En

Operating instructions and spare parts list

PS
Powder sieve machine

Translation of the original operating instructions

Gema

Documentation PS Powder sieve machine

Printed in Switzerland

Gema Switzerland GmbH
Mövenstrasse 17
9015 St. Gallen
Switzerland

Phone: +41-71-313 83 00
Fax.: +41-71-313 83 83

E-Mail: info@gema.eu.com
Homepage: www.gemapowdercoating.com

Table of contents

General safety regulations

This chapter sets out the fundamental safety regulations that must be followed by the user and third parties using the PS Powder sieve machine.

These safety regulations must be read and understood before the PS Powder sieve machine is used.

Safety symbols (pictograms)

The following warnings with their meanings can be found in the 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 PS Powder sieve machine 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 PS Powder sieve machine is to be used for other purposes or other substances outside of our guidelines then Gema Switzerland 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 PS Powder sieve machine 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 PS Powder sieve machine has been set up and wired according to the guidelines for machinery (2006/42 EG). EN 60204-1 (machine safety) must also be observed.
5. Unauthorized modifications to PS Powder sieve machine exempt 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

PS Powder sieve machine

The PS Powder sieve machine is a component of the system and is thus integrated into the safety system of the plant.

For the use outside of the safety concept, corresponding measures must be taken!

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

About this manual

General information

This operating manual contains all the important information which you require for the working with the PS Powder sieve machine. 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.

Structure and function

PS Powder sieve machine

Field of application

The PS Powder sieve machine is intended exclusively for sieving plastic powder (organic) and enamel powder. 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!

Powder supply

Powder can be fed to the sieve by either powder pumps or pinch valves, according to booth type and customer specifications.

Venting the powder hopper

If an overpressure is created in the powder hopper, the powder can be swirled up and blown back into the hoses and the venting tube of the powder sieve machine.

In order to avoid an overpressure in the powder hopper, it is recommended to vent the powder hopper. For this purpose, an Airmover (for HF-50 Powder hopper) or a retrofit venting set (for HF-100/150/200) can be installed (see therefore the operating manual of the corresponding powder hopper).

Interruption switch

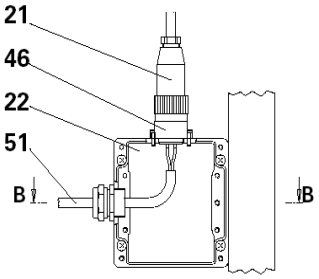
The PS Powder sieve machine can be equipped with an interruption switch, if desired. This interruption switch causes the interrupt of the powder supply and the sieve machine vibration, so that the sieve can be checked for cleanliness or some fresh powder can be refilled, without stopping the whole powder coating process. The sieve cleaning must be carried out during the cleaning of the booth.

It is recommended to prevent this interruption with a separate time relay, to avoid malfunctions during operations. The interruption switch (with separate time relay) switches off the powder supply and the vibration motor for 1 minute (factory setting). This time can be extended to max. 3 minutes, but only after consultation with a Gema service center.

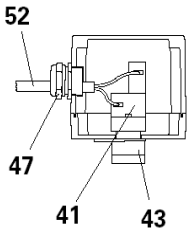
The interruption can be extended for 1 minute before expiring by pressing the yellow button once more.

The PS Powder sieve machines without an interruption switch are provided only with an empty enclosure (with connection cable for sieve vibration motor).

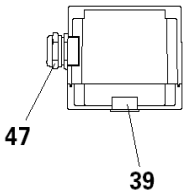
The interruption switch (with separate time relay) can be installed later by the customer, but only after previous consultation with a Gema service center.



Enclosure with vibration motor connection (cross section)



Enclosure with interruption switch (cross section)



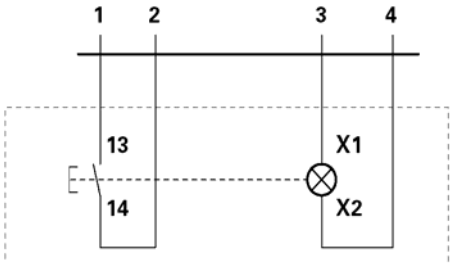
Enclosure without interruption switch (cross section)

21	Motor cable PS 1	43	Illuminated push button - yellow
22	Enclosure	46	Flange socket
39	Blind grommet (enclosure without switch)	47	Lead-through
		51	Cable - vibration motor
41	Illuminated push button lower part	52	Cable - interruption switch

Attention, danger!
Never touch the wires in the enclosure with the bare hand - 400 V!

Attention:
Before starting maintenance work, switch off the powder coating equipment with the main switch!
Maintenance work should be carried out only by trained personnel!

By working on the interrupter switch, great care should be taken not to connect the wrong cable in the switch box, because both cables are grey! The interruption switch cable has 5 leads and operates with 24 VDC. The vibration motor cable has 4 leads and operates with 400 V (see also "Sieve vibration motor"). The interruption switch will be connected as follows:



Wiring diagram - interruption switch

Sieve vibration motor

The sieve vibration motor supports the sieve performance of the powder sieve machine. It runs continually by switching on the powder coating plant, until the whole plant is switched off, or switched to the cleaning operation mode, or until the interruption switch is pressed (see "Interruption switch").

Attention, danger!
Never touch the wires in the enclosure with the bare hand - 400 V!

Attention:
Before starting maintenance work, switch off the powder coating equipment with the main switch!
Maintenance work should be carried out only by trained personnel!

The vibration motor cable is connected to the flange socket as follows:

Flange socket	Wire no.
Contact 1	No. 1
Contact 2	No. 2
Contact 3	No. 3
Contact 4	Grounding (yellow/green)

Attention:
By connecting the engine cable plug, observe the plug coding and never use too much force!

Double sieve with cleaning effect

Double sieves consist of two parts, the wire net with large mesh width on the lower side, and the wire net with fine mesh on the upper side.

Both sieve frames are fitted together, so that the inlying rings can not be lost. By using this filter assistance, the sieve mesh on the lower surface is constantly cleaned and the clogging danger is substantially reduced. According to experience, it is well-known that blockages are caused by the powder accumulation on the lower surface of the sieve.

Technical data

PS Powder sieve machine

Sieve performance

The sieve performance depends on powder type, ageing, grain distribution, machine set-up etc.

