Operating manual
for
MINI-sprayvalve MSV

Read this manual carefully before installing, operating or servicing this equipment.
Keep always handy for further use.

1 Introduction

The MINI-spray valve **MSV** is designed and constructed for finest application of thin materials f.i. release agents, colours or other fluids of low viscosity. Depending on air cap this spray valve sprays in flat- or roundspray. Depending on viscosity of fluid, the application can be adjusted individually via nozzle dimension, atomizing air pressure and material pressure. The supply of atomizing air, control air and material should be done via three hoses. Spray valves are precision tools. Always keep clean and observe minimum instructions to maintain a long usefull life of the valve.

2 Safety

2.1 Duties of the user

- The user must read this service manual carefully before performing any operations.

- Application and service operations should not be carried out if the user is not absolutely sure of the purpose and consequence of the operations.

2.2 Definitive Use

The MINI-spray valve **MSV** is a pneumatically controlled spray valve; It is suitable for sprayable materials. It is not suitable for spraying aggressive or heated materials. In case of doubt, contact the manufacturer.

2.3 Warning against danger

This operating manual warns users of operations which may put their health at risk. The warnings are indicated by combinations of text and symbols corresponding to the different danger classes.

WARNING!

Signs a possible dangerous situation.
If you don´t avoid, *death or severe injuries* can follow.

CAUTION!

Indicates a situation which may be dangerous.
Failure to heed the caution may result in *personal injury*. This indication is also used where material damage is possible.

IMPORTANT!

Indicates tips for usage and other helpful information.

3 Function Description

The MINI-spray valve **MSV** is pneumatically controlled: air open; spring return.
The spraying material is to be fed to the valve via pressure tank or pump. The separate controlled atomizing air atomizes the material to a spray jet. Depending on mounted air cap valve sprays a flat- or roundspray jet.

4 Installation

The **MSV** can be installed in any position. For solid attachment please use the two thread bores M4 on each side of the valve body. Distance to spraying surface varies width of application. Vibrations of the valve caused by fast intermitting cycles require solid and massive installation. Vibration of the equipped machine to the valve should be limited as far as possible.

4.1 Hose connection

Connect hoses for atomizing air and control air seperately to control valves (pressure reducers and solenoids). Then fluidhose to material pressure tank or other means of feeding as under:

- atomizing air Z (11) (hose blue):
  ➔ to 2/2 way solenoid
- control air S (11) (hose black):
  ➔ to 3/2 way solenoid
- fluid M (11) (hose transparent):
  ➔ to feeding device

4.2 Operating instructions

CAUTION!
Never point the spray valve against persons. Wearing eye protection is strongly recommended. Spraying procedures cause noises depending on the used pressure. If necessary, wearing of ear protection is recommend.

WARNING!
Danger caused by combustible and noxious spraying material. Safety instructions on fluid can and material data of fluid manufacturer must definitly be observed.

Do not smoke when spraying paints or solvents which have combustible properties. All electrical installations within the spraying area must be explosionproof. Observe working safety regulations in respect of protective clothing (masks, clothing, ear protection, etc.)
The valve **MSV** needs 4 - 6 bar pressure for control air. The atomizing air should be 0,5 - 6 bar. The maximum material pressure is 3 bar. If higher material pressure is necessary, please observe the regulations of the professional/trade association having liability for industrial safety and insurance.
When you are certain, that fluid pressure stands up to the nozzle, actuate 2/2 way solenoid for atomizing air. After that actuate 3/2 way solenoid for control air. This way you receive socalled "pre-air" prior to opening fluid flow. After each cycle solenoids are to be actuated in reverse order, so you will still have "purging-air" after needle has closed nozzle and fluid flow was stopped. This prevents fluid to form out drops instead of being atomized. Set working pressure of atomizing air and fluid pressure according to required spray droplet sizes. Two seperate pressure reducers must be available, if fluid is fed via pressure tank.

Standard version of valve has flat spray air cap. If round spray cone jet is required, install round spray air cap. Flat spray air cap can be positioned for horizontal, vertical or any in between position of jet.
Depending on viscosity of fluid, different nozzle diameters are available in:
0,2 / 0,3 / 0,5 / 0,8 / 1,0 / 1,2 / 1,5mm Ø.

IMPORTANT!
Fluid flow can be regulated with regulating screw (9).
turn right : less fluid flow
turn left : more fluid flow

IMPORTANT!
Wrong handling can damage nozzle and needle. Reduce fluid flow (clockwise turn of regulating screw) only when fluid flows throught nozzle. After fluid flow is nil, never turn regulating screw (9) further right.

