



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

Reclaiming assembly

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Reclaiming assembly

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1. Supplementary documents

Note: This document contains links to the following operating manuals:

For the GNM 100, [see RT Nr 6102](#)

For the "Mach-Jet Gun", [see RT Nr 6336](#)

For the "Auto Mach-Jet" sprayer, [see RT Nr 6366](#)

See the supplier's documentation for the filtration box

See the supplier's documentation for explosion venting

See the supplier's documentation for recommendations on reducing the explosion hazard

See the supplier's documentation for the ΔP control module.

See the supplier's documentation for the motor fan unit

See the supplier's documentation for the DPI sequencer

For the PVV Easycolor booth, [see RT Nr 6187](#)

For the Instructions for fitting a sleeve into a sleeve valve, [see RT Nr 6057](#)

For the PVV Easycolor facility, [see RT Nr 6224](#)

For the CS 127 powder pump, [see RT Nr 6368](#)

2. Safety

This powder reclaiming equipment must be installed by SAMES.

All modifications to the reclaiming equipment, or the facility of which it is a part, must be in accordance with SAMES recommendations.

2.1. Safety rules



WARNING : All operators must, without fail, understand the residual risks involved in the use of this equipment ([see § 2.2 page 5](#)).

The rules listed below apply to the installation, maintenance and operation of the equipment.



WARNING : This electrostatic coating equipment must only be used by trained personnel who are fully aware of the following safety rules:

- 1 A warning sign written in a language understood by the operator which summarizes the safety rules set forth in this manual must be conspicuously displayed near the work station.
- 2 Operators must wear antistatic shoes which comply with ISO 2251 standards. If gloves are necessary, use only antistatic gloves or gloves from which the palms have been removed.
- 3 The work area must have antistatic flooring (bare concrete flooring is usually antistatic).
- 4 The powder coating equipment must be serviced on a regular basis in accordance with instructions from SAMES. Repairs must also be performed in accordance with these instructions.
- 5 All conductive structures located within or around the work area must be electrically connected to the electrical power ground protection system (cyclone separator, sieving system, etc.).
- 6 The ground surface on which the cyclone separator rests must have a strength greater than 400 kN / m².
- 7 The sieving system must be properly adjusted (in particular, the powder conveying air pressure and vibratory amplitude) in accordance with SAMES instructions ([see § 4.1 page 10](#)).
- 8 The temperature of any heat source in contact with the reclaiming system must not exceed 40° C.
- 9 The perforated plate and sieve must be properly installed. The perforated plate must be locked into the groove in the hopper.
- 10 The sieving system must be correctly positioned against the bottom of the cyclone separator. Make sure that there are no objects caught between the sieving system and the cyclone separator.

11 Make sure that the reclaimed powder conveyance hose is properly connected to the sieving system.

12 The bend radius of the powder conveyance hose must be greater than 200 mm.

2.2. Residual risks

All operators must be fully aware of the residual risks involved in the operation of the equipment. These risks are explained in the following table:

Risk	Degree of risk	Extent of injury	Exposure frequency and length	Methods used to limit damage
Noise hazard (see RT Nr 6224 for noise level data sheet).	Serious	More than one person	During cleaning cycle	Personal protection (helmet, ear-plugs, etc.).
Cutting or severing of a body member (finger, hand, etc.) when handling the perforated plate	Minor	One person	During manual cleaning operations or 0 to 10 times a day.	Operator training
Dust inhalation	Minor	More than one person	During manual cleaning operations or 0 to 10 times a day.	Protective mask
Fall hazard when working on the upper part of the cyclone separator	Serious	One person	Rare	Proper equipment for working at the height in question.

