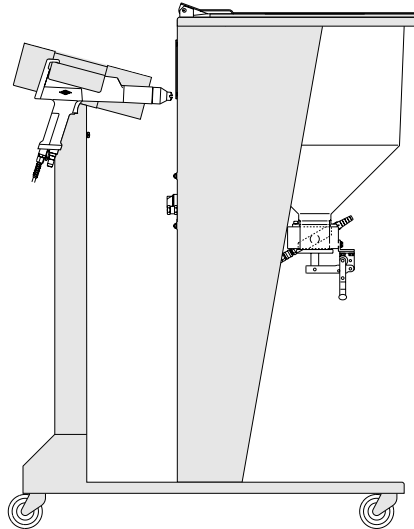


Operating Instructions and Spare Parts List

## MPS-SBN

With PG 1 or PG 2-A Powder Guns





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## Directions for Use

The electrostatic coating system consists of:

PG 1 Electrostatic manual powder spray gun,  
PG 2-A Automatic powder spray gun.  
PGC 1 Control module with CB 1 electronics control board.  
Powder hopper with a stirrer mechanism.

*This equipment is matched and should only be operated in this configuration.*

This equipment combination was tested by PTB: PTB test No 91.C.9102, Date tested 10. 91
-----------------------------------------------------------------------------------------

### **Safety rules for the electrostatic powder coating equipment**

1. This equipment can be dangerous when it is not operated according to the following standards:
  - EN 50 050 (or VDE 0745 Part 100),
  - EN 50 053 Part 2 (or VDE 0745 Part 102).
2. All electrostatic conductive parts which are within 5 metres of the coating area and especially the workpieces must be grounded.
3. The floor in the coating area must be electrostatic conductive. Normal concrete is generally conductive.
4. The operating personnel must wear electrostatic conductive footwear, i.e. leather soles.
5. The operating personnel should hold the gun (PG 1) in the bare hand. If gloves are worn they must be electrostatically conductive.
6. Connect the grounding cable (green/yellow) supplied to the grounding terminal on the transport trolley column. The grounding cable must have a good metal to metal contact with the coating booth, recovery unit, and the workpiece conveyor system, especially with the workpiece suspension.
7. The electrical cables and powder feed hoses to the gun must be laid out so that they are protected from possible mechanical damage.
8. The powder spraying equipment should only be switched on after the coating booth is in operation. If the booth breaks down then the powder coating system must also switch off.
9. Check the grounding of all electrostatic conductive parts at least once a week.
10. When cleaning the gun or changing nozzles the control module must be switched off.

## Technical Data for the MPS-1SBN, and MPS-2SBN Electrostatic Coating System and a PG 1 Manual Powder Gun or PG 2-A Automatic Powder Gun

Type	MPS-1SBN	MPS-2SBN
<i>Electrical data</i>		
Single-phase AC		
Selectable voltage :	110 V, 120 V or 240 V	
Voltage selection is made on the inside of the electrical unit PGC 1 by resoldering the tag of the transformer and in the Stirrer Control unit. The value of the fuse in the PGC 1 Control Module for 100, 110, and 120 V is 2.0 AT and for the higher voltages is 1.0 AT.		
<b>The equipment is delivered for operation at 230 V from the factory.</b>		
Tolerance:	±10%	
Frequency:	50 / 60 Hz	
Connected load:	150 VA	220 VA
Rated output voltage (to gun):	10 V	10 V
Rated output current (to gun):	1.2 A	1.2 A
Type of protection:	IP 54	
Temperature range:	+10° C to +40° C (+50° F to +104° F)	
Approval:	EN 50 050	
	FM test No. J.I.O.W 7 A 6.AE (7264)	
	Date tested 10. 93	
	PTB test No 91.C.9102	
	Date tested 10. 91	
<i>Pneumatic data</i>		
Maximum input pressure:	10 bar	
Minimum input pressure :	5 bar	
Maximum water vapour content of compressed air:	1.3 g/m <sup>3</sup>	
Maximum oil vapour content of compressed air:	0.1 mg/kg	
Maximum compressed air consumption:		
Powder hose - ø 12 mm	7 m <sup>3</sup> /h	14 m <sup>3</sup> /h
Main compressed air input connection thread:	1/4" B.S.P (female)	
<i>Dimensions</i>		
Width:	460 mm	460 mm
Depth:	900 mm	900 mm
Height:	1160 mm	1160 mm
Weight:	78 kg	91 kg
Useful capacity of hopper:	18.5 dm <sup>3</sup>	
Powder gun (with integrated high-voltage generator)	<b>PG 1 / PG 2-A</b>	
Rated input voltage:	10 Veff.	
Frequency:	17000 Hz	
Rated output voltage:	98 kV	
Maximum output current:	100 µA	
H-V indication (PG 1):	LED	
Polarity:	negative or positive (optional)	
Flash protection:	EEx 5 mj	
	FM test No. J.I.O.W 7 A6.AE(7264)	
	Date tested 10. 93	
	PTB test No 91.C.9102	
	Date tested 10. 91	

## About these operating instructions

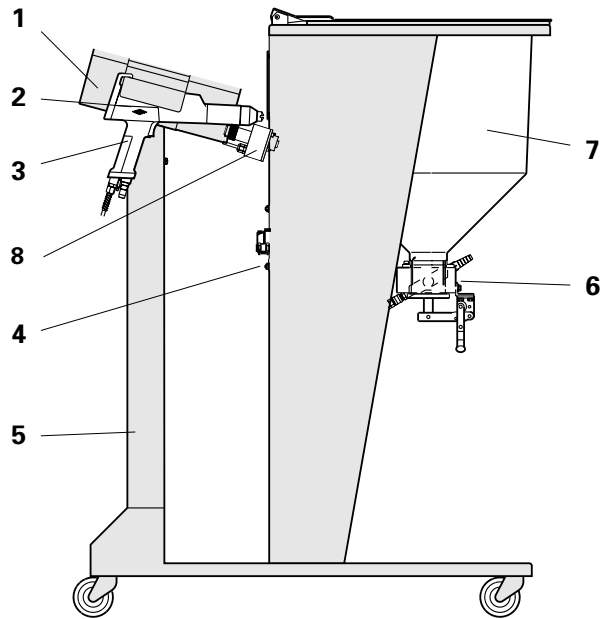
These operating instructions contain important information which is required to operate the **MPS-SBN** Automatic Powder System. It will guide you safely through the assembly phase, give you information to convert an **MPS-1SBN** to **MPS-2SBN** and give instructions and tips for optimizing the new powder spraying system. Information about the functioning of the individual system components - PGC 1 Powder Gun Control, PG 1 Manual Powder Gun, PG 2-A Automatic Powder Guns or PI 8-H Injector - are found in the accompanying documentation.

## Automatic Powder System for MPS-SBN Electrostatic Powder Spraying with PG 1 Manual, or PG 2-A Automatic Powder Gun

### 1. Fields of Application

The MPS-SBN electrostatic powder spraying system with PG 1 or PG 2-A powder guns is especially suited for working with fine-grained powder with small powder volumes in short bursts.

### 2. Scope of Delivery for APS 3-1-SA (Standard):



- |   |                                                   |   |                                            |
|---|---------------------------------------------------|---|--------------------------------------------|
| 1 | PGC 1 control module                              | 6 | PI 8-H injector                            |
| 2 | Gun holder                                        | 7 | Powder hopper with stirrer                 |
| 3 | Alternatively: PG 1, PG 2-A or PG 1-R3 Powder gun | 8 | Adapter (only for use with automatic guns) |
| 4 | External air input                                |   |                                            |
| 5 | Transport trolley                                 |   |                                            |

Figure 1

A PGC 1 control module (1), installed in a metal housing, complete with gun support (2 - Manual guns only) and power cable.

A transport trolley (5) fitted with a powder hopper (7), with stirrer and cover.

An external air input (4), mounted on the transport trolley powder hopper support panel.

A PI 8-H (6) plug-in injector.

Alternatively: A PG 1 manual powder gun (3), PG 2-A automatic powder gun with electric cable, powder hose, rinsing air hose, and a standard PG 1 nozzle set (see corresponding Manual).

Pneumatic hoses for the conveying air (red), and supplementary air (black), also pneumatic connection from the external air input (4) to the control module.

Adapter with cable (8) for an external signal to operate the automatic powder gun (only with automatic guns)

Optional extras:

- A cover with safety switch, which switches the drive motor off when the main cover is lifted;

- A fluidizing flap with a built-in fluidizing plate, instead of a discharge flap. The powder will be loosened up in addition to the stirrer (not suitable for all types of operations)

### 2.1 Supplementary Material for MPS-SBN (standard), see also page 19, Fig. 16

A second PGC 1 control module, complete with gun support (manual guns only), special power cable, and connecting cable.

A second PI 8-H injector.

A second PG 1 Manual powder gun, PG 2-A Automatic powder guns with electric cable, powder hose, and rinsing air hose (and a Standard nozzle set when a PG 1 manual gun is used).

A second adapter with external signal cable to operate the automatic powder gun (supplied as standard with automatic guns) .

Pneumatic hoses for the conveying air (red), supplementary air (black), also a pneumatic connection with a double air distributor from the external air input to the control module.

Two connecting plates.

