En

Operating instructions and spare parts list

OptiSpray F

Manual coating equipment

Translation of the original operating instructions

Documentation OptiSpray F Manual coating equipment

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General safety regulations

This chapter specifies the fundamental safety regulations that must be followed by the user and third parties using the OptiSpray F Manual coating equipment.

These safety regulations must be read and understood before the OptiSpray F Manual coating equipment is used.

Safety symbols (pictograms)

The following warnings with their meanings can be found in the ITW Gema operating instructions. The general safety precautions must also be followed as well as the regulations in the operating instructions.

DANGER!
Danger due to live electricity or moving parts. Possible consequences: Death or serious injury

WARNING!
Improper use of the equipment could damage the machine or cause it to malfunction. Possible consequences: minor injuries or damage to equipment

INFORMATION!
Useful tips and other information

Conformity of use

1. The OptiSpray F Manual coating equipment is built to the latest specification and conforms to the recognized technical safety regulations. It is designed for the normal application of powder coating.
2. Any other use is considered as non-conform. The manufacturer is not responsible for damage resulting from improper use of this equipment; the end-user alone is responsible. If the OptiSpray F Manual coating equipment is to be used for other purposes or other substances outside of our guidelines then ITW Gema GmbH should be consulted.

3. Observance of the operating, service and maintenance instructions specified by the manufacturer is also part of conformity of use. The OptiSpray F Manual coating equipment should only be used, maintained and started up by trained personnel, who are informed about and are familiar with the possible hazards involved.
4. Start-up (i.e. the execution of a particular operation) is forbidden until it has been established that the OptiSpray F Manual coating equipment has been set up and wired according to the guidelines for machinery (98/37 EG). EN 60204-1 (machine safety) must also be observed.
5. Unauthorized modifications to the OptiSpray F Manual coating equipment exempts the manufacturer from any liability from resulting damage.
6. The relevant accident prevention regulations, as well as other generally recognized safety regulations, occupational health and structural regulations are to be observed.
7. Furthermore the country-specific safety regulations must be observed.

Product specific security measures

OptiSpray F Manual coating equipment

- The installation work, to be done by the customer, must be carried out according to local regulations
- Before starting up the plant, a check must be made that no foreign objects are in the booth or in the ducting (input and exhaust air)
- It must be observed, that all components are grounded according to the local regulations, before start-up

Note:
For further security information, see the more detailed ITW Gema safety regulations!

About this manual

General information

This operating manual contains all the important information which you require for the working with the OptiSpray F Manual coating equipment. It will safely guide you through the start-up process and give you references and tips for the optimal use of your new powder coating system.

Information about the function mode of the individual system components - reciprocators, booths, powder gun control units, powder guns etc. - should be referenced to their corresponding documents.

Function description

Field of application

The OptiSpray F Manual coating equipment (with fluidized powder hopper) is designed exclusively for electrostatic coating with organic powders. Any other use is considered as non-conform. The manufacturer is not responsible for any damage resulting from this - the risk for this is assumed by the user alone!

Typical characteristics

- High powder output
- Processing the powder from the fluidized powder hopper
- Quick and simple color change
- Supplied ready for use

OptiSpray F Manual coating equipment

Structure

OptiSpray F Manual coating equipment - structure

1	OptiStar Control unit	8	Gun holder
2	OptiSelect Manual powder gun	9	Hose holder
3	OptiSpray Dense phase pump	10	Powder filler flap
4	Mobile frame with hand rail	11	Rubber wheel
5	Fluidized powder hopper	12	Air consumption (Airmover)
6	Filter regulating valve	13	Powder suction hose
7	Swivel wheel	14	Diffuser

OptiStar Control unit

All information about the OptiStar Control unit will be found in the corresponding enclosed documentation!

