

User manual

Nanobell 801

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The French version is deemed the official text and Sames will not be liable for the translations into other languages.

Nanobell 801

| | |
|---|----|
| 1. Health and Safety Instructions----- | 5 |
| 1.1. Configuration of certified equipment | 5 |
| 1.2. Marking on the atomizer | 5 |
| 1.3. Precautions for Use | 6 |
| 1.4. Simplified analysis of the potential sources of ignition according to Standard 80079-36 | 6 |
| 1.5. Warnings | 6 |
| 1.5.1. Installation rules | 9 |
| 1.6. Important Recommendations | 11 |
| 1.6.1. Compressed Air Quality | 11 |
| 1.6.2. Product Quality | 11 |
| 1.6.3. Bearing Safety | 11 |
| 1.6.4. Locking | 11 |
| 1.6.5. Shaping Air | 12 |
| 1.6.6. Maximum Speed | 12 |
| 1.6.7. Vibrations | 12 |
| 1.6.8. O-ring Seals | 12 |
| 1.6.9. Ventilation | 12 |
| 1.6.10. Residual pressure | 13 |
| 1.6.11. Safety devices | 13 |
| 1.6.12. Restriction on robot wrist movements | 13 |
| 1.6.13. Mechanical Collision | 13 |
| 1.6.14. Ambient Temperature | 13 |
| 1.6.15. Sound level | 13 |
| 1.6.16. Specific maintenance provisions | 13 |
| 1.7. Guarantee | 14 |
| 2. Description ----- | 15 |
| 2.1. General | 15 |
| 2.2. Function of the parts | 17 |
| 3. Technical Characteristics ----- | 18 |
| 3.1. Dimensions, gravity center and tool center point (mm) . | 18 |
| 3.2. Working characteristics | 20 |
| 3.3. Operating Principle | 21 |
| 3.3.1. Turbine | 21 |
| 3.3.2. Rotation speed measurement with microphone | 21 |
| 4. Fluid diagram ----- | 22 |
| 5. Startup ----- | 24 |
| 5.1. Tools | 24 |
| 5.2. Installation | 26 |
| 5.3. Fixing interface, straight version | 26 |
| 5.4. Shutdown and Startup Procedures | 27 |
| 5.4.1. Shutdown Procedure | 27 |
| 5.4.2. Startup Procedure | 27 |

| | |
|--|----|
| 6. Maintenance | 28 |
| 6.1. Summary table of maintenance operations | 28 |
| 6.2. Preventive maintenance | 29 |
| 6.2.1. Procedure A: Atomizer exterior | 29 |
| 6.2.2. Procedure B1: Magnetic bell cup and fixing cone | 31 |
| 6.2.3. Procedure B2: Cleaning of outer cover | 33 |
| 6.2.4. Procedure B3: Injector exterior | 34 |
| 6.2.5. Procedure C1: Cleaning of the turbine | 35 |
| 6.2.6. Procedure C2: Injector / Injector holder | 37 |
| 6.3. Corrective maintenance | 38 |
| 6.3.1. Procedure D1: Installation / Removal of shaping air shroud / T8 nut assembly | 38 |
| 6.3.2. Procedure D2: Body installation / removal | 40 |
| 6.3.3. Procedure D3: Replacement of microvalves | 41 |
| 6.3.4. Procedure D4: Replacement of body o-rings | 41 |
| 6.3.5. Procedure D5: Replacement of fittings | 42 |
| 6.3.6. Procedure D6: Replacement of ground cable | 43 |
| 7. Spare parts list | 44 |
| 7.1. Nanobell 801 hollow wrist | 44 |
| 7.1.1. Equipped 60° robotic support, Nanobell 801 hollow wrist | 45 |
| 7.2. Nanobell 801 full wrist | 46 |
| 7.2.1. Equipped 60° robotic support, Nanobell 801 full wrist | 47 |
| 7.3. Nanobell 801, straight version | 48 |
| 7.4. Nanobell 801, reciprocator version | 49 |
| 7.5. Equipped body assembly | 50 |
| 7.5.1. Shaping air shroud / T8 nut assembly | 51 |
| 7.5.2. Equipped body | 53 |
| 7.5.3. Injector / Injector holder | 56 |
| 7.6. Robot adapters | 57 |
| 7.6.1. Adapter for Motoman EXP 2050 and 2900 robots | 57 |
| 7.6.2. Adapter for Fanuc P250 robot | 57 |
| 7.6.3. Adapter for Staubli RX 160 robot | 57 |
| 7.6.4. Adapter for Staubli TX 250 robot | 58 |
| 7.6.5. Adapter for ABB IRB 4400 robot | 58 |

1. Health and Safety Instructions

This manual contains links to the following user manuals:

- [see RT Nr 7127](#) for the user manual of Hi-TE NW bellcups/outer cover.
- [see RT Nr 7128](#) for the user manual of the T8 turbine.
- [see RT Nr 6021](#) for the user manual of the microvalve.
- [see RT Nr 6190](#) for the microphone.
- [see RT Nr 6364](#) for the user manual of the electric systems,

1.1. Configuration of certified equipment

These user manuals define the configuration of certified equipment.

1.2. Marking on the atomizer



P/N : *

(Serial number)

| | | | | |
|--|--|---|---|---------------------------------------|
| Atomizer Nanobell 801 - P/N 910026947 Hollow wrist Equipped body - P/N 910026941 Hollow wrist support - P/N 910026940 T8 Turbine - P/N 910026052 | Atomizer Nanobell 801 - P/N 910026946 Full wrist Equipped body - P/N 910026941 Full wrist support - P/N 910026939 T8 Turbine - P/N 910026052 | Atomizer Nanobell 801 - P/N 910028344 Straight version Equipped body - P/N 910026941 T8 Turbine - P/N 910026052 Straight adapter- P/N 900018676 | Atomizer Nanobell 801 - P/N 910028849 Reciprocator version Equipped body - P/N 910026941 T8 Turbine - P/N 910026052 Straight adapter- P/N 900018676 Support tube - P/N 1203616 | P/N Nanobell 801 (*) |
| X | | | | 910026947 |
| | X | | | 910026946 |
| | | X | | 910028344 |
| | | | X | 910028849 |

1.3. Precautions for Use

This document contains information that all operators should be aware of and understand before using the Nanobell 801. This information highlights situations that could result in serious damage and indicates the precautions that should be taken to avoid them.



WARNING : Before any use of the Nanobell 801 equipment, check that all operators:

- have previously be trained by the compagny **SAMES KREMLIN**, or by their distributors registered by them for this purpose.
- have read and understood the user manual and all rules for installation and operation, as laid out below.

It is the responsibility of the operators' workshop manager to ensure these two points and it is also his responsibility to make sure that all operators have read and understood the user manuals for any peripheral electrical equipment present in the spraying area.

1.4. Simplified analysis of the potential sources of ignition according to Standard 80079-36

| Risk of ignition | | Action applied to prevent any ignition source to become effective |
|------------------------------|---|---|
| Potential source of ignition | Description / Main cause (What are the conditions engendering the ignition risk?) | Description of the applied action |
| Spark of a mechanical origin | Turbine docking | Choice of materials according to Standards 80079-36 and 80079-37 |
| Spark of a electric origin | No electric spark because no electrical equipment | - |
| Static electricity | Electrostatic surface charge that can occur when cleaning the sprayer by rubbing a dry cloth, for example, or in proximity to an electrostatic sprayer and electrostatic discharge due to a nearby ground | The metal parts are connected to earth by a cable equipped with a connector screwed into the body of the sprayer. This cable is directly connected to the robot flange. Surface electrostatic discharge test for the cover part |

1.5. Warnings



WARNING : Safety may be jeopardized if this equipment is not operated, disassembled and reassembled in compliance with the instructions given in this manual and in any European Standard or national safety regulations in force.



WARNING : The NANOBELL 801 sprayer must not be connected to the high voltage, but only to the ground by the cable provided for this purpose.



WARNING : Equipment performance is only guaranteed if original spare parts distributed by **SAMES KREMLIN** are used.



WARNING : To guarantee an optimal assembly, spare parts must be stored in a temperature close to their temperature of use. Should the opposite occur, a sufficient waiting time must be observed before the installation, so that all the elements are assembled in the same temperature.



WARNING :

This equipment has to be used only within areas designed for spraying with respect to EN 50176 or with similar ventilation conditions. The equipment has to be used only within ventilated in order to reduce risks for the health of the operators, fire or explosion. The efficiency of the extraction ventilation system has to be daily checked. The booths designed for the installation of Nanobell 801 must comply with EN 16985.

Within explosive atmospheres produced by the spraying process, only appropriate explosion-proof electrical equipment has to be used.

The pressurised coating product or the pressurised air must not be directed towards people or animals.

Appropriate measures have to be taken to avoid, during periods when the equipment is not used and/or when the equipment is broken, the presence of potential energy (liquid or air pressure or electric) inside the equipment.

Using individual protection equipment will limit the risks of contact and/or inhalation of toxic product, gas, vapours, fog or dusts that can be produced while using the equipment. The user has to follow the coating product manufacturer's recommendations.

Electrostatic spraying equipment must be serviced regularly in accordance with the information and instructions given by **SAMES KREMLIN**.

It is strictly prohibited to stick adhesive tape on the atomizer body.

Cleaning operations must be carried out either in authorised areas equipped with a mechanical ventilation system, or using cleaning liquids with a flash point at least 15 °C higher than room temperature.

Only metal containers can be used for cleaning liquids and they must have a reliable ground connection.

Inside the booth it is forbidden to use a naked flame, glowing object or a device likely to produce sparks.

It is also forbidden to store inflammable products, or vessels that have contained them, close to the booth.

The surrounding area must be kept clear and clean.

In addition, a careful check must be made to ensure that any conducting or semi-conducting part closer than 2.5 m to the atomizer is correctly grounded.

If it is not, electrical charges capable of causing sparks could build up on it. Operating personnel must wear anti-static shoes and gloves to avoid this risk.

All metal parts of the booth and parts to be painted must be correctly grounded. Ground resistance must be less than or equal to 1 M Ω (minimum measurement voltage 500 V). This must be checked regularly.

Grounding is mandatory for all the conductive envelopes of the electrical equipments and for all the conductive components within explosive atmospheres by conductive connection with the ground terminal.

Finally, for the same reasons, the spraying area must have an anti-static floor, such as concrete, metal duckboard, etc.

It is essential to provide sufficient ventilation in the spraying booths to avoid the build up of inflammable vapors.

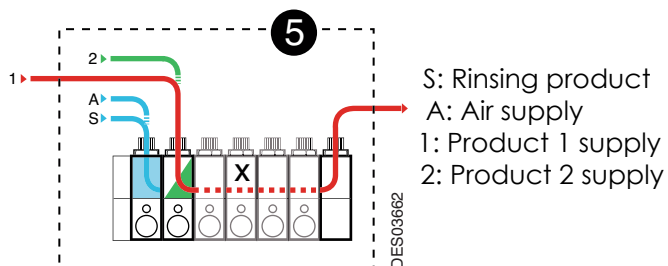
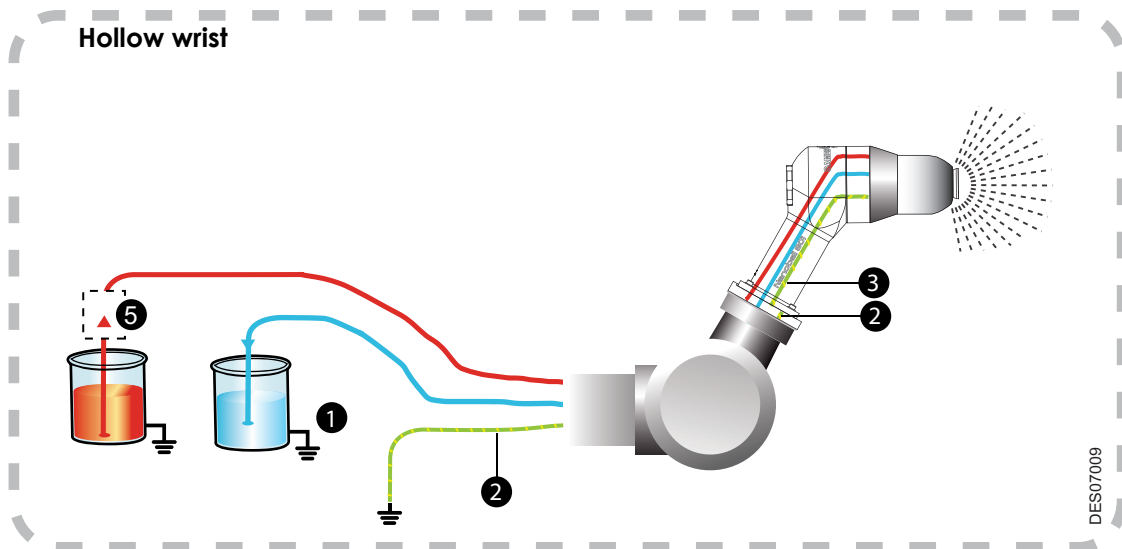
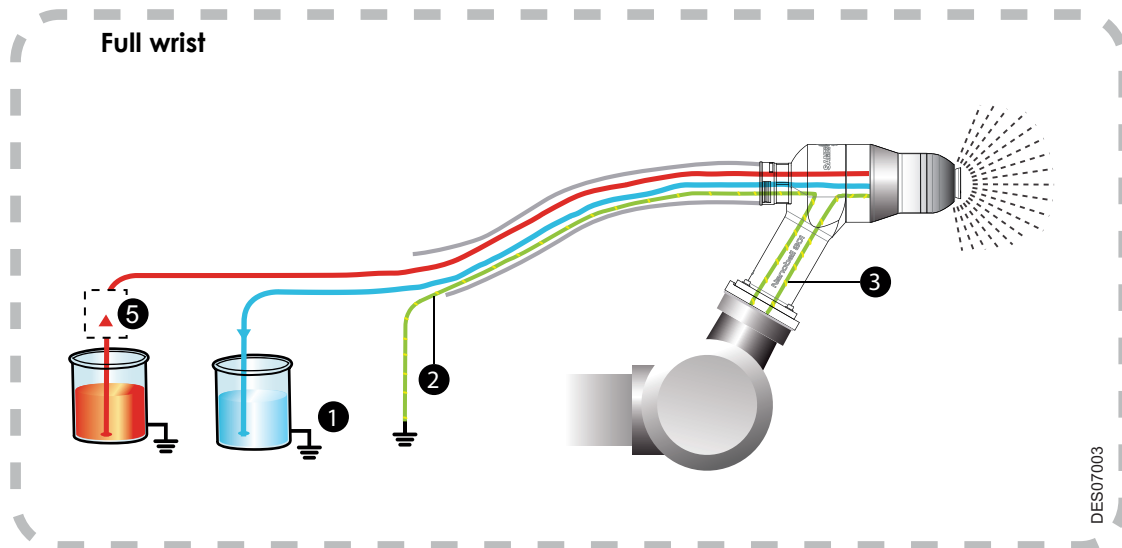
Additional equipment has to be placed outside the dangerous area and its starting device has to be servo-controlled to the running mode of the booth aspiration fan. The correct working of the servo-control has to be checked once a week.

