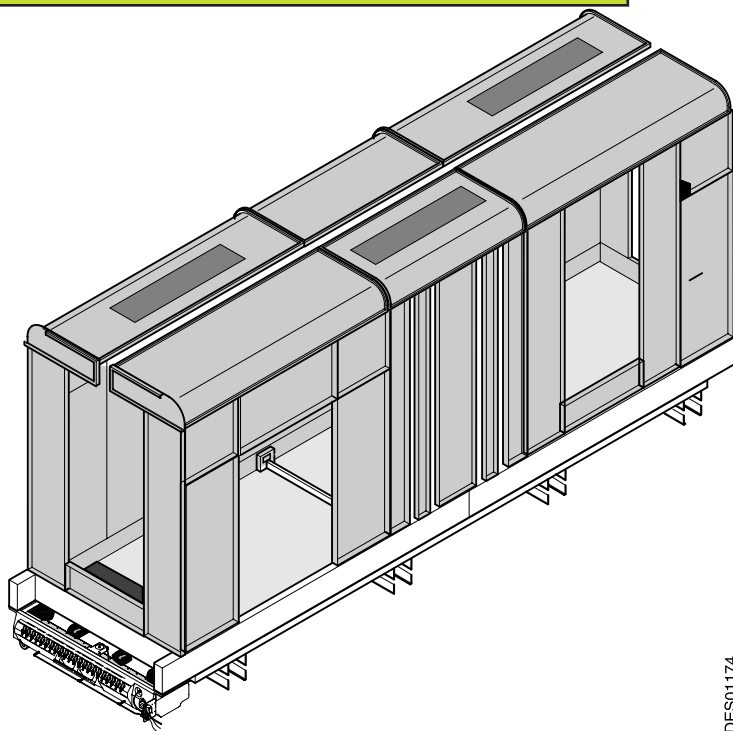




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DES01174

User manual

MVH Powder booth with automatic scraper

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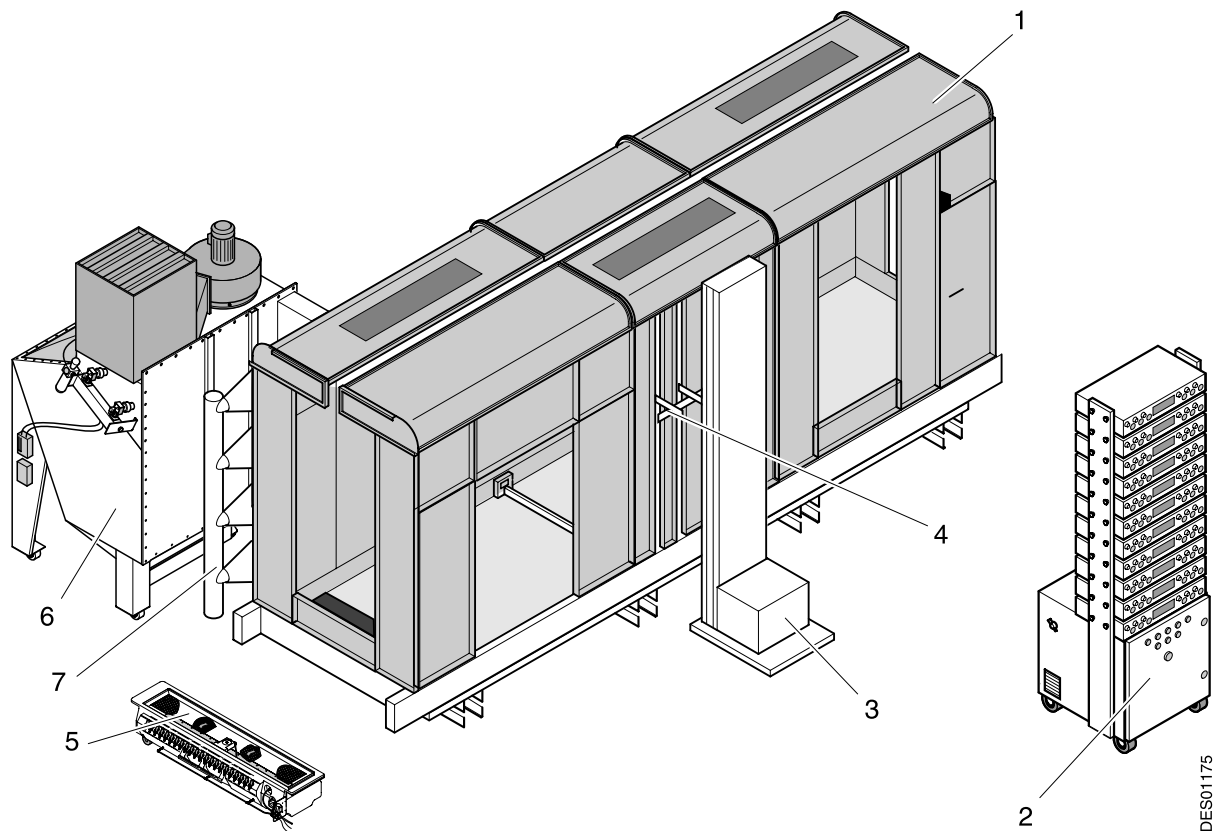
E-mail : formation-client@sames.com

MVH Powder booth with automatic scraper

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1. Description

1.1. General description of the installation



The **MVH** powder booth with automatic scraper (1), the subject of this manual, is intended to equip standard powdering installations of large and medium capacity. This powder booth integrates into a surface coating installation.

The **MVH** powder booth requires the following devices to operate:

- one or two CRN 456 modular panels (2) (according to the number of automatic controls, projectors, filter units, etc...),
- if it is an automatic booth, one or more robots (3) supporting the powder projectors (4) (depending on the number of automatic controls),
- one **CSV 800** hopper (5) for 1, 2 and 3 module models, the 4 module **MVH** booth has two **CSV 800** hoppers, with an option of additional hoppers to facilitate colour changes,
- one or more booth ventilation and air filtration tanks (6),
- possibly one or more multi-cyclones (7).

It may also have other equipment on option; for example, one (or more) fixed spray gun supports, spare part detection systems, etc...

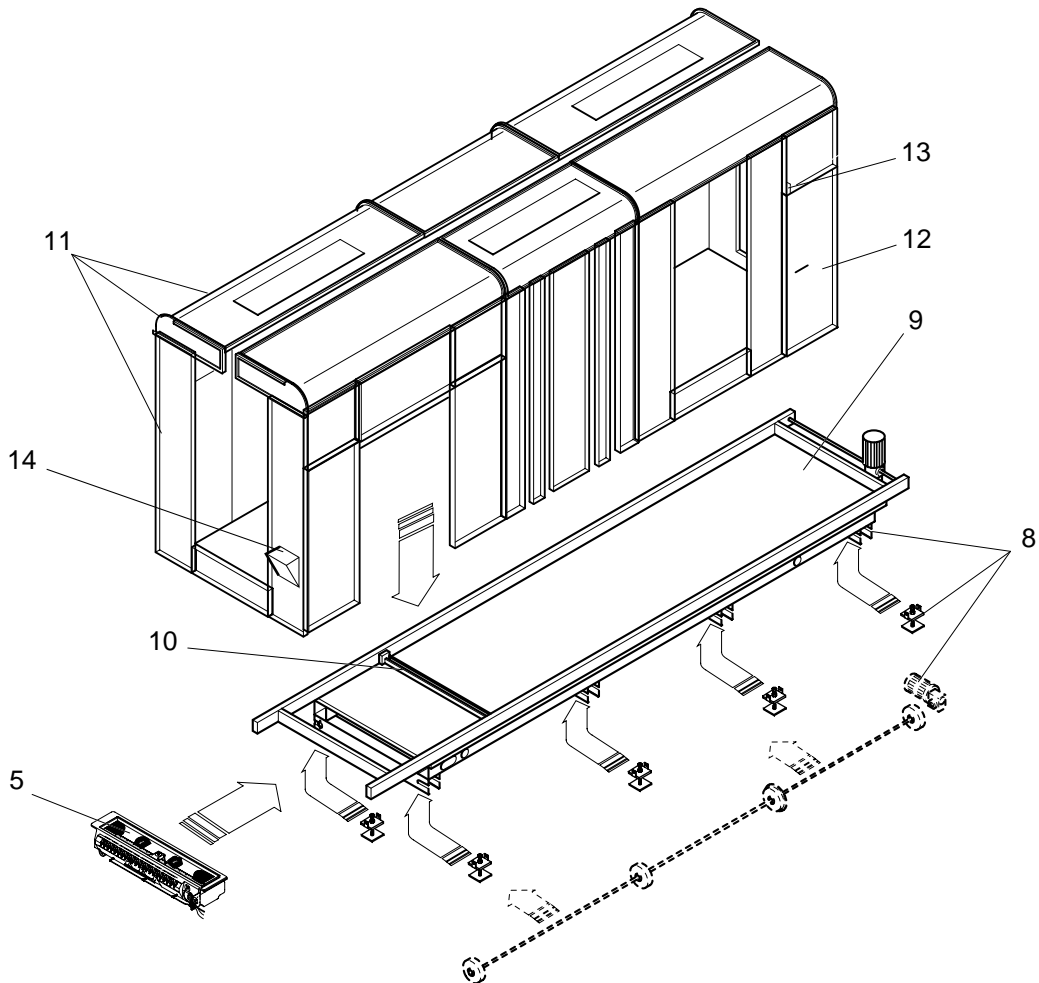
Consult **SAMES** for further information.

The declaration of incorporation and the conformity plate must be supplied for the whole powder booth assembly.



WARNING : It is dangerous to use this machine for uses other than those indicated above.

1.2. Description of the MVH powder booth



DES01176

The **MVH** powder booth exists with 1, 2, 3 or 4 modules and in two heights, 2500 or 3000 mm.

Its main components are:

- a set of fixed legs **(8)** (optional, a set of mobile legs),
- a 1, 2, 3 or 4 module floor **(9)** with automatic cleaning using a magnetic dual drive movable scraper **(10)**; the 4 module model has 2 scrapers (see assembly instructions **STMC008** and **STMU028**),
- a **CSV 800** hopper **(5)** for the 1, 2 and 3 module **MVH** powder booths (the 4 module booth has 2 hoppers, one at each end),
- a structure comprising panelling **(11)** (see assembly notice for the scraper booth structure **STMC010**), a door **(12)** with a "door open" detector **(13)** which prevents operation of the powder booth while the door is open and a powder filling trap-door **(14)**.



WARNING : In order to ensure an optimum operating, to each filling, don't put more 10 kg of powder in the filling trap-door.

