Speedking Powder Recycle System

Manual P/N 768 645 A
– English –

NORDSON (UK) LIMITED D STOCKPORT D UK

CE

Order number
P/N = Order number for Nordson products

Declaration of Conformity
98/37/EC
73/23/EEC

We,

Nordson (U.K.) Limited

of

Ashurst Drive, Cheadle Heath, Stockport, Cheshire, SK3 0RY, United Kingdom

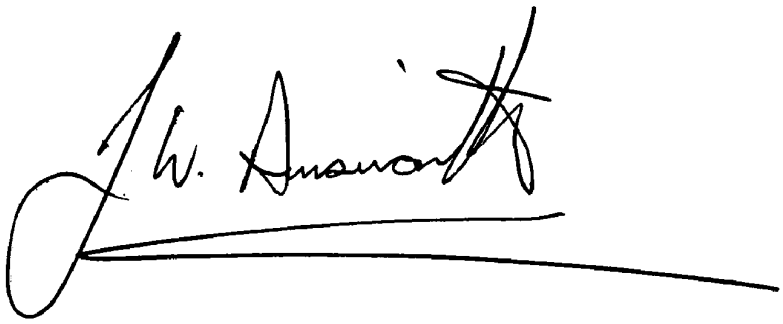
declare that under our sole responsibility for supply/manufacture of the product(s)

Product Name	Speedking Powder Recovery System
Model Number(s)	All
Product Options	All

to which this declaration relates, is in conformity with the following standards and other normative documents

Safety	BS EN 292:1991 "Safety of machinery – Basic concepts, general principles for design"

following the provisions of 98/37/EC and 73/23/EEC Directives



Jim Ainsworth
Engineering Director

Nordson (U.K.) Ltd., 1st January 2002

NB ref EN45014 (BS7514)

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Congratulations on the Purchase of Your Nordson Product

Nordson equipment is engineered and manufactured in accordance with strict specifications, using high quality components and state−of−the−art technologies that assure reliable, long−term performance. Your product was thoroughly tested for proper operation prior to shipment.

Before unpacking and installing your new equipment, please read this manual. It is your guide to safe installation, productive operation and effective maintenance. We recommend that you keep the manual available for future reference.

Your Safety is Important to Nordson

Carefully read the *Safety* section. Your product is designed for safe operation when used according to the published instructions. Potential hazards exist when operating instructions are not followed.

Manufacturer of Equipment

Nordson (U.K.) Ltd.
Ashurst Drive
Cheadle Heath
Stockport
England
SK3 0RY

Telephone: 0044 (0) 161−495−4200
Fax: 0044 (0) 161−428−6716

For a list of local Nordson organisations, see *Nordson International*.

Nordson International

Europe

Country		Phone	Fax
Austria		43-1-707 5521	43-1-707 5517
Belgium		31-13-511 8700	31-13-511 3995
Czech Republic		4205-4159 2411	4205-4124 4971
Denmark	*Hot Melt*	45-43-66 0123	45-43-64 1101
	Finishing	45-43-66 1133	45-43-66 1123
Finland		358-9-530 8080	358-9-530 80850
France		33-1-6412 1400	33-1-6412 1401
Germany	*Erkrath*	49-211-92050	49-211-254 658
	Lüneburg	49-4131-8940	49-4131-894 149
	Düsseldorf - Nordson UV	49-211-3613 169	49-211-3613 527
Italy		39-02-904 691	39-02-9078 2485
Netherlands		31-13-511 8700	31-13-511 3995
Norway	*Hot Melt*	47-23 03 6160	47-22 68 3636
	Finishing	47-22-65 6100	47-22-65 8858
Poland		48-22-836 4495	48-22-836 7042
Portugal		351-22-961 9400	351-22-961 9409
Russia		7-812-11 86 263	7-812-11 86 263
Slovak Republic		4205-4159 2411	4205-4124 4971
Spain		34-96-313 2090	34-96-313 2244
Sweden	*Hot Melt*	46-40-680 1700	46-40-932 882
	Finishing	46 (0) 303 66950	46 (0) 303 66959
Switzerland		41-61-411 3838	41-61-411 3818
United Kingdom	*Hot Melt*	44-1844-26 4500	44-1844-21 5358
	Finishing	44-161-495 4200	44-161-428 6716
	Nordson UV	44-1753-558 000	44-1753-558 100