For longer working interruptions and if the fluid is under pressure, it can stay in valve.

5 Repair and Maintenance

Before starting maintenance or repair work, ensure that all air operated tools are disconnected from the air supply.

WARNING!
Danger caused by combustible and noxious spraying material. Safety instructions on fluid can and material data of fluid manufacturer must definitly be observed.

WARNING!
Before opening the spray valve it has to be disconnected from the air and fluid supply.Otherwise ejected elements can cause danger.

These spray valves are high precision tools. Always keep clean and observe minimum instructions to maintain a long and useful life of valve.
We recommend lubricating moveable parts regularly, and greasing threads, especially the nozzle threads, when replacing or cleaning the nozzle.

5.1 Cleaning

To clean valve, spray solvent until pure solvent leaves nozzle. Do not submerge entire valve in solvent. At longer working interruptions it is advisable to clean air cap and nozzle by putting these parts only into solvent. If necessary use a soft brush. Moving parts and threads should alway be greased slightly.
The spray valve should be cleaned using an appropiate thinner. To clean small drill holes, use our special nozzle cleaning needles.

5.2 Trouble shooting

- If seal (5) is worn, exchange this gasket removing needle (see "Changing nozzle set" / "Changing needle gasket").
- If drops form on the nozzle, either needle or nozzle is worn out and should be replaced. Or needle is not closing properly f.i. because particle residues within nozzle.
- If there is an uneven or not steady spray jet, make sure that nozzle is screwed in tight. Other reason could also be dirt residue within air cap.