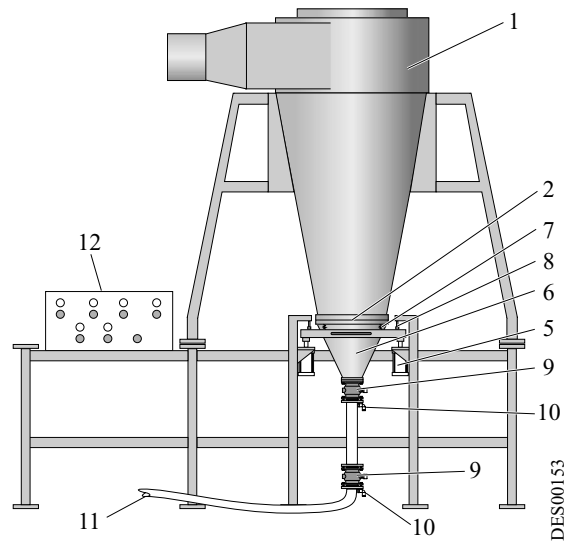
3. Description of the equipment

3.1. General description

The reclaiming assembly, which is made up of the cyclone separator (1) and the sieving system (2), is used to reclaim the powder deposited in the booth (A). Reclaiming occurs during the booth powder coating stage and during the cleaning stage.

Air containing excess powder is sucked up by the motor fan unit (D) and conveyed to the cyclone separator (1).

A vibrating sieve filters the powder coming from the separator; the powder is then sent to the supply unit (C) for re-use and the air from which the powder has been removed, is filtered in the filtration box (E), then returned to the shop.



1	Cyclone separator	Separates the excess powder from the air
2	Gasket	Provides a tight seal between the cyclone separator and the sieving system
3	Perforated plate	An anti-clogging device to prevent powder from clogging the sieve
4	Sieve *	Sieves the powder before its re-use
5	Locking cylinders	Positions the sieving system on the bottom of the separator
6	Vibrator	Helps the powder to flow into the hopper.
7	Springs	Control the vibratory amplitude of the sieving system
8	Cyclone separator frame end stop	Positions the sieving system
9	Sleeve-valves	Isolates the reclaiming compartment from the separator/sieving system assembly
10	Conveyance air	Conveys the powder
11	Powder conveying hose	Conveys the powder to the powder supply unit
12	Control panel	Adjusts the powder conveyance air flow Controls opening / closing of the sieving system

* The following mesh dimensions can be used: 150 µm, 390 µm.

3.1.1. Pneumatic specifications

Max. input pressure	10 bar (150 psi)
Min. input pressure for a flow rate of 17 m ³ / hr.	4 bar (60 psi)
Max. compressed air consumption *	17 m ₀ ³ /h (10.2 Scfm).
Compressed air specifications	NF ISO 8573-1
Dew point *	Class 4 or +3 °C (37°)
Max. particle size of solid pollutants	Class 3 or 5 µm
Max. concentration in solid pollutants *	Class 3 or 5 mg / m ₀ ³
Max. concentration in oil*	Class 1 or 0,01 mg / m ₀ ³

* = m₀³: values given for a temperature of 0° C (32° F), at atmospheric pressure.

3.1.2. Electrical specifications

3.1.2.1. Sieving system vibrator

Supply voltage	220/380 V 3-phase.
Frequency	50/60 Hz.
Wattage	115 W.
Protection index	IP 65.
Insulation class	E.
Weight	6 kg.

3.1.2.2. Sieving system specifications

Sieving system vibratory adjustment	Min. see § 4.2 page 11
Max. flow rate for reclaimed powder:	
Sieve mesh - 390 µm	100 kg/h.
Sieve mesh - 150 µm (optional)	100 kg/h.