Distributors in Eastern & Southern Europe

DED, Germany	49-211-92050	49-211-254 658

Outside Europe / Hors d'Europe / Fuera de Europa

- For your nearest Nordson office outside Europe, contact the Nordson offices below for detailed information.
- Pour toutes informations sur représentations de Nordson dans votre pays, veuillez contacter l'un de bureaux ci-dessous.
- Para obtener la dirección de la oficina correspondiente, por favor diríjase a unas de las oficinas principales que siguen abajo.

Contact Nordson		Phone	Fax
Africa / Middle East			
DED, Germany		49-211-92050	49-211-254 658
Asia / Australia / Latin America			
Pacific South Division, USA		1-440-988-9411	1-440-985-3710
Japan			
Japan		81-3-5762 2700	81-3-5762 2701
North America			
Canada		1-905-475 6730	1-905-475 8821
USA	*Hot Melt*	1-770-497 3400	1-770-497 3500
	Finishing	1-440-988 9411	1-440-985 1417
	Nordson UV	1-440-985 4592	1-440-985 4593

Section 1

Safety

Section 1
Safety

1. Introduction

Read and follow these safety instructions. Task and equipment specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to all persons operating or servicing equipment.

2. Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

3. Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

4. Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

5. Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing any moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- While operating manual electrostatic spray guns, make sure you are grounded. Wear electrically conductive gloves or a grounding strap connected to the gun handle or other true earth ground. Do not wear or carry metallic objects such as jewelry or tools.
- If you receive even a slight electrical shock, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.
- Obtain and read Material Safety Data Sheets (MSDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

6. Fire Safety

To avoid a fire or explosion, follow these instructions.

- Ground all conductive equipment in the spray area. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one mega–ohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored.
- Provide adequate ventilation to prevent dangerous concentrations of volatile materials or vapors. Refer to local codes or your material MSDS for guidance.
- Do not disconnect live electrical circuits while working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

7. Action in the Event of a Malfunction

If a system or any equipment in a system malfunctions, shut off the system immediately and perform the following steps:

- Disconnect and lock out electrical power. Close pneumatic shutoff valves and relieve pressures.
- Identify the reason for the malfunction and correct it before restarting the equipment.

8. Disposal

Dispose of equipment and materials used in operation and servicing according to local codes.

Section 2

Description

Section 2
Description

1. Intended Use

To recycle powder recovered by the cyclone to the Powder Feed Centre.

2. Functional Principle

Speedking coating booths are equipped with powder recycle equipment of a high technical standard. The powder discharged from the cyclone (1) passes through a sieving device (6) into a surge hopper (2) and is transported to the Powder Feed Centre (5) via a pinch valve, solid phase transfer system.

