



Liquid coating application solutions with rotary bell atomizer

CATALOGUE V1.2

More than 50 years of experience in high finishing quality



BOND • PROTECT • BEAUTIFY

www.sames.com



Sames - Headquarter - 13 chemin de Malacher, 38243 MEYLAN - FRANCE
 ≈ 236 Employees / 15 000 m²



Sames - 150, avenue de Stalingrad, 93240 STAINS - FRANCE
 ≈ 220 Employees / 20 000 m²

Editor's note

To help you increase your competitiveness, **Sames** dedicates itself daily to excellence in terms of innovation, reliability and sustainability.

We are constantly improving our performances as well as quality to meet your specific needs.

We also help you define the equipment allowing your installation to comply with V.O.C. directives and industry standards.

We enable you to benefit from reliable technologies while ensuring you a swift return on investment.

In this catalog, you will find the equipment that will enable you to reach the paint application results you are targeting and the finish quality you desire.

Our mission is to provide you with the best equipment to meet your needs and requirements.

The entire team at **Sames** is at your disposal to answer your questions.

Enjoy your reading.

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SYMBOLS



One-component material



Solvent based paint



Electrical charge by direct contact (internal charge)



Two-components material



Water based paint



Electrical charge by external electrodes (EXT)

Flash this QRcode to request a private access to download every user manual.



A strong identity at your disposal

For almost a century, **Sames** has provided services and equipment for the application of liquid and powder paints, adhesives and sealants to bond, protect and beautify all types of surfaces.

We design, produce and market complete solutions - manual guns, automatic and robotic applicators, pumps and dosing machines...

We offer solutions at the cutting edge of technological innovation, serving industrial efficiency for the most challenging customers, and environmentally friendly.

In addition to delivering products, our services include the audit of your installations and consulting, training, repair and programming assistance of your robotic installations.

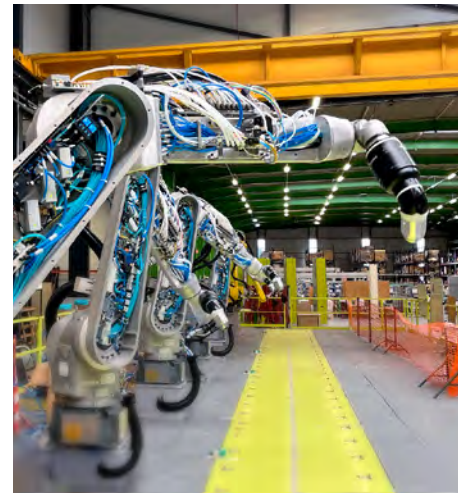
More than a supplier, **Sames** is the partner of your performance.

We **Simply** apply the **most efficient** solutions.



Improve your business

Leader in finishing solutions to protect and embellish materials, **Sames** is your key partner to enhance your productivity, combined with an excellent finish quality.



THE MOST ADVANCED

TECHNOLOGIES

R & D = 4% of revenues
invested in R&D

106 families of active registered
patents

Electrostatic expertise

Finishing Science

Powder coating inventor

INNOVATIVE

TURN-KEY OFFER

Key technical areas controlled

- Finishing,
- Robotics,
- Mechanical,
- Automation,
- Fluid,
- Electrical, Electronics...

Engineering =
200 people worldwide

ENGAGED

BEYOND YOUR NEEDS

Analyze and anticipate your
needs

A global network of experts,
close to you

Support you

- Culture of industrial and
technical cooperation
- Services during the life of your
installation

Our commitments

Customer satisfaction through
clear processes

Customer satisfaction

SAMES HAS WORKED OUT A COMPLETE OFFER OF SERVICES, ADAPTED TO ALL YOUR NEEDS:

Advice, repair, servicing, adjustment or intervention by a qualified technician. Whatever your request may be, Sames Customer satisfaction department, is at your disposal to answer your needs within the shortest time.



> HOTLINE



Sames has a quality hotline which takes care of our customer satisfaction.

Please feel free to contact us. Our customer service team would like to provide an answer under 48 hours.

+33 (0)4 76 41 60 01

Monday to Friday: 8:30 - 12:00 am & 13:00 - 17:30 pm (time slot France)

> AUDIT



In order to make the most from your installation, paint or powder, advice and expertise of specialists are essential. Made of practical, experienced members, Sames customer support team will carry out a diagnostic of your installation and will provide you with a worthy technical assistance for the improvement or retrofit of your paint line.

> REPAIR



A regular, and carried out professionally, maintenance or a retrofit of your equipment, is the best way to guaranty the correct running of your equipment. To this end, do not hesitate to contact one of our technicians:

- to get technical advice or technical assistance by phone
- to get one of your product repaired or controlled
- to carry out a retrofit

> SPARE PARTS



Original spare parts guaranty the correct running of your equipment. We are here to deal with all your orders of spare parts throughout the world. Thus, our aim is to rapidly supply you and at the best price, with the wished part in order to guaranty an optimum and prolonged running of your paint or powder application equipment.

> TRAINING



Sames is registered as a training centre by the French Ministry of Employment.

Training sessions that allow you learning the requisite knowledge to the use and the maintenance of your equipment are organised throughout the year. A catalogue can be obtained upon request. You will be then able to choose among the proposed selection of training courses, the type of training that meets your needs or production aims. These training sessions can be organised within your premises or in our training centre located in our headquarters in Meylan - FRANCE.



Quality assurance

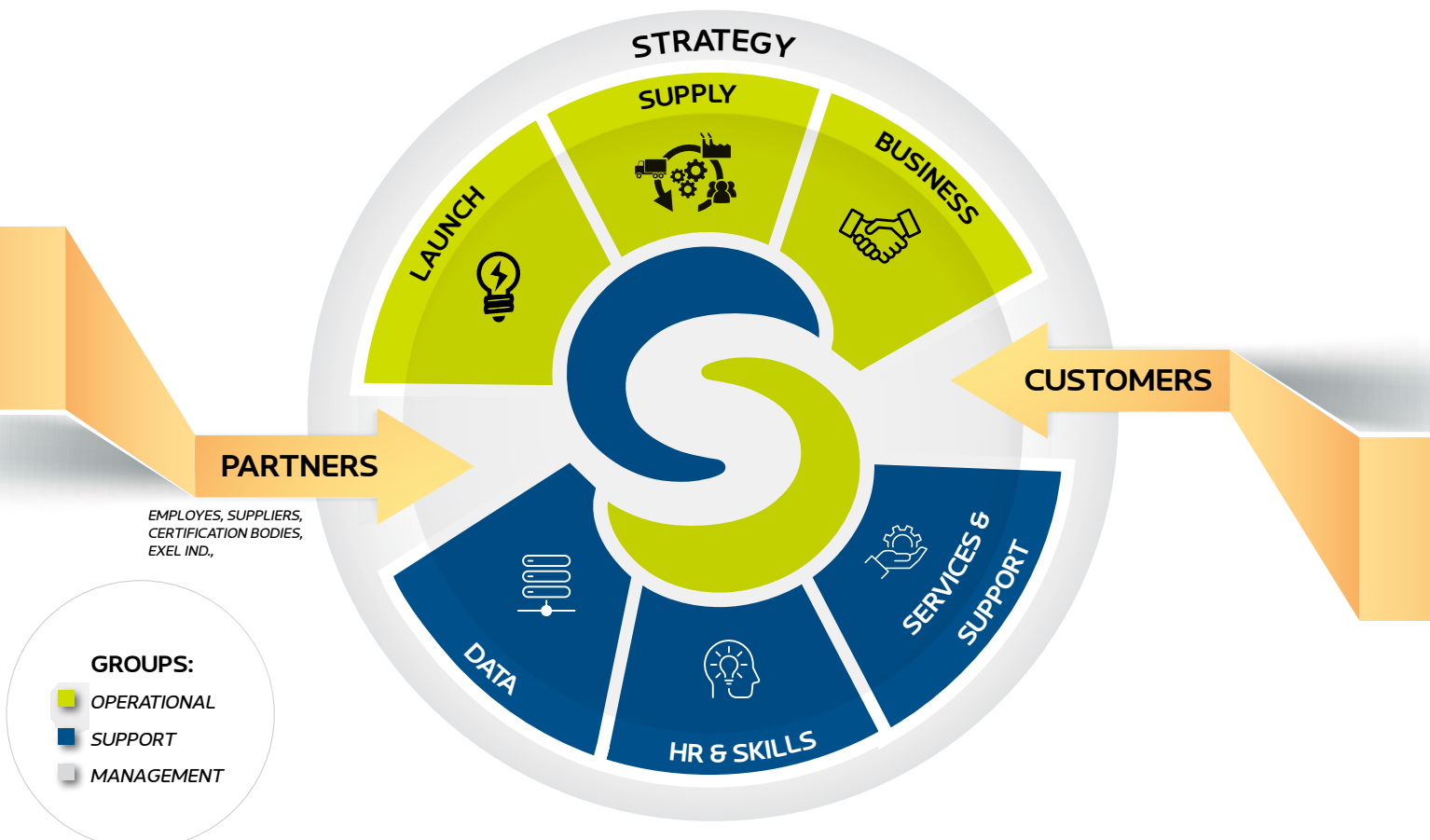
In conformity with the ISO9001 standard - 14001 - 45001, the requisite procedures and registrations are mastered. The seriousness with which **Sames's** quality policy is dealt ensures you an optimum quality at each stage of the production and of the assembly of the components.

Our products are in the scope of the following European directives and UK:

- 2014/34/UE Potentially explosive atmospheres / Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016
- 2006/42/CE Machinery / Supply of Machinery (Safety) Regulations 2008
- 2014/35/UE Low tension / Electrical Equipment (Safety) Regulations 2016
- 2014/30/UE Electromagnetic compatibility / Electromagnetic Compatibility Regulations 2016
- 2014/68/UE Pressure equipment / Pressure Equipment (Safety) Regulations 2016
- Statutory Instrument SI 2016 No. 1107 (amended by SI 2019 No. 696)
- Standard NF ISO/IEC/EN 80079-34 : quality management systems for the manufacture of devices for use in hazardous areas
- NF EN ISO 9001 : Quality management systems
- FM, Canada...
- REACH, RoHS, Conflict Mineral.

A process mapping allows organizing all the stages while being very attentive to the various environments (customers, competition...), to the audits (inner and outer) and to the indicators linked to the defined aims.

PROCESSES MAPPING





Robotic Paint solutions

Whichever your process may be, there is always a well proven painting solution to carry out your application:

- Automatization
- Robotization
- Quick color change
- Low VOC Low paint loss
- Finishing quality improvement

In close collaboration with our technical teams, a solution will be worked out to meet your requirements; our range allowing equipping any type of facility.

Our priority is to create a range of solutions for reducing your environmental impact, while increasing your industrial efficiency.

Research & Innovation

Sames' main activity is to increase the productivity of its customers by designing and manufacturing innovative electrostatic systems. Launching new products into the market is the core of our organization. Our know-how, our large investment in Research

& Development as well as our reliability-proven equipment allow us to offer our customers turn-key solutions designed to their needs.

Sames has been integrating its own technology for decades all around the world. Your efficiency is leading our solutions:

- **Premium Finishing Application**
 - 50+ years of experience in bell spraying
 - High bell speed rotation for fine and homogenous droplets
- **Enhanced Productivity**
 - Outstanding wrap-around effect to increase robot speed
 - Adjustable pattern to fit the shape of the part
- **High Transfer Efficiency**
 - Low overspray
 - Optimum High Voltage performances
- **Improved Maintenance**
 - Reliable components for reduced downtimes
 - Reduced overspray to avoid cleaning stoppages
- **Paint & Energy savings**
 - Reduced paint and solvent consumption
 - High efficiency for low resources need
- **Benefits of low overspray**
 - Decreases VOC emissions
 - Minimizes filter pollution
 - Reduces water for wet scrubber



ROBOTIC PAINT SOLUTIONS



RESEARCH & INNOVATION



ENGINEERING PARTNERSHIP



CUSTOMER SERVICE

Engineering partnership

The **Sames** engineering teams share with our customers the fruit of their experience and bring all of their expertise and availability.

Each of our customers is guaranteed technical and commercial tracking in the running and development of their coating process, our staff are always available to provide rapid assistance and advice.

Sames commits to the quality and reliability of its solutions and services, such as the improvement of:

- The performance (regularity and transfer rates of the equipment, output when changing colours, etc...)
- Compliance with safety and environmental rules (ATEX, VOC, CO₂ emissions)

- Productivity (grouped colour batches, unhooking of hangers, automatic cleaning frequency, etc...)
- Costs reduction

- Automation of functions (detection of size, break between parts, automatic cleaning of applicators, proportional flow control, use of spray gun recipes dedicated to families of products, etc...)

- Ergonomics of work stations (specific tools for quick and long lasting repairs)


- Tracking and management of maintenance (audit, spare part list and maintenance frequency planning)

Global presence

16 Locations

Wherever you are in the world, we are committed to staying close to you. This is our "Human Touch".



<p>◆ Headquarter & Production plants</p> <p>Meylan, FRANCE</p>	<p>● Subsidiaries (with application lab)</p>															
<p>● Production plants</p> <p>Stains, FRANCE</p> <p>Erfstadt, GERMANY</p>	<p>● Commercial offices:</p> <table border="0"> <tr> <td>CZECH REPUBLIC</td> <td>PHILIPPINES</td> <td>UK</td> </tr> <tr> <td>INDONESIA</td> <td>SINGAPORE</td> <td>VIETNAM</td> </tr> <tr> <td>LATVIA</td> <td>SWEDEN</td> <td></td> </tr> <tr> <td>MALAYSIA</td> <td>THAILAND</td> <td></td> </tr> <tr> <td></td> <td>TURKEY</td> <td></td> </tr> </table>	CZECH REPUBLIC	PHILIPPINES	UK	INDONESIA	SINGAPORE	VIETNAM	LATVIA	SWEDEN		MALAYSIA	THAILAND			TURKEY	
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INDONESIA	SINGAPORE	VIETNAM														
LATVIA	SWEDEN															
MALAYSIA	THAILAND															
	TURKEY															
<p>■ A worldwide coverage, more than 1000 employees and 3000 partners!</p>																
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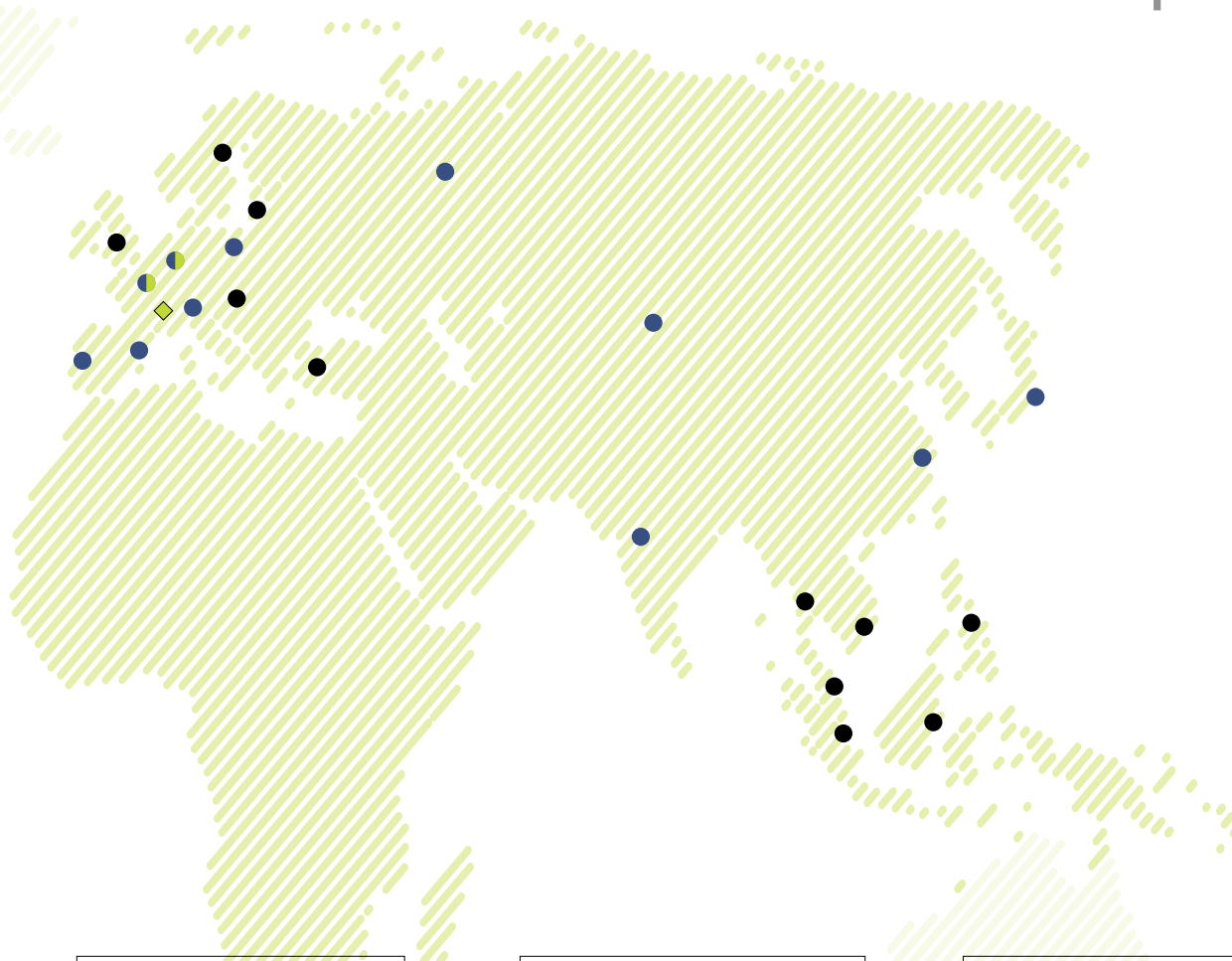
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Electrostatic Sprayers

