



EC 35 **Hi-TE** nw



EC 50 **Hi-TE** nw

User manual

**Bell cups and Shaping air
assemblies Hi-TE NW range
for High Velocity Turbine**

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Bell cups and Shaping air assemblies Hi-TE NW range for High Velocity Turbine

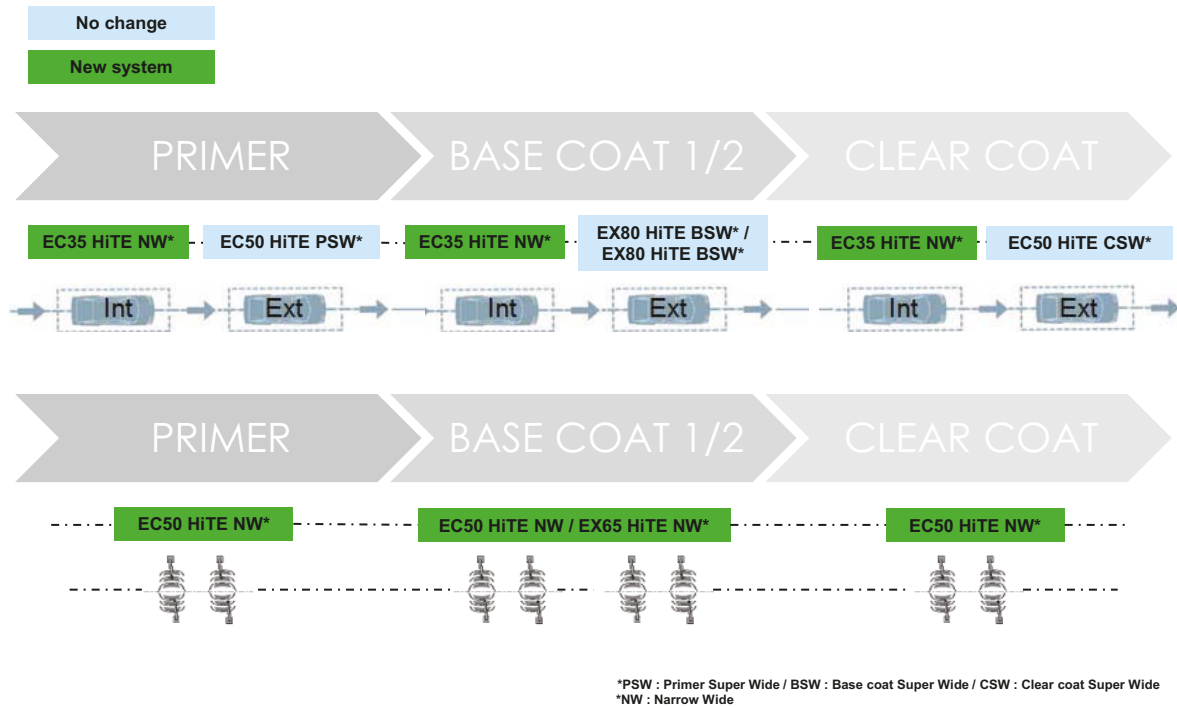
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1. Description

Hi-TE technologies composed of a bell and a shaping air assembly are dedicated to sprayers equipped with high velocity turbines (PPH 707, Accubell 708 except Accubell 708 1K, Accubell 709).

- EC 35 Hi-TE NW technology: diameter of bell cup 35 mm.
- EC 50 Hi-TE NW technology: diameter of bell cup 50 mm.
- EX 65 Hi-TE NW technology: diameter of bell cup 65 mm (soon available).

1.1. Selection of the various technologies



1.2. Summary table

Parts to be painted	Type of paints	Hi-TE Technologies (internal charge)
Body interiors	Primer	EC 35 Hi-TE NW
	Basecoat 1	EC 35 Hi-TE NW
	SB clearcoat	EC 35 Hi-TE NW
Bumper	Primer	EC 50 Hi-TE NW
	Basecoat 1	EC 50 Hi-TE NW
	Basecoat 2	EX 65 Hi-TE NW (soon available)
	SB clearcoat	EC 50 Hi-TE NW

1.3. Recommendations for the application on insulating parts

35 and 50 Hi-TE NW technologies are designed for variable spray patterns. They are thus specially designed for the application on interiors of automobile bodies and on plastic parts such as bumpers.

To obtain the best results, it is highly recommended to use these technologies with trajectories of variable flows and spray patterns (100 mm < W50 < 300 mm for EC 50 Hi-TE NW technology and 75 to 250 mm for EC 35 Hi-TE NW technology), with high to very high motion speeds of the TCP (Tool Center Point).

It is also recommended:

- to systematically ground the part to be painted.
- to start the trajectory within the grounded area, in particular for water-based products. The paint film will then ensure the electrical continuity.
- to use a high electrostatic voltage.
- to use a reduced spraying distance: from 180 to 210 mm.

1.4. Performances of the different technologies

	35 EC Hi-TE NW	EC 50 Hi-TE NW
Robot speed	up 1200 mm / s	
Paint flow	100 to 600 cc/mn	250 to 850 cc/mn
Rotation speed of bell cup	25 to 85 krpm	
Electrostatic charge	60 kV maxi, 50kV recommended	90 kV maxi, according to the distance
Shaping airs	see § 2 page 8	
Impact diameter	variable 75 to 250 mm (according to the applied paints)	variable 100 to 300 mm (according to the applied paints)
Spraying distance	150 mm to 250 mm	180 mm to 250 mm

1.5. Spraying conditions

1.5.1. EC 35 Hi-TE NW Technology

The values of parameters given below are indicative.