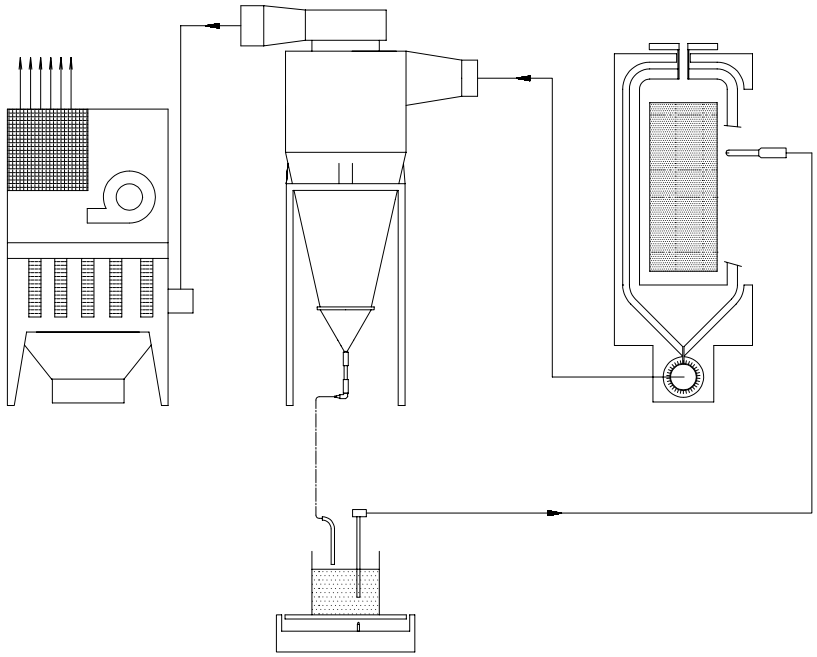

Fig. 2-1 Speedking Recycle System

2. Functional Principle
(contd.)

The surge hopper (2) is clamped by air cylinder operated through a hand lever valve. A frame with a laid-in sieve frame (6) (coarse mesh) is clamped between the surge hopper flange and the cyclone flange. A vibrating motor assists the powder passing through the mesh into the surge hopper. The powder recirculation pump is triggered by PLC control and the individual control times are tuned in correspondance with each installation. During colour changes, the recovered powder hose connector (4) is plugged and locked into the purge manifold for cleaning. The powder recirculation components are then cleaned with compressed air (powder tube and powder pinch valve pump).