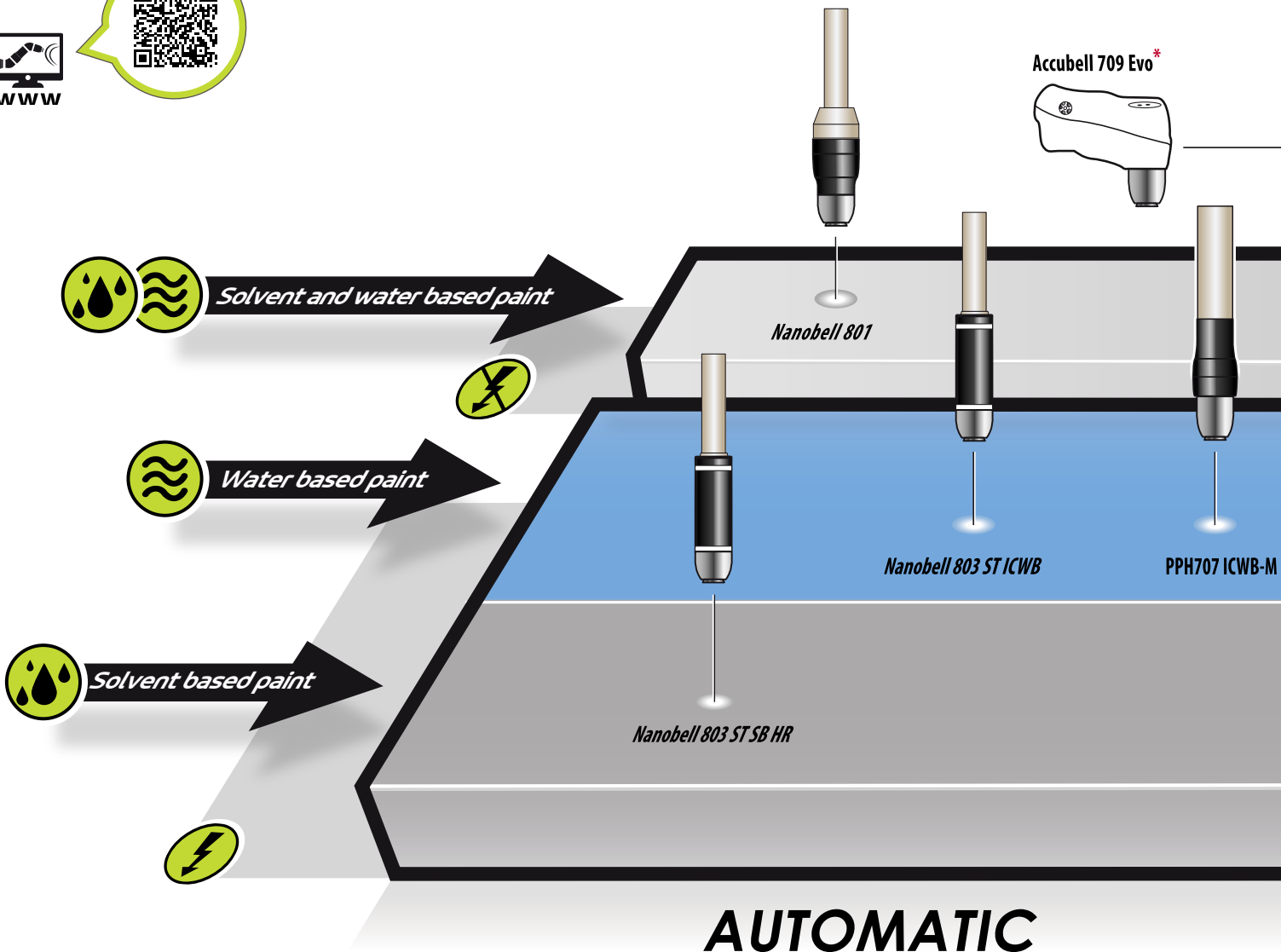
Range of the liquid sprayers

The Sames Liquid electrostatic range is made of two types of sprayers:

AUTOMATIC SPRAYERS for electrostatic application with high flow rate and used to process large series with short takt time. Most of the time, several guns are fitted in heavy duty paint facilities.

ROBOTIC SPRAYERS with high speed turbine for enhanced finishing quality and sprayers for general industry and automotive applications.

ALL EQUIPMENTS DELIVER THE HIGHEST TRANSFER EFFICIENCY.



SB: Solvent paint
 WB: Water base paint
 2K: Two components paint
 MT: Multi-Trigger

MS: Multi-Spray
 ST: Straight
 M = ST
 C: Compact

H: Hardener
 IC: Internal electric charge
 EXT: External electric charge
 EXTi: Fingerless external electric charge

Range of the liquid sprayers

WHEN USING GUN OR BELL ?



Gun Sprayer

Very versatile, the fan spray favors penetration in recesses and folds. Target distance may be a factor.

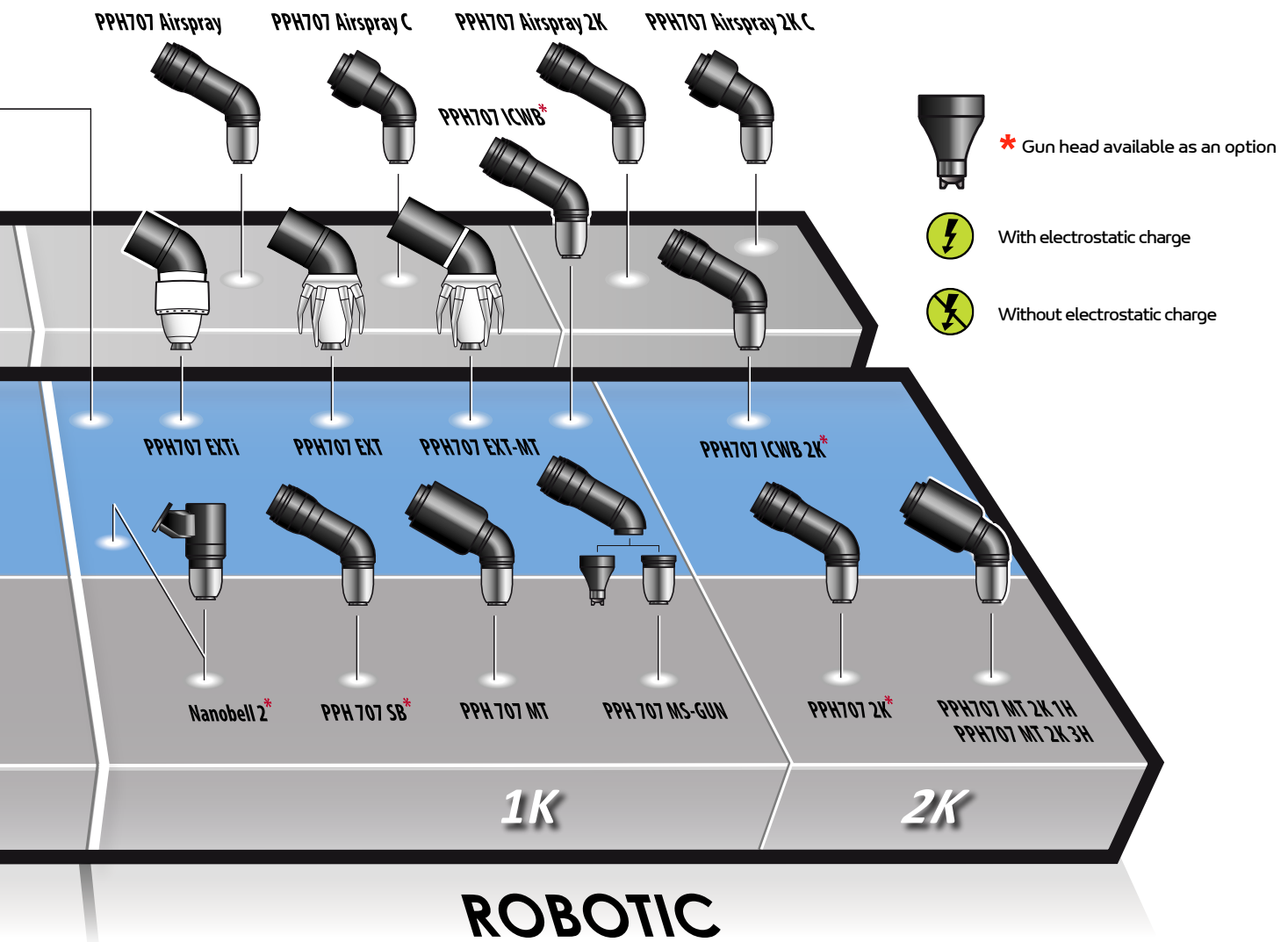
- Good penetration and wrap around
- Complex shapes
- Used for touch-up / pre-touch
- Automatic or manual
- High Transfer Efficiency



Bell Sprayer

Designed for coating large flat surfaces, the bell can spray all kinds of liquid materials with a film build accuracy.

- Wrap around effect
- Wide pattern
- High flow
- Homogeneous thickness
- Automatic or robotic
- High transfer efficiency
- Excellent finishing quality



Automatic Bell Spray

Nanobell 801

Automatic non-electrostatic rotary bell atomizer



- > Premium Finishing Application
- > High Transfer Efficiency - Low Overspray
- > Safe & Easy Installation - No High Voltage

Our first non-electrostatic rotary bell atomizer has been designed to meet the need of high finishing applications allowing paint savings at a reduced investment. Nanobell 801 combines Airspray and Rotary Bell technologies to offer all the benefits of rotary bell atomization to non-electro applications at an enhanced production speed with easier set-up and operation.

Premium Finishing Application

Renowned range of magnetic bell cups associated with NW (Narrow to Wide) air shroud from the unsurpassed expertise of Sames in Automotive industry allows taking advantage of the highest application quality.

High Transfer Efficiency - Low Overspray

Sames bell-spraying technology increases the transfer efficiency allowing huge savings (up to 30%) in Paint Consumption compared to conventional Airspray gun.

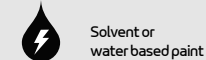
Safe & Easy Installation - No High Voltage

The non-electrostatic aspect brings a Safe & Easy Concept for integration, operation and maintenance whatever the material sprayed; either solvent-based, water-based, 1K or 2K paint and even on low payload robots.

To adapt to any kind of application, 3 bell cups sizes are available:

- EC35 NW variable pattern from very narrow to small pattern
- EC50 NW variable pattern from narrow to large pattern
- EX65 NW variable pattern from narrow to large pattern & fine atomization

BREAKTHROUGH IN ROTARY BELL SOLUTIONS: THE AUTOMOTIVE HIGH FINISHING FOR ALL



Solvent or water based paint



3.2 kg



up to 800 cc/min



Dual Shaping air



Magnetic Bellcup



up to 65 000 rpm



WWW

CUSTOMERS' BENEFITS

Performance

- 1 - High bell speed rotation up to 65 000 RPM at various flowrates for fine atomization
- 2 - Patented Hi-TE Technology combining straight and vortex air for unsurpassed transfer efficiency
- Fast trigger response and minimal paint loss due to the proximity of trigger valve

Productivity

- 3 - Narrow Wide air shroud (NW) allowing fast & flexible pattern to fit complex-shaped parts to paint
- 4 - Lightweight & compact design suits all painting robots, full or hollow wrist even with low payload
- Complete range of magnetic bell cups for full bell/bell processes
- Easy controlling with BSC 300 bell speed controller offering remote monitoring

Sustainability

- 5 - Patented magnetic fixing of bell cups ensuring easy, safe, and fast installation
- High reliability of all components to maintain production uptime (valves lasting 3 million cycles, long-life air motor, robust fittings and magnetic bell cups)
- Bell cups available in Aluminum as Standard with a Titanium option offering extended lifetime



Automatic Bell Spray

Technical Data

Weight	Nanobell 801
Nanobell 801 only (straight version), without cable or hose	3.2 kg
Nanobell 801 only (reciprocator version), without cable or hose	4.8 kg

Pneumatic supply	Nanobell 801
Nano-valve drive air pressure	6 bar mini (90psi) - 10 bar max. (150psi)
Magnetic turbine bearing air pressure	5 mini (75psi) - 7 bar max. (105psi) from 130 to 180 L/min
Shaping air pressure	6 bar (90psi) recommended on manifold
Micro air pressure	0.5 mini (7,5psi) at 1 bar maxi. (15psi) from 20 L/min to 40 L/min
Drive air consumption	10 NI/min.
Magnetic turbine bearing air consumption	130 NI/min.
Shaping air consumption (with respect to air shroud and bell being used)	From 200 to 900 NI/min.
Turbine rotation air consumption	From 100 to 700 NI/min. ⁽¹⁾
Safeguard air quantity	25 litres at 6 bar (90 psi)

(1): with respect to sprayed flow and rotation speed


Product supply	Nanobell 801
Standard product supply pressure	6 (90psi) to 8 bar (120psi)
Maximum product pressure	10 bar (150psi)
Paint flow (depending on paint type)	30 to 800 cc/min. ⁽²⁾ maxi.
Viscosity scale (for minimum results)	20 to 40 seconds FORD #4 Cup


(2): depending on paint used

Performances	HVT
Rotation speed	15 to 65 000 rpm (upon diameter of bell cup used)
Application speed	up to 900 mm/sec

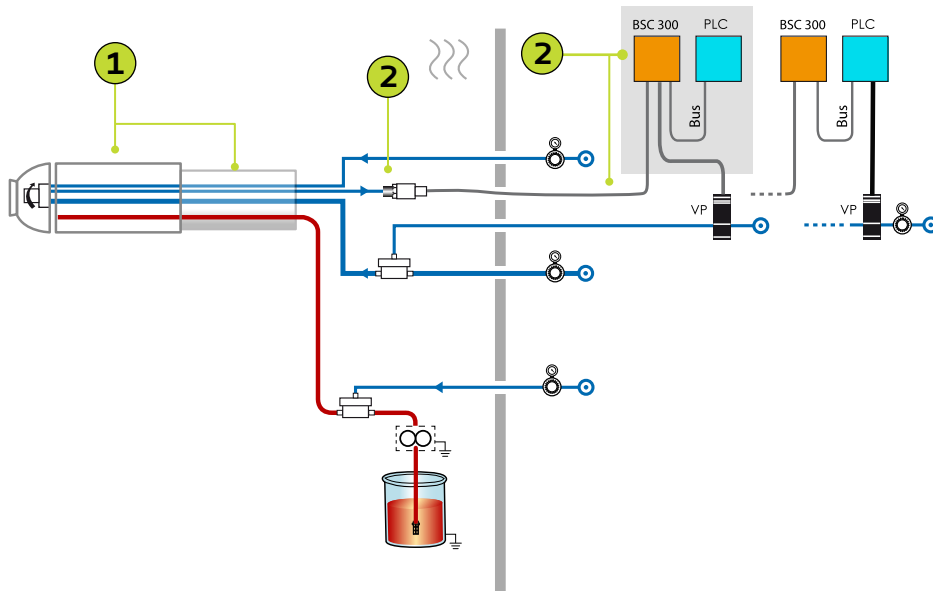
Marking:

Nanobell 801



 II 2 G Ex h IIA T6 Gb


Build your Atomizer



Preferred control: BSC 300 reads microphone and drives propotional valve.

Alternative control: BSC 300 reads microphone and PLC drives proportional valve.

BSC: Bell Speed Controller
 PLC: Programmable logic controller
 VP: Proportional valve

USE FOR SOLVENT-BASED OR WATER-BASED PAINT



1 Mark 1

Nanobell 801 reciprocator version
Nanobell 801, straight version
Support arm - dia. 63 x 440
fixing nut - dia.50mm

REFERENCE ATOMIZER Nanobell 801	
	910028849
	910028344
	1203616
	1204441

2 Mark 2

You can define the type of control module to control the junction blocks, the control of the rotation speed, etc...