Paint flow	100 to 600 cc/min (350 cc/min recommended for CCB1)
Shaping air ratio	Variable, 2 air supplies with separate control Shaping airs: see § 2 page 8
Speed of robot	up to 1200 mm/s (700 mm/s recommended)
Spraying distance	150 to 250 mm (180 mm recommended)
Electrostatic charge	0 to 60 kV (50 kV recommended for body interiors)

	Bell speed	Overlap	Width of variable pattern
Waterborne base coats	from 20 to 85 krpm (25 krpm recommended)	de 50 à 75% (50% recommended)	From 75 mm to 250 mm

1.5.2. EC 50 Hi-TE NW Technology

The values of parameters given below are indicative.

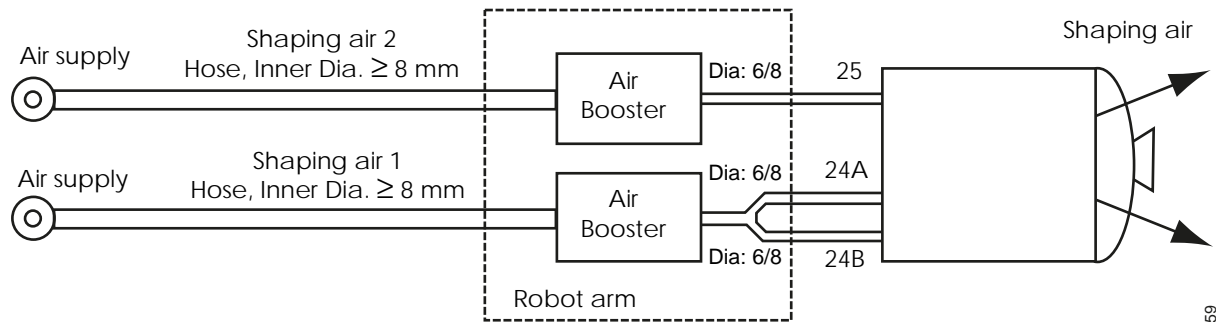
These values are valid for the different types of paint: water borne primers and base coats, solvent borne primers, base and clear coats.

Paint flow	200 to 850 cc/min (550 cc/min recommended)
Shaping air ratio	Variable, 2 air supplies with separate control Shaping Airs: see § 2 page 8
Speed of robot	up to 1200 mm/s (700 mm/s recommended)
Spraying distance	180 to 250 mm (200 mm recommended)
Electrostatic charge	0 to 90 kV (85 kV recommended)

	Bell speed	Overlap	Width of variable pattern
Water borne primers	From 30 to 60 krpm (40 krpm recommended)	From 50 to 66% (50% recommended)	100 to 300 mm
Waterborne base coats	From 30 to 60 krpm (40 krpm recommended)	From 50 to 75% (50% recommended pour CCB1 and 66% for CCB2)	100 to 300 mm
Solvent borne primers	From 25 to 55 krpm (35 krpm recommended)	From 50 to 66% (50% recommended)	100 to 300 mm
Solvent borne base coats	From 25 to 55 krpm (45 krpm recommended)	From 50 to 75% (50% recommended pour CCB1 and 66% for CCB2)	100 to 300 mm
Solvent borne clearcoat	From 25 to 55 krpm (30 krpm recommended)	From 50 to 75% (50% recommended)	100 to 300 mm

1.6. Installation rules

Hi-TE NW systems must be used with two shaping air supplies to obtain the wished width of pattern. For that, the installation must respect the following diagram:



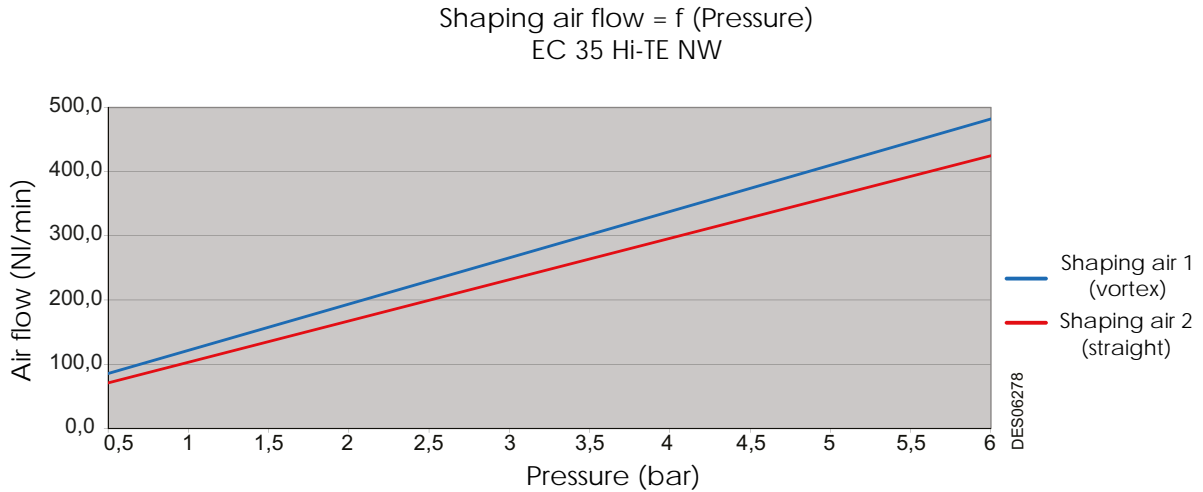
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2. Curves flow / pressure for each Hi-TE NW Technology