Section 3

Installation

Section 3
Installation

WARNING: Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

1. Installation Components/ Delivery Content

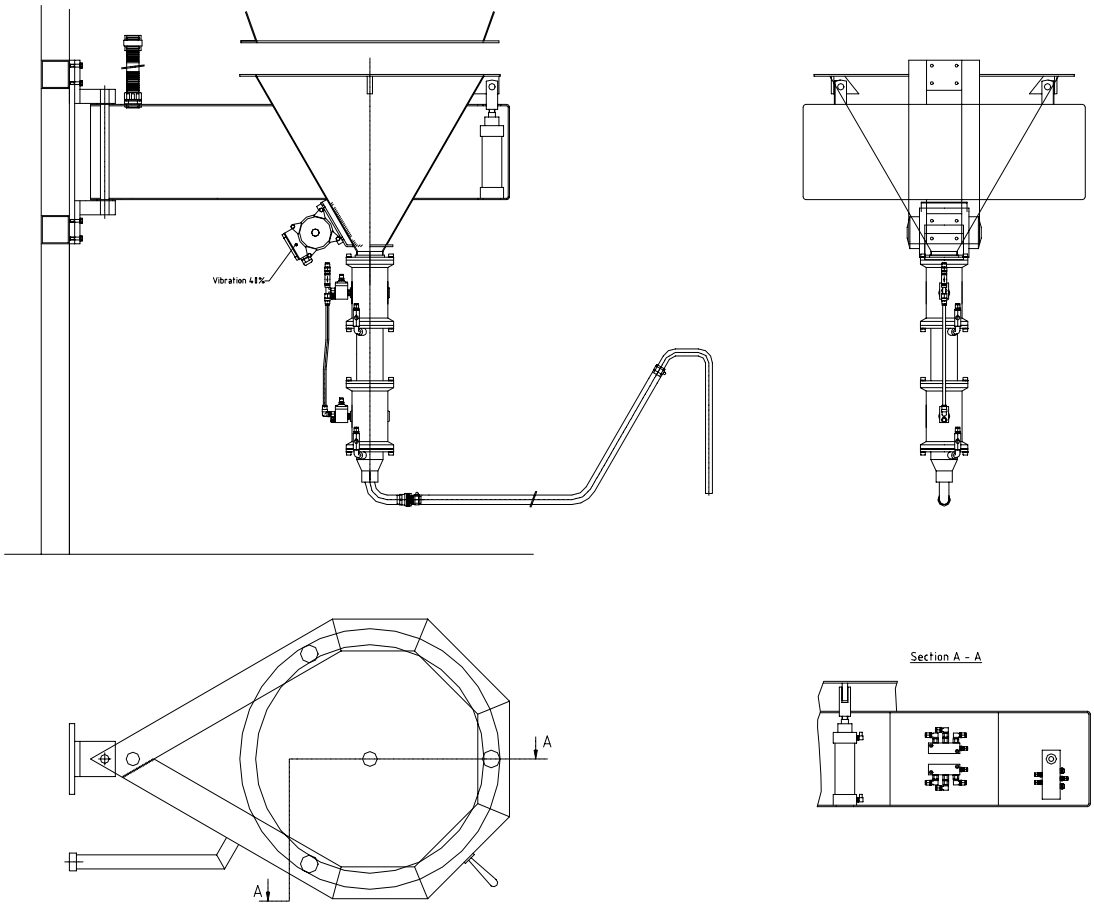

Fig. 3-1 Speedking Sieve and Pinch Valve Assembly

1 Swivelling frame
2 Surge hopper
3 Vibration motor
4 Limit stop
5 Powder pinch valve pump
6 Transfer Hose
7 Transfer bend

Section 4

Operation

Section 4
Operation

1. Collection Surge Hopper with Sieve

During Operation, the collecting surge hopper is clamped pneumatically against the cyclone end flange.

WARNING: Frame with coarse sieve, surge hopper and cyclone end flange must close tightly (seals prevent air leaks).

During the cleaning procedure, the surge hopper is driven downwards by actuating the hand lever valve (push lever downwards).

The frame with coarse sieve may now be swiveled and cleaned by using a compressed air gun.

The surge hopper stays below the cyclone end, until the powder pinch valve pump cleaning procedure is finished.

After then, the residual powder in the surge hopper is blown off.

After completion of these jobs, the frame with coarse sieve is again rotated in (to limit stop) and the hand lever valve is pushed upwards. Thus, the complete surge hopper system is locking at the cyclone end flange.

WARNING: trapping danger ! The sieve has to be held with one hand, while the other hand actuates the hand lever valve.

2. Powder Pump Valve Pump and Recycle Tube

The pinch valves recycle recycle the powder recovered by the cyclone to the supply container. The valve sequence operation is illustrated in fig 4.1 The sequence is as follows:

- The top valve opens with the bottom valve closed.
- Powder falls into the space between the valves and the top valve is closed.
- The bottom valve is then open and 0.5 secs later, the Push air is actuated.
- The bottom valve shuts after a set time and the sequence repeats.

The transport air is continuously switched on during operation and serves as transport and supply aid to keep the transfer hose as clear as possible.

During the cleaning process of the powder pinch valve pump, the squeezing valves open automatically and can be cleaned by air strokes.

The powder pinch valve pump is ready for the next job after the cleaning cycle.

WARNING: The exit piece of the powder recirculation tube must show a perceptible continous overpressure during operation.

See the next picture regarding functional principle and operating positions.

