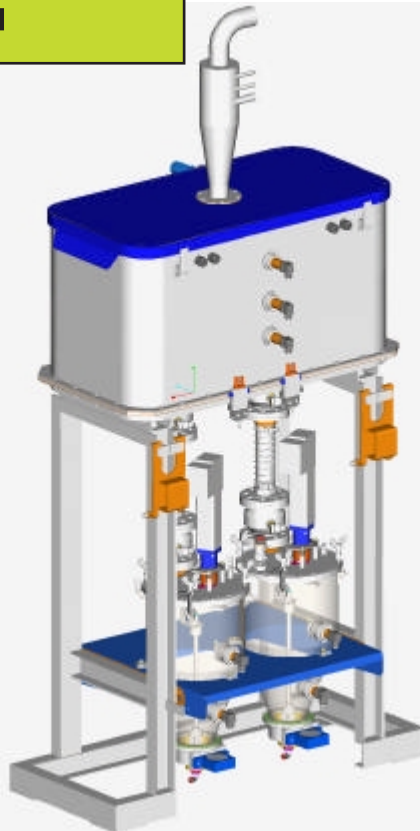




From February 1st, 2017 SAMES Technologies SAS becomes SAMES KREMLIN SAS
A partir du 1/02/17, SAMES Technologies SAS devient SAMES KREMLIN SAS



User manual

Long distance powder supply system LDPS



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Long distance powder supply system LDPS

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1. Safety Instructions



WARNING : The LDPS long distance powder supply system is designed to store paint in powder form. It must always be properly earthed.

This equipment may be dangerous if not used in accordance with the safety instructions contained in this manual.



WARNING : Operating temperature range: 0°C to 30°C.

1.1. CAUTION

Inflammable materials or containers previously used for inflammable materials must not be stored near the booth or in front of its doors.

The spraying area must have an anti-static floor surface, eg, bare concrete, metallic grill, etc. The risk to individuals may be minimised by wearing anti-static footwear and gloves.

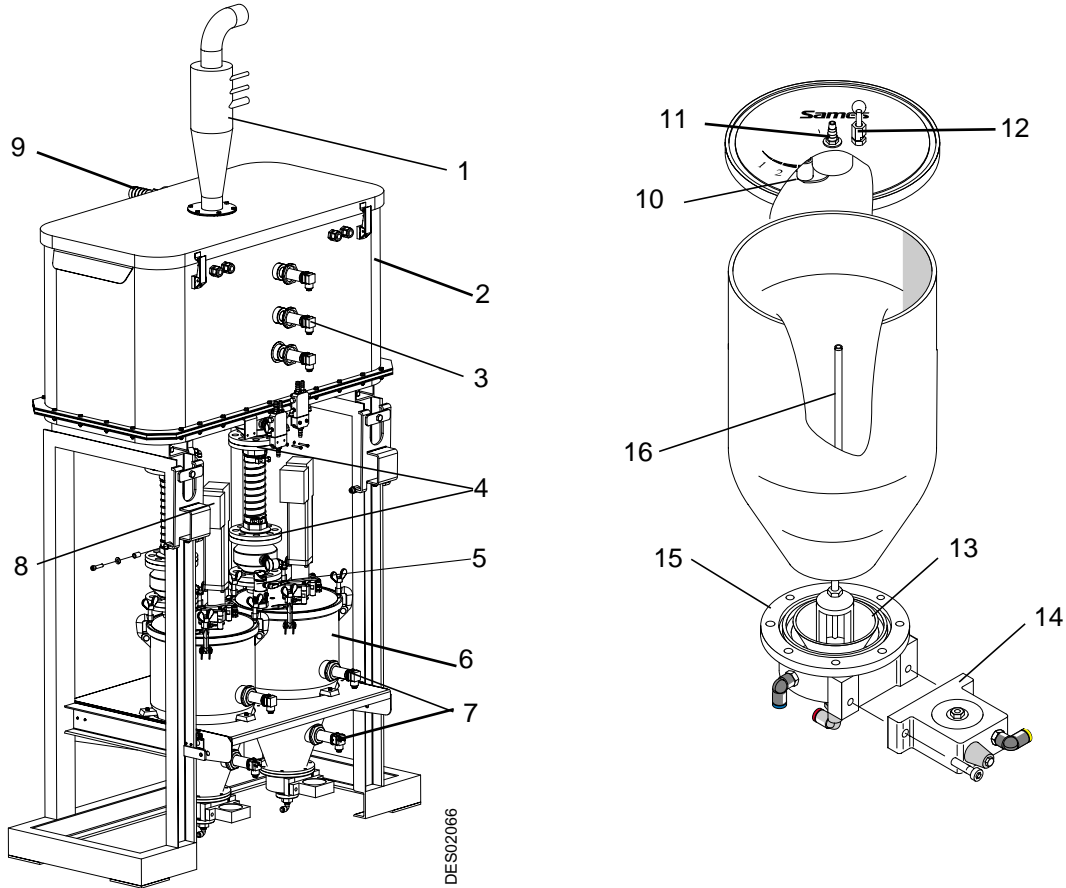
Spray booths must always be properly ventilated to prevent any build up of inflammable vapours.

2. Introduction to the LDPS long distance powder supply system

The LDPS system may be used to supply powder-using equipment over long distances and at high flow rates. It consists of a primary tank designed to supply two downstream, pressurised pots with fluidised powder. Each of these pots may be used to feed one spray gun.

The LDPS system's main components are:

Main components:



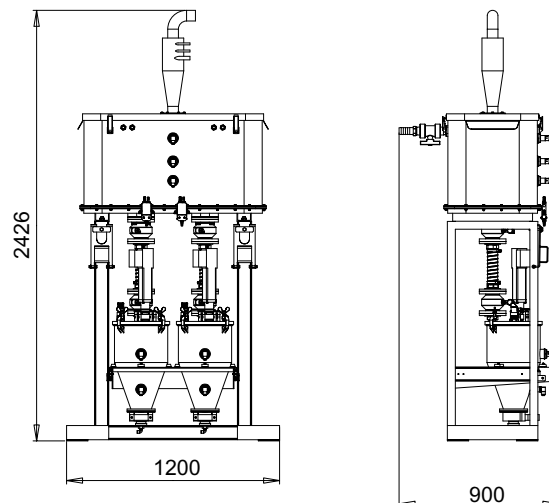
1	Mini-cyclone
2	Primary tank
3	Level detectors
4	Sleeve valves
5	Pressure sensor
6	Pressurised pot (secondary tank)
7	Level detectors
8	Motor
9	Fume exhaust valve
10	Shutter
11	Funnel
12	Safety valve
13	Porous cone
14	Pneumatic vibrator
15	Fluidization pot
16	Injector/venturi unit

2.1. The functions of the various components

Component	Function
Venturi/injector unit	This unit directs the powder into the central venturi tube.
Central venturi tube	10mm in diameter, this tube guides the powder to the funnel.
Funnel (Pos. 11)	The powder supply pipe is connected to the funnel.
Shutter (Pos. 10)	This is located between the central pipe and the funnel, and used to change the powder flow rate.
Motor (Pos. 8)	This causes the shutter to turn and so change the powder flow rate by partially obscuring the powder jet.
Sleeve valves (Pos. 4)	The sleeve valves control the powder inlet when filling the pressurised pot from the primary tank.
Level detector (Pos. 3 and 7)	There are three sensors in the primary tank and two in each secondary tank. They are used to check the fill level of the powder.
Pressure sensor (Pos.5)	This sensor is used to give the powder pressure in the pressurized pot. Also, it indicates powder is in tank.
Pneumatic vibrator (Pos. 14)	This prevents the powder clogging the porous cone
Mini-cyclone pump (Pos. 1)	A 3-inlet mini-cyclone pump is needed to transport the powder from the 3-way valve as well as transporting the powder supply from the installation's primary tank.
Fluidization pot (Pos. 15)	This is used to 'fluidise' the powder by injecting air across the porous cone.