**Standard Equipment for MPS-SBN**

**MPS-1SABN**

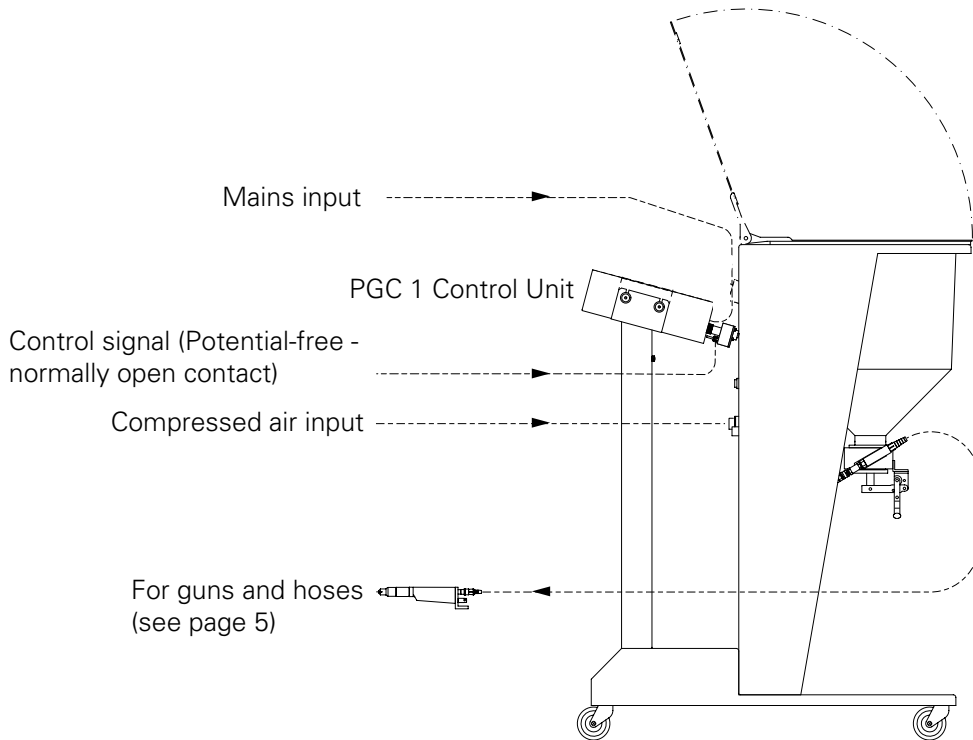


Figure 2

**MPS-1SABN - Fixed (Floor mounting)**

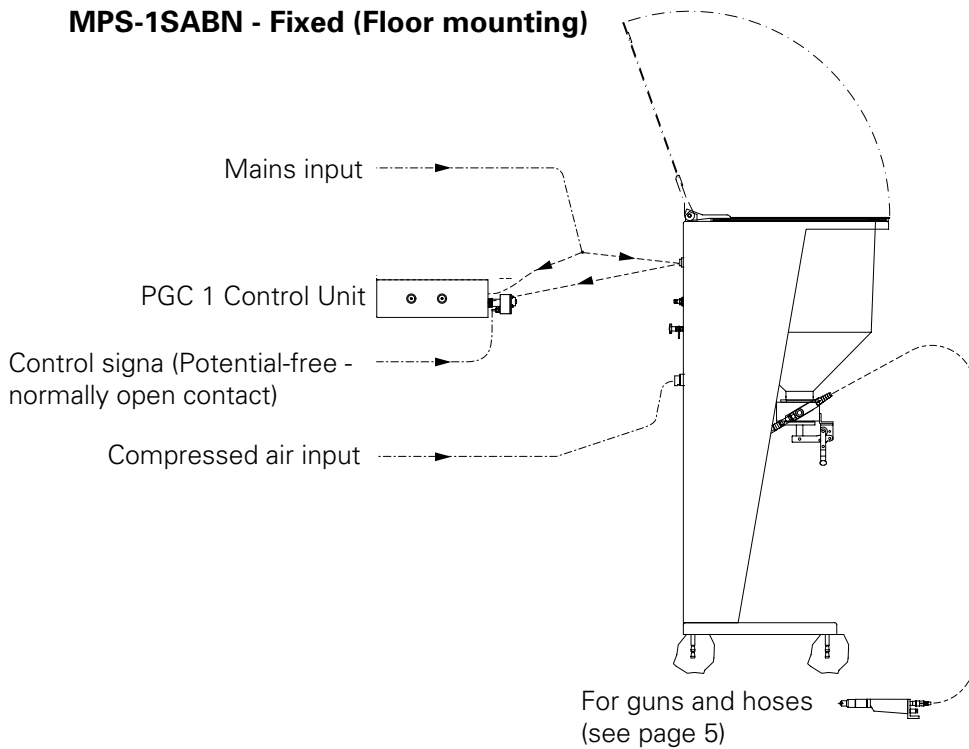


Figure 3

**Fitting Possibilities - Control Unit**

**Stand - Complete, for PGC 1 Control Unit - Fixed**

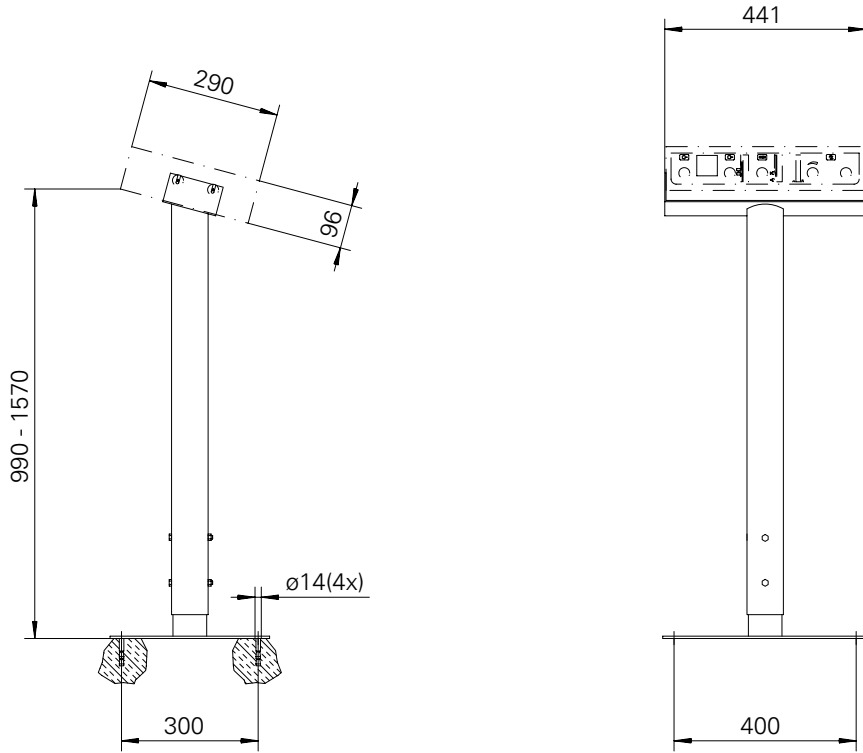


Figure 4

**Support - Complete for Wall Mounting the PGC 1 Control Unit**

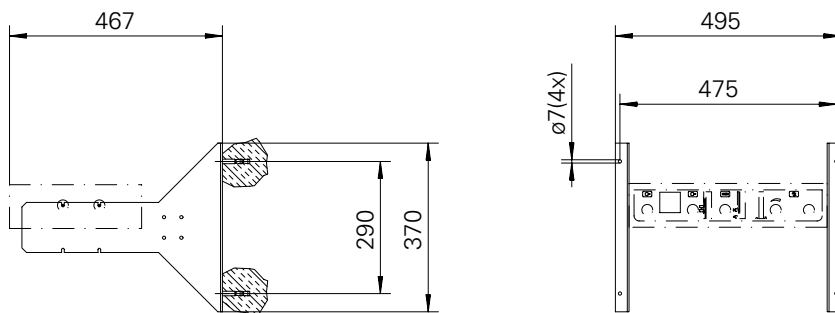


Figure 5

**Powder Guns and Powder Hoses**

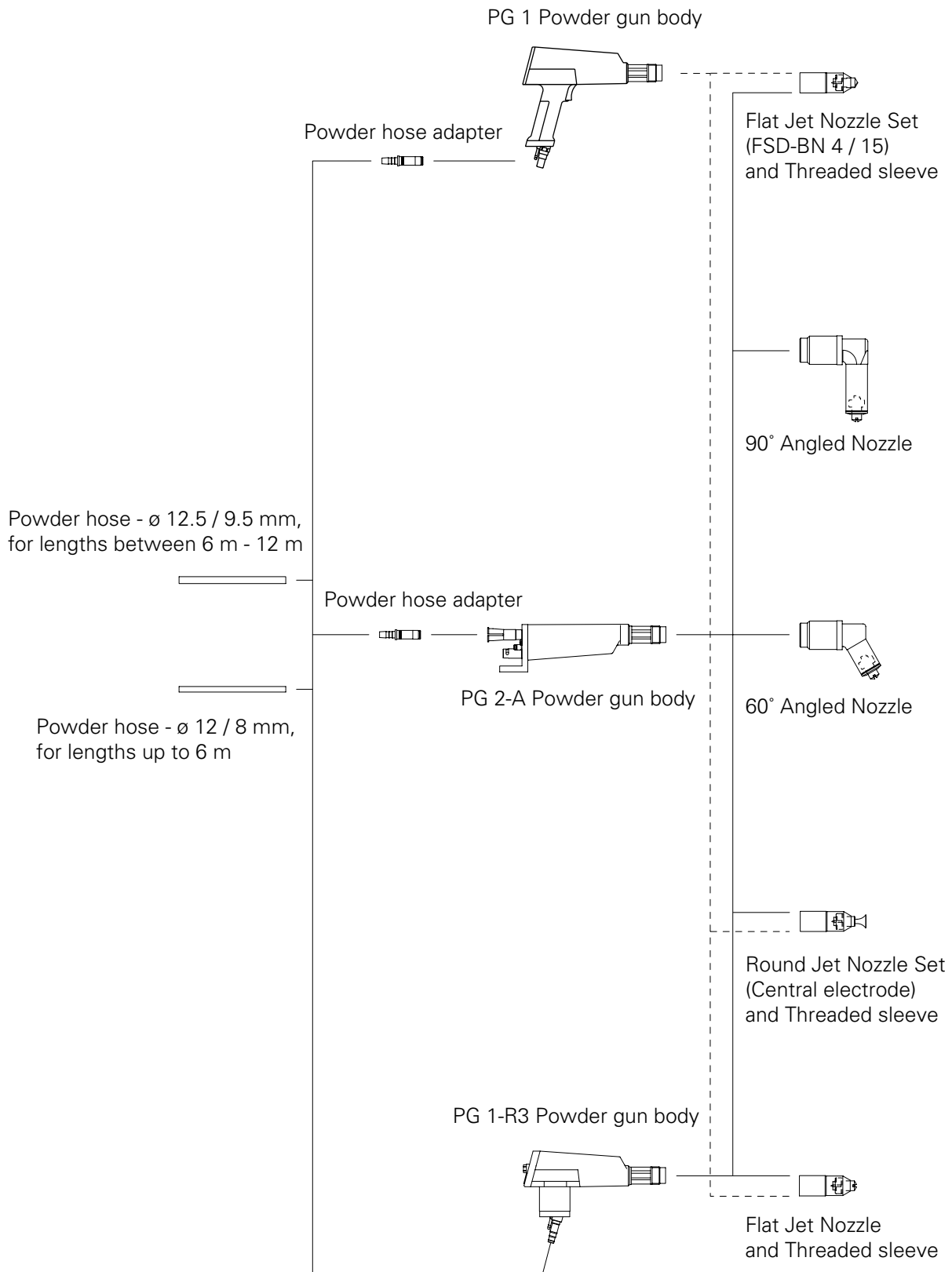


Figure 6

## Functional Description

The agitated powder in the powder hopper is sucked into the injector, fitted on the bottom of the powder hopper, by the conveying air (1.2 - red hose) passing through it. The powder/air mixture reaches the gun through the powder hose (transparent hose).

The powder is electrostatically charged shortly before it leaves the gun nozzle. An electrostatic field also exists between the gun nozzle and the grounded object. The electrostatically charged powder sprayed onto the object adheres to the latter's surface.

The powder is agitated by the stirrer arm in order to prevent it from compacting. A brush is also fitted to the stirrer arm to stop the build up of powder between the powder hopper wall and the stirrer arm.

The conveying air and the supplementary air are regulated on the control module. The function of the injector is explained in the corresponding Manual.

The arrows in Figure 7 show the direction of flow, the letters, and numbers indicate the connection points at the rear of the PGC 1 Control module.

External signal (for Automatic powder guns only)

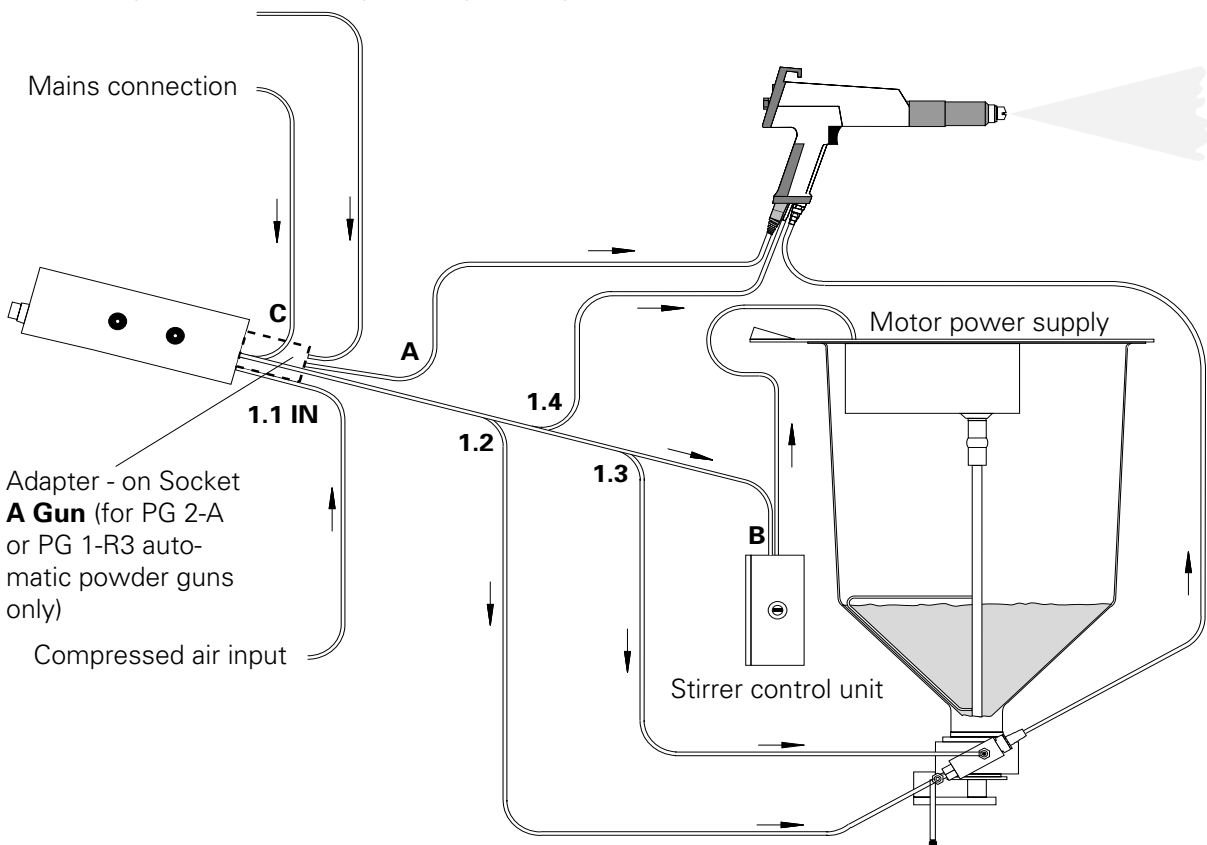


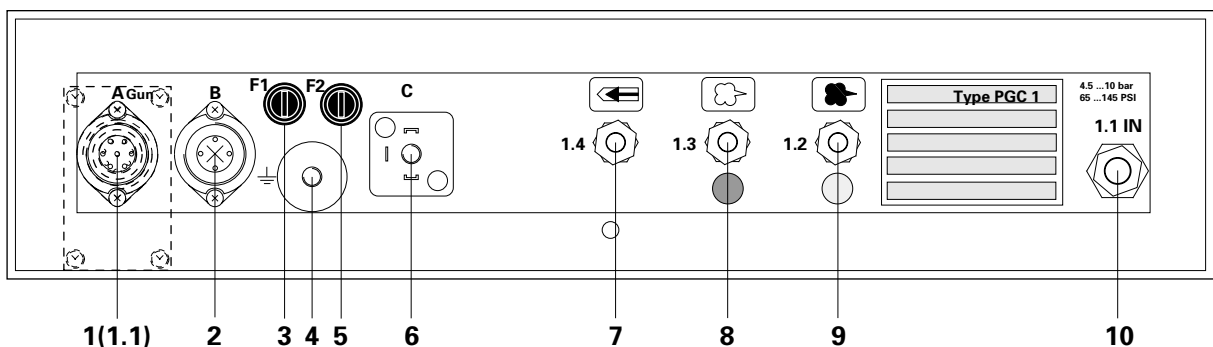
Figure 7

## Installation of the Powder Coating System

### MPS-SBN

The powder coating system is preassembled in the factory so that it is only necessary to connect a few cables, Adapter and hoses.

