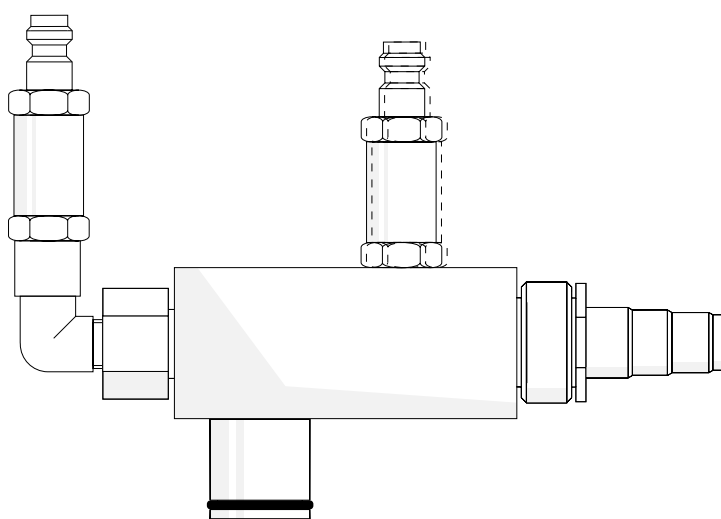


Operating Instructions and Spare Parts List

## PI 2 Plug-in Injector





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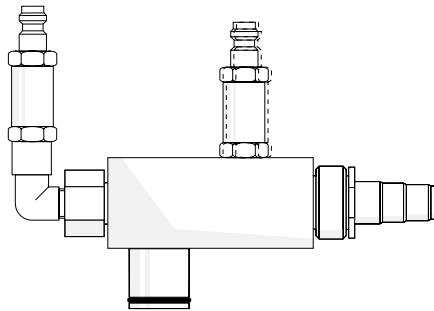


## PI 2 plug-in injectors for organic powders

### Fields of application

The PI 2 injector is especially suited for use with normal organic powders. The PI 2 "plug-in injector" allows fast cleaning and easy handling because it can be detached from the powder hopper without using any tools. All pneumatic connections are also easily detachable (Quick-release connectors). The injector is fitted with a separate connection for rinsing the powder hose.