3.1.2.3. Conveying device specifications

Flow rate (with adjustments see § 3.2.1 page 8)	100 kg/h.
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3.2. Operation

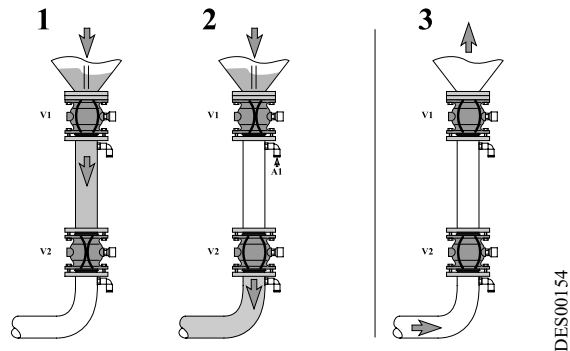
3.2.1. Reclaiming and powder conveyance

The excess powder deposited inside the powder coating booth (A) is sucked into the evacuation duct (B) by the motor fan unit (D) and is conveyed to the cyclone separator (1). In the separator (1), the air laden with powder particles circulates in a swirling motion from the top to the bottom of the separator. When it arrives at the perforated plate (3), the speed of the powder laden air is considerably reduced. Since the air speed is no longer sufficient to carry the powder particles, they fall into the sieving system (2), and the air, from which most of the powder has been removed, is discharged through the top of the cyclone separator to the filtration box (E).

The powder is then sifted through the sieve (4), which the vibrator causes to oscillate, and falls into the container.

The amplitude of the sieve's vibrations is controlled by the springs (7). After the powder has been evacuated into the hopper, two sleeve valves (9) control its return to the supply unit (C) by opening and closing in alternation with the injection of air flow to convey the powder.

Stage	Valve 1 (V1)	Powder conveying air flow 1 (A1)	Valve 2 (V2)	Powder conveying air flow 2 (A2)	Result
Reclaiming (1 + 2)	Open	0	Closed	1	The powder falls into the buffer zone between V1 and V2. The powder under V2 is conveyed into the reclaiming hose.
	Closed	1	Open	0	The powder falls under the V2 valve.
Cleaning (3)	Open	1	Open	1	The cleaning air flow arrives from the supply unit and crosses the two sleeve valves.



3.2.2. Cleaning the sieving system

During the sieving system cleaning stage, the bottom of the cyclone separator is open and only the powder which is already in the sieving system is reclaimed.

The powder which is still in the booth at that time is not reclaimed. The sieving system should therefore be cleaned after cleaning the booth to minimise the waste of powder.

3.3. Sieving system installation



WARNING : Make sure the sieving system's two support legs are solidly touching the ground.

Check that the hopper lift nuts are not touching the hopper frame (to avoid the transfer of vibrations).

Use the handle to manipulate the hopper frame.

3.3.1. Installing the sieving system

¥Place the sieve and the perforated plate on the sieving system.

- Lock the perforated plate into the groove on the hopper by rotating it around its axis.
- Rotate the sieving system under the separator until it reaches the stop.
- Lock the sieving system under the separator by activating the two locking cylinders on the control panel.

3.3.2. Positioning the sieving system

¥The sieving system must be installed so that there is a perfectly tight seal at the gasket located on the cyclone separator's output rim.

¥The vibrator is used to obtain the sieving system's vibratory amplitude ([see § 4.2 page 11](#)). The reclaiming device is now ready for operation.