1.3. Features

1.3.1. General features

- Booth movement speed: 9 m/min.
- Scraper movement speed: 8.16 m/min.
- Noise generated by the booth components consult the noise measurement sheet.

1.3.2. Dimensions

(see fig. DES01177)

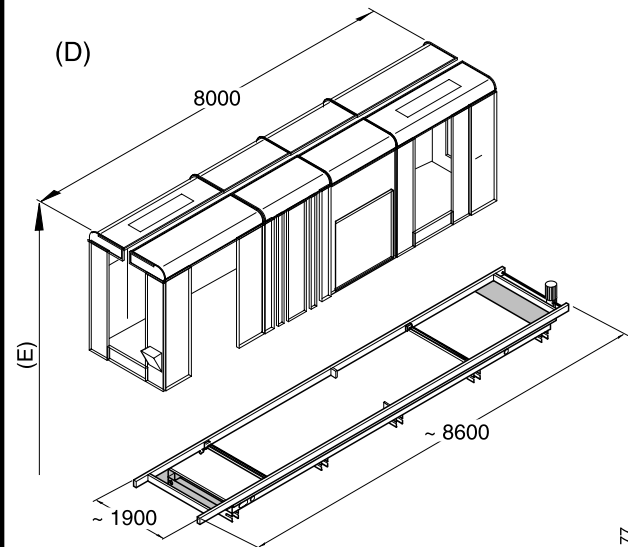
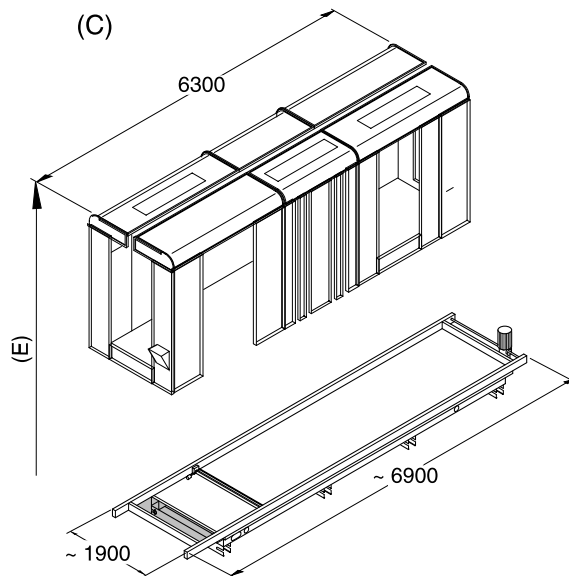
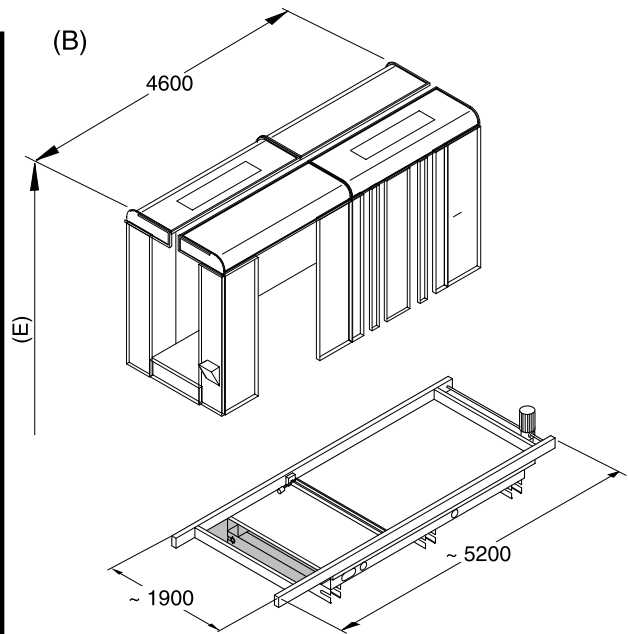
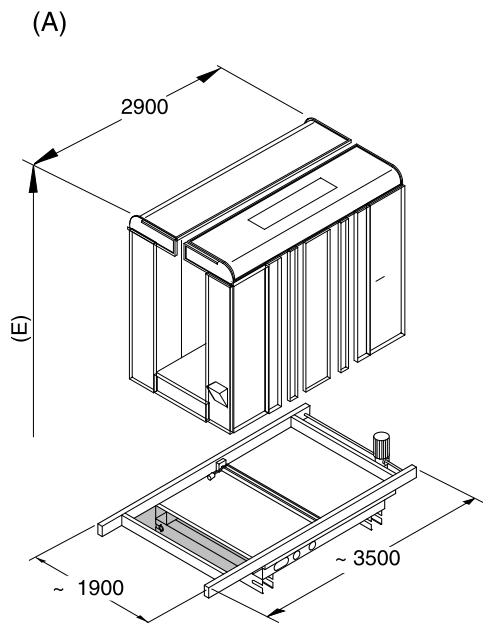
- Height 2600 mm or 3100 mm overall, depending on model.
- Width approx. 1900 mm overall.
- Lengths:
 - 1 module **MVH** booth 3500 mm overall,
 - 2 module **MVH** booth 5200 mm overall,
 - 3 module **MVH** booth 6900 mm overall,
 - 4 module **MVH** booth 8600 mm overall.
- Characteristics of the **CSV 800** hopper consult the document for the hopper **CSV 800** - ([see RT Nr 6141](#))

1.3.3. Pneumatic features

Consult the modular panel document .

1.3.4. Electrical features

- Supply voltage for the scraper motor 380 V 3-phase.
- Supply voltage for the lighting 220 V monophasé.
- Consult the modular panel document for further information.



DES01177

Reference	Description
A	1 module MVH booth
B	2 module MVH booth
C	3 module MVH booth
D	4 module MVH booth
E	2600 or 3100 overall at ground level

1.4. Operating principle

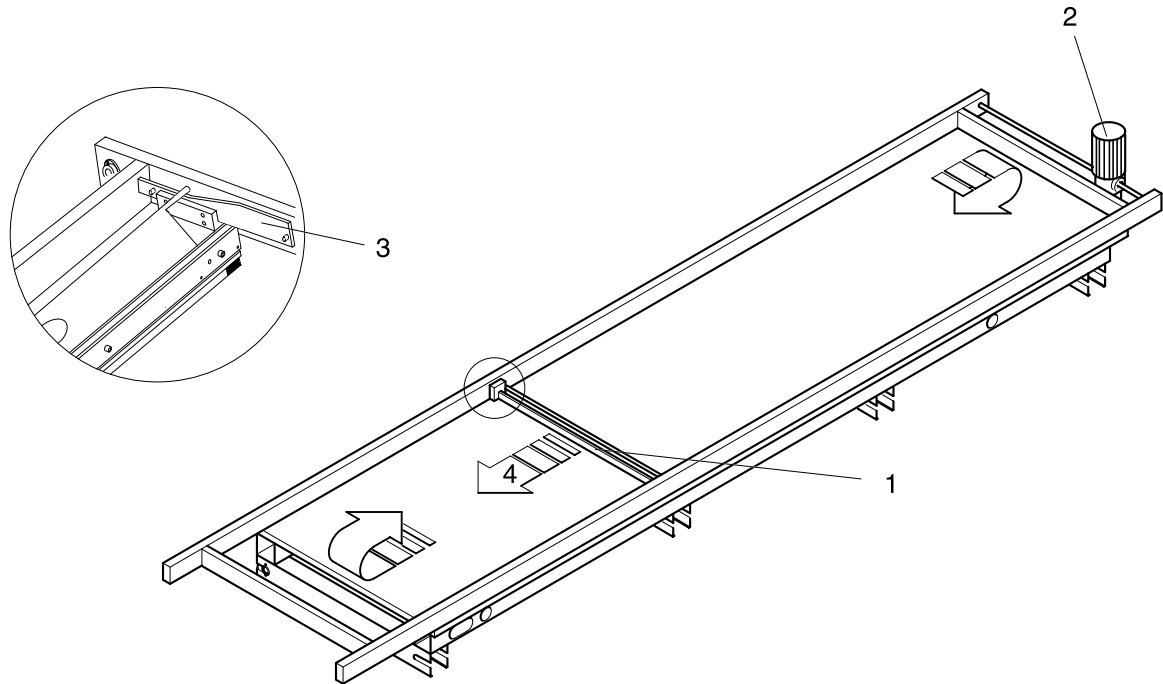
1.4.1. Booth operating principle

The parts to be powder coated are transported through the booth by a conveyor belt.

As they pass through the booth, the parts are painted by the powder projectors fed by the hopper(s) and activated by the robot(s) in the case of an automatic booth.

The booth has a powder hopper elevation system ([see § 2 page 9](#)).

1.4.2. Scraper operating principle



DES01178

(A): Scraper detail.

The scraper (1) is moved by a motor (2).

Two cams (3) (one either side of the scraper) are used to:

- move the scraper to the low position to scrape the floor of the booth (4),
- raise the scraper for its return.

The booth has two "end of stroke" reverser detectors for the scraper and two "out of stroke" detectors.