3. LDPS Long distance powder supply system specifications

3.1. Dimensions (mm)



3.2. Operating specifications

3.2.1. General

Total weight	kg
Secondary tank capacity	24lb, ie, 12kg of powder

The vibrator used with the LDPS system is a turbine type, driven by compressed air. The sound pressure generated by this vibrator at a range of one metre is never more than 70 db(A).

Paint

Paint powder flow rate	Between 100 and 1000 g/min.
Maximum refill flow rate	2 kg/min

Time taken to fill one pot

Lower sleeve valve opening time	2s.
Sleeve valve opening time	1s

3.2.2. Pneumatic specifications

Pressure

Air supply pressure	6 bar
Injection air pressure	1.5 bar
Fluidization air pressure in the pressurised pot	0.65 bar
Lower sleeve valve pilot pressure	3.5 bar
Upper sleeve valve pilot pressure	2.5 bar
Transport hose air pressure	0.5 bar
Injector compensation air pressure	0.3 bar
3-way re-circulating valve closing pressure	2 bar
Primary tank fluidization air pressure	1.5 bar
Vibrator air pressure	1 bar
Pot pressure loading	0.5 to 0.8bar

Compressed air specifications (in accordance with ISO 8573-1 standard)

Maximum solid impurities content	5 mg/m ₀ ³ (Class 3)
Maximum size of solid impurities	5 micrometres (Class 3)
Maximum oil content	0.01 mg/m ₀ ³ (Class 1)
Dew point (air at 6 bar.)	3° C (Class 4)

Flow rates

Injection air flow	appr. 2.5Nm ³ /hr
Fluidization air flow	appr. 2.5Nm ³ /hr

3.3. Operation

The primary tank is supplied with powder. The powder is fluidised by means of the 'fluidising' air supply and then transferred to both of the pressurised pots through the two hoses. Here it is fluidised again and then driven by the injection air supply to the funnel in order to feed the powder spray gun.

The powder flow is controlled by a variable obstruction in the powder circuit provided by a rotating shutter driven by a motor that is, in turn, managed by a programmable logic controller (PLC).

Back at the primary tank, the receipt of a 'no powder' signal sent by the low powder level sensor in the primary tank triggers the resupply of the primary tank to the level of the upper sensor. A third sensor warns of a seriously low powder level and this sends an alarm signal to indicate that the tank is no longer being supplied. In the pressurised pots, the presence of powder, as signalled by the upper level sensor, stops the feed from the primary tank.

4. Installation

NB: The air supply connections are fitted with coloured rings - red for injection air, blue for fluidising air and yellow for the vibrator air supply.

Primary tank powder supply:

- Powder transport pipe, 20/26mm diameter - Rilsan

From the electro-pneumatic cabinet to the primary tank:

- Fluidization air line, 5.5/8mm diameter - polyurethane, with pressure regulator and gauge for the fluidization air pressure.

From the electro-pneumatic cabinet to the secondary tank:

- Fluidization air line, 4/6mm diameter - Rilsan, with pressure regulator and gauge for the fluidization air pressure.
 - Injection air line, 5.5/8mm diameter - polyurethane, with pressure regulator and gauge for the injection air pressure.
 - Injector blow-through air line, 5.5/8mm diameter - polyurethane, with pressure regulator and gauge for the air pressure.
 - Vibrator air supply line, 5.5/8mm diameter - polyurethane, with pressure regulator and gauge for the vibrator air pressure.
 - Air supply line for the sleeve valves, 5.5/8mm diameter - polyurethane
 - Resupply air line, 5.5/8mm diameter - polyurethane
 - 3-way valve air supply line, 4/6mm diameter - Rilsan
-
- Tank earthing strap.



WARNING : When replacing pipes or hoses, always use the same materials as that for original equipment.

4.1. Turning the equipment ON and OFF

Initial operation:

Primary tank

- Close the cover.
- Turn ON the fluidising air supply.
- Turn ON the powder supply. The powder supply will stop when the level detector signals that the correct level has been reached
- Leave to fluidise for 5 to 10 minutes.

Secondary tanks (pressurised pots)

- Check that the covers are both closed, using the four clamps.
- Turn ON the two vibrators.
- Turn ON the fluidising air supply to both tanks.
- Turn ON the blow-through air supply.
- Initiate the fill cycle for each secondary tank.
- Wait approximately 5 to 10 minutes to ensure that the powder is fully fluidised.
- Turn ON the injection air supply when the system is ready for spraying.

Turning the system ON when restarting work

- Turn ON the fluidization air supply for the primary tank and the two secondary tanks.
- Wait 5 minutes to ensure that the correct operating levels have been reached and that the powder is properly fluidised.
- Turn ON the injection air supply and the powder spraying can commence.

Turning OFF the LDPS system

- Turning the installation OFF at the main control unit.

4.2. Calibration procedure for the pressurized pot.



WARNING : This procedure must be done after every maintenance operation on the shutter or on the shutter motor.

Conditions:

- Check all the pressures of the system according to the technical sheets.
- The calibration (mini - maxi) of the invertors / motors must be done.

Calibration of the powder supply equipment

- For the pressurized pot: you're working on:
 - 1 put the motor in Forcing mode. The forcing setvalue must be 0 degree.
 - 2 put the injector in Manual Mode ON.
 - 3 the system is ready to supply paint.
 - 4 one operator must be in the booth to weight the powder. The calibration allows to define 5 points (Flow setvalue - Shutter opening):

Flow 1 = 0	Shutter opening 1 = 0 (mini flow)
Flow 2	Shutter opening 2
Flow 3	Shutter opening 3
Flow 4	Shutter opening 4
Flow 5 = 500	Shutter opening 5 = 200 (maxi flow)

Nota: the couple of points "Flow 1 mini - opening 1 mini" and Flow 5 maxi - opening 5 maxi" always have to be define at the given values. Then the operator has only 3 points to define.

To calibrate: open the shutter at a given position setvalue and then weight the quantity of paint obtained. Do this operation as many time as needed to obtain the couple of points you need.

Flow 2 must be slightly inferior at the mini Automatic Flow setvalue.

Flows 3 and 4 must be in the working area.

5 When the measurements are done, stop the powder supply and fill the Manual Identification Table with the obtained results .

Then the pressurized pot is calibrated and will supply the asked Setvalue by putting the shutter in a position defined by the Manual Identification Table.

Nota: Any changes in the pressures of the pressurized pot via the manometers implies a recalibration of this one.

4.3. Recommended tools

No specific recommended tools are required

5. Maintenance



WARNING : Before carrying out any work on the LDPS long distance powder supply system, the operator must be wearing the following safety equipment: eye protection, gloves and breathing mask.



WARNING : Check that the electric and pneumatic power supplies are both disconnected.

5.1. Primary tank

NB: The primary tank needs no further special maintenance other than regular cleaning.

Cleaning:

- Empty the primary tank
- Remove the cover. The mini cyclone pump is built into the cover.
- Clean the tank using a vacuum cleaner with a plastic end-piece.
- When refitting the cover, check the state of the seal and replace it if necessary.

5.2. Sleeve valve and hose unit



WARNING : Before any disassembly of the sleeve valves, the primary tank must be empty.

5.2.1. Disassembly of the upper sleeve valve (primary tank outlet)

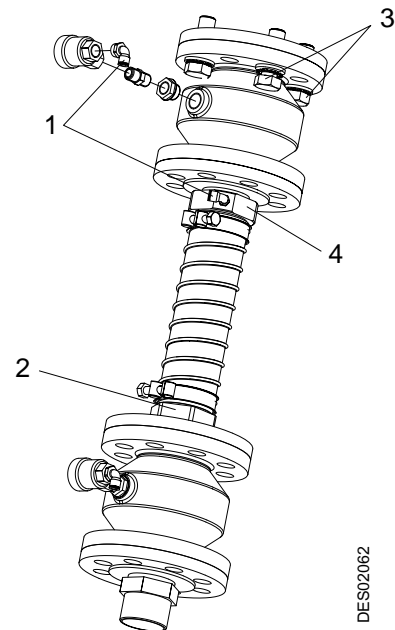
- Disconnect the pilot lines (Pos. 1) from the valve.
- Unscrew the triple connector (Pos. 2)
- Slide out the dual pressurised pot mounting.
- Remove the four screws, M6 x 50 (Pos. 3)

On the workbench,

- Disassemble the hose adaptor from the sleeve valve (Pos. 4).
- Take off the valve

5.2.2. Reassembly of the upper sleeve valve.

- Reassembly of the sleeve valve is the reverse of the above procedure.