4. Adjusting the equipment

4.1. Conveyance of reclaimed powder



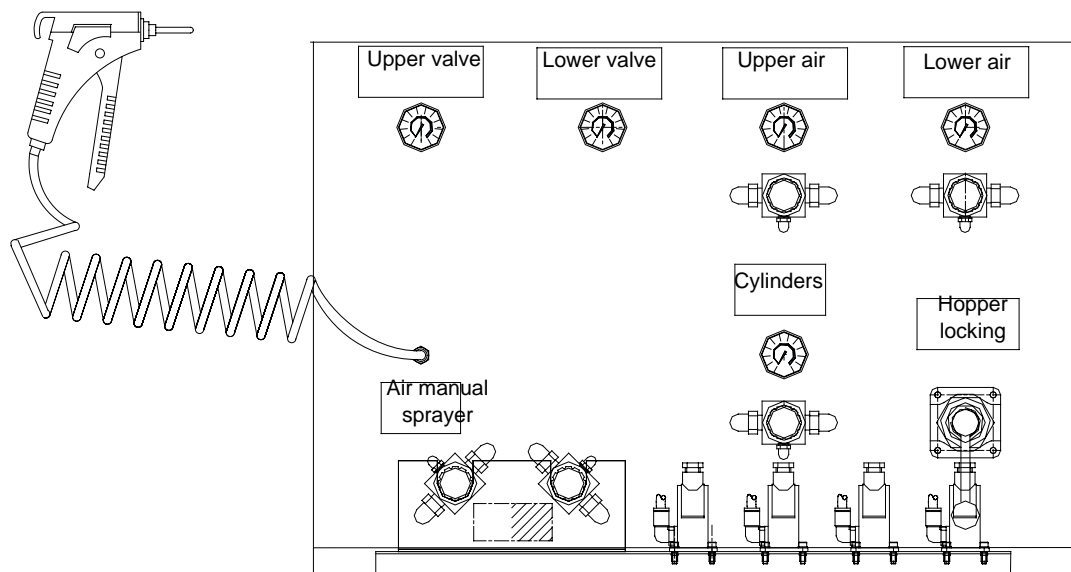
WARNING : This adjustment should be made by a **SAMES** technician.

The reclaiming device is controlled by an PLC.

To adjust this device, the duration and pressure of the pneumatic conveyance airflow injections must be regulated.

Pressure is adjusted on the control panel. The values set for the various airflow pressures are given below. The air injection duration adjustment is made from the PLC. The conveyance airflow pressure should permit powder reclaiming without excessive fumes in the powder unit.

See control panel diagram for pressure adjustments on the control panel:



DES00431

The conveyance airflow pressure values to be set on the control panel are as follows:

Upper valve – V1	1.8 bar (27 psi).
Upper conveyance airflow – A1	1.2 bar (18 psi).
Lower valve – V2	1.8 bar (27 psi).
Lower conveyance airflow – A2	1 to 3 bar (15 to 45 psi).
Sieving system locking cylinders	6 bar (90 psi).

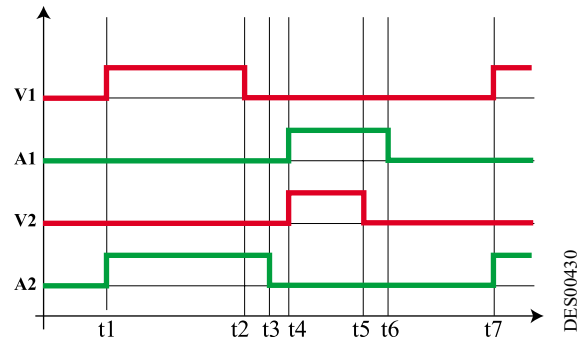
The upper and lower valve pressure are to be adjusted inside the box.

Injection cycle adjustment: the pneumatic conveyance of reclaimed powder is entirely controlled by the facility's PLC.

Diagram of the conveyance cycle:

Conveyance cycle times are programmed on the automat:

t1 to t2	Powder intake into the buffer zone
t1 to t3	Conveyance of powder to the supply unit
t3 to t4	Stand-by
t4 to t5	Powder intake into the reclaiming tubing
t4 to t6	Conveyance from V1 to V2
t6 to t7	Stand-by for next cycle



4.2. Vibrator



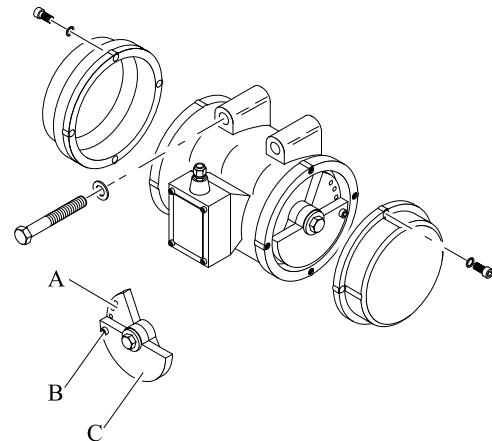
WARNING : Vibratory intensity must be adjusted by a SAMES technician. It must be identical on both sides of the vibrator.

