

Operating Instructions and Spare Parts List

PT 5 Powder Transport for MRS with Fluidizing Channel

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Safety Notes

1. Installation

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

2. Grounding

All parts of the PT 5 Powder Transporter must be grounded. The ground connection must be done by the customer on site.

3. Repairs

Repairs should only to be carried out by trained personnel.

Technical Data**Dimensions**

Specification Sheet	MB-052
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Electrical Connections

Voltage	230 V
Frequency	50 / 60 Hz
Power consumption	300 VA

Compressed air

Air supply	min. 4 bar max. 10 bar
Air quality	
- Water vapour content	max. 1,3 g/m ³
- Oil content	max. 0,1 mg/kg
- Compressed air consumption	ca. 4 Nm ³ /h

Setting values

(Reference values, must be adapted according to operational experience)

Time Relays

Fill time	3 sec.
Conveying time	6 sec.
Cycle acknowledgement	0,5 sec.

Compressed air

Transport air	1 bar
Conveying air	1,5 bar
Pinch valve pressure	2 bar <i>(must not be increased, because too high pressure leads to damage to the membrane)</i>

Conveying performance

(Reference values, can vary according to the booth type, powder type etc.)

Conveying volume:	ca. 6 kg / min
- with used Epoxy/Polyester powder	
- with max. 11 m Transport hose	
- with 5 m Transport height	

PT 5 Powder Transport for MRS with Fluidizing Channel

Description of Function

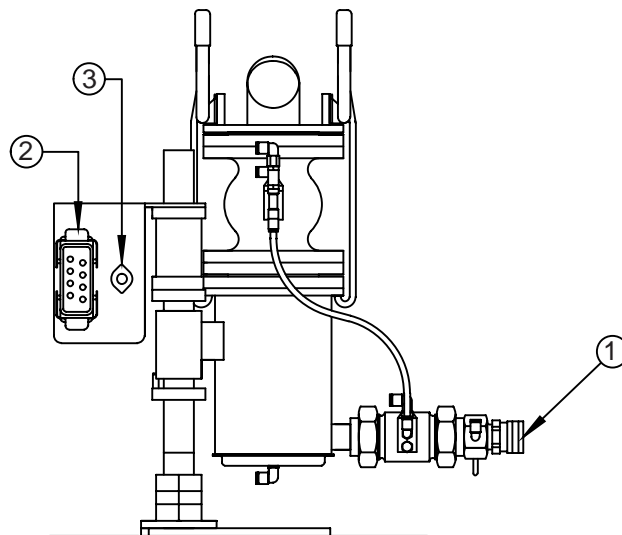
The PT 5 Powder Transport is a system which transports powder from the fluidizing channel of the MRS back to a sieve machine, and the powder hopper.

It is designed as an enclosed sub-assembly and can be fitted to existing equipment, as well as the new MRS fluidizing channel, in the place of powder pumps.

As soon as the MRS booth is put into operation, the powder transport unit must be supplied with compressed air. The „Transport“ pinch valve closes and the „Fill“ pinch valve remains open. Powder in the transport hose is loosened up by the simultaneous switching on of the conveying air. Due to fluidization, powder flows from the fluidizing channel into the intermediate hopper.

If powder is requested in the powder hopper by the level sensor, and the intermediate hopper of the powder transport unit is full, that is, the level sensor is switched on, then a Transport pulse is released. The pinch valves, „Fill“, and „Transport“ are simultaneously switched over and the conveying air is switched on. After a set time the conveying air is switched off again and the pinch valves are switched back to their starting positions. Now the fill procedure of the intermediate hopper starts again.

The powder transport is only released for automatic operation when the level sensor in the intermediate hopper reports that it is full. By operating the selector switch on the control unit the manual operation can, however, be switched on, that is, transport pulses follow continuously.