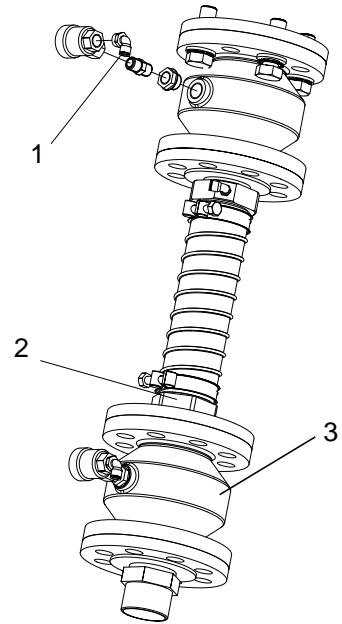
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5.2.3. Disassembly of the lower sleeve valve (secondary tank inlet)

- Disconnect the pilot line (Pos. 1) from the valve.
- Unscrew the triple connector (Pos. 2).
- Unscrew the valve (Pos. 3) from the cover.
- Take off the valve

5.2.4. Reassembly of the lower sleeve valve

- Reassembly of the sleeve valve is the reverse of the above procedure.



5.2.5. Replacing the valve sleeve



WARNING : Make sure that spare sleeve (P/N # F1VACC128) corresponds to the original one (diameter and material).

- Immerse the sleeve in a solution composed of water + teepol
- Put the sleeve in place in the valve body and make sure that the length protruding at each end is equal + 2 mm approximately.
- Dampen the sleeve positioning cones on the clamping flanges.
- Put the two clamping flanges in place and put the set on the press table .
- Insert the tube (pos.1) inside the sleeve with the tool (P/N # F1VACC129) for sleeve dia: 40
- Install the tube (pos.1) on the upper clamping flange.

When the inlet valve (pos.4) is connected and a pressure of 6 bar (maximum) applied actuate the press, to the force corresponding to the diameter of the sleeve (2 tonnes for a dia.40 sleeve). Do not exceed this value because the valve would be damage.

- Tighten the connecting bolts (pos.5), then release the compressed air, then carry out the same operation for the other clamping flange.
- Isolate and release the pressure of the compressed air: raise the press, remove the shim (pos.3), the thrust washer (pos.2) and the tube (pos.1).

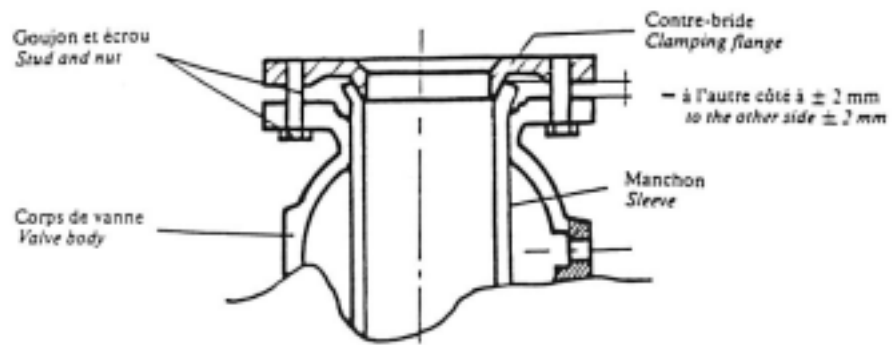


FIG. 1

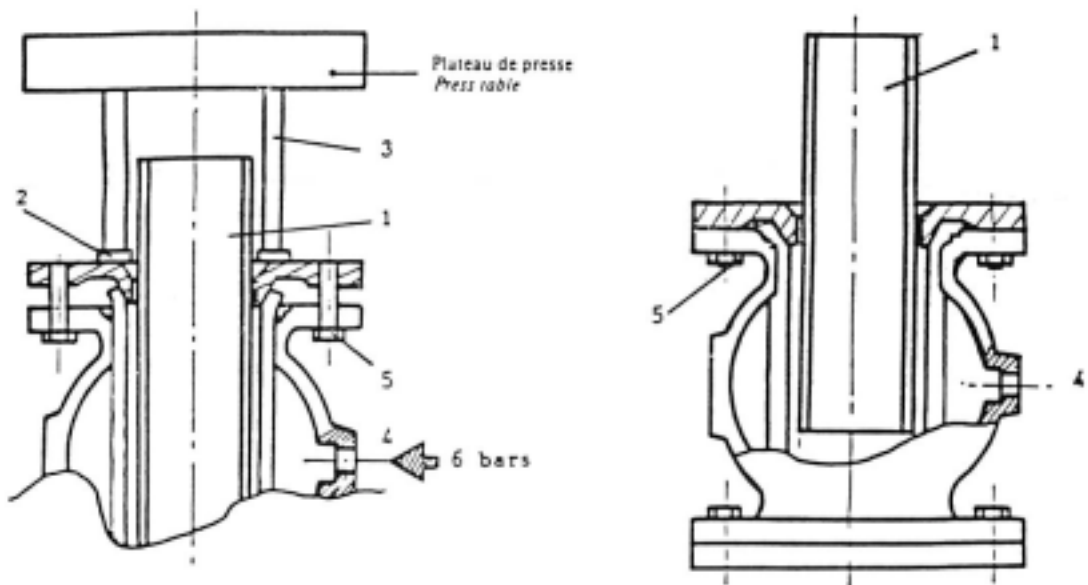


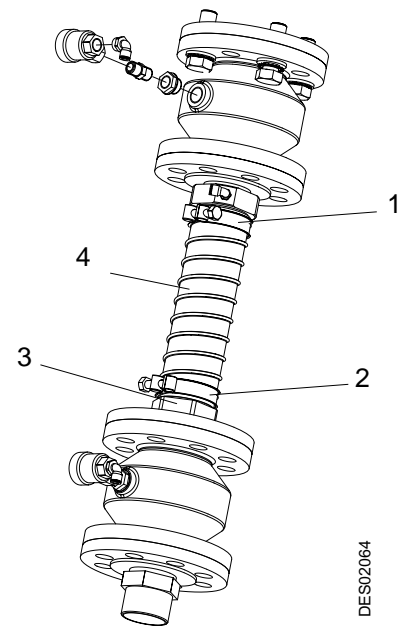
FIG. 2

FIG. 3

5.2.6. Replacing the hose

- Unscrew the upper hose clamp (Pos. 1).
- Unscrew the nut from the triple connector (Pos. 3)
- Remove the unit.
- Take off the lower hose clamp (Pos. 2) and the triple connector.
- Take of the hose (Pos. 4) and replace it.

- Fit the connector onto the hose (Pos. 3).
- Fit the lower hose clamp (Pos. 2) and tighten it up.
- Fit the new hose assembly (Pos. 4) onto the upper valve.
- Tighten up the upper hose clamp (Pos. 1).
- Retighten the triple connector nut.



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5.3. Secondary tank (pressurized pot)

- Using an open-ended spanner, unscrew the nut on the triple connector.
- Unscrew the 2 screws holding the tank mounting to the chassis.
- Slide out the dual pot mounting as illustrated above.