Powder sieve machine	PS 2	PS 2-2	PS 4	PS 5
Operation in (recommended)	MRS	MRS	MFR	PZ
Interruption switch	yes	yes		
Input voltage - vibration motor	3x400 V			
Frequency	50 Hz			
Power	50 W			
Powder hopper Ø	Ø 700 mm			
Max. powder container height	742 mm		430 mm	

Sieves

Double sieves	Mesh width
	265 µm
	300 µm
	400 µm
	500 µm
Single sieves	**Mesh width**
	200 µm
	250 µm
	315 µm
	400 µm
	500 µm

Start-up

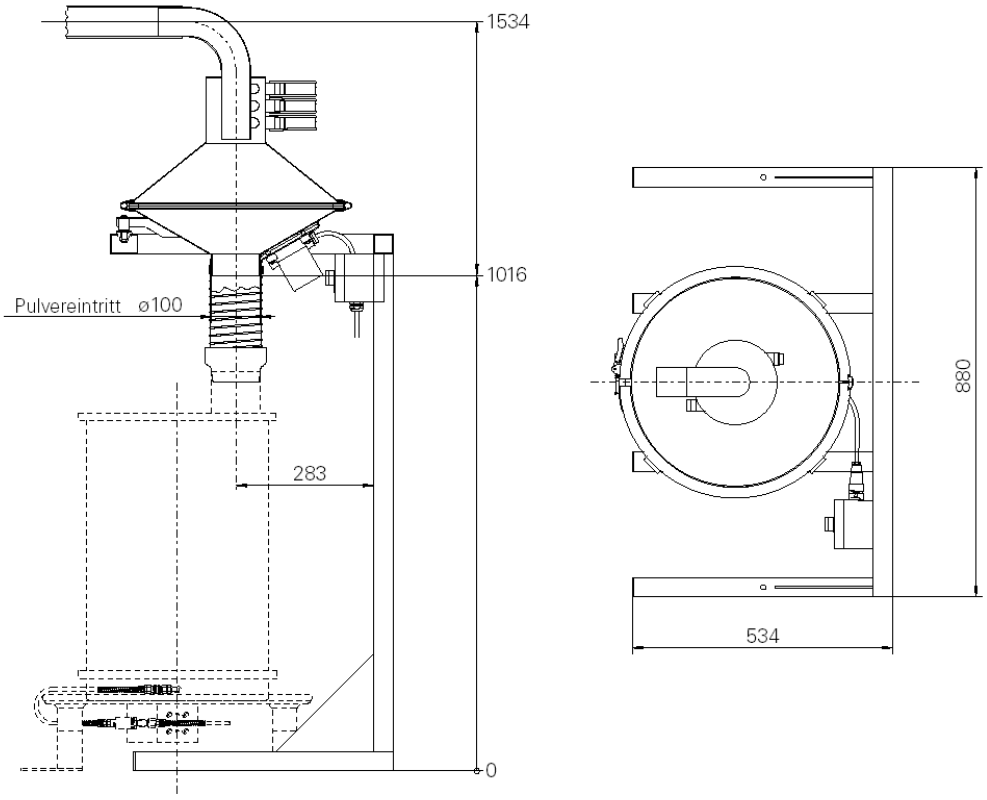
Grounding

Check the booth and the powder center grounding before every start-up. The grounding connection is customer specific and is fitted on the booth basement, on the cyclone and on the powder center housing.

The grounding of the workpieces and the other plant units is also to be strictly observed!