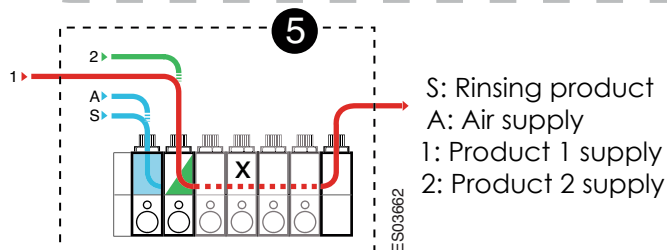
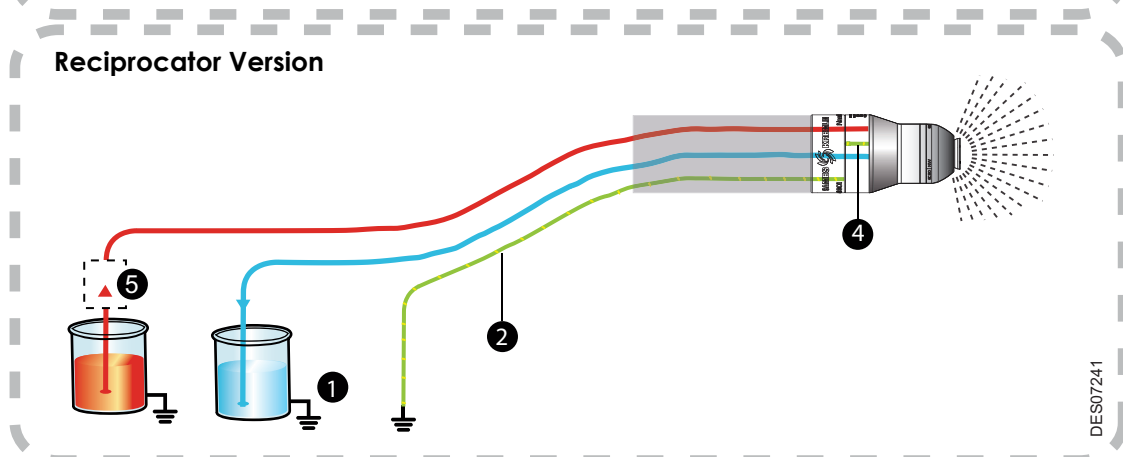
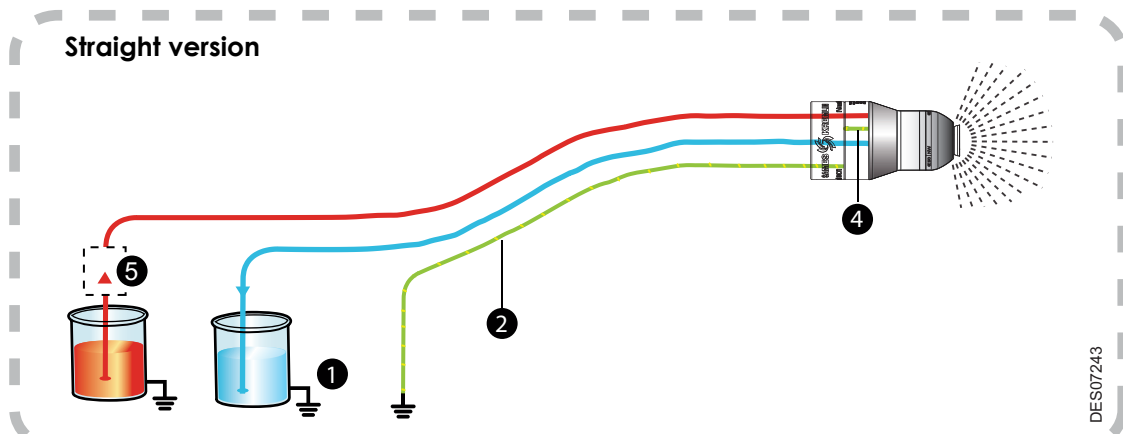
A warning board has to be placed in full view close to the spraying area.

An excessive turbine speed can engender major damages on the turbine as well as a loss of connection bell/turbine; this represents a risk for persons and equipment. The maximum speed indicated in this user manual must not be exceeded ([see § 3.2 page 20](#)).

During spraying, it will be necessary to respect a safety distance minimum of 50 mm between the bell cup and the part to be painted.

1.5.1. Installation rules
Nanobell 801





WARNING : All the conductive components must be connected to the ground potential (metallic fittings of Moduclean, gear pump, etc...).

| Item | Description |
|------|---|
| 1 | Dump return line connected to the ground potential |
| 2 | Ground cable for earthing at the installation |
| 3 | Ground cable for earthing at the robot flange |
| 4 | Ground cable for earthing at the straight adapter |
| 5 | Supplies of paints and rinsing products connected to the ground potential |



WARNING : It is strictly prohibited to install an unspecified system not complying with the rules described above.

1.6. Important Recommendations



WARNING : The product supply system and the dump return hose must be grounded.

1.6.1. Compressed Air Quality

The air must be filtered to a level that will guarantee a long life time and prevent any pollution during painting.

The filter must be installed as close as possible to the facility. The filter cartridges must be changed regularly to ensure that the air is clean.

PTFE tape or glue should not be used between the filter and the bearing as glue residue or pieces of PTFE may block the small holes of the air bearing and cause turbine failure.

The inside of hoses supplying air to the atomizer and the ports of the quick-disconnect plate must be clean and free of any traces of paint, solvent or other foreign matter.

The guarantee does not cover faults caused by unclean, unfiltered bearing air resulting from disregard of the previous recommendations.



WARNING : If the air is not correctly filtered, the bearing may become fouled resulting in a turbine operating fault. The filtering system used must prevent particles greater than 0.1 µm in diameter from reaching the bearing.



WARNING : The guarantee does not cover damage caused by foreign matter such as paint, solvent or other substances entering the air circuits of the Nanobell 801.

1.6.2. Product Quality

The paint must be filtered to prevent any damage to the atomizer.

The maximum permissible particle size in the atomizer is 200 µm.

1.6.3. Bearing Safety

The compressed air connection to the air bearing must be made directly via the supply circuit (without using an isolating valve). A sudden cutoff of the air supply may cause partial damage to the turbine air bearing, possibly resulting in system shutdown.



WARNING : The guarantee does not cover faults that occur if the turbine is operated with insufficient bearing air pressure.

1.6.4. Locking

Do not atomize the product if the bellcup is not turning at a speed of at least 15000 rpm. At lower speeds, paint or solvent may enter the turbine, bearing and control circuits. Opening the head valve, injector rinsing valve and bellcup exterior rinsing valve must be prohibited when the bellcup is not turning. Only qualified personnel are authorized to by-pass this locking system for flow rate checks.



WARNING : If the turbine is not already operating, wait, after starting it up, until the bellcup reaches at least 15000 rpm before opening the head valve. The recommended minimum waiting time is 2 seconds.

1.6.5. Shaping Air

Do not atomize the product until the shaping air rate is at least 200 NI / min. If it is less, there may be a feedback of atomized product which fouls the outer cover and the inside surface of the air shroud resulting in application faults.

1.6.6. Maximum Speed

Excessive turbine speed can result in serious damage to the turbine and loss of connection between the bell cup and turbine, presenting a risk to persons and equipment. The speed must not exceed 65,000 rpm.



WARNING : The guarantee does not cover damage resulting from a rotation speed greater than 65 000 tr/min.

1.6.7. Vibrations

If the atomizer vibrates abnormally, the cause is generally unbalanced rotating parts. If this is the case, the rotation speed will rapidly decrease, inevitably causing damage to the turbine. Paint deposits, damage or dry paint residues on the bell cup or fastening cone are the possible causes of a balancing defect. If significant vibration is observed, the problem must be immediately corrected. A significant imbalance of more than G 0.4 (1/1000 gr x 1 cm radius) will inevitably deteriorate the turbine.



WARNING : The guarantee does not cover damage caused by imbalance of rotating parts.

1.6.8. O-ring Seals

Use the seals recommended in these operating instructions to ensure dimensional, functional and chemical compatibility with the fluids present. The Nanobell 801 is only guaranteed to work properly when used with the seals recommended in this manual.



WARNING : Equipment performance is only guaranteed if original spare parts distributed by **SAMES KREMLIN** are used.

1.6.9. Ventilation

Do not begin applying paint with the Nanobell 801 before starting up the ventilation system in the spraying booth. If the ventilation is cut, toxic substances such as organic solvents or ozone may remain in the spraying booth, resulting in a risk of fire, poisoning or irritation.

1.6.10. Residual pressure

Before all maintenance or repair operations, remove paint and solvent from the atomizer, switch off the high voltage power supply and cut the paint, solvent and air supplies, then release residual pressure in each supply system. Residual pressure may lead to component damage and expose personnel to serious injuries. Paint or solvent dispersion may also lead to poisoning or irritation.

1.6.11. Safety devices

During installation of the Nanobell 801, it is important to set up safety devices enabling high voltage power, paint, solvent and air supplies to be cut immediately if there is a problem.

- Detection of control system faults
- Detection of air pressure drops.
- Detection of ventilation failure.
- Detection of fire
- Detection of human presence.
- Detection of turbine rotation speed faults.

Failure to install safety devices could result in a risk of fire, expose the personnel to serious injury and damage the equipment.

1.6.12. Restriction on robot wrist movements

In order to optimize the life time of the low voltage cable as well as the supply hoses, it is recommended to limit the movement of axis 6 to $\pm 0,5$ turns compared with the axis 3.

1.6.13. Mechanical Collision

The guarantee does not cover damage resulting from the operating environment (for example collision with the robot).

1.6.14. Ambient Temperature

The sprayer is designed to work normally under room temperature between 0°C and + 40°C. In order to optimise application quality, it is advised to work under room temperature between + 15°C and + 28°C.

The storage temperature will never exceed +60°C.

1.6.15. Sound level

The sound pressure level generated by the sprayer is less than 70 dBA at the workplace under the specified operating conditions.

Conditions of measurement:

The equipment has been run at its maximum values, the measures have been made from the operator desk of the paint test booth Nr 3 (closed booth with glass walls) of the Innovation & Development laboratory at **SAMES KREMLIN** Meylan France.

Method of measurement:

The acoustic pressure level, continuous, equivalent, weighted (70 dBA) is given in LEQ value, measured for observation periods of at least 30 seconds.

1.6.16. Specific maintenance provisions

The access of the booth, near the atomizer in operation, will have to be proscribed and controlled by safety devices ([see § 1.6.11 page 13](#)) which will have to stop the equipment in case of intrusion of people in the area.

Nevertheless, for maintenance operation, these safety devices will have to be arranged in order to allow certain operations and checks (only for persons trained and entitled by **SAMES KREMLIN**).

The turbine rotation with a bellcup, in all the cases, will be prohibited with personnel in the area.

1.7. Guarantee

Under the guarantee, which applies only to the buyer, **SAMES KREMLIN** agrees to repair operating faults resulting from a design fault, materials or manufacture, under the conditions set out below.

The guarantee claim must define, in writing, the exact nature of the fault concerned. The **SAMES KREMLIN** guarantee only covers equipment that has been serviced and cleaned according to standard procedures and our own instructions, that has been fitted with parts approved by SAMES or that has not been modified by the customer.

More precisely, the guarantee does not cover damage resulting from:

- the customer's negligence or inattentiveness,
- incorrect use,
- failure to follow the procedure
- use of a control system not designed by **SAMES KREMLIN** or a **SAMES KREMLIN** control system modified by a third party without written permission from an authorized **SAMES KREMLIN** technical agent,
- accidents such as: collision with external objects, or similar events,
- flooding, earthquake, fire or similar events,
- inadequately filtered bearing air (solid particles more than 0.1 µm in diameter),
- inadequately filtered paint and solvent,
- use of seals not complying with **SAMES KREMLIN** recommendations,
- starting up turbine rotation without minimum bearing air pressure (5 bar),
- exceeding the maximum speed of 65,000 rpm under load,
- starting up rotating parts that are unbalanced (dry paint on bellcup, rotor or damaged bellcups),
- pollution of air circuits by fluids or substances other than air.

SAMES KREMLIN atomizer **Nanobell 801** and its air turbine are covered by a one-year guarantee for use in two 8-hour shifts under normal operating conditions (5000 hours).

The guarantee will take effect from the date of the first startup or of the provisional acceptance report.

Under no circumstances, either in the context of this guarantee or in other contexts, will **SAMES KREMLIN** be held responsible for physical injury or intangible damage, damage to brand image and loss of production resulting directly from its products.

2. Description

2.1. General

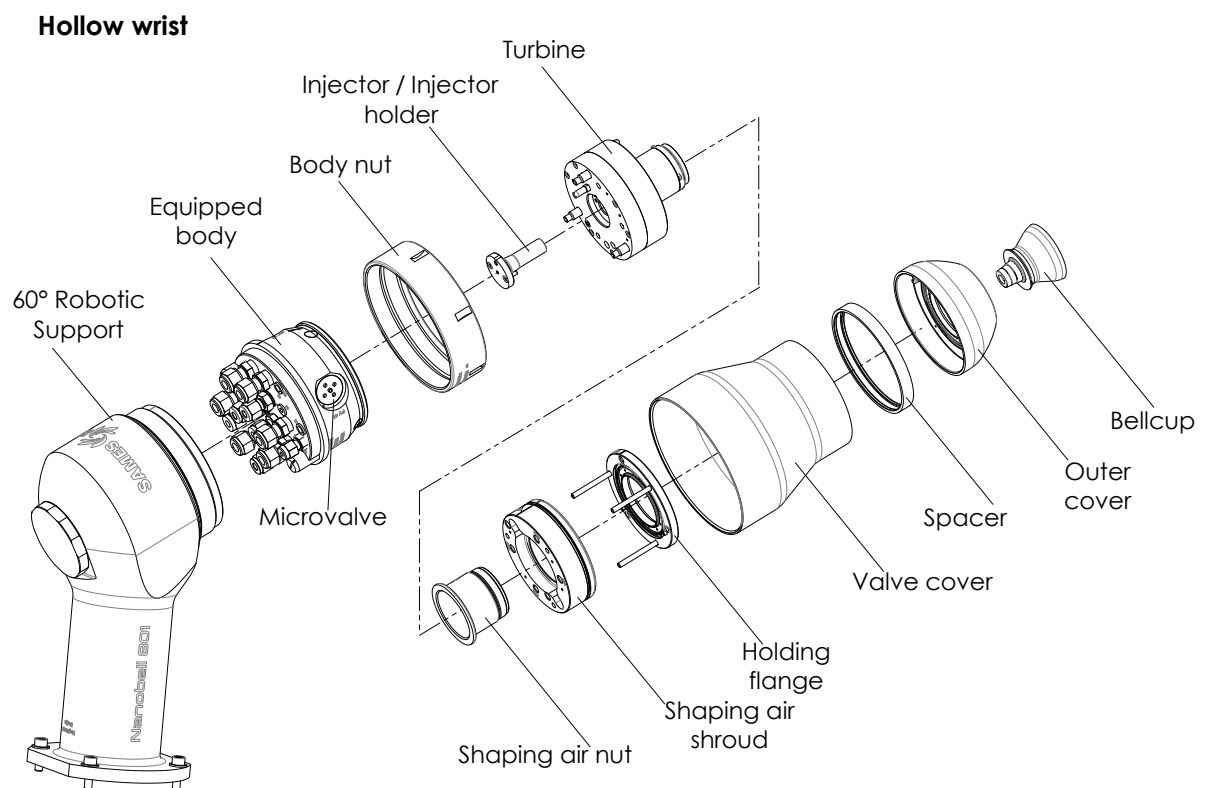
Atomizer **Nanobell 801** is a rotary atomizer, dedicated according to versions, to the application of solvented or waterborne paints, mono paintings or multi-components. It is used in environments of automatic electrostatic atomization, its design makes of this atomizer equipment simple, sturdy and easy to maintain.

The Nanobell 801 is modular and can be mounted on robots (hollow wrist or solid wrist) for its robotic versions, on all types of robotic devices for its straight version or on reciprocators for its version with support tube.