WARNING : Triggering of an "out of stroke" detector indicates failure of the previous "end of stroke" detector. In this case, the powder booth should be "re-started" (procedure, [see § 5 page 17](#))

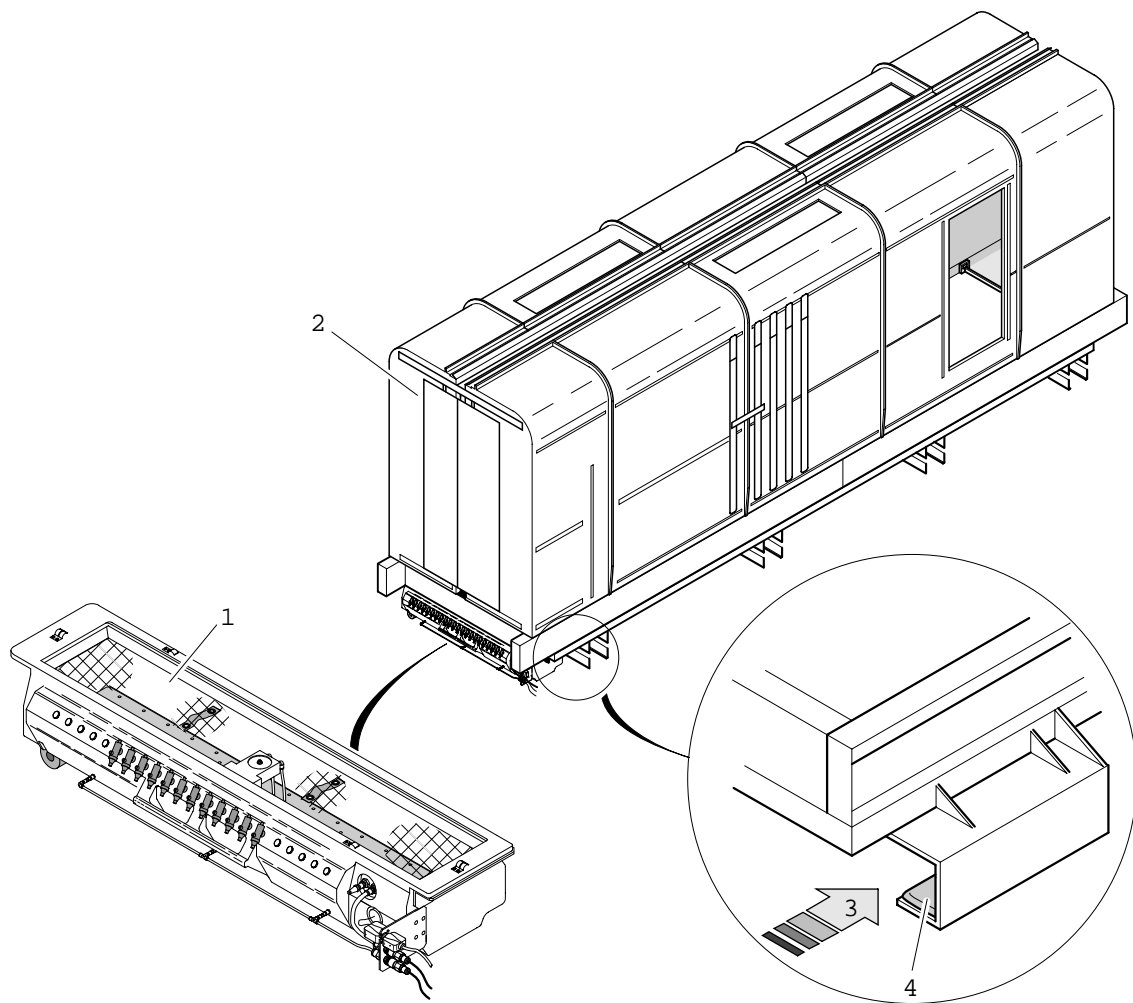
2. Installation



WARNING : The powder booth must be installed by a professional. For all modifications to the powder booth or its installation, it is mandatory to follow the installer's recommendations.

2.1. Installation of the CSV 800 hopper beneath the powder booth

Consult the modular panel document to put the powder booth into operation.



DES01179

- Offer up the **CSV 800** (1) hopper beneath the powder booth (2).

- Place the **CSV 800** powder hopper (or hoppers for the 4 module **MVH** booth) beneath the powder booth in the direction indicated by the arrow (3), then activate the jacks (4) using the control panel to position it (or them) beneath the booth.



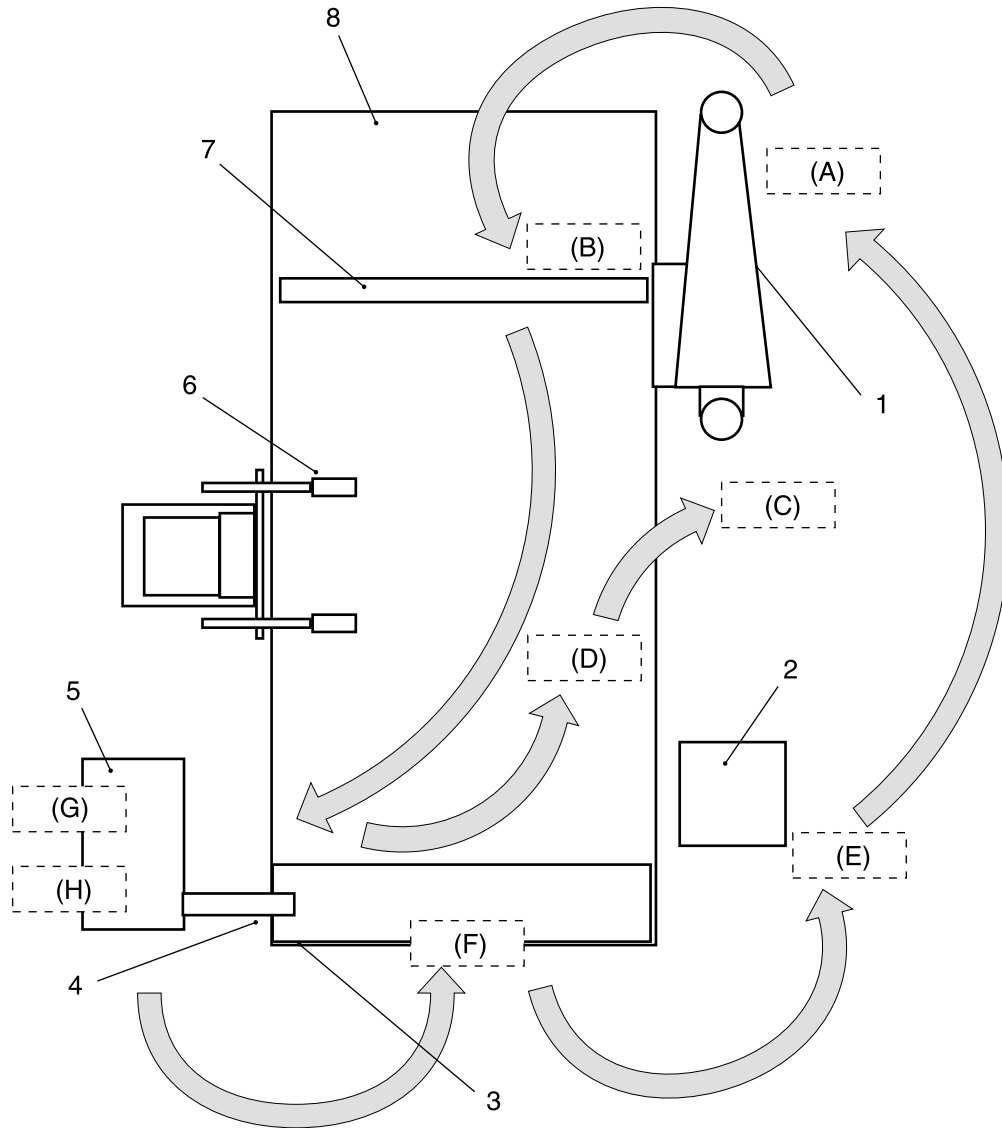
WARNING : The 4 module booth is fitted with two control panels.

2.2. Removal of CSV 800 hopper

- Detach the **CSV 800** hopper from the powder booth by activating the jacks (4).
- Remove the hopper (1).

3. Cleaning the booth

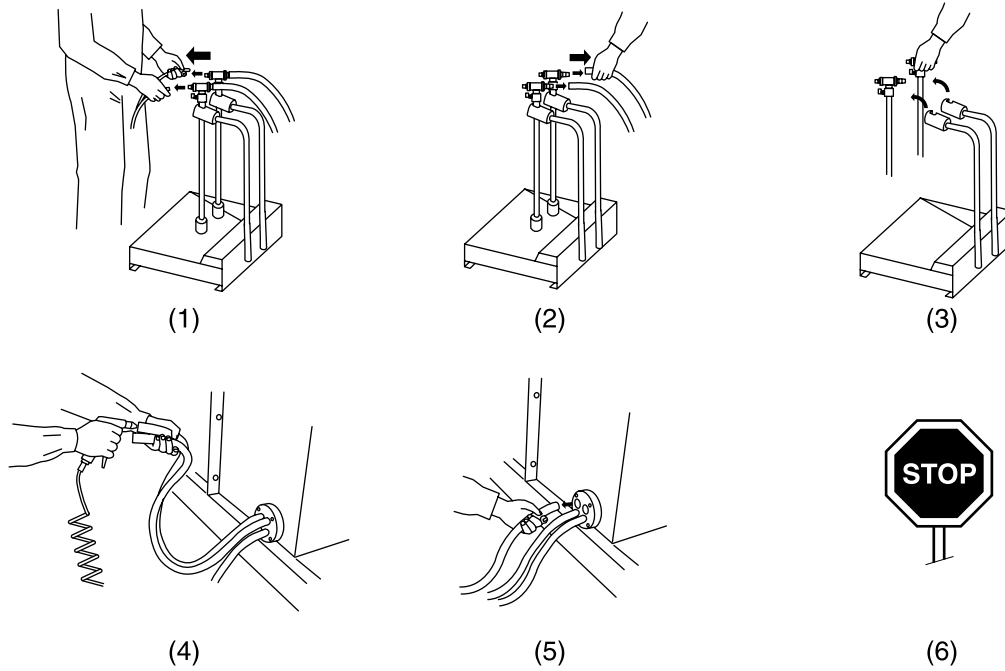
3.1. Cleaning cycle



DES01180

Reference	Description
1	Cyclone
2	Control
3	Powder hopper
4	New powder inlet elbow
5	New powder supply
6	Spray guns
7	Scraper
8	Booth
A	see § 3.5 page 14
B	see § 3.6 page 14
C	see § 3.8 page 16
D	see § 3.7 page 15
E	see § 3.5 page 14 - 17 -
F	see § 3.4 page 13
G	see § 3.2 page 12
H	see § 3.3 page 13

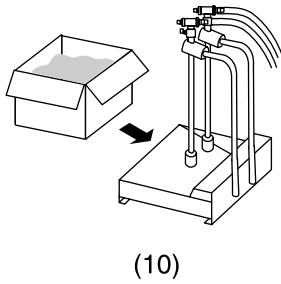
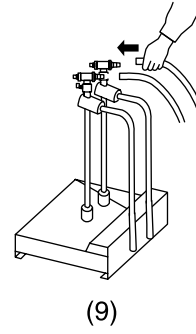
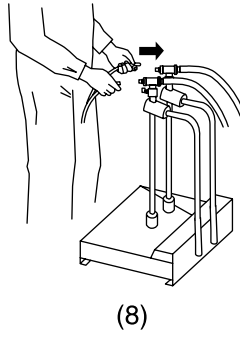
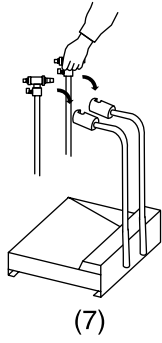
3.2. Disconnection and cleaning of plungers



No.	Procedure
1	Disconnect the "injection" pipes on the "new powder" plungers.
2	Disconnect the new powder feed pipes.
3	Remove the dirty plungers.
4	Blow out the "new powder" inlet pipes.
5	Disconnect only the "new powder" inlet pipes to the booth.
6	Stop the conveyor.