5.3.1. Disassembly of the shutter unit

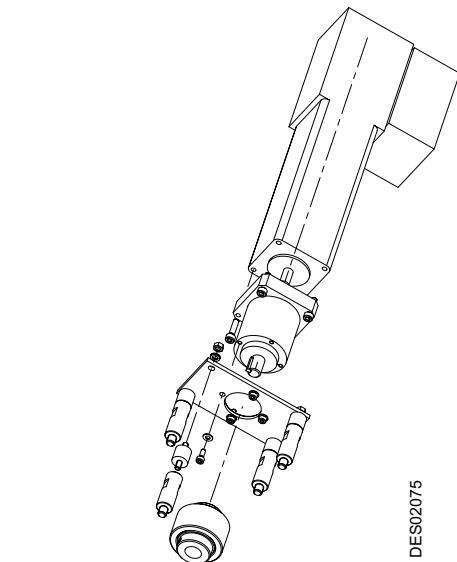
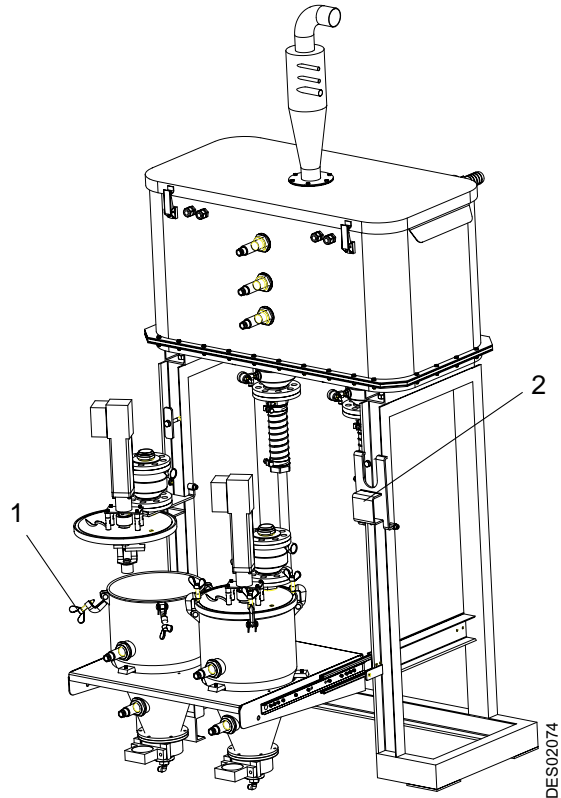
- Unscrew the four cover clamps (Pos.1).
- Clean the cover using a vacuum cleaner fitted with a plastic end-piece.
- Remove the unit and set the cover onto its special support (Pos.2).
- Unscrew the 4 nuts (Pos. 3) from the motor and gearing unit mounting plate and remove the motor and gearing unit itself.
- Align the shutter unit with the 0 mark°.

On the workbench:

- Using an Allen key, unscrew the screw on the lower coupling whilst holding the shutter unit from below.
- Take off the shutter unit.
- Unscrew the M6 x 16 screw holding the shutter to its shaft.
- Replace the o-ring and guide ring.

5.3.2. Reassembly of the shutter unit

- Fit a new O-ring and guide ring on the shutter's shaft.
- Fit the shutter on its shaft.
- Fit the toothed lock washer onto the shaft and retighten the M6 x 16 screw.
- Fit the shutter unit in place.
- Align the shutter unit with the 0 mark °, line up the screw with the flat of the shaft and tighten up the screw located on the coupling.
- Fit the motor and gearing unit onto the spacers (Pos.4) on the cover and tighten the nuts.
- Adjust the shutter's minimum and maximum angles.



WARNING : After a maintenance procedure on the shutter or on the shutter motorization, the operator has to do a calibration procedure, [see § 4.2 page 11](#) .

5.3.3. Disassembly of the funnel

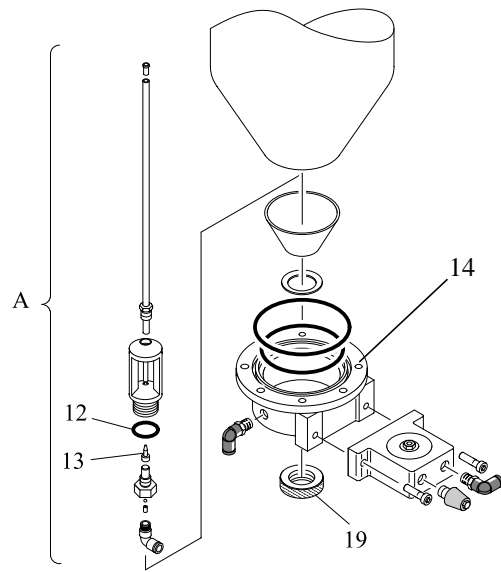
- Unscrew the four clamps holding the cover.
- Clean the underside of the cover using a vacuum cleaner fitted with a plastic end-piece.
- Position the shutter in such a way as to be able to remove the funnel.
- Unscrew the retaining nut located on the top of the cover.
- Remove the funnel.

5.3.4. Reassembly of the funnel

- Replace the funnel
- Replace and tighten the retaining nut.
- Adjust the shutter's minimum and maximum angles.

5.3.5. Disassembly of the venturi-injector unit

- Empty the pots manually.
- Switch over to manual mode (check that the filler valves remain shut)
- Switch the 3-way valve over to recirculation.
- Enter a maximum flow rate command at the main control unit.
- Operate the injection air supply
- After 10min, cut off the injection air supply and reset the flow rate command to 0.
- Take off the cover.
- Clean out the tank using a vacuum cleaner fitted with a plastic end-piece.
- Disconnect the injection air supply.
- Unscrew the knurled nut (Pos. 19) and then withdraw the venturi-injector unit (Pos. A) upwards through the inside of the pot, holding it by the venturi tube.
- Clean the venturi-injector unit using compressed air.
- Using an open-ended spanner, unscrew the retaining nut from the connector.
- Using an Allen key, unscrew the ball valve seat. Clean the ball and its seat with compressed air.
- Unscrew the injector (Pos. 13) using a flat tip screwdriver and clean it with compressed air.



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5.3.6. Reassembly of the venturi-injector unit

- Reassemble the venturi-injector unit, checking that the seal (Pos. 12) is in good condition and properly located.
- Fit the venturi-injector unit on its base and screw on the knurled nut (Pos. 19).

5.3.7. Disassembly of the porous cone

- Disassemble the venturi-injector unit as described above
- Unscrew the 6 screws (Pos. 14) whilst holding the lower part of the pot with an open-ended spanner.
- Remove the porous cone sandwiched between the pot and the fluidising pot. Clean it with compressed air.
- Check the condition of the various seals and replace them if necessary.

5.3.8. Reassembly of the porous cone

- Reassembly is the reverse of disassembly.

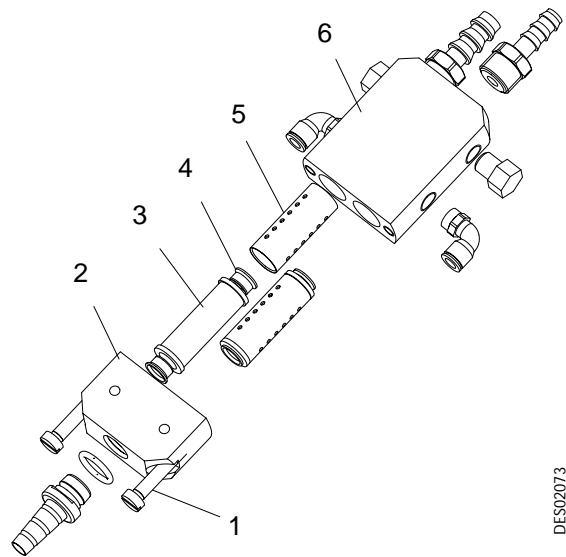
5.4. 3-way powder valve

5.4.1. Disassembly

- Disconnect the three powder pipes from the connector and the two pilot air lines from the valve.
- Unscrew the two M6 x 30 nylon screws (Pos.1) and pull to separate the valve into two parts (Pos. 2 and 6).
- Remove the cylinder consisting of the diaphragm and bush (Pos. 3 and 5).
- Take off the sleeves (Pos.4).
- Remove the diaphragm from the bush.
- Clean the collector and valve body with solvent.