PT 5 Powder Transport

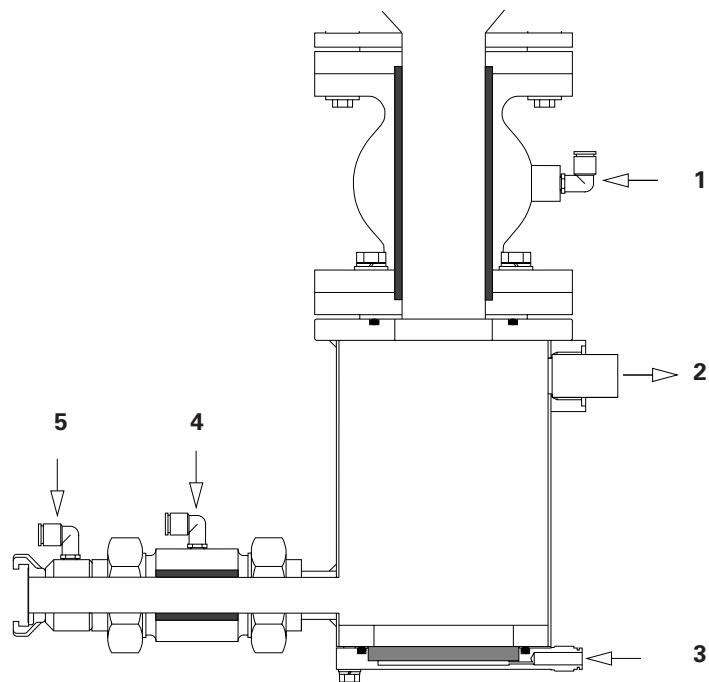
Fig. 1

Function sequence

Transport performance (for Fluidizing channel = 6 kg/min.)

1. Starting position

- The control is not switched on
- No compressed air present (main valve closed)



- Both pinch valves open

1. „Fill“ Pinch valve
2. Level sensor
3. Conveying air
4. „Transport“ Pinch valve
5. Transport air

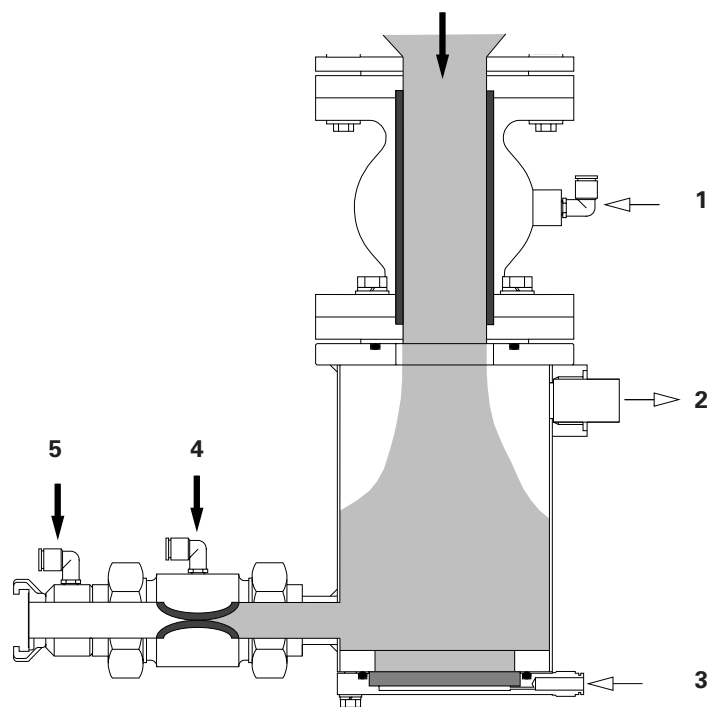
→ In operation

→ Not in operation

Fig. 2

2. In operation

- The powder coating plant is in operation
- The intermediate hopper is filled according to the amount of powder returned.



- Transport air is switched on
- "Transport" pinch valve is closed

1. „Fill“ Pinch valve
2. Level sensor
3. Conveying air
4. „Transport“ Pinch valve
5. Transport air