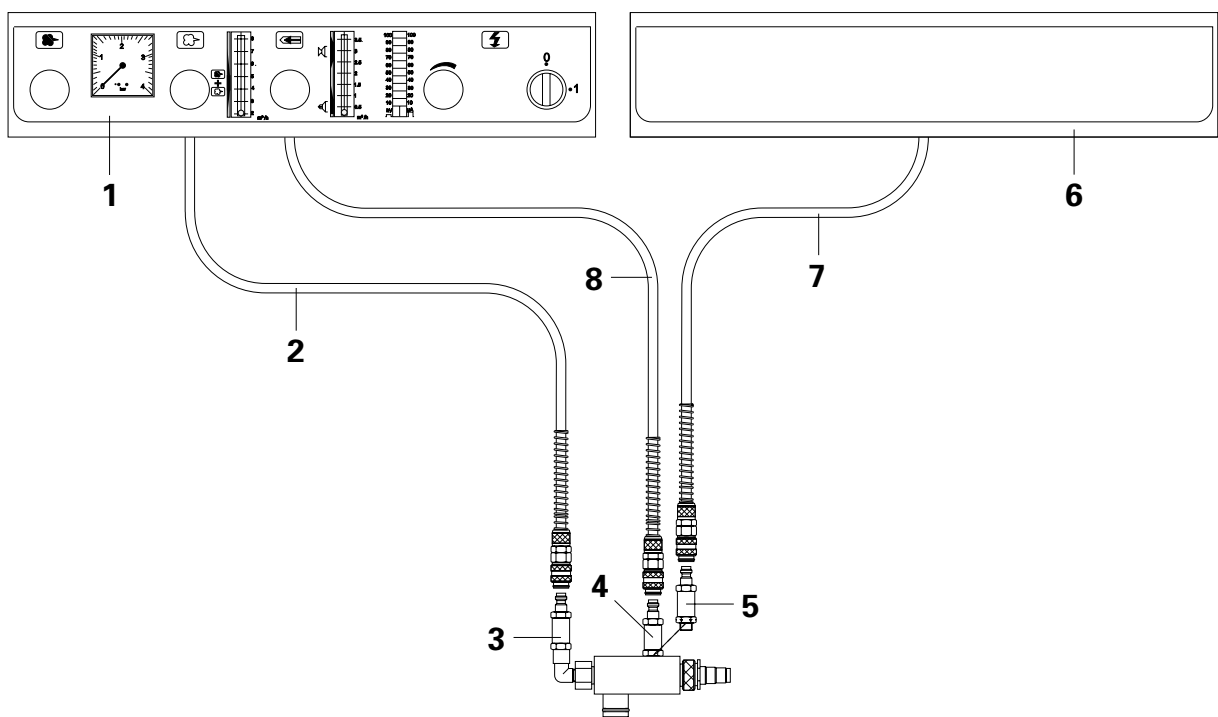
### PI 2-V



PI 2-V "vertical plug-in Injector"

Figure 1

### Connecting the PI 2-V injector

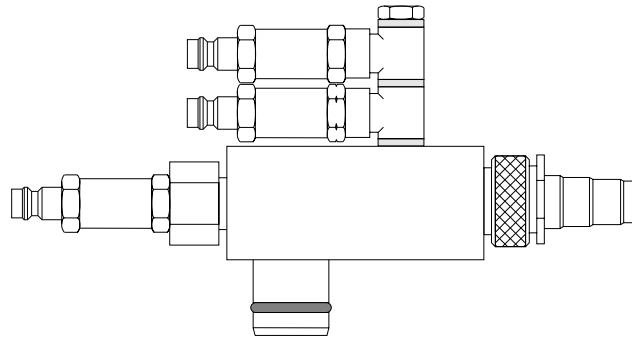


- |  |                                 |
|--|---------------------------------|
| 1 PGC 1 Powder Gun Control unit              | 5 Rinsing air check valve       |
| 2 Conveying air hose (red)                   | 6 HRC Hose Rinsing Control unit |
| 3 Conveying air check valve                  | 7 Rinsing air hose (black)      |
| 4 Supplementary air check valve (with notch) | 8 Supplementary air hose (blue) |