OptiSpray Dense phase pump

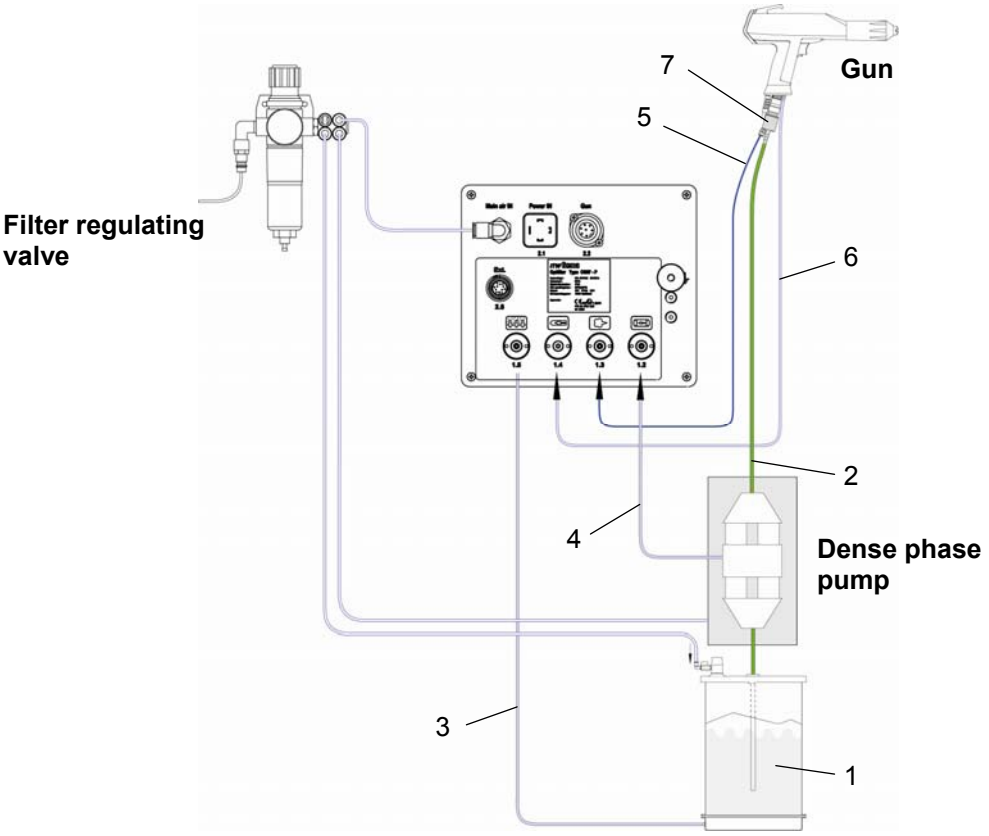
All information about the OptiSpray Dense phase pump will be found in the corresponding enclosed documentation!

Fluidized powder hopper

The fluidized powder in the powder hopper (**1**) will be aspirated by the dense phase pump. The powder arrives to the diffuser (**7**) through the powder hose (**2**) and then to the gun. The powder is charged electrostatically in the gun nozzle. In addition, an electrostatic field will be created between the gun nozzle and the grounded object. The charged powder spray remains adhered on the surface of the object.

The powder will be fluidized in the powder container by fluidizing air (**3**) forced through a porous plastic plate from below. Thereby, the powder acquires fluid-like characteristics.

The transport air (**4**), spraying air (**5**), fluidizing air (**3**) and electrode rinsing air (**6**) are provided by the OptiStar Control unit.



Fluidized powder hopper - function

Scope of delivery

OptiSpray F

- An OptiStar Control unit in a metal case with power supply cable
- An OptiSpray Dense phase pump
- A mobile trolley with a gun/hose support
- A fluidized powder hopper
- An OptiSelect Manual powder gun with connection cable, powder hose, rinsing air hose, diffuser and standard nozzle set (see therefore the OptiSelect Manual powder gun user manual)
- An electrically conducting powder hose

Technical data

OptiSpray F Manual coating equipment

Electrical data

OptiSpray F Manual coating equipment	
Nominal input voltage	100-240 VAC
Frequency	50/60 Hz
Input power	60 VA
Nominal output voltage (to the gun)	max. 12 V
Nominal output current (to the gun)	max. 1 A
Protection type	IP54
Temperature range	0 - 40 °C
Control unit approval	(see the corresponding operating manual)
Dense phase pump approval	(see the corresponding operating manual)

Pneumatic data

OptiSpray F Manual coating equipment	
Compressed air main connection	Quick coupling
Max. input pressure	10 bar
Min. input pressure	7,0 bar
Max. water vapor content of the compressed air	1,3 g/m³
Max. oil vapor content of the compressed air	0,1 mg/m³
Max. compressed air consumption	11 m³/h

Connectable guns

OptiSpray F Manual coating equipment	connectable
OptiSelect GM02	yes, with diffuser
OptiGun GA02	yes, with diffuser and trigger adaptor
PG1/PG2-A	no
TriboJet	no

Attention:
The OptiSpray F Manual coating equipment can only be used with the approved gun types!