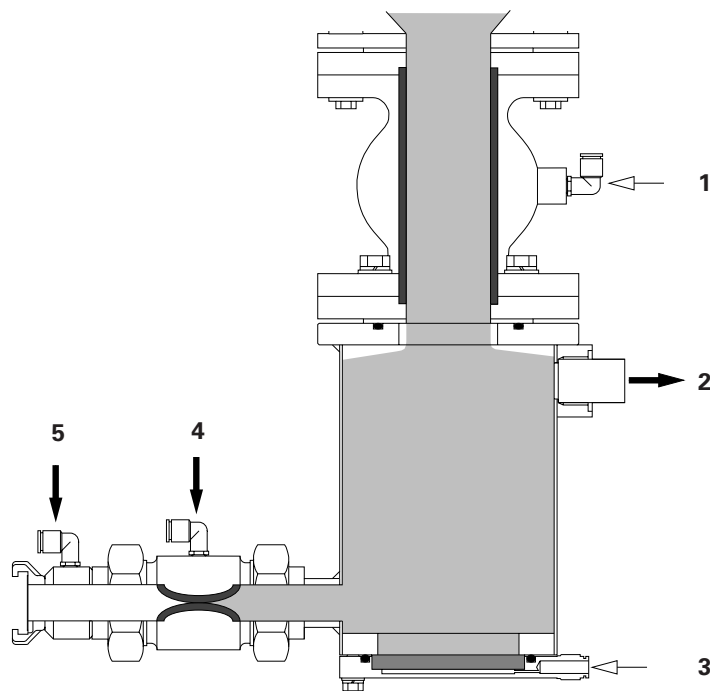
→ In operation

→ Not in operation

Fig. 3

3. Intermediate hopper full

- The intermediate hopper is full, indicated by the level sensor



- The transport air is switched on
- The level sensor gives a signal to the control unit

1. „Fill“ Pinch valve
2. Level sensor
3. Conveying air
4. „Transport“ Pinch valve
5. Transport air

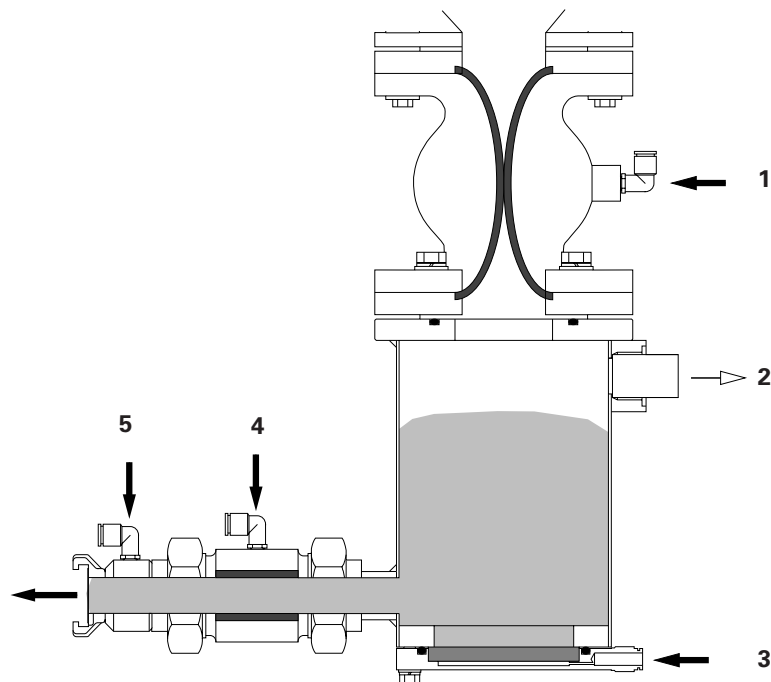
→ In operation

→ Not in operation

Fig. 4

4. Transport (T= approx. 6 secs)

- A feed pulse is only release on request from the level sensor in the powder hopper
- Feed pulse is requested during the preset time



- Transport air switched on
- The "Fill", and "Transport" pinch valves switch at the same time
- The transport air is switched on for a certain time, then afterwards the pinch valves switch back

1. „Fill“ Pinch valve
2. Level sensor
3. Conveying air
4. „Transport“ Pinch valve
5. Transport air