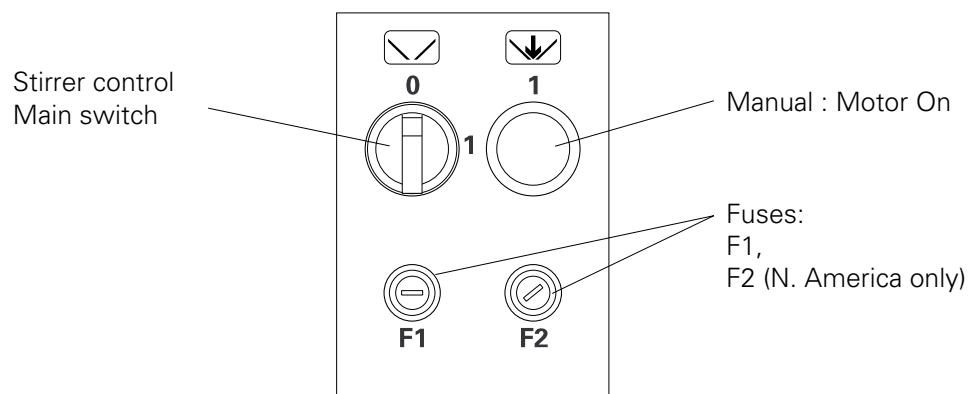
- The gun support (manual gun only) can be mounted on either side of the control module housing.
- Connect the thick black hose from the external compressed air input (mounted on the powder hopper support panel of the trolley) to the inlet **1.1 IN (10)** at the rear of the control module.
- Fit the red hose to the conveying air outlet **1.2 (9)** at the rear of the control module and the other end to the quick-release fitting of the injector.
- Connect the black hose for the supplementary air to the outlet **1.3 (8)** of the control module and to the fitting of the injector.
- Connect the rinsing air hose (small diameter transparent hose) to the connection on the gun and the other end to the outlet **1.4 (7)** on the control module.
- The adapter (**1.1**) is connected to the Socket **A Gun (1)** when using PG 2-A



Rear panel of the PGC 1 Control Unit

- |                                                            |                                               |
|------------------------------------------------------------|-----------------------------------------------|
| 1 Gun socket ( <b>A Gun</b> )                              | 5 Fuse holder - <b>F2</b> (N. America only)   |
| 1.1 Adapter only in connection with PG 2-A automatic guns) | 6 Mains connection ( <b>C</b> )               |
| 2 Stirrer motor control socket ( <b>B</b> )                | 7 Rinsing air connection ( <b>1.4</b> )       |
| 3 Fuse holder - <b>F1</b>                                  | 8 Supplementary air connection ( <b>1.3</b> ) |
| 4 Module ground connection                                 | 9 Conveying air connection ( <b>1.2</b> )     |
|                                                            | 10 Main air input ( <b>1.1 IN</b> )           |

Figure 8



Operating elements: Stirrer control on the powder hopper support panel

Figure 9

## Converting MPS-1SBN to MPS-2SBN

The MPS-2SBN consists of a basic MPS-1SBN which has been expanded to operate with a second powder gun (PG 1 Manual gun, PG 2-A Automatic guns).

1. Remove the gun holder (7) (manual gun only) and milled nuts from the control unit.
2. Mount a connecting plate (4 - slots facing upwards) and gun holder (7) (manual gun only) on each side on the protruding studs and tighten the milled nuts.
3. Mount the second control unit (2) so that the protruding studs fit into the slots of the connecting plates (4) and tighten the milled nuts.
4. Remove the plug from the injector distributor head and fit the second injector (9) and check that it fits tightly in the mount.
5. Connect PG 1 manual gun (or for automatic guns - the adapter - 2.2) to the socket - **A Gun** at the rear of the PGC 1 control unit, see page 7, Fig. 8. (For automatic guns only) Connect the automatic gun cable to the adapter (2.2).

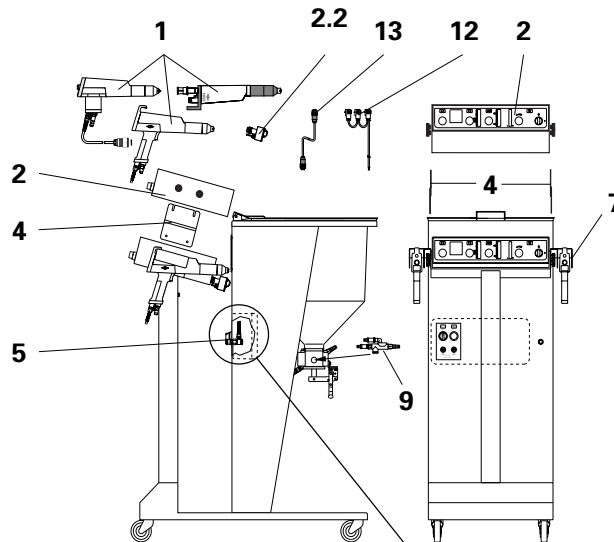


Figure 10

6. Connect the transparent rinsing air hose to the air output - 1.4, all on the rear of the second PGC 1 unit (see page 7, Fig. 8). Connect the powder hose to the injector hose connection.
7. Remove the original Mains input power cable (with two plugs) from socket - **C** at the rear of the PGC 1 control unit, and from the Mains connection on the stirrer control unit on the inside of the hopper support panel.
8. Fit the screw coupling of the air connection of the conveying air hose (red) to the air input - 1.2, and the supplementary air hose (black) to the air input - 1.3 on the rear of the second PGC 1 unit, then push the corresponding quick-release connection on to the corresponding injector connection (red-red and black-black).
9. Connect two plugs of the triple plug cable (12) to the Mains input socket - **C** on the rear of the PGC 1 units and the remaining plug to the Mains input socket of the stirrer control unit, next to the main compressed air input (5), on the inside of the hopper support panel.
10. Connect the cable (13) to the stirrer control motor socket - **B** on the rear of the second PGC 1 unit and the remaining plug to the corresponding socket of the stirrer control unit on the inside of the hopper support panel.

### Procedure for converting the Main compressed air input connection (5).

1. Unscrew the single air connection adapter from the adapter fitted to the hopper support panel. **Always use the correct size spanners!!!**
2. Fit the two air connection rings (a) and gaskets (c) according to Fig. 10 on to the double air connection adapter (b) and screw it into Main compressed air input connection on the hopper support panel (see also "Spare Parts List" on page 32, Fig. 23).
3. Connect the black air hose to the new connection ring (a) and to the Main air input (1.1 IN - see page 7, Fig. 8) on the rear of the second PGC 1 unit.

## Preparatory Steps for Initial Start-up

### a) Setting the correct line voltage

**CAUTION**

When setting the correct voltage for the PGC 1 Powder Gun Control the correct voltage for the Stirrer motor is not also automatically set. Set the required voltage on the terminal of the transformer in the Stirrer Control unit.

The factory always sets the voltage to 230 V. If the local line voltage is not 230 V, the voltage setting of the transformer must be changed by an electrician as described below.

**CAUTION**

If the incoming voltage is 10% or higher than the voltage selected damage may be done to internal components. If the incoming voltage is 10% or more below the selected setting then the unit may operate erratically or not at all.

### Setting the correct line voltage in the PGC 1 Control Module

1. Unfasten all connections (pneumatic and electrical) at the rear of the control module.
2. Unscrew the retaining screw at the rear of the control module.
3. Slide the module out carefully and place on a clean, flat surface.

**CAUTION**

**When removing the unit do not pull on the control knobs, push the unit from the back if necessary.**

4. Unscrew the two Philips screws holding the cover plate of the electrical section.  
Carefully remove the cover plate
5. Unsolder the connecting wire from the 230 V terminal post on the transformer and resolder onto the desired voltage terminal post. **Do not unsolder the other wire (0) on the transformer.**
6. Replace the cover plate and tighten the two Philips screws.
7. Re-insert the module into the housing and slide back into place. Screw in the retaining screw tightly.
8. Refasten all connections (pneumatic and electrical).

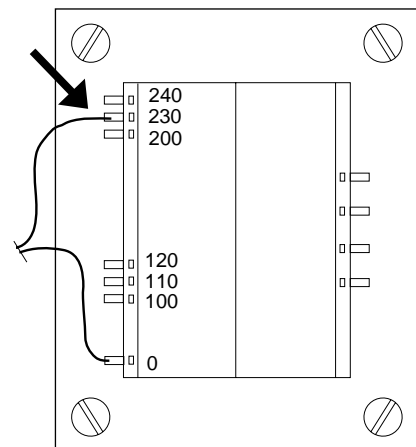


Figure 11

## Setting the Correct Line Voltage in the Stirrer Control Unit

The stirrer control unit is set for 230 V operation.

1. Unfasten all electrical connections at the stirrer control unit on the inside of the stirrer support panel.
2. Unscrew the screws holding the cover plate. Carefully remove the cover plate
3. Remove the connecting wire from the 230 V terminal on the transformer and connect onto the desired voltage terminal.  
**Do not** remove the other wire (0) on the transformer.
4. Replace the cover plate and tighten the screws.
5. Refasten all electrical connections.

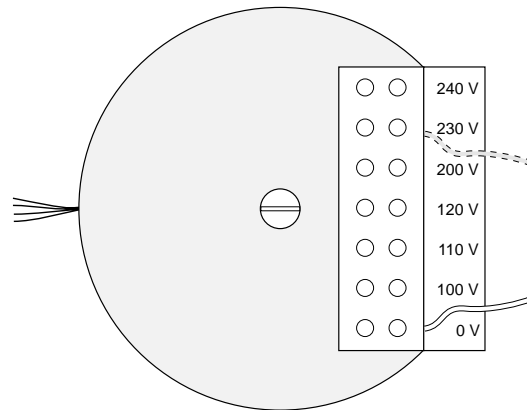


Figure 12

### b) Connection to the compressed air supply

Compressed air is fed into the connection on the input adapter mounted on the trolley support panel. Thread connection: 1/4" B.S.P.  
*The compressed air must be free of oil and water.*

### c) Establishing the ground connection

Connect the ground connection cable of the control unit to grounding connection the column of the trolley and the ground connection clip to an external ground connection.

**d) Connecting the PG 1 Manual, PG 2-A Automatic Powder Guns**

1. Connect the gun cable (1) with the 7 pin connector of the Adapter (1.1 - automatic guns only) fitted in the socket - "A Gun" (Manual guns directly into socket - "A Gun") at the rear of the control module.
2. Connect the hose for rinsing air (9) to rinsing air outlet 1.4 and to the gun.
3. Connect the powder hose (7) to the gun and to the injector (6).