Dimensions

OptiSpray F Manual coating equipment	
Width	690 mm
Depth	800 mm
Height	1295 mm
Weight	61 kg

Start-up and operation

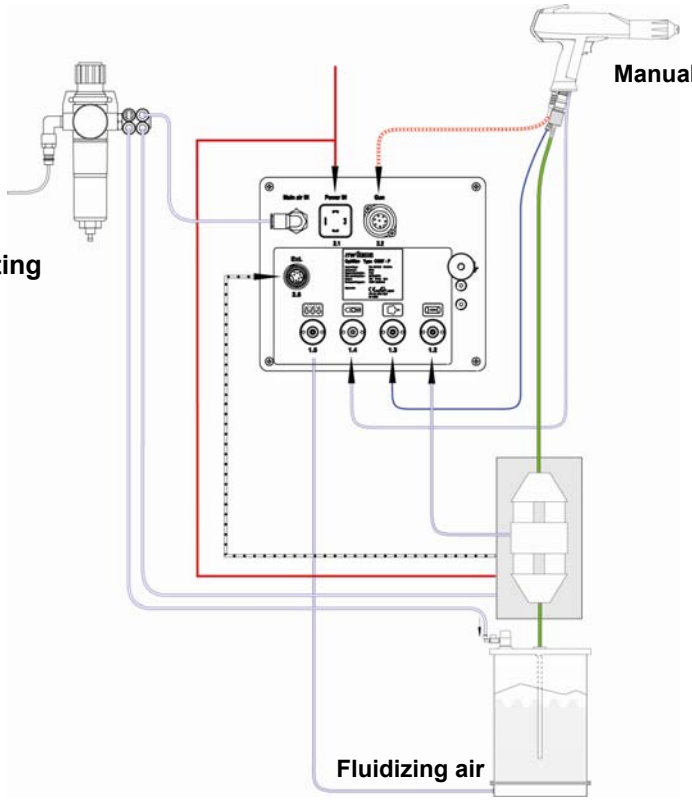
Connecting guide

1. Check the compressed air connection from the filter regulating valve to the control unit, the dense phase pump and the Airmover. Connect the compressed air supply hose from the compressed air circuit directly to the main connection of the filter regulating valve

Note:
The compressed air must be free of oil and water!

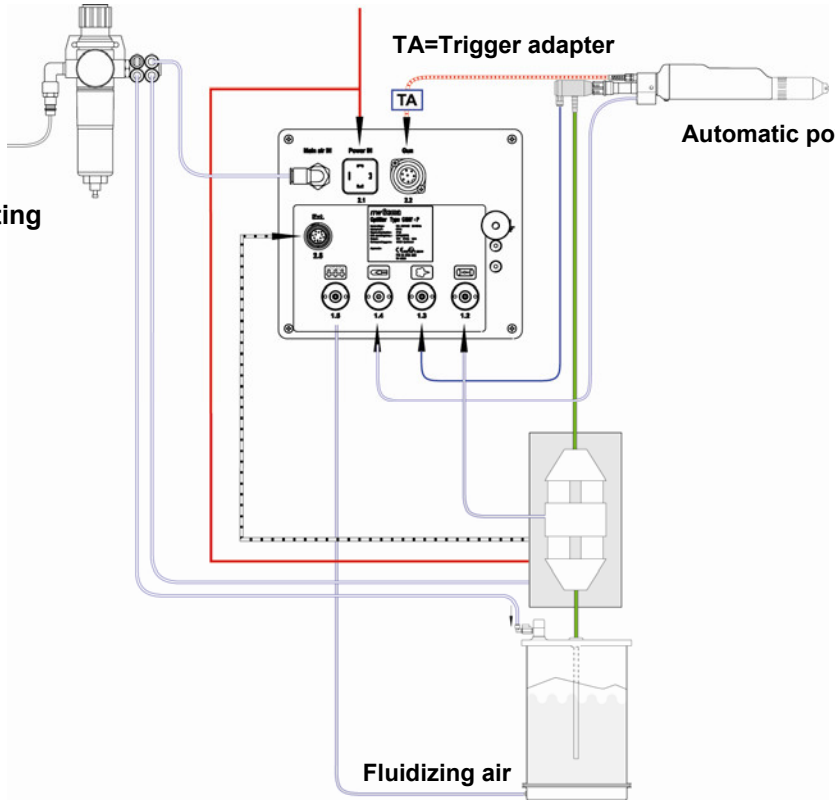
2. Connect the black hose for fluidizing air (electrically conductive) to the output **1.5** on the rear side of the control unit
3. Connect the grounding cable to the control unit with the grounding screw, and the 5 m long grounding cable with the clamping clip to the booth or the conveyor. Check ground connections with Ohm meter and ensure 1 MOhm or less
4. Connect the gun cable plug to the socket **2.2** on the rear side of the control unit
5. Connect the rinsing air hose to the electrode rinsing air output **1.4** and to the powder gun
6. Connect the spraying air hose to the output **1.3** and to the powder gun diffuser
7. Connect the powder hose to the dense phase pump and to the powder gun diffuser
8. Connect the mains cable to the **2.1 Power IN** plug and fasten it