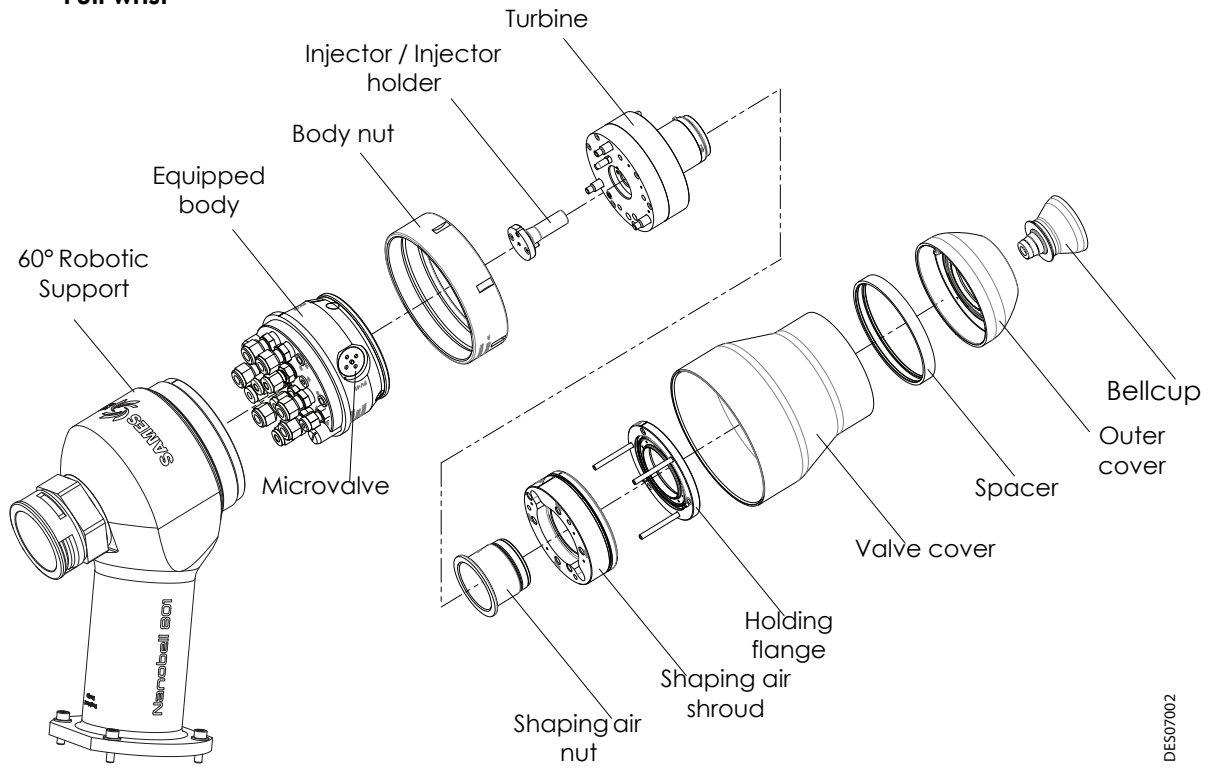
Equipped with an air bearing turbine, the atomizer **Nanobell 801** can atomize with a maximum rotation speed of 65,000 rpm.

Atomizer Nanobell 801 allows to improve the quality of production while making significant savings of paint.

Main components:

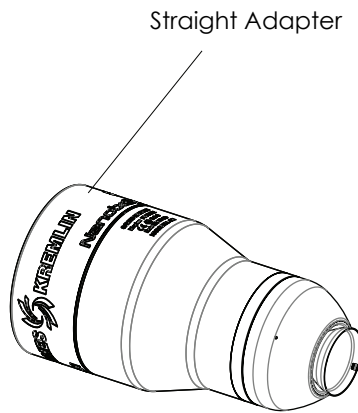


Full wrist



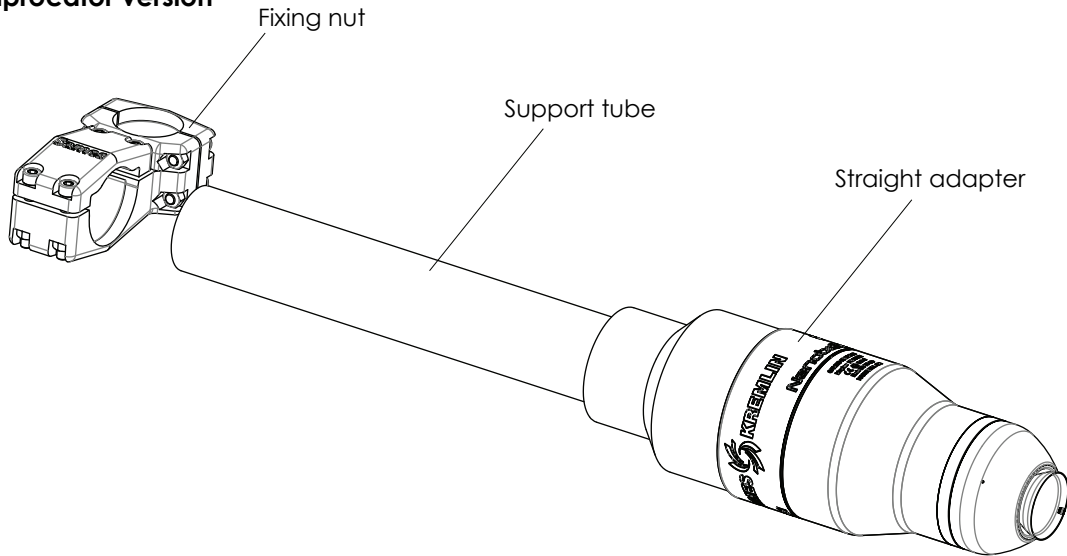
DES07002

Straight Version



DES07244

Reciprocator version



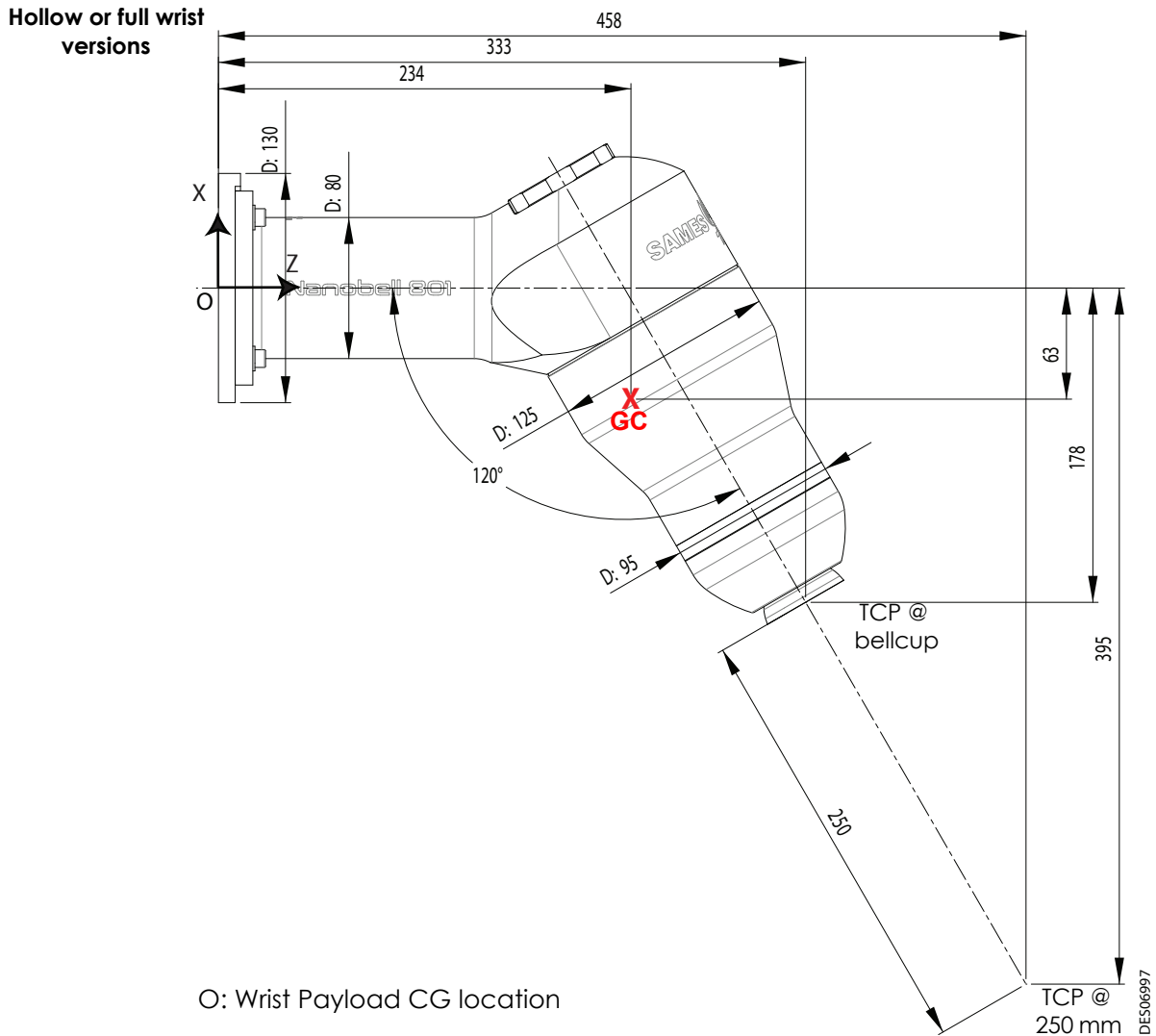
DES07242

2.2. Function of the parts

| Parts | Function |
|---|---|
| Bell cup | The bell cup atomizes all types of paint. It is selected according to the type of product used. |
| Turbine | The rotation of the bell cup is produced by a pneumatic motor. Atomization results from the centrifugal forces generated by rotation of the bell cup. The size of the sprayed particles is smaller the higher the rotational speed. |
| Body | The body houses all the fluid circuits, product, air and solvent microvalves and the injector / injector holder assembly. |
| Shaping air assembly (outer cover / shaping air shroud) | These parts control the size and pattern diameter and transfer the particles to the parts to be painted. They protect internal components and allow easy cleaning. |
| Injector holder Injector | The injector transfers products to the bell cup. The holder retains the injector and allows it to be rinsed. |
| Microvalve | Air-controlled, 2-way, normally closed valves used for various operations: paint supply, paint rinse, bell cup exterior rinse, injector rinse |
| 60° Robotic support | Allows the sprayer to be installed on a robot with a hollow wrist or a full wrist |
| Support tube | Allows the sprayer to be installed on a reciprocator robot. |
| Straight Adapter | Allows an interface for fixing the sprayer for use on all types of robotic devices |

3. Technical Characteristics

3.1. Dimensions, gravity center and tool center point (mm)



Note: TCP : Tool Center Point

Weight: 3.5 kg

Gravity center (CG) in millimeters

(X; Y; Z) = (- 63; 0; 234)

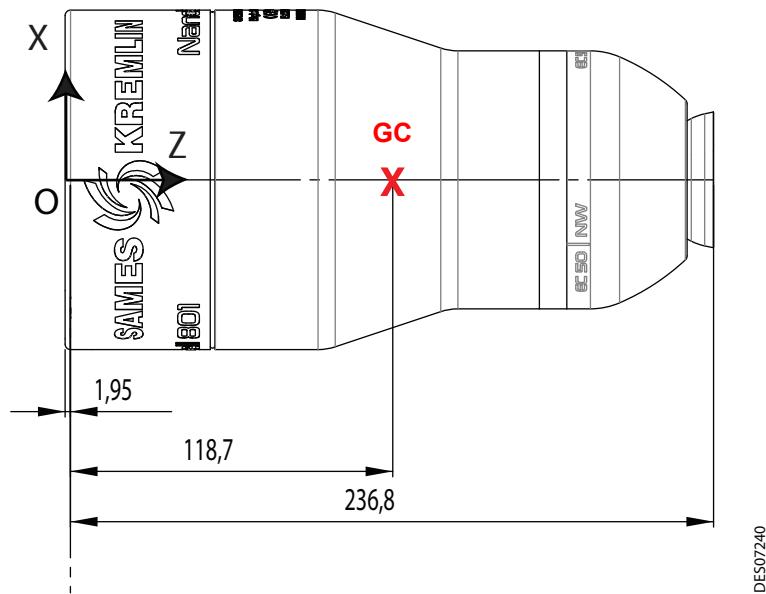
Main inertia axis and moments (kg x mm²), measured to the gravity center:

| | |
|---------------------------------|------------------|
| $I_x = (0.00 ; -0.44 ; 0.90)$ | $P_x = 10176.87$ |
| $I_y = (-0.01 ; -0.90 ; -0.44)$ | $P_y = 47296.92$ |
| $I_z = (1.00 ; -0.00 ; -0.00)$ | $P_z = 51225.88$ |

Inertia moments (kg x mm²), measured to the output C.S:

| | | |
|----------------------|-----------------------|-----------------------|
| $I_{xx} = 275080.78$ | $I_{xy} = - 53.94$ | $I_{xz} = 267.74$ |
| $I_{yx} = - 53.94$ | $I_{yy} = 249209.59$ | $I_{yz} = - 70299.21$ |
| $I_{zx} = 267.74$ | $I_{zy} = - 70299.21$ | $I_{zz} = 32119.89$ |

Straight version



O: Wrist Payload CG location

Note:

Weight: 3.2 kg

Gravity center (GC) in millimeters

(X; Y; Z) = (118.71; 0.56; 0.59)

Main inertia axis and moments (kg x mm²), measured to the gravity center:

| | |
|--------------------------------|------------------|
| $I_x = (1.00 ; -0.01 ; 0.90)$ | $P_x = 5012.67$ |
| $I_y = (-0.03 ; 0.03 ; -1.00)$ | $P_y = 14885.88$ |
| $I_z = (0.02 ; 1.00 ; 0.03)$ | $P_z = 14995.72$ |

Inertia moments (kg x mm²), measured to the output C.S:

| | | |
|--------------------|---------------------|---------------------|
| $I_{xx} = 5024.48$ | $I_{xy} = 63.69$ | $I_{xz} = -58.17$ |
| $I_{yx} = 63.69$ | $I_{yy} = 58984.34$ | $I_{yz} = 1.60$ |
| $I_{zx} = -58.17$ | $I_{zy} = 1.60$ | $I_{zz} = 58868.92$ |

3.2. Working characteristics

| | | |
|--|---|--|
| Weight | | |
| | Nanobell 801 only (hollow or full wrist) | 3.5 kg |
| | Nanobell 801 only (straight version) | 3.2 kg |
| | Nanobell 801 only (reciprocator version) | 4,8 kg |
| Speed | | |
| | Recommended rotation speed | 15 to 65 K rpm |
| Paint | | |
| | Flow rate | 30 to 800 cc/ min. maxi (depending on paint used) |
| | Supply pressure | 6 to 8 bar |
| | Maximum pressure | 10 bar |
| | Viscosity | 20 to 40 seconds - cup FORD # 4 |
| | Viscosity | 20 to 45 seconds - cup AFNOR #4 |
| Air pressure | | |
| | Microvalve pilot | 6 bar mini. - 10 bar maxi |
| | Bearing air | 5 bar mini. - 7 bar maxi (measured at the level of the body) |
| | Shaping air | 6 bar maximum |
| | Mircophone air | 0,5 to 1 bar constant |
| Compressed air | | |
| Filtered air (bearing air) must be dry and free of oil and dust as per DIN ISO 8573-1 | | |
| | Maximum dew point at 5,5 bar (80 psi) | Class 2 i.e - 40°C (-40°F) |
| | Granulométrie maximale des polluants solides (Air palier) | Class 0 i.e Ø 0,1 µm |
| | Granulométrie maximale des polluants solides (Rotation turbine) | Class 1 i.e Ø 1 µm |
| | Granulométrie maximale des polluants solides (Autres) | Class 3 i.e Ø 5 µm |
| | Concentration maximale en huile | Class 1 i.e 0,01 mg / m ₀ ³ * |
| | Concentration maximale en polluants solides | 1 mg / m ₀ ³ * |
| Air consumption | | |
| | Instant pilot flow required | 10 NI/min. |
| | Bearing air | 130 NI/min. mini. |
| | Shaping air | 200 to 900 NI/min. |
| | Turbine | see RT Nr 7128 |

* m₀³ values given for a temperature of 20°C (68°F) and an atmospheric pressure of 1,013mbar.