DES01181

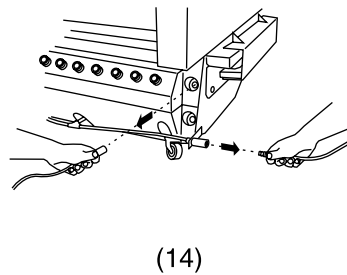
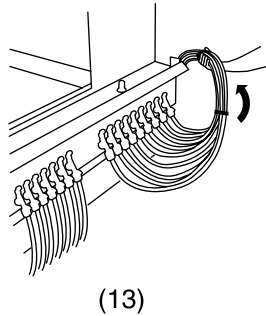
3.3. Connection of clean plungers



No.	Procedure
7	Fit the clean plungers.
8	Connect the "injection" air pipes.
9	Connect the new powder pipes.
10	Insert the box containing the new colour.

DES01182

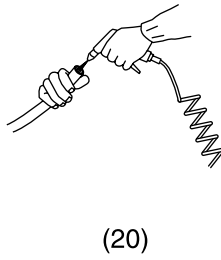
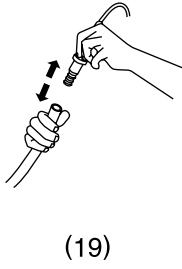
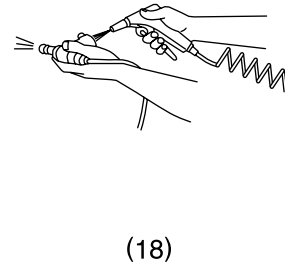
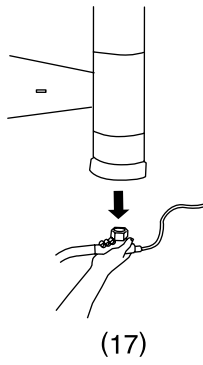
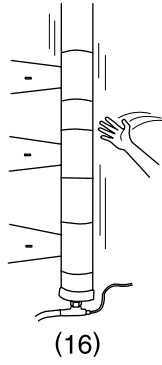
3.4. Freeing of powder vat



No.	Procedure
11	Disconnect the projector powder pipes .
12	Clean the projector plungers using an air blower.
13	Hang the pipes on the side of the booth.
14	Disconnect the CSV 800 hopper fluidisation, the level detector and the vibrator.
15	Clean the exterior of the projectors.

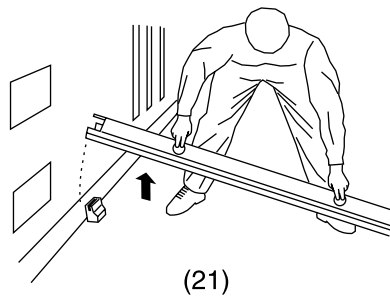
DES01183

3.5. Freeing of collector



No.	Procedure
16	Tap the cyclone collector.
17	Disconnect the recycled powder return pipe.
18	Blow out the venturi.
19	Disconnect the venturi from the recycling pipes.
20	Blow out the recycling pipes.

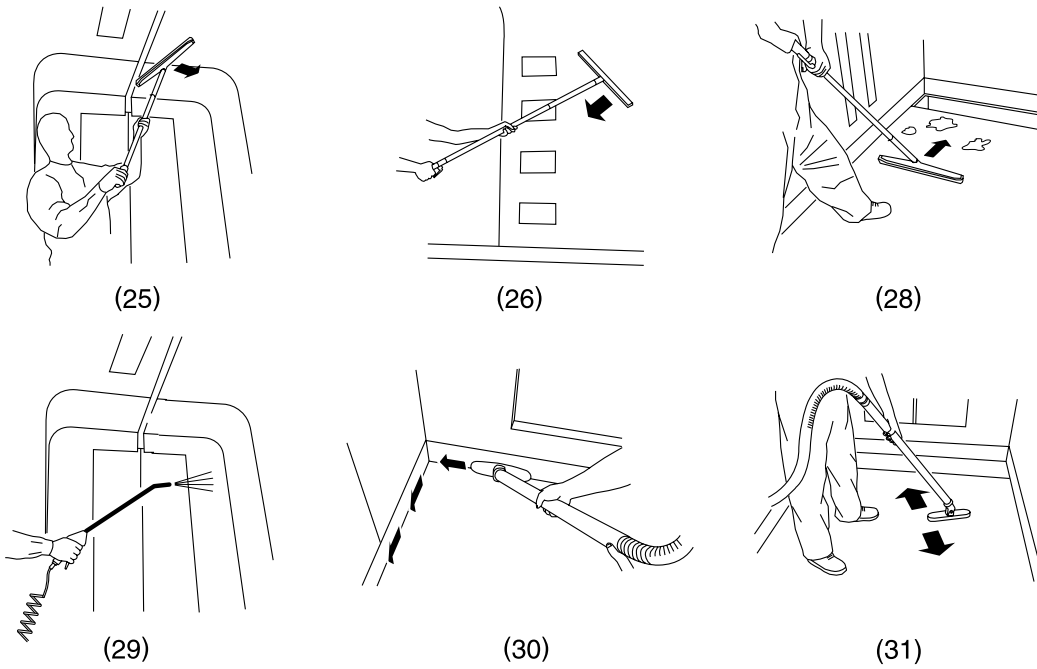
3.6. Removal of the scraper



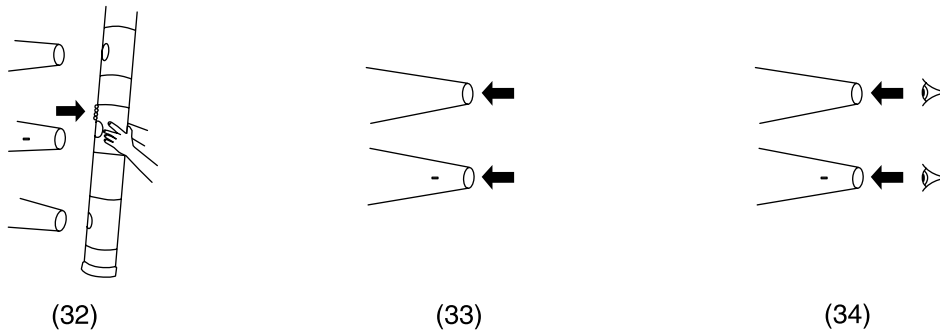
DES01185

No.	Procedure
21	Remove the scraper.

3.7. Cleaning the interior of the booth



No.	Procedure
25/26	Scrape the walls (top to bottom in the direction of the cyclones).
27	Scrape the bottom of the booth towards the vat.
28	Remove the powder vat and insert the "waste" vat.
29	Blow down the walls.
30/31	Vacuum the stainless steel bottom (seals + bottom).

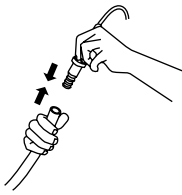


No.	Procedure
32	Disconnect the cyclone collector.
33	Blow out the cyclones.
34	Check that the interior of the cyclones is clean.

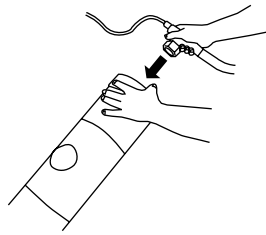
DES01187

DES01188

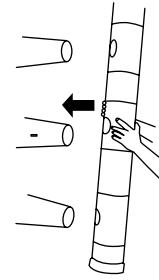
3.8. Re-fitting the parts



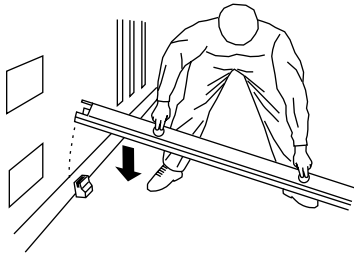
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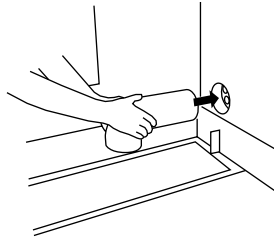
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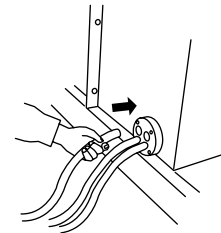
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(38)

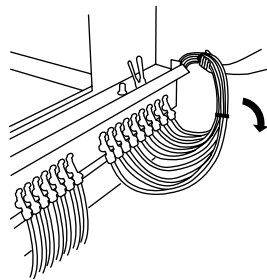


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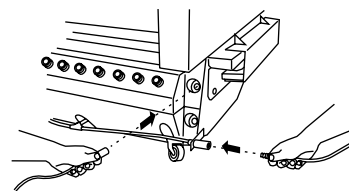


(40)

No.	Procedure
35	Connect the powder return pipes (light or dark shades) on the venturi.
36	Connect the venturi to the clean collector.
37	Re-install the collector and its fixings.
38	Re-install the scraper.
39	Re-install the powder inlet elbow (on option).
40	Connect each new powder inlet pipe and recycling pipe to the booth.



(42)



(44)

No.	Procedure
41	Remove the "waste" vat and insert the new colour vat.
42	Unhook the pipes from the side of the booth.
43	Reconnect the pipes on the hopper venturi.
44	Reconnect the hopper fluidisation, the level detector and the vibrator.

DES01189

DES01190

4. Preventive maintenance



WARNING : Use only compressed air, a cloth, a brush or possibly a silicone-free rubber scraper for cleaning operations.

Never use water to clean the equipment.

The nature of the paint used determines the extent of dirt and wear caused by the passage of the powder paint.

The maintenance schedule shown in the table below is given as a guide only.

The user must create his own maintenance schedule as he uses **SAMES** material.

At first, we recommend the following maintenance schedule:

Maintenance frequency	Action
- Daily	- Check the general state of the powder booth.
- Weekly	- Clean the whole of the powder booth assembly (see § 3 page 10). - Grease the chains using a "microball" grease spray, ref.: MOLYKOTE METALFORM .
- Every 100 hours of operation.	- Check the state of the shoe friction plates inside the booth. Replace them if necessary.
- Every 400 hours of operation.	- Check the state of the shoe friction plates outside the booth and the chain tension (see STMU028 § 5.6).
- Every 3000 hours of operation.	- Grease the control shafts. Check their axial play. If it exceeds 30°, the axles and pins must be replaced (not forgetting to put the end washers back into place). - Check that the chains are in good condition (see STMU028 § 5.6), replace them if they have extended by more than 2% (see the following chapter "corrective maintenance"). Also replace the corresponding pinions and pins.