Figure 2

**PI 2-H Injector**

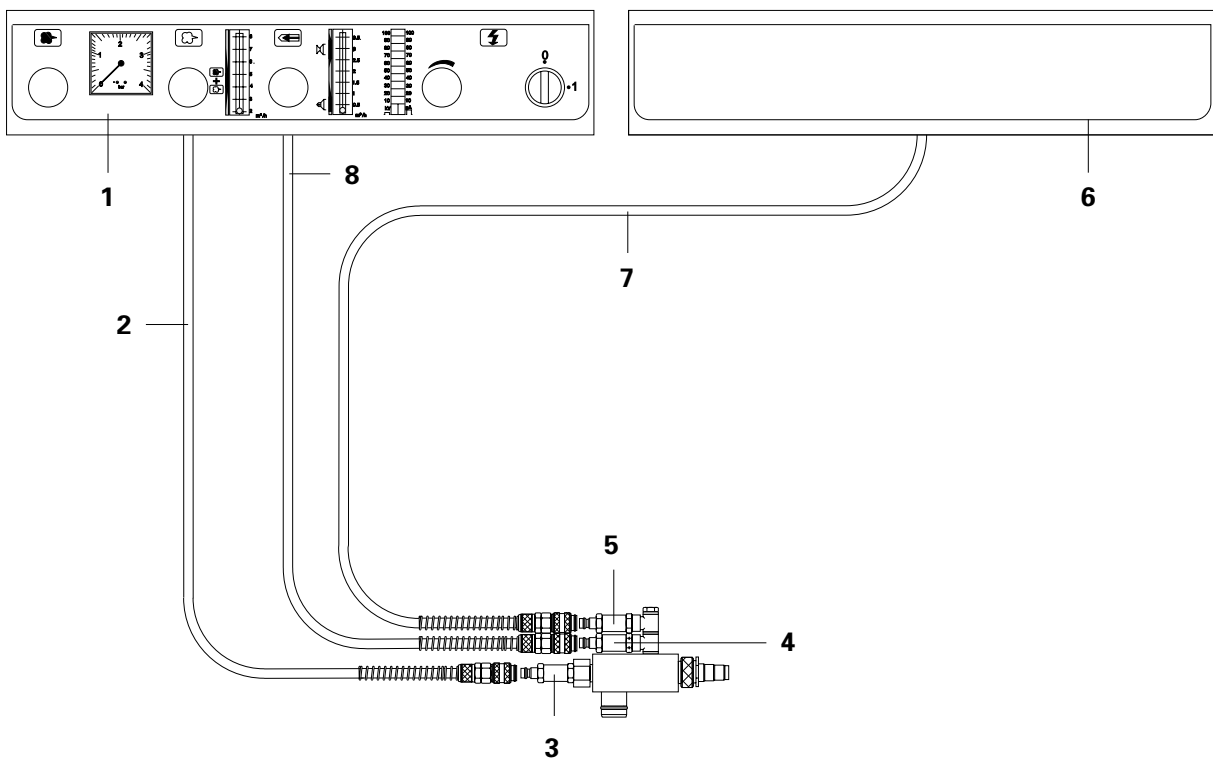
**PI 2-H**



PI 2-H "Horizontal plug-in Injector"

Figure 3

**Connecting the PI 2-H Injector**



- |   |   |   |                                |
|---|---|---|--------------------------------|
| 1 | PGC 1 Powder Gun Control unit.              | 5 | Rinsing air check valve.       |
| 2 | Conveying air hose (red).                   | 6 | HRC Hose Rinsing Control unit. |
| 3 | Conveying air check valve.                  | 7 | Rinsing air hose (black).      |
| 4 | Supplementary air check valve (with notch). | 8 | Supplementary air hose (blue). |

Figure 4

## Principle of the injector and the influence of supplementary air

When air flows through the nozzle into the cavity, a vacuum is created in the cavity, (see figure below). This vacuum causes powder to be drawn up the suction tube and into the cavity. A powder/air mixture is created.

The forward air velocity at the nozzle conveys powder through to the powder hose and the gun.