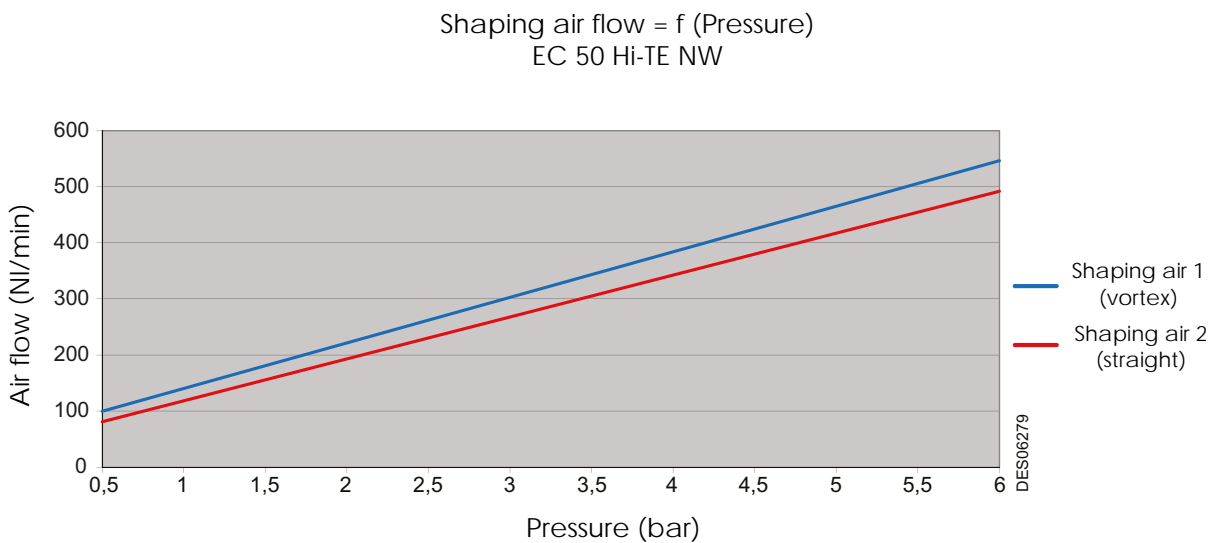
Measures of pressure are taken at a distance of 1m to the quick disconnect plate.

The values of parameters given below are indicative and depend on the configuration of shaping air supply circuit.

2.1. EC 35 Hi-TE NW Technology



2.2. EC 50 Hi-TE NW Technology

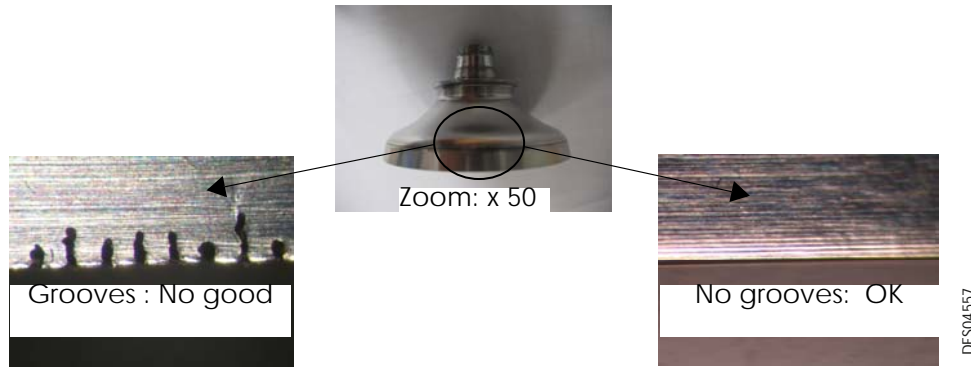


3. Recommendations

For perfect results, the atomizing bell cup must be cleaned frequently. It is recommended to clean the bell cup external every 8 hours and completely every 120 hours. The bell cup must not be subjected to impacts on its atomizing edge or distorted because it is balanced.

Necessary checks:

It is imperative to check the wear of the bell cup (all diameters) at the level of the spraying edge every 120 hours using a binocular 50-times magnifying glass.



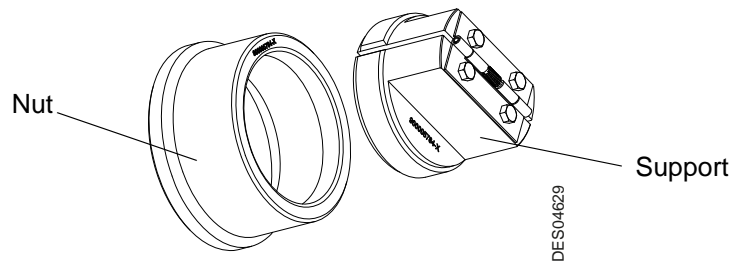
WARNING : If these recommendations are not respected, the operator exposes himself to the mechanical risk characterized by a tearing of the material due to the excessive wear of the bell cup.