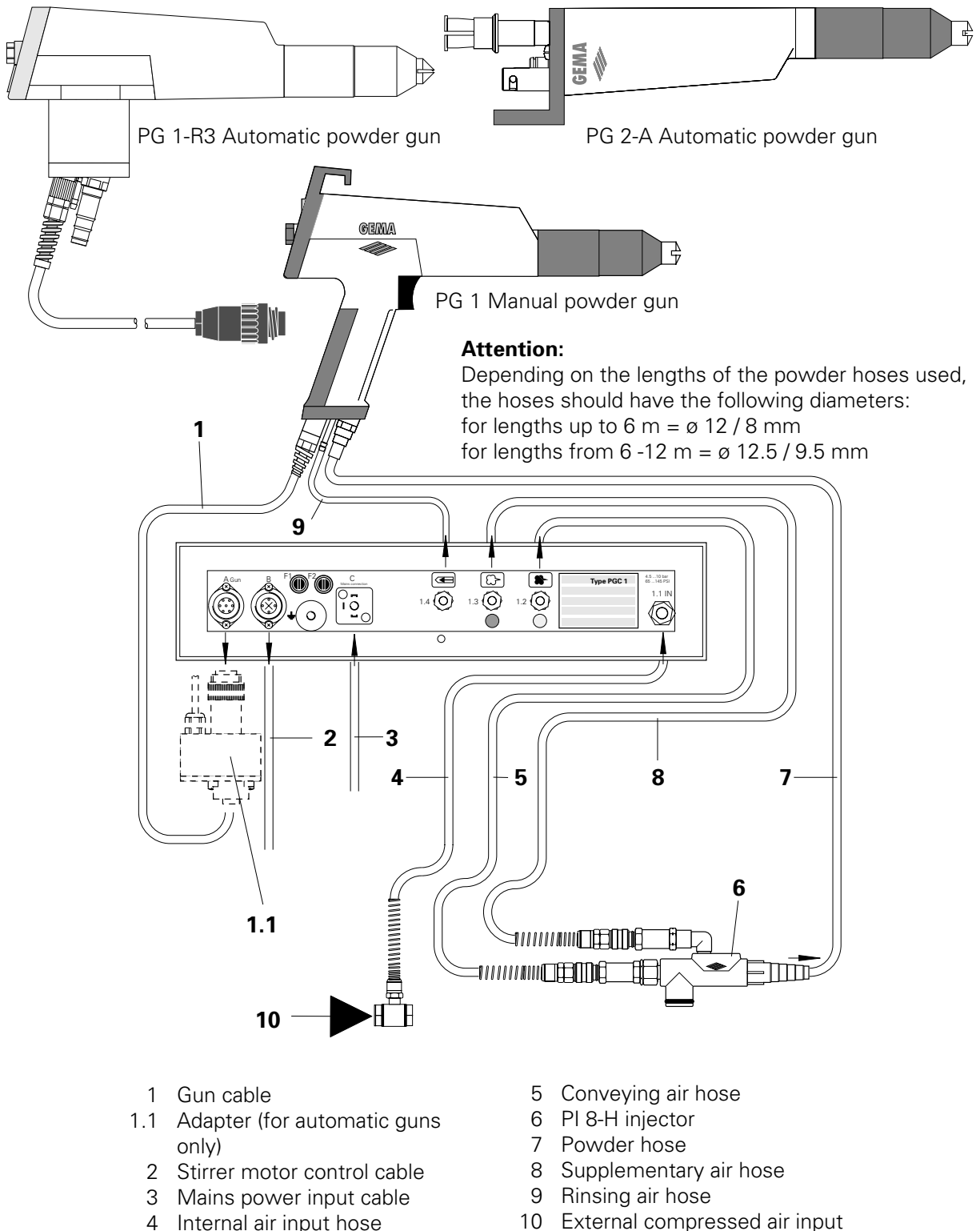


Figure 13

## e) Function Check

See trouble shooting guide on pages 17 and 18 for possible malfunctions.

1. Switch on the main switch **(9)** of the control module. The **MPS-SBN** is under power when the lamp inside the green main switch illuminates.
2. Switch on the motor control switch.
3. Depress the high-voltage control knob **(8)** on the control module, if not already in this position, and turn to the left-hand stop.
4. Point the gun at a grounded work piece approximately 20 cm away.
5. Switch on the automatic gun (Pull the trigger on the manual gun), with automatic guns:
  - close the external control contact or
  - with manual guns:
    - Connect the gun plug directly into the **A Gun** socket (PGC 1). If necessary, remove the adapter first.

*The lowest left-hand LED on the high voltage/corona current meter (7) should illuminate. The equipment is active.*

6. Set the pressure for the desired rate of powder deposit with the control knob **(1)** on the conveying air pressure gauge **(2)**.
7. Check on the supplementary air flowmeter **(4)** if the ball "floats" within the green sector of the scale. If it does not, turn the supplementary air control knob **(3)** to the left or right, switch the automatic gun (pull the trigger of a manual gun) on and off once or twice, until the ball is positioned correctly.

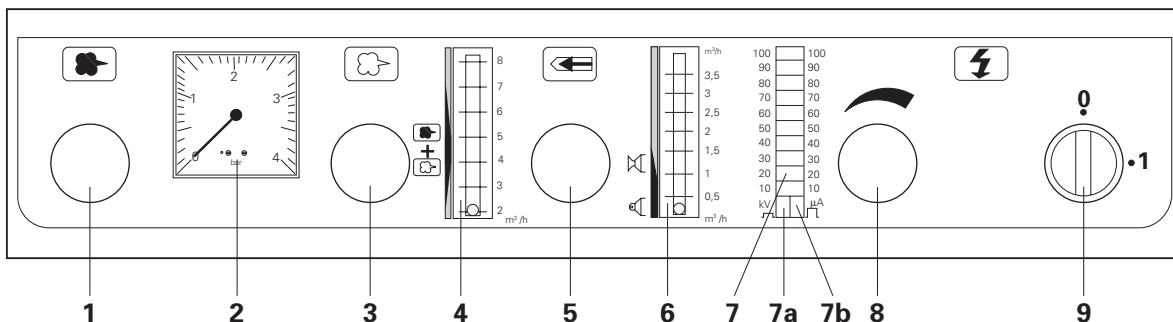


Figure 14

8. Set the rinsing air by turning the rinsing air control knob **(5)** until the ball in the rinsing air flowmeter **(6)** "floats" within the respective green sector of the scale depending on the type of jet nozzle being used (flat jet nozzle or round jet nozzle).

## f) Filling the Powder Hopper

1. Open the small hinged flap of the hopper cover. (The stirrer must be in the correct operating position).
2. Pour the powder into the hopper. Maximum filling level of the powder is marked on the inside of the hopper (useful capacity: 18.5 dm<sup>3</sup>).
3. Close the hinged flap of the hopper cover.
4. Turn the main switch of the stirrer control to **"1"** (see page 7, Fig. 9). Press the Manual push button. The stirrer starts to operate.

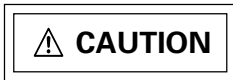
When all the above checks have been successfully completed, the equipment is ready for use. If it fails to function correctly, consult the trouble shooting guide on pages 17 and 18.

## Start-up

### a) Powder Stirrer

Before the stirrer motor can operate the control unit, and the stirring motor control must be switched on. When the automatic gun is switched on - from the external contact through the adapter - (or the trigger is pressed on the manual gun) the stirrer arm starts to rotate, and powder conveying is switched on.

The stirrer arm is fitted with a "trailing" brush, which clears the powder away the powder from the hopper wall.



**After the automatic gun is switched off (or the trigger of the manual gun is released) the stirred motor continues to run for approximately 20 seconds. The cover should only be opened *after* the stirrer arm has come to a standstill!**

If the equipment is fitted with the optional main cover switch, the stirrer motor switches off immediately, as soon as the main cover is lifted.

### b) Adjusting the Powder Output and Powder Cloud

The powder output is dependent on the type of powder, the powder hose length and the number of coils, the powder hose diameter, the conveying air pressure, and the dosing air. The operating principle of the injector and the influence of the supplementary air are explained in the PI Injector Manual.

1. Switch the control module, and the motor control on.
2. Check that the powder is stirred when the gun trigger is pressed .
3. Direct the gun at the spray position and switch the automatic gun (press the manual gun trigger).
4. Set the conveying air (see page 12, Fig. 14 - **1** and **2**).
5. Adjust the supplementary air (see page 12, Fig. 14 - **3**).
6. Adjust the rinsing air pressure.

*Using a flat jet nozzle.*

- Adjust the rinsing air on the control module with the control knob (page 12, Fig. 14 - **5**) so that the ball in the flowmeter (page 12, Fig. 14 - **6**) "floats" in the lower green area of the scale (Flat jet nozzle symbol).

*Using a round nozzle with vented deflector.*

- Adjust the rinsing air on the control module with the control knob (page 12, Fig. 14 - **5**) so that the ball in the flowmeter (page 12, Fig. 14 - **6**) "floats" in the upper green area of the scale (Round jet nozzle symbol).

7. Adjust the powder cloud.

*Using a flat jet nozzle.*

- Loosen the threaded sleeve by turning it approximately 45° so that the flat jet nozzle can just be turned.
- Turn the flat jet nozzle in the desired axial direction.
- Re-tighten the threaded sleeve.

*Using a round nozzle with vented deflector.*



- Change the deflector (ø 16, 24, and 32 mm are supplied with the gun).

**Caution: Never turn the deflectors, these are pushed on an O-ring fitting!**

## c) Powder Coating - Start-up

**⚠ IMPORTANT**

**First, check that all electrostatically conductive parts within 5 m of the spraying position are grounded.**

1. Switch on the control module.
2. Switch on the stirrer control module with the rotary switch  on the powder hopper support.
3. Press the push button  on the powder hopper support and continue to hold it down.
4. Check that the powder is stirring.
5. Release the push button  
The stirrer motor stops.
6. Point the gun at the spraying position.
7. Switch on the automatic gun (Press the trigger on the PG 1 manual gun).  
When the switch (or gun trigger) is pressed the stirrer arm starts to rotate, and the powder conveying is switched on.
8. Adjust the high-voltage:  
*Check by observing the LED on the control module (on the rear of the PG 1 powder gun)*
9. The equipment is now ready for operation.

## d) Shutdown

1. Switch off the switch (release the gun trigger).
2. Switch off the control module (both rotary switches set to "O").  
*The adjustment for high-voltage, rinsing air, and powder output do not have to be changed.*
3. For work interruptions such as lunch-breaks, overnight, etc. it is only necessary to disconnect the compressed air supply.

## e) Rinsing the Powder Hose

Before long idle periods the residual powder must be removed from the powder hose as follows:

1. Pull the hose off the injector hose connection.
2. Point the gun into an open container.
3. Blow out the hose manually with a compressed air gun.
4. Refit the hose to the injector sleeve.

## f) Stirrer Arm Brush

The brush must be fitted onto the stirrer arm so that it "trails" behind direction of rotation of the stirrer arm (see page 15, Fig. 15). An incorrectly fitted brush will cause the destruction of the bristles of the brush, and to excessive strain on the stirrer.

## Maintenance Schedule

Conscientious maintenance at regular intervals increases the service life of the coating system and will result in uniform coating quality over a longer period!

### a) Daily maintenance

- 1a. Clean injector, refer to PI Injector operating instructions.
- 2a. Clean gun, refer to corresponding powder gun operating instructions PG 1, PG 2-A
- 3a. Clean the powder hose.

### b) Weekly maintenance

- 1b. Clean the powder hopper, injector, and gun. Only refill the powder hopper shortly before production is to be resumed!
- 2b. Check ground connections of the control module.

### c) If the control module remains idle for several days

- 1c. Disconnect the power plug.
- 2c. Clean the control module (refer to 1b).
- 3c. Disconnect the compressed air supply to the spraying system.
- 4c. Empty the powder hopper.