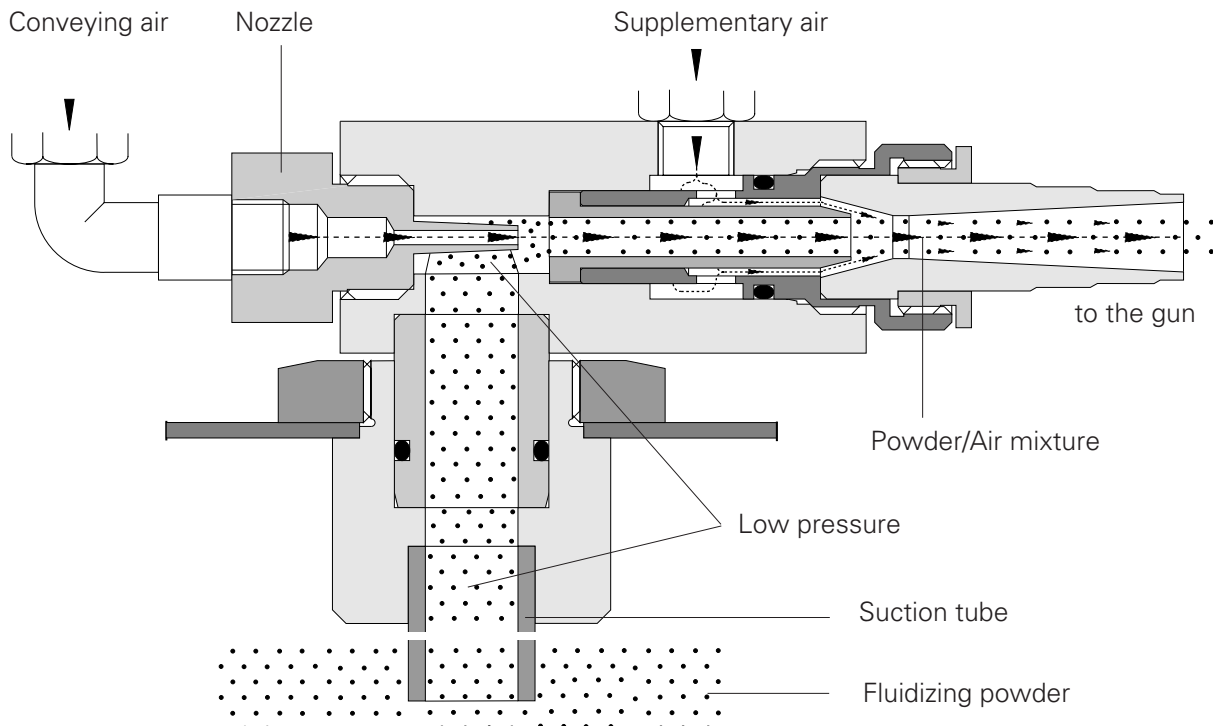


Figure 5

The concentration of the powder/air mixture, and with it, the powder output depends on the conveying air pressure and supplementary air pressure, the quality of the powder, the length of the powder hose, the diameter of the powder hose, the number of coils in the hose, the difference in the height between the gun and injector, and the type of nozzle.

Experience with pneumatic material handling technology shows that pneumatic transport of fine solid matter (powder) in the form of tubing (hose) the transporting medium requires a certain volume of air per unit of time. With an  $\varnothing$  11 mm hose this value is approximately 4 m<sup>3</sup>/h. To decrease the powder output, the vacuum in the cavity has to be reduced. For that purpose the pressure of the conveying air is also reduced. With the reduction of the conveying air the volume of air in the powder hose sinks to below the optimum value of 4 m<sup>3</sup>/h. The powder transport becomes irregular, so-called "pumping" takes place. In order to prevent this from happening supplementary air is added until the volume of the air in the powder hose is 4-5 m<sup>3</sup>/h once more. As the flowmeter (4 - Fig. 6) measures the sum of the conveying air and supplementary air the ball in the flowmeter should therefore "float" within the green section of the scale.

The pressure gauge for conveying air is graduated in 1/10th bar and indicates the powder output accordingly. See "Setting table for the PI 2 injector" on the next page. The flowmeter for the sum of conveying and supplementary air is graduated in m<sup>3</sup>/h.

## Setting table for the PI 2 injector

In order to set the conveying, and supplementary air correctly on the PGC 1 and therefore the powder output, the amount of powder to be deposited must be determined first.

The conveying air pressure setting for the pressure gauge (2) is found in the table below through the desired amount of powder to be deposited, in grams per minute. If the conveying air pressure is increased, through the control knob (1), then the powder output increases correspondingly. If the ball in the flowmeter (4) does not "float" in the green sector of the scale then the supplementary air must be adjusted either up or down, on the setting knob (3).

**ATTENTION ! After every setting of the conveying air the ball in the flowmeter (4) should "float" in the green sector of the scale (4-5 m<sup>3</sup>/h).**  
**(See also previous page "Principle of the injector and the influence of supplementary air").**