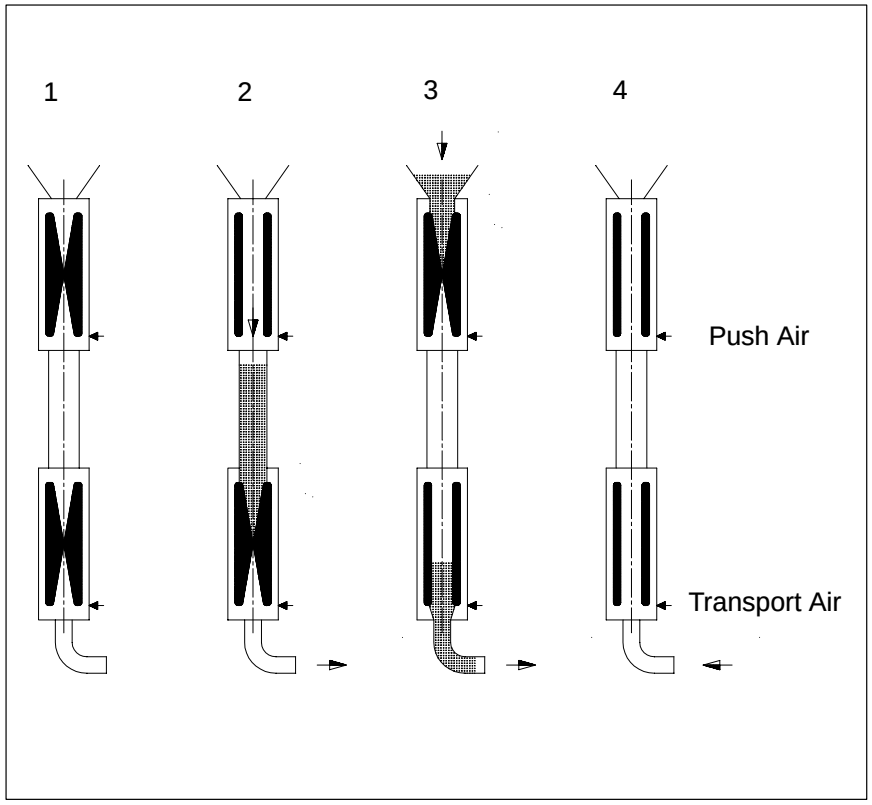

Fig. 4-1 Pinch Valve Operation

1. Basic position (when installation is switched ON)
2. Filling position
3. Transport position
4. Cleaning position

3. Operation Procedure

Cleaning the Powder Pump (cyclone cone has to be lowered

Plug recirculation connection onto blow-off nose piece and lock with lever!

Cleaning On

OP7 → A ***ON*** → B ***DAR*** or ***BRI >>*** → D1 PP ***ON***

S Switching to stand-by after the program sequence.

Cleaning of the powder pump during the color change process

Switch on installation at operation panel

OP7 → A ***ON***

Prepare cleaning process

OP7 → B O.S. → C Clean ***ON***

(Speedking cleaning process is working)

The display shows picture G Booth cleaning

If the cleaning frame reaches the reverse point, switch off the powder pump:

OP7 → G PP ***OFF***

Plug recirculation connection onto blow-off nose piece and lock with lever!

Cleaning the Powder Pump

OP7 → G PP ***CLEAN***

The Powder Pump (integrated into the color change procedure process) may be cleaned now. After this process, the program is ready

OP7 → B

Section 5

Maintenance

Section 5
Maintenance

WARNING: Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

1. Daily

- Clean down Surge Hopper with air lance, remove any impact fused powder using solvent. Do not scratch or scrapped the powder off.
- Check Pinch Valve operation and clear any obstructions.

2. After 5000 – 8000 Operation Hours

- Replace Pinch Valve membrane.
- Check and clean all operational components, Replace/repair were necessary.

Section 6

Parts

Section 6
Parts

1. Introduction

To order parts, call the Nordson Customer Service Center or your local Nordson representative. Use this five-column parts list, and the accompanying illustration, to describe and locate parts correctly.

Using the Illustrated Parts List

Numbers in the Item column correspond to numbers that identify parts in illustrations following each parts list. The code NS (not shown) indicates that a listed part is not illustrated. A dash (—) is used when the part number applies to all parts in the illustration.

The six-digit number in the Part column is the Nordson Corporation part number. A series of dashes in this column (- - - - - -) means the part cannot be ordered separately.

The Description column gives the part name, as well as its dimensions and other characteristics when appropriate. Indentions show the relationships between assemblies, subassemblies, and parts.

Item	Part	Description	Quantity	Note
—	000 000	Assembly	1	
1	000 000	S Subassembly	2	A
2	000 000	S S Part	1	

- S If you order the assembly, items 1 and 2 will be included.
- S If you order item 1, item 2 will be included.
- S If you order item 2, you will receive item 2 only.

The number in the Quantity column is the quantity required per unit, assembly, or subassembly. The code AR (As Required) is used if the part number is a bulk item ordered in quantities or if the quantity per assembly depends on the product version or model.