### Stirrer Arm Brush - viewed from above

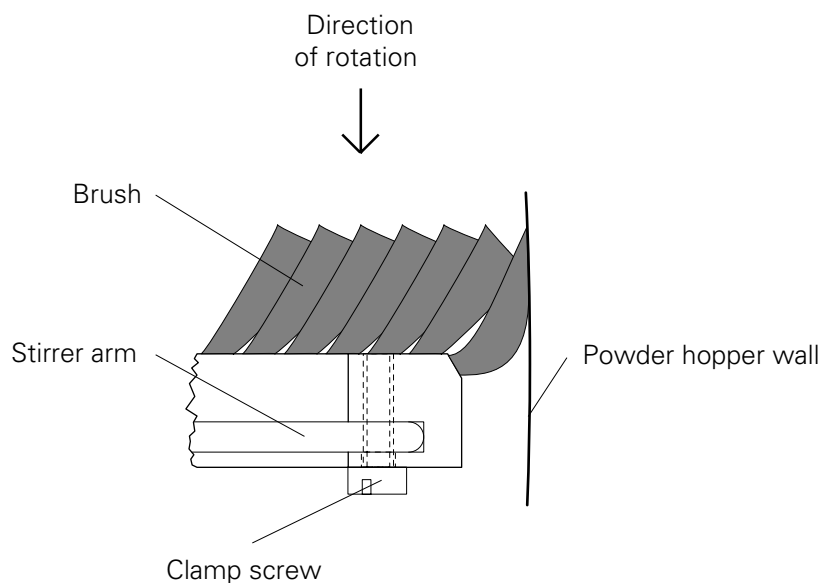




Figure 15

## Cleaning and Repairs

### Powder Hopper

#### Cleaning

1. Switch on the motor control unit main switch 
2. Place an empty container under the quick-release cover. Open the discharge flap by pushing the lever towards the stirrer control module.
3. Press the push button  on the powder hopper support and continue to hold it down. The powder then empties into the container.
4. Switch off the motor control unit main switch.
5. Remove the injector, and the plug covering the second injector hole.
6. Clean the injector and the injector connection (see PI Injector Operating Instructions ).

 **CAUTION**

**Danger of accidents!! Never put fingers or any other objects into the injector seat hole(s) at the bottom of the powder hopper when the stirrer is operating.**

7. Remove the cover (take care not to damage the stirrer arm) and wipe with a clean, dry brush, and a clean cloth.
8. Carefully close the cover again (taking care of the stirrer arm). Fit the injector, the second injector plug, and hoses.

### PG 1 Manual Gun or PG 2-A Automatic Powder Gun

#### Cleaning

Frequent cleaning of the gun is recommended to assure the coating quality (see also corresponding Powder Gun Operating Manual).

 **IMPORTANT**

**Before cleaning the gun, switch off the control module. The compressed air used for cleaning should be free of oil, and water.**

*Daily:*

1. Clean the outside of the gun.

*Weekly:*

2. Detach the powder hose at the connector.
3. Detach the nozzle from the gun and clean it.
4. Blow out the gun through the powder inlet in the direction of flow.
5. Clean the gun tube with the spiral brush supplied.
6. Blow out the gun again with compressed air.
7. Reassemble and reconnect the gun.

## Trouble Shooting Guide

For further details see the corresponding operating instructions.

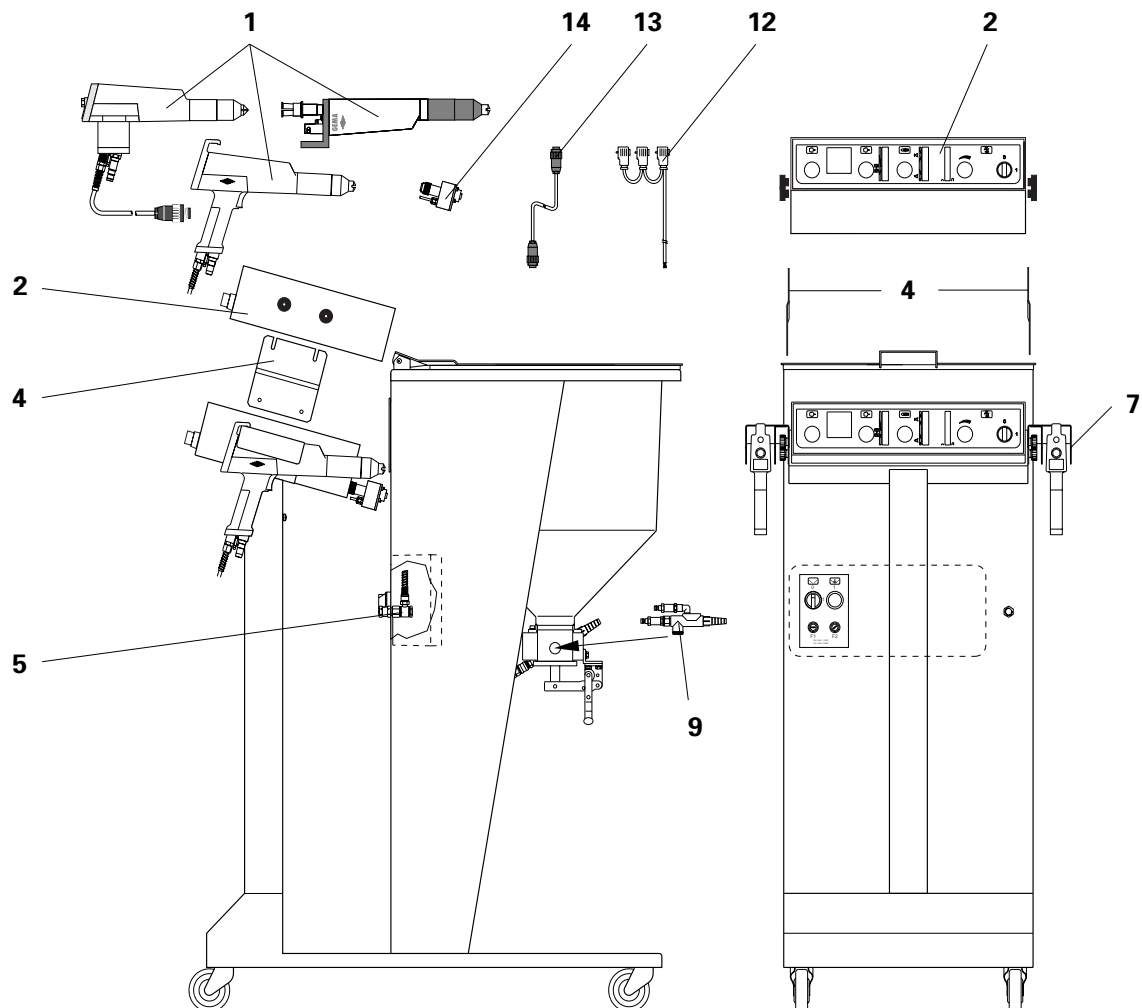
Faults	Causes	Remedies
<p>Green lamp does not illuminate although control module has been switched on.</p>	<p>No power:</p> <ul style="list-style-type: none"> <li>– Control module is not connected to Mains</li> <li>– Fuse F1 defective</li> <li>– External power line fuse defective</li> </ul> <p>In equipment:</p> <ul style="list-style-type: none"> <li>– Lamp defective</li> <li>– Electronics board (PCB) defective</li> </ul> <p>In the gun:</p> <ul style="list-style-type: none"> <li>– Gun cable defective</li> <li>– High voltage section defective</li> </ul>	<p>Connect spray unit to the Mains with power cord</p> <p>Replace</p> <p>Replace or reset</p> <p>Replace</p> <p>Mail in for repair</p> <p>Replace, eventual mail in for repairs</p> <p>Mail in gun for possible repairs</p>
<p>Stirrer does not work</p>	<ul style="list-style-type: none"> <li>– Motor switch is not switched on</li> <li>– Stirrer not connected to powder supply</li> <li>– Fuse defect</li> <li>– Control cable not plugged in</li> </ul>	<p>Switch on</p> <p>Check power supply</p> <p>Replace</p> <p>Plug in</p>
<p>Needle of pressure gauge for conveying air stays at zero when making adjustments</p>	<p>Operating error:</p> <ul style="list-style-type: none"> <li>– Module is not switched on</li> <li>– Gun switch is not pressed</li> </ul> <p>In equipment:</p> <ul style="list-style-type: none"> <li>– Electronics board (PCB) defective</li> </ul>	<p>Switch on</p> <p>Press gun switch while regulating</p> <p>Mail in for repair</p>

## Trouble Shooting Guide (continued)

Faults	Causes	Remedies
During spraying process air escapes from the gun shaft	<ul style="list-style-type: none"> <li>– O-ring in the gun shaft defective or missing</li> </ul>	Replace or insert
Gun does not spray powder although the control module is switched on and the gun trigger is pressed.	<ul style="list-style-type: none"> <li>– Injector, check valve or throttling at injector, powder hose or gun clogged</li> <li>– Insert sleeve in injector is worn</li> <li>No conveying air:               <ul style="list-style-type: none"> <li>– Reducing valve defective</li> <li>– Solenoid valve defective</li> </ul> </li> <li>– Electronics board (PCB) defective</li> </ul>	Clean corresponding part  Replace  Replace  Replace  Mail in for repair
Gun sprays powder, LED at the rear of the cascade (PG 1) is not lit, powder does not adhere to the work-piece.	<ul style="list-style-type: none"> <li>– High voltage too low</li> <li>– Gun connector, gun cable or gun cable connector is defective</li> <li>– High voltage cascade is defective</li> <li>– Electronics board (PCB) defective</li> </ul>	Increase the high voltage on the control module  Replace defective item or mail it in for repair  Mail in the shaft of the gun for repair  Mail in for repair
Gun sprays powder, high-voltage present, powder does not adhere to the workpiece	<ul style="list-style-type: none"> <li>– Workpiece not properly grounded</li> </ul>	Check the ground connection, also refer to "Safety rules"

## Supplementary Material for Converting MPS-1SBN to APS-2SBN

Carefully unpack the parts and check against the list below if all the necessary material has been supplied.



- 1 Alternatively: PG 1 Manual Powder Gun, PG 2-A Automatic Powder Guns - complete
- 2 PGC 1 Powder Gun Control unit - complete
- 4 Connecting plates
- 5 Air connection adapter
- 7 Gun holder
- 9 PI 8-H Injector
- 12 Mains cable - 3 plugs
- 13 Connection cable **MPS-2SBN**
- 14 Adapter (automatic guns only)

### PARTS NOT SHOWN

- 6 m Powder hose - $\varnothing$  12 / 8 mm
- 12 m Powder hose -  $\varnothing$  12.5 / 9.5 mm
- Main air connection (black)
- Supplementary air connection (black)
- Conveying air connection (red)
- Assorted spare parts set