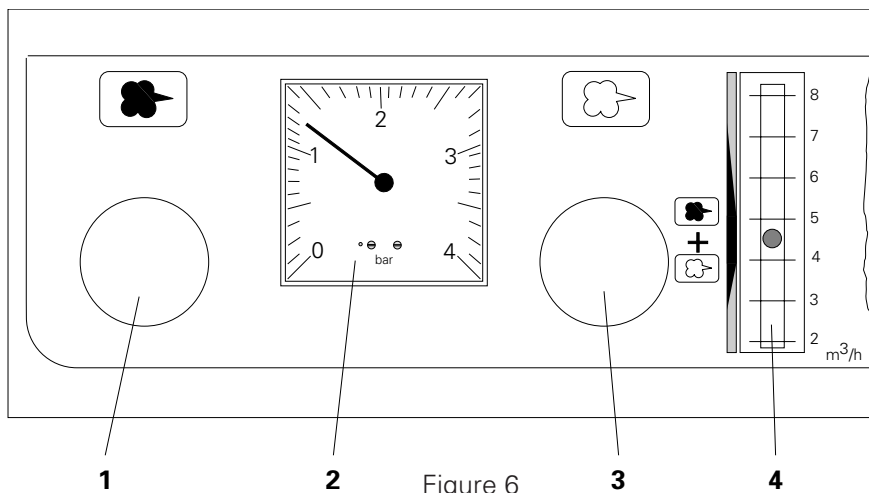


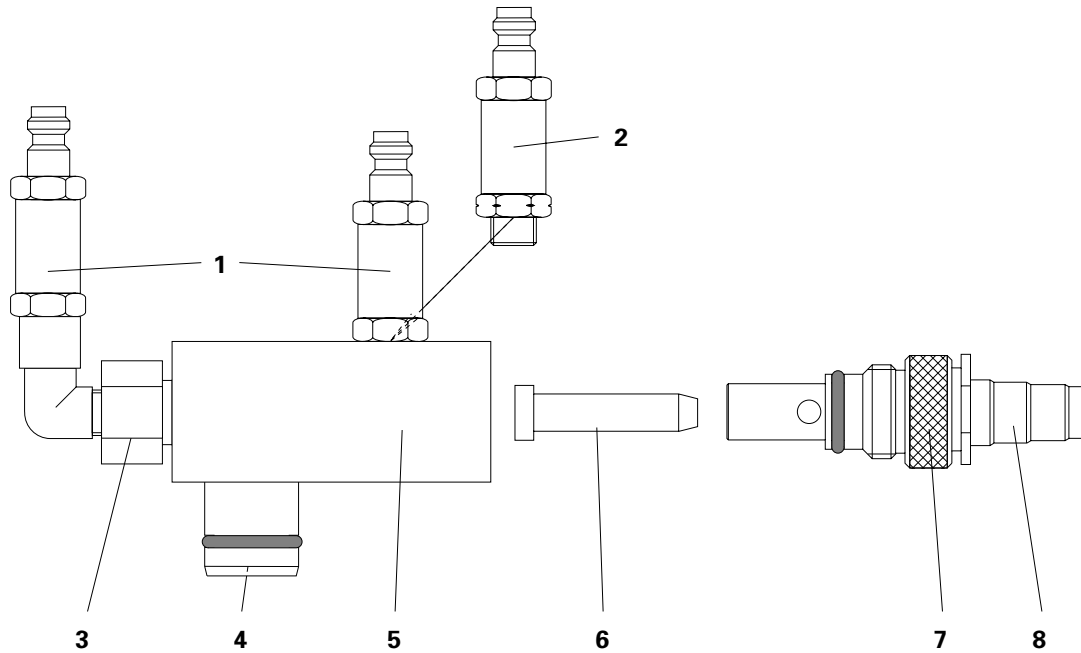
Figure 6

*Values in the table below are approximate and only serve as a guideline for the various settings as conditions in different workshops can vary greatly.*

Specification:	Powder hose :	ø11 mm - 6 m. and 12 m. long.			
	Powder :	PES 31.9010 S			
	Constant volume of air :	4 m <sup>3</sup> / h (Conveying air + supplementary air).			
<b>g/min.</b>	<i>(6 m)</i> bar	<i>(12 m)</i> bar	<b>g/min.</b>	<i>(6 m)</i> bar	<i>(12 m)</i> bar
<b>25</b>	0.65	0.92	<b>225</b>	1.80	2.61
<b>50</b>	0.80	1.14	<b>250</b>	1.94	3.07
<b>75</b>	0.93	1.32	<b>275</b>	2.09	3.50
<b>100</b>	1.10	1.52	<b>300</b>	2.24	3.50
<b>125</b>	1.22	1.70	<b>325</b>	2.43	3.50
<b>150</b>	1.38	1.90	<b>350</b>	2.75	3.50
<b>175</b>	1.50	2.11	<b>375</b>	3.15	3.50
<b>200</b>	1.65	2.32	<b>400</b>	3.50	3.50

## Cleaning and Maintenance

a) Cleaning should be done daily before starting work or with a colour change



- |   |   |   |                   |
|---|---|---|-------------------|
| 1 | Conveying air or Rinsing air check valve    | 5 | Injector body     |
| 2 | Supplementary air check valve (with notch)* | 6 | Insert sleeve     |
| 3 | Injector nozzle                             | 7 | Insert sleeve nut |
| 4 | Hopper fitting                              | 8 | Hose fitting      |