5.4.2. Reassembly

- Check the various components for wear and change them if necessary.
- Fit the diaphragm (Pos.3) inside the bush (Pos 6).
- Fit the sleeves (Pos.4) over the diaphragm and bush unit.
- Fit this unit inside the valve.
- Tighten up the 2 M6 x 30 nylon screws (Pos.1).
- Reconnect the valve.



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6. Cleaning procedure

6.1. Cleaning



WARNING : Cleaning operations must only be done with compressed air, rag and, where necessary, a brush.

Never use water to clean this equipment.

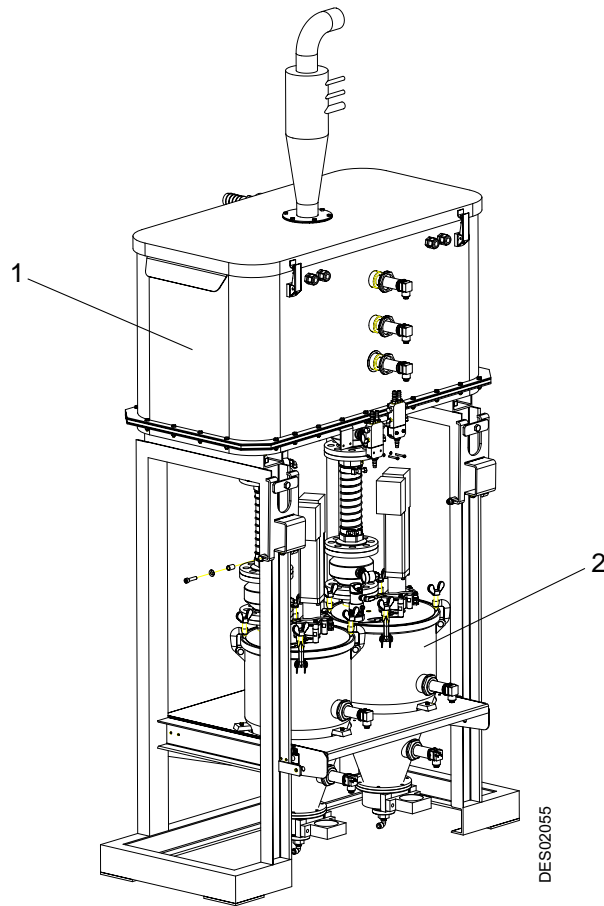
Frequency	Task
Weekly	<ul style="list-style-type: none">- Without removing the cover or the funnel, check the funnel at the narrowest part of the venturi by removing the powder pipe only.- Replace if necessary.
Monthly	<ul style="list-style-type: none">- Empty the tank.- Check the venturi-injector unit.- Clean out the tank using a vacuum cleaner fitted with a plastic end-piece.

7. Troubleshooting

Symptoms	Likely causes	Remedies
The powder does not flow smoothly	Insufficient powder fluidization	Increase the fluidization air supply pressure
		Change the porous cone if this is blocked.
	The powder has hardened (polymerised).	Clean the venturi cone with solvent
		Disassemble and clean the 3-way valve with solvent.
The venturi-injector unit's O-ring is missing	Replace this O-ring.	
Powder flow is jerky or uneven	Venturi-injector is partially plugged	Open the secondary tank and unplug the venturi-injector. Check the foreign element in the tank.
	Powder fluidization is too weak	Increase the pressure of fluidization air.
Powder leak from the tank cover	Evacuation hoses plugged	Unplug the evacuation hoses
Powder leak from the tank cover	Tank cover not well centered	Unscrew fixation lugs of the tank and center the cover.
Pressure drop in the tank (check supply and fluidization pressures on the manometer)	Tank empty	Check if there is powder in the tank. Check the fluidization pressure of the tank.
	Hole in the sleeve	Check air go back from sleeve valve to the tank and change the sleeve if necessary, see § 5.2.5 page 13

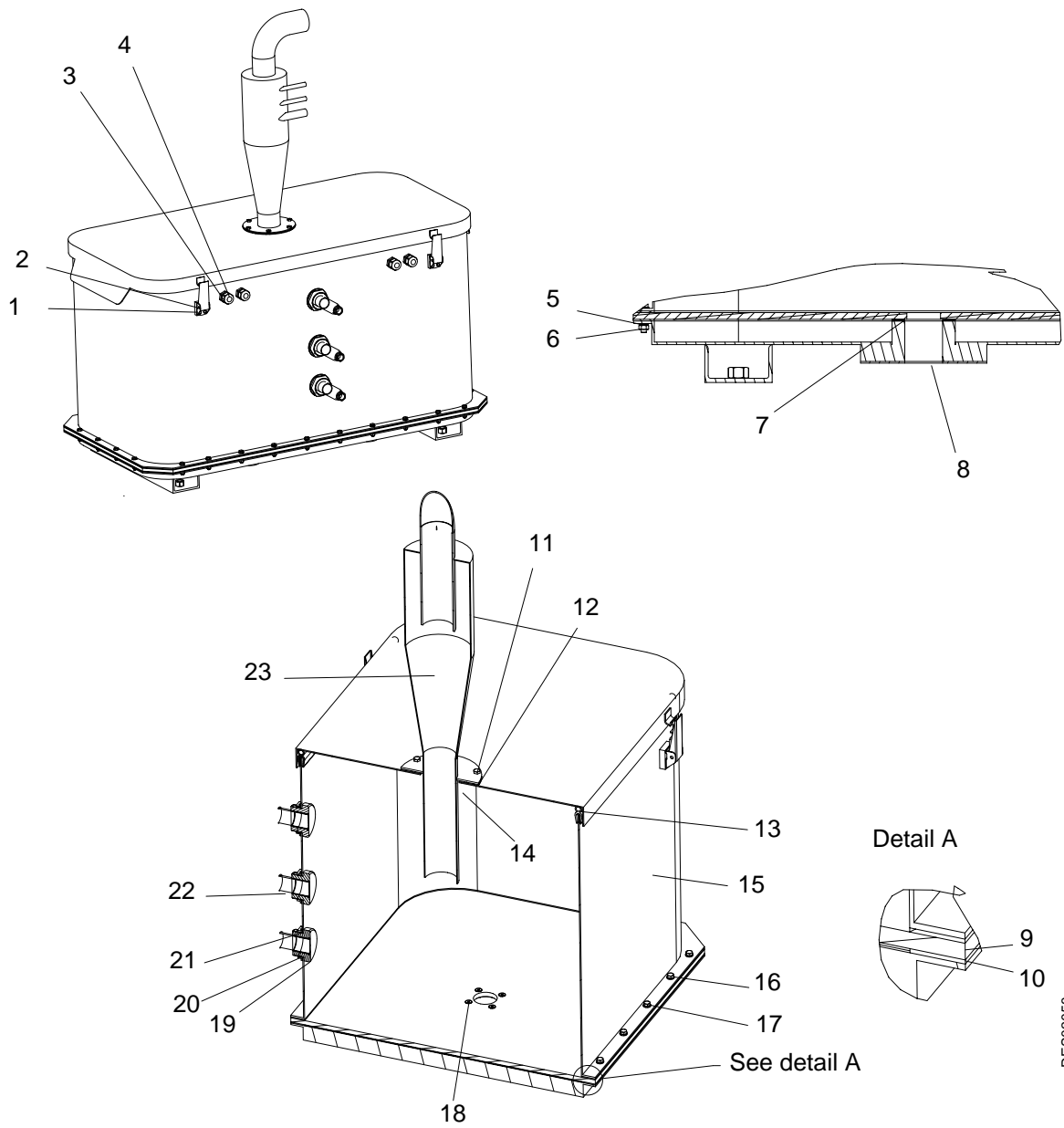
8. Spare parts

8.1. LDPS Long distance powder supply system - Part no.1520165



Item	Part number	Description	Qty.	Unit of sale
	1520165	LDPS Long distance powder supply system	1	1
1	1520166	Primary tank see § 8.2 page 22	1	1
2	1520168	Pressurised powder pot see § 8.3 page 24	2	1