3.3. Operating Principle

3.3.1. Turbine

[see RT Nr 7128](#)

The turbine is equipped with an air bearing that separates the transmission shaft and drive vane from the main body of the turbine. This eliminates friction between the various components, ensuring long component life and allowing high rotation speeds.

The air directed onto the turbine blades controls the rotation or braking of the turbine.

Atomisation of the product takes place thanks to the centrifugal forces created by the rotation of the bell cup. The size of the atomised particles decreases as the rotation speed increases.

3.3.2. Rotation speed measurement with microphone

[see RT Nr 7128](#)

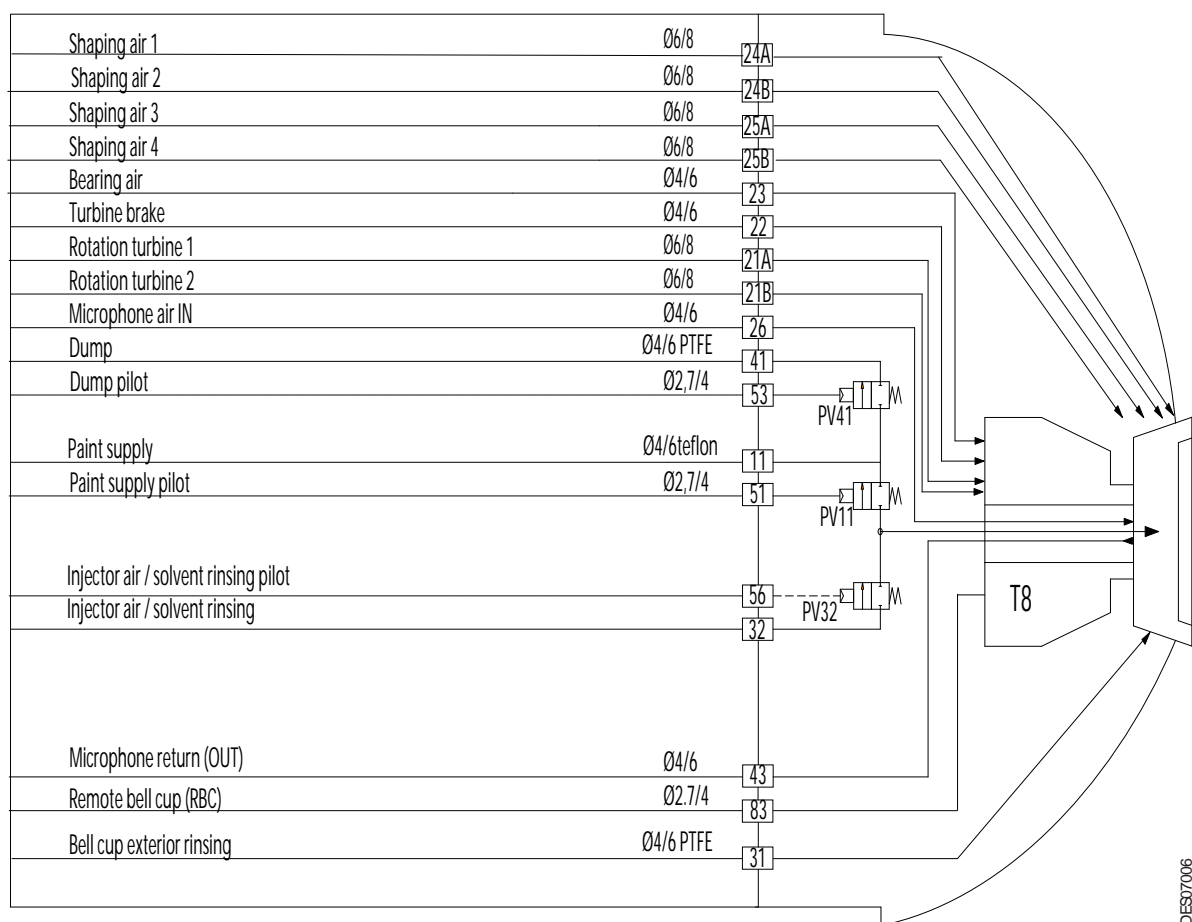
The rotation speed is measured acoustically. Air is supplied between the body and the shaft of the turbine. Each bell cup rotation, air passes through a groove machined on the shaft. This variation in pressure generates a signal whose frequency is proportional to the rotation speed and which is returned to the microphone through the turbine (via the atomizer body). The microphone ([see RT Nr 6190](#)) converts this signal into electrical pulses that are in turn transmitted to a control board.



WARNING : The 'microphone return' hose must be between 4 and 5 m long to avoid loss of acoustic signal at the microphone.

Due to the high speed of the turbine, a resonance frequency may occur in a hose that does not respect the recommended length range. The resonance frequency causes a stationary wave that inhibits the acoustic signal at the microphone.

4. Fluid diagram



DIES07006

| Item | Function | Hose characteristics |
|------|---|------------------------|
| 11 | Paint supply | D: 4/6 PTFE |
| 21A | Turbine Rotation 1 | D: 6 / 8 polyurethane |
| 21B | Turbine Rotation 2 | D: 6 / 8 polyurethane |
| 22 | Turbine brake | D: 4/ 6 polyurethane |
| 23 | Bearing air | D: 4/ 6 polyurethane |
| 24A | Shaping air 1 | D: 6 / 8 polyurethane |
| 24B | Shaping air 2 | D: 6 / 8 polyurethane |
| 25A | Shaping air 3 | D: 6 / 8 polyurethane |
| 25B | Shaping air 4 | D: 6 / 8 polyurethane |
| 26 | Microphone air IN | D: 4/ 6 polyurethane |
| 31 | Exterior bell cup air / solvent rinsing | D: 4/6 PTFE |
| 32 | Injector air / solvent rinsing | D: 4/6 PTFE |
| 41 | Dump | D: 4/6 PTFE |
| 43 | Microphone return (OUT) | D: 4/ 6 polyurethane |
| 51 | Paint supply pilot | D: 2,7/ 4 polyurethane |
| 53 | Dump pilot | D: 2,7/ 4 polyurethane |
| 56 | Injector air / solvent rinsing pilot | D: 2,7/ 4 polyurethane |
| 83 | Remote bell cup (RBC) | D: 2,7/ 4 polyurethane |

PTFE hoses should be replaced neither by polyamide hoses nor by polyurethane hoses.
Blue hoses are used for the different air supplies.
The colourless hoses are used for the product.



WARNING : After a phase of the exterior bell cup and injector, it is imperative to finish the rinsing phase by a blowing of the "31" hose during 1 to 2 seconds.

RBC (Remote Bell Cup) function: Inlet 83 is a pressure tap used to measure a pressure proportional to the bell cup resistance force (magnetic clip).
This pressure must exceed 1.5 bar.

- RBC pressure \leq 0.9 bar: bell cup not present
- 0.9 bar < RBC pressure < 1.5 bar: insufficient resistance force (dirty turbine fastening cone, damaged bell cup cone)

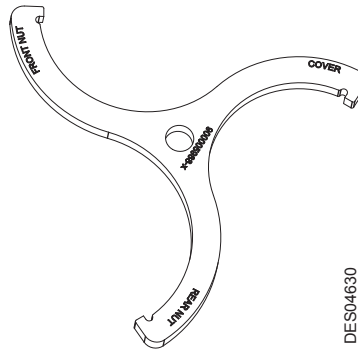
- When the RBC pressure is less than 1.5 bar, the 'bell cup retaining/presence' fault is activated, inhibiting the rotation and activation of the paint supply valve (except in maintenance mode, to perform paint flow rate measurements).

- **AS check:** Function associated with the RBC function. When the RBC pressure is less than 1.5 bar, a 'AS check problem' fault is also activated. The problem may be due to an incorrect tightening of the outer cover, or an incorrect tightening of the retaining flange and/or to a bell cup retaining/presence problem.

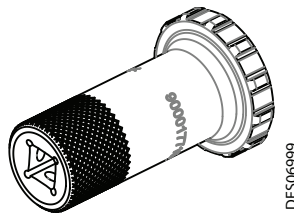
The operator is prompted to check these components and production is interrupted (the atomizer cannot be used with this fault).

5. Startup

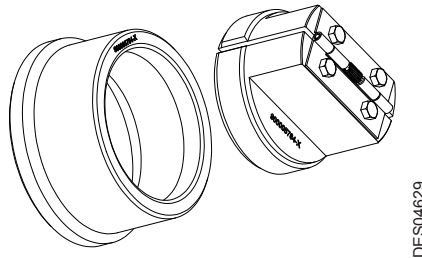
5.1. Tools



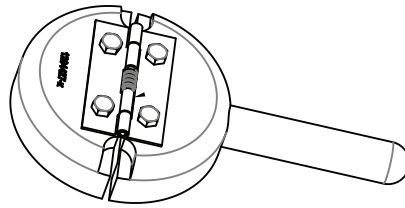
| Part Number | Description | Qty | Sale unit |
|-------------|--------------------------------------|-----|-----------|
| 900004492 | Installation / Removal tool for body | 1 | 1 |



| Part Number | Description | Qty | Sale unit |
|-------------|--|-----|-----------|
| 900017715 | Installation / Removal tool for T8 outer cover | 1 | 1 |

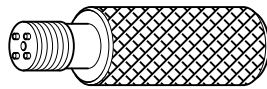


| Part Number | Description | Qty | Unit of sale |
|-------------|--|-----|--------------|
| 900005784 | Removal tool for EC 35 magnetic bell cup | 1 | 1 |

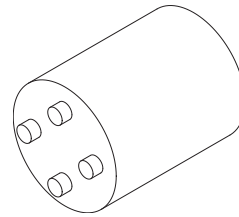


DES02870

| Part Number | Description | Qty | Sale unit |
|-------------|--|-----|-----------|
| 900000803 | Removal tool for EC 50 magnetic bell cup | 1 | 1 |
| 1204427 | Removal tool for EX 65 magnetic bell cup | 1 | 1 |



DES00039

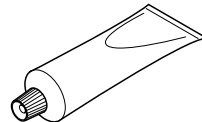


DES01673

| Part Number | Description | Qty | Sale unit |
|-------------|--|-----|-----------|
| 1303689 | Removal tool for microvalve | 1 | 1 |
| 1403478 | Automatic tightening tool for microvalve | 1 | 1 |



| Part Number | Description | Qty | Sale unit |
|-------------|---------------------|-----|-----------|
| 240000301 | Seal extractor tool | 1 | 1 |



DES00685

| Part Number | Description | Qty | Sale unit |
|-------------|-------------------------|-----|-----------|
| H1GMIN017 | White vaseline (100 ml) | 1 | 1 |

Additional tools and accessories required:

The tool listed below should be available for product installation and maintenance operations.

- Hose cutter (P/N.: W3SCTU002).
- Screwdriver (small and medium).
- Allen wrench (2.5 mm).
- Flat wrenches (4, 6, 14 and 18 mm)
- Open-socket wrench (6 mm)
- Torque wrench 5 to 50 Nm, 3/8" square
- Fine brush.

5.2. Installation

For installation rules: [see § 1.5.1 page 9](#).

For hollow or full wrist versions:

- **Step 1:** Install the robotic adapter specific to the robot to be equipped.
- **Step 2:** Connect the ground cable from the robot to one of the two housings of the robot adapter.
- **Step 3:** Remove the 60° robotic support from the body and secure it to the robot adapter using the 4 Chc M6x 20 screws and 4 M6 washers.
- **Step 4:** Connect the hoses to the atomizer.
- **Step 5:** Pass the hoses through the 60° robotic support, connect the ground cable of the atomizer to the robot flange and then fix the body with the body nut on the 60° robotic support.
- **Step 6:** Install the bellcup/ outer cover assembly on the atomizer.

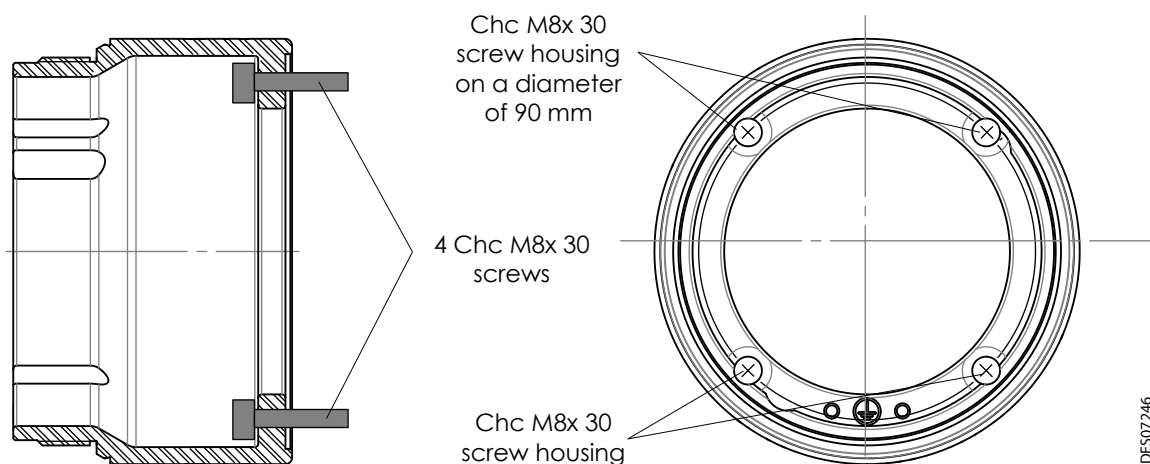
For straight version:

- **Step 1:** Remove the straight adapter from the body and screw it onto the robotic system used using the 4 M8 x 30 Chc screws.
- **Step 2:** Connect the ground cable from the robotic system used to one of the two housings of the straight adapter.
- **Step 3:** Connect the hoses to the sprayer .
- **Step 4:** Pass the hoses through the straight adapter, connect the atomizer ground cable to the straight adapter and then fix the body with the body nut on the straight adapter.
- **Step 5:** Install the bellcup/ outer cover assembly on the atomizer.

For reciprocator version:

- **Step 1:** Place the nut on the support tube and then install the assembly on the reciprocator robot.
- **Step 2:** Remove the straight adapter from the body and screw it onto the support tube using the 4 M8x30 Chc screws.
- **Step 3:** Connect the ground cable from the reciprocator to one of the two housings on the straight adapter.
- **Step 4:** Pass the hoses through the support tube and the straight version, then connect the hoses to the atomizer.
- **Step 5:** Connect the ground cable of the atomizer on the straight adapter then secure the body with the body nut on the 60° robotic support.
- **Step 6:** Install the bellcup/ outer cover assembly on the atomizer.

5.3. Fixing interface, straight version



5.4. Shutdown and Startup Procedures

Important recommendations

Follow the air settings given in Section 3.2.

The bearing air must be at least 5 bar at the inlet of the body.

Check that the speed regulating module transmits a signal.

5.4.1. Shutdown Procedure

Important steps to be observed:

| | | Step 1 | Step 2 | Step 3 | Step 4 | Step 5 |
|--|----------------|--------|--------|--------|--------|--------|
| Stop atomizing | Sequence chart | | | | | |
| Run a rinsing cycle | | | | | | |
| Run a blowing cycle of paint and solvent hoses | | | | | | |
| Cut off the shaping air | | | | | | |
| Cut off the turbine rotation air * | | | | | | |
| Cut off the bearing air | | | | | | |



WARNING : * Wait until the turbine has completely stopped 0 rpm.