Figure 16

**Pneumatic Diagram for MPS-SBN**

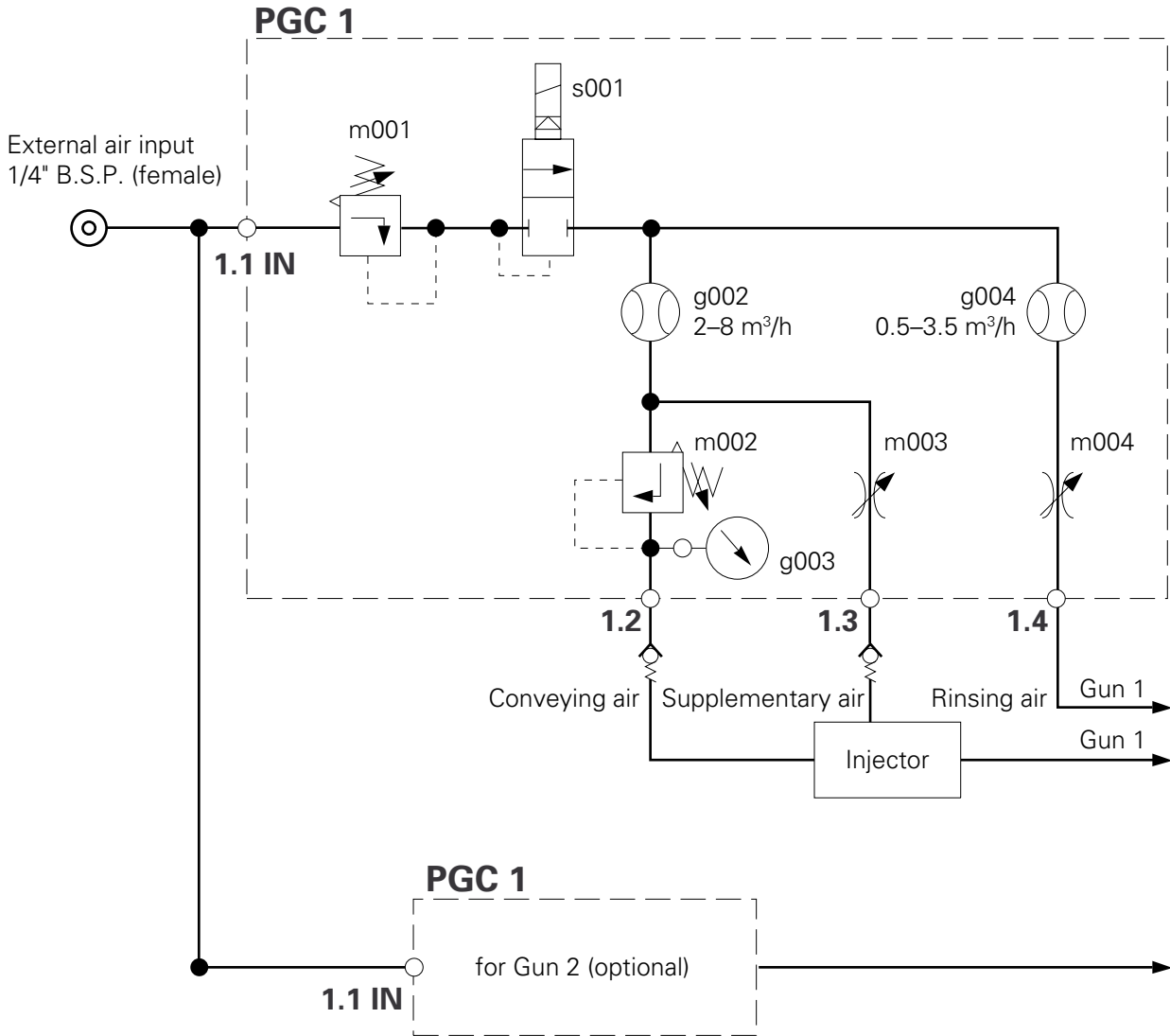


Figure 17





**Wiring Diagram for the MPS-SBN (CBS Control Board)**

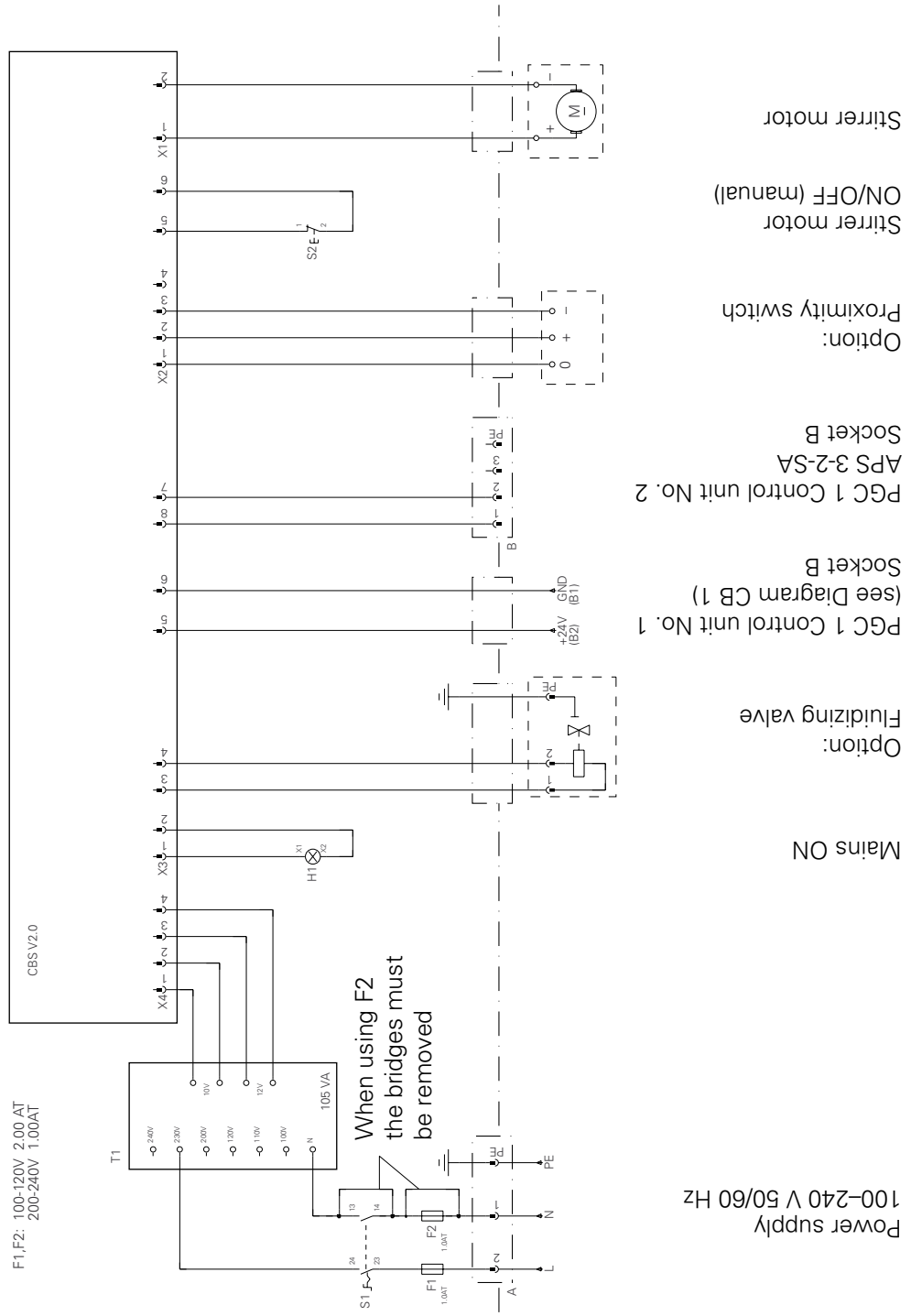


Figure 20

**NOTES:**

## Spare Parts List

### Ordering Spare Parts

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

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

*Example:*

1. **Type** MPS-1SBN, **Serial no** : xxxx xxxx
2. **Order no** : 201 073, 5 pieces, fine wire fuse

When ordering cable or hose material the length required must also be given. The spare part numbers of yard/metre ware always begin with 1.. ... and are always marked with an \* in the spare parts list.

Wear parts are always marked with a #.

All dimensions of plastic powder hoses are quoted as external (o/d), and internal (i/d) diameters :

e.g.  $\varnothing 8 / 6$  mm = 8 mm outside diameter (o/d) / 6 mm inside diameter (i/d).

**Stirrer Motor Control Unit**

	Control unit - complete	366 900
1	Housing	366 919
2	Control board - CBS - V2.0	365 335
3	Transformer - 105 VA-P100-240 V	366 579
4	Connector cable and plug - PGC/CBS V2.0	367 150
5	Connector cable - Motor/CBS V2.0	367 249
6	Braided copper cable	366 617
10	Stirrer motor switch	245 402
11	Adapter fixture	235 920
12	Contact element	235 938
13	Bulb holder unit	235 946
14	Bulb - 12 V/2 W	237 531#
15	Drive push button - Green	203 483
16	Switch base	203 599
17	Fuse holder - Long	200 131
18	Fuse - F1 - 1.0 AT (for 200-240 V)	210 242#
18.1	Fuse - F2 - 2.0 AT (for 100-120 V - <b>N. America only</b> )	221 872#
18.2	Fuse - F3 - 8.0 AT (for Motor)	255 459#
18.3	Fuse - F4 - 0.25 AT (for Printed circuit)	227 161#
19	Flanged socket - 4 pole/pin	206 490
20	Dust cap	206 458
21	External plug - 3 pin	200 409
22	Lead-through - PG9	222 330
23	Lead-through - PG7	235 989
24	Plug cap - PG7	256 242
25	Connection cable ( <b>MPS-1SBN</b> - 2 plugs)	368 253
26	Connection cable ( <b>MPS-2SBN</b> - PGC 1/CBS V2.0)	338 338
27	Connection cable ( <b>MPS-2SBN</b> - 3 plugs)	368 261

\* Please indicate length

# Wear parts

**Stirrer Motor Control Unit**

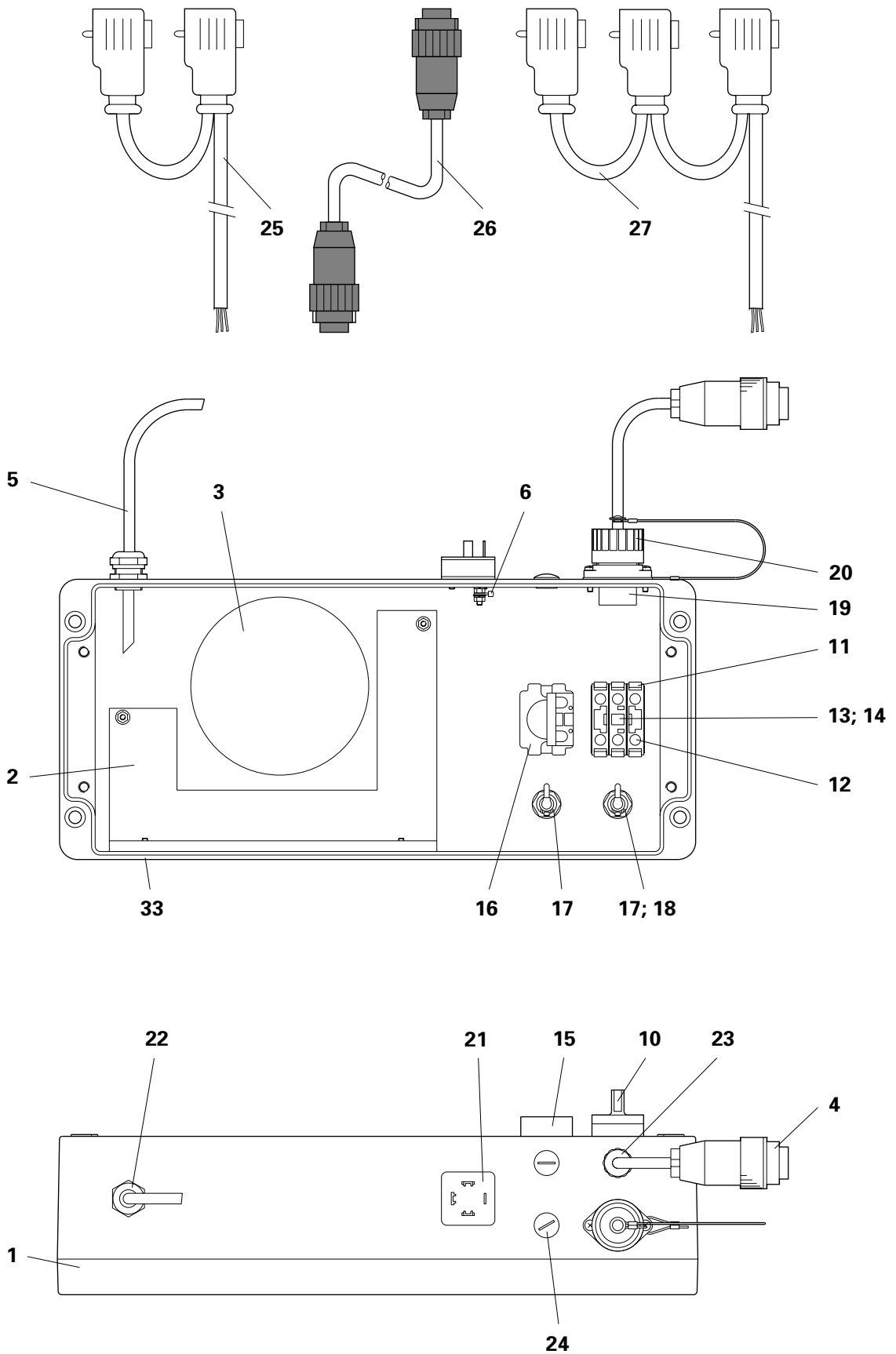


Figure 21

**Control Unit Adapter**

	Adapter - complete	342 483
1	Print housing	367 966
2	Cover	367 974
3	Adapter tube	367 982
13	O-Ring - $\varnothing$ 48 x 1.5 mm - Nitril	200 263
21	Lead-through - PG07	235 989
22	Connection plug - 7 pole	200 085
23	Flange socket - 7 pole socket	200 093
31	Cable - 2 x 0.75 mm <sup>2</sup>	100 609*