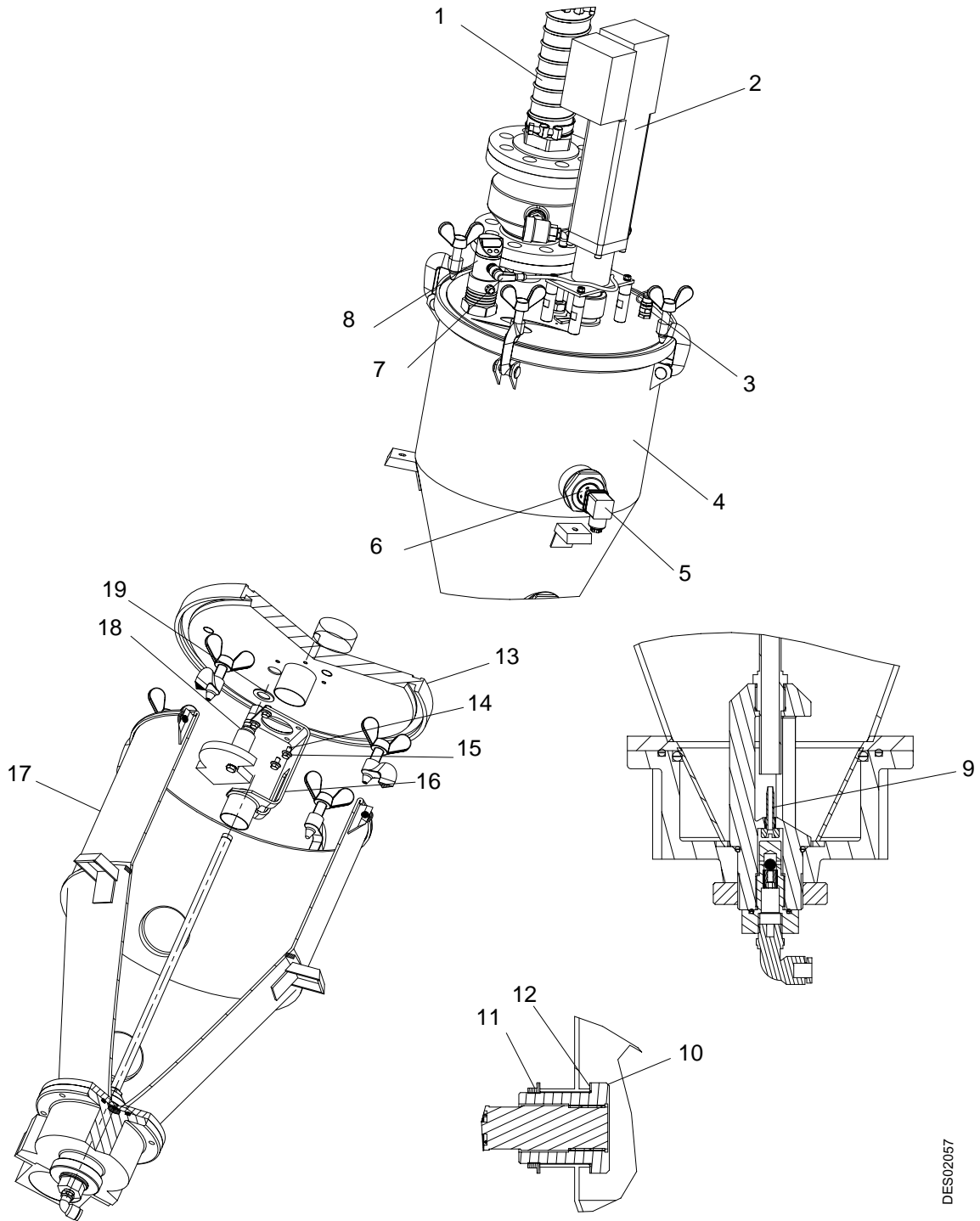
8.2. Primary tank - Part no. : 1520166



DES02053

Item	Part number	Description	Qty.	Unit of sale
	1520166	Primary tank	1	1
1	X2BVHA118	Screw, hex-head, M4 x 10	8	1
2	Q1FFER053	Toggle clamp	4	1
3	E3RPLS027	Compression joint nut	4	1
4	E3RPLS026	Compression joint	4	1
5	X3CDSP783	Self-locking washer	28	1
6	X2BEHU006	Nut, hex, M6	28	1
7	547660	Tank seal	2	1
8	1409427	Seal	2	1
9	1104715	Fluidization plate	1	1
10	1312111	Fluidization unit base seal	2	1
11	X2BVHA223	Screw, hex-head, M6 x 16	6	1
12	546001	Mini cyclone / tank seal	1	1
13	J2CPRS288	Profile seal	1	m
14	1104725	Tank cover	1	1
15	1104731	Tank body	1	1
16	X2BDMU006	Flat washer, D6	28	1
17	X2BVHA228	Screw, hex-head, M6 x 30	28	1
18	X4EVSF184	Screw, c'sunk/90 Allen head, M5 x 16 - stainless steel	8	1
19	548901	Sensor mounting	3	1
20	E3RPCN036	Compression joint nut	3	1
21	E3RPLJ036	Compression joint flat seal	3	1
22	E6KDDP145	Sensor	3	1
23	1409431	Mini cyclone, 3 inlet	1	1

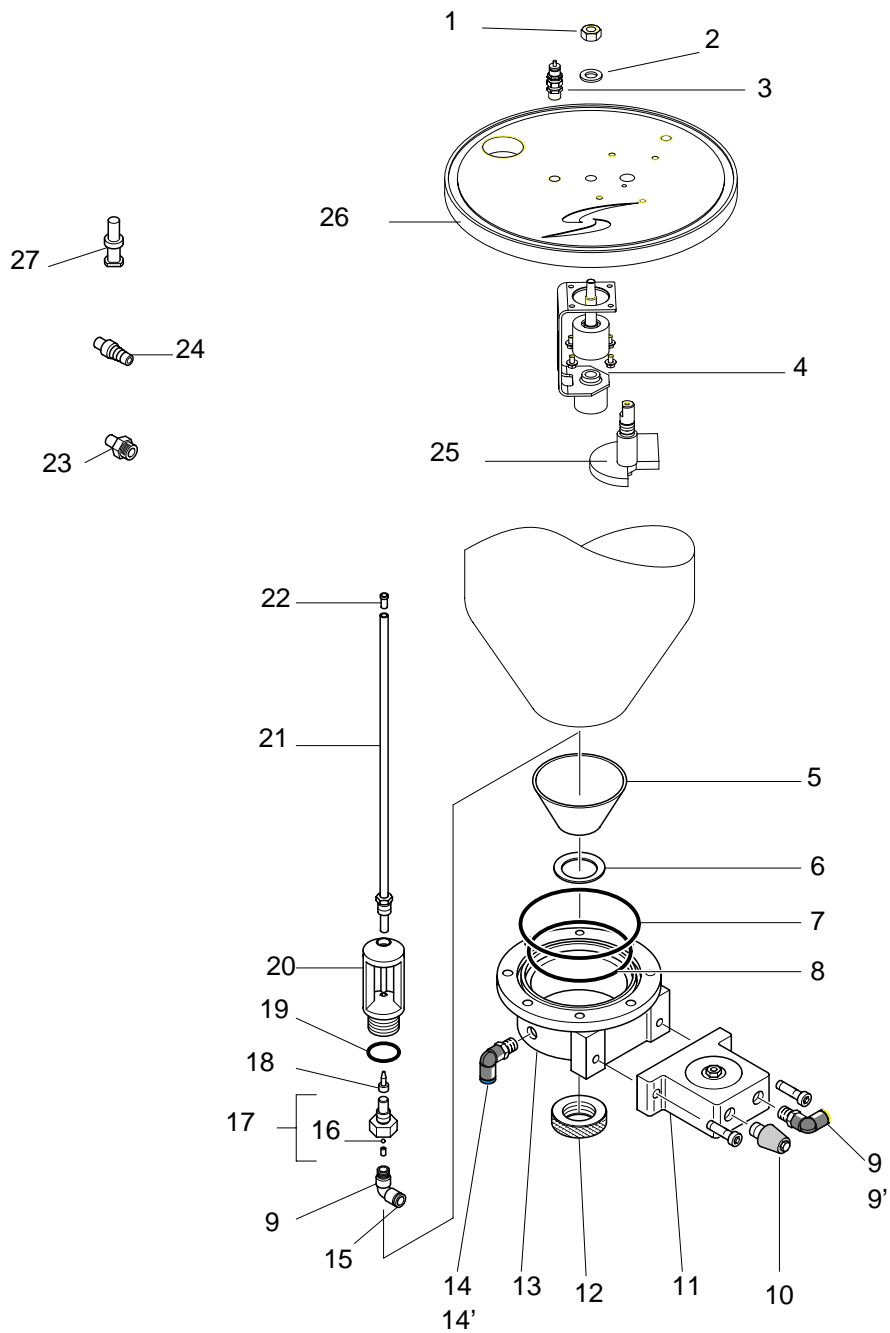
8.3. Pressurised pot - Part no.: 1520168