5.4.2. Startup Procedure

Important steps to be observed:

| | | Step 1 | Step 2 | Step 3 | Step 4 |
|----------------------------------|----------------|--------|--------|--------|--------|
| Switch on the bearing air supply | Sequence chart | | | | |
| Start up turbine rotation | | | | | |
| Switch on the shaping air supply | | | | | |
| Start up atomization | | | | | |

6. Maintenance

6.1. Summary table of maintenance operations

| Procedure | Description | Preventive | Corrective | Duration | Frequency |
|-----------|---|------------|------------|----------|------------------|
| A | Cleaning of atomizer exterior, outer cover and bell cup | X | | 5 mn | 8 Hours |
| B | B1 Cleaning of bell cup and fixing-cone | X | | 2 mn | 40 Hours |
| | B2 Cleaning of outer cover | X | | 5 mn | 40 Hours |
| | B3 Cleaning of injector exterior | X | | 2 mn | 40 Hours |
| C | C1 Cleaning of turbine | X | | 2 mn | 520 Hours |
| | C2 Cleaning of injector / injector holder | X | | 2 mn | 520 Hours |
| | Body maintenance | | | | |
| D | D1 Installation / Removal of shaping air shroud/ T8 nut assembly | | X | < 5 mn | |
| | D2 Body installation / removal | | X | < 30 mn | |
| | D3 Replacement of microvalves | | X | 5 mn | 3 million cycles |
| | D4 Replacement of o-rings | | X | 15 mn | > 5000 Hours |
| | D5 Replacement of fittings / hoses | | X | 60 mn | > 5000 Hours |
| | D6 Replacement of ground cable | | X | 60 mn | > 10000 Hours |

6.2. Preventive maintenance

These maintenance operations can be performed online. Always refer to the health and safety instructions before carrying out any work ([see § 1.5 page 6](#)).

6.2.1. Procedure A: Atomizer exterior

At regular intervals during frequent use, and at the end of each cycle:

- Stop atomization, run a rinsing cycle.
- Stop the turbine. The bearing air and shaping air remain under pressure to block the solvent flow between the bell cup and inner shaping air shroud.



WARNING : Always wear safety goggles.

Whenever solvent is handled, gloves made of an appropriate resistant material must be worn. Work in a well-ventilated area whenever solvent is used.



WARNING : Prior to cleaning, It is essential to eliminate all electrostatic charges on the atomizer using a cloth soaked with water then clean using a rag and an approved cleaning product. Do not use a manual solvent gun.



WARNING : Under no circumstances must the atomizer or any of its components be sprayed with solvent or water at high or low pressure.

Soak the body of the atomizer in a liquid of cleaning without integral disassembling of all its components is strictly prohibited. It is essential to remove bell cup, shaping air assembly, turbine, la turbine, microvalves, o-rings and fittings by using suitable tools ([see § 5.1 page 24](#)) then dry all the parts perfectly. If this information is not respected, there is a risk of total deterioration of the atomizer imposing its replacement which is not covered by the **SAMES KREMLIN** guarantee. It is in the same way strictly prohibited to soak the turbine in solvent.



WARNING : **SAMES KREMLIN** disadvises the use of anti-static plastic films to protect bodies and insulating covers of the atomizers. These films are conductive and can short-circuit the high voltage.

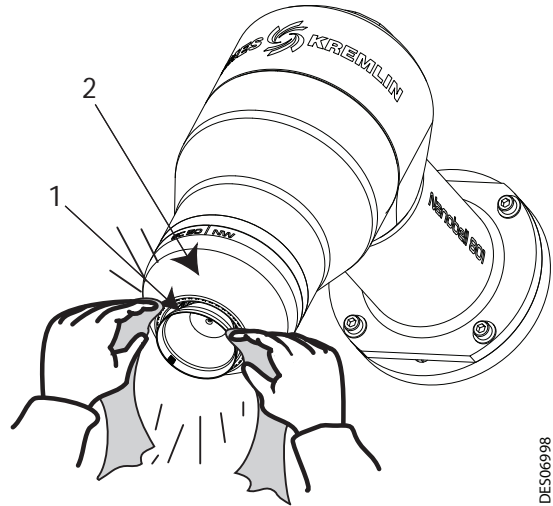
SAMES KREMLIN forbids the use of adhesives on the insulating parts of the atomizers.

SAMES KREMLIN also forbids the use of absorbent textile cover to protect bodies and insulating covers of the atomizers.

Thus, **SAMES KREMLIN** recommends the use of insulating grease for protection of the atomizers.

| | |
|---|-------------|
| 1 | Bell cup |
| 2 | Outer cover |

- Clean the atomizer, the outer cover and the bellcup exterior using a clean rag.
- Dry carefully with compressed air.



DE506998

6.2.2. Procedure B1: Magnetic bell cup and fixing cone



WARNING : All bell cup maintenance or handling operations must be performed with extreme care, since the bell cup is balanced.

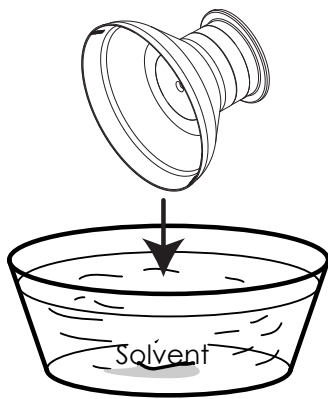


WARNING : Stop the turbine and cut off the shaping air supply, the bearing air remains pressurized.

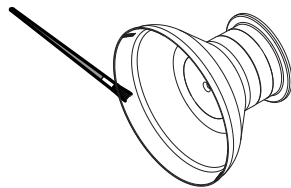
- Remove the magnetic bell cup using the suitable tool, [see RT Nr 7127](#).
- Carry out a visual inspection.
- Let the bell cup soak for one hour in an appropriate solvent, then clean with a clean cloth and soft brush.



WARNING : Make sure that all surfaces are clean and free from impurities. Take care particularly of the internal and external surfaces of the cylinder of the bellcup fixing.

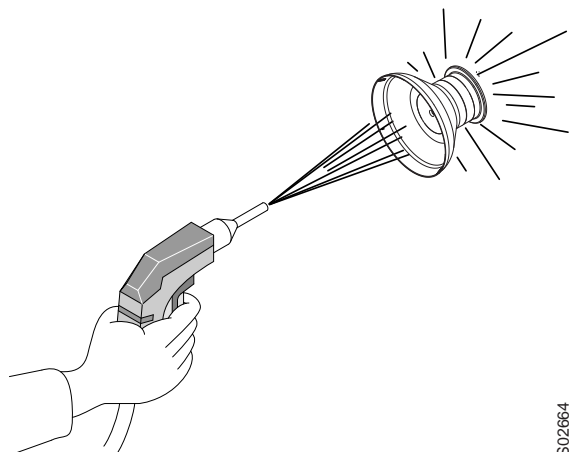


DES02662



DES02663

- Dry carefully with compressed air.



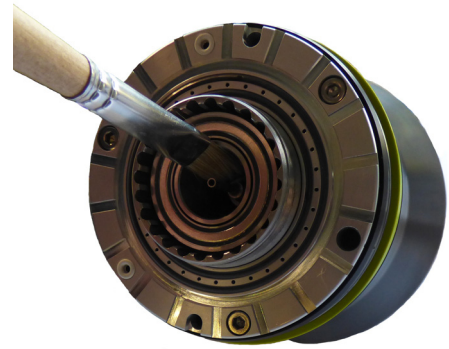
DES02664

- Reinstall the bell cup on the atomizer.

Bellcup fixing cone:

Note: This procedure can also be performed with the outer cover in place.

- Using a brush slightly soaked in solvent, clean the bellcup fixing cone.



- Dry carefully with a clean, dry, non-fluffy cloth.

6.2.3. Procedure B2: Cleaning of outer cover

- The bell cup has been previously removed,

- **Step 1:** Place the tool (P/N 900017715) on a Torque wrench 5 to 50 Nm, 3/8'' square.



Step 1

- **Step 2:** Unscrew the outer cover.

Step 2

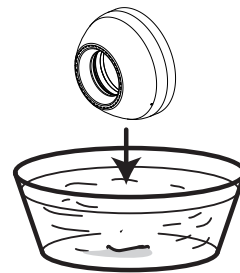


- **Step 3:** Remove the outer cover.

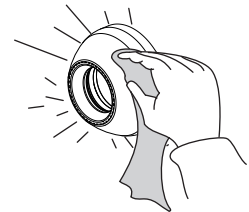


Step 3

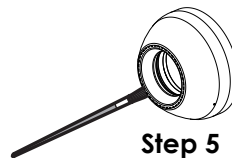
- **Step 4:** Let the outer cover soak for one hour in an appropriate solvent then clean the outer and inner surfaces with a clean cloth soaked in solvent.



Step 4

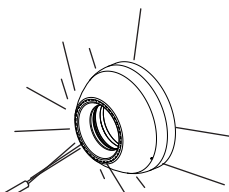


- **Step 5:** Use a nylon brush to clean the holes on the front face of the outer cover.



Step 5

- **Step 6:** Dry carefully with compressed air (concentrating on the holes to eliminate paint residues) then wipe with a clean, dry cloth.



Step 6

- **Reinstall the outer cover:**

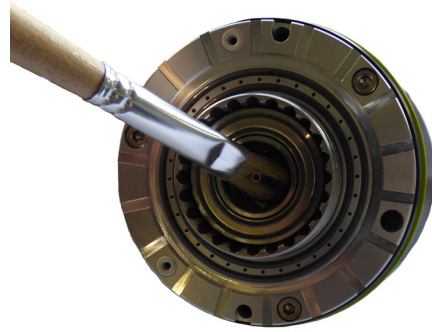
place the outer cover on the sprayer and tighten to 25 N.m

DES07031

6.2.4. Procedure B3: Injector exterior

- Bellcup is previously removed.

Note: This procedure can also be performed with the outer cover in place.



- Using a brush slightly soaked in solvent, clean the injector exterior.

- Dry carefully with a clean, dry, non-fluffy cloth.

6.2.5. Procedure C1: Cleaning of the turbine

- Proceed with the bell cup, the outer cover and the shaping air shroud / T8 nut assembly previously removed.



- Unscrew the three turbine fixing screws and pull the turbine in the axis. Remove the injector / injector holder assembly ([see § 6.2.6 page 37](#)).

- Clean the inside of the turbine with a cylindrical brush.

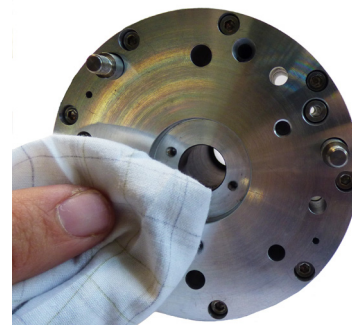


- Then clean the outside of the turbine with a soft, lint-free cloth.

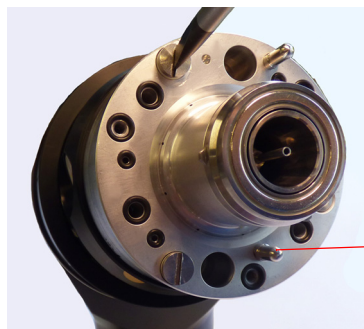


WARNING : Do not soak the turbine in solvent.

- Before reinstalling the turbine on the body, check the condition of the O-rings, replace them if necessary and make sure they are all present. ([see RT Nr 7128](#)).



- **Reassembling:** Put back in place the injector / injector holder into the turbine ([see § 6.2.6 page 37](#)). Position the turbine by aligning a screw and centering pin on the body. Secure the turbine with the three screws, tighten to a torque of 2.2 Nm.



Centering
pin

6.2.6. Procedure C2: Injector / Injector holder

- Bellcup and outer cover are previously removed.

Injector alone: (it is not necessary to remove the turbine or the shaping air shroud / T8 nut assembly).

- **Step 1:** Using a 9 mm pipe wrench, unscrew the injector (clockwise) and remove it, making sure not to damage the injector and its two O-rings
- **Step 2:** Soak the injector for one hour in a suitable solvent and then dry thoroughly with compressed air. Check the condition of the O-rings, replace them if necessary ([see § 7.5.3 page 56](#)).
- **Step 3:** Place the injector on the injector holder and tighten counter-clockwise to the tightening torque of 3.5 Nm.

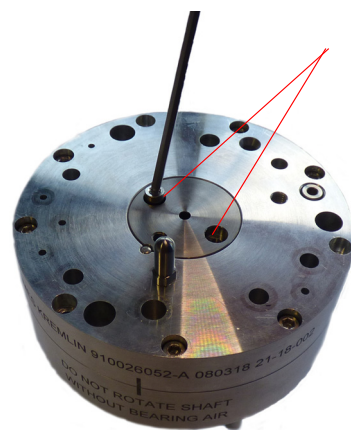


Step 1



Injector / Injector holder:

- **Step 4:** Unscrew the three fixing screws holding the turbine on the equipped body. Pull the turbine in the axis. If necessary, remove the injector holder, unscrew the 2 screws fixing the injector holder with a 5 mm allen key.
- **Step 5:** Using a 9 mm open-end wrench, unscrew the injector (clockwise) and remove it, making sure not to damage the injector and its two O-rings. Then repeat steps 2 and 3.
- **Reassembling:** Insert the injector holder into the turbine, tighten the two screws to a torque of 1.7 N.m.



2 - C M 3x8 screws

Step 4

Step 5



6.3. Corrective maintenance

The following operations are preferably performed in a workshop.

6.3.1. Procedure D1: Installation / Removal of shaping air shroud/ T8 nut assembly

For both versions of Nanobell 801:

- Remove the bellcup and outer cover.



Step 1

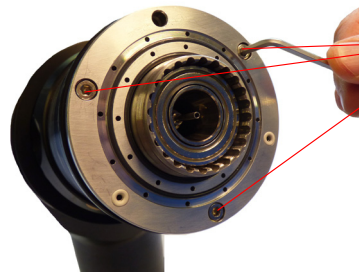
- Step 1:** Remove the ring, then the valve cover.



3 - C M
4x40 screws

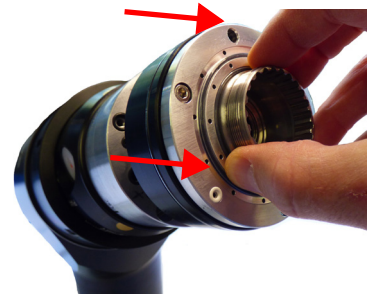
Step 2

- Step 2:** Unscrew the 3 screws C M 4x40 with a 3 mm allen key.

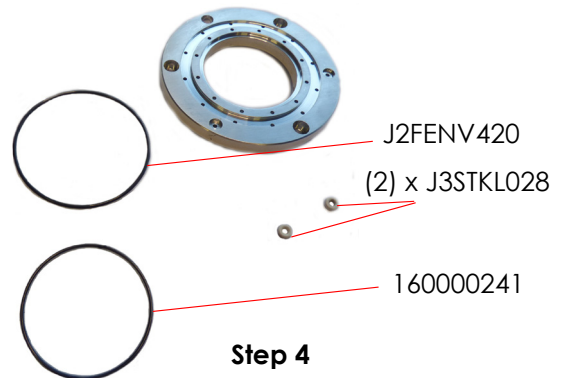


Step 3

- Step 3:** Uncouple the shaping air shroud / T8 nut assembly by pulling the assembly through the nut.



- Step 4:** Check the condition of the o-rings, replace them if necessary, remove them with the tool (P/N 240000301):
O-ring set, T8 interior flange (P/N 910027918).

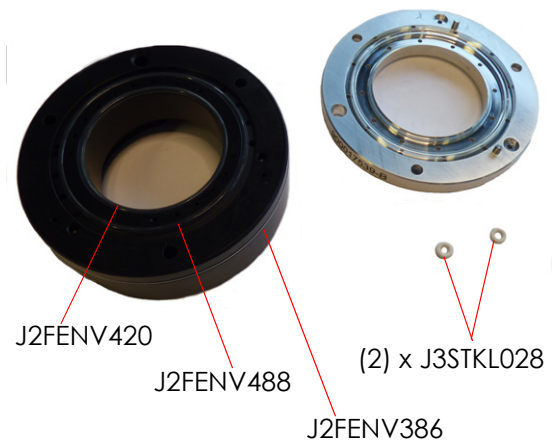


Step 4

- **Step 4: (continued)**
O-ring set, T8 exterior flange (P/N 910027917).