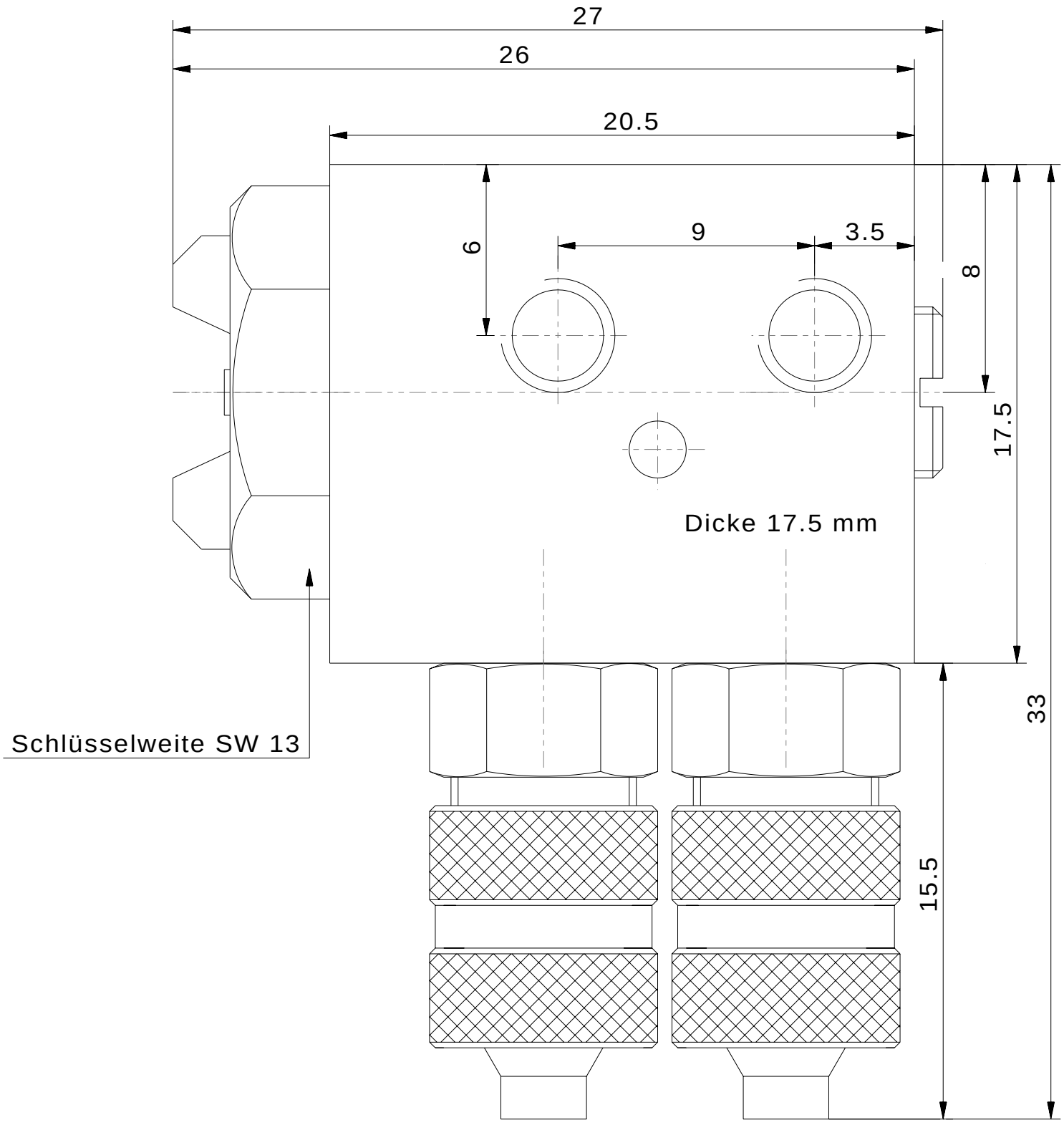
5.3 Changing the nozzle set

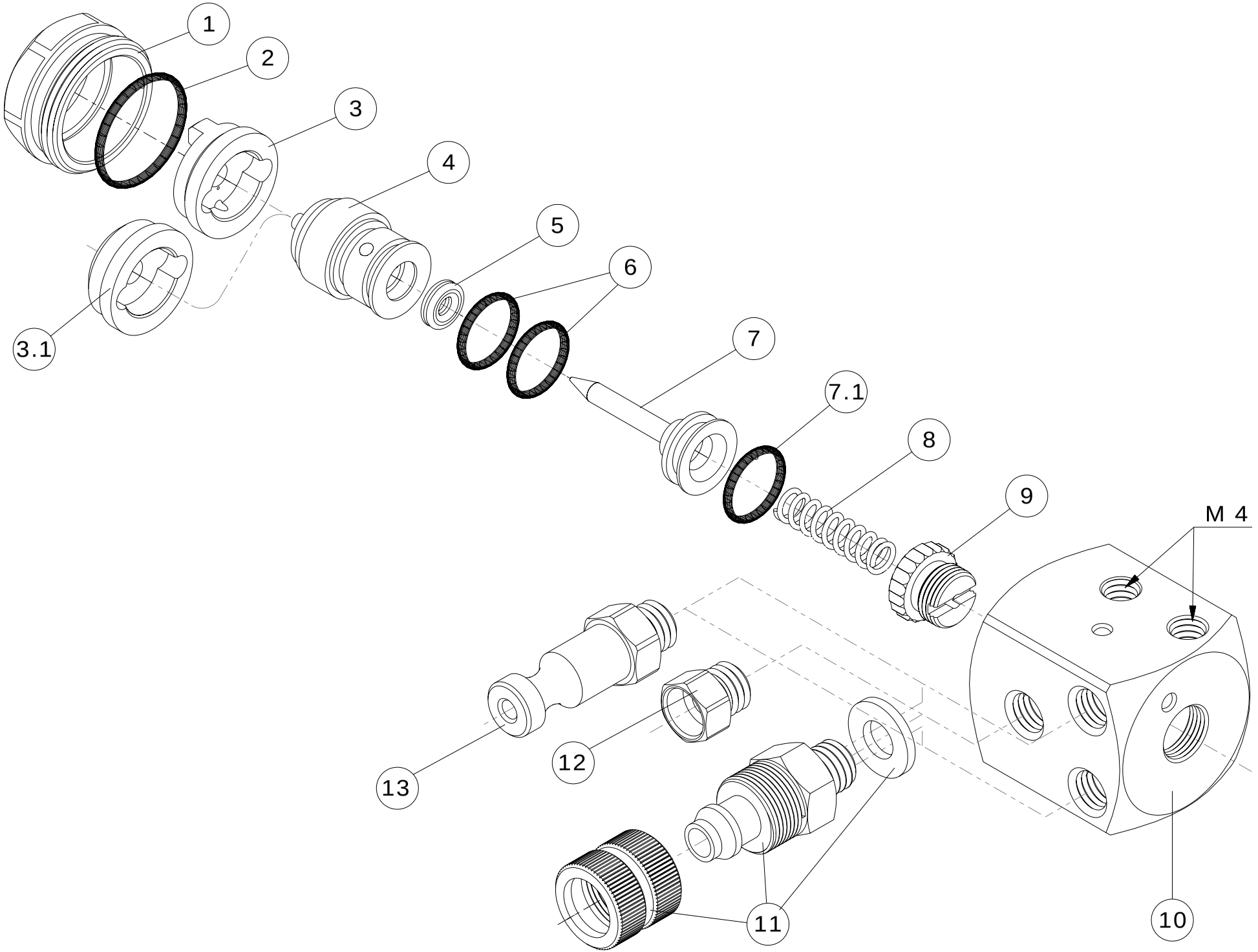
IMPORTANT!
Nozzles, gaskets and gasket seats can be damaged. Do not use metallical aid to remove and insert those parts.