Description
System for electric kits

see page 80

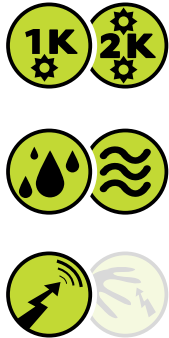
- Not included:
- bell cup, air shroud and tools (refer to page 86)
- air supply hoses (contact Sames)

- pumping system (contact Sames)
- color change block (refer to page 106)
- air regulator (contact Sames)

Automatic Bell Spray

Nanobell 803 ST

Rotary bell atomizer for solvent based and waterborne paint



- > General Industry Premium Finishing
- > High Transfer Efficiency
- > Easy to Integrate, Operate and Maintain

The sprayer Nanobell 803 allows the application of liquid solvent-based or water-based paint in general industry. Known as the best rotary bell sprayer, Nanobell 803 benefits from technologies developed for Automotive markets. It is usually used with a reciprocating machine or in fixed station.

$\geq 600 \text{ M}\Omega \cdot \text{cm}$
(solvent paint)
 $\approx \text{K}\Omega \cdot \text{cm}$
(waterborne paint)

4 kg



80 kV/100 μA
HVU810)
70 kV /
500 μA (HVU287 N)

up to
800 cc/min



Magnetic
Bellcup

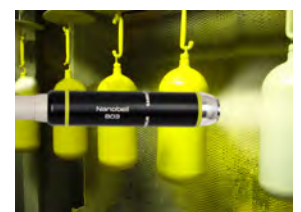
up to
65 000 rpm

FIELD OF APPLICATION

- Aerospace
- Metallic furniture
- Cycles & Motorcycles
- Wood industry
- Aluminium profiles
- Agricultural & construction equipment

EXAMPLES OF INSTALLATIONS

Type	Characteristics	Markets
<p>Fixed base</p>	<ul style="list-style-type: none"> • Small-sized parts on flat or vertical line • Line speed from 1 to 6 m/mn 	<ul style="list-style-type: none"> • Wood: Bed frames • Metal: rims, wheels, heating resistance • Glass: perfume bottles, spirits • Plastic: lipsticks
<p>Reciprocator 1 axis</p>	<ul style="list-style-type: none"> • Line speed from 1 to 6 m/mn • Object on satellites with simple geometry 	<ul style="list-style-type: none"> • Wood: picture frames, rod curtain • Metal: shock absorbers, metallic bottles, aluminium profiles



Nanobell 803 ST

CUSTOMERS' BENEFITS

Performance

- 1 - Patented NW (Narrow to Wide) air shrouds for unsurpassed transfer efficiency
- 2 - Renowned range of high-speed magnetic bell cups for uniform atomization
- 3 - High Voltage Unit properly scaled and controlled for outstanding wrap-around effect
- 4 - Brand new air motor T8 for High Rotation Speed allowing fine atomization

Productivity

- 4 - The T8 air motor provides constant production with accurate flow and paint applications
- 5 - Optimized fluid circuits for incomparable application efficiency
- 6 - Simple spray head for easy operation without specific skills
- 7 - Lightweight and compact to fit on smaller systems and robots to keep productivity at its best

Sustainability

- 7 - Soft body (free of notches & slots for paint) that is fast and easy to clean for improved maintenance
- 8 - Integrated 3D print technology for rigidity and robust operation
- 9 - Newly patented Nano5 valves are highly durable
- 10 - Patented magnetic fixing of bell cups ensures easy, fast, and safe installations



RANGE

Depending on the type of application (solvent based or water-based) the version of the sprayer Nanobell 803 is different by the wiring elements connected to high voltage circuits' product and rinsing:

Nanobell 803 ST SB HR



For an application of **SOLVENT-BASED PAINT** with a resistivity $\geq 6 \text{ M}\Omega\cdot\text{CM}$:

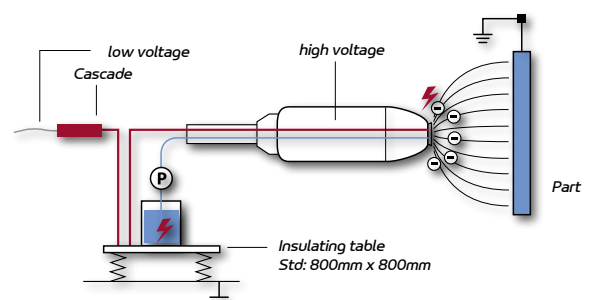
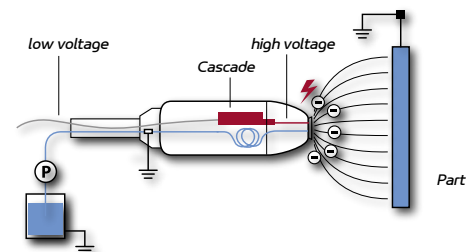
- The product distribution system is connected to potential of the ground.
- High voltage unit (HVU810) integrated into the sprayer.
- Coil hose back on paint circuit and purge return.

Nanobell 803 ST ICWB



For the application of **WATER-BASED PAINT** nonflammable or hardly flammable:

- The product distribution system is isolated from the ground (ex: table or other insulating).
- The application is made by internal charge (best yield).
- High voltage unit (HVU287 N) remote sprayer.
- The number of colors is limited.



Automatic Bell Spray

Technical Data

Weight		Nanobell 803
Spare atomizer, without cable and hose		4 kg
Pneumatic supply		Nanobell 803
Microphne air (bar)		0.5 to 1 bar constant (5 to 10 psi)
Nano5 air pilot (bar)		5 to 7 bar max (75 to 90 psi)
Bearing air (bar)		5 to 7 bar max (75 to 90 psi)
Shaping air (bar)		6 max. (90 psi)
Fluid supply		Nanobell 803
Fluid pressure maxi. (bar)		10 (150 psi)
Paint flow (cc/min)		30 to 800 ⁽¹⁾
Viscosity range (seconds) Coupe FORD n°4		20 to 40
<i>(1): depending on paint</i>		
Performances		Turbine
Rotation speed		10000 to 65 000 rpm (upon diameter of bell cup used)
High Voltage		HVU 810 HVU 287 N
Voltage maxi.	80 kV	70 kV
Current maxi.	100 µA	500 µA

Marking:

Nanobell 803 SB HR:
solvent-based product with
R ≥ 6 MΩ.cm

CE 0080 UK CA 2503
II 2 G T6
350 mJ < E < 2J
INERIS 20ATEX0035X
CML 21UKEX9798X

Nanobell 803 ICWB:
water-based paint

CE UK CA 2503
II 3 G T6 X
E > 2J
Type D-L

GNM300: ⁽²⁾

CE 0080 UK CA 2503
II (2) G
[350 mJ < E < 2J]
INERIS 20ATEX0035X
INERIS 19ATEX0009X
INERIS 18ATEX0044X

(2): This control module allows piloting the HVU. It is an associated equipment that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.

BSC300:

CE 0080 UK CA 2503
II (2) GD [Ex ia Ga] IIC
[Ex ia Da] IIIC
INERIS 17ATEX0031X
CML 21UKEX2794X



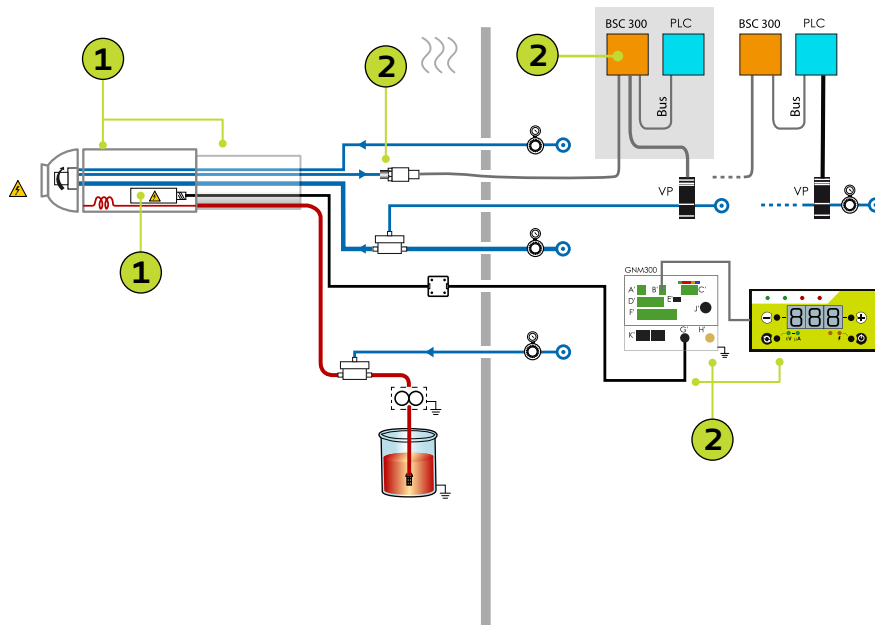
TWO VERSIONS DEPENDING ON YOUR NEEDS:



VERSION	Compatible with	Product Resistivity
Nanobell 803 ST SB HR High voltage unit (HVU 810) integrated into the sprayer	solvent based paint	≥ 6 MΩ.cm
Nanobell 803 ST ICWB Remote high voltage unit (HVU 287 N) from sprayer	water-based paint ⁽³⁾ nonflammable or hardly flammable	≈ KΩ.cm

(3): the product distribution system must be isolated from the ground potential.

Build your Atomizer



Preferred control: BSC 300 reads microphone and drives propotional valve.

Alternative control: BSC 300 reads microphone and PLC drives proportional valve.

BSC: Bell Speed Controller
PLC: Programmable logic controller
VP: Proportional valve

USE FOR SOLVENT-BASED PAINT

1 Mark 1

Nanobell 803 SB set
HVU 810
Support arm - dia. 63 x 440
fixing nut - dia.50mm

REFERENCE ATOMIZER Nanobell 803 ST SB HR	
solvent-based paint with a resistivity $\geq 6 \text{ M}\Omega \cdot \text{cm}$	
	910029588
	910028548
	900019643
	1204441

2 Mark 2

You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...

Description
System for electric kits

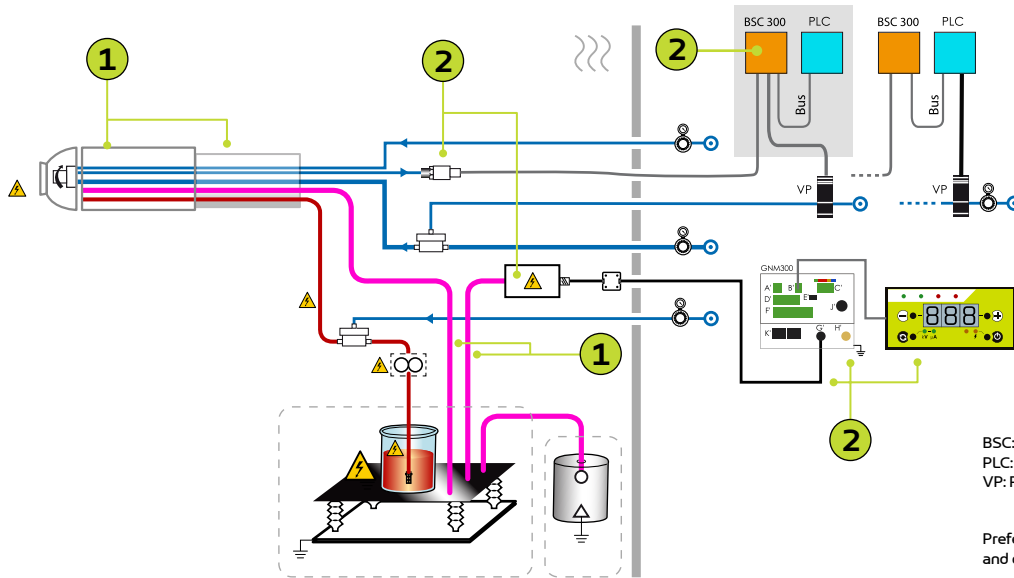
↓	↓
see page 80	

- Not included:
- bell cup, air shroud and tools (refer to page 86)
- air supply hoses (contact Sames)

- pumping system (contact Sames)
- color change block (refer to page 106)
- air regulator (contact Sames)

Automatic Bell Spray

Build your Atomizer



BSC: Bell Speed Controller
 PLC: Programmable logic controller
 VP: Proportional valve

Preferred control: BSC 300 reads microphone and drives proportional valve.

Alternative control: BSC 300 reads microphone and PLC drives proportional valve.

USE FOR WATER-BASED PAINT

1	Mark 1	REFERENCE ATOMIZER Nanobell 803 ST ICWB
	Nanobell 803 WB set	water-based paint with $\alpha \approx K\Omega.cm$
	High voltage connection (18m)	910030961
	Support arm - dia. 63 x 440	910030504
	fixing nut - dia.50mm	900019643
		1204441

2	Mark 2	
	<i>You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...</i>	
	Description	
	System for electric kits	see page 80

- Not included:
- bell cup, air shroud and tools (refer to page 86)
- air supply hoses (contact Sames)
- pumping system (contact Sames)
- color change block (refer to page 106)
- air regulator (contact Sames)
- Insulating table, Short-circuiting, Safety lock, High voltage discharge

Build your Atomizer

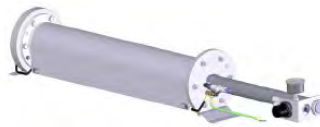


DISCHARGE SYSTEM OF WATER-BASED PAINT SUPPLY FACILITY

The water-based paint is connected to the potential of the high voltage through an isolated table during electrostatic application.



1 Nanobell 803 WB



2 Short-circuiter

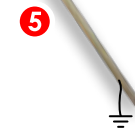
it allows the potential of the ground from all supply water-based paint installed on table isolated safely.



3 Insulating table



4 Safety lock



5 *Not for use in hazardous atmosphere*

Mark	Description	Reference
2	Short circuiter	910019962
3	Insulating table 800mm x 800mm	1519263
	Insulating table 1600mm x 800mm	1519265
4	Safety lock 2x3 left side position	910022444
	Safety lock 2x3 right side position	910022445
5	High voltage discharge rod assembly	750207
-	Connecting cable between 2 and 3	910015658

Automatic Bell Spray



PPH707 ICWB-M

Rotary bell atomizer for waterbased paint with internal charge



- > High productivity
- > A-grade finishing quality
- > Easy to maintain

 ≈ KΩ.cm
(waterborne paint)

 8.5 kg



 100 kV
500 μA

 up to
1000 cc/min

 Dual
Shaping air

 Magnetic
Bellcup

 up to
85 000 rpm

Atomizer PPH707 ICWB M is a high performance atomizer with rotating bell cup, dedicated for applying non-flammable or hardly flammable water-based paints, using internal charge.

Originally developed for automotive OEM and Tier 1 markets, PPH707 ICWB M offers unrivalled results in terms of productivity, thanks to its high flow rate and transfer efficiency even with fast reciprocator speeds (up to 1000 mm/s).

FIELD OF APPLICATION

- Automotive
OEMs, Tier One & Tier Two
- Wheels



PPH707 ICWB-M

CUSTOMERS' BENEFITS

High Performance

- High rotating speed
- Strong flow rate with high reciprocator speed
- High transfer rate
- Specific body design preventing dust & droplet
- High voltage unit
- Hi-TE dual shaping air

Flexibility

- Full Bell/Bell process: Primer, Basecoat 1, Basecoat 2, Clear coat
- Compatible with whole SAMES bellcup range
- Wide or narrow pattern

High Reliability

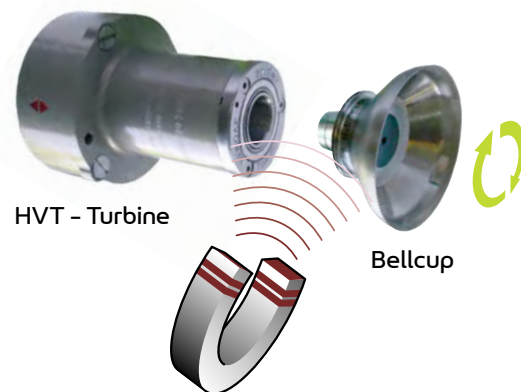
- Long life HVU (High Voltage Unit)
- 2.5 million cycles life of valves
- 7 years/30 000h. warranty* turbine

* Whichever is the sooner



Easy to Maintain

- Magnetic bellcup fastening system
- Quick disconnect
- Easy access to valves, fittings
- No calibration tool required

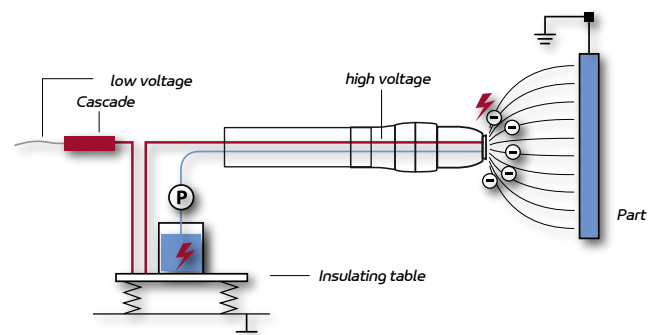


RANGE



PPH707 ICWB-M
For an application of **WATER-BASED PAINT**
non-flammable or hardly flammable:

- The product distribution system is isolated of the potential from the ground (ex: table or other insulating).
- The application is made by internal charge (best yield).
- High voltage unit (UHT288) remote sprayer.
- The number of colors is limited.