5. Corrective maintenance

5.1. "Re-starting" the powder booth

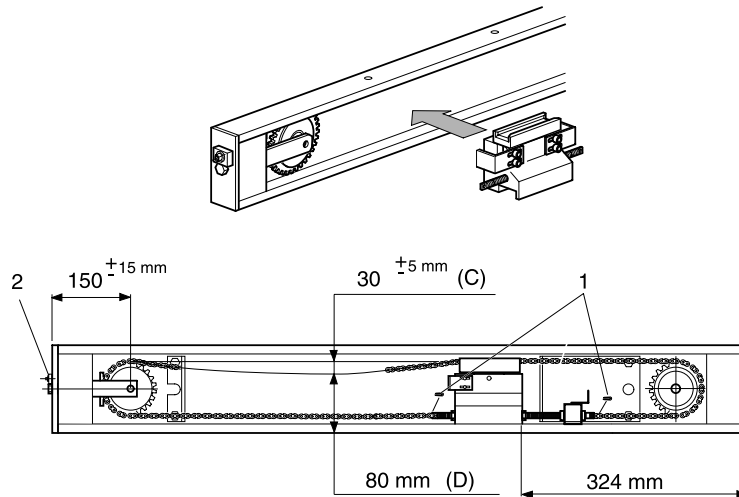


WARNING : After an installation stoppage due to scraper movement beyond the "end of stroke" safety detector, the following operations must be carried out:

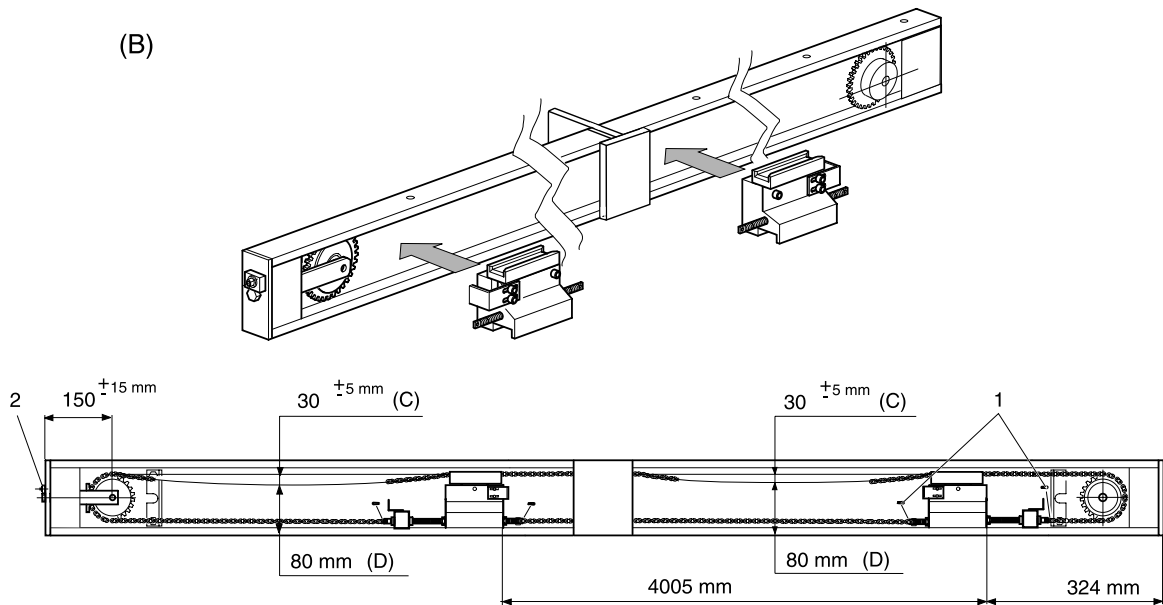
- Switch off the installation's general electricity supply.
- Remove the yellow torque limiter lid.
- Unscrew the wing nut to separate the washers.
- Bring the scraper back by turning the shaft manually.
- Adjust the torque limiter (consult the scraper booth floor assembly document STMC008).
- Replace the torque limiter lid.
- Check that the end of stroke detectors are working correctly; replace them if necessary.
- Reconnect the powder booth's general electricity supply.

5.2. Replacing the scraper drive chains

(A)



(B)



DES01191

Reference	Description
A	1, 2 or 3 module MVH booth
B	4 module MVH booth
C	Arrow
D	Girder bottom



WARNING : Systematically replace all self-locking washers when re-assembling. Both (or all four for the 4 module booth) chains (one - or two - on each side) must be changed simultaneously.

- Remove the upper girder covers.
- Stop the scraper so that the external skids are accessible.

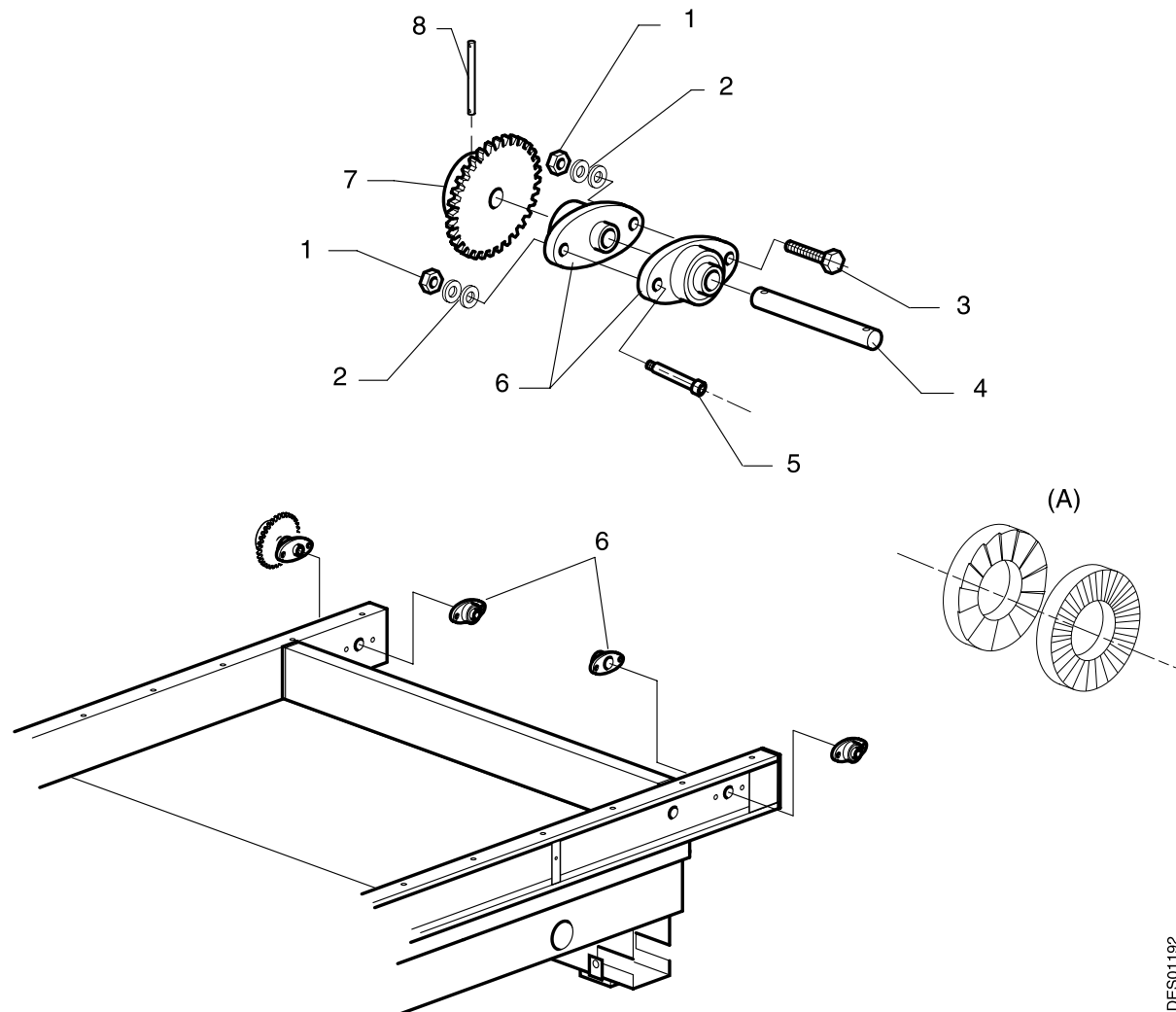
- Switch off the installation's general electricity supply.
- Remove the stopping plates (2).
- Slacken the chain to enable removal of the "rapid fastening" links (1) located on either side of the external shoe.
- Remove the chains.
- Replace the motor pinions and their axles and pins ([see § 7.1 page 20](#))
- Check the state of the tensioner pinions; replace them if necessary ([see § 7.2 page 21](#)).
- Inert the shoes respecting the dimensions shown in fig. DES01191 below.
- Place new chains in position, then tighten them.
- Replace the upper girder covers.
- Switch on the powder booth's general electricity supply.