The o-ring (P/N J2FENV386) must be replaced systematically as soon as it has been removed from its groove.

- **To reassemble the assembly:** proceed in reverse order. Place the assembly on the body, and tighten the 3 screws C M 4x40 to a torque of 1.7 N.m.



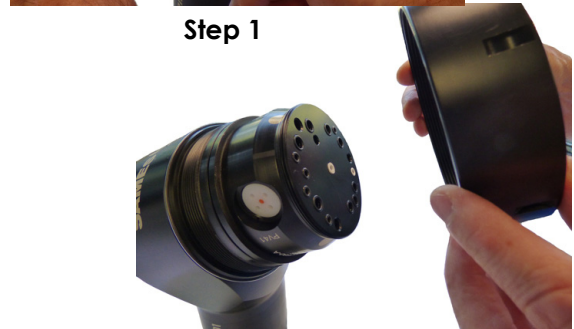
6.3.2. Procedure D2: Body installation / removal

- Remove the bellcup, shaping air assembly (and possibly turbine and injector/holder assembly).

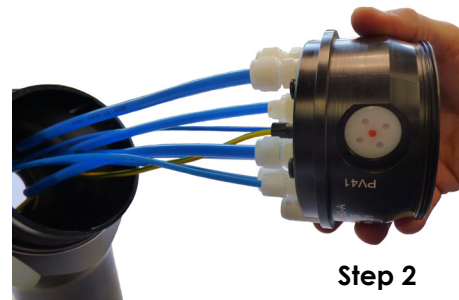


Step 1

- Step 1:** Unscrew the body nut with the tool (P/N 900004492) and remove it.



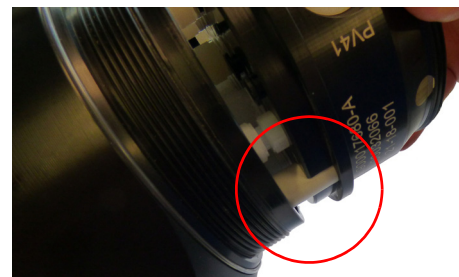
- Step 2:** Uncouple the body from the support.



Step 2

- Disconnect the hoses one by one to have access the fittings ([see § 6.3.5 page 42](#)).

- To reassemble the body:** proceed in reverse order. Position the body lugs in the slots of the support.



6.3.3. Procedure D3: Replacement of microvalves

The D2 procedure having been previously carry out ([see § 6.3.2 page 40](#)).

- **Remove the microvalves:**

[see RT_Nr 6021](#) for the operations listed below.

Remove the microvalves using tool (P/N 1303689).

Check the condition of the microvalves, clean them and replace if necessary.

Before re-assembling, coat the threading of the microvalves with vaseline grease.



6.3.4. Procedure D4: Replacement of body o-rings

- Check the conditions of the o-rings and replace if necessary.

O-ring kit, Nanobell 801 body: P/N 910027908.

Prior to reinstalling the body, make sure all the o-rings are present.



6.3.5. Procedure D5: Replacement of fittings

The D2 procedure having been previously carry out ([see § 6.3.2 page 40](#)).

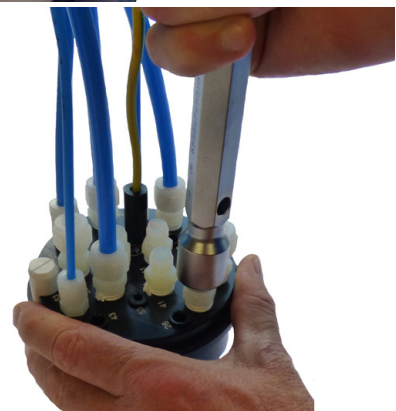
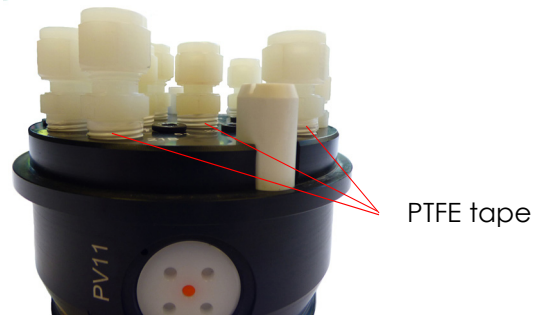
- Unscrew the nut from the fitting(s) to be replaced using a suitable open-end wrench, disconnect the hose(s).
- Unscrew the fitting(s) and remove them from the body.
- To merely replace the fitting, cut the hose approximately 20 mm from its end using the tube cutter (P/N W3SCTU002). Caution: the cutting plane must be perfectly perpendicular to the hose.



Note: If all fittings are removed, start with those on the periphery of the body and reverse for reassembly.

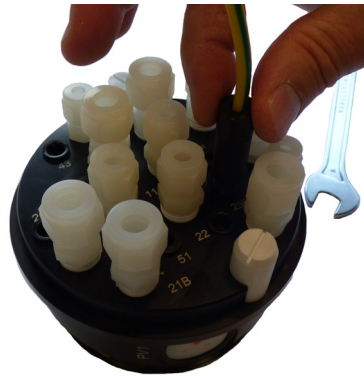
Reinstallation of fittings:

- Place PTFE tape on fitting threading, then screw each fitting into the body using a 12 or 14mm- flat wrench according to the diameter.
- Push the hose fully into the fitting and screw the nut onto the hose.



6.3.6. Procedure D6: Replacement of ground cable

The D2 procedure having been previously carry out ([see § 6.3.2 page 40](#)).



- Using a 12 mm open-end wrench, unscrew the nut while rotating the cable.

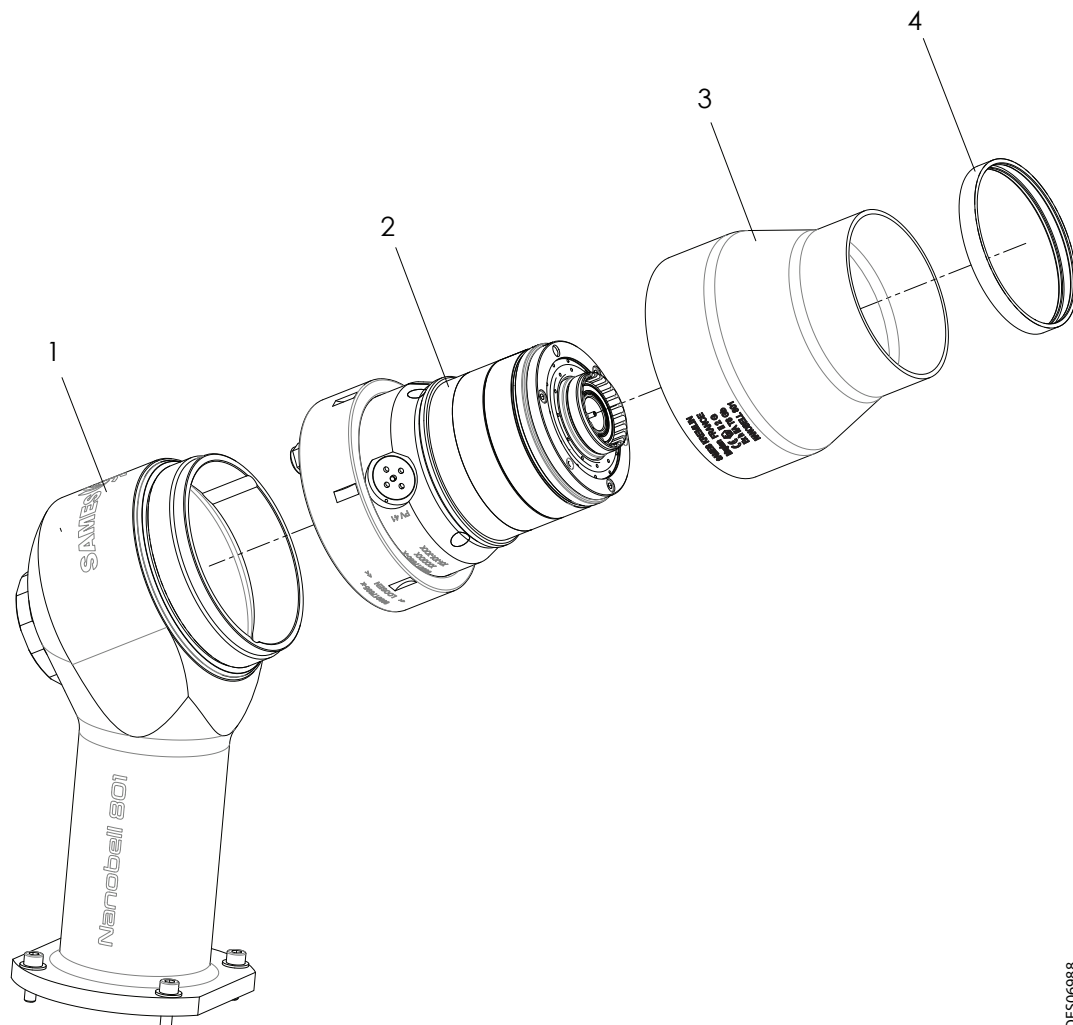


- Pull out the ground cable.

7. Spare parts list

7.1. Nanobell 801 hollow wrist

Bell cup and outer cover are not included.



DES06988

| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|----------|------------------|--|----------|--------------|--------------------------------------|
| | 910026947 | Nanobell 801 Hollow wrist | 1 | 1 | 3 |
| 1 | 910026940 | Equipped 60° robotic support, Nanobell 801 hollow wrist (see § 7.1.1 page 45) | 1 | 1 | 3 |
| 2 | 910026941 | Equipped body (see § 7.5 page 50) | 1 | 1 | 3 |
| 3 | 910027912 | Valve cover | 1 | 1 | 3 |
| 4 | 900017710 | Spacer, outer cover / valve cover | 1 | 1 | 3 |

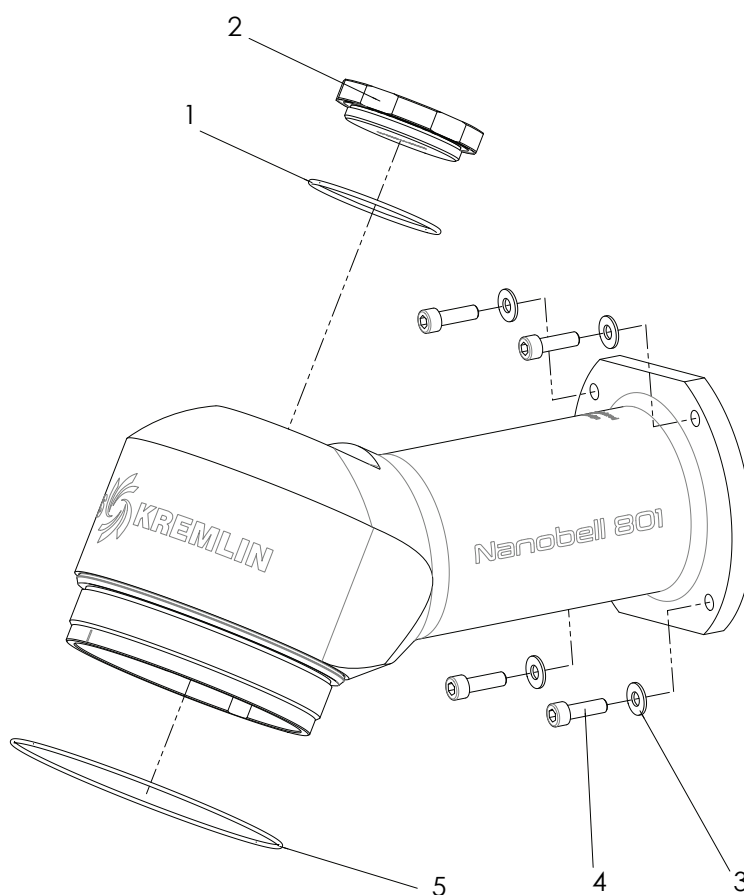
(*)

Level 1: Standard preventive maintenance

Level 2: Corrective maintenance

Level 3: Exceptional maintenance

7.1.1. Equipped 60° robotic support, Nanobell 801 hollow wrist



DES06994

| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|------|------------------|--|----------|--------------|--------------------------------------|
| | 910026940 | Equipped 60° robotic support, Nanobell 801 hollow wrist | 1 | 1 | 3 |
| 1 | J2FENV358 | O-ring | 1 | 1 | 3 |
| 2 | 900017682 | Support plug | 1 | 1 | 3 |
| 3 | X4FDMU006 | Washer M6 | 4 | 1 | 3 |
| 4 | X4FVSY226 | Chc M6 x 20 stainless steel screw | 4 | 1 | 3 |
| 5 | J2FENV695 | O-ring | 1 | 1 | 1 |

(*)

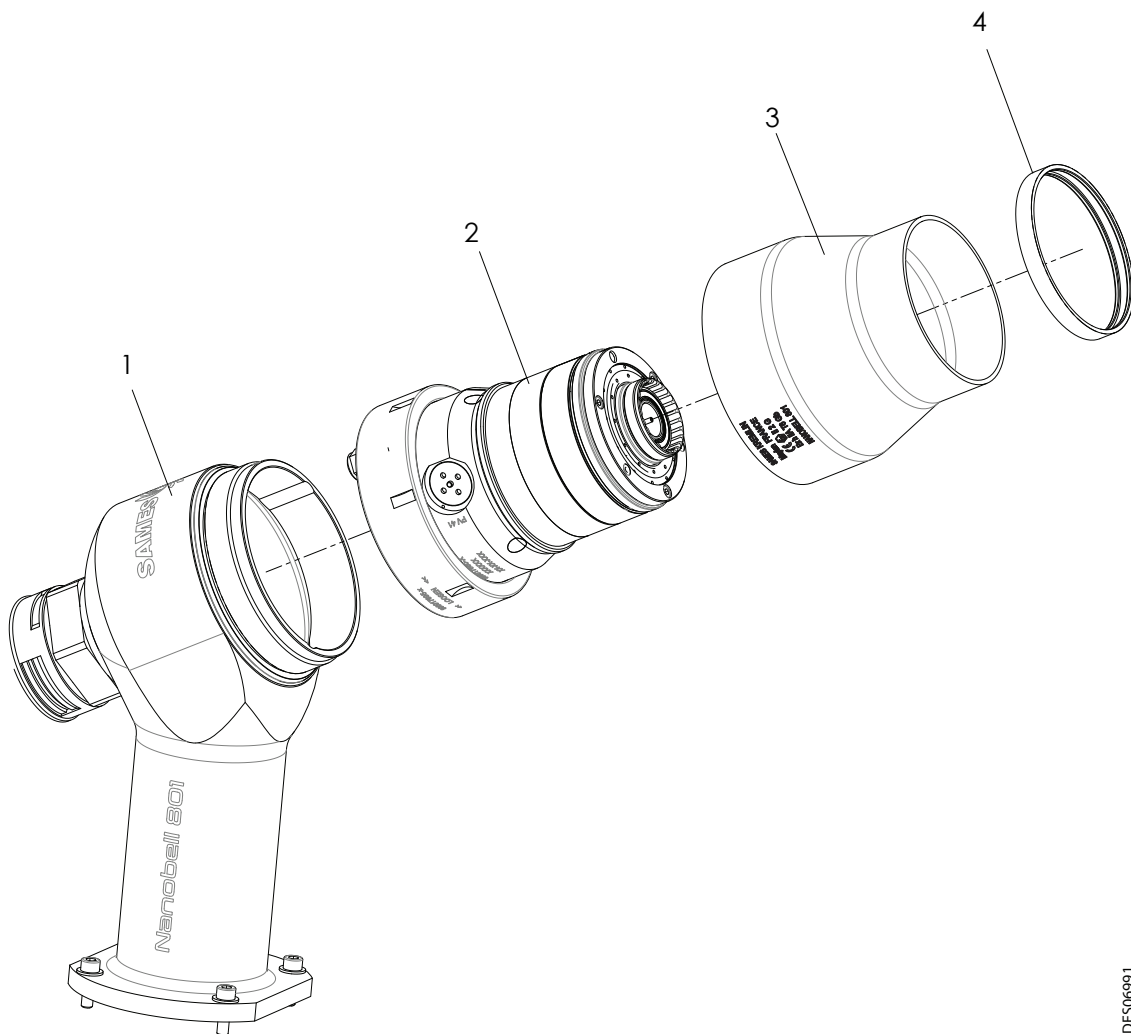
Level 1: Standard preventive maintenance

Level 2: Corrective maintenance

Level 3: Exceptional maintenance

7.2. Nanobell 801 full wrist

Bell cup and outer cover are not included.