The vibrator is located opposite the handle on the hopper frame. Vibration must be adjusted to the minimum. (The minimum out of balance is obtained when the 2 half disks are positioned on either side of the vibrator's axis).

Adjustment procedure:

- 1 Remove the housings from both sides of the vibrator.
- 2 Unscrew the screw (C).
- 3 Rotate the half-disk (B) on the half-disk (A) to the position corresponding to the desired vibratory intensity, 10°.
- 4 Re-tighten the screw (C).
- 5 Perform the same procedure to adjust the other side of the vibrator with the same orientation.
- 6 Replace the housings, then re-install the vibrator on the vibrating table.

A	Mobile flyweight
B	Mounting bolt
C	Fixed flyweight



5. Method of operation

The operation of the reclaiming system is controlled by the PLC.

Cleaning the sieving system:

The sieving system must be cleaned each time the colour is changed and before a production shut-down of more than two hours.

The cleaning procedure for the sieving system is as follows:



WARNING : During the sieving system cleaning operation, the evacuation air system must be operational.

- 1 Lower the sieving system from the cyclone separator by activating the lock cylinders using the lever on the control panel.
- 2 Rotate the sieving system to gain access to the perforated plate.
- 3 Clean the perforated plate using the air gun on the control panel.
- 4 Unlock and remove the perforated plate.
- 5 Clean both sides of the perforated plate using the air gun (this should be done under the separator). Rest the perforated plate on one of the sieving system's end stops and on the sieving system's rim.
- 6 Clean the sieve and the hopper of the sieving system under the separator using the air nozzle.
- 7 Reposition the sieving system without the sieve or the perforated plate:
 - Place it against the separator frame.
 - Raise it by activating the lock cylinders until it is lodged against the separator gasket.
- 8 Activate backblowing of the reclaiming hose.
- 9 Open the sieving system and clean the hopper under the separator.
- 10 Re-install the sieve and the perforated plate, then reposition the sieving system (see item 7).
- 11 The reclaiming system is now ready for operation.

6. Maintenance

6.1. Preventive maintenance

At each colour change, the perforated plate, the sieve and the hopper must be properly cleaned using the air gun on the control panel.

6.1.1. Sieve cleaning

The inner sieve cleaning has to be cleaned every week. Before starting the cleaning of the inner sieve , please, refer to the safety instructions ([see § 2.1 page 4](#)).

Cleaning kit:

- Non fluffy clean cloth
- Cleaning product VIADYL (more or less 1 litre)
- Rubber gloves
- Protection goggles

Weekly cleaning procedure

- Clean the sieve, likewise for colour-changes, with provided air compressed manual gun.
- Clean off the accumulated powder, that has melted on the sieve, every week with a VIADYL-soaked cloth by placing a recovery tub underneath. Scrub off the melted powder..
- Then, clean the whole upper and lower surface with a clean and dry cloth.
- Blow the sieve
- Leave it to dry for at least 24 hours minimum.

6.1.2. Cyclone cleaning

The inner cyclone has to be cleaned every week. Before starting the cleaning of the inner cyclone, please, refer to the safety instructions ([see § 2.1 page 4](#)).

Cleaning kit:

- Non fluffy clean cloth
- Cleaning product VIADYL (more or less 1 litre)
- Rubber gloves
- Protection goggles

Cleaning procedure for the cyclone inner cone

- Clean off the accumulated powder that has melted on the cyclone inner cone with a VIADYL-soaked cloth every week.
- Leave it to dry for at least 24 hours minimum.