6. Associated documents

- Scraper booth floor assembly document..... STMC008
- Scraper booth structure assembly document..... STMC010
- Scraper motorisation assembly document STMU028
- CSV 800 hopper operating manual [see RT Nr 6141](#)
- Filter module operating manual
 - C4500 associated MCH RT 6078
 - C6000 associated FU cyclone RT 6050
 - C6000 associated MCH RT 6047
 - C6000 without pre-cycloning..... RT 6077
 - C6000 ground level fan RT 6051
 - Universal C6000 associated MCC6000 RT 6097
 - C8000 without pre-cycloning..... RT 6032
 - C9000 associated MCH RT 6074
 - C12000 without pre-cycloning..... RT 6032
 - C12000 associated MCH RT 6073
 - Universal FV6000 RT 6098
 - Universal FV8000 RT 6099
 - V6000-R RT 6048
 - V8000-R RT 6049

7. Spare parts

7.1. Fixed pinion

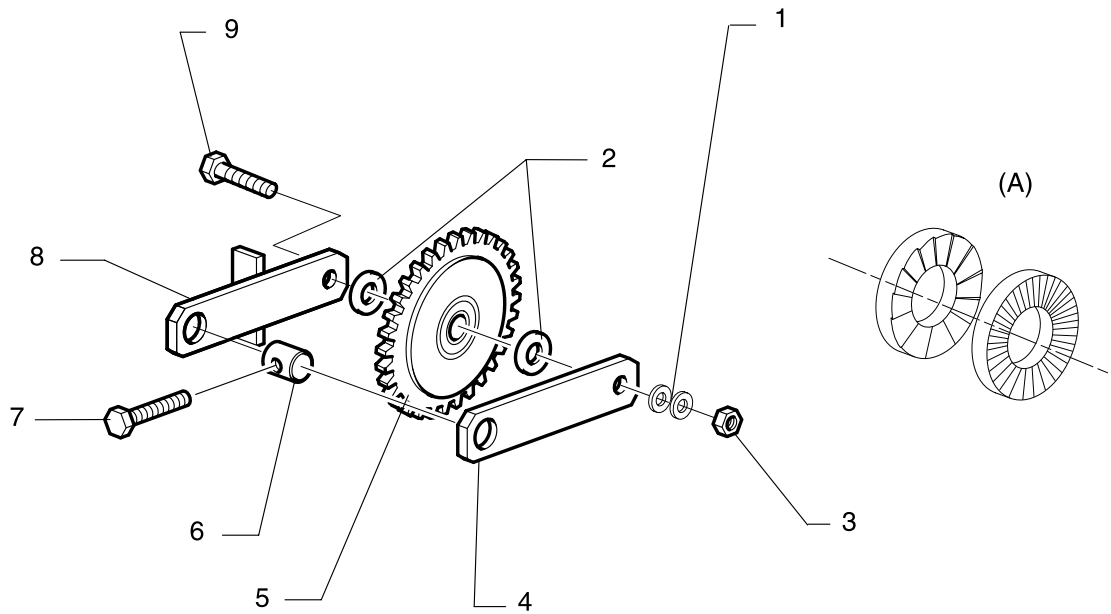


DES01192

Ref	Part number	Description	Qty
1	X2BEHU010	H M 10 nut	4
2	X3CDSP782	Self-locking washer, dia. 10 mm	4
3	X2BVHA331	H M 10 x 30 screw	2
4	1402184	Pinion axle	2
5	X3AVAE374	Shoulder bolt	2
6	641047	Bearing	4
7	547869	Pulley	2
8	X3CGSP015	Pin	2

Nota: Quantity are given for the two sides.

7.2. Tensioner pinion



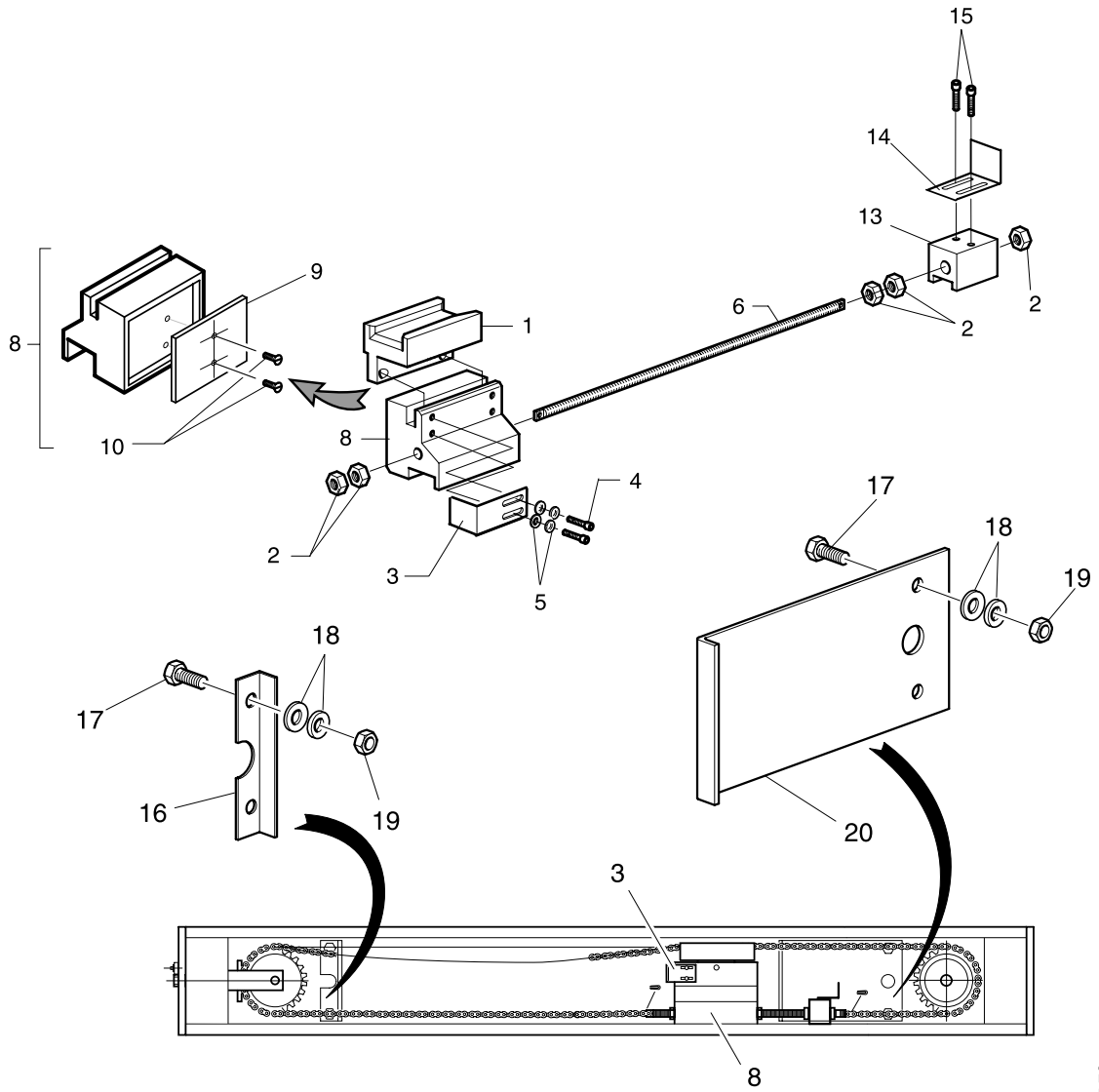
(A): Self-locking washer assembly

DES01193

Ref.	Part number	Description	Qty
1	X3CDSP786	Self-locking washer, dia. 12 mm	2
2	549573	Washer	4
3	X2BEHU012	H M 12 nut	2
4	738794	Outside tensioner flat	2
5	549574	Pinion	2
6	549571	Threaded axle	2
7	X2BVHA706	CHc M 10 x 70 screw	2
8	738795	Inside tensioner flat	2
9	X2BVHA378	CHc M 12 x 40 screw	2

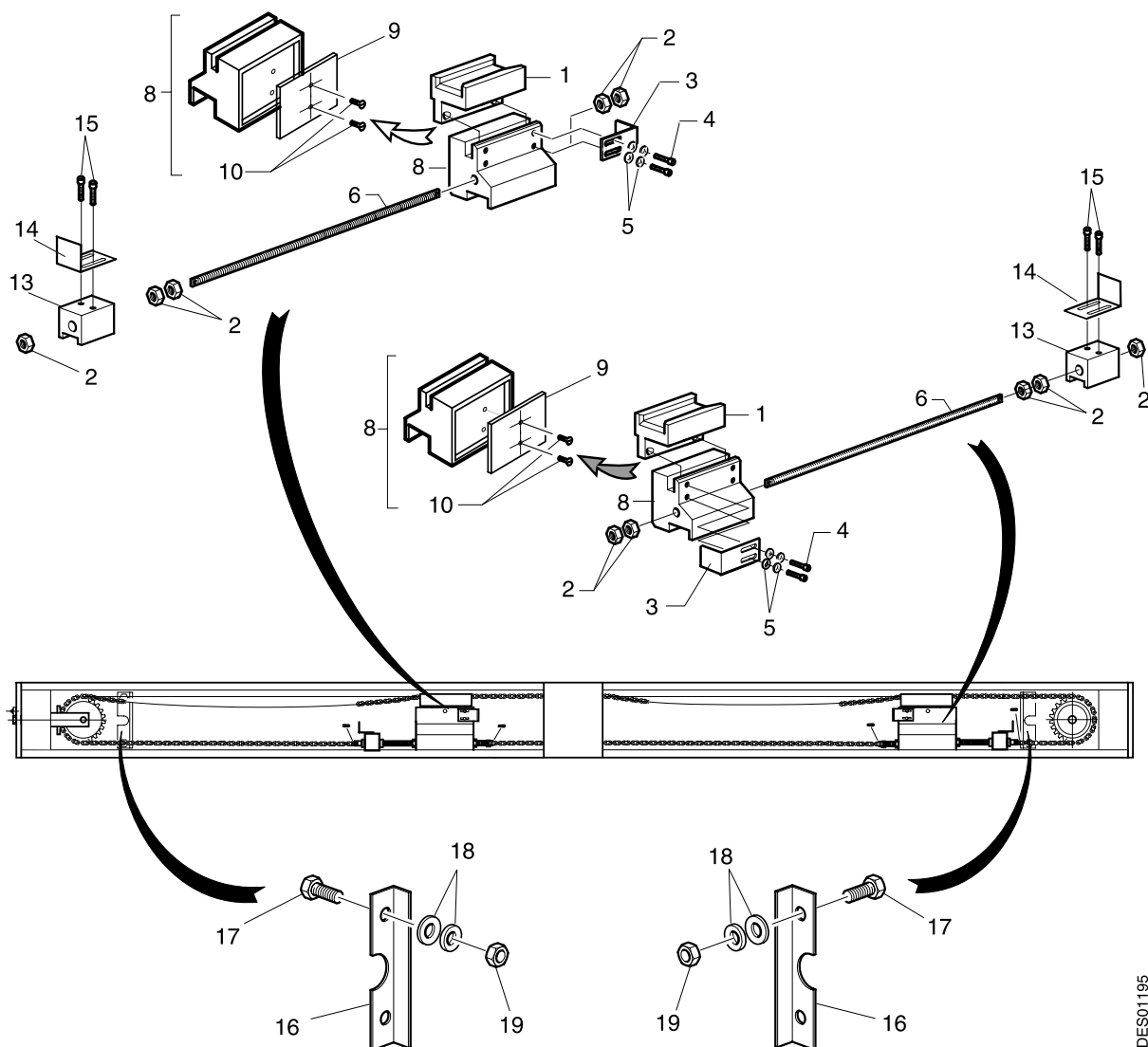
7.3. Shoes

- External shoe assembly for 1, 2 or 3 module booths: 2 external shoes (1 on each side)