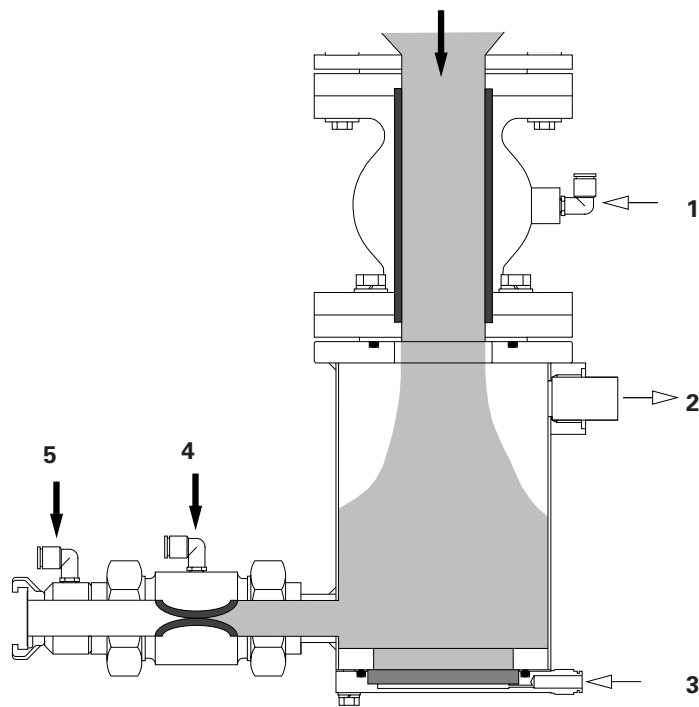
→ In operation

→ Not in operation

Fig. 5

5. Filling

- The intermediate hopper is filled again according to the amount of powder returned



- The transport air is switched on
- The "Transport" pinch valve is closed

1. „Fill“ Pinch valve
2. Level sensor
3. Conveying air
4. „Transport“ Pinch valve
5. Transport air

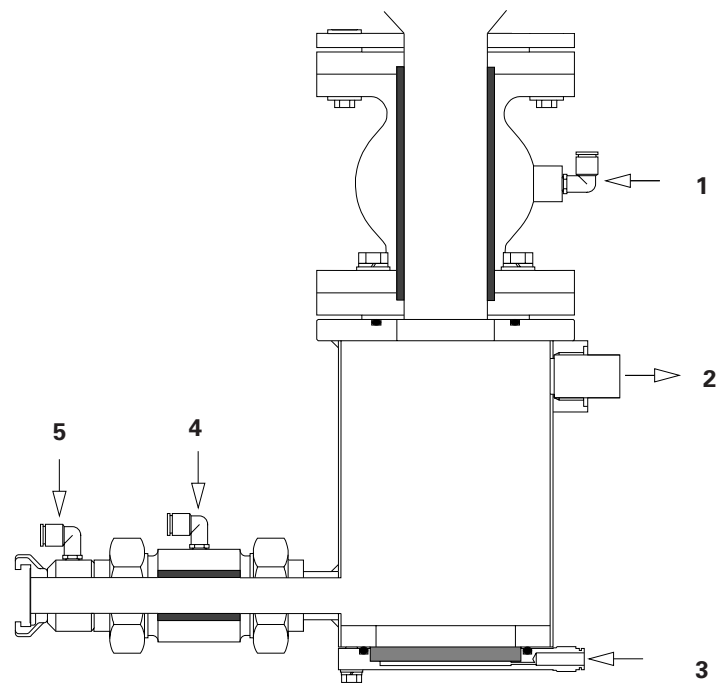
→ In operation

→ Not in operation

Fig. 6

6. Cleaning

- The control unit is switched off
- Main valve not switched on, no compressed air present



- Both pinch valves are open
- Blow through, and vacuum from both sides

1. „Fill“ Pinch valve
2. Level sensor
3. Conveying air
4. „Transport“ Pinch valve
5. Transport air

→ In operation

→ Not in operation

Fig. 7

Preparation for Start Up

Before starting up the Powder Transport the following points must be observed:

- Observe the Safety Notes
- All hose connections should be as short as possible.
- The transport hose should be laid out or fitted without loops to prevent depositing, and clogging.
- Check the hose connections for good sealing, and firm seating
- Check the interlocking, the PT 5 Powder Transport should only operate when the exhaust system is switched on.
- Fitting of the transport hose, above all at the delivery end
- Check the compressed air settings
- Check the time settings.

Carrying out a Start Up

Start Up with the main control

The Start Up must now take place in the following sequence:

1. Turn the main switch of the MRS control unit to „ON“
2. Switch on the booth with Key switch - **S0.1**. Lamp **H0** illuminates.
3. Switch on the plant with the Switch - **S2**. Lamp **H1** illuminates.
4. Switch on the exhaust air system.
 - With this step the compressed air must also be switched on and the pressure gauge on the MRS control unit must display the following reference values:

Transport air	approx. 1 bar
Conveying air	approx. 1.5 bar
Valve pressure	approx. 2 bar
5. PT 5 Powder Transport is ready to operate.
6. Switching the plant off also automatically switches the PT 5 Powder Transport off.