Letters in the Note column refer to notes at the end of each parts list. Notes contain important information about usage and ordering. Special attention should be given to notes.

2. Spare Parts

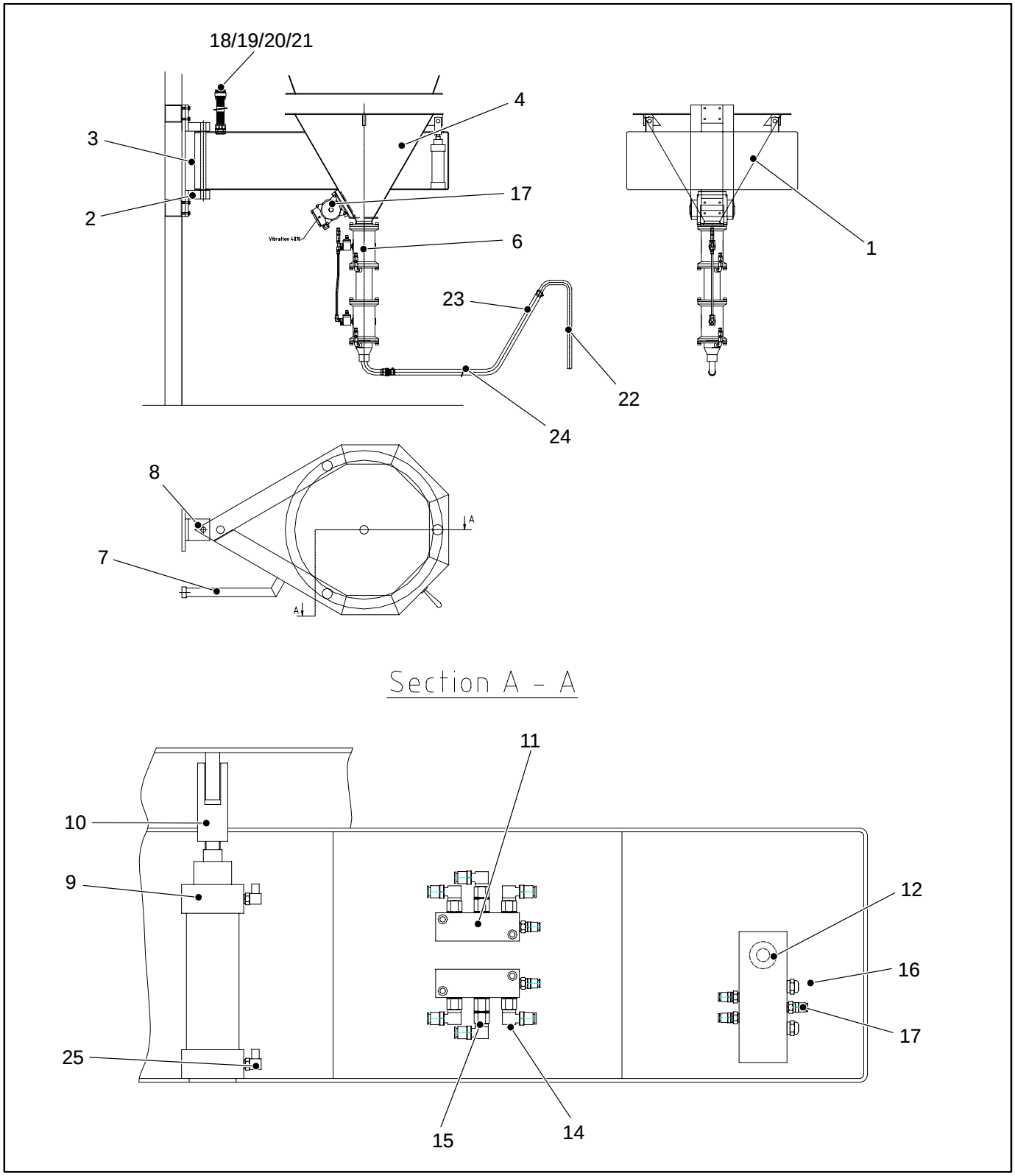

Fig. 6-1 Parts illustration of Speedking Recycle System

Item	Description	Quantity	648-P4	648-P6	756-P4	756-P6
-	Powder Recycle System	-	736 020			
1	S Swivelling frame	1	2200152	2200152	2200151	2200151
2	S Swivelling bearing	2	2200156	2200156	2200156	2200156
3	S Plate	1	2200155	2200155	2200155	2200155
4	S Surge hopper	1	2200134	2200157	2200132	2200132
6	S Pinch valve pump	1	2200099	2200097	2200099	2200097
7	S Limit stop	1	2200144	2200144	2200144	2200144
8	S Flange bush	2	9300207	9300207	9300207	9300207
9	S Cylinder	3	9200303	9200303	9200303	9200303
10	S Clevis pin	3	9200505	9200505	9200505	9200505
11	S Distributor	2	9200606	9200606	9200606	9200606
12	S Hand lever valve	1	9200199	9200199	9200199	9200199
13	S Fitting	5	9200126	9200126	9200126	9200126
14	S Fitting	6	9200097	9200097	9200097	9200097
15	S Nipple	2	9200081	9200081	9200081	9200081
16	S Silencer	2	9200080	9200080	9200080	9200080
17	S Vibration motor	1	9600305	9600305	9600305	9600305
18	S Tube screwing	1	9100802	9100802	9100802	9100802
19	S Nut	1	9300104	9300104	9300104	9300104
20	S Wave tube	1	9400309	9400309	9400309	9400309
21	S Tube holder	1	9400905	9400905	9400905	9400905
22	S Recirculation bow	1	2200173	2200174	2200173	2200174
23	S Tube clamp	2	9300905	9300906	9300905	9300906
24	S Recirculation tube	1	9400307	9400308	9400307	9400308
25	S One way restrictor	6	9200318	9200318	9200318	9200318
NS	S Sieve Frame 400 M icron	1	393 496		736 027	
NS	S Sieve Frame 600 M icron	1	736 058		736 059	