Connection with manual gun



Connection with manual gun

Connection with automatic powder gun



Connection with automatic powder gun

Preparation for start-up

Prepare the fluidized powder hopper

1. Install the Airmover
2. Fill in powder
3. Adjust the fluidization on the control unit

Switch on the booth

The coating booth is switched on according to the corresponding user manual.

Start-up

OptiSpray F with manual gun

1. Press the **ON** power switch on the OptiStar Control unit.
   The displays illuminate and the control unit is ready for operation
2. Switch on the OptiSpray Dense phase pump
3. The coating procedure will be started by pressing the gun trigger

Note:
The further start-up procedure and operation of the OptiSpray F Manual coating equipment is explicitly described in the OptiStar CG07P Gun control unit operating instructions (chapter "Initial start-up" and "Daily start-up")!

OptiSpray F with automatic gun

1. Press the **ON** power switch on the OptiStar Control unit.
   The displays illuminate and the control unit is ready for operation
2. Switch on the OptiSpray Dense phase pump
3. The coating procedure will be started by an external potential-free contact

Note:
The further start-up procedure and operation of the OptiSpray F Manual coating equipment is explicitly described in the OptiStar CG06CP Gun control unit operating instructions (chapter "Initial start-up" and "Daily start-up")!

Color change

General information

When a color change takes place, the individual components of the manual coating equipment must be cleaned carefully. Thereby, all powder particles of the former color must be removed!

Procedure:

1. Empty the fluidized powder hopper and clean it thoroughly
2. Clean the dense phase pump hoses:
   - Pull out the suction hose from the fluidized container
   - Point the powder gun into the booth
   - Press the gun trigger until no more powder exits
3. Point the suction hose and the conveying hose into the booth and clean them with the manual cleaning procedure of the dense phase pump (see therefore the user manual of the OptiSpray Dense phase pump)
4. Start the cleaning program of the control unit and blow through the suction hose with compressed air. Point the powder gun into the booth and press the gun trigger
5. Prepare the manual coating equipment with new powder for start-up

Maintenance and cleaning

Note:
Regular and conscientious maintenance increases the service life of the manual coating equipment and provides for a longer continuous coating quality!

Daily maintenance

1. Clean the dense phase pump (see therefore the dense phase pump user manual)
2. Clean the powder gun (see the corresponding operating manual)
3. Clean the diffuser
4. Clean the powder hose, see therefore section "Color change"

Weekly maintenance

1. Clean the powder hopper, dense phase pump and powder gun
2. Check the grounding connection of the control unit

If in disuse for several days

1. Remove the mains plug
2. Clean the coating equipment
3. Turn off the compressed air main supply

Powder hose rinsing

If longer downtimes take place, the powder hose has to be cleaned. The procedure is described in section "Color change".

Cleaning

Cleaning the powder hopper

1. Disconnect the fluidizing air supply
2. Remove the suction hose
3. Remove the cover, blow out with compressed air and clean with a clean dry brush and cloth
4. Clean the suction tube
5. Empty the remaining powder into a container
6. Clean the hopper and above all, the hopper floor
7. Clean the hopper with a cloth
8. Reassemble the powder hopper

Note:
Refill the powder hopper shortly before reusing! Never clean the powder hopper with solvents or water!

Cleaning the powder gun

Frequent cleaning of the gun helps to guarantee the coating quality.

Note:
Before cleaning the powder gun, switch off the control unit. The compressed air used for cleaning must be free of oil and water!

Daily:

1. Blow off the outside of the gun and wipe, clean etc.
2. Clean the diffuser

Weekly:

3. Remove the powder hose from the connection
4. Remove the diffuser from the gun and clean it
5. Blow out the gun from the connection in flow direction with compressed air
6. Clean the integrated gun tube with the provided gun brush
7. Blow through the gun with compressed air again
8. Clean the powder hose
9. Reassemble the gun and connect it

Note:
See therefore the user manual of the corresponding powder gun!