Space requirement

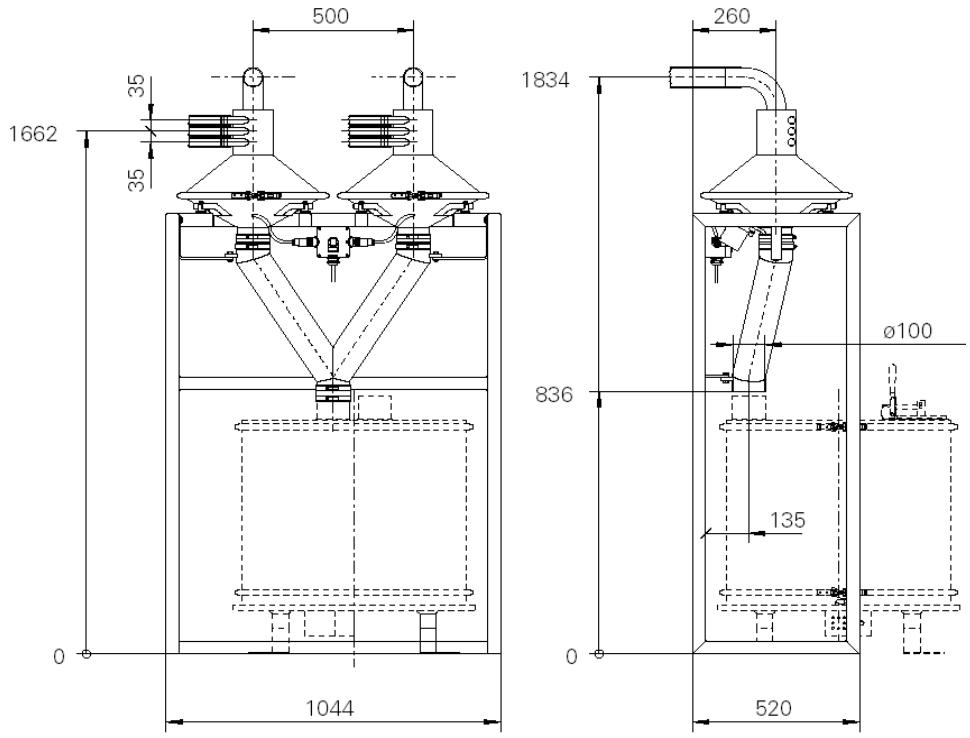
PS 2 Powder sieve machine



PS 2 Powder sieve machine - space requirement

Space requirement

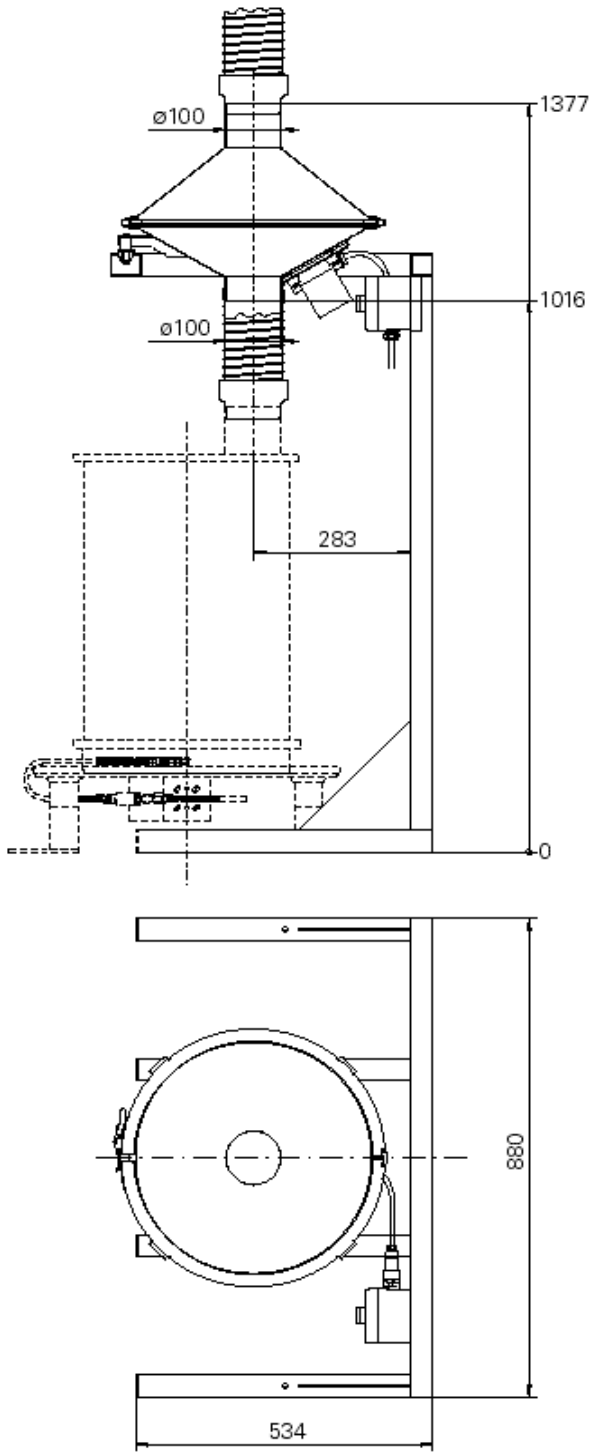
PS 2-2 Powder sieve machine



PS 2-2 Powder sieve machine - space requirement

Space requirement

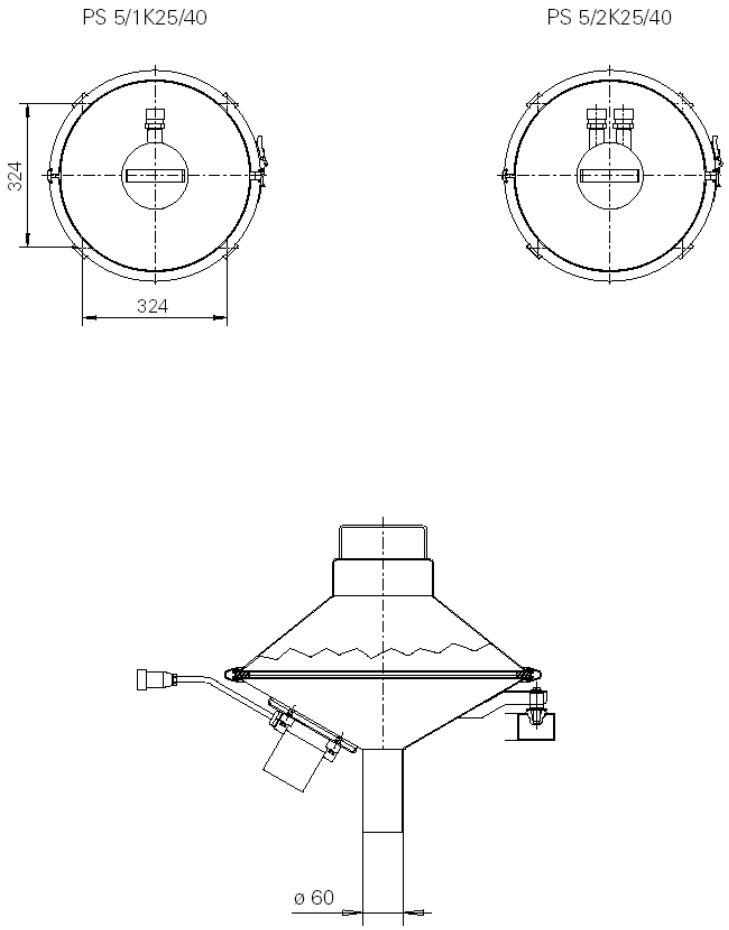
PS 4 Powder sieve machine



PS 4 Powder sieve machine - space requirement

Space requirement

PS 5 Powder sieve machine



PS 5 Powder sieve machine - space requirement

Set-up

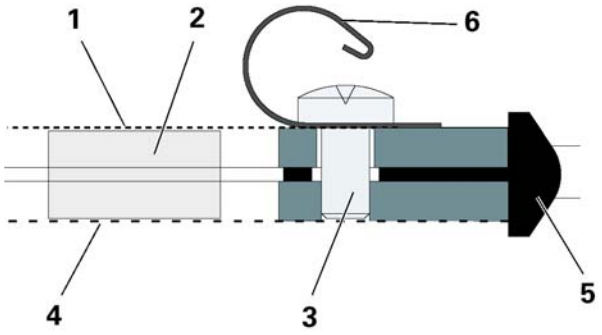
The PS Powder sieve machine must be placed on firm soil (concrete) and fasten with screws (vibration transmission), to obtain an optimal sieve performance. An unsecured sieve machine can vibrate strongly and deliver an up to 20% less sieve performance.

The PS Powder sieve machine must placed as close as possible to the booth or the filter unit/multicyclone, in order to lay out the venting hoses as straight and short as possible. A curvature or a bend can cause powder deposits or degrade the air flow in such a manner, that powder will be deposit in the inside of the hose.

Installing the double sieve insert

In order to obtain the maximum sieve performance of the powder sieve machine, the double sieve insert must be correctly installed. The fine sieve mesh (**1**) must show upwards and the rough sieve mesh (**4**) downwards.

Attention:
Handle the sieve insert carefully, held it on the flange only!