DES02057

Item	Part number	Description	Qty.	Unit of sale
	1520168	Pressurised pot	2	1
1	1520169	Powder feed (see § 8.3.2 page 28)	2	1
2	1520248	Shutter motorization (see § 8.3.3 page 29)	2	1
3	F1SSRL015	Valve with ring, 0.5bar	2	1
4	1504721	Assembled pressurised pot (see § 8.3.1 page 26)	2	1
5	E6KDDP147	Level sensor connector	2	1
6	E6KDDP145	Level sensor	4	1
7	E6KDPP146	Sensor connector M12 female	1	1
8	R2PCAP098	Pressure sensor	1	1
9	1405927	Injector, D1.7	8	2
10	548903	Sensor mounting	4	1
11	E3RPCN036	Compression joint nut	4	1
12	E3RPLJ036	Compression joint flat seal	4	1
13	1311610	Cover	2	1
14	X2BVHA184	Screw, hex-head, M5 x 10	8	1
15	X2BDMU005	Washer, D5	8	1
16	1311955	Venturi tube centring device	2	1
17	1311597	CSV tank	2	1
18	1311946	Shutter assembly	2	1
19	548169	Teflon washer	2	1

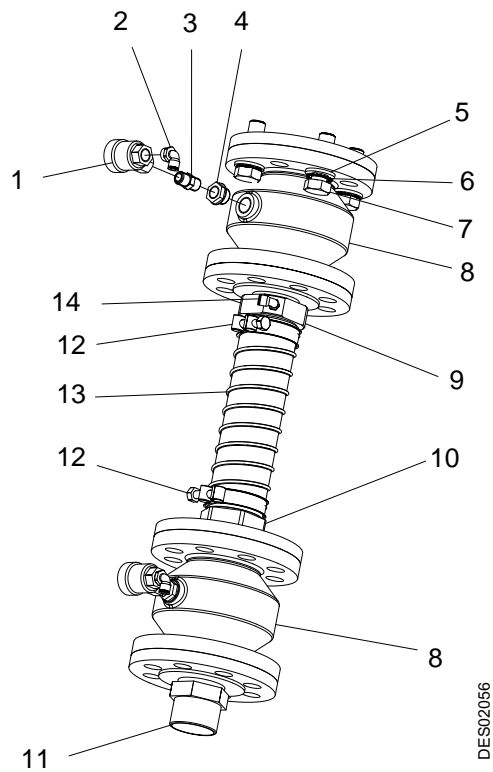
8.3.1. Pressurised pot assembly - Part no. 1504721



DES02068

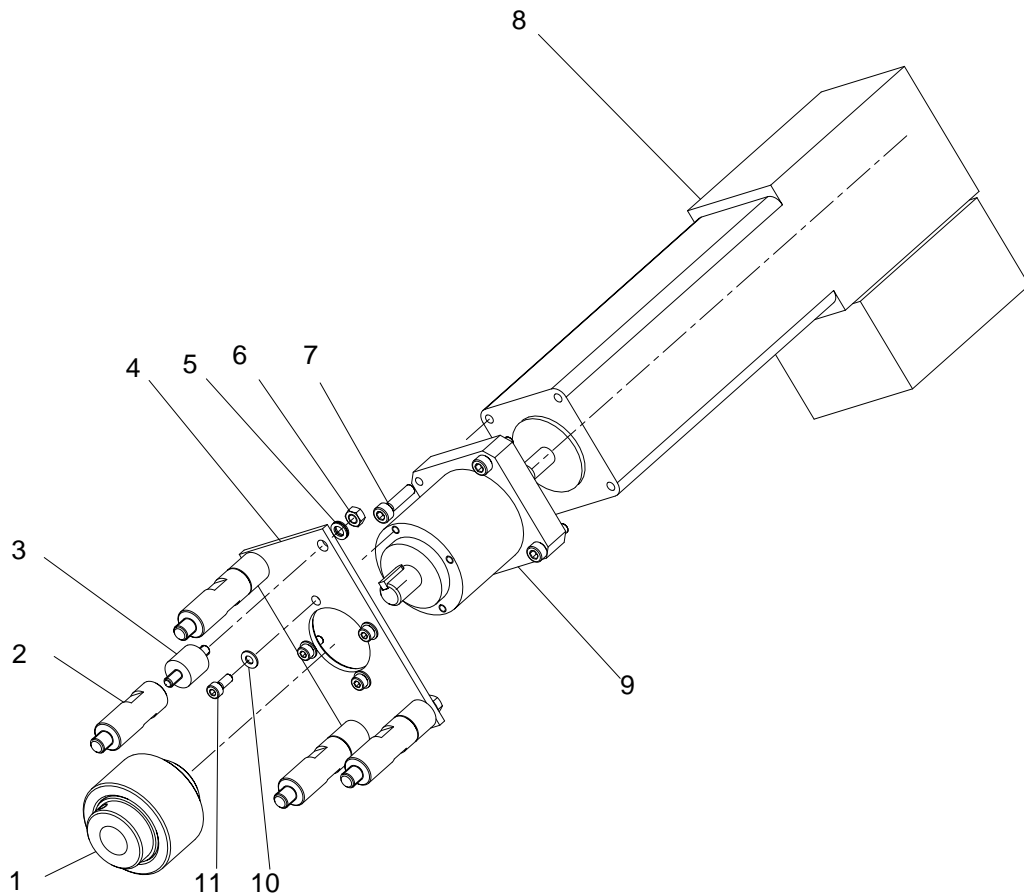
Item	Part number	Description	Qty.	Unit of sale
	1504721	Pressurised pot assembly	2	1
1	X2BEHU012	Nut, hex, M12	1	10
2	X2BDZU012	Toothed locking washer	1	10
3	F1SSRL015	Quick exhaust valve	1	1
4	1409536	Funnel	1	1
5	302398	Porous cone	1	1
6	440022	Flat seal	1	5
7	J2CTCN229	O-ring	1	2
8	J2CTCN190	O-ring	1	1
9	F6RLCS185	Elbow connector, 6/8mm diameter	2	1
9'	F6RLZB405	Yellow ring, 8mm diameter	1	10
10	F2SSIL015	Silencer	1	1
11	K3VARC009	Vibrator with silencer	1	1
12	440021	Knurled nut	1	1
13	325829	Fluidization pot	1	1
14	F6RLCS184	Elbow connector, 4/6mm diameter	1	1
14'	F6RLZB410	Blue cap, 6mm diameter	1	1
15	F6RLZB403	Red ring, 8mm diameter	1	10
16	K6RKBL118	Ball, 6mm diameter	1	5
17	456423	Valve assembly	1	1
18	440418	Injector, D1.7	1	1
19	J2CTCN067	O-ring	1	10
20	442001	Body	1	1
21	441998	Powder venturi tube	1	1
22	441216	End-piece	1	1
23	1409627	Powder pipe connector	1	1
24	F6RLJF311	Push-on connector	1	1
25	1311946	Shutter unit (see § 8.3.4 page 30)	1	1
26	440014	Cover seal	1	1
27	F6RLZX396	Plug, 6mm diameter	1	10