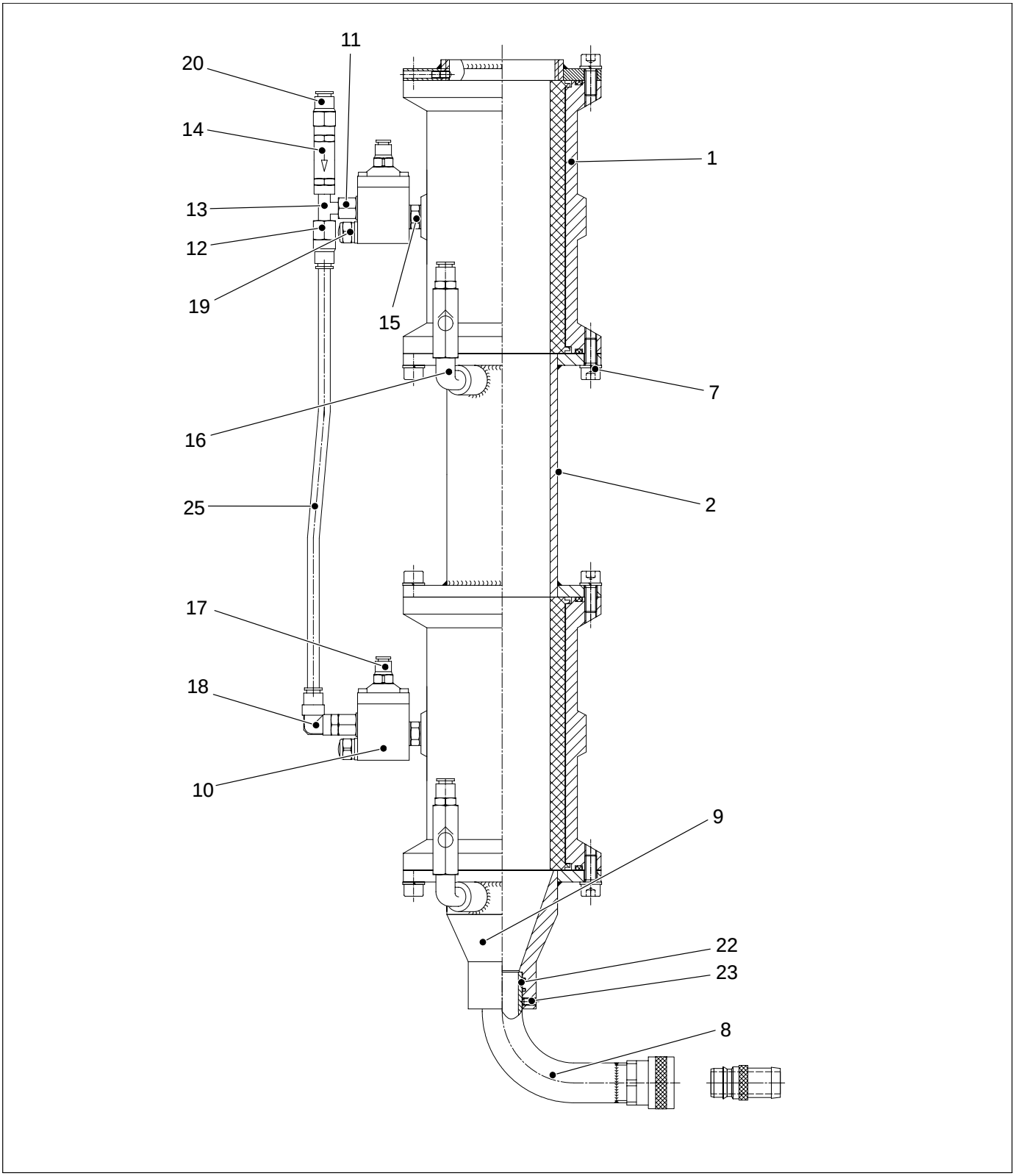

Fig. 6-2 Pinch Valve Assembly

Item	Description	Quantity	Pinch valve pump		
			P6	**P4**	**P4K**
-	Powder pinch valve pump	-			
1	S Pinch valve	2	2200135	2200137	2200196
2	S Pump tube	1	2200302	2200301	2200301
4	S Fluidring	2	2200136	2200103	2200103
7	S Nut	2	2200109	2200108	2200108
8	S 90º Elbow	1	9500601	9500602	9500602
9	S Cone	1	2200107	2200106	2200106
10	S Pneumatic valve	2	9200166	9200166	9200166
11	S Reducing nipple	1	9200108	9200108	9200108
12	S Screwing	1	9200106	9200106	9200106
13	S T-piece	1	9200109	9200109	9200109
14	S Back valve	3	9200102	9200102	9200102
15	S Double nipple	2	9200107	9200107	9200107
16	S Bend	2	9200103	9200103	9200103
17	S Fitting	2	9200105	9200105	9200105
18	S Fitting	1	9200100	9200100	9200100
19	S Silencer	2	9200804	9200804	9200804
20	S Screwing	3	9200104	9200104	9200104
22	S O-ring	2	9400207	9400208	9400208
23	S Setscrew	1	9300052		
24	S Setscrew	4	9300051		
24	S Setscrew	5		9300051	9300051
25	S Tube	1	9400302	9400302	9400302

Section 7

Specifications

Section 7
Specifications

1. Dimensions

Length	1410 mm
Width	900 mm
Height	1370 mm
Weight	82 kg

2. Pneumatic Data

Compressed-air connection	According to layout booth
Actual max. compressed-air quantity	2 Nm^3/h
Compressed-air quality	Residual Water content: max. 1,3g/Nm^3 Residual Oil content: max 0,01 mg/Nm^3

3. Electrical Data

Cyclone Surge Hopper Vibrator	0.15Kw

4. Powder Delivery

Powder Pinch Valve Pump Type P4	75 Kg/hr
Powder Pinch Valve Pump Type P6	130 Kg/hr