Cleaning the diffuser

1. Dismantle the diffuser
2. Blow off the diffuser with compressed air in the powder flow direction
3. If the diffuser is severely contaminated, it must be dismantled and the fluidizing tube must be cleaned with compressed air

Maintenance and cleaning of the filter regulating valve

The filter regulating valve of the OptiSpray F Manual coating equipment measures and cleans the compressed air. Here, the main compressed air connection of the equipment is located.

Replacing the filter element

Procedure:

1. Vent the plant and the manual coating equipment
2. Remove the drain screw and let run out the condensation water
3. Unscrew the filter glass on the filter unit
4. Unscrew the filter pad
5. Replace the filter element
6. Clean the filter glass on the inside and reinstall it in reverse order

Troubleshooting

General information

Fault	Causes	Troubleshooting
---	Power pack defective	Replace the power pack
---	Main valve defective	Replace main valve coil
---	Gun not connected	Connect the gun
	Gun plug, gun cable or gun cable connection defective	Replace corresponding part or send in for repair
	Remote control on powder gun defective	Replace the remote control (gun back cover)
---	Gun plug, gun cable or gun cable connection defective	Replace corresponding part or send in for repair
Gun LED remains dark, although the gun is triggered	Gun plug, gun cable or gun cable connection defective	Replace corresponding part or send in for repair
	Remote control on powder gun defective	Replace the remote control (gun back cover)
Powder does not adhere to object, although the gun is triggered and sprays powder	High voltage and current deactivated	Press the selection key (application key)
	High voltage cascade defective	Replace the high voltage cascade or send in the gun for repair
	The objects are not properly grounded	Check the grounding
Control unit displays remain dark, although the control unit is switched on	Control unit is not connected to the mains	Connect the equipment with the mains cable
	Power pack fuse defective	Replace the fuse
	Power pack defective	Replace the power pack
The powder is not fluidized	Compressed air not present	Connect the equipment to the compressed air
	Fluidizing air is set too low on the control unit	Set the fluidizing air correctly
	Throttle motor defective	Replace the throttle motor

Fault	Causes	Troubleshooting
The manual gun does not spray powder, although the control unit is switched on and the gun trigger is pressed	Compressed air not present	Check the compressed air supply
	Transport air not present	Connect the control unit and the dense phase pump to the compressed air Check the hose connection of the control unit to the dense phase pump
	Fluidization not running	(see above)
The automatic gun does not spray powder although the control unit is switched on	(see above) No external signal at the trigger adaptor	(see above) Check the external signal

Spare parts list

Ordering spare parts

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

- Type and serial number of your powder coating equipment
- Order number, quantity and description of each spare part

Example:

- **Type** OptiSpray F Manual coating equipment
  Serial number 1234 5678
- **Order no.** 203 386, 1 piece, Clamp - Ø 18/15 mm

When ordering cable or hose material, the required length must also be indicated. The spare part numbers of this yard/meter ware is always marked with an *****.

The wear parts are always marked with a **#**.

All dimensions of plastic hoses are specified with the external and internal diameter:

Example:

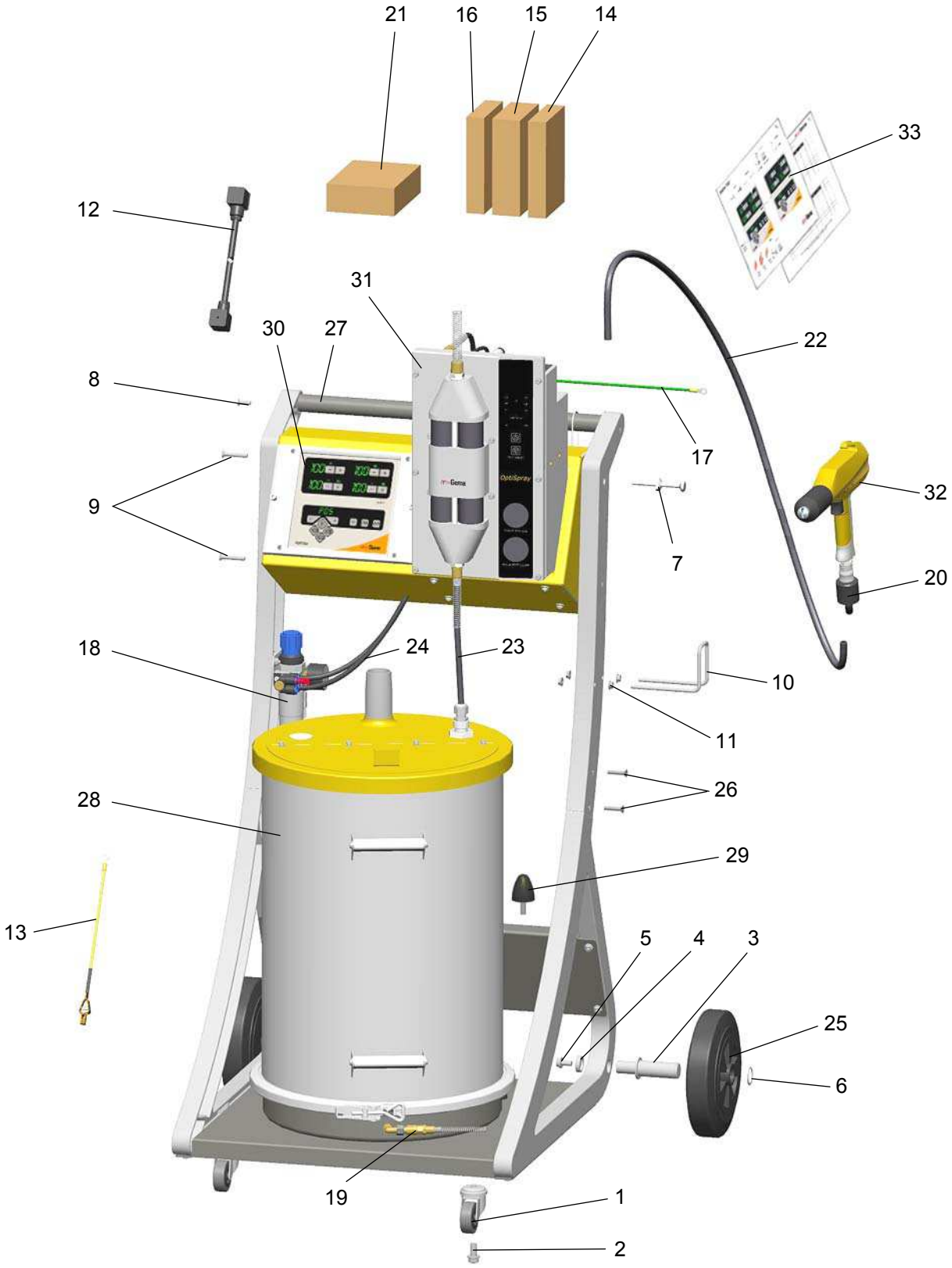
Ø 8/6 mm, 8 mm outside diameter (o/d) / 6 mm inside diameter (i/d)

WARNING!
Only original ITW Gema spare parts should be used, because the hazardous location approval will be preserved that way! The use of spare parts from other manufacturers will invalidate the ITW Gema guarantee conditions!

OptiSpray F - spare parts list

	OptiSpray F Manual coating equipment - complete	1005 610
1	Swivel wheel - Ø 50 mm	260 606
2	Cylinder ribbed Allen screw - M10x20 mm, galv.	260 584
3	Bearing bolt	1000 453
4	Counter washer	1000 944
5	Cylinder ribbed Allen screw - M8x16 mm, galv.	261 793
6	Snap ring - A-25	237 094
7	Gun retainer	1003 076
8	Countersunk Allen screw - M6x20 mm	1002 992
9	Countersunk Allen screw - M6x40 mm	1002 953
10	Hose holder	1000 699
11	Hexagon shakeproof nut - M6	244 430
12	Power supply extension - 1.2 m	1002 636
13	Grounding cable - complete	301 140
14	Dense phase pump spare parts kit, consisting of:	1005 255
	Fuse - 2 AT	221 872
	Assembly tool - complete	1005 058
15	Pinch valves spare parts kit, consisting of:	1005 256
	Pinch valve hose	1004 405
	Pinch valve - fit-up aid	1005 270
	Short instructions for pinch valve change	1005 382
16	Filter element spare parts kit, consisting of:	1005 257
	Filter element - 3 µm, complete	1005 056
	Short instructions for filter element change	1005 383
17	Grounding cable - complete, L=1200 mm	1006 077
18	Filter regulating valve unit (see corresponding spare parts list)	
19	Pneumatic connection, consisting of:	1002 042
	Quick release connection - NW5, Ø 6 mm	200 840
	Plastic tube - Ø 6/4 mm, black, antistatic (not shown)	1001 973*
	Nut with kink protection - M10x1 mm, Ø 6 mm (not shown)	201 308
20	Diffuser (see OptiStar CG07-P Control unit user manual)	
21	Spare parts kit MC02 / MF02-P	1002 789
	Fuse - 4 AT	262 897
	Fuse - 2 AT	221 872
	Fuse - 0.1 AT	229 520
22	Powder hose - Ø 11.4/7 mm	1005 097*