\*The notch indicates the valve inside  $\varnothing$  : notch =  $\varnothing$  1.4 mm

Figure 7

1. Remove the injector from powder hopper cover.
2. Pull hose off the hose fitting (8).
3. Remove the insert sleeve nut (7) and hose fitting (8) from the injector.
4. Clean the insert sleeve nut (7) hose fitting (8) with the spiral gun brush, and with compressed air that is free of water and oil.
5. Remove the insert sleeve (6) and clean, check for wear.
6. Clean injector body (5) with compressed air that is free of water and oil. Any contamination can be seen through the opening of the hopper fitting (4).
7. Reassemble the injector and fit on the hopper cover.

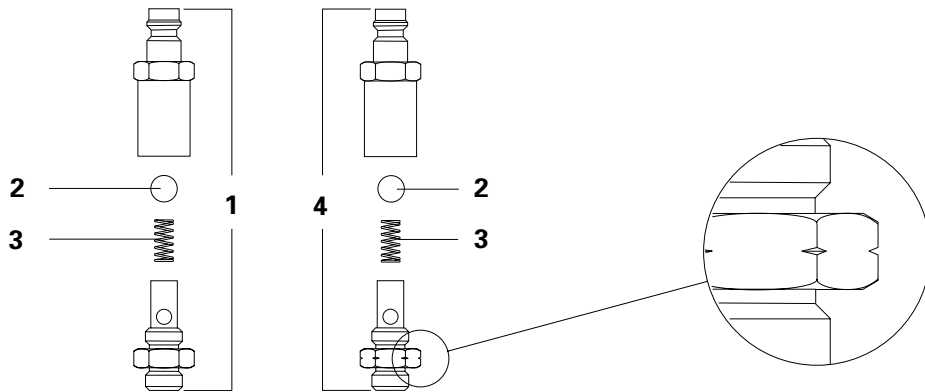
**Caution :** If the injector is severely fouled, it must be disassembled as shown in the Figure 7 above. Remove the injector nozzle (3) with the correct sized spanner. Clean the component parts with compressed air and, if necessary, dissolve sintered deposits with nitro-thinners (after dismantling the check valve).

**Do not scrape. Do not use acetone!**

## b) Replacing the insert sleeve (6 - Fig. 7)

1. Unscrew the insert sleeve nut (7- Fig. 7) and pull out.
2. Remove or replace insert sleeve (6 - Fig. 7).
3. Place the insert sleeve (6 - Fig. 7) in the insert sleeve nut (7- Fig. 7).  
Ensure that it rests against the stop in the injector housing when the nut is tightened.

## c) Cleaning the check valves (1 and 4 - Fig. 8)

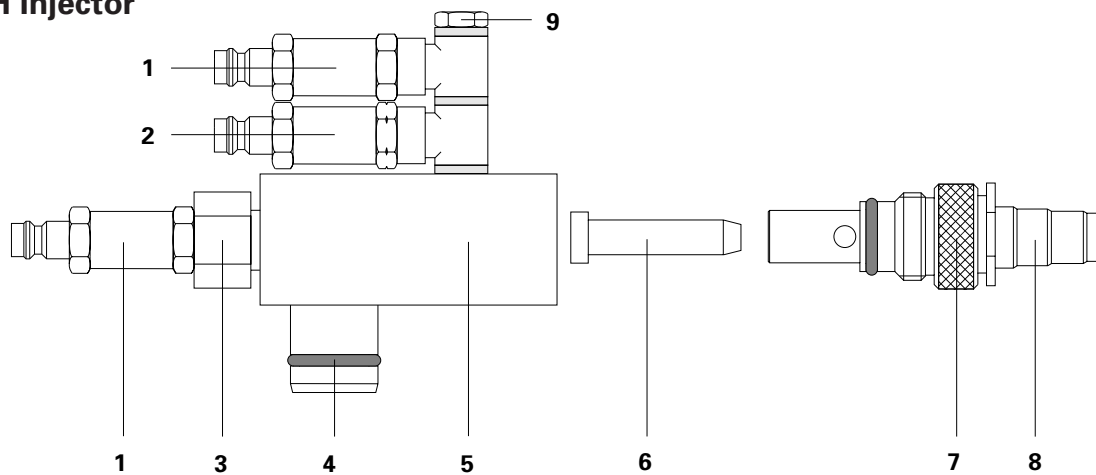


**Attention : Do not place the ball in solvents !!!**

- |   |                         |   |                          |
|---|-------------------------|---|--------------------------|
| 1 | Check valve (w/o notch) | 3 | Spring                   |
| 2 | Ball                    | 4 | Check valve (with notch) |