For the replacement frequencies of the various bell cups ([see § 8 page 19](#)).

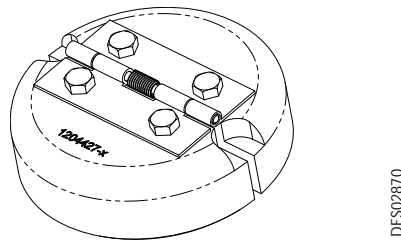
4. Characteristics

	Bell cup 35 mm		Bell cup 50 mm	
	Aluminium	Titanium	Aluminium	Titanium
Material	Aluminium	Titanium	Aluminium	Titanium
Length	45.5 mm	45.5 mm	45.5 mm	45.5 mm
Weight	38 g	38 g	44 g	53 g

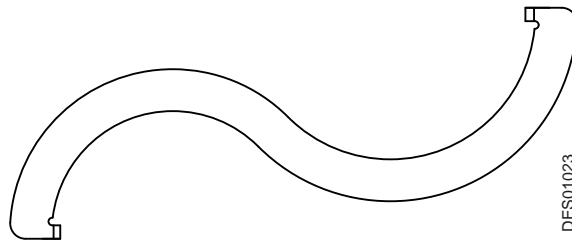
5. Tools



Part Number	Description	Qty	Unit of sale
900005784	Removal tool for EC 35 magnetic bell cup	1	1



Part Number	Description	Qty	Unit of sale
900000803	Removal tool for EC 50 magnetic bell cup	1	1



Part Number	Description	Qty	Unit of sale
1308689	Installation/ Removal tool for outer cover	1	1

6. Maintenance



WARNING : Before any operation, stop shaping air and high voltage and wait for a complete stop of the turbine. Never stop the bearing air.

6.1. Magnetic bell cup



WARNING : All maintenance and handling operations operated on the bellcup must be carried out with utmost care as it is balanced.



WARNING : Any use of an unbalanced bellcup involves an inevitable destruction of the high speed turbine. Possible causes for unbalanced rotating parts are: paint deposits, physical damage and dry paint located on the bellcup or on the securing cone.

6.1.1. Removal



WARNING : The magnetic bellcup removal is carried out only the shaping air assembly in place.

EC 50 bell cup removal

- **Step 1:** Position the tool ([see § 5 page 10](#)) on the bell cup.



WARNING : Take care to the edge of the bell cup.

- **Step 2:** Close the tool on the bell cup and pull the bell cup in the axis.



- **Step 3:** Place the bell cup with care on a flat surface. It is imperative not to prop the bell against the fixation cone



EC 35 bell cup removal

- **Step 1:** Position the tool (support) ([see § 5 page 10](#)) on the bell cup.



WARNING : Take care to the edge of the bell cup.



- **Step 2:** Close the tool on the bell cup.



- **Step 3:** Hold the tool and screw the nut of the tool clockwise; it must come right against the outer cover (mechanical stop).



- **Step 4:** Hold the nut, then screw it anti-clockwise in order to remove the bell cup.



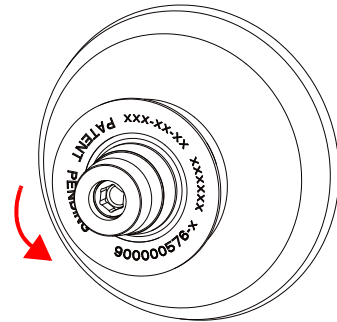
6.1.1.1. Deflector removal



WARNING : The deflector removal is an operation to be only realized within the framework of a cleaning, the deflector is balanced with the bell cup and thus cannot be replaced alone.

- Using an appropriate allen wrench, loosen the deflector by the back of the bellcup. Caution: left threading.
- Extract the deflector from the bellcup.

Loosening sense



6.1.2. Reassembly

Deflector reassembly:

- Put in place, with precaution, the deflector in the bellcup. Make sure that the threading, the interior of the cone of the bellcup as well as the deflector are perfectly clean.
- Turn over the assembly, then using an appropriate wrench, tighten the deflector in the bellcup with a tightening torque of 3 N.m.

Bellcup reassembly:

- Make sure that the bellcup is perfectly clean, check the absence of foreign matters (residues of dry paints, filings...) on the complete fixing cone of the bellcup and on the face of the magnet. Take care particularly of the fixing cone.
- Put in place the magnetic bellcup on the turbine, a "clac" should be heard.



WARNING : After the reassembly, rotate the bellcup by hand (after setting of the bearing air), carry out a visual check in order to check that the bellcup rotates perfectly (in a concentric way) and freely.

6.2. Shaping air assembly

The procedure is identical whatever the diameter of the bellcup

6.2.1. Disassembly

- **Step 1:** With the fingers, push the shaping air shroud against the atomizer and remove the outer cover using the tool (P/N # 1308689) by placing the wrench notches into the outer cover slots, turn clockwise and continue removing by hand.
- **Step 2:** Remove the shaping air shroud.