OptiSpray F - spare parts



OptiSpray F - spare parts

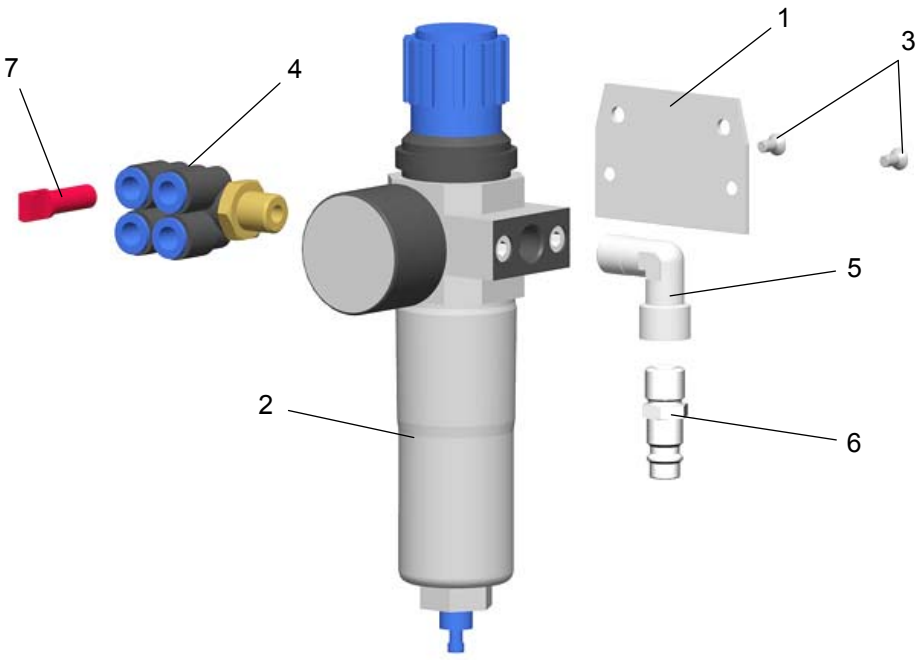
OptiSpray F - spare parts list

23	Powder hose - Ø 9.6/6 mm	1001 102*
24	Plastic tube - Ø 8/6 mm, black, antistatic	103 756*
25	Rubber wheel - Ø 200 mm	260 592
26	Countersunk Allen screw - M6x30 mm	1002 952
27	Handle bar	1002 623
28	Powder container (see corresponding spare parts list)	
29	Rubber buffer - Ø 35x40 mm, M8	211 664
30	OptiStar CG07P Gun control unit - complete (see corresponding operating manual)	
31	OptiSpray DPP01 Dense phase pump - complete (see corresponding user manual)	
32	OptiSelect Manual powder gun - complete (see corresponding user manual)	
33	OptiStar program table	1002 063

***** Please indicate length

OptiSpray F - filter regulating valve

	Filter regulating valve unit - complete	1006 038
1	Fixing plate	1006 037
2	Filter regulating valve unit	1006 036
3	Countersunk-head screw - M4x8 mm	214 647
4	Elbow joint - 1/4", Ø 8, 2x2 mm	1006 035
5	Elbow connection - 1/4"i-1/4"a	222 674
6	Rectus connector - NW 7.4 mm, 1/4"a	256 730
7	Closure plug - Ø 8 mm	238 023