Colour change

The following procedure is recommended for colour changes:

1. Cleaning the booth
 - During this procedure the resulting powder can still be returned to the powder hopper by the Powder Transport as usual. The selector switch „MAN - AUTO“ can thereby be switched to „MAN“. With this type of operation the transport pulses follow continuously, that is, the fluidizing channel is emptied.
2. Cleaning the Powder Transport
 - The connections of the „Fill“ pinch valve can be easily removed for cleaning by unscrew-ing the two milled nuts.
 - If the Switch - **S1** on the control unit is now switched off, and with it the compressed air on the conveying system, both pinch valves open. The whole PT 5 Powder Transport system can now be blown through and cleaned out with a vacuum cleaner.
3. Cleaning the transport hose

Cleaning can be assisted by blowing foam-rubber cubes through the hose.

Maintenance

Monitoring during operation

- Check the compressed air
The readings on the pressure gauges remain the same.

Daily maintenance

- Check the compressed air
The readings on the pressure gauges correspond exactly with the set values
- Transport hose
Check for sintering on the inside
- Transport hose connection Check for sintering on the inside

Additional monthly maintenance work

- Intermediate hopper
Check for sintering on the inside
- Conveying air connection Check the fluidizing plate

Functional checks

The following points should be checked regularly as functional checks :

- Powder flows in the transport hose
The residual powder must also be kept moving during transport pulses. This is achieved with the transport air switched on.
- Powder discharging from the transport hose
Powder should not discharge from the hose in large clouds and also not during a transport pulse. This depends on the combined volumes of the transport, and conveying air.
- Level sensor
The LED on the sensor body must always go out between transport pulses, otherwise the sensor must be checked for sintering or check setting of the sensor.

Trouble Shooting Guide

Always check the following points first when there are faults on the PT5 Powder Transport:

- Is Mains voltage present ?
- Is compressed air present (min. 4 bar) ?

Fault	Error / Solution
Transport hose is clogged	<ul style="list-style-type: none"> - No or too little transport air set - Transport hose laid out alternately rising / falling - Heavy sintering in the transport hose
Heavy powder development at the end of the transport hose	<ul style="list-style-type: none"> - Too much transport air set - Too much conveying air set - Conveying time set too long
Conveying runs continuously	<ul style="list-style-type: none"> - Depositing on the level sensor - Selector switch set to „MAN“
Heavy powder development in the fluidizing channel	<ul style="list-style-type: none"> - „Fill“ pinch valve defect - Too little pressure for the pinch valve control - Conveying air not switched off during the filling process
Conveying performance too low	<ul style="list-style-type: none"> - Too little conveying air - Intermediate hopper not full - Level sensor always switched on (covered by depositing)

Pinch valve

Sleeve replacement

„Fill“ pinch valve

The sleeve on the „Fill“ pinch valve (NW 65) must be replaced in the following manner:

1. Switch off the plant. The booth lighting may be left on.
2. Disconnect all air hoses on the pinch valves („Fill“ and „Transport“).
3. Release the clamp bands fixing the Heliflex hose to the fluidizing channel outlet.
4. Release the clamp levers and remove the fluidizing channel connection (1).
5. Place wooden blocks under the intermediate hopper to support it. The blocks should stop the hopper from falling to the floor when the next steps are made.
6. Unscrew the 2 bolts holding the pinch valve support bracket to the frame.
7. Unscrew the 2 (painted) bolts holding the pinch valve support bracket to the pinch valve.
8. Unscrew the other 2 (painted) bolts holding the pinch valve support bracket to the pinch valve.
9. Move the pinch valve and intermediate hopper away from the supporting frame.
10. Unscrew the 4 (plated) bolts holding the intermediate hopper to the flange (3).
CAUTION !! *These bolts are now holding the lower pinch valve flanges together.*
11. Unscrew the flange (3) from the top of the pinch valve housing. 12. Remove the sleeve (5) and completely clean the housing (4). 13. Fit a new sleeve
14. Fit the cones of the flanges (3) into the sleeve (5) and lightly screw the cone flanges together, each with 2 screws (8). Take care that the conical surfaces of the flanges fit into the inside of the hose.
15. Fit the $\varnothing 33 / 59$ mm assembly tube, connect the air hose and close the valve with 6 bar control pressure 16. Tighten the cone flange nuts evenly (diagonally) 17. Release the control pressure and remove the assembly tube 18. Connect control pressure again and check the valve, also the sealing and firm seating of the sleeve