Automatic Bell Spray

Technical Data

Weight	PPH707 ICWB M
Spare atomizer, without cable or hose	8.5 kg

Pneumatic supply	PPH707 ICWB M
Nano-valve drive air pressure	8 bar mini (120psi) - 10 bar max. (150psi)
Magnetic turbine bearing air pressure	5 mini (75psi) - 7 bar max. (105psi) from 1.30 to 180 L/min
Shaping air pressure	6 bar (90psi) recommended on manifold
Micro air pressure	0.5 mini (7,5psi) at 1 bar maxi. (15psi) from 20 L/min to 40 L/min
Drive air consumption	10 NI/min.
Magnetic turbine bearing air consumption	125 NI/min.
Shaping air 1 and air 2 consumption (with respect to air shroud and bell being used)	From 100 to 600 NI/min.
Turbine rotation air consumption	From 100 to 700 NI/min. ⁽¹⁾
Safeguard air quantity	25 litres at 6 bar (90 psi)

(1): with respect to sprayed flow and rotation speed


Product supply	PPH707 ICWB M
Standard product supply pressure	6 (90psi) to 8 bar (120psi)
Maximum product pressure	10 bar (150psi)
Paint flow (depending on paint type)	30 to 1000 cc/min. ⁽²⁾ maxi.
Viscosity scale (for minimum results)	20 to 40 seconds FORD #4 Cup

(2): with a product density < 1.1 gr/cm3 and/or of the combination bell and air shroud being used

Performances	HVT
Rotation speed	15 to 85 000 rpm (upon diameter of bell cup used)
High Voltage	UHT 288 EEX e
Voltage maxi.	100 kV
Current maxi.	500 µA

Marking:


PPH707 ICWB M:

CE UK CA  II 3 G X T6
W > 2J

UHT 288 EEX e:

 II 2 GD
EEx e II
ISseP01ATEX002U

GNM300: (3)

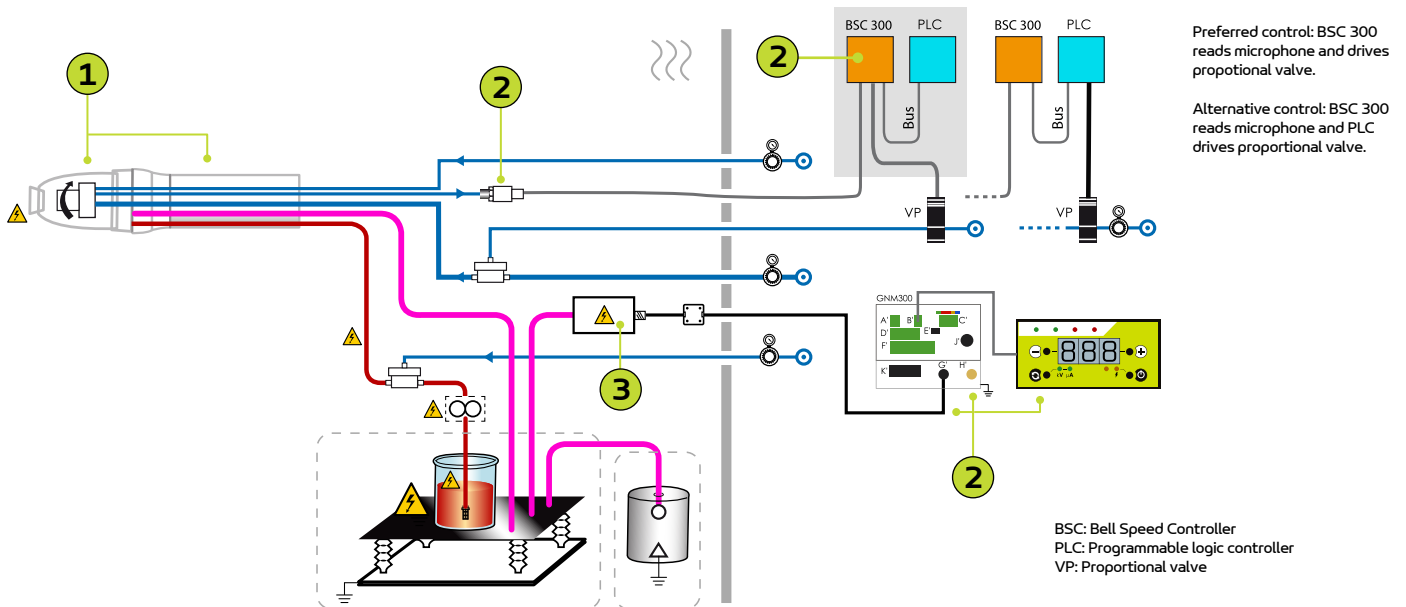
CE 0080 UK CA ²⁵⁰³
 II (2) G
[350 mJ < E < 2J]
INERIS 20ATEX0035X CML21UKEX9798X
INERIS 19ATEX0009X CML21UKEX9796X
INERIS 18ATEX0044X CML21UKEX9795X

(3): This control module allows piloting the HVU. It is an associated equipment that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.

BSC300:

CE 0080 UK CA ²⁵⁰³
 II (2) GD [Ex ia Ga] IIC
[Ex ia Da] IIC
INERIS 17ATEX0031X
CML 21UKEX2794X

Build your Atomizer



USE FOR WATER-BASED PAINT



1	Mark 1	REFERENCE ATOMIZER PPH707 ICWB-M
	PPH707 ICWB-M set	910009002
2	Mark 2	↓
	<i>You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...</i>	
	Description	see page 80
	System for electric kits	
3	Mark 3	
	Description	910002864
	High voltage unit UHT 288 EEx e	

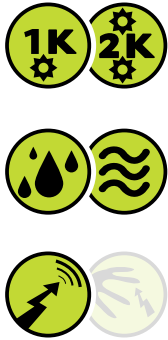
- Not included:
- bell cup, air shroud and tools (refer to page 84)
- air supply hoses (contact Sames)
- pumping system (contact Sames)

- color change block (refer to page 106)
- air regulator (contact Sames)
- Insulating table, Short-circuiting, Safety lock, High voltage discharge

Robotic Spray Gun

TRP501 & TRP502

Electro pneumatic robotic gun



- > High performance gun atomizer
- > High reliability for Automotive paintshop
- > Easy to maintain

TRP gun is used for the application of **water or solvent based paints**. The additional advantage of the TRP is to enable the application at **very high flow** (up to 1200 cm³/min with certain configurations) while combining the **pneumatic and electrostatic effects**.


The TRP gun is light, compact and has much **flexibility of use**. Its simple and robust design makes it **extremely reliable**.

For more than 35 years, **TRP gun** has been the reference in the world of automotive finishing, often copied but never equalled.


FIELD OF APPLICATION

- Car body interiors
- Door cut-ins
- Rocker panels
- Penetration in hollow body (dead areas...)
- Any type of openings (ventilation louvers on bumpers...)
- Metallic base coat: 2nd base coat with Bell/Gun process
- Bumper



 > 1 MΩ.cm (solvent paint)

 4.7 - 5.5 kg

 100 kV
200 μA

 up to
1200 cc/min



TRP501 & TRP502

CUSTOMERS' BENEFITS

High Performance

- The transfer efficiency is high; it is doubled compared to a conventional gun application (30% to 60% depending on the shape of the part, the paint being used and the working adjustments).

Easy-to-use:

- The adjustments of all the gun parameters (product flow, paint spray, product opening control) are remotely controlled, manually or by a PLC.

RANGE

- TRP501 sprayer is equipped with a gun on which can be assembled either a fan or round (Vortex effect) spray nozzle:

➤ The fan spray is equipped with a metal injector to guaranty a steadfast spraying quality in the long run (few wear). The injector diameter is of 1.5 mm and comes in several versions.

➤ The round spray comes in four calibres:
 - calibre ø8 mm = standard
 - calibre ø6, 12 and 20 mm = as an option

- TRP502 sprayer is equipped with two fan spray guns. The converging patterns are directed at the part as one pattern, and are supplied and piloted simultaneously. TRP502 versions provide twice the paint flow offered by TRP501 versions.

- The gun is assembled onto a support allowing two tilting angles.

- The paint supply of both TRP501 & 502 sprayers comes in several versions:

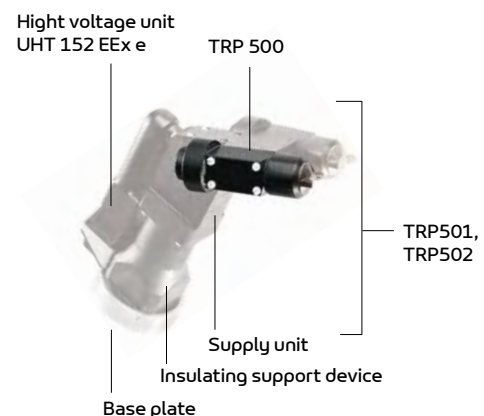
- With or without modular-built product regulator,
- With simple dump (SP) of the paint circuit (one paint circuit inlet),
- or with double dump (DP) of the paint circuit (two paint circuit inlets).

With TRP502 version, the air and product supplies are shared by both spraying heads.

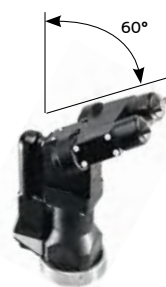
New Capability improvement

- Available on 2 sets of TRP501/502, the Heavy Duty Kit let your robotic gun last longer. The newly piston makes the guns able to trigger thousands of time per day.

Kit Heavy Duty TRP: P/N 910019437



- This set is composed of a supply unit on which is assembled a support device allowing orientating the TRP 500 with respect to the robot arm (60° or 90°). An insulating support device thus maintain this whole set to the quick disconnect base plate. The supply unit is equipped with one or two product inlets, a product dump/rinsing outlet, a high voltage inlet and air inlets (needle drive, dump, spraying airs).



TRP502



TRP502

Robotic Spray Gun

Technical Data

Weight	TRP501	TRP502	
Spare atomizer, without cable or hose	4.7 kg	5.5 kg	
Pneumatic supply	TRP501 - TRP502		
Maxi. air pressure	6 bar (90 psi)		
Maxi. Product pressure	6 bar (90 psi)		
Drive standard pressure	5 bar (75 psi)		
Product opening response time	25 msec (for information only)		
Product cut response time	30 msec (for information only)		
Product supply	TRP501 - TRP502		
Standard product supply pressure	6 (90psi) to 8 bar (120psi)		
Maximum product pressure	10 bar (150psi)		
Viscosity scale (for minimum results)	14 to 60 seconds FORD #4 Cup		
Paint resistivity (solvent based paint)	> 3 MΩ.cm		
Paint resistivity (water based paint)	> a few kΩ.cm		
Spraying	Round spray	Fan spray (TRP501)	Fan spray (TRP502)
Spray pattern width (mm) for information only	100 to 400	100 to 500	660
Airs total flow (Nm ³ /h)	7 - 27	7 - 40	14 - 80
Paint flow (cc/min)	from 100 to 500	from 100 to 800	from 200 to 1200
High Voltage	UHT 152 EEx e		
Voltage maxi.	100 kV		
Current maxi.	200 μA		

ATEX marking:

TRP501 / TRP502:

CE 0080 Ex II 2 G

EEx > 350 mJ
ISseP05ATEX032X

GNM 200⁽¹⁾:

CE 0080 Ex II (2) GD

[EEx > 350 mJ]
ISseP05ATEX032X
ISseP06ATEX032X

(1): This control module allows piloting the UHT 152. It is a device that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.

> For the application of solvent based paints of which resistivity is > to 1 MΩ.cm, all the conductive parts have to be grounded (product tank, pressurised tank, moduclean, metal fittings, etc...). In order to minimize the leakage current into the paint circuit, it is recommended to use small diameter hosing (ex: ø4x8 mm) and of 5-meter length maximum between the sprayer and the metal fitting or grounded bulk-head union.

> For the application of water based paints that are non-flammable or hard to set fire to, (resistivity of a few kΩ.cm), the paint supply has to be electrically insulated (product tank, pressurised tank, moduclean, metal fittings, etc...). Do provide for all the necessary safeties to avoid any electrical shocks to the operator.

Please, consult Sames for more information.

Essential to the interiors
The rinsing box is used to clean and dry the exterior of the sprayer that is exposed to dirt and to recycle the rinsing product. The rinsing box is available as an option (Please, consult Sames for more information).





SPRAYER TRP501/502

Description	Regulator	Angle adapter	Reference
TRP501 SP AR QD	Yes	60°	1 521 595
		90°	1 518 921
TRP501 SP SR QD	No	60°	910 019 845*
		90°	910 002 320
TRP502 SP AR QD	Yes	60°	910 002 319
		90°	910 002 317
TRP502 SP SR QD	No	60°	910 019 846*
		90°	910 002 318

SP: single dump circuit, AR: with regulator,
SR: without regulator, QD: quick-disconnect base-plate
*: Heavy duty version with piston

ELECTRIC KIT

Description	Reference
Electric kit connexion LV UHT152	1519896

GNM200A 220V + Low Voltage Connector and Cable (30 m) for UHT152 (not included) + Terminal box

OPTION NOZZLES AND AIRCAPS

Fan spray nozzle



Description	Injector (ø mm)	Reference
Nozzle JP single circuit injector INOX	1.1	730 355
	1.2	755 287
	1.5	439 058
Nozzle JP single circuit Complete nozzle INOX	1.2	428 375 ⁽³⁾
	1.5	429 064 ⁽³⁾
Nozzle JP double circuit	1.5	752 055

(3): The flat spray nozzle is all stainless steel material – cast in one piece.

Round spray nozzle (SUPER VORTEX)



Description	Injector (ø mm)	Reference
Nozzle without injector		752 983
Injector JR	6	455 234#
	8	455 235#
	12	455 236#

#: set of 5

Nuts



Description	Reference
Nut for nozzle JP	745 066
Nut for nozzle JR	749 982

Build your Atomizer

SPRAYING HEAD

TRP 500 alone



Description	Restrictor (ø mm)	Injector (ø mm)	Reference
TRP 500 JP	1.4	1.5	910019688*
TRP 500 JR	1.2	8	910019848*
TRP 500 JR	1.2	12	910019850*

JP: flat spray, JR: round spray, *: Heavy duty version with piston

ACCESSORIES: MEASURE «TEST AIRCAPS»

The air caps permit to measure the pressure (bar) of the air plenum (fan air and centre air) at the level of the gun head. This measure is very important to define the shape of the pattern (spray symmetry, width...).



Description	Material	Reference
JP Cap (same as JP cap 436 939)	Brass	437 257 ⁽¹⁾
JP Cap (same as JP cap 422 513)	Brass	423 753 ⁽²⁾

(1): standard pattern, (2): wide pattern

Aircap – Fan spray



Description	Material	ø (mm)	Reference
aircap JP - standard	Plastic		436 939
aircap JP - wide pattern	Plastic		422 513
aircap JP - stainless nozzle	Brass	1.2	428 376
	Brass	1.5	429 063

Aircap – Round spray



Description	Material	ø (mm)	Reference
aircap JR	Plastic	6	430 804
		8	430 540
		12	430 179

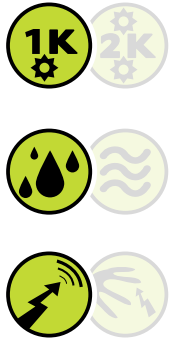
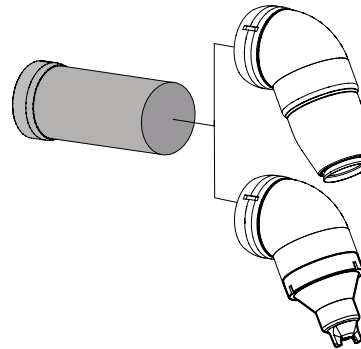
Robotic Spray Gun



PPH707 MS-GUN

Robotic multi-process gun sprayer for solvent based paint

- > Ideal for the validations of Bell/Gun on site
- > Easy to switch process



PPH707-MS-GUN with manual tool change «multi-process» is mainly dedicated to Tier 1 paint lines. This allows switching quickly from a gun to a bell process and vice versa for solvent based paint application.

FIELD OF APPLICATION

A MULTIPURPOSE TOOL:

This tool, belonging to Range 7 sprayers (PPH707 SB), is composed of a common body integrating an high voltage cascade (UHT 157), the product and air circuits and is ended by a quick fixation nut on which can be fixed a sprayer head of bell type (PPH707 SB) or a single-head gun.