Figure 8

## PI 2-H Injector



- |   |   |   |                        |
|---|---|---|------------------------|
| 1 | Conveying air or Rinsing air check valve    | 6 | Insert sleeve          |
| 2 | Supplementary air check valve (with notch)* | 7 | Insert sleeve nut      |
| 3 | Injector nozzle                             | 8 | Hose fitting           |
| 4 | Hopper fitting                              | 9 | Air connection adapter |
| 5 | Injector body                               |   |                        |

\*The notch indicates the valve inside  $\varnothing$  : notch =  $\varnothing$  1.4 mm

Figure 9

**The PI 2 injector should be cleaned at least once a day.**

Normally it can be disassembled as shown in the diagram on the previous page.

**Once a week or in case of heavy contamination** it should be totally disassembled. See also Figure 10 or 11 - spare parts drawings on the following pages.

**Trouble shooting guide**

If the gun does not spray powder when the PGC 1 Powder Gun Control is switched ON the injector could be contaminated :

<ul style="list-style-type: none"> <li>- Injector, injector nozzle, check valve, powder hose or gun are clogged and must be cleaned.</li> </ul>	<p>Clean the corresponding part(s)</p>
<ul style="list-style-type: none"> <li>- The insert sleeve in the injector is worn and must be replaced.</li> </ul>	<p>Replace with a new insert sleeve</p>

**PI 2-V Injector**

	Injector (complete)	342 297
1	Check valve - conveying air, or rinsing air (complete)	239 135
2	Ball	240 168
3	Spring	240 176
4	Check valve (with notch) - supplementary air (complete)	239 143
5	Elbow connection 1/8" - 1/8"	237 604
6	Injector nozzle	336 459
7	O-ring ø 16x2	231 517
8	Insert sleeve	336 467#
9	O-ring ø 12x2	235 725
10	Insert sleeve holder	336 408
11	Hose fitting	336 424#
12	Insert sleeve nut	336 416
13	Quick-release hose connector for - ø 8 / 6 mm hose	203 181
14	Hose for conveying air - ø 8 / 6 mm hose (red)	103 500*
15	Hose for supplementary air - ø 8 / 6 mm (black)	103 756*
16	Hose for rinsing air - ø 8 / 6 mm (green)	103 519*
17	Hopper fitting	336 440
18	Injector body	342 300
	Powder hose ø 16 / 11 mm :	
	for PG 1 Manual gun	103 128*#
	for PG 1-A Automatic gun	103 012*#

\* Indicate length required

# Wear parts



**PI 2-H Injector**

	Injector (complete)	DIP01-Z7-3
1	Check valve - conveying air, rinsing air (complete)	239 135
2	Ball	240 168
3	Spring	240 176
4	Check valve (with notch) - supplementary air (complete)	239 143
5	Air connection adapter	241 890
6	Injector nozzle	336 459
7	O-ring - $\varnothing$ 16x2 mm	231 517
8	Insert sleeve	336 467#
9	O-ring - $\varnothing$ 12x2 mm	235 725
10	Insert sleeve holder	336 408
11	Hose fitting	336 424#
12	Insert sleeve nut	336 416
13	Quick-release hose connector - $\varnothing$ 8 / 6 mm hose	203 181
14	Hose for conveying air - $\varnothing$ 8 / 6 mm hose (red)	103 500*
15	Hose for supplementary air - $\varnothing$ 8 / 6 mm (black)	103 756*
16	Hose for rinsing air - $\varnothing$ 8 / 6 mm (green)	103 519*
17	Hopper fitting	336 440
18	Injector body	336 475
19	Gasket	241 911
20	Air connection ring	241 903
	Powder hose - $\varnothing$ 16 / 11 mm :	
	for PG 1 Manual gun	103 128*#
	for PG 1-A Automatic gun	103 012*#