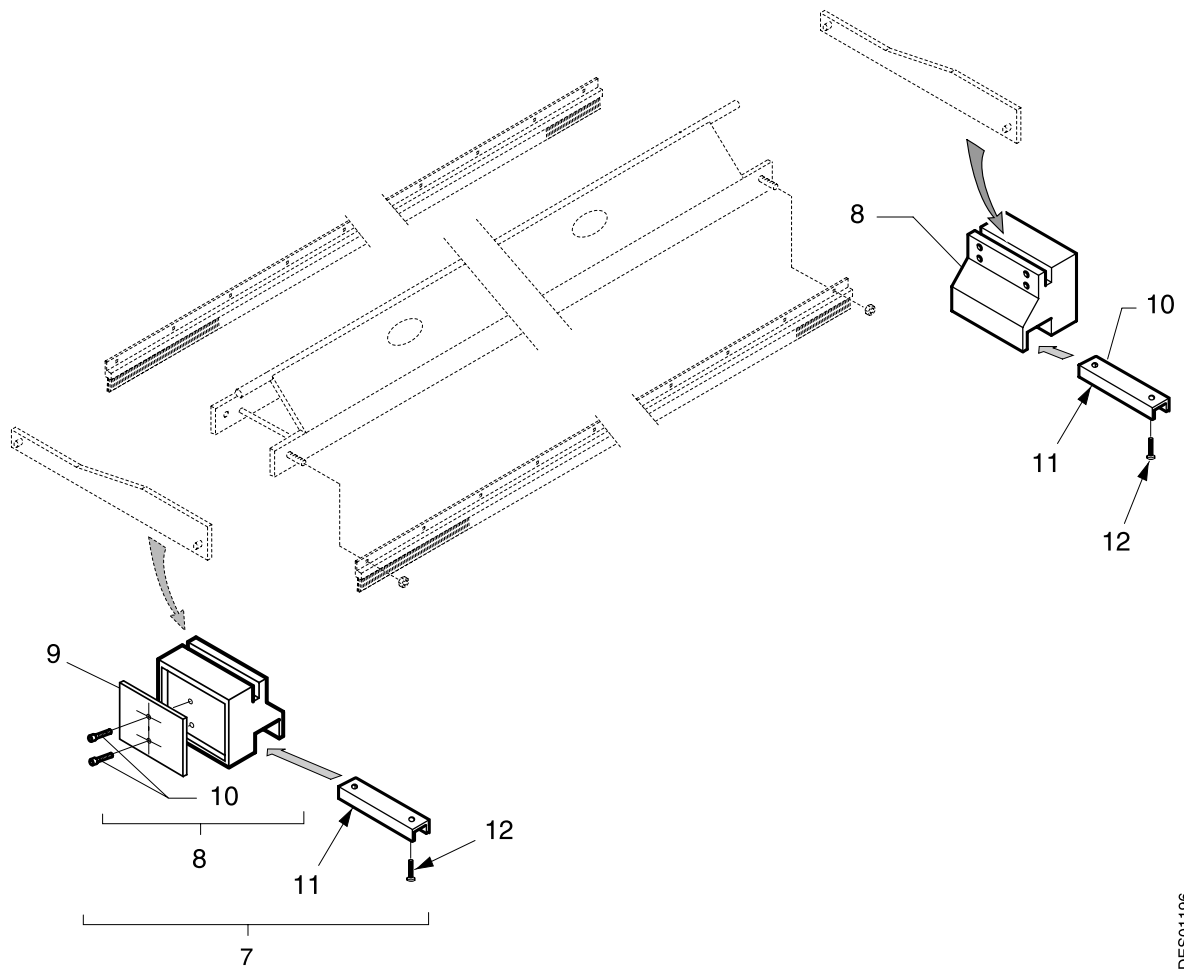
DES01194

- External shoe assembly for 4 module booth: 4 external shoes (2 on each side)



DES01195

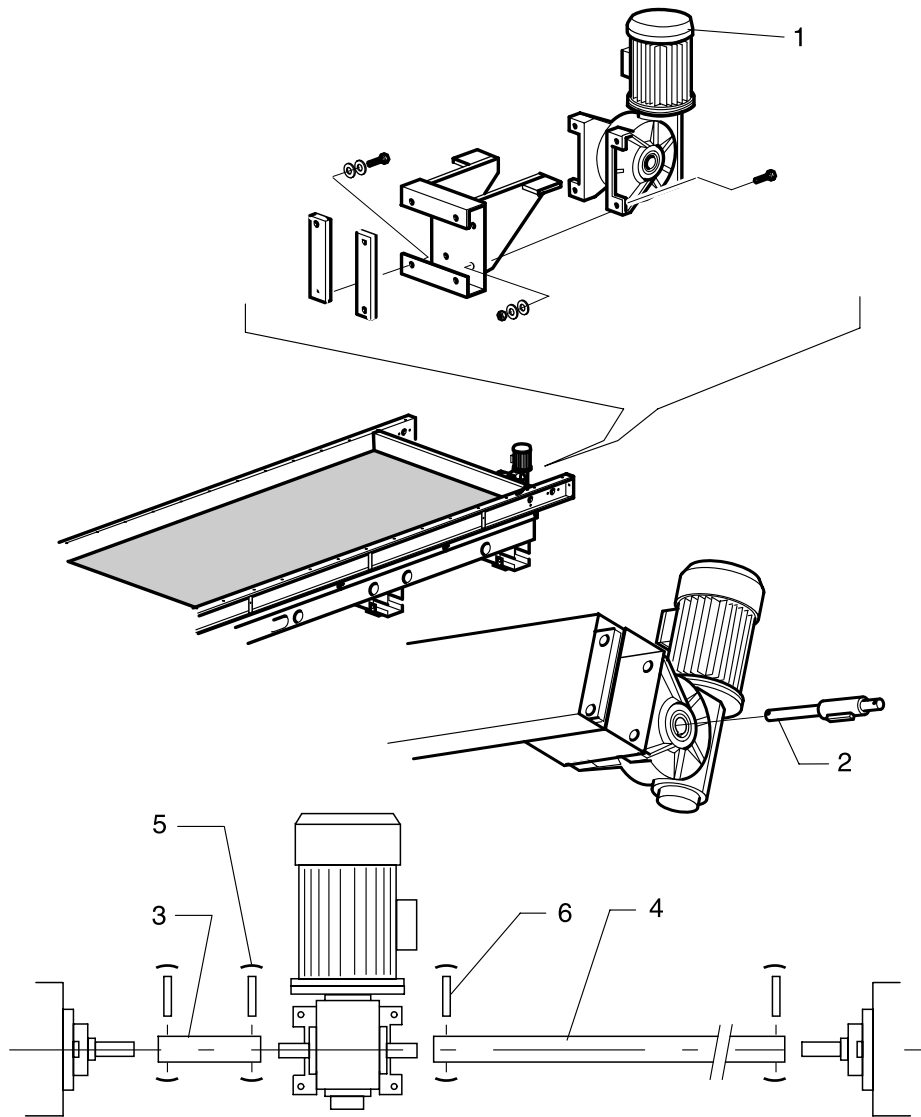
- Internal shoe assembly for 1, 2 or 3 module booths: 2 internal shoes per scraper (1 on each side), i.e. 2 internal shoes for one booth
- Internal shoe assembly for 4 module booth: 2 internal shoes per scraper (1 on each side), i.e. 4 internal shoes for one booth



DES01196

Ref.	Part number	Description	Qty 1, 2 and 3 modules	Qty 4 modules
1	. 739143	Chain support	2	4
2	. X2BEHU010	H M 10 nut	10	20
3	. 930225	Detection plate of shoe	2	4
4	. X3AVSY186	CHc M 5 x 20 screw	4	8
5	. X3CDSP784	Brake washer, dia. 5 mm	8	16
6	. 1303680	Chain link axle	2	4
7	. 930115	Internal shoe assembly (complete)	2	4
8	.. 739140	Mounted shoe assembly (with friction plate and screws)	4	8
9	... 641189	Friction plate	1 per shoe assy.	1 per shoe assy.
10	... X9NVFP118	F/90 M 4 x 10 nylon screw	2 per shoe assy.	2 per shoe assy.
11	.. 641190	Sliding skid	2	4
12	.. X2BVCB183	C M 5 x 16 slotted steel screw	4	8
13	.. 1303681	Guide block	2	4
14	.. 1403486	Detection bracket	2	4
15	.. X3AVSY119	CHc M 4 x 12 screw	4	8
16	.. 1403488	Shoe stop	2	4
17	.. X2BVHA285	H M 8 x 30 screw	4	8
18	.. X3CDSP781	Self-locking washer	16	32
19	.. X2BEHU008	H M 8 nut	16	16
20	.. 1 303684	Shoe stop	2	-

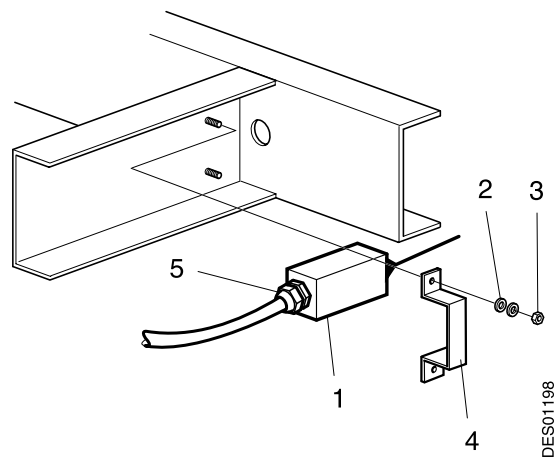
7.4. Motor reduction gear



DES01197

Ref.	Part number	Description	Qty
1	1402724	Motor reduction gear	1
2	1402183	Motor axle	1
3	738950	Short U-joint	1
4	738951	Long U-joint	1
5	X3DXER223	Quicklock washer	8
6	X3CGSP014	U-joint pin	4