Example: the application of a second base coat is generally carried out with an electrostatic gun but can also be carried out with a bell (paint saving).

AN UPGRADABLE SPRAYING SYSTEM:

MULTISPRAY makes the spraying process evolution easier, the same tool switching easily from a gun to a bell configuration. PPH707 MS-GUN allows validating «all electrostatic» and «bell for 2nd base coat» processes, with the aim of optimizing paint consumption. Mass production on a paint line can start with an electro-pneumatic gun, and then the operator can adapt a bell to carry out trials with the aim of changing the 2nd base coat application process. It can easily come back to the gun configuration and resume production up to the final application with bell; thus without disassembling the common body from the robot which does not change.



A NEW SUPER VORTEX NOZZLE:

Research for the manual gun NANOGUN led SAMES KREMLIN to design a new nozzle able to enhance finishing performance. She is also available for robots on MS-Gun sprayer. Round pattern allows less rotating movements of the atomizer, so less wear of robot wrist, high voltage cable and paint hoses.



MS-GUN FOR ACCUBELL 709 EVO:

This gun head can be fixed on ACCUBELL 709 EVO body for waterborne paint. This option gun head can replace the turbine, air shroud and bell cup.

Reference number is: 910006902



WWW

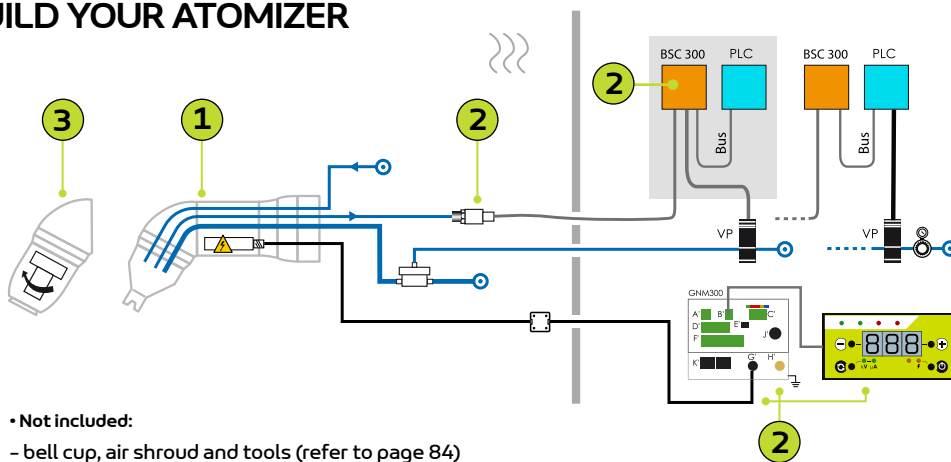
PPH707 MS-GUN

CUSTOMERS' BENEFITS

Flexibility

- Validation of all the processes from outside the line by using only one set
- Reduction of the time necessary to the validation of the new shapes, paints and colors
- Reduction of the time for assembly/disassembly of configurations
- Use of only one equipment; reduction of the number of spare parts and maintenance costs

BUILD YOUR ATOMIZER



BSC: Bell Speed Controller
 PLC: Programmable logic controller
 VP: Proportional valve

Preferred control: BSC 300 reads microphone and drives proportional valve.

Alternative control: BSC 300 reads microphone and PLC drives proportional valve.

• Not included:

- bell cup, air shroud and tools (refer to page 84)
- Robot wrist adapters (contact Sames)

1 Mark 1

Atomizer
Elbow
Microvalve type
Nanovalve type
High Voltage Unit UHT 157

(1): equipped with GUN sprayer

PPH707 MS-GUN
with Microphone with Coil
910006755
910003414SAV ⁽¹⁾
1507375
1510004
910002870

PPH707 MS-GUN 2K
with Microphone with Coil
910023166
910020180SAV ⁽¹⁾
1507375
1510004
910002870

2 Mark 2

You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...

Description
System for electric kits

↓ ↓

see page 80

3 Mark 3

Description	Reference
Complete elbow assembly BELL	91000 4455SAV
Complete elbow assembly GUN	910006756SAV

Marking:

PPH707 MS-GUN:

CE 0080 UKA 2503
 II 2 G T6
 350 mJ < E < 2J
 INERIS 18ATEX0044X
 CML 21UKEX9795X

BSC300:

CE 0080 UKA 2503
 II (2) GD [Ex ia Ga] IIC
 [Ex ia Da] IIIC
 INERIS 17ATEX0031X
 CML 21UKEX2794X

GNM300 ⁽²⁾

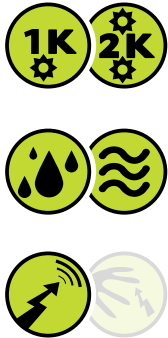
CE 0080 UKA 2503
 II (2) G
 [350 mJ < E < 2J]
 INERIS 20ATEX0035X
 INERIS 19ATEX0009X
 INERIS 18ATEX0044X
 CML21UKEX9798X
 CML21UKEX9796X
 CML21UKEX9795X

(2): This control module allows piloting the HVU. It is a device that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.

Robotic Bell Spray

Nanobell 2

Rotary atomizer bell for Robotic application



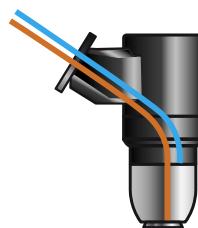
- > Easy integration and maintenance
- > High transfer efficiency
- > High finishing quality

The NANOBELL2 robotic sprayer is compact, lightweight (5 kg) and sturdy, meeting the expectations of manufacturers of small and average plastic parts, of the wood industry and of manufacturers of metal parts.

With NANOBELL2 is an affordable bell applicator which can significantly increase their paint savings, while improving the quality of their production. It can spray, depend on configuration solvent-based or water-based paints, mono or multi-components paints.

AVAILABLE IN 2 VERSIONS

**hollow
wrist robot:**

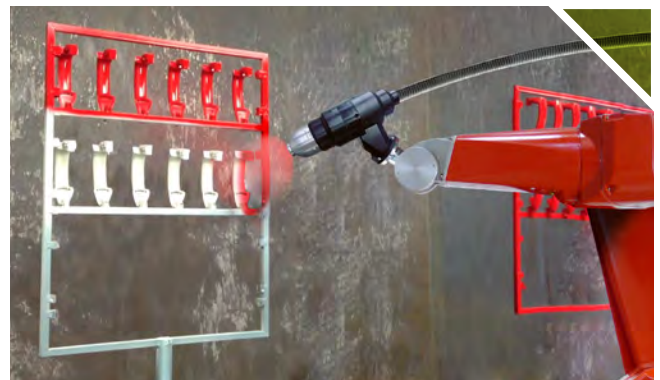


**non-hollow
wrist robot:**





FIELD OF APPLICATION

- Aerospace
- Metallic furniture
- Cycles & Motorcycles
- Drums & Gas containers
- Wood industry
- Aluminium profiles
- Agricultural & construction equipment




Application with non-hollow wrist robot version

 0.5 to 500 MΩ.cm (solvent paint)
≈ KΩ.cm (waterborne paint)

 5 kg




 70 kV/100 μA (UHT 158)
70 kV/500 μA (UHT 287)

 up to 750 cc/min

 Dual Shaping air

 Magnetic Bellcup

 up to 40 000 rpm



WWW

Nanobell 2

CUSTOMERS' BENEFITS

High Transfer Efficiency

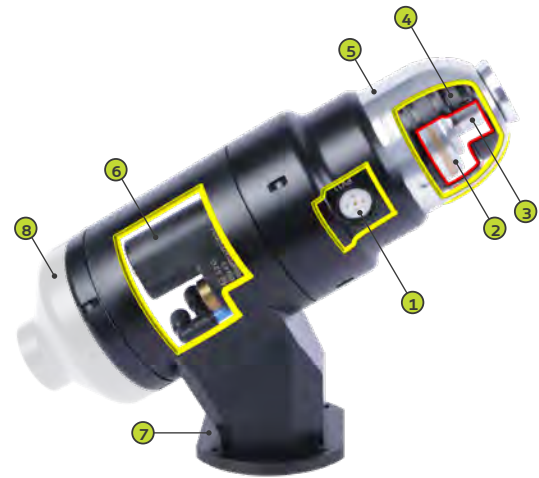
- Significant paint savings (from 20 to 50% more savings than conventional gun)
- Variation of pattern thanks to Hi-TE technology for BETTER spray control

Easy integration & maintenance

- Light weight sprayer for small size robots
- Allows mounting on both hollow and non-hollow wrist
- Easy to dismantle
- Easy access to valve, fittings
- Long life magnetic turbine

High finishing quality

- Thin atomization of paint droplets
- Sharp control of applied thickness



(1) Microvalve
(2) Magnetic turbine
(3) Bell cup EC50 Hi-TE
(4) Internal shaping air shroud
(5) External shaping air shroud

(6) High Voltage Unit (UHT 158 EE e)
(7) Arm support with output of hoses and cables in hollow wrist robot version
(8) Output of hoses and cables in non-hollow wrist robot version

Easy Maintenance

- Magnetic bellcup fastening system
- Optimised design for assembly/disassembly



RANGE

Depending on the type of application (solvent-based or water-based), the spray version NANO BELL 2 differs through the wiring of the elements connected to the high voltage and product and rinsing circuits:



NANO BELL 2 SB

For an application of **solvent-based paint** with a resistivity $\geq 6 \text{ M}\Omega\cdot\text{cm}$:

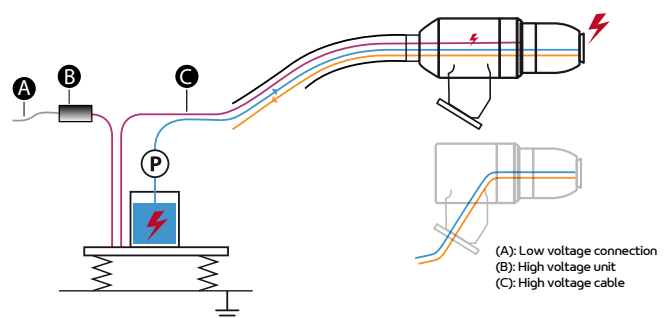
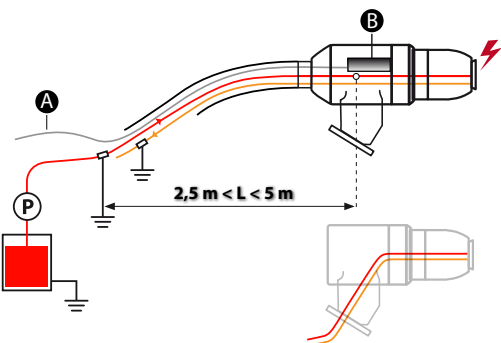
- The product distribution system is connected to ground potential.
- High Voltage Unit (B) UHT158 [70kV/100 μ A] is integrated to the sprayer.
- Two versions are available:
 - hollow wrist robot
 - non-hollow wrist robot



NANO BELL 2 WB

For an application of **water-based paint nonflammable and flammable**:

- The product distribution system is isolated from the ground potential, example: isolated table.
- The application is made by internal charge (best yield).
- High Voltage Unit (B) UHT287 [70kV/500 μ A] is remote from the sprayer.
- The number of colors is limited.
- Two versions are available:
 - hollow wrist robot
 - non-hollow wrist robot



(A): Low voltage connection
(B): High voltage unit
(C): High voltage cable

Robotic Bell Spray

Technical Data

Weight	NANOBELL 2
Both versions NANOBELL 2, without hoses (kg)	5 kg

Fluid supply	NANOBELL 2
Fluid pressure maxi. (bar)	10 (150 psi)
Paint flow (cc/min) according type of paint	30 to 750 ⁽¹⁾
Viscosity range - FORD n°4 (seconds)	20 to 50

(1): depending on viscosity

Pneumatic power	NANOBELL 2
Operating air pressure (bar)	6 (90 psi) to 10 (150 psi)
Magnetic bearing air pressure (bar)	6 (90 psi) to 10 (150 psi) 85 NI/min.
Air shroud pressure (bar)	6 (90 psi) constant
Micro air pressure (bar)	1.9 to 3 bar constant
Operating consumption (NI/min.)	10
Bearing air consumption (NI/min.)	125
Air shroud consumption (NI/min.)	0 to 600 (depending skirt)
Turbine air consumption (NI/min.)	190 to 700

Performances	Turbine	
Rotation speed	5000 to 40 000 rpm (upon diameter of bell cup used)	
High Voltage	UHT158 EEX e	UHT287 EEX e
Voltage maxi.	70 kV	70kV
Current maxi.	100 µA	500 µA

ATEX marking:

NANOBELL 2
solvent-based paint
with R ≥ 6 MΩ.cm
CE 0080
II 2 G T6
350 mJ < E < 2J
INERIS 18ATEX0044X

UHT158 EEX e
70kV/100µA
II 2 G
EEX e II
ISSeP01ATEX002U

NANOBELL 2
water-based paint
with = kΩ.cm
CE CE III 3 G X T 60°C
W > 2 J

UHT287 EEX e
70kV/500µA
II 2 GD
EEX e II
ISSeP01ATEX002U

BSC300:
CE 0080 UK 2503
II (2) GD [Ex Ia Ga] IIC
[Ex Ia Da] IIC
INERIS 17ATEX0031X
CML 21UKEX2794X

GNM300 (2)
CE 0080 UK 2503
II (2) G
[350 mJ < E < 2J]
INERIS 20ATEX0035X
INERIS 19ATEX0009X
INERIS 18ATEX0044X
CML21UKEX9798X
CML21UKEX9796X
CML21UKEX9795X

(2): This control module allows piloting the UHT. It is an associated equipment that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.

SEVERAL VERSIONS DEPENDING ON YOUR NEEDS:



VERSION	Compatible with	Product Resistivity
NANOBELL 2 SB High voltage unit (UHT 158) integrated into the atomizer	solvent based product	≥ 6 MΩ.cm
NANOBELL 2 WB Remote high voltage unit (UHT 287) from atomizer	water-based paint (3) nonflammable or hardly flammable	≈ 0 MΩ.cm

(3): the product distribution system must be isolated from the ground potential.

RECOMMENDATIONS

High voltage (kV)	Solvent paint Resistivity
30 kV	0.5 to 1 MΩ.cm
50 kV	1 to 6 MΩ.cm
70 kV	> of 6 MΩ.cm



HI-TE TECHNOLOGY



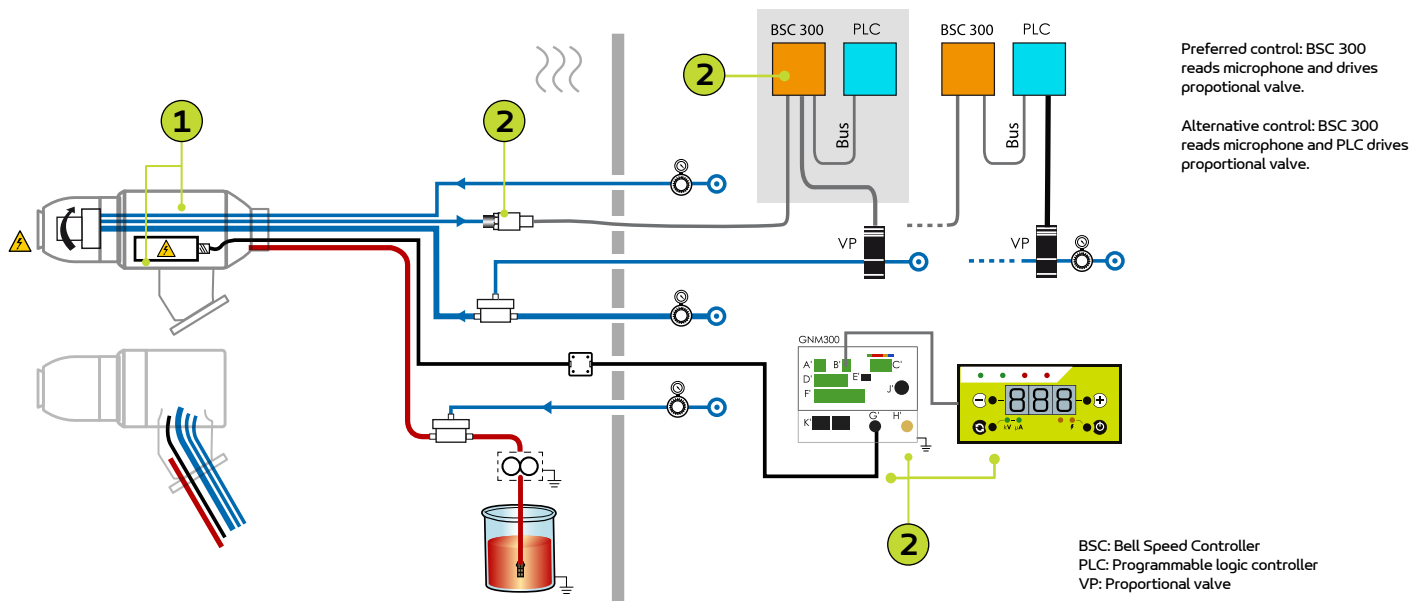
The external shroud is composed of couples of combined air holes. This external shroud allows many applications; the pattern can fastly vary from a narrow and penetrating spray to a wide and wrapping spray for an optimal transfer efficiency.