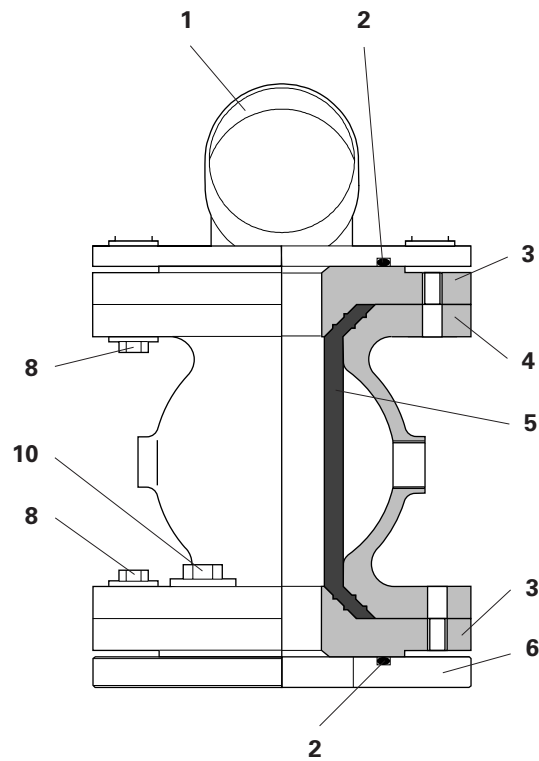


The control pressure in operation should only be approx. 1.8 - 2 bar higher than the operating pressure, a too high operating pressure leads to premature damage to the sleeve.

19. When all the checks are completed and everything is correct, reassemble the intermediate hopper and the pinch valve housing in the reverse order to which they were dismantled.

NW = Nominal diameter in mm

"Fill" pinch valve - Sleeve replacement



- | | | | |
|---|-------------------------------|----|---------------------------------|
| 1 | Fluidizing channel connection | 6 | Intermediate hopper flange |
| 2 | O-Ring | 7 | O-Ring |
| 3 | Cone flange plate | 8 | Pinch valve flange bolt |
| 4 | Pinch valve housing | 10 | Intermediate hopper flange bolt |
| 5 | Pinch valve sleeve | | |

Fig. 8

„Transport“ pinch valve - Sleeve replacement

On the „Transport“ pinch valve (NWà 25) the sleeve must be replaced in the following man-ner:

1. Switch off the whole plant. The booth lighting can be left on.
2. Disconnect the air hoses from the hose connections.
3. Carefully unscrew the pinch valve assembly completely by unscrewing the rear cone flange (**12**) from the intermediate hopper. *Always use the correct size spanners!*
4. Carefully unscrew both clamp nuts (**13**) and remove the cone flanges (**12**).
5. Remove the old pinch valve sleeve (**14**).
6. Clean the valve housing (**15**) completely.
7. Fit a new pinch valve sleeve (NWà 25).
8. Carefully press the cones of the cone flanges (**12**) into the ends of the sleeve and fix both ends with the clamp nuts (**13**) again.
9. Replace the air hoses on the hose connections.
10. Set the pinch valve under pressure and check for air leaks. If necessary tighten the clamp nuts (**13**) or repeat Point 8.
11. Screw the pinch valve assembly back onto the intermediate hopper.
12. The pinch valve is now ready to operate.

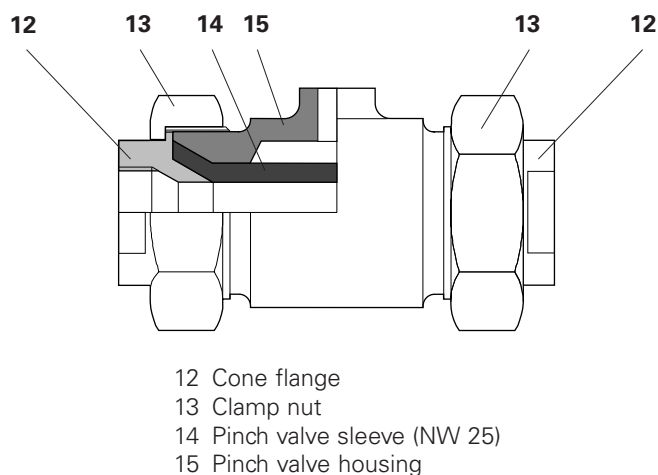
„Transport“ pinch valve

Abb. 9

Spare Parts List

Ordering Spare Parts

When ordering spare parts for coating equipment, please indicate the following specifications :

1. Type, and serial number of your coating equipment
2. Order number, quantity, and description of *each* spare part.

Example :

1. **Type** PT 5, **Serial no.** : xxxx xxxx
2. **Order no.** : 246 573, 1 piece, T-Connector - 1/8"- ø 8- ø 8 mm.