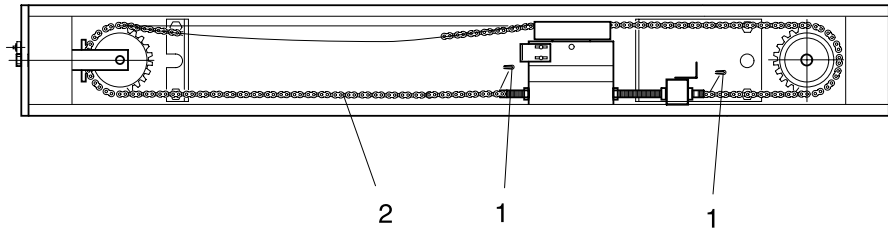
7.5. End of stroke detector



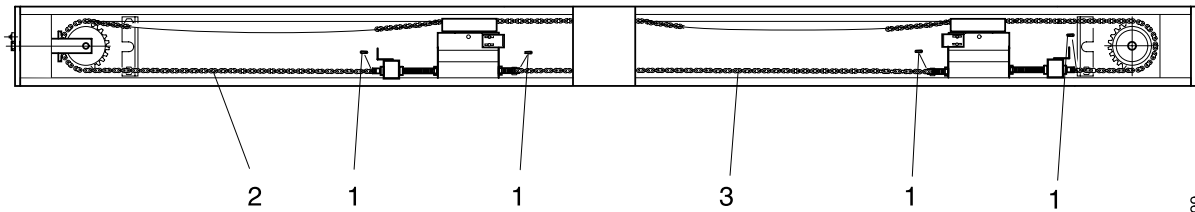
Ref.	Part number	Description	Qty
1	930227	"End of stroke" and "out of stroke" detector	4
2	X3CDSP783	Brake washer, dia. 6	8
3	X2BEHU006	M 6 nut	8
4	739731	Detector flange	4
5	E3RPLN011	Stuffing box	4

7.6. Chains

(A)



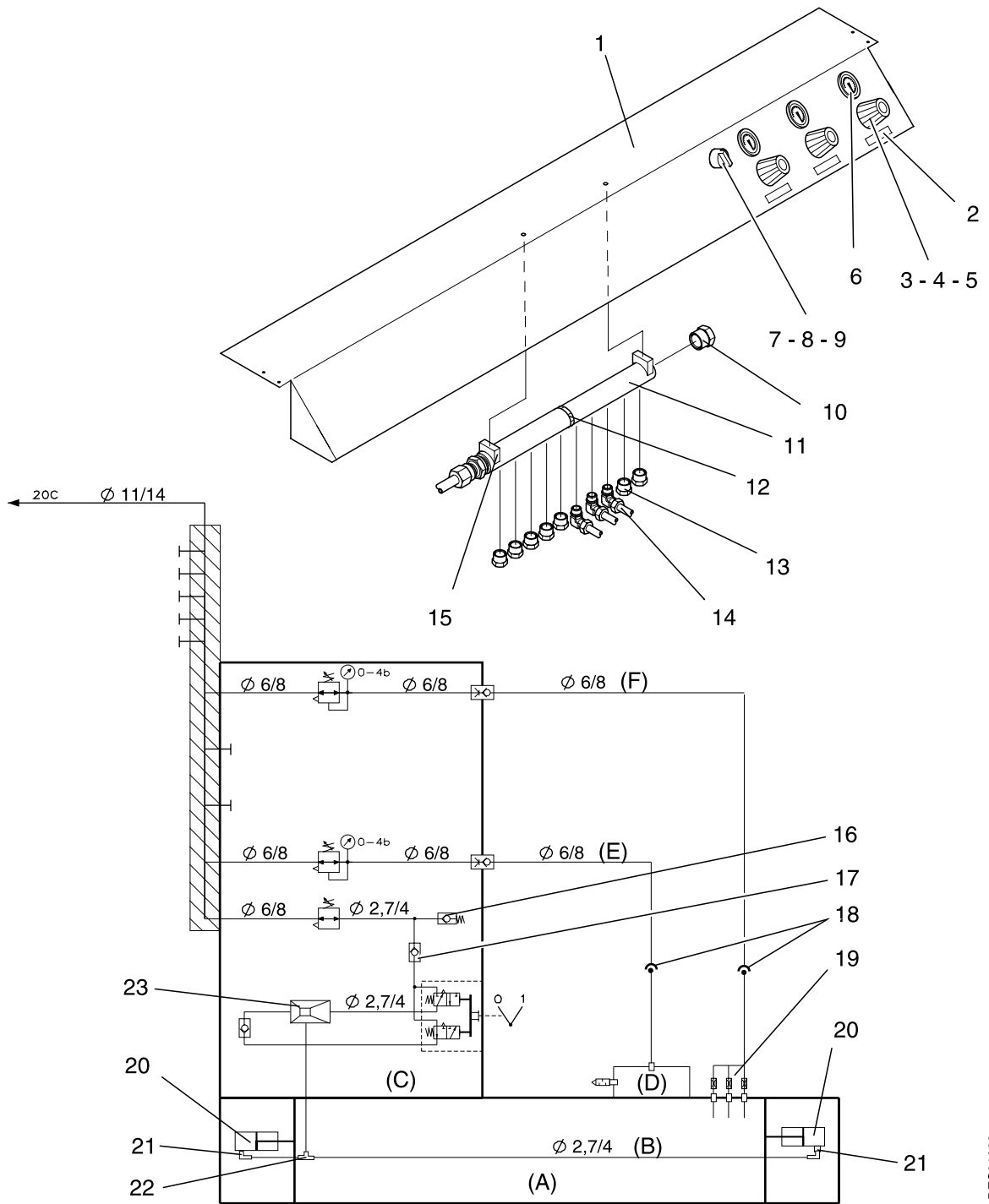
(B)



DES01199

Ref.	Part number	Description	Qty
A		1 module booth	
1	K4CATR771	Rapid fastener link	4
2	K4CSRP796	Chain for 1 module booth, 7.175 m long	2
A		2 module booth	
1	K4CATR771	Rapid fastener link	4
2	K4CSRP790	Chain for 2 module booth, 10.439 m long	2
A		3 module booth	
1	K4CATR771	Rapid fastener link	4
2	K4CSRP793	Chain for 3 module booth, 13.843 m long	2
B		4 module booth	
1	K4CATR771	Rapid fastener link	8
1	K4CSRP797	Chain for 4 module booth, 12.509 m long	2
5	K4CSRP798	Chain for 4 module booth, 3.911 m long	2

7.7. Front control panel and jacks

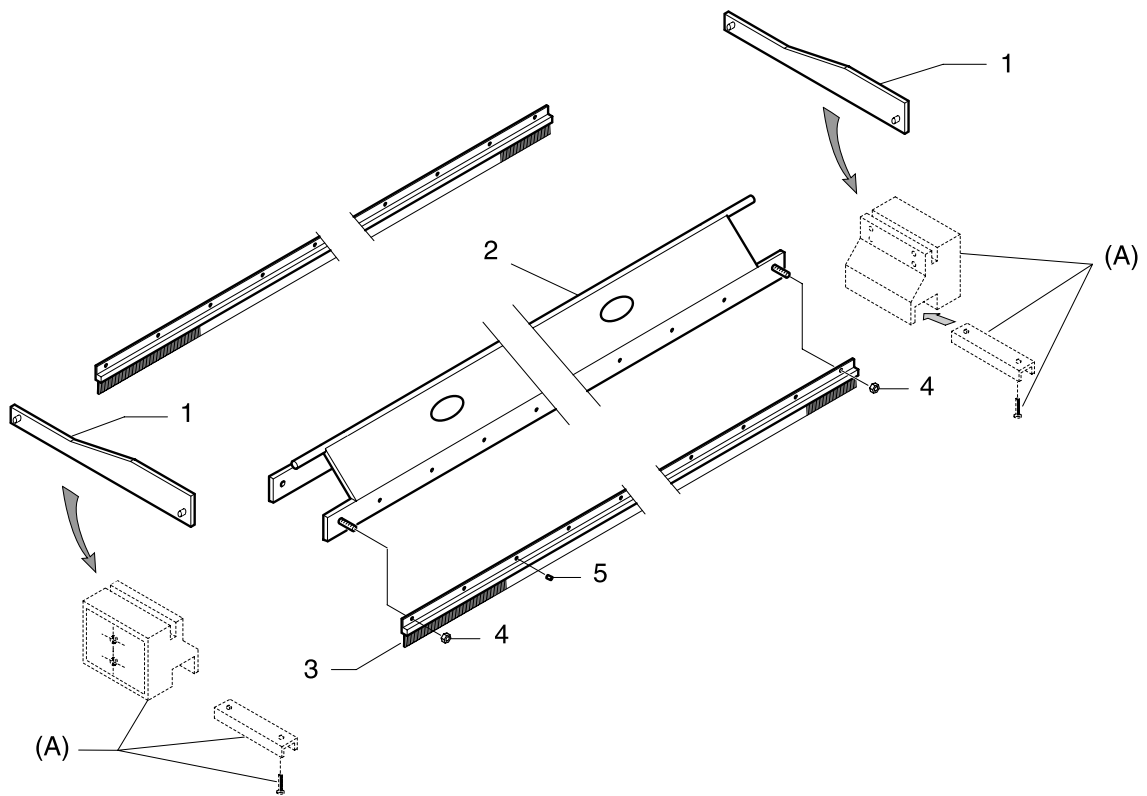


DES01200

Ref.	Part number	Description	Qty
1	1201301	Booth control panel	1
2	641437	Label control panel	1
3	F6RLUS271	Female simple union dia. 4 1/8"	3
4	R4DREG029	Regulator 3.5 Bars	3
5	F6RLCS393	Male elbow, dia. 8 1/4"	6
6	R7MCAD061	Manometer, dia. 40 4B+PSI	3
7	E5FBME039	Turning button	1
8	E5FETQ058	Stop/start label	1
9	F1VEET056	Valve "EC" support	1
10	F6RLSZ412	End plug 3/4"	1
11	F6RLSZ411	Collector	2
12	F6RLSZ399	Nipple 3/4"	1
13	F6RLBH233	Plug 3/8"	9
14	F6RLCS466	Male elbow, dia. 8 3/8"	3
15	F6RLSZ413	Support for GIACOMINI collector	2
16	F1SSRL027	Safety valve	1
17	F6RRAF045	Check valve	2
18		Connection - See CSV800 hopper (see RT Nr 6141)	4
19		Restrictor - See CSV800 hopper (see RT Nr 6141)	4
20	1304012	Jacks	2
21	F6RLUS484	Unequal dual union, dia. 2.7/4 - 4/6 ratchet	2
22	F6RLTS453	Equal fitting tee, dia. 2.7/4	1
23	F3PPRE069	Vacuum generator	1

Reference	Description
A	CSV800 hopper
B	Jack outlet hopper-booth connection
C	Control panel
D	Vibrator
E	Air vibrator
F	Air fluidisation

7.8. Scraper assembly



DES01201

(A): voir § 8.3

Ref.	Part number	Description	Qty 1, 2 and 3 modules	Qty 4 modules
1	738833	Elevation rod	2	4
2	930517	Brush support	1	2
3	738832	Brush	2	4
4	X2BEHU003	H M 3 nut	4	8
5	X6BRSP134	Blind pop rivet, dia. 4 mm	20	40