6.2.2. Reassembly

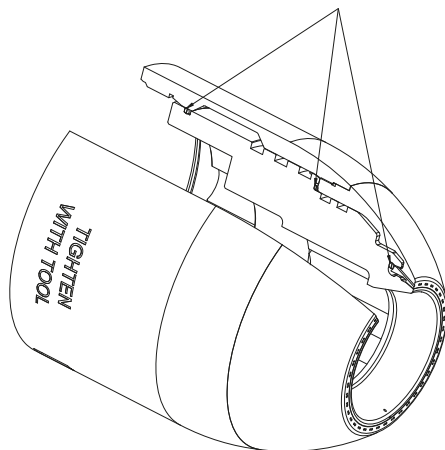


WARNING : Clean all components and inspect for damage, replace if necessary [see § 8 page 19](#).

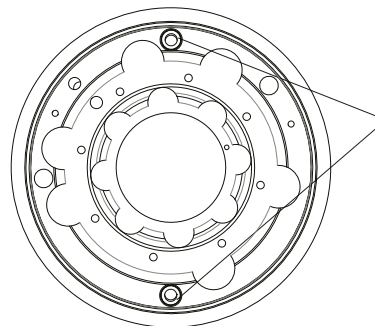


WARNING : Before reinstalling the shaping air assembly, check that all O-rings are present.

3 o-rings on the shaping air shroud



View A



Rear view

Make sure that one or two restrictors are in place

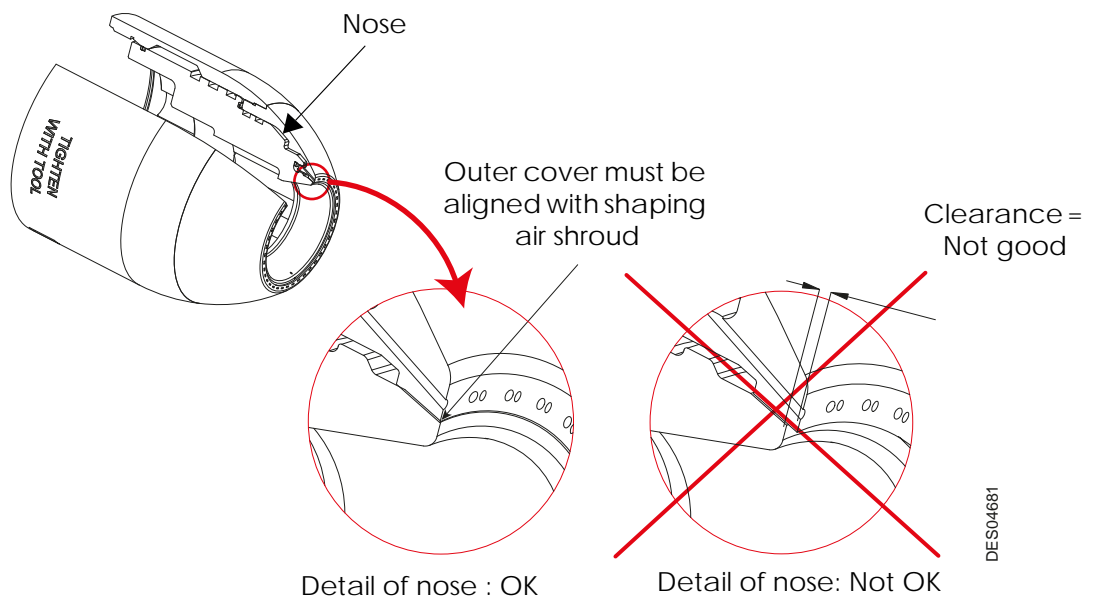
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- **Step 1:** Check the presence of the o-rings on the shaping air shroud, install it on the atomizer while making corresponding the various indexes (see illustration) and put it in stop.



- **Step 2:** Put in place the outer cover over the assembly, secure it by hand then tighten it with the tool P/N # 1308689. When tightening is correct the front face of the shaping air shroud and the front face of the outer cover are aligned.





7. Cleaning

7.1. Bell cup cleaning

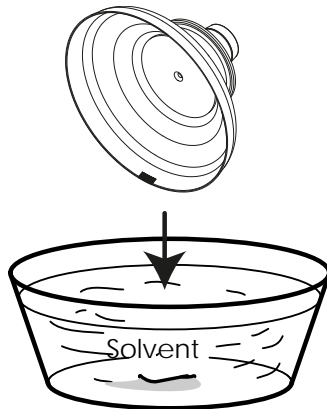


WARNING : All maintenance and handling operations operated on the bell cup must be carried out with utmost care as it is balanced.

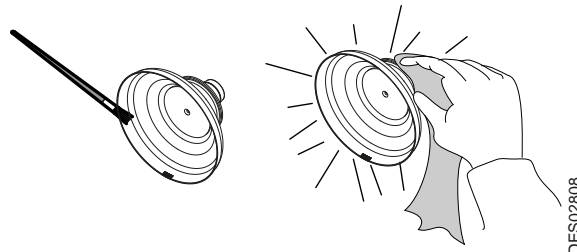
- **Step 1:** Remove the bell cup ([see § 6.1.1 page 11](#)).
- **Step 2:** Let the bell cup soak for one hour in a suitable solvent, then clean with a clean cloth and soft brush.