8.3.2. LDPS Powder supply - Part no.: 1520169



Item	Part number	Description	Qty.	Unit of sale
	1520169	LDPS Powder supply	2	1
1	F1CNRE009	Exhaust valve	4	1
2	F6RLCS354	Elbow connector, male, tapered thread	4	1
3	F6RLHC214	Male-male pipe connector	4	1
4	F6RLRP311	Male-female reducer	4	1
5	X2BDZU016	Washer	8	1
6	X2BDVX016	Toothed locking washer - steel	8	1
7	X2BVHA436	Screw, hex-head, M16 x 50 - white galvanized steel	8	1
8	F1RVMC211	Sleeve valve	4	1
9	1312118	Hose adaptor for sleeve valve	2	1
10	1312112	Triple connector	2	1
11	F5MLNN047	Male-male pipe connector	2	1
12	X2BCCF045	Clamp, M8	4	1
13	V4GFPO069	Hose, reinforced polyurethane, D55	2	1
14	F6RLCS367	Elbow connector, male, tapered thread	2	1

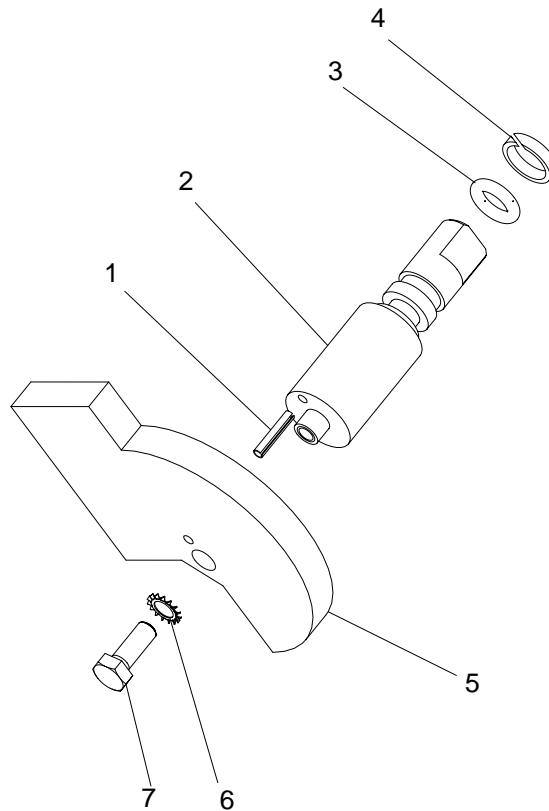
8.3.3. Shutter motorization - Part no.: 1520248



DES02000

Item	Part number	Description	Qty.	Unit of sale
	1520248	Shutter motorization	2	1
1	1409354	Machined coupling	2	1
2	1409357	Motor and reducing gear mounting spacer	8	1
3	305381	Elastomer block	8	1
4	1409355	Motor and reducing gear mounting plate	2	1
5	X3CDSP784	Self-locking washer	8	2
6	X2BEHU005	Nut, hex, M5	8	1
7	X3AVSY186	Allen screw, cheese-head, M5 x 20	8	1
8	1405175EX	Motor	2	1
9	K1RARP146	Reducing gear	2	1
10	X2BDMU004	Washer, M4	8	1
11	X3AVSY118	Allen screw, cheese-head, M4 x 10 -steel, white galvanized 8/8	8	1

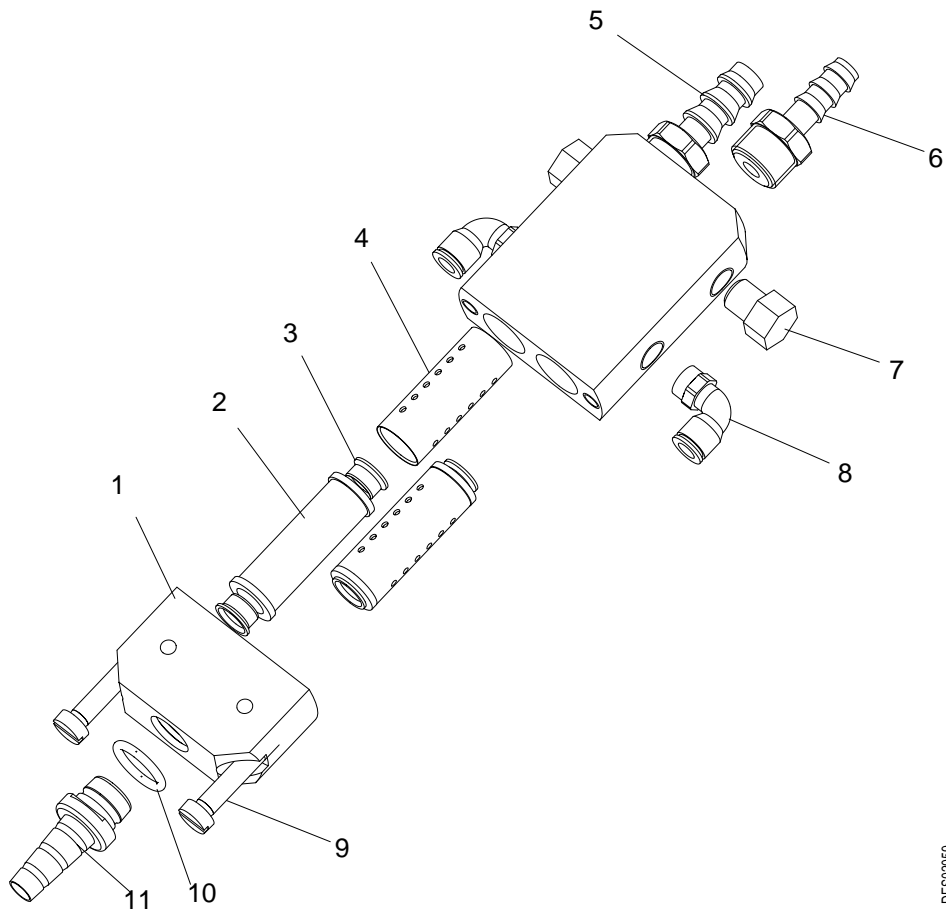
8.3.4. Shutter unit assembly



DES02065

Item	Part number	Description	Qty.	Unit of sale
	1311946	Shutter assembly	2	1
1	X3DGMC069	Pin	2	1
2	1409348	Shutter shaft	2	1
3	J2CTCN021	O-ring	2	1
4	J3TSEG121	Guide ring	2	1
5	1312271	Shutter	2	1
6	X2BVVX006	Toothed locking washer	2	1
7	X2BVHA223	Screw, hex-head, M6 x 16	2	1

8.3.5. 3-way, non-return, powder valve - Part no.: 1520178



DES02059

Item	Part number	Description	Qty.	Unit of sale
	1520178	3-way, non-return powder valve	1	1
1	931304	Collector	1	1
2	546898	Diaphragm	2	1
3	642657	Sleeve	4	1
4	642193	Bush	2	1
5	F6RPQF152	Straight male connector, ringed, D 10	1	1
6	1409253	Male connector, ringed, D 8	2	1
7	F6RPBA002	Plug, 1/8, nylon	2	1
8	F6RLCS367	Elbow connector, male, tapered thread	2	1
9	X9NVCB228	Screw, c M6 x 30 - nylon	2	1
10	J3ETOR031	O-ring	1	1
11	1409459	Push-on inlet pipe, D 8	1	1