Double sieve components - cross section

1	Sieve mesh (fine)	4	Sieve mesh (rough)
2	Sieve assistance 70x)	5	Gasket (is clamped between the both inserts)
3	Screw	6	Grounding spring

Start-up

Inspection check

Before the booth is switched on, the following points are to be checked:

- No foreign material in the central suction unit of the powder center and in the booth
- The pneumatic conduction and the powder hose must be connected to the dense phase conveyor
- The pneumatic conduction to the After Filter is connected, the filter element door is closed, the refuse container is placed and inserted
- The PS Powder sieve machine is started on the main control cabinet after the switching on of the complete powder coating equipment

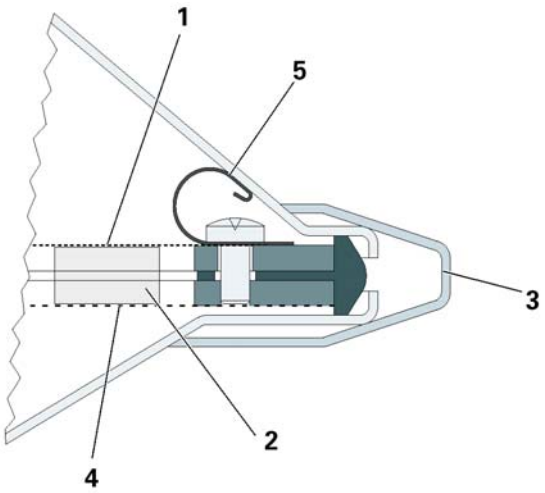
Grounding of the sieve machine

The PS Powder sieve machine must be installed and grounded according to the local safety regulations. All grounding connections must be checked regularly.

Grounding of the sieve insert

The grounding of the sieve insert is done by a grounding spring (**5**) which is grounded by continuous contact with the sieve cover.

Attention:
Take care to install the double sieve correctly!



Grounding of the sieve insert

1	Sieve mesh (fine)	4	Sieve mesh (rough)
2	Sieve assistance 70x)	5	Grounding spring
3	Clamp ring		

Seating of the clamp ring

The clamp ring (**3**) must be checked for properly seating before every start-up. If the clamp ring does not sit correctly, the gasket of the sieve insert can be damaged and the powder can escape into the environment.

Maintenance

General information

Regular and conscientious maintenance increases the service life of the unit and ensures a longer, more constant coating quality!

Contamination removal

To ensure that the powder has the optimum cleanliness, the sieve should be checked every day before starting work or change of shift and cleaned, if necessary.

Daily cleaning of the sieve

1. Switch off the plant on the main control cabinet. By pressing the interruption switch, the vibration motor and the powder supply can be stopped for a short time, see therefore "Structure and function"
2. Unclip the clamp ring, remove the sieve cover and clean with an industrial vacuum cleaner. If a color change takes place, remove the sieve and clean it thoroughly with an industrial vacuum cleaner

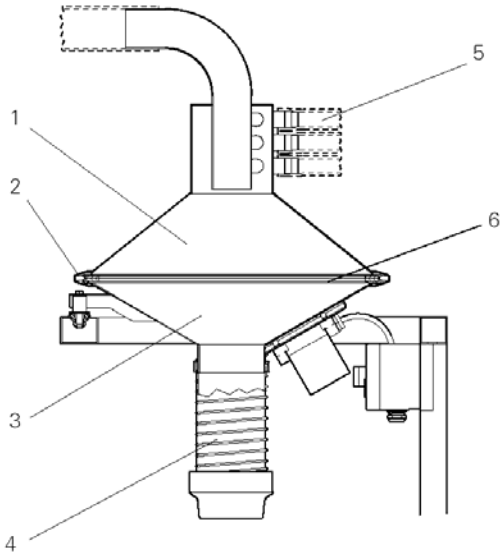
Note:
Do not use compressed air, because the fine sieve mesh can be damaged, if the compressed air stream is too strong! In addition, this can cause powder turbulences and effectuates a powder mixture, if a color change takes place.
However, if compressed air must be used, it should be used with extreme care!

3. The powder deposits on the sieve can now be cleaned with a vacuum cleaner
   - Check the sieve for damage
   - Small holes can be filled with adhesive (i.e. Araldit). Let the adhesive harden before to reinsert the sieve!
4. If heavily contaminated, or if a color change takes place, remove the sieve and clean it thoroughly with an industrial vacuum cleaner

5. Clean both enclosures with an industrial vacuum cleaner and/or with a clean, soft cloth
6. Reinstall the sieve cover, fasten the clamp ring and check the seating of the clamp ring

Attention:
Fit correctly the double sieve insert!
The fine sieve mesh must show upwards!

7. Switch on the powder coating equipment again on the main control cabinet



Powder sieve

1	Sieve cover	4	Connecting hose
2	Clamp ring	5	Hose clamp
3	Sieve base	6	Sieve

Vibration motor

The vibration motor does not require a special maintenance. If the vibration motor must be replaced, make sure that the specifications (mains voltage, mains frequency etc.) are correctly.

Repairs

Repairs must be carried out by trained personnel only!

Only original Gema spare parts are to be used by repairing Gema equipment!

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** PS Powder sieve machine,
  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 given. 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:

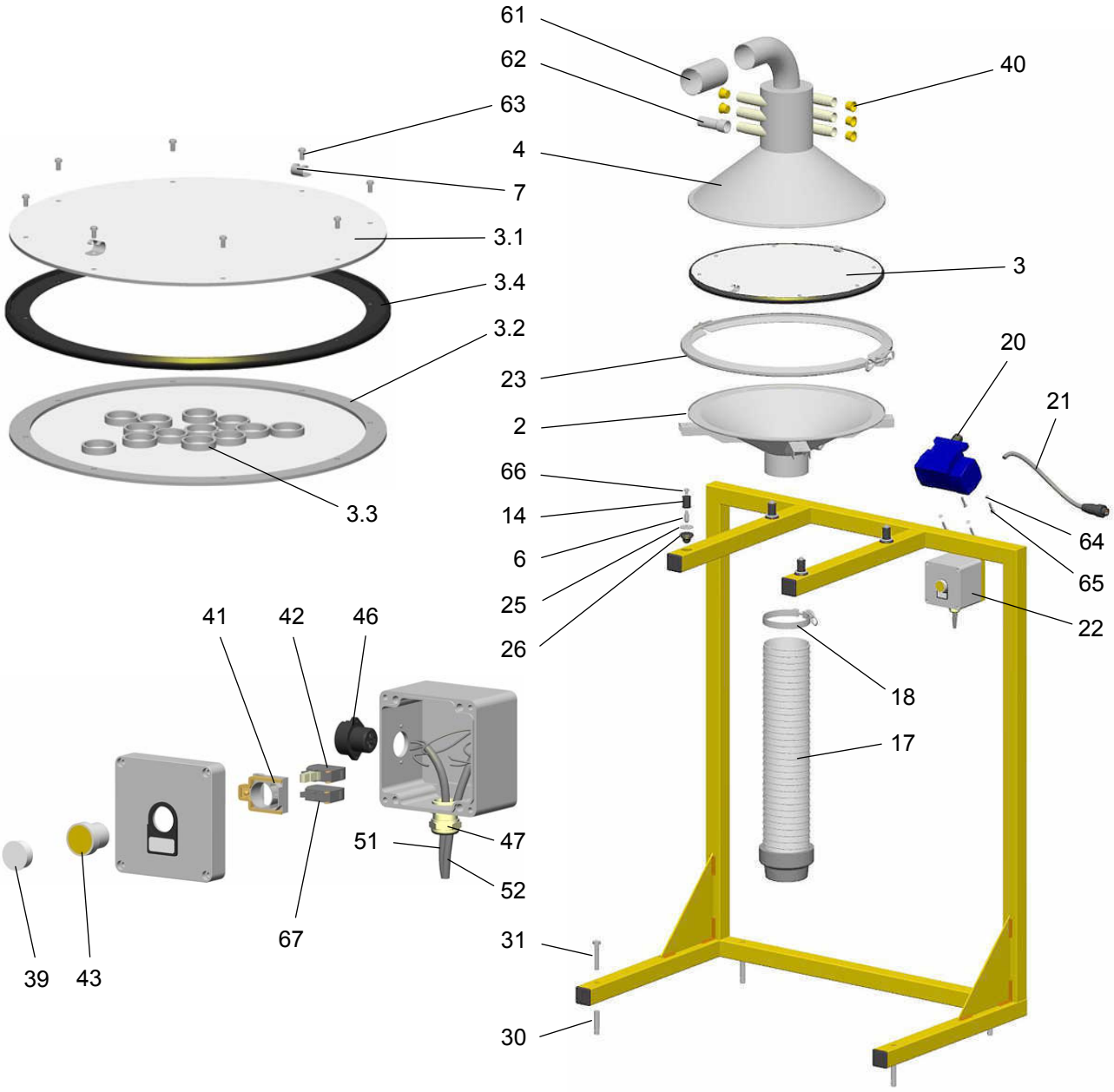
Ø 8/6 mm, 8 mm outside diameter (o/d) / 6 mm inside diameter (i/d)

WARNING!
Only original 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 Gema guarantee conditions!

PS 2 Powder sieve machine - spare parts list

	PS 2 Powder sieve machine, version with interruption switch - complete	348 945
	PS 2 Powder sieve machine, version without interruption switch - complete	374 938
2	Sieve base - Ø 100 mm	388 629
3	Double sieve, 300 µm - complete (standard)	357 740#
	Double sieve, 265 µm - complete	357 758#
	Double sieve, 400 µm - complete	357 731#
	Double sieve, 500 µm - complete	357 723#
	Single sieve, 200 µm - complete (not shown)	355 267#
	Single sieve, 250 µm - complete (not shown)	355 259#
	Single sieve, 315 µm - complete (not shown)	355 240#
	Single sieve, 400 µm - complete (not shown)	355 232#
	Single sieve, 500 µm - complete (not shown)	355 224#
	Single sieve, 750 µm - complete (not shown)	366 064#
3.1	Sieve insert for double sieve - 300 µm (standard)	388 696#
	Sieve insert for double sieve - 265 µm	388 688#
	Sieve insert for double sieve - 400 µm	388 718#
	Sieve insert for double sieve - 500 µm	388 726#
3.2	Mesh support for double sieve	388 653#
3.3	Sieve assistance for double sieve	357 669#
3.4	Gasket	388 750#
4	Sieve cover	385 980
6	Bolt	347 108
7	Grounding spring	388 742
14	Rubber damper - Ø 20x25 mm	237 051
17	Connecting hose - L=500 mm	359 602
18	Quick release clamp	236 101
20	Vibrator motor - HV 0,4/2 - 380 V	241 776
21	Motor cable PS 1	347 183
22	Enclosure	372 455
23	Clamp ring	369 969
25	Washer - Ø 7/30x2 mm	243 922
26	Grommet - Ø 12/18 mm	243 914
30	Steel bolt dowel - M10x55 mm	216 160
31	Hexagon screw - M10x60 mm	214 167
39	Blind grommet (version without interruption switch)	208 191
40	Blind grommet	252 891
41	Fixing flange (version with interruption switch)	268 240

PS 2 Powder sieve machine - spare parts



PS 2 Powder sieve machine - spare parts

PS 2 Powder sieve machine - spare parts

42	LED module - yellow, 24 V (version with interruption switch)	1000 532
43	Illuminated push button - yellow (version with interruption switch)	268 976
46	Flange socket - 4 pins, with socket	205 249
47	Lead-through - PG16/2, brass (version with interruption switch)	204 374
	Lead-through - PG16, brass (version with interruption switch)	204 366
51	Cable - 4x1 mm²	100 579*
52	Cable - 5x1 mm² (version with interruption switch)	254 711*
61	Plastic hose - Ø 60 mm	103 802*
62	Plastic hose - Ø 30/22 mm	103 780*
63	Cap screw - M5x10 mm	241 849
64	Lock washer - M5	205 168
65	Hexagon screw - M5x25 mm	243 809
66	Cap screw - M6x8 mm	251 364
67	Auxiliary switch (normally open contact/maker)	267 791