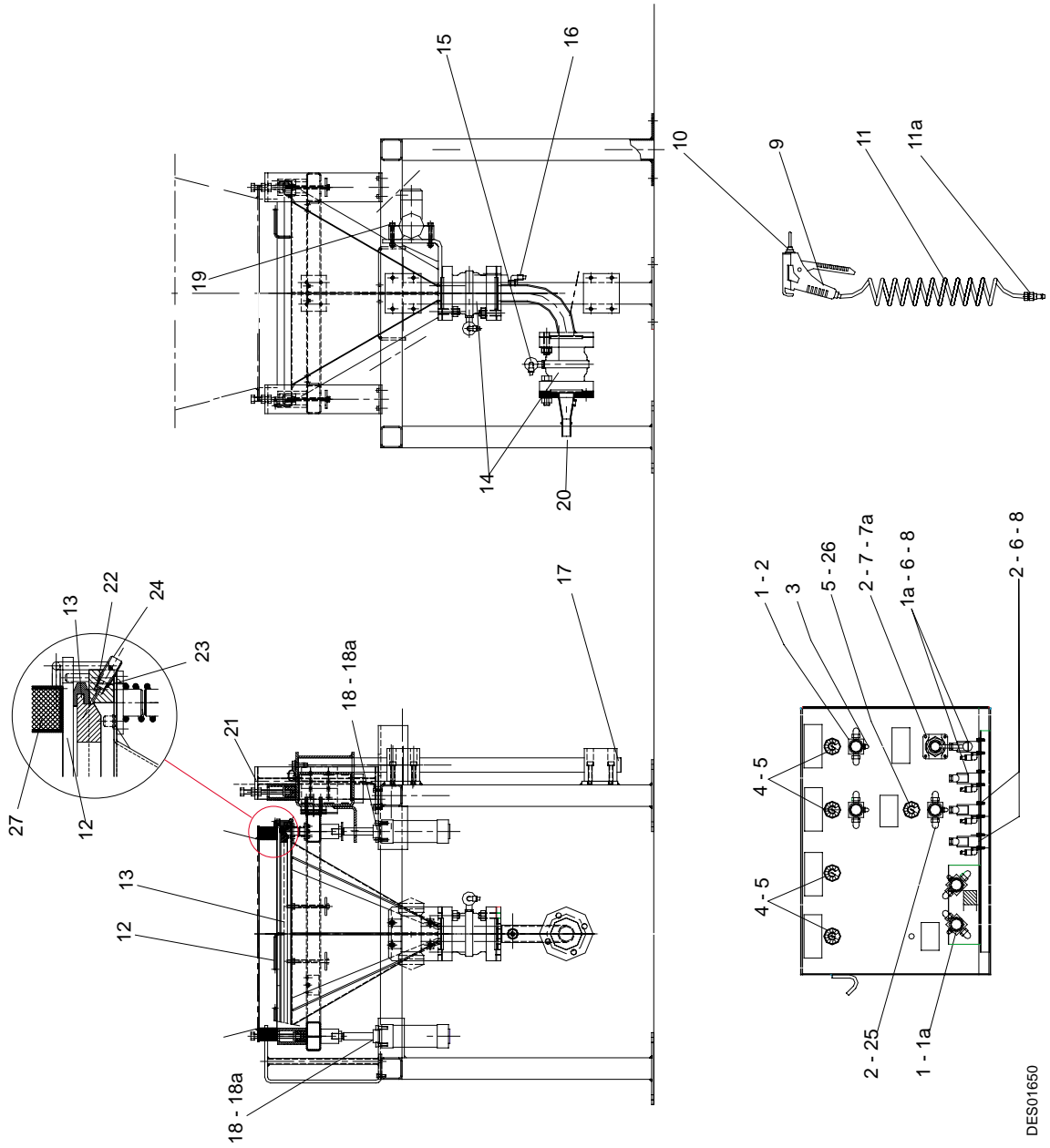
WARNING : : If a weekly cleaning is not sufficient, after a few weeks practice (accumulation of melted powder), sand down with a special disk equipped with a stainless steel blade.