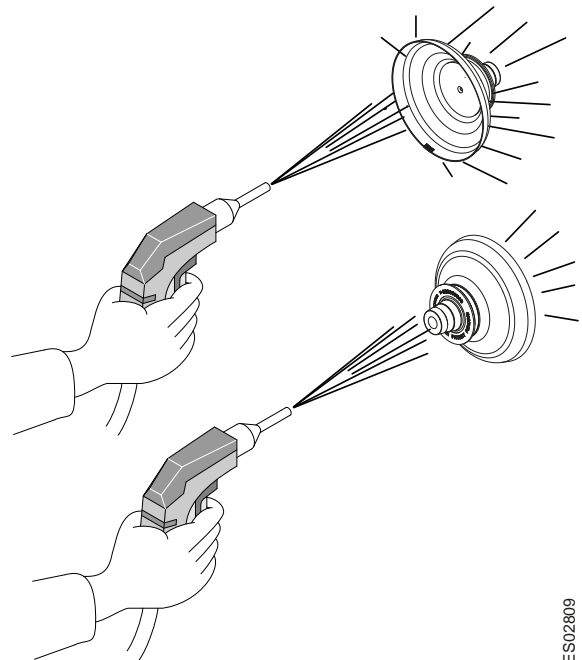
WARNING : Make sure that all surfaces are clean and completely free of impurities, particularly the inner and outer surfaces of the bell cup fastening cone.



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- **Step 3:** Dry carefully the two faces of the bell cup with compressed air.

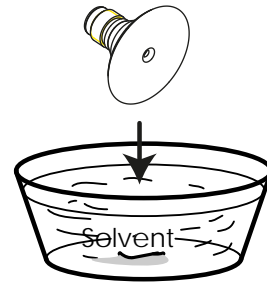


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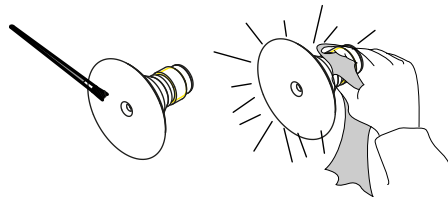
7.2. Deflector cleaning

- **Step 1:** Remove the deflector, ([see S 6.1.1.1 page 13](#)).

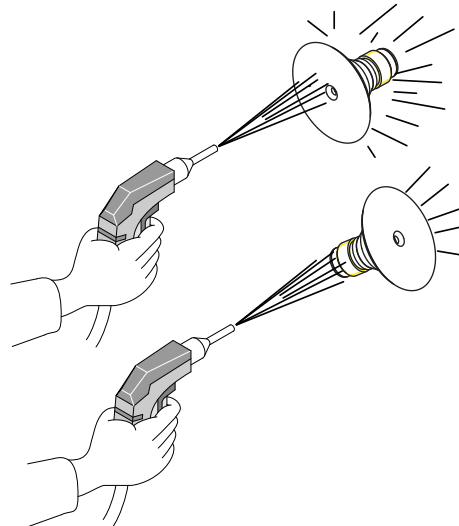
- **Step 2:** Let the deflector soak in solvent for one hour.



- **Step 3:** Then clean with a clean cloth and soft brush.



- **Step 4:** Dry carefully the two faces of the deflector with compressed air.



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7.3. Outer cover cleaning

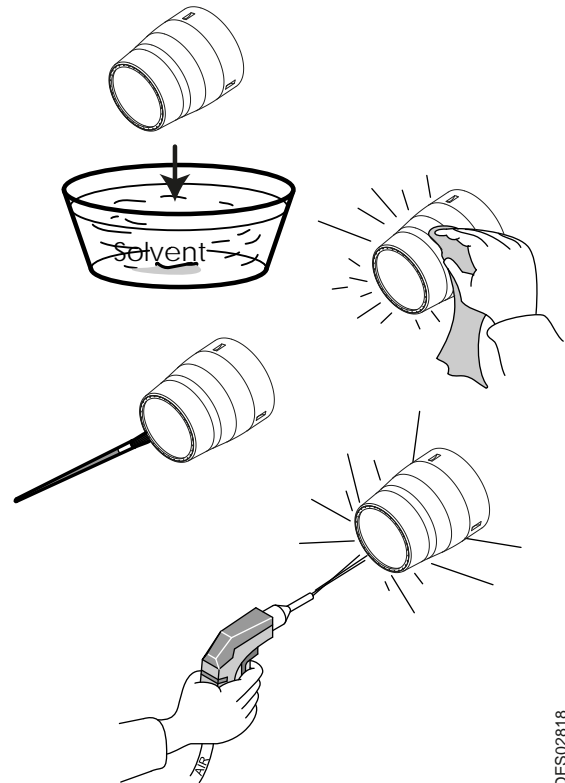
- **Step 1:** Remove the outer cover, [see § 6.2.1 page 14](#).

- **Step 2:** Let the outer cover soak in solvent for one hour, then clean the outer and inner surfaces using a rag soaked in solvent.

- **Step 3:** Using a nylon brush, clean all the holes located on the front face of the outer cover.

- **Step 4:** Dry carefully with compressed air insisting on the holes to eliminate the paint residues, then wipe with a clean dry rag.

- **Step 5:** Check the shaping air shroud, clean it if necessary using a rag soaked in solvent.



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8. Spare parts



WARNING : The deflector removal is an operation to be only realized within the framework of a cleaning, the deflector is balanced with the bell cup and thus cannot be replaced alone.