PS 2-2 Powder sieve machine - spare parts list

	PS 2-2 Powder sieve machine, version with interruption switch - complete	370 231
	PS 2-2 Powder sieve machine, version without interruption switch - complete	374 989
1	Enclosure	372 447
2	Sieve cover	385 980
3	Sieve base - Ø 100 mm	388 629
4	Double sieve, 300 µm - complete (standard)	357 740#
	Double sieve, 265 µm - complete	357 758#
	Double sieve, 400 µm - complete	357 731#
	Double sieve, 500 µm - complete	357 723#
	Single sieve, 200 µm - complete (not shown)	355 267#
	Single sieve, 250 µm - complete (not shown)	355 259#
	Single sieve, 315 µm - complete (not shown)	355 240#
	Single sieve, 400 µm - complete (not shown)	355 232#
	Single sieve, 500 µm - complete (not shown)	355 224#
	Single sieve, 750 µm - complete (not shown)	366 064#
4.1	Sieve insert for double sieve - 300 µm (standard)	388 696#
	Sieve insert for double sieve - 265 µm	388 688#
	Sieve insert for double sieve - 400 µm	388 718#
	Sieve insert for double sieve - 500 µm	388 726#
4.2	Mesh support for double sieve	388 653#
4.3	Sieve assistance for double sieve	357 669#
4.4	Gasket	388 750#
6	Connecting tube	370 207
7	Bolt	347 108
8	Grounding spring	388 742
11	Motor cable PS 1	347 183
13	Rubber sleeve	370 380
14	Clamp ring	369 969
21	Hexagon screw - M10x60 mm	214 167
33	Steel bolt dowel - M10x55 mm	216 160
41	Vibrator motor - HV 0,4/2 - 380 V	241 776
42	Fixing flange (version with interruption switch)	268 240
43	LED module - yellow, 24 V (version with interruption switch)	1000 532
44	Illuminated push button - yellow (version with interruption switch)	268 976
47	Flange socket - 4 pins, with socket	205 249
48	Lead-through - PG16/2, brass (version with interruption switch)	204 374
	Lead-through - PG16, brass (version with interruption switch)	204 366
50	Blind grommet (version without interruption switch)	208 191

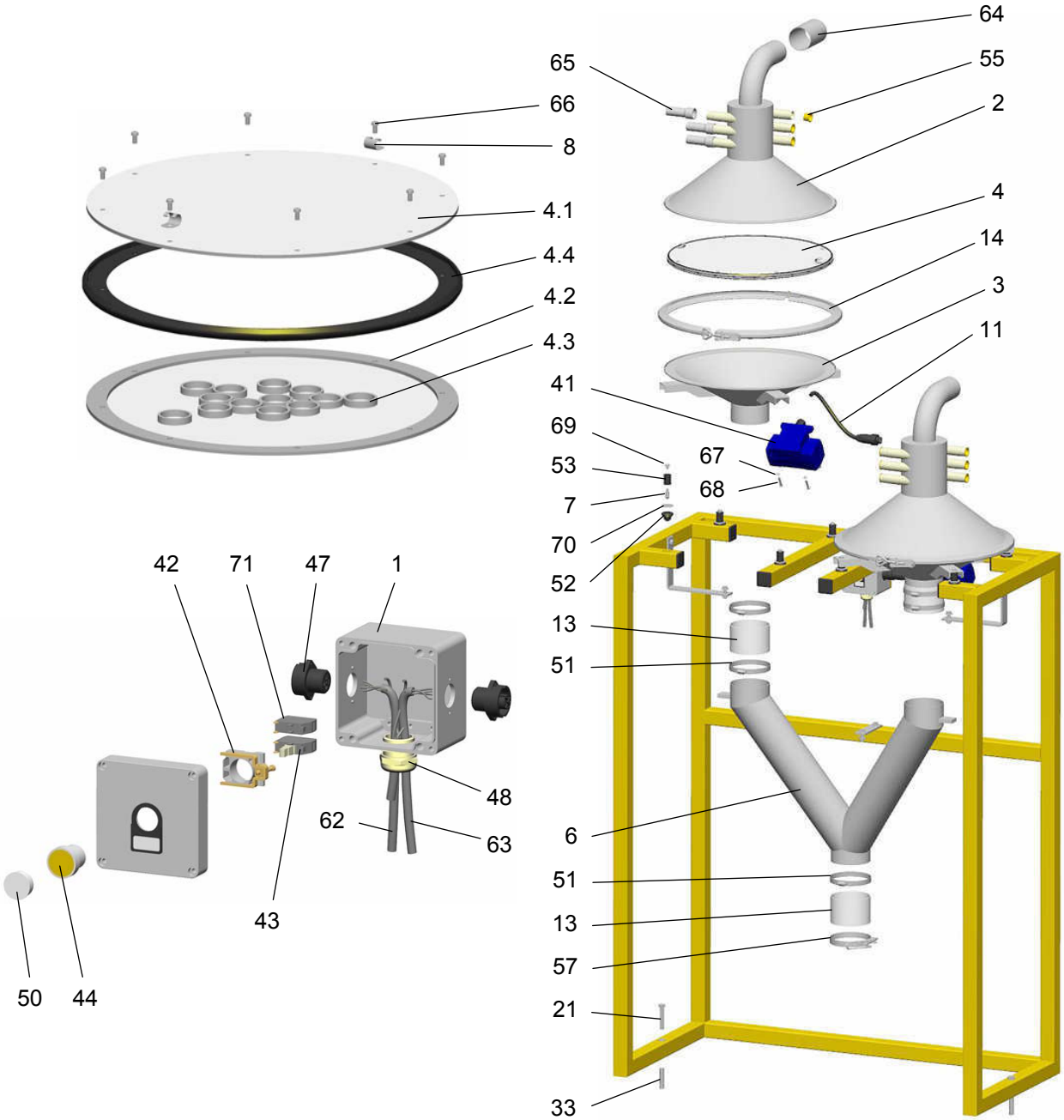
PS 2-2 Powder sieve machine - spare parts list

51	Hose clamp - 90-120 mm	211 125
52	Grommet - Ø 12/18 mm	243 914
53	Rubber damper - Ø 20x25 mm	237 051
55	Blind grommet	252 891
57	Quick release clamp	236 101
62	Cable - 4x1 mm² (version without interruption switch)	100 579*****
63	Cable - 5x1 mm² (version with interruption switch)	254 711*****
64	Plastic hose - Ø 60 mm	103 802*****
65	Plastic hose - Ø 30/22 mm	103 780*****
66	Cap screw - M5x10 mm	241 849
67	Lock washer - M5	205 168
68	Hexagon screw - M5x25 mm	243 809
69	Cap screw - M6x8 mm	251 364
70	Washer - Ø 7/30x2 mm	243 922
71	Auxiliary switch (normally open contact/maker)	267 791