\* Please indicate length

**Control Unit Adapter**

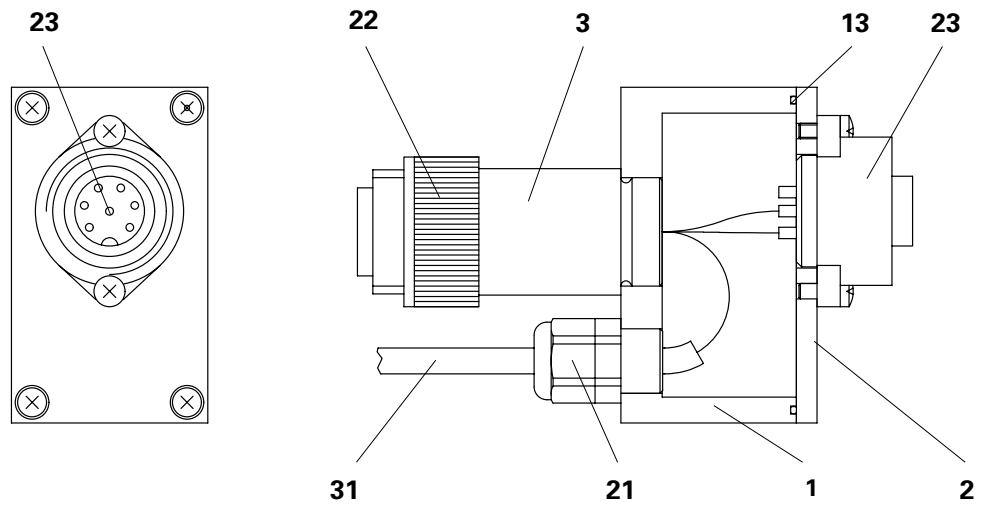


Figure 22

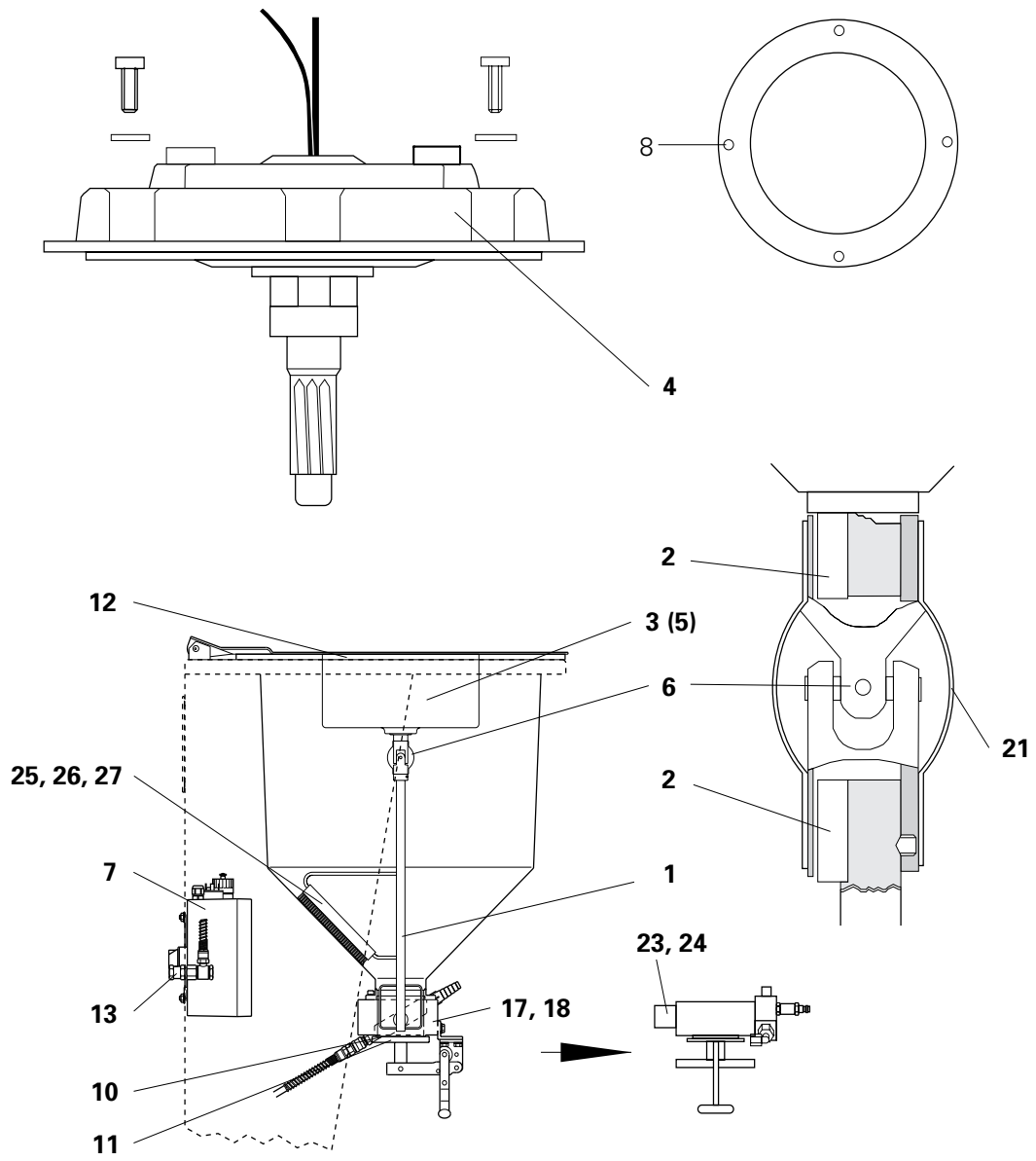
**Stirrer Powder Hopper**

1	Stirrer	366 862
2	Feather key	206 075
3	Stirrer motor with gear - complete	366 927
4	Stirrer motor with pinion - 12 V DC	257 010
5	Reduction gear for stirrer	220 370
6	Universal joint	206 369
7	Stirrer control unit	see page 26
8	Gasket	304 042
10	Gasket for discharge flap - ø 75 x 3 mm	303 240#
11	Discharge flap with clamp unit	303 194
12	Gasket for powder hopper	101 630*
13	Main air input	see page 32
17	Distributor head	352 373
18	O-ring - ø 67 x 2 mm	236 403
21	Protective sleeve	206 350
23	Injector hole plug	352 365
24	O-ring	231 517
25	Brush	377 660
26	Screw - M4 x 20 mm	205 346
27	Lock nut	205 192

\* Please indicate length

# Wear parts

**Stirrer Powder Hopper**

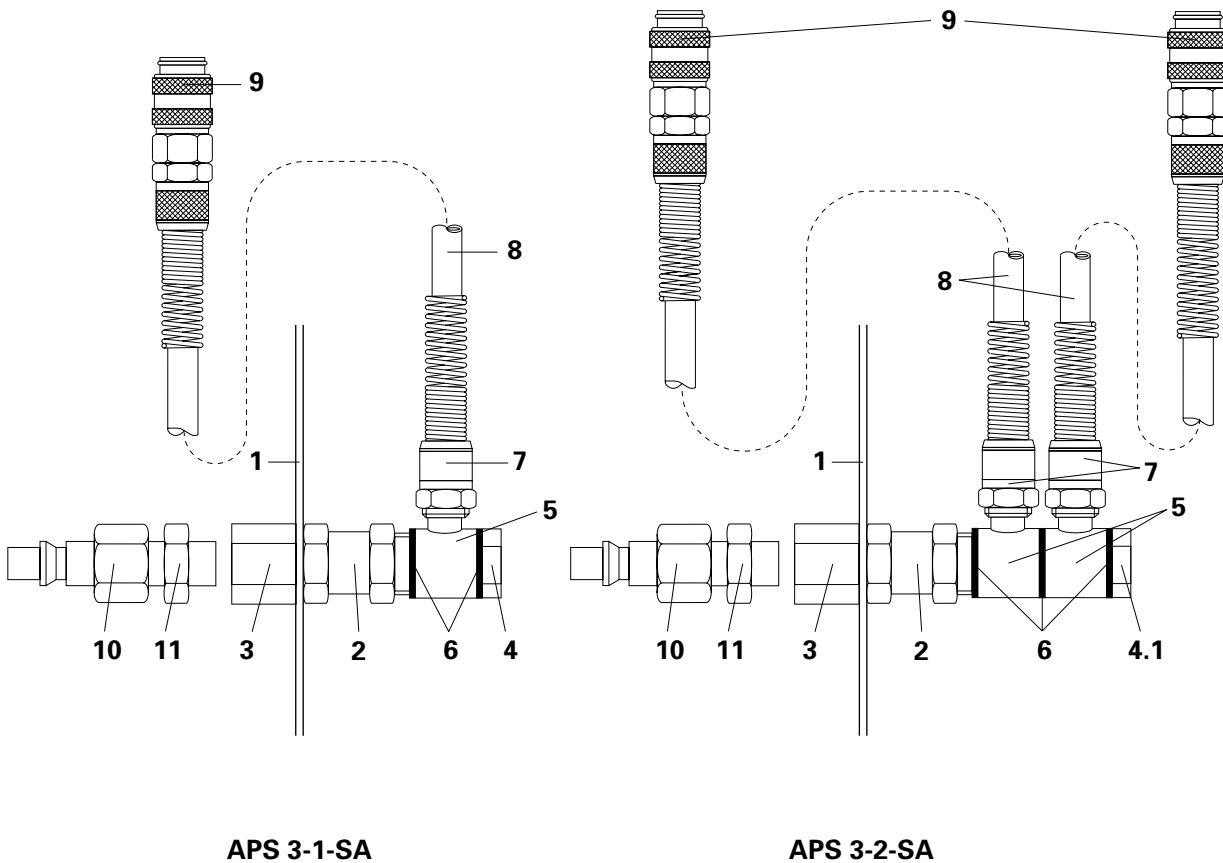


(drawings not to scale)

Figure 23

## External Air Input Unit

1	Stirrer support panel	see page 33
2	Main air connector - 1/4"-1/4"	256 269
3	Main air connector adapter - 1/4"-1/4"	256 277
4	Air connection adapter (APS 3-1-SA)	237 221
4.1	Air connection adapter (APS 3-2-SA)	237 838
5	Air connection ring - $\varnothing$ 8 mm-1/4"	231 886
6	Gasket - $\varnothing$ 13.4 x 18.0 x 1.8 mm	225 487
7	Screw connector - $\varnothing$ 8 / 6 mm	338 737
8	Hose - $\varnothing$ 8 / 6 mm (black)	103 756*
9	Quick-release connector - $\varnothing$ 8 / 6 mm (for Item 8)	338 575
10	Quick-release connection - 1/4"	203 106
11	Adapter - 1/4"-1/4"	202 479



\* Indicate length required

Figure 24

**MPS-1SBN / MPS-2SBN**

1	Connecting plate (PGC-PGC)	336 262
2	PGC Control unit	340 057
3	Gun holder	301 086
4	Milled nut - M4 (not shown)	201 090
5	Trolley wheels	202 215

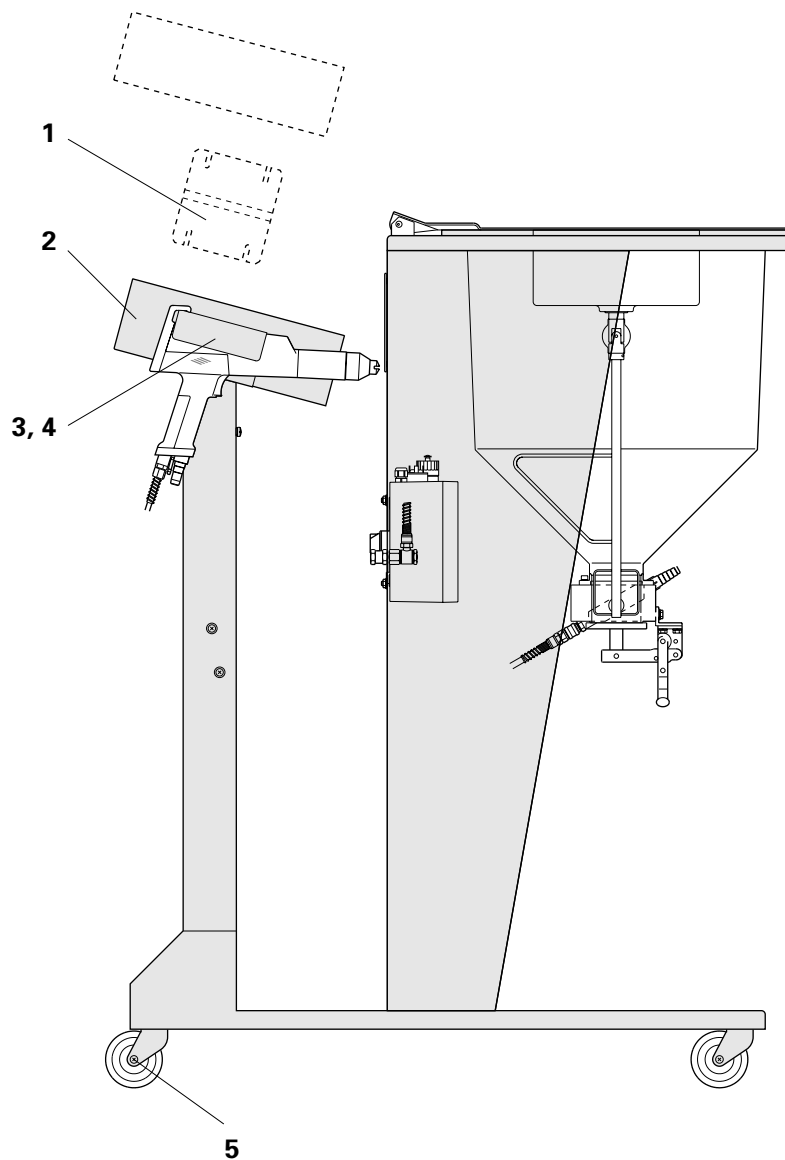
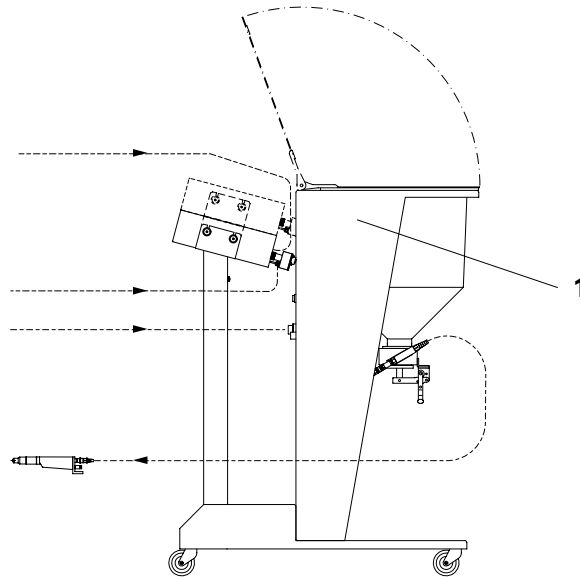