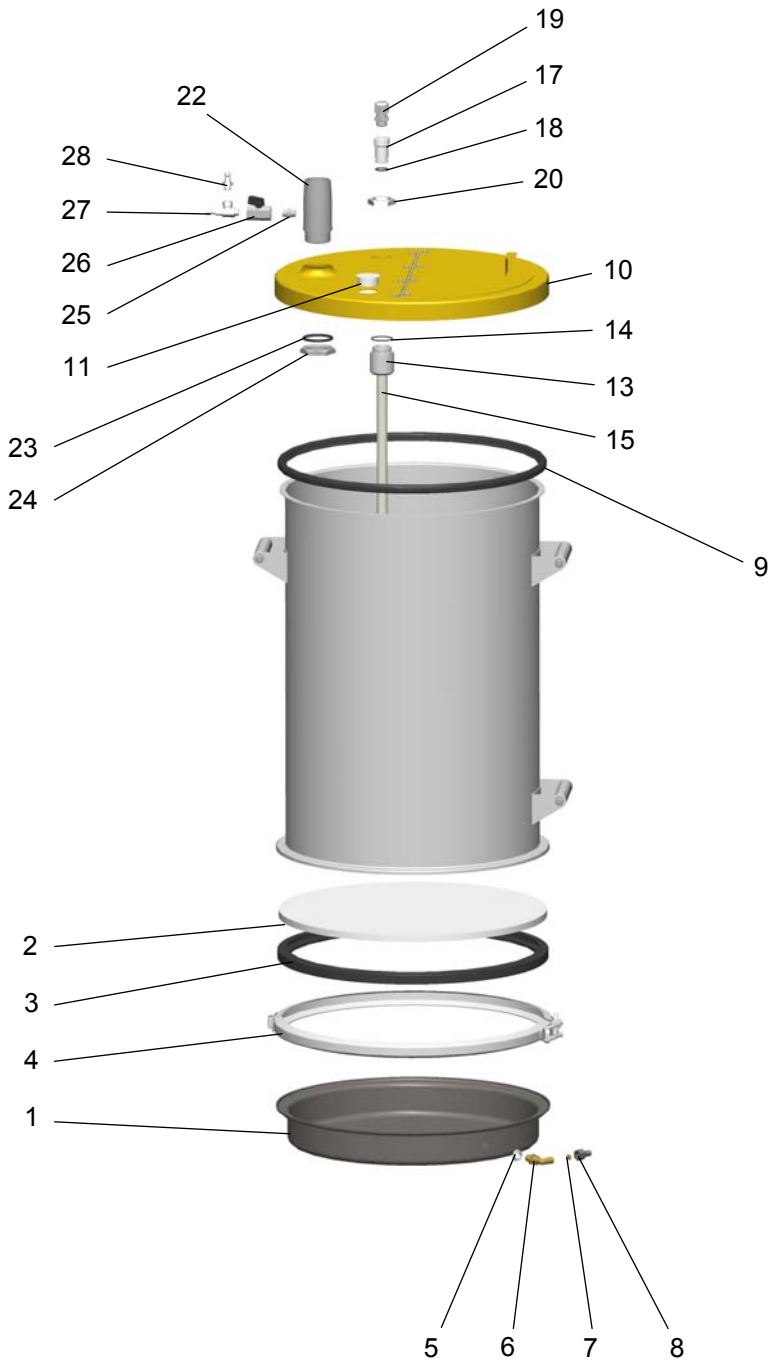
OptiSpray F - filter regulating valve

OptiSpray F - powder hopper

	Powder hopper - complete	**1001 653**
	Bottom section - complete (incl. pos. 1-9)	**1001 644**
1	Bottom plate	1001 640
2	Fluidizing plate	390 151
3	Fluidizing plate gasket	390 186
4	Clamp ring	390 194
5	Sealing ring - Ø 10.2/17x3.8 mm	230 626
6	Elbow screw connection - 1/8"a-1/8"a	1001 079
7	Flow restrictor - Ø 1.4 mm	371 912
8	Connector - NW5, 1/8"i	200 859
9	Protective strip	103 837
10	Hopper cover - complete	1001 648
	Suction tube - complete, L=504 mm (pos. 13, 14 and 15)	**339 130**
13	Suction tube holder (incl. pos. 14)	336 483
14	O-ring - Ø 28.3x1.78 mm	224 987
15	Suction tube	336 491
	Hose feedthrough - complete (incl. pos. 17, 18 and 19)	**1006 049**
17	Hose feedthrough	1006 032
18	O-ring - Ø 16x2 mm	231 517
19	Connection fitting - M16	1006 050
20	Locknut - PG 21	234 869
	Venting tube - complete (pos. 22-28)	**1002 043**
22	Venting tube	375 845
23	O-ring - Ø 38x4 mm	239 151
24	Locknut	342 343
25	Double nipple - 1/8"a-1/8"a	202 258
26	Ball valve - 1/8"i-1/8"i	260 967
27	Throttle valve - 1/8"a-1/8"a	1002 127
28	Connector - NW5-1/8"a	237 272
	Spiral hose - Ø 40/45 mm (not shown)	100 048*

* Please indicate length

OptiSpray F - powder hopper



OptiSpray F - powder hopper