DES06991

| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|----------|------------------|--|----------|--------------|--------------------------------------|
| | 910026946 | Nanobell 801 full wrist | 1 | 1 | 3 |
| 1 | 910026939 | Equipped 60° robotic support, Nanobell 801 full wrist (see § 7.2.1 page 47) | 1 | 1 | 3 |
| 2 | 910026941 | Equipped body (see § 7.5 page 50) | 1 | 1 | 3 |
| 3 | 910027912 | Valve cover | 1 | 1 | 3 |
| 4 | 900017710 | Spacer, outer cover / valve cover | 1 | 1 | 3 |

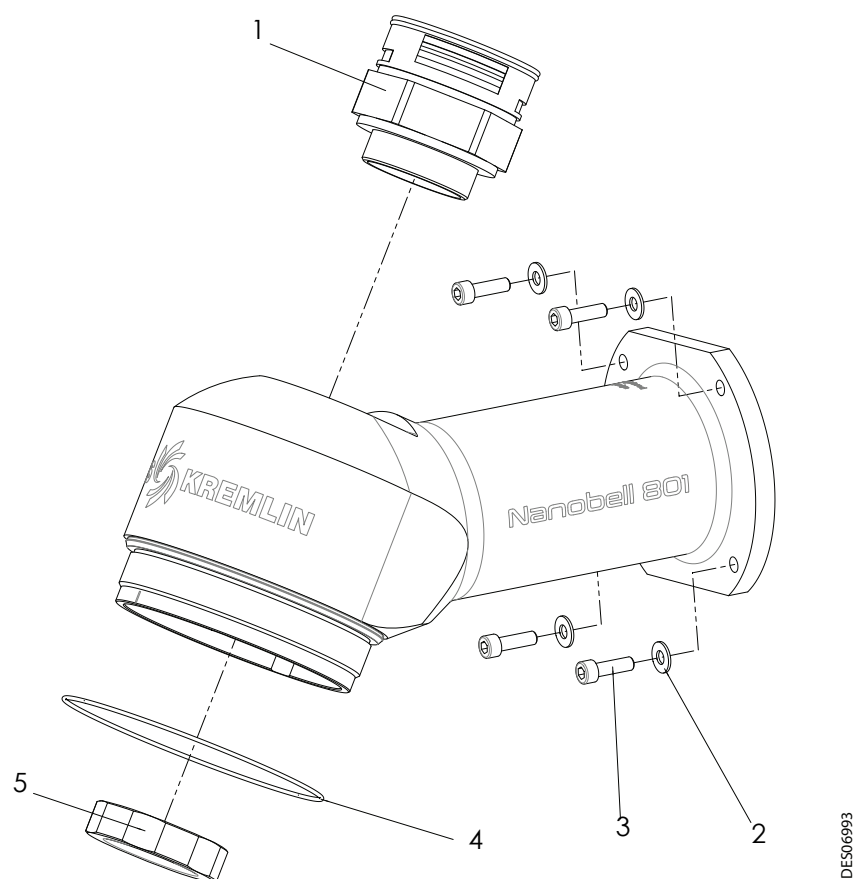
(*)

Level 1: Standard preventive maintenance

Level 2: Corrective maintenance

Level 3: Exceptional maintenance

7.2.1. Equipped 60° robotic support, Nanobell 801 full wrist



DIES06993

| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|------|------------------|-------------------------------------|----------|--------------|--------------------------------------|
| | 910026939 | Equipped 60° robotic support | 1 | 1 | 3 |
| 1 | 110001877 | Straight connector Dia.: 48 | 1 | 1 | 3 |
| 2 | X4FDMU006 | Washer M6 | 4 | 1 | 3 |
| 3 | X4FVSY226 | Chc M6 x 20 stainless steel screw | 4 | 1 | 3 |
| 4 | J2FENV695 | O-ring | 1 | 1 | 1 |
| 5 | 900017681 | Connector nut M50 | 1 | 1 | 3 |

(*)

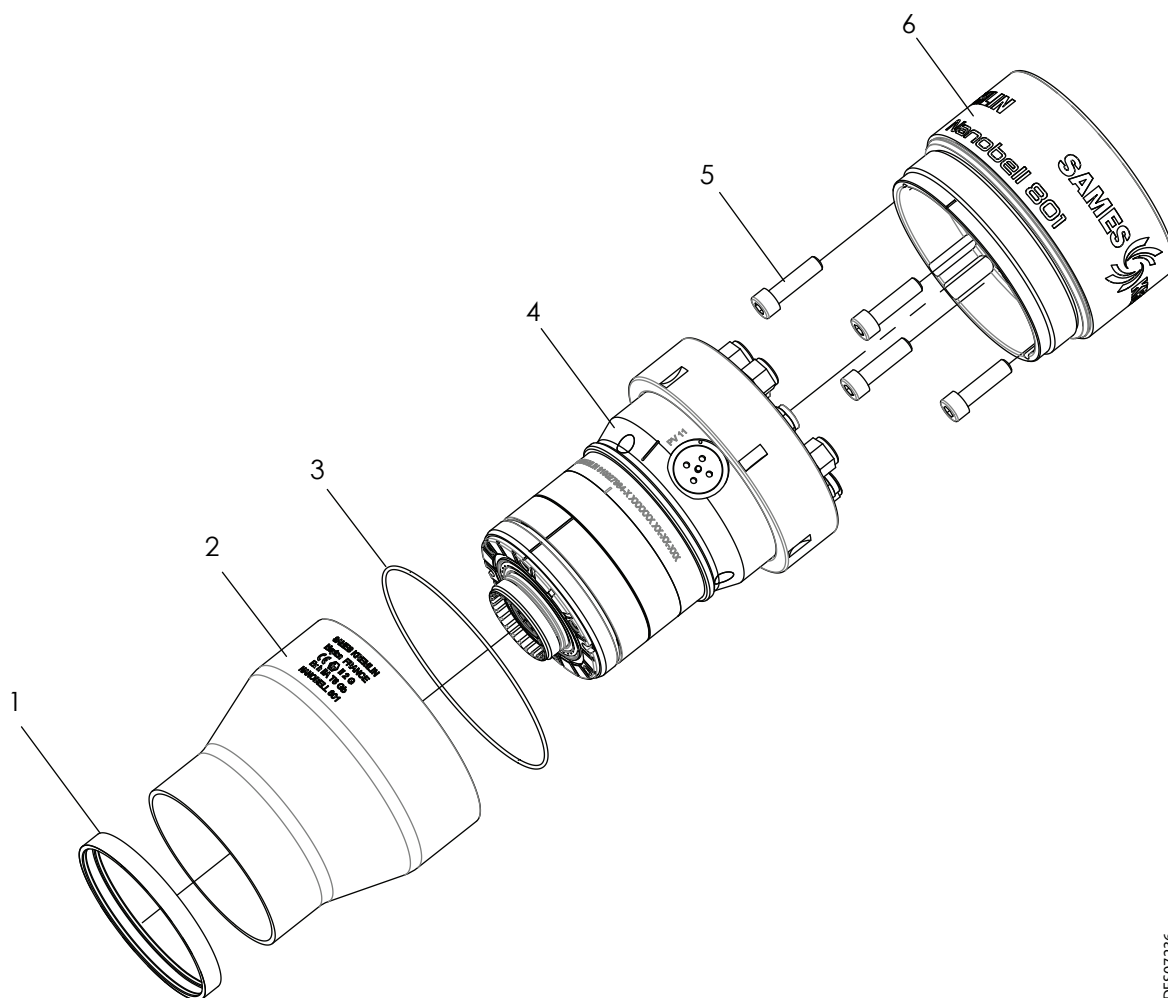
Level 1: Standard preventive maintenance

Level 2: Corrective maintenance

Level 3: Exceptional maintenance

7.3. Nanobell 801, straight version

Bell cup and outer cover are not included.



DES07236

| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|----------|------------------|--|----------|--------------|--------------------------------------|
| | 910028344 | Nanobell 801, straight version | 1 | 1 | 3 |
| 1 | 900017710 | Spacer, outer cover / valve cover | 1 | 1 | 3 |
| 2 | 910027912 | Valve cover | 1 | 1 | 3 |
| 3 | J2FENV695 | O-ring | 1 | 1 | 1 |
| 4 | 910026941 | Equipped body (see § 7.5 page 50) | 1 | 1 | 3 |
| 5 | X4FVSY285 | Ss Chc M8 x 30 screw | 4 | 1 | 3 |
| 6 | 900018676 | Straight adapter | 1 | 1 | 3 |

(*)

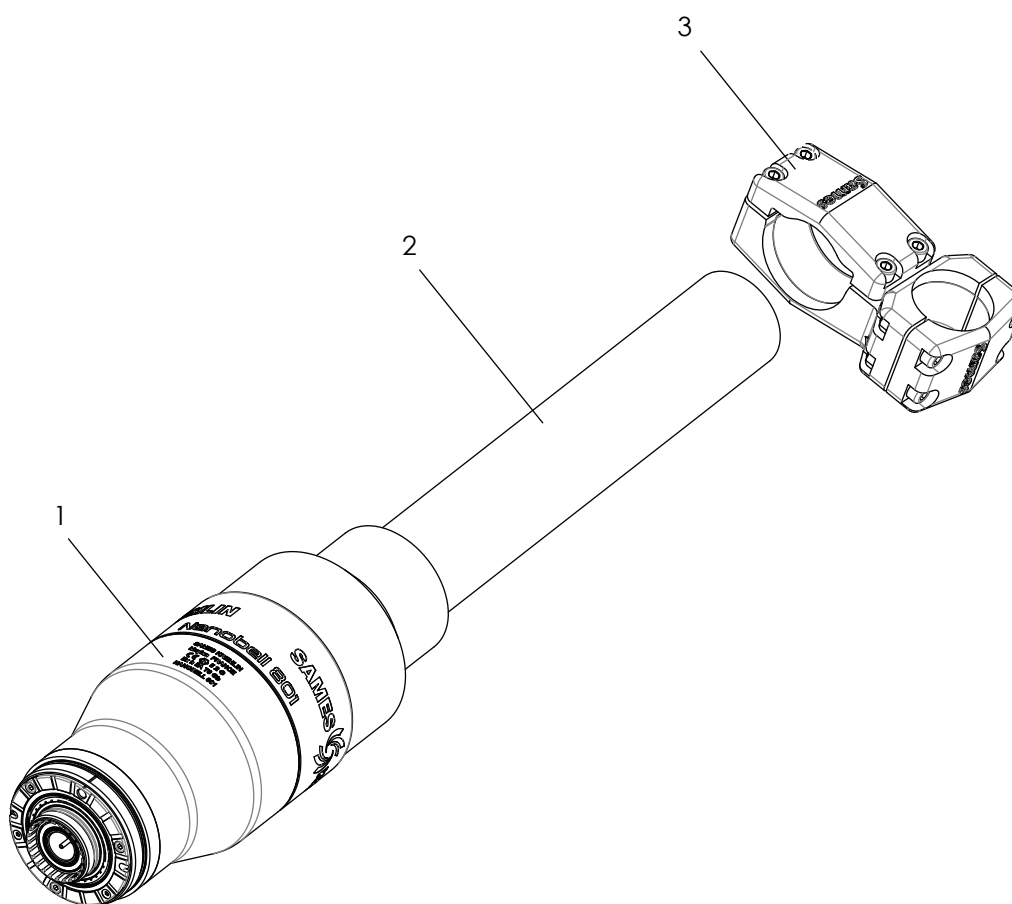
Level 1: Standard preventive maintenance

Level 2: Corrective maintenance

Level 3: Exceptional maintenance

7.4. Nanobell 801, reciprocator version

Bell cup and outer cover are not included.



DES07245

| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|------|-------------|--|-----|--------------|--------------------------------------|
| | 910028849 | Nanobell 801 reciprocator version | 1 | 1 | 3 |
| 1 | 910028344 | Nanobell 801, straight version (see § 7.3 page 48) | 1 | 1 | 3 |
| 2 | 1203616 | Tube support | 1 | 1 | 3 |
| 3 | 1204441 | Fixing nut | 1 | 1 | 3 |

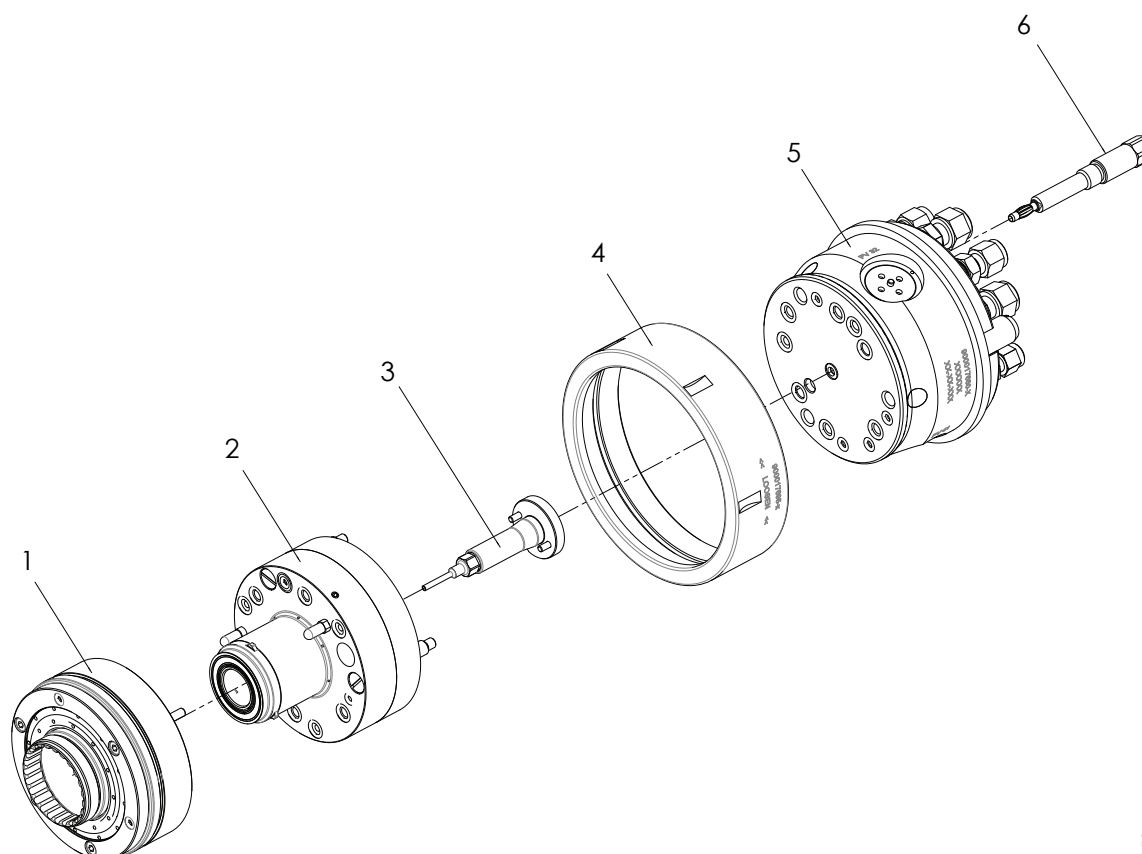
(*)