Before starting maintenance or repair work, ensure that all air operated tools are disconnected from the air supply.
Unscrew collar ring (1) via spanner SW 13. Pull out air cap (3 or 3.1) and nozzle (4). Pull out needle (7) careful.
Re-assemble in reverse order slightly greased. Make sure, that nozzle and needle areabsolutely clean from any dirt or rests of fluid. It is not recommended to use old needles and nozzles because even slightly damaged needle shafts would immediatly cause leakage in needle gasket (5).

5.4 Changing needle gasket

After pull out nozzle (4) (see chapter „changing nozzle set“), the needle gasket (5) can be placed in the groove of rear side of nozzle. The 2 o-rings (6) are to be placed in the grooves at the outer side of nozzle. The o-ring (7.1) can be changed easily on the disassembled piston of needle (7).


27
26
20.5
6
9
3.5
8
17.5
33
15.5
Dicke 17.5 mm
Schlüsselweite SW 13


1
2
3
4
5
6
7
7.1
8
9
M 4
3.1
12
13
11
10

6 Sparepartslist

draw-no.	part-no.	Qty.	Description
1	410071	1	collar ring
2	640208	1	o-ring 12 x 1 mm
3	*	1	air cap, flat spray
3.1	*	1	air cap, round spray
4	*	1	nozzle, complete with 5+6
5	640169	1	quad-ring 2 x 1,5 mm
6	640039	2	o-ring 6 x 1 mm
7	*	1	needle, stainless steel, complete
7.1	640039	1	o-ring 6 x 1 mm
8	820007	1	needle spring
9	610445	1	regulating screw
10	510206	1	valve body, stainless steel
11	220089	3	connection M5
			connections for MSV with quick release adapter
12	220900	1	material connection, SW6, ø6,7 x 7mm, M5
13	220898	2	air connection, SW7, ø7,8 x 20,7mm, M5

* part. no. see page 8.
When ordering nozzles, needles and air caps, please indicate nozzle dimension.
Available dimensions: 0,2 / 0,3 / 0,5 / 0,8 / 1,0 / 1,2 / 1,5mm ∅

7 Technical data

measurements:
with air cap, flat spray = 27mm length x 17,5mm x 33mm (without connections)
with air cap, round spray = 26mm length x 17,5mm x 33mm (without connections)

weight = 60g
air consumption = approx. 43ltr./min. (at 3 bar, 0,5mm nozzle, flatspray air cap and 2m hose)
pressure for control air = 4 – 6 bar
pressure for atomising air = 0,5 – 6 bar
material pressure = max. 3 bar

Special designs on request. Technical alterations reserved. November 2009.

6.1 part no. of needles, nozzles and air caps

*needle		
draw no.	part no.	Description
7	110520	0,2-0,5mm
7	110587	0,8/1,0mm
7	110588	1,2/1,5mm

*nozzle		
draw no.	part no.	Description
4	210469	0,2mm
4	210470	0,3mm
4	210471	0,5mm
4	210472	0,8mm
4	210473	1,0mm
4	210474	1,2mm
4	210475	1,5mm

* air cap / flat spray 90° (standard)		
draw no.	part no.	Description
3	310170	for nozzle 0,2-0,5mm
3	310179	for nozzle 0,8/1,0mm
3	310180	for nozzle 1,2/1,5mm

* air cap / flat spray 60°		
draw no.	part no.	Description
3	310171	for nozzle 0,2-0,5mm
3	310189	for nozzle 0,8/1,0mm
3	310190	for nozzle 1,2/1,5mm

* air cap / round spray 15°		
draw no.	part no.	Description
3.1	310176	for nozzle 0,2-0,5mm
3.1	310177	for nozzle 0,8/1,0mm
3.1	310178	for nozzle 1,2/1,5mm