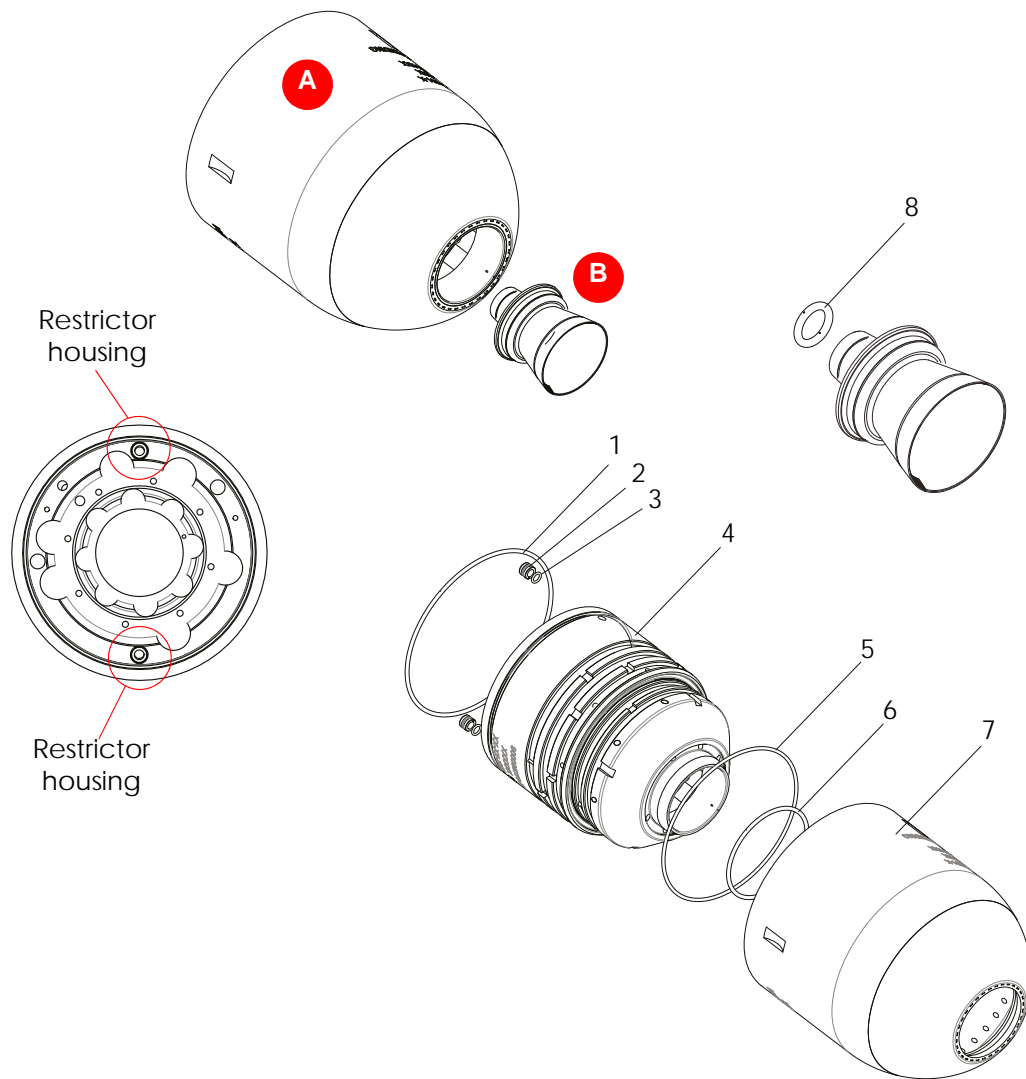
8.1. Replacement Frequency of bell cups

Types of bell cups	Replacement frequency
EC 35 bell cup	5000 hours
EC 50 bell cup	5000 hours



WARNING : SAMES KREMLIN recommends to integrate these periodicities in preventive maintenance schemes and to systematically apply them, so that the equipment is not affected by an excessive wear of the bell cup.

8.2. EC 35 Hi-TE NW System



DES06256

With aluminium bell cup

Item	Part Number	Description	Qty	Unit of sale	Maintenance level for spare part (*)
	910020612	EC 35 Hi-TE NW System	1	1	2
A	910020606	EC 35 Hi-TE NW shaping air assembly	1	1	2
1	J2FENV622	O-ring - FEP viton	1	1	1
2	900011488	Restrictor D: 4	2	1	1
3	J3STKL038	O-ring - chemically inert	2	1	1
4	900005773	Shaping air shroud	1	1	2
5	J2FENV385	O-ring - FEP viton	1	1	1
6	J2FENV420	O-ring - FEP viton	1	1	1
7	900011531	Outer cover	1	1	2
B	910000636	Aluminium EC 35 Hi-TE bell cup	1	1	2
8	J3STKL094	O-ring - chemically inert	1	1	1