\* Indicate length required

# Wear parts

**PI 2-H Injector**

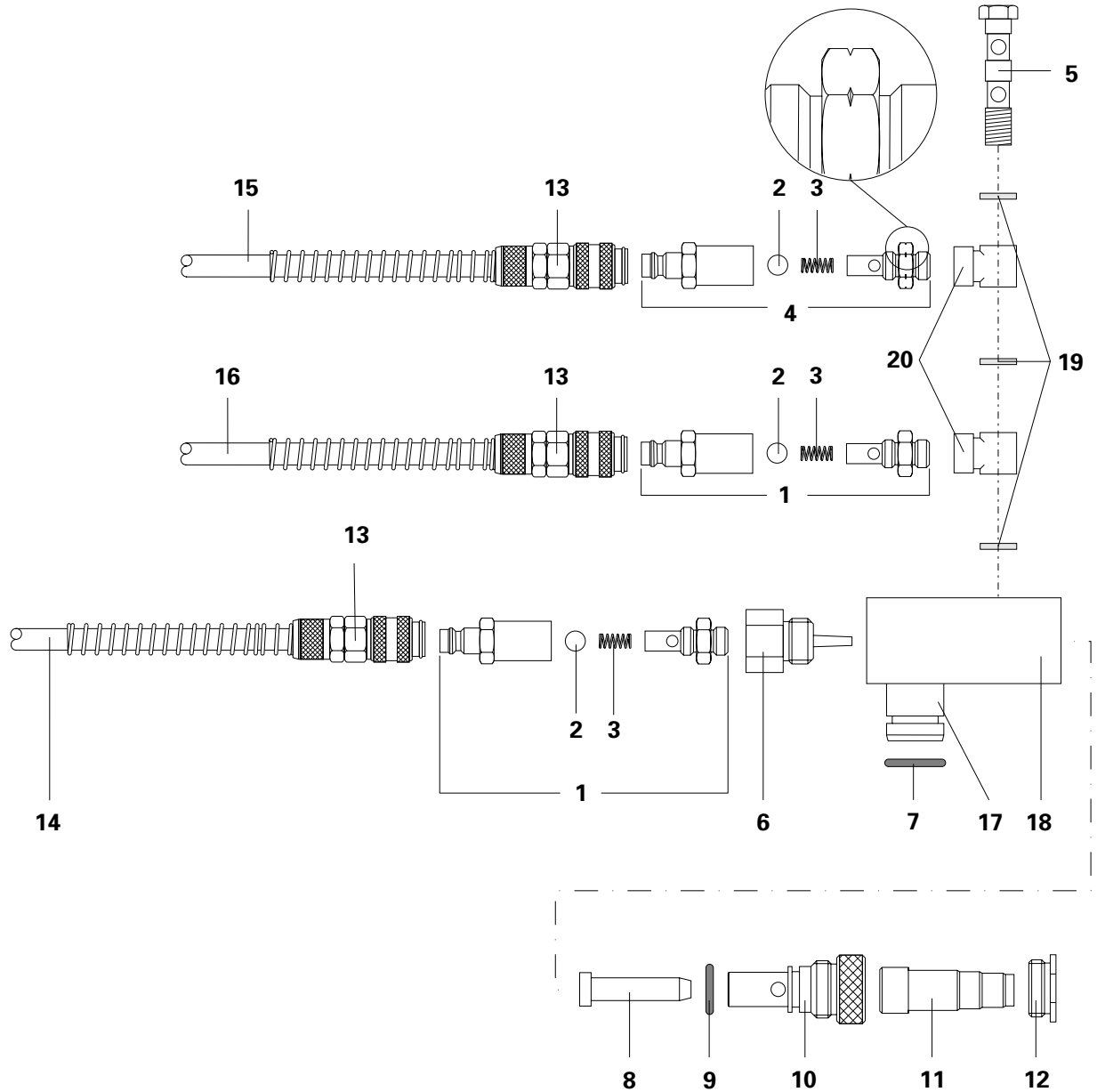


Figure 11

Documentation PI 2 Powder Injector

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