MAIN BENEFITS:

- More paint savings
- Better finishing quality and color match
- Easy operation thanks to single air adjustment



Build your Atomizer



USE FOR SOLVENT-BASED PAINT



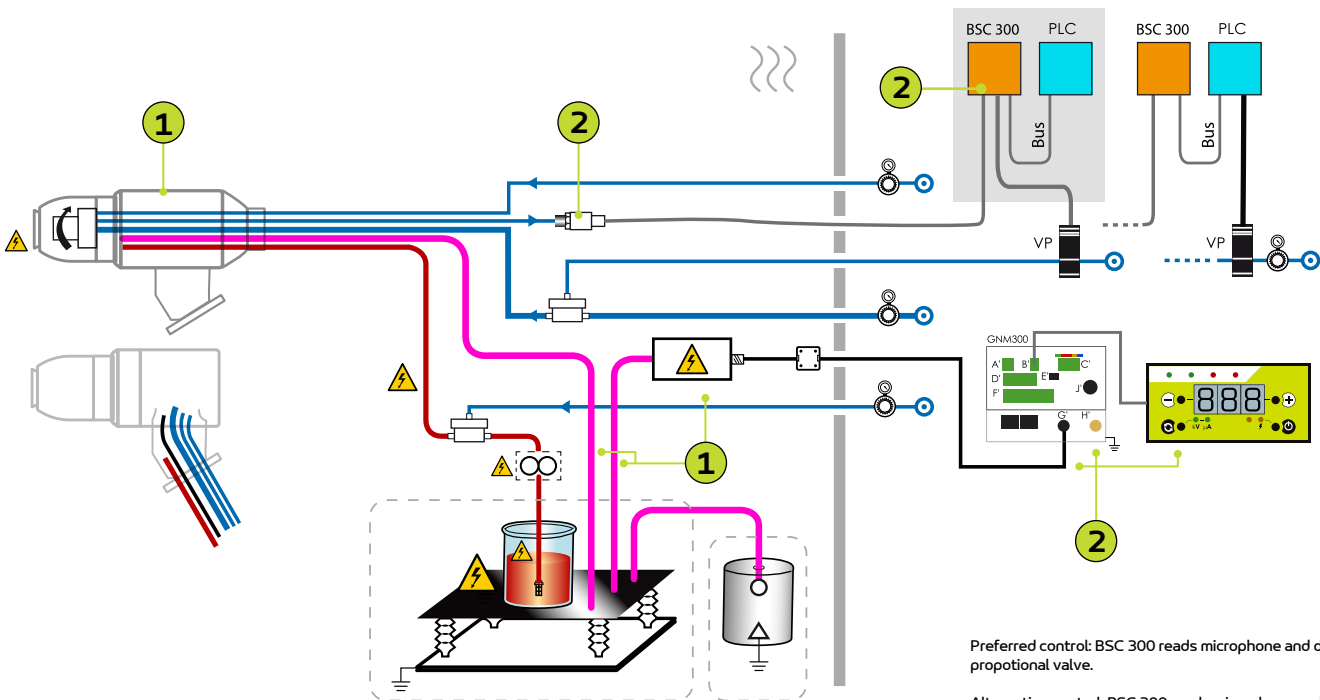
1	Mark 1	REFERENCE ATOMIZER NANOELL 2 SB
		solvent-based paint with a resistivity $\geq 6 \text{ M}\Omega \cdot \text{cm}$
	NANOELL 2 SB (hollow wrist robot)	910016011
	NANOELL 2 SB (non-hollow wrist robot)	910016012
2	Mark 2	
	<i>You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...</i>	
	Description	
	System for electric kits	see page 80

- Not included:
- bell cup, air shroud and tools (refer to page 84)
- air supply hoses (contact Sames)

- pumping system (contact Sames)
- color change block (refer to page 106)
- air regulator (contact Sames)

Robotic Bell Spray

Build your Atomizer




Preferred control: BSC 300 reads microphone and drives proportional valve.

Alternative control: BSC 300 reads microphone and PLC drives proportional valve.

BSC: Bell Speed Controller
 PLC: Programmable logic controller
 VP: Proportional valve

USE FOR WATER-BASED PAINT

1	Mark 1	REFERENCE ATOMIZER NANOBELL 2 WB
	NANOBELL 2 WB (hollow wrist robot)	water-based paint with a $\approx k\Omega \cdot cm$ 910016903
	NANOBELL 2 WB (non-hollow wrist robot)	910016902
2	Mark 2	
	<i>You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...</i>	
	Description	
	System for electric kits	 see page 80

- Not included:
- bell cup, air shroud and tools (refer to page 84)
- air supply hoses (contact Sames)
- pumping system (contact Sames)
- color change block (refer to page 106)
- air regulator (contact Sames)
- Insulating table, Short-circuiting, Safety lock, High voltage discharge

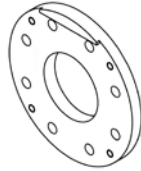
Build your Atomizer

COMPONENTS

Adaptation for assembly on robots

Robot model	Reference
EPX 2050/2900	910018263
P250	910019313
RX160	910018262
TX250	910018264
IRB4400	910018261

for others robots, contact SAMES



BE MORE FLEXIBLE

NANOBELL 2 with GUN head (option)

Switch easily from bell to gun process for more penetration. This feature available as an option of Nanobell sprayer replaces all bell components (turbine, shroud, and bell cup) by fan shaped electro pneumatic sprayer, without disassembling the body.



Description	Reference
GUN head	910019815

DISCHARGE SYSTEM OF SUPPLY WATER-BASED PAINT

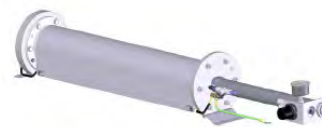
The water-based paint is connected to the potential of the high voltage through an isolated table during electrostatic application.



NANOBELL 2 WB



4 Insulating table



3 Short circuiter
It allows the grounding of the electrostatically charged paint circuit when not in us



5 Safety lock

Mark	Description	Reference
3	Short circuiter	910019962
4	Insulating table 800mm x 800mm	1519263
	Insulating table 1600mm x 800mm	1519265
5	Safety lock 2x3 left side position	910022444
	Safety lock 2x3 right side position	91022445
6	High voltage discharge rod assembly	750207
7	Connecting cable between 3 and 4	910015658

6

Not for use in hazardous atmosphere

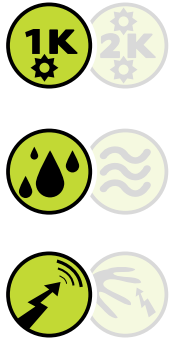


Robotic Bell Spray

PPH707 SB



Robotic sprayer for solvent based paint equipped with high speed rotary bell



- > High performance bell atomizer
- > High reliability for Automotive paintshop
- > Easy to maintain

PPH707 SB is a sprayer dedicated to the electrostatic application with internal charge of solvent based paint. It is equipped with the high speed turbine (HVT) with magnetic bell. "SB" index means that this type of sprayer is dedicated to **solvent based** paint application. The high speed allows a high rotation (up to 85 000 rpm):

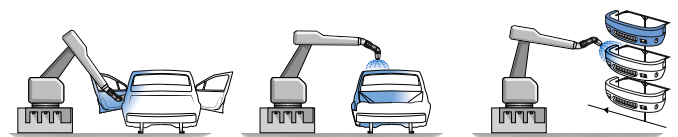
- better atomization fineness,
- high paint flow

The level of finishing quality proposed by the PPH707 SB guaranties a high quality. This tool will meet your requirements in terms of:

- spraying (primer, base, 2nd base, clear ...)
- application aspect
- transfer efficiency (control of the V.O.C.)
- reliability and simplification of the maintenance operations
- product saving

FIELD OF APPLICATION

PPH707 SB is dedicated to the Automotive Industry and Tier 1 for solvent based application.



Primer	•	•	•
Base	•	•	•
Clearcoat	•	•	•

PPH707 SB can be built-in into any type of multi-axis robot.



> 3 MΩ.cm

7 kg



100 kV/2 00 μA
60 kV/200 μA

up to 1000 cc/min

Dual Shaping air

Magnetic Bellcup

up to 85 000 rpm



CUSTOMERS' BENEFITS

High Performance

- High rotating speed
- High voltage unit
- Hi-TE dual shaping air
- Dual circuit for fast color change



Flexibility

- Full Bell/Bell process: Primer, Basecoat 1, Basecoat 2, Primer
- Wide or narrow pattern
- Light weight for any painting robots

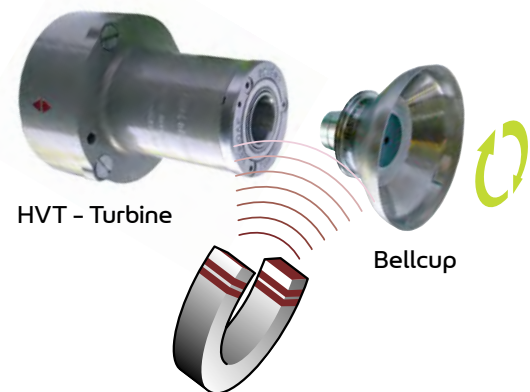
High Reliability

- Long life HVU (High Voltage Unit)
- 2.5 million cycles life of valves
- Titanium bellcup for longer life
- 7 years/30 000h. warranty* turbine

* Whichever is the sooner

Easy to Maintain

- Magnetic bellcup fastening system
- Quick disconnect
- Easy access to valves, fittings
- Specific body design preventing & dust or droplet
- No calibration tool required



Safety

- Smart integrated HVU: fast energy discharge preventing any spark
- Remote bell monitoring device
- ATEX zone 1



Robotic Bell Spray

Technical Data

Weight	PPH707 SB
Spare atomizer, without cable or hose	7 kg

Pneumatic supply	PPH707 SB
Nano-valve drive air pressure	8 bar mini (120psi) - 10 bar max. (150psi)
Magnetic turbine bearing air pressure	5 mini (75psi) - 7 bar max. (105psi) from 130 to 180 L/min
Shaping air pressure	6 bar (90psi) recommended on manifold
Micro air pressure	0.5 mini (7,5psi) at 1 bar maxi. (15psi) from 20 L/min to 40 L/min
Drive air consumption	10 NI/min.
Magnetic turbine bearing air consumption	125 NI/min.
Shaping air 1 and air 2 consumption (with respect to air shroud and bell being used)	From 100 to 600 NI/min.
Turbine rotation air consumption	From 100 to 700 NI/min. ⁽¹⁾
Safeguard air quantity	25 litres at 6 bar (90 psi)

(1): with respect to sprayed flow and rotation speed

Product supply	PPH707 SB
Standard product supply pressure	6 (90psi) to 8 bar (120psi)
Maximum product pressure	10 bar (150psi)
Paint flow (depending on paint type)	30 to 1000 cc/min. ⁽²⁾ maxi.
Viscosity scale (for minimum results)	20 to 40 seconds FORD #4 Cup
Paint resistivity (with coil)	> 3 MΩ.cm
Paint resistivity (without coil)	> 10 MΩ.cm

(2): with a product density < 1.1 gr/cm³ and/or of the combination bell and air shroud being used

Performances	HVT	
Rotation speed	15 to 85 000 rpm (upon diameter of bell cup used)	
Application speed	up to 1500 mm/sec	
Color change	PPH707 SB	
Paint consumption	25 cm ³ (paint circuit) & 25 cm ³ (pump circuit)	
Rinsing product consumption	300 cm ³ (not included rinsing box)	
Standard process time	10 sec (with REVERSE FLUSH)	
Optimized process time	5 sec (with REVERSE FLUSH on circuit 1 & 2)	
Same Color (head rinsing + bell cup)	PPH707 SB	
Time	6 sec.	
Rinsing product consumption	50 cm ³	
High Voltage	UHT 157	UHT 157I
Voltage maxi.	100 kV	60 kV
Current maxi.	200 µA	200 µA

ATEX marking:

PPH707 SB:

CE 0080 UK²⁵⁰³
 II 2 G T6
 350 mJ < E < 2J
 INERIS 18ATEX0044X
 CML 21UKEX9795X

BSC300:

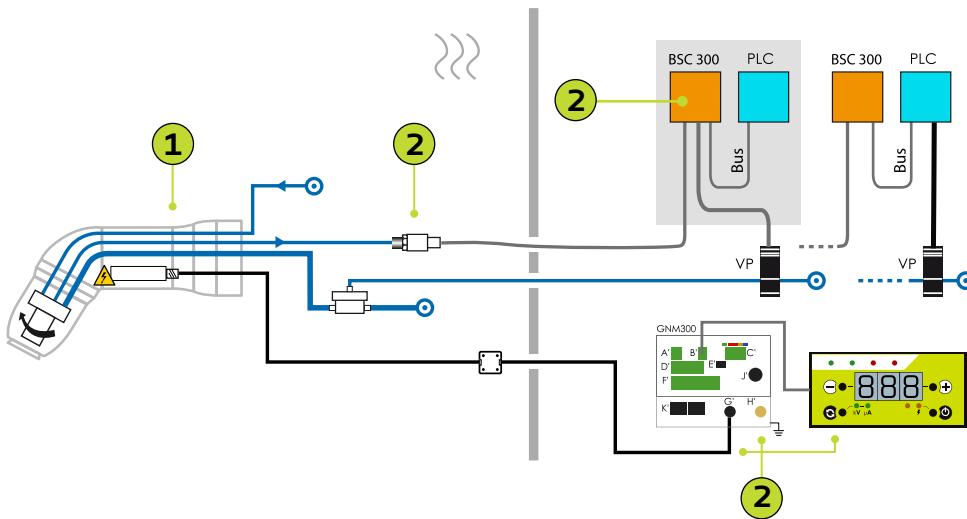
CE 0080 UK²⁵⁰³
 II (2) GD [Ex ia Ga] IIC
 [Ex ia Da] IIIC
 INERIS 17ATEX0031X
 CML 21UKEX2794X

GNM300⁽³⁾

CE 0080 UK²⁵⁰³
 II (2) G
 [350 mJ] < E < 2J]
 INERIS 20ATEX0035X
 INERIS 19ATEX0009X
 INERIS 18ATEX0044X
 CML21UKEX9798X
 CML21UKEX9796X
 CML21UKEX9795X

(3): This control module allows piloting the UHT157 and UHT157I. It is a device that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.

Build your Atomizer



Preferred control: BSC 300 reads microphone and drives proportional valve.

Alternative control: BSC 300 reads microphone and PLC drives proportional valve.

BSC: Bell Speed Controller
PLC: Programmable logic controller
VP: Proportional valve

1 Mark 1	REFERENCE ATOMIZER			
	PPH707 SB			PPH707 ICWB
	with Microphone with Coil	with Microphone without Coil circuit	with Fiber Optic	with Microphone
Atomizer	910004013*	910017984*	910004013FO*	910005907
Elbow	910003414SAV	910003414SAV	910003414FOSAV	910004455SAV
Microvalve type	1507375	1507375	1507375	1507375
Nanovalve type	1510004	1510004	1510004	1510004
High speed turbine	1525849	1525849	1525849	1525849
High Voltage Unit UHT 157 / UHT 157i	910002870 / 910016744	910002870 / 910016744	910002870 / 910016744	
High Voltage Unit UHT 288				910002864

2 Mark 2	
<i>You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...</i>	
Description	
System for electric kits	see page 80

*: with UHT 157i, add «INT» on the reference number (exemple: 910004013INT for PPH707 SB with UHT 157i or 910004013FO becomes 910004013INTFO)

- Not included:
 - bell cup, air shroud and tools (refer to page 84)
 - Robot wrist adapters (contact Sames)
 - air supply hoses (contact Sames)
 - pumping system (contact Sames)
 - color change block (refer to page 106)
 - air regulator (contact Sames)

Robotic Bell Spray

PPH707 MT



Robotic sprayer for solvent based paint equipped with multi trigger technology



- > Minimum color change loss
- > Compact design
- > 7th range quality

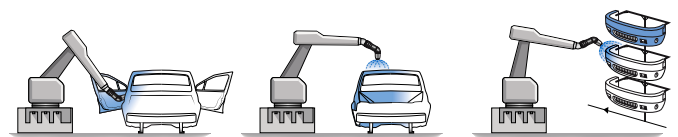
Multi trigger technology means that the color change block is integrated inside this atomizer's body.

1 super high runner and 5 high runner colors have very low loss of paint and solvent during color change.