Figure 25

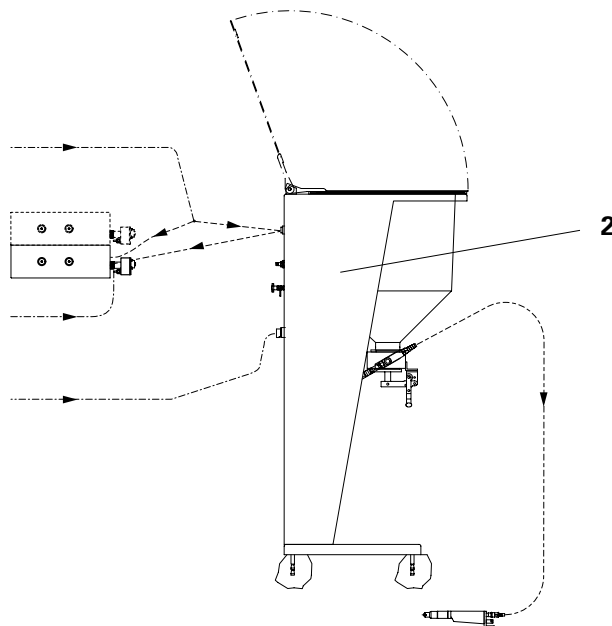
**MPS-1SABN Automatic Powder System**

1	MPS-1SABN Automatic Powder System - Mobile - complete	375 942
	MPS-2SABN Automatic Powder System - Mobile - complete	375 950

**APS 3-1-SA - Mobile**



**APS 3-1-SA - Fixed**

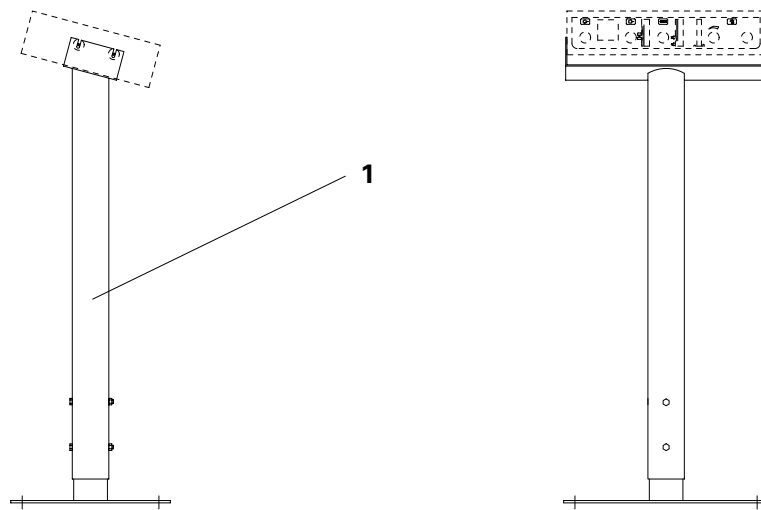


‡ Must be fixed to the floor

Figure 26

**Stand / Support**

- |   |                                         |         |
|---|-----------------------------------------|---------|
| 1 | Stand (for floor mounting ‡) - complete | 374 270 |
| 2 | Support (for wall mounting) - complete  | 336 599 |



‡ Must be fixed to the floor

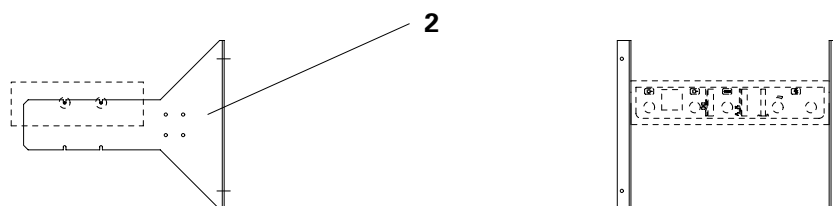


Figure 27

**Powder Guns and Powder Hoses**

1	PG 2-A Gun body - negative	361 690
	PG 2-A Gun body - positive	361 704
1.1	PG 1 Gun body	332 348
2	Powder hose adapter	367 427
2.1	Powder hose adapter	653 136
3	Flat Jet Nozzle Set - (FSD-BN 4 / 15)	On request
4	Threaded sleeve	328 774
5	90° Angled Nozzle - complete	371 246
6	60° Angled Nozzle - complete	365 262.
7	PG 1-R3 Gun body	650 374
8	RSD Round Jet Nozzle (Central electrode)	351 717
9	FSD Flat Jet Nozzle	319 350
10	Powder hose - ø 12.5 / 9.5 mm, L = 6 m - 12 m	103 705#
11	Powder hose - ø 12 / 8 mm, L < 6 m	104 698#

\* Please indicate length

# Wear parts

**Powder Guns and Powder Hoses**

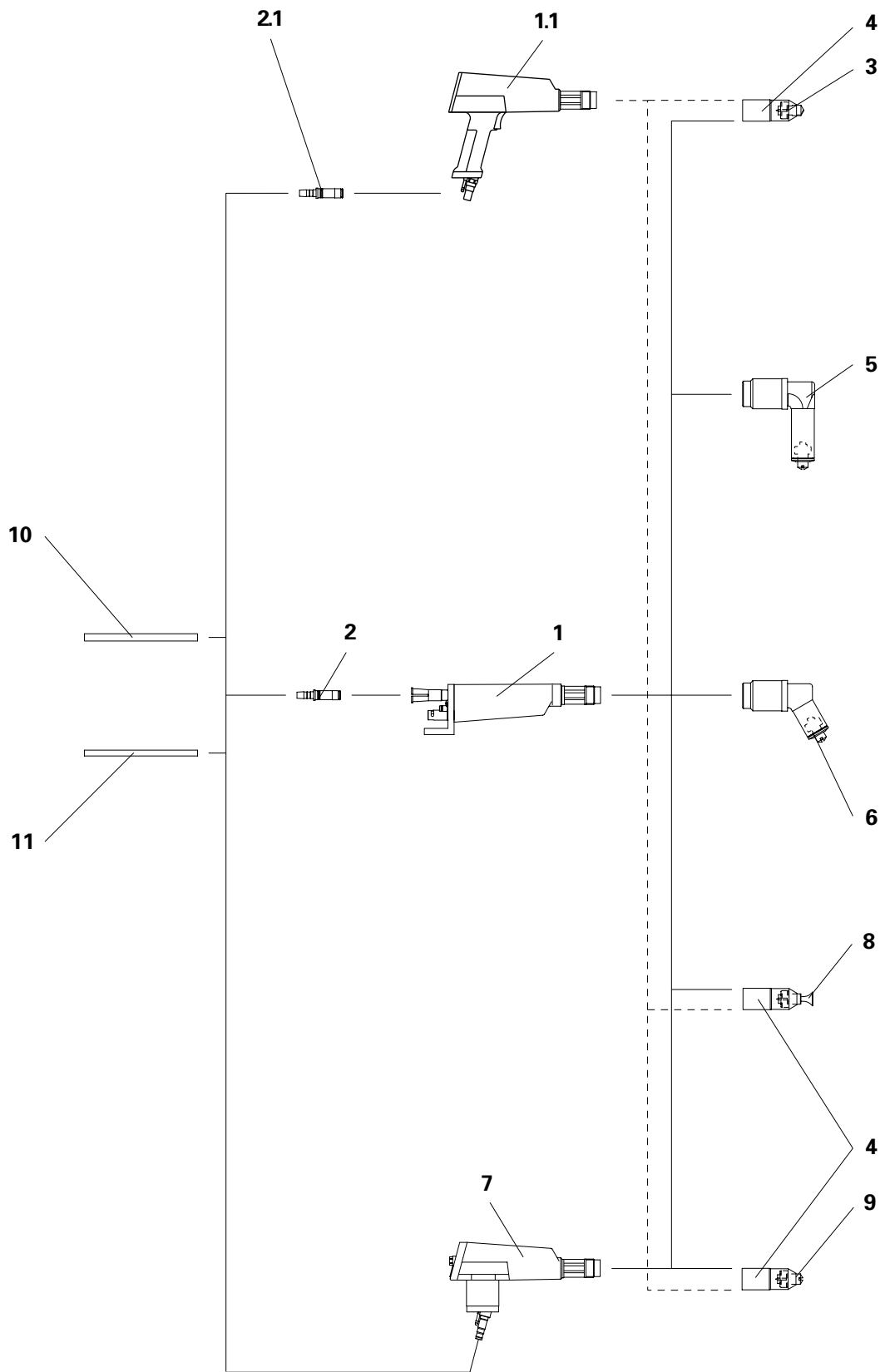


Figure 28

**PI 8-H Injector**

	PI 8-H Injector - complete	375 896
1	Injector body	344 311
2	Injector nozzle - NW 2.2‡	375 888*
3	Hose fitting	344 338*
4	Check valve (with notch) - NW1.4‡	239 143
5	Elbow joint - 1/8"-1/8"	237 604
6	O-Ring - ø 16 x 2 mm - Nitril	231 517
7	Powder hose adapter - PG 2-A	367 427*
	Powder hose adapter - PG 1	653 136*
8	Powder hose - Type 1 - Length 6-12 m - ø 12.5 / 9.5 mm	103 705#
	Powder hose - Type 2 - Length 3-6 m - ø 12.0 / 8.0 mm	104 698#

‡ NW = Nominal diameter

\* Please indicate length

# Wear parts

**PI 8-H Injector**

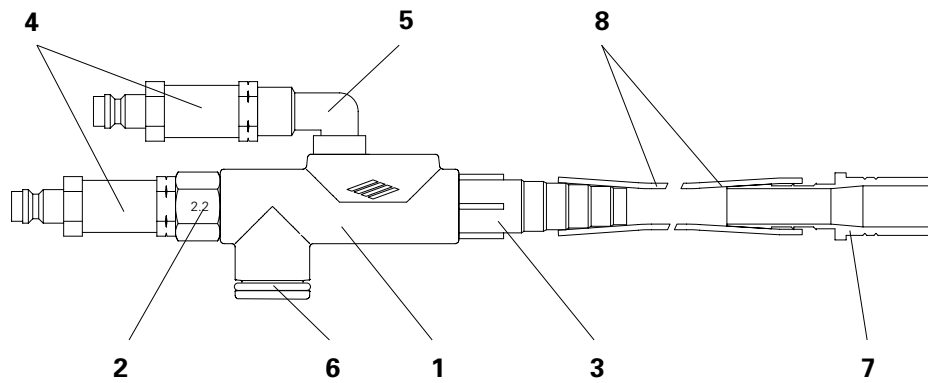


Figure 29

Documentation APS 3-1-SA / APS 3-2-SA

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