Wearing part

***** Please indicate length

PS 2-2 Powder sieve machine - spare parts



PS 2-2 Powder sieve machine - spare parts

PS 4 Powder sieve machine - spare parts list

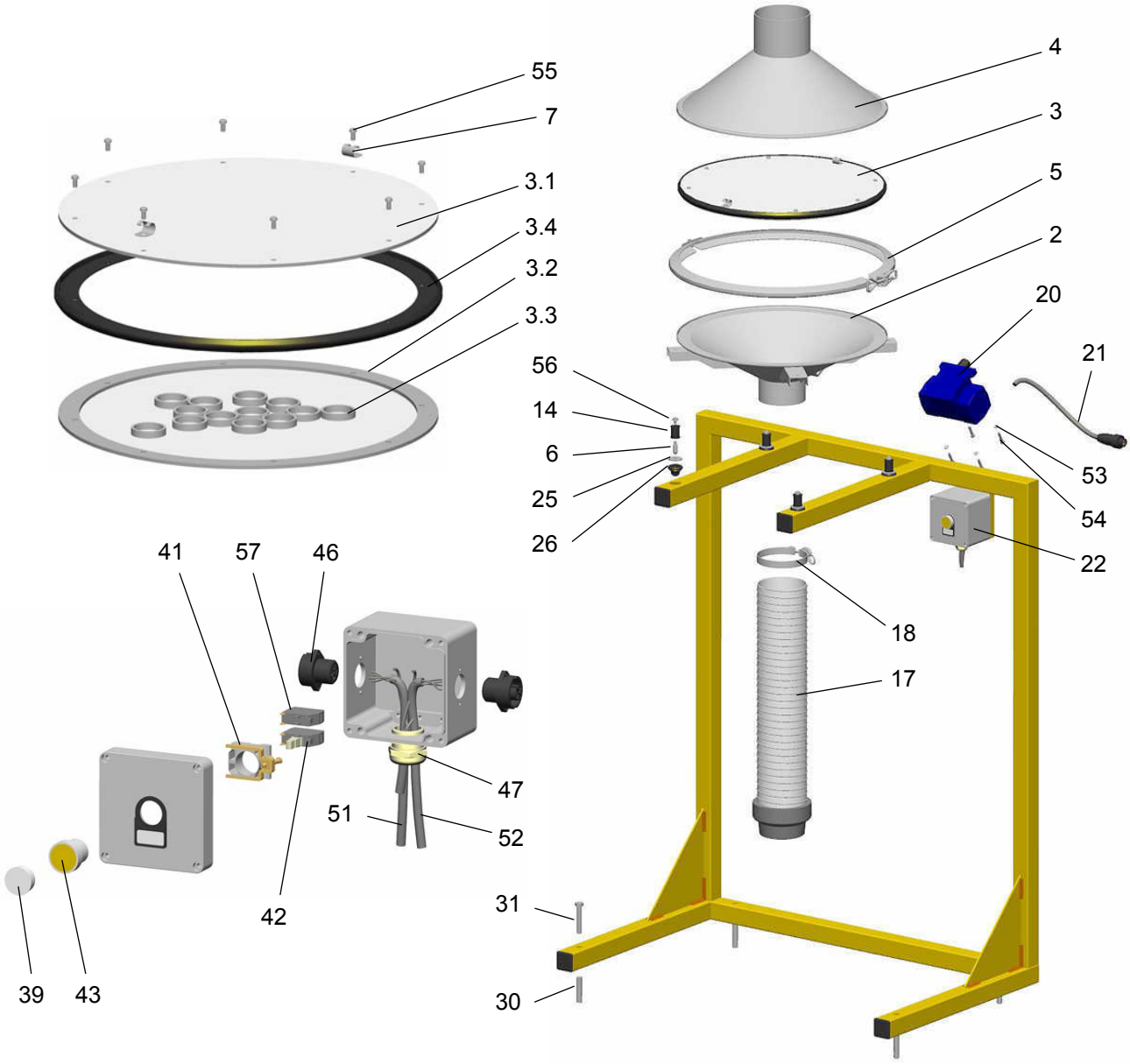
	PS 4 Powder sieve machine, version with interruption switch - complete	349 534
	PS 4 Powder sieve machine, version without interruption switch - complete	374 970
2	Sieve base - Ø 100 mm	388 629
3	Double sieve, 300 µm - complete (standard)	357 740#
	Double sieve, 265 µm - complete	357 758#
	Double sieve, 400 µm - complete	357 731#
	Double sieve, 500 µm - complete	357 723#
	Single sieve, 200 µm - complete (not shown)	355 267#
	Single sieve, 250 µm - complete (not shown)	355 259#
	Single sieve, 315 µm - complete (not shown)	355 240#
	Single sieve, 400 µm - complete (not shown)	355 232#
	Single sieve, 500 µm - complete (not shown)	355 224#
	Single sieve, 750 µm - complete (not shown)	366 064#
3.1	Sieve insert for double sieve - 300 µm (standard)	388 696#
	Sieve insert for double sieve - 265 µm	388 688#
	Sieve insert for double sieve - 400 µm	388 718#
	Sieve insert for double sieve - 500 µm	388 726#
3.2	Mesh support for double sieve	388 653#
3.3	Sieve assistance for double sieve	357 669#
3.4	Gasket	388 750#
4	Sieve cover - Ø 100 mm	370 509
5	Clamp ring	369 969
6	Bolt	347 108
7	Grounding spring	388 742
14	Rubber damper - Ø 20x25 mm	237 051
17	Connecting hose - L=550 mm	359 602
18	Quick release clamp	236 101
20	Vibrator motor - HV 0,4/2 - 380 V	241 776
21	Motor cable PS 1	347 183
22	Enclosure	372 455
25	Washer - Ø 7/30x2 mm	243 922
26	Grommet - Ø 12/18 mm	243 914
30	Steel bolt dowel - M10x55 mm	216 160
31	Hexagon screw - M10x60 mm	214 167
39	Blind grommet (version without interruption switch)	208 191
41	Fixing flange (version with interruption switch)	268 240
42	LED module - yellow, 24 V (version with interruption switch)	1000 532
43	Illuminated push button - yellow (version with interruption switch)	268 976