It means also a high speed color change.

FIELD OF APPLICATION

Whichever the product, the operating modes may be:



Primer	-	•	•
Base	-	-	-
Clearcoat	-	•	•

PPH707 MT can be built-in into any type of multi-axis robot.



> 3 MΩ.cm

9.2 kg



100 kV/200 μA

up to 1000 cc/min

Dual Shaping air

Magnetic Bellcup

up to 85 000 rpm

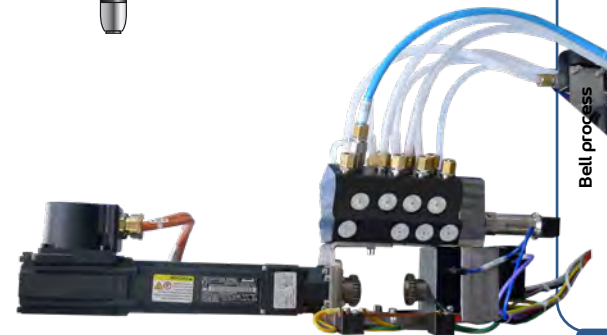
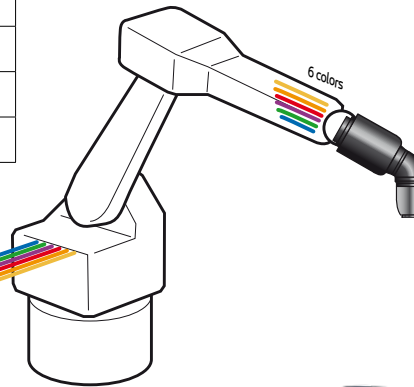
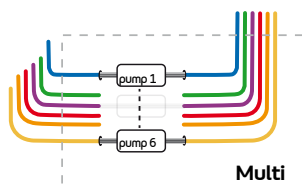
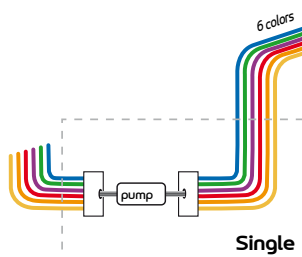


CUSTOMERS' BENEFITS

Minimum Material Loss

- Less paint & solvent loss
5 high runners at 5cc.
1 super high runner at 1cc.
- Single or Multi easy rinsing pump process

	Single	Multi
Color change time	15 sec.	5 sec.
Paint loss	29cc.	6cc.
Solvent loss	300cc.	40cc.



1 Single motor + 1 easy rinsing pump + 1 block color changer

Flexibility

- Easy to upgrade PPH707 SB to PPH707 MT: same TCP & Head
- Coil option for low resistivity or metallic material
- Available 2K version, color change performances: 5 high runners + 1 hardener, 7 sec./8cc. paint & 65cc. solvent loss

High Reliability

- 7 years/30 000h. warranty* turbine
- Long life HVU (High Voltage Unit)
- Titanium bellcup for longer life
- 2.5 million cycles life of valves

* Whichever is the sooner

Safety

- Smart integrated HVU: fast energy discharge preventing any spark
- Remote bell monitoring device
- ATEX zone 1



Robotic Bell Spray

Technical Data

Weight	PPH707 MT
Spare atomizer, without cable or hose	9.2 kg (with coil) – 8.8 kg (without coil)

Pneumatic supply	PPH707 MT
Nano-valve drive air pressure	8 bar mini (120psi) – 10 bar max. (150psi)
Magnetic turbine bearing air pressure	5 mini (75psi) – 7 bar max. (105psi) from 130 to 180 L/min
Shaping air pressure	6 bar (90psi) recommended on mani-fold
Micro air pressure	0.5 mini (7,5psi) at 1 bar maxi. (15psi) from 20 L/min to 40 L/min
Drive air consumption	10 NI/min.
Magnetic turbine bearing air consumption	125 NI/min.
Shaping air 1 and air 2 consumption (with respect to air shroud and bell being used)	From 100 to 600 NI/min.
Turbine rotation air consumption	From 100 to 700 NI/min. ⁽¹⁾
Safeguard air quantity	25 litres at 6 bar (90 psi)

(1): with respect to sprayed flow and rotation speed

Product supply	PPH707 MT
Standard product supply pressure	6 (90psi) to 8 bar (120psi)
Maximum product pressure	10 bar (150psi)
Paint flow (depending on paint type)	30 to 1000 cc/min. ⁽²⁾ maxi.
Viscosity scale (for minimum results)	20 to 40 seconds FORD #4 Cup
Paint resistivity (with coil)	> 3 MΩ.cm
Paint resistivity (without coil)	> 10 MΩ.cm

(2): with a product density < 1.1 gr/cm3 and/or of the combination bell and air shroud being used

Performances	HVT	
Rotation speed	15 to 85 000 rpm (upon diameter of bell cup used)	
Application speed	up to 1200 mm/sec	
Color change	Single pump group	Multi pump group
Paint loss per color – without coil	29 cm ³	6 cm ³
Paint loss per color – with coil	39 cm ³	16 cm ³
Solvent loss per color – without coil	300 cm ³	40 cm ³
Solvent loss per color – with coil	330 cm ³	40 cm ³
Process time – without coil	15 sec	5 sec
Process time – with coil	15 sec	5 sec
High Voltage	UHT 157	
Voltage maxi.	100 kV	
Current maxi.	200 µA	

ATEX marking:

PPH707 MT:

CE 0080 UK 2503
 II 2 G T6
 350 mJ < E < 2J
 INERIS 18ATEX0044X
 CML 21UKEX9795X

BSC300:

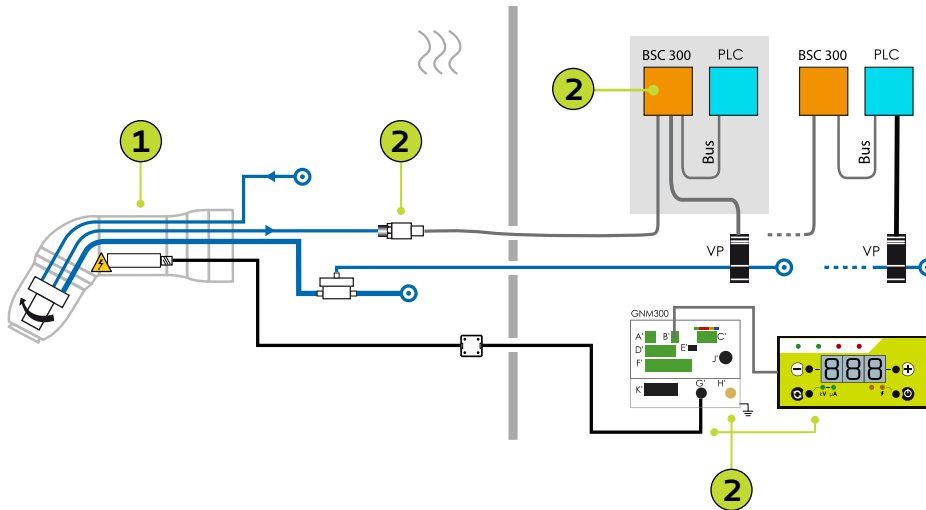
CE 0080 UK 2503
 II (2) GD [Ex ia Ga] IIC
 [Ex ia Da] IIIC
 INERIS 17ATEX0031X
 CML 21UKEX2794X

GNM300⁽³⁾

CE 0080 UK 2503
 II (2) G
 [350 mJ < E < 2J]
 INERIS 20ATEX0035X
 INERIS 19ATEX0009X
 INERIS 18ATEX0044X
 CML21UKEX9798X
 CML21UKEX9796X
 CML21UKEX9795X

(3): This control module allows piloting the UHT 157. It is a device that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.

Build your Atomizer



Preferred control: BSC 300 reads microphone and drives proportional valve.

Alternative control: BSC 300 reads microphone and PLC drives proportional valve.

BSC: Bell Speed Controller
PLC: Programmable logic controller
VP: Proportional valve

1 Mark 1

	REFERENCE ATOMIZER PPH707 MT		
	with Microphone with Coil	with Microphone without Coil circuit	with Fiber optic with coil
Atomizer	910010372	910010373	910010372FO
Elbow	910004455SAV	910004455SAV	910004455FOSAV
Microvalve type	1507375	1507375	1507375
Nanovalve type	1510004	1510004	1510004
High speed turbine	1525849	1525849	1525849
Rear support	910010102SAV	910010104SAV	910010102SAV
High Voltage Unit UHT 157	910002870	910002870	910002870

2 Mark 2

You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...

Description	
System for electric kits	see page 80

- Not included:
- bell cup, air shroud and tools (refer to page 84)

- Robot wrist adapters (contact Sames)

Robotic Bell Spray

PPH707 SB-2K



Robotic sprayer for two-component solvent-based paints equipped with high speed rotary bell



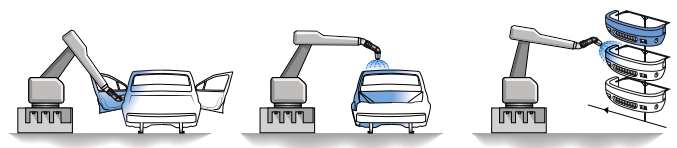
- > Low material loss
- > High reliability
- > Easy to maintain

PPH707 SB-2K is a sprayer dedicated to the electrostatic application with internal charge of 2 components liquid paints.

It is equipped with the static mixer located just before the bellcup injector, which helps to reduce the mixed paint volume to only 2cc.

FIELD OF APPLICATION

Whichever the product, the operating modes may be:



Primer	-	•	•
Base	-	-	-
Clearcoat	•	•	•

PPH707 SB-2K can be built-in into any type of multi-axis robot.



> 3 MΩ.cm

7.15 kg



100 kV/2 00 μA
60 kV/200 μA

up to
1000 cc/min

Dual
Shaping air

Magnetic
Bellcup

up to
85 000 rpm



CUSTOMERS' BENEFITS

Low Material Loss

- Static mixer into the head
- Valve close to mixer
- Mixed paint volume = 2cc. only

High Reliability

- Microvalves with bellow available for hardener supply circuit: **ref 910010850**
- Long life HVU (High Voltage Unit)
- 7 years/30 000h. warranty* turbine
- Titanium bellcup for longer life
- 2.5 million cycles life of valves

* Whichever is the sooner

Easy to Maintain

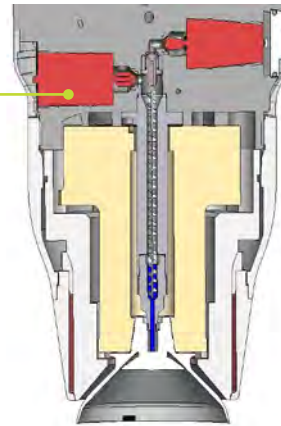
- Easy tear down of parts in contact on hardener
- No mixed material in Robot's arm
- No mixed product can return back in the circuit

Flexibility

- Compatible with every solvent based 2K coating
- Easy to upgrade PPH707 SB to 2K:
same TCP and body
- Available 2K Multi Trigger version, color change performances:
5 high runners + 1 hardener, 7 sec./8cc. paint and 65 cc. solvent loss

Safety

- Smart integrated HVU:
fast energy discharge preventing any spark
- ATEX zone 1



Robotic Bell Spray

Technical Data

Weight	PPH707 SB-2K
Spare atomizer, without cable or hose	7.15 kg

Pneumatic supply	PPH707 SB-2K
Nano-valve drive air pressure	8 bar mini (120psi) - 10 bar max. (150psi)
Magnetic turbine bearing air pressure	5 mini (75psi) - 7 bar max. (105psi) from 130 to 180 L/min
Shaping air pressure	6 bar (90psi) recommended on manifold
Micro air pressure	0.5 mini (7,5psi) at 1 bar maxi. (15psi) from 20 L/min to 40 L/min
Drive air consumption	10 NI/min.
Magnetic turbine bearing air consumption	125 NI/min.
Shaping air 1 and air 2 consumption (with respect to air shroud and bell being used)	From 100 to 600 NI/min.
Turbine rotation air consumption	From 100 to 700 NI/min. ⁽¹⁾
Safeguard air quantity	25 litres at 6 bar (90 psi)

(1): with respect to sprayed flow and rotation speed

Product supply	PPH707 SB-2K
Standard product supply pressure	6 (90psi) to 8 bar (120psi)
Maximum product pressure	10 bar (150psi)
Paint flow (depending on paint type)	30 to 1000 cc/min. ⁽²⁾ maxi.
Viscosity scale (for minimum results)	20 to 40 seconds FORD #4 Cup
Paint resistivity (with coil)	> 3 MΩ.cm

(2): with a product density < 1.1 gr/cm3 and/or of the combination bell and air shroud being used

Performances	HVT		
Rotation speed	15 to 85 000 rpm (upon diameter of bell cup used)		
Application speed	up to 1500 mm/sec		
Color change	PPH707 SB-2K		
Paint consumption	25 cm ³ (paint circuit) & 25 cm ³ (pump circuit)		
Rinsing product consumption	300 cm ³ (not included rinsing box)		
Standard process time	10 sec (with REVERSE FLUSH)		
Optimized process time	5 sec (with REVERSE FLUSH on circuit 1 & 2)		
Same Color (head rinsing + bell cup)	PPH707 SB-2K		
Time	6 sec.		
Rinsing product consumption	50 cm ³		
High Voltage	UHT 157	UHT157i	UHT 288 EEx e
Voltage maxi.	100 kV	60 kV	100 kV
Current maxi.	200 µA	200 µA	500 µA

ATEX marking:

PPH707 ICWB-2K:

CE UK
CA II 3 G X T6
W > 2J

PPH707 SB-2K:

CE 0080 UK
CA 2503 II 2 G T6
350 mJ < E < 2J
INERIS 18ATEX0044X
CML 21UKEX9795X

BSC300:

CE 0080 UK
CA 2503 II (2) GD [Ex ia Ga] IIC
[Ex ia Da] IIIC
INERIS 17ATEX0031X
CML 21UKEX2794X

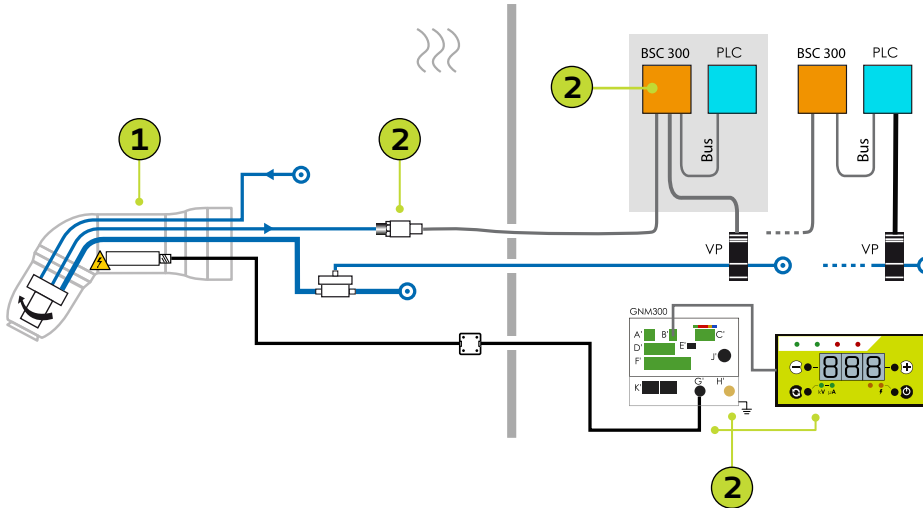
GNM300⁽³⁾

CE 0080 UK
CA 2503 II (2) G
[350 mJ < E < 2J]
INERIS 20ATEX0035X
INERIS 19ATEX0009X
INERIS 18ATEX0044X

(3): This control module allows piloting the HVU. It is an associated equipment that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.

CML21UKEX9798X
CML21UKEX9796X
CML21UKEX9795X

Build your Atomizer



Preferred control: BSC 300 reads microphone and drives proportional valve.

Alternative control: BSC 300 reads microphone and PLC drives proportional valve.

BSC: Bell Speed Controller
PLC: Programmable logic controller
VP: Proportional valve

1 Mark 1

	REFERENCE ATOMIZER		
	PPH707 SB-2K		PPH707 ICWB-2K
	with Microphone without coil	with Microphone with coil	with Microphone
Atomizer	910025901	910023058	910016139
Elbow	910020180SAV	910020180SAV	910016141SAV
Microvalve type	1507375	1507375	1507375
Nanovalue type	1510004	1510004	1510004
High speed turbine	1525849	1525849	1525849
High Voltage Unit UHT 157 / UHT 157i	910002870 / 910016744	910002870 / 910016744	
High Voltage Unit UHT 288			910002864

2 Mark 2

You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...