Level 1: Standard preventive maintenance

Level 2: Corrective maintenance

Level 3: Exceptional maintenance

7.5. Equipped body assembly



DES06989

| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|------|-------------|---|-----|--------------|--------------------------------------|
| | 910026941 | Equipped body assembly | 1 | 1 | 3 |
| 1 | - | Shaping air shroud / T8 nut assembly (see § 7.5.1 page 51) | 1 | 1 | 3 |
| 2 | 910026052 | T8 Turbine (see RT Nr 7128) | 1 | 1 | 3 |
| 3 | 910026944 | Injector / Injector holder (see § 7.5.3 page 56) | 1 | 1 | 3 |
| 4 | 900017695 | Body nut | 1 | 1 | 3 |
| 5 | 910026942 | Equipped body (see § 7.5.2 page 53) | 1 | 1 | 3 |
| 6 | 910026945 | Ground cable | 1 | 1 | 3 |

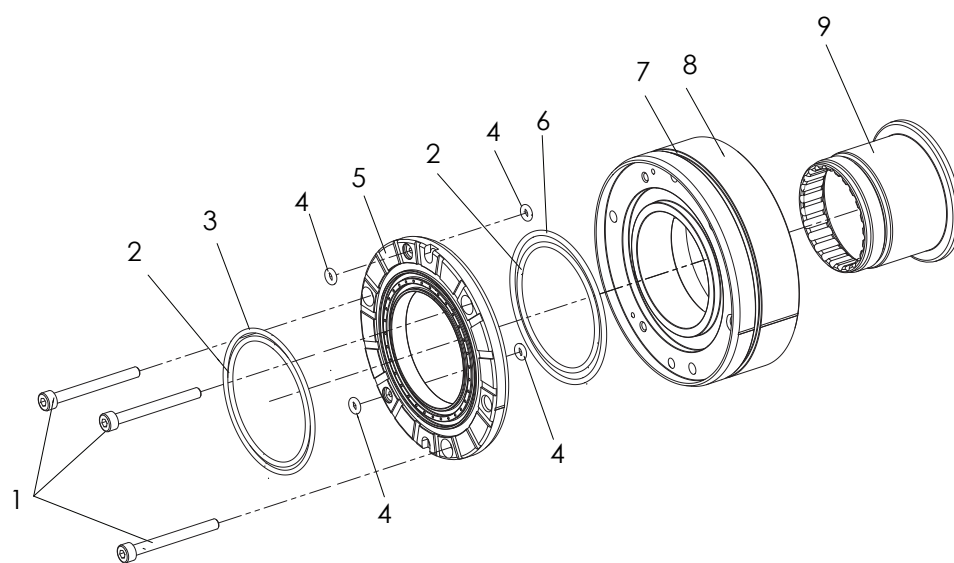
(*)

Level 1: Standard preventive maintenance

Level 2: Corrective maintenance

Level 3: Exceptional maintenance

7.5.1. Shaping air shroud / T8 nut assembly



DES07005

| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|------|-------------|---|----------|--------------|--------------------------------------|
| | - | Shaping air shroud / T8 nut assembly | 1 | 1 | 3 |
| 1 | X4FVSY127 | Chc M4 x 40 stainless steel screw | 3 | 1 | 3 |
| 2 | J2FENV420 | O-ring | 2 | 1 | 1 |
| 3 | J2FENV488 | O-ring | 1 | 1 | 1 |
| 4 | J3STKL028 | O-ring - chemically inert | 4 | 1 | 1 |
| 5 | 900018223 | Retaining flange | 1 | 1 | 3 |
| 6 | 160000241 | O-ring | 1 | 1 | 1 |
| 7 | J2FENV386 | O-ring | 1 | 1 | 1 |
| 8 | 900018224 | T8 shaping air shroud | 1 | 1 | 3 |
| 9 | 900017540 | T8 outer cover nut | 1 | 1 | 3 |

(*)

Level 1: Standard preventive maintenance

Level 2: Corrective maintenance

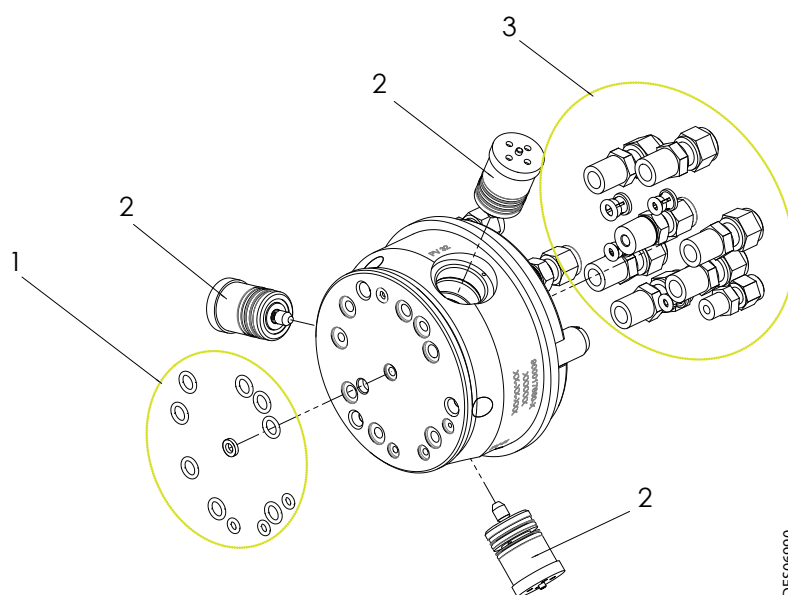
Level 3: Exceptional maintenance

O-ring sets:

| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|------|------------------|---------------------------------------|----------|--------------|--------------------------------------|
| | 910027917 | O-ring set, T8 exterior flange | 1 | 1 | 1 |
| 2 | J2FENV420 | O-ring | 1 | 1 | - |
| 3 | J2FENV488 | O-ring | 1 | 1 | - |
| 4 | J3STKL028 | O-ring - chemically inert | 2 | 1 | - |
| 5 | J2FENV386 | O-ring | 1 | 1 | - |

| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|------|------------------|---------------------------------------|----------|--------------|--------------------------------------|
| | 910027918 | O-ring set, T8 interior flange | 1 | 1 | 2 |
| 2 | J2FENV420 | O-ring | 1 | 1 | - |
| 4 | J3STKL028 | O-ring - chemically inert | 2 | 1 | - |
| 6 | 160000241 | O-ring | 1 | 1 | - |

7.5.2. Equipped body



DE506990

| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|------|-------------|---|-----|--------------|--------------------------------------|
| | 910026942 | Equipped body | 1 | 1 | 3 |
| 1 | 910027908 | O-ring kit, Nanobell 801 body (see § 7.5.2.1 page 54) | 1 | 1 | 1 |
| 2 | 1507375 | Microvalve, 2 ways, orange indicator, chemically inert o-rings (see RT Nr 6021) | 3 | 1 | 1 |
| 3 | 910027909 | Fitting set (see § 7.5.2.2 page 55) | 1 | 1 | 2 |

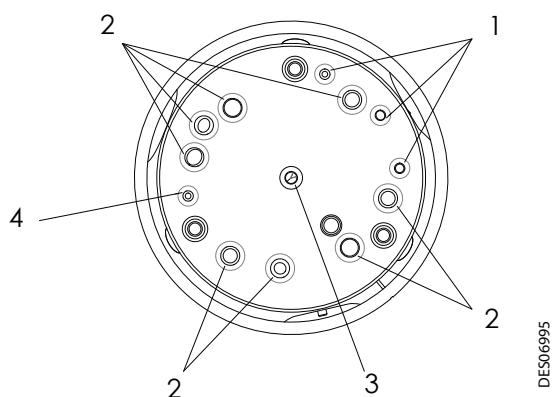
(*)

Level 1: Standard preventive maintenance

Level 2: Corrective maintenance

Level 3: Exceptional maintenance

7.5.2.1. O-ring kit, Nanobell 801 body



| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|------|------------------|--------------------------------------|----------|--------------|--------------------------------------|
| | 910027908 | O-ring kit, Nanobell 801 body | 1 | 1 | 1 |
| 1 | J2FTDF035 | O-ring | 3 | 1 | 1 |
| 2 | J2FTDF082 | O-ring | 8 | 1 | 1 |
| 3 | 160000028 | O-ring - chemically inert | 1 | 1 | 1 |
| 4 | J3STKL035 | O-ring - chemically inert | 1 | 1 | 1 |

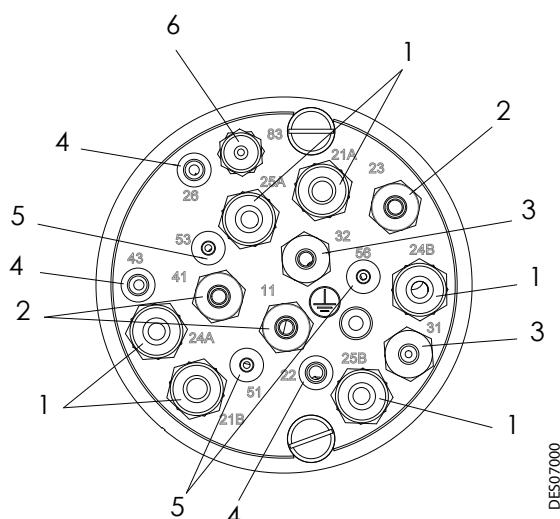
(*)

Level 1: Standard preventive maintenance

Level 2: Corrective maintenance

Level 3: Exceptional maintenance

7.5.2.2. Fitting set, Nanobell 801 body



| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|------|------------------|---------------------------------------|----------|--------------|--------------------------------------|
| | 910027909 | Fitting set, Nanobell 801 body | 1 | 1 | 2 |
| 1 | F6RPUQ093 | Male fitting Dia: 8 1/4G | 6 | 1 | 1 |
| 2 | F6RPUQ092 | Male fitting Dia: 6 1/4G | 3 | 1 | 1 |
| 3 | 130001720 | Straight male union Dia: 6 1/8G | 2 | 1 | 3 |
| 4 | F6RXZG082 | Stainless steel grip + seal | 3 | 1 | 2 |
| 5 | F6RXZG081 | Stainless steel grip + seal | 3 | 1 | 2 |
| 6 | F6RPUQ062 | Male union Dia: 4 1/8G | 1 | 1 | 1 |

(*)

Level 1: Standard preventive maintenance

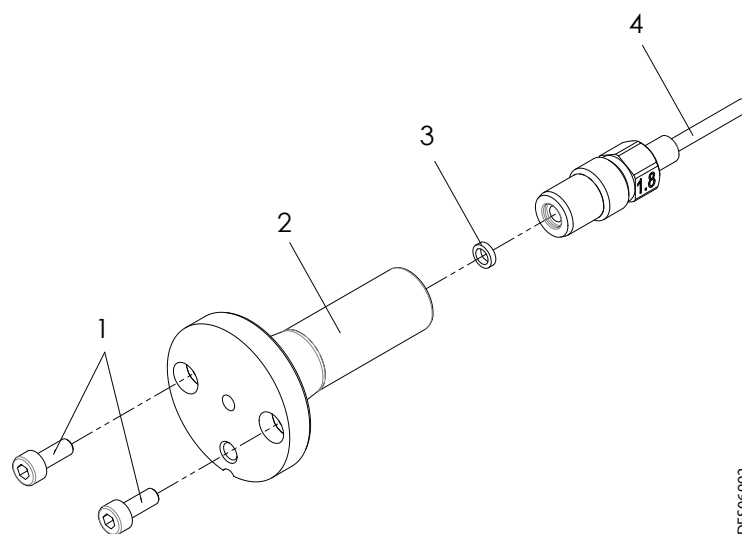
Level 2: Corrective maintenance

Level 3: Exceptional maintenance

Location of fittings

| Item | Location |
|------|------------------------------------|
| 1 | on 21A, 21B, 24A, 24B, 25A and 25B |
| 2 | on 11, 23 and 41 |
| 3 | on 31 and 32 |
| 4 | on 22, 26 and 43 |
| 5 | on 51, 56 and 53 |
| 6 | on 83 |

7.5.3. Injector / Injector holder



| Item | Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|------|------------------|-----------------------------------|----------|--------------|--------------------------------------|
| | 910026944 | Injector / Injector holder | 1 | 1 | 3 |
| 1 | X4FVSY066 | C M 3 x 8 stainless steel screw | 2 | 1 | 1 |
| 2 | 900017534 | Injector holder | 1 | 1 | 3 |
| 3 | 900010925 | Flat seal | 1 | 1 | 1 |
| 4 | 900017768 | Injector Dia: 1.8 * | 1 | 1 | 1 |

* Other injectors:

| Part number | Injector | Qty | Unit of sale | Maintenance level for spare part (*) |
|-------------|-------------------|--------|--------------|--------------------------------------|
| 900018997 | Injector Dia: 1.2 | Option | 1 | 1 |
| 900001814 | Injector Dia: 1.5 | Option | 1 | 1 |

(*)

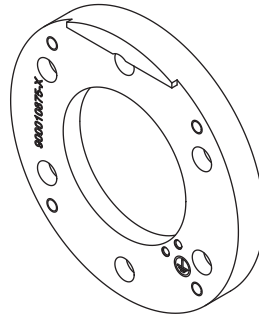
Level 1: Standard preventive maintenance

Level 2: Corrective maintenance

Level 3: Exceptional maintenance

7.6. Robot adapters

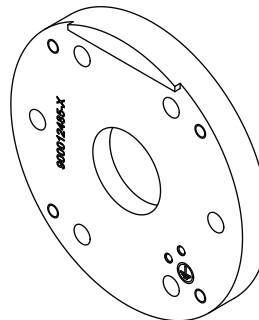
7.6.1. Adapter for Motoman EXP 2050 and 2900 robots



DES05862

| Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|-------------|---------------|-----|--------------|--------------------------------------|
| 910018263 | Robot adapter | 1 | 1 | - |

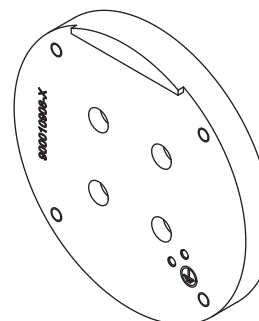
7.6.2. Adapter for Fanuc P250 robot



DES06112

| Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|-------------|---------------|-----|--------------|--------------------------------------|
| 910019313 | Robot adapter | 1 | 1 | - |

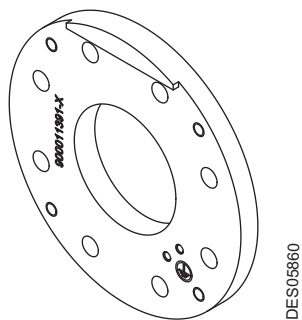
7.6.3. Adapter for Staubli RX 160 robot



DES05861

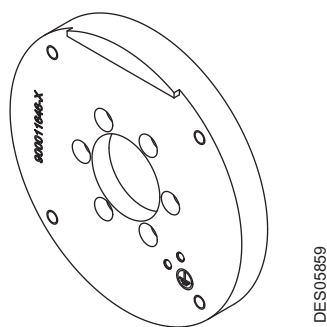
| Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|-------------|---------------|-----|--------------|--------------------------------------|
| 910018262 | Robot adapter | 1 | 1 | - |

7.6.4. Adapter for Staubli TX 250 robot



| Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|-------------|---------------|-----|--------------|--------------------------------------|
| 910018264 | Robot adapter | 1 | 1 | - |

7.6.5. Adapter for ABB IRB 4400 robot



| Part number | Description | Qty | Unit of sale | Maintenance level for spare part (*) |
|-------------|---------------|-----|--------------|--------------------------------------|
| 910018261 | Robot adapter | 1 | 1 | - |

Remarks: For other robots: contact **SAMES KREMLIN**.