When ordering cable and hose material the length required must also be given. The spare part numbers for metre/yard ware is always marked with an *****.

All wear parts are marked with a **#**.

All dimension of plastic powder hoses are given with external and internal diameters : e.g. ø 8 / 6 mm = 8 mm outside diameter (o/d)/ 6 mm inside diameter (i/d).

PT 5 Powder Transport

	PT 5 Powder Transport - complete	371270
1	Base plate	371297
2	Support tube	371300
3	Fluidizing channel connection	371319
4	Connecting piece	377368
5	Fluidizing plate	371327*
6	Intermediate powder hopper	371289
7	Flange	371378
8	Centering ring complete	371335
9	Clamp	371386
10	Rubber sleeve D70x80 mm	354570
11	Adjusting ring complete	371343
12	Fixture plate complete	371416
13	Fluidizing ring	363570*
14	Spacer	377376
15	Cap screw K-SI M05x12 mm	239941
16	Hex. Shake-proof screw M06x020 mm	244414
17	Steel bolt A-M08x080 mm	223581
18	Hex. Screw M12x050 mm	214299
19	Diaphragme D1.9 mm	372900
20	Hex. Nut M08 mm	215570
21	Lock nut M08 mm	221317
22	Washer D13.0/24.0x2.5 mm	215830
23	Spring washer M12 R	215970
24	Air valve 1/8 NW 5.5	258512
25	Clamp lever Mod.351	255300
26	Hose clamp D74 mm	246689
27	Support tube clamp D40 mm	218472
29	Non-return valve 1/8a-1/8i	202240
30	Pinch valve NW 25	253707
30.1	Pinch valve sleeve NW 25 - for Item 30	255 246*
31	Pinch valve NW 65	253723
31.1	Pinch valve sleeve NW 65 - for Item 31	255 262*
38	Eye screw M06x015 mm	261122
39	Spring hook 060x06 mm	250694
40	Sliding bearing D40/44x40 mm	258148
41	O-Ring D90.0x5.00 Nitril	246158
49	Hose connection - compl. G1"	258539
50	Elbow connection 1/8a-D08	203050
51	Adapter 1/8i-D08	236020
53	Double adapter 1/8a-3/8a	240079
54	Plastic hose D08/06 black antistatic	103756#
55	Elbow connection 1/8i-D08	253987
56	T-connection 1/8a-1/8a-1/8a	237760
57	Silencer 1/8a	251305
60	Proximity switch	253740
70	Rubber profile 10x04 mm	100374#