With titanium bell cup

Item	Part Number	Description	Qty	Unit of sale	Maintenance level for spare part (*)
	910020613	EC 35 Hi-TE NW System	1	1	2
A	910020606	EC 35 Hi-TE NW shaping air assembly	1	1	2
1	J2FENV622	O-ring - FEP viton	1	1	1
2	900011488	Restrictor D: 4	2	1	1
3	J3STKL038	O-ring - chemically inert	2	1	1
4	900005773	Shaping air shroud	1	1	2
5	J2FENV385	O-ring - FEP viton	1	1	1
6	J2FENV420	O-ring - FEP viton	1	1	1
7	900011531	Outer cover	1	1	2
B	910011188	Titanium EC 35 Hi-TE bell cup	1	1	2
8	J3STKL094	O-ring - chemically inert	1	1	1

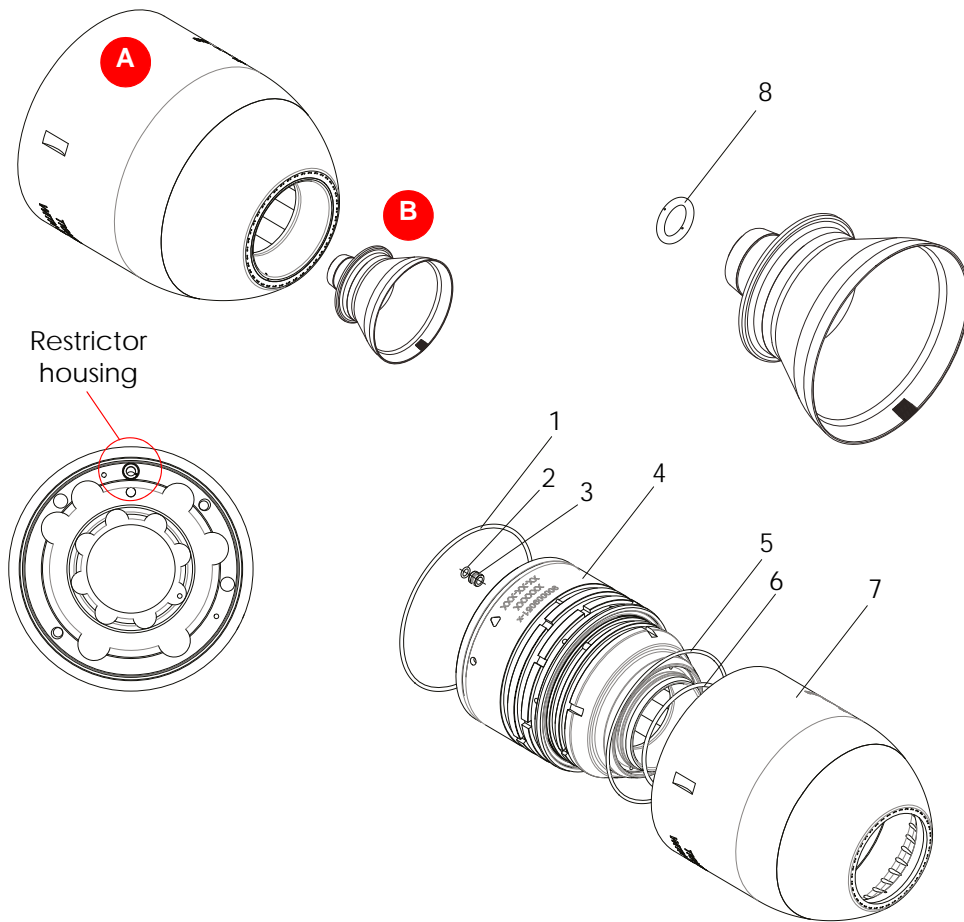
(*)

Level 1: Standard preventive maintenance

Level 2: Corrective maintenance

Level 3: Exceptional maintenance

8.3. EC 50 Hi-TE NW system



DE506257

With aluminium bell cup

Item	Part Number	Description	Qty	Unit of sale	Maintenance level for spare part (*)
	910020610	EC 50 Hi-TE NW system	1	1	2
A	910020605	EC 50 Hi-TE NW shaping air assembly	1	1	2
1	J2FENV622	O-ring - FEP viton	1	1	1
2	J3STKL038	O-ring - chemically inert	1	1	1
3	900011488	Restrictor D: 4	1	1	1
4	900009051	Shaping air shroud	1	1	2
5	J2FENV385	O-ring - FEP viton	1	1	1
6	J2FENV358	O-ring - FEP viton	1	1	1
7	900012473	Outer cover	1	1	2
B	910003159	Aluminium EC 50 Hi-TE bell cup	1	1	2
8	J3STKL094	O-ring - chemically inert	1	1	1

With titanium bell cup

Item	Part Number	Description	Qty	Unit of sale	Maintenance level for spare part (*)
	910020611	EC 50 Hi-TE NW system	1	1	2
A	910020605	EC 50 Hi-TE NW shaping air assembly	1	1	2
1	J2FENV622	O-ring - FEP viton	1	1	1
2	J3STKL038	O-ring - chemically inert	1	1	1
3	900011488	Restrictor D: 4	1	1	1
4	900009051	Shaping air shroud	1	1	2
5	J2FENV385	O-ring - FEP viton	1	1	1
6	J2FENV358	O-ring - FEP viton	1	1	1
7	900012473	Outer cover	1	1	2
B	910008756	Titanium EC 50 Hi-TE bell cup	1	1	2
8	J3STKL094	O-ring - chemically inert	1	1	1

(*)

Level 1: Standard preventive maintenance

Level 2: Corrective maintenance

Level 3: Exceptional maintenance