6.2. Corrective maintenance

Problem	Probable cause	Solution
No reclaiming	An error is displayed on the facility's PLC sieve	Find the cause of the error, then reset (see RT Nr 6224).
	Clogged sieve.	Clean the sieve with compressed air. Replace it if necessary.
	The powder conveyance reclaiming hose is blocked	Clean the powder conveyance hose with compressed air. Make sure that it is not bent and that it is properly connected beneath the sieving system. Replace it if necessary.
	Sleeve-valve malfunction.	Check for opening airflow on the defective sleeve-valve. Replace the valve if necessary (see RT Nr 6057). Also check also the quick dump valve, replace if necessary. Replace the valve sleeves (see RT Nr 6057)
	Hose inversion of lower and upper valves.	Check the sleeve-valve connections and conveyance air supply.
	Defective back flow stop valve on the conveyance air intakes.	Replace the back flow stop valves on the conveyance air intakes.
Air leak under the separator	Deflective gasket.	Replace the gasket under the separator.

7. Spare parts

Note: The information and specifications furnished in this manual are not contractual and SAMES reserves the right to make changes to the equipment without prior notice.



DES01650

Item	Part number	Description	Qty	Sales unit
1	R4DREG029	Regulator - 3.5 bar	4	1
1a	F6RLCS354	Elbow union	5	1
2	F6RLCS393	Elbow union - 6/8 mm diam.	13	1
3	F6RLCS265	Elbow union - 4/6 mm diam.	5	1
4	R7MCAD061	Manometer 0-4 bar	4	1
5	F6RLUS271	Single male union - 4 mm diam.	5	1
6	R3VELM313	Solenoid valve	4	1
7	R3PVPR216	Valve spool	1	1
7a	F1CAUT015	Quick exhaust valve	1	1
8	R3VACS314	Valve spool mounting bracket	4	1
9	F3PBPU060	Manual air gun	1	1
10	F3PACC095	Manual Air gun end-piece	1	1
11	F3PACC073	Air gun wire-spiral reinforced hose	1	1
11a	F6RLJR208	Air gun wire-spiral end piece	1	1
12	1202073	Sieve reinforcing plate	1	1
13	1407243	Equipped Sieve 390 µm	1	1
	1407955	Equipped Sieve 150 µm	Option	1
14	1306960	Sleeve valve DN 40	2	1
	F1VACC126	Sleeve for sleeve valve DN 40	-	1
15	F1CRNE009	Quick exhaust valve	2	1
	F6RLHC214	Male-male nipple	2	1
	F6RLCS354	Elbow union	2	1
16	R2RPRE006	Back flow stop valve	2	1
	F6RLCS354	Elbow union	2	1
	F6RLHC214	Male-male nipple	2	1
17	K7ADLL057	Bearing PM 40 C	2	1
18	K5VPCA405AT	Cylinder D. 50 – C 80	2	1
18a	F6RRAF041	Flow regulator fitting	2	1
19	K3VELE021AT	Vibrator 60 W	1	1
20	U1GBBA207	Reclaiming hose	1	1
21	1406764	Hopper frame vertical end stop	3	1
22	1408002	Contact blocks	1	1
23	Q2HRDC149	Spring	1	1
24	X3ASSA329	Screw without head M12-20	1	1
25	R4DREG039	Regulator 0-6 bar	1	1
26	R7MCAD066	Manometer 0-6 bar	1	1
27	1405143	Sieve gasket	1	1
	H2DDEG081	Can of 5 liters, Viadyl cleaning product	1	1

When a filter cartridge must be replaced, it is recommended to change all the filter cartridges.