* Wear parts

Indicate length required

PT 5 Powder Transport

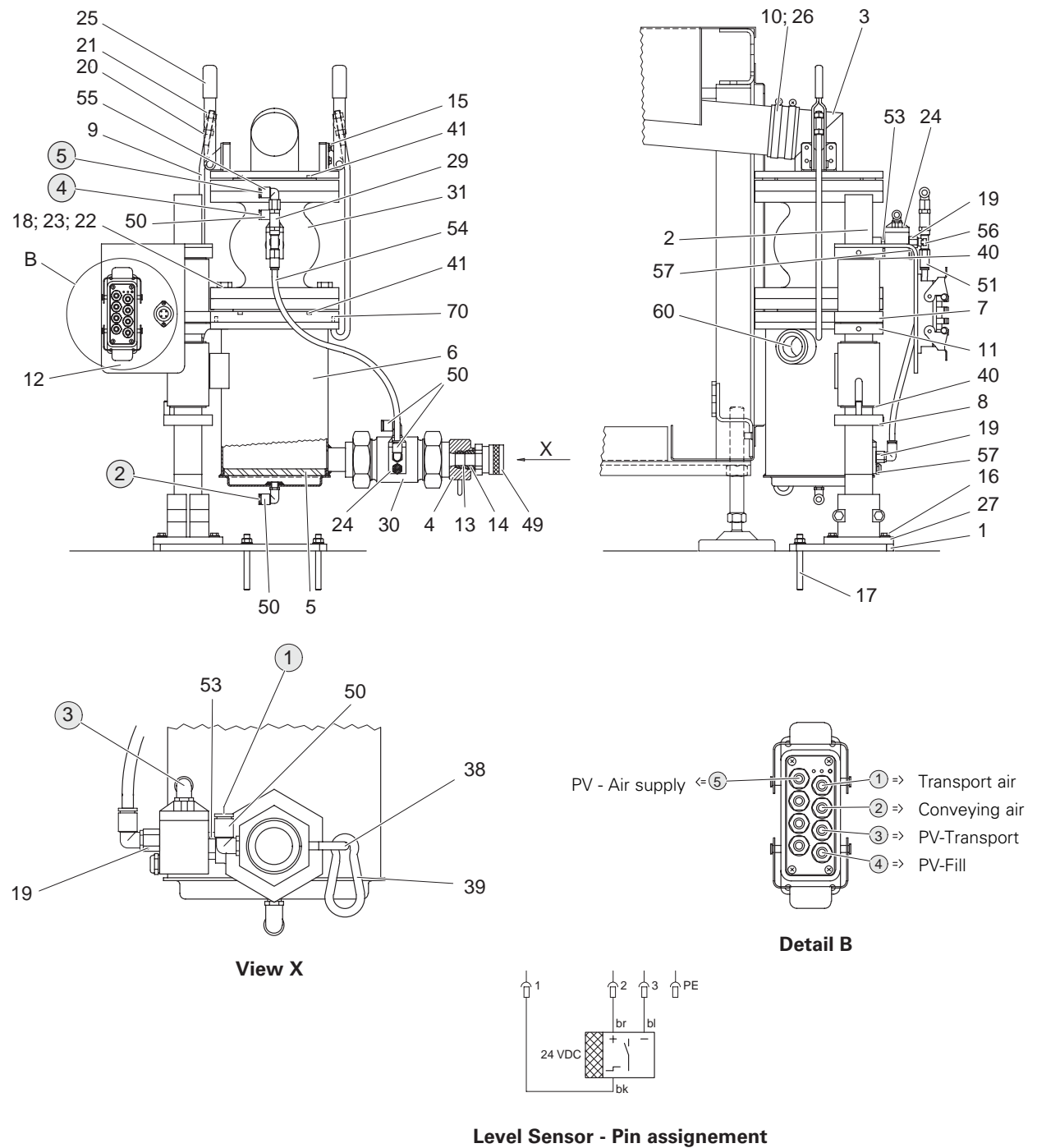


Fig. 10

PT 5 Powder Transport - Connections

Connection ①

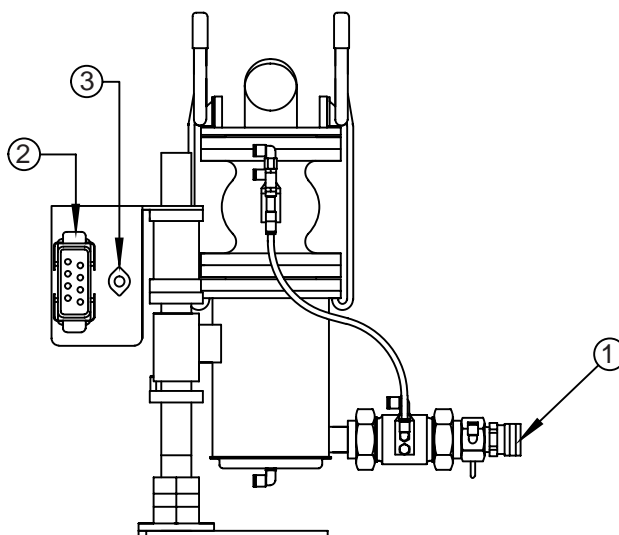
Transport hose NW25	104604*
Clamp	226335
Hose connection D25	258547
Safety cable	374628

Pneumatic connection ②

see page 19

Level Sensor connection ③

4-pin socket	206482
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* Wear parts
Indicate length required

Fig. 11

Notes:

Documentation PT 5

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