PS 4 Powder sieve machine - spare parts

46	Flange socket - 4 pins, with socket	205 249
47	Lead-through - PG16/2, brass (version with interruption switch)	204 374
	Lead-through - PG16, brass (version with interruption switch)	204 366
51	Cable - 4x1 mm²	100 579*
52	Cable - 5x1 mm² (version with interruption switch)	254 711*
53	Lock washer - M5	205 168
54	Hexagon screw - M5x25 mm	243 809
55	Cap screw - M5x10 mm	241 849
56	Cap screw - M6x8 mm	251 364
57	Auxiliary switch (normally open contact/maker)	267 791

Wearing part

* Please indicate length

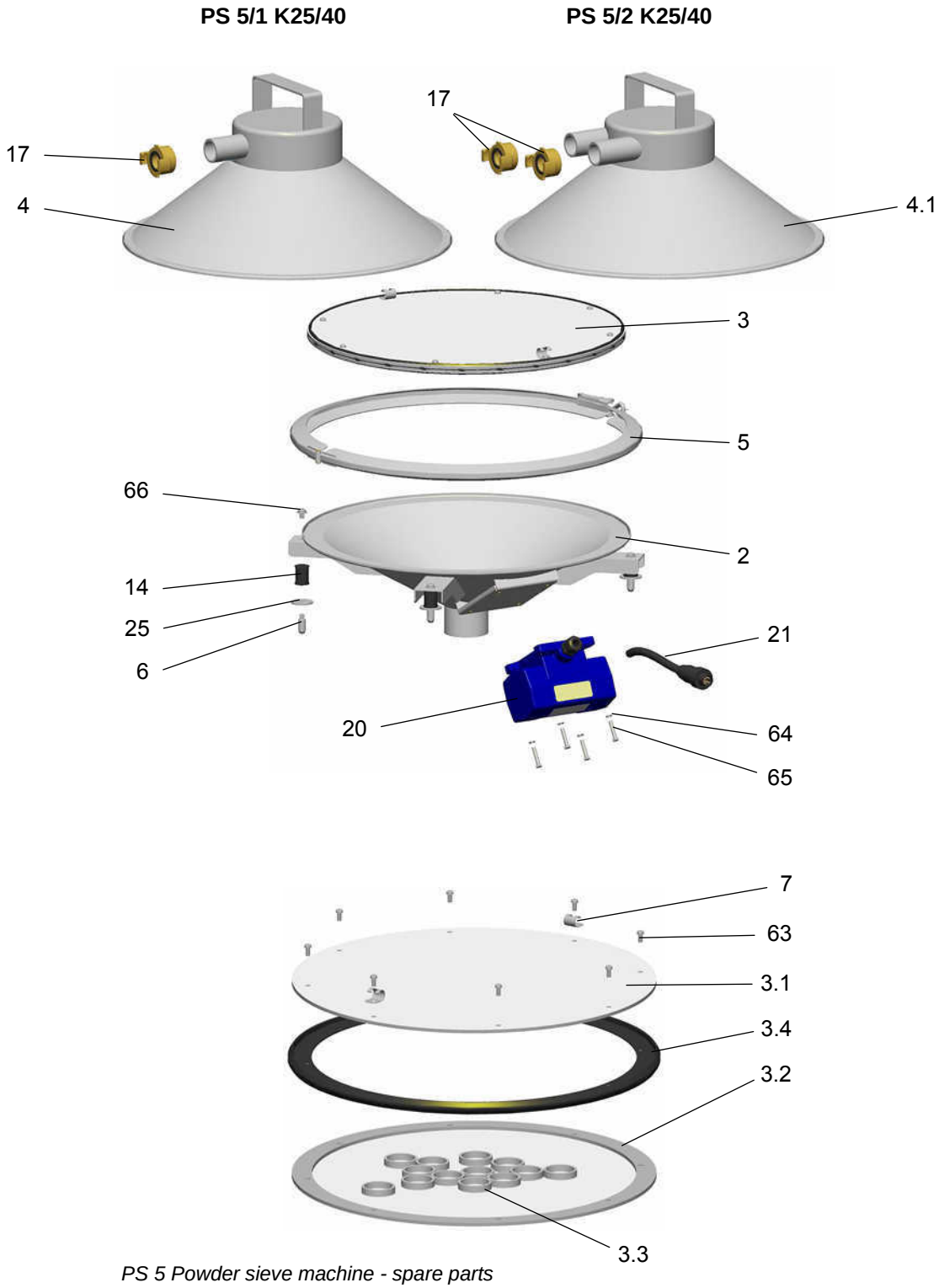


PS 5 Powder sieve machine - spare parts list

	Powder sieve machine PS 5/1 K25/60 - complete	388 831
	Powder sieve machine PS 5/2 K25/60 - complete	388 840
2	Sieve base - Ø 60 mm	388 610
3	Double sieve, 300 µm - complete (standard)	357 740#
	Double sieve, 265 µm - complete	357 758#
	Double sieve, 400 µm - complete	357 731#
	Double sieve, 500 µm - complete	357 723#
	Single sieve, 200 µm - complete (not shown)	355 267#
	Single sieve, 250 µm - complete (not shown)	355 259#
	Single sieve, 315 µm - complete (not shown)	355 240#
	Single sieve, 400 µm - complete (not shown)	355 232#
	Single sieve, 500 µm - complete (not shown)	355 224#
	Single sieve, 750 µm - complete (not shown)	366 064#
3.1	Sieve insert for double sieve - 300 µm (standard)	388 696#
	Sieve insert for double sieve - 265 µm	388 688#
	Sieve insert for double sieve - 400 µm	388 718#
	Sieve insert for double sieve - 500 µm	388 726#
3.2	Mesh support for double sieve	388 653#
3.3	Sieve assistance for double sieve	357 669#
3.4	Gasket	388 750#
4	Sieve cover - PS 5/1 K25	371 564
4.1	Sieve cover - PS 5/2 K25	375 012
5	Clamp ring	369 969
6	Bolt	347 108
7	Grounding spring	388 742
14	Rubber damper - Ø 20x25 mm	237 051
17	GK coupling	1000 854
20	Vibrator motor - HV 0,4/2 - 380 V	241 776
21	Motor cable PS 1	347 183
25	Washer - Ø 7/30x2 mm	243 922
63	Cap screw - M5x10 mm	241 849
64	Lock washer - M5	205 168
65	Hexagon screw - M5x25 mm	243 809
66	Cap screw - M6x8 mm	251 364

Wearing part

PS 5 Powder sieve machine - spare parts



PS 5 Powder sieve machine - spare parts