Description
System for electric kits

see page 80

- Not included:
 - bell cup, air shroud and tools (refer to page 84)
 - Robot wrist adapters (contact Sames)

Robotic Bell Spray

PPH707 MT-2K 1H

Robotic sprayer two-component solvent-based paints equipped with **multi trigger technology**



- > Minimum color change loss
- > Compact design
- > Easy to maintain

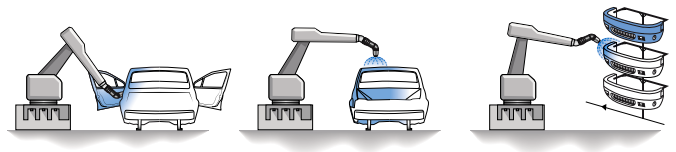
PPH707 MT-2K 1H (one hardener) is a sprayer dedicated to the electrostatic application with internal charge of 2 components liquid paints. This atomizer is the best solution for colored 2K primer or clear coat: low paintloss and fast color change.

It is equipped with:

- a static mixer located just before the bellcup injector.
 - a color change bloc inside the atomizer for:
- 1 super high runner and 5 high runner colors**

FIELD OF APPLICATION

Whichever the product, the operating modes may be:



Primer	-	•	•
Base	-	-	-
Clearcoat	-	•	•

PPH707 MT-2K 1H can be built-in into any type of multi-axis robot.



> 3 MΩ.cm

8.83 to 9.2 kg



100 kV/2 00 μA
60 kV/2 00 μA

up to
1000 cc/min

Dual
Shaping air

Magnetic
Bellcup

up to
85 000 rpm



PPH707 MT-2K 1H

CUSTOMERS' BENEFITS

Low Material Loss

- Static mixer into the head
- Valve close to mixer
- Mixed paint volume = 2cc. only
- Same performances as PPH707 MT

High Reliability

- Long life HVU (High Voltage Unit)
- 2.5 million cycles life of valves
- Titanium bellcup for longer life
- 7 years/30 000h. warranty* turbine

* Whichever is the sooner

Easy to Maintain

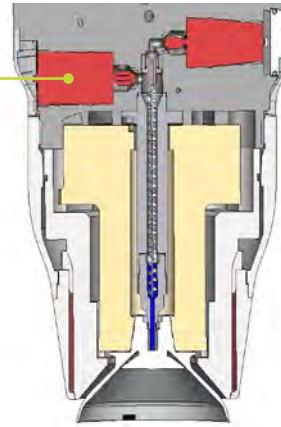
- Easy tear down parts in contact on hardener
- No mixed material in Robot's arm
- No mixed product can return back in the circuit

Flexibility

- Easy to upgrade PPH707 MT to MT-2K:
same TCP & Reach
- Coil option for low resistivity or metallic material

Safety

- Smart integrated HVU:
fast energy discharge preventing any spark
- Remote bell monitoring device
- ATEX zone 1



Robotic Bell Spray

Technical Data

Weight	PPH707 MT-2K 1H
Spare atomizer, without cable or hose	9.22 kg (with coil) 8.83 kg (without coil)

Pneumatic supply	PPH707 MT-2K 1H
Nano-valve drive air pressure	8 bar mini (120psi) - 10 bar max. (150psi)
Magnetic turbine bearing air pressure	5 mini (75psi) - 7 bar max. (105psi) from 130 to 180 L/min
Shaping air pressure	6 bar (90psi) recommended on mani-fold
Micro air pressure	0.5 mini (7,5psi) at 1 bar maxi. (15psi) from 20 L/min to 40 L/min
Drive air consumption	10 NI/min.
Magnetic turbine bearing air consumption	125 NI/min.
Shaping air 1 and air 2 consumption (with respect to air shroud and bell being used)	From 100 to 600 NI/min.
Turbine rotation air consumption	From 100 to 700 NI/min. ⁽¹⁾
Safeguard air quantity	25 litres at 6 bar (90 psi)

(1): with respect to sprayed flow and rotation speed

Product supply	PPH707 MT-2K 1H
Standard product supply pressure	6 (90psi) to 8 bar (120psi)
Maximum product pressure	10 bar (150psi)
Paint flow (depending on paint type)	30 to 1000 cc/min. ⁽²⁾ maxi.
Viscosity scale (for minimum results)	20 to 40 seconds FORD #4 Cup
Paint resistivity (with coil)	> 3 MΩ.cm
Paint resistivity (without coil)	> 10 MΩ.cm

(2): with a product density < 1.1 gr/cm3 and/or of the combination bell and air shroud being used

Performances	HVT	
Rotation speed	15 to 85 000 rpm (upon diameter of bell cup used)	
Application speed	up to 1200 mm/sec	
Color change	Single pump group	Multi pump group
Paint loss per color - without coil	31 cm ³ + 2 cm ³ (loss of hardener)	8 cm ³ + 2 cm ³ (loss of hardener)
Paint loss per color - with coil	41 cm ³ + 2 cm ³ (loss of hardener)	18 cm ³ + 2 cm ³ (loss of hardener)
Solvent loss per color - without coil	355 cm ³	65 cm ³
Solvent loss per color - with coil	385 cm ³	80 cm ³
Process time - without coil	17 sec	7 sec
Process time - with coil	17 sec	7 sec
High Voltage	UHT 157	UHT 157I
Voltage maxi.	100 kV	60 kV
Current maxi.	200 μA	200 μA

ATEX marking:

PPH707 MT-2K 1H:

CE 0080 UKA²⁵⁰³
 II 2 G T6
 350 mJ < E < 2J
 INERIS 18ATEX0044X
 CML 21UKEX9795X

BSC300:

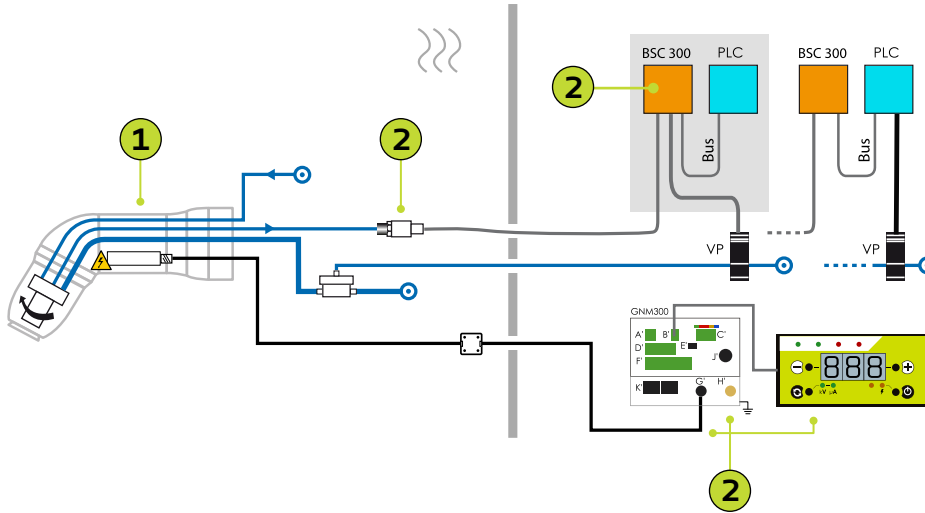
CE 0080 UKA²⁵⁰³
 II (2) GD [Ex ia Ga] IIC
 [Ex ia Da] IIIC
 INERIS 17ATEX0031X
 CML 21UKEX2794X

GNM300⁽³⁾

CE 0080 UKA²⁵⁰³
 II (2) G
 [350 mJ < E < 2J]
 INERIS 20ATEX0035X
 INERIS 19ATEX0009X
 INERIS 18ATEX0044X
 CML21UKEX9798X
 CML21UKEX9796X
 CML21UKEX9795X

(3): This control module allows piloting the HVU. It is an associated equipment that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.

Build your Atomizer



Preferred control: BSC 300 reads microphone and drives proportional valve.

Alternative control: BSC 300 reads microphone and PLC drives proportional valve.

BSC: Bell Speed Controller
PLC: Programmable logic controller
VP: Proportional valve

1	Mark 1	REFERENCE ATOMIZER PPH707 MT-2K 1H	
		with Microphone with Coil	with Microphone without Coil circuit
	Atomizer	910022448	910022449
	Elbow	910020180SAV	910020180SAV
	Microvalve type	1507375	1507375
	Nanovalve type	1510004	1510004
	High speed turbine	1525849	1525849
	Rear support	910010102	910010104
	High Voltage Unit UHT 157	910002870	910002870

2	Mark 2	
	Description	You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...
	System for electric kits	see page 80

- Not included:
 - bell cup, air shroud and tools (refer to page 84)
 - Robot wrist adapters (contact Sames)

Robotic Bell Spray

PPH707 MT-2K 3H

Robotic rotary atomizer for 2 components, solvent-based material, with multi-trigger technology



- > Minimum color change loss
- > Compact design
- > Easy to maintain

> 3 MΩ.cm

8.28 to 9.16 kg



Up to 100 kV

up to 1000 cc/min

Dual Shaping air

Magnetic Bellcup

up to 85 000 rpm

PPH707 MT-2K 3H (three hardeners) is a sprayer designed for electrostatic application with internal charge of 2 components liquid paints.

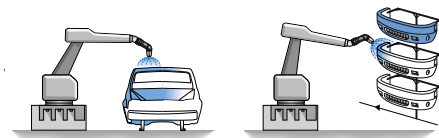
This atomizer is the best solution for colored 2K primer or clear coat: low paintlost and fast color change.

It is equipped with:

- a static mixer located just before the bellcup injector
- a color change block inside the atomizer for 1 super high runner and 5 high runner colors

FIELD OF APPLICATION

Whichever the product, the operating modes may be:



	Exterior	Bumper
Primer	•	•
Base	-	-
Clearcoat	•	•

PPH707 MT-2K 3H can be built-in into any type of multi-axis robot.



WWW

PPH707 MT-2K 3H

Performance

- High rotating speed
- High voltage unit
- Hi-TE dual shaping air
- Mix & paint, one solution

Sustainability

- High reliability for Automotive paintshop
- Microvalves with bellow available for hardener supply circuit
- Long life HVU (High Voltage Unit)
- 7 years/30 000h. turbine warranty*
- Titanium bellcup for longer life
- 2.5 million cycle valve life

* Whichever is the sooner

Easy to Maintain

- Easy tear down of parts in contact on hardener
- No mixed material in robot's arm
- No mixed material can return back in the circuit
- Magnetic bellcup fastening system
- Quick disconnect
- "Cabriolet cover" for easy access to valve in the atomizer

Productivity

- 15 seconds / 40cc paint loss / 7cc hardener loss
- Static mixer into the head
- Valve close to mixer
- Remote bell monitoring device



Robotic Bell Spray

Technical Data

Weight		PPH707 MT-2K 3H
Spare atomizer, without cable or hose		9.16 kg (with coil) 8.28 kg (without coil)

Pneumatic supply		PPH707 MT-2K 3H
Nano-valve drive air pressure		8 bar mini (120psi) - 10 bar max. (150psi)
Magnetic turbine bearing air pressure		5 mini (75psi) - 7 bar max. (105psi) from 130 to 180 L/min
Shaping air pressure		6 bar (90psi) recommended on mani-fold
Micro air pressure		0.5 mini (7,5psi) at 1 bar maxi. (15psi) from 20 L/min to 40 L/min
Drive air consumption		10 NI/min.
Magnetic turbine bearing air consumption		125 NI/min.
Shaping air 1 and air 2 consumption (with respect to air shroud and bell being used)		From 100 to 600 NI/min.
Turbine rotation air consumption		From 100 to 700 NI/min. ⁽¹⁾
Safeguard air quantity		25 litres at 6 bar (90 psi)

(1): with respect to sprayed flow and rotation speed

Product supply		PPH707 MT-2K 3H
Standard product supply pressure		6 (90psi) to 8 bar (120psi)
Maximum product pressure		10 bar (150psi)
Paint flow (depending on paint type)		30 to 1000 cc/min. ⁽²⁾ maxi.
Viscosity scale (for minimum results)		20 to 40 seconds FORD #4 Cup
Paint resistivity (with coil)		> 3 MΩ.cm
Paint resistivity (without coil)		> 10 MΩ.cm

(2): with a product density < 1.1 gr/cm3 and/or of the combination bell and air shroud being used

Performances		HVT	
Rotation speed		15 to 85 000 rpm (upon diameter of bell cup used)	
Application speed		up to 1200 mm/sec	
Color change		Single pump group	Multi pump group
Paint loss per color - with coil		50 cm ³ + 17 cm ³ (loss of hardener)	8 cm ³ + 2 cm ³ (loss of hardener)
Paint loss per color - without coil		40 cm ³ + 7 cm ³ (loss of hardener)	18 cm ³ + 2 cm ³ (loss of hardener)
Process time - with coil		15 sec	7 sec
Process time - without coil		15 sec	7 sec
High Voltage		UHT 157	UHT 157i
Voltage maxi.		100 kV	60 kV
Current maxi.		200 µA	200 µA

ATEX marking:

PPH707 MT-2K 3H:

CE 0080 UK 2503
 II 2 G T6
 350 mJ < E < 2J
 INERIS 18ATEX0044X
 CML 21UKEX9795X

BSC300:

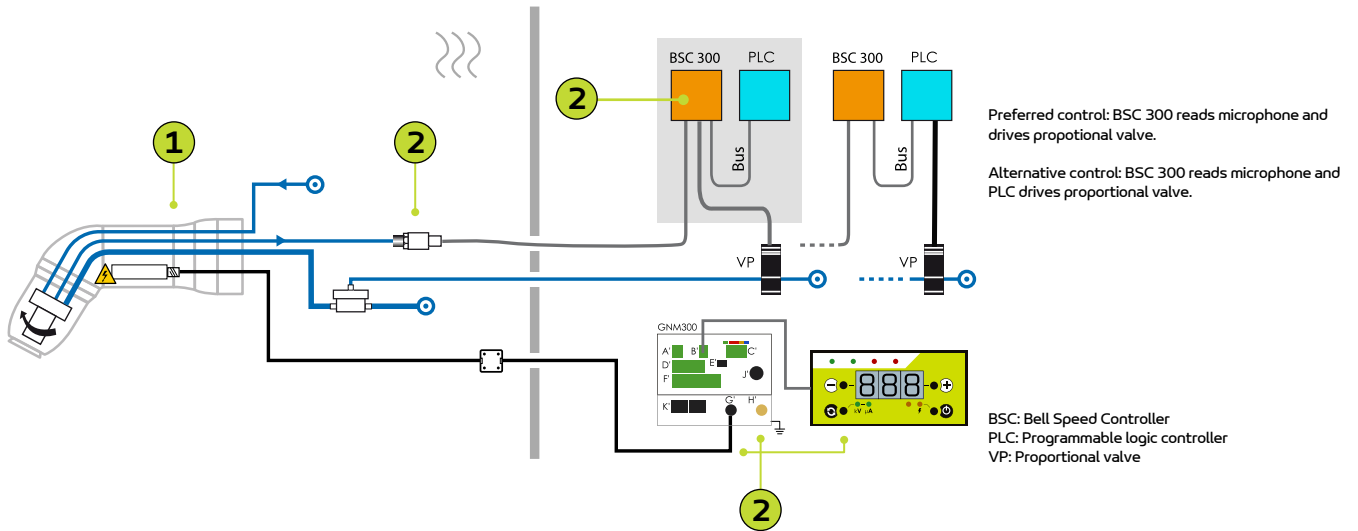
CE 0080 UK 2503
 II (2) GD [Ex ia Ga] IIC
 [Ex ia Da] IIIC
 INERIS 17ATEX0031X
 CML 21UKEX2794X

GNM300 ⁽³⁾

CE 0080 UK 2503
 II (2) G
 [350 mJ < E < 2J]
 INERIS 20ATEX0035X
 INERIS 19ATEX0009X
 INERIS 18ATEX0044X
 CML21UKEX9798X
 CML21UKEX9796X
 CML21UKEX9795X

(3): This control module allows piloting the HVU. It is an associated equipment that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.

Build your Atomizer



1 Mark 1

Atomizer	910020183
Elbow	910020180SAV
Microvalve type	1507375
Nanovalve type	1510004
High speed turbine	1525849
Rear support	910020175SAV
High Voltage Unit UHT 157	910002870
For UHT 157i use	

REFERENCE ATOMIZER PPH707 MT-2K 3H

	with Coil	with Coil & Bellow valves	without Coil	without Coil & with Bellow valves
Atomizer	910020183	910020185	910020182	910020184
Elbow	910020180SAV	910020181SAV	910020180SAV	910020181SAV
Microvalve type	1507375	1507375	1507375	1507375
Nanovalve type	1510004	1510004	1510004	1510004
High speed turbine	1525849	1525849	1525849	1525849
Rear support	910020175SAV	910020176SAV	910020173SAV	910020174SAV
High Voltage Unit UHT 157	910002870	910002870	910002870	910002870

add «INT» at the end of the atomizer reference. Ex. **910020183INT**

2 Mark 2

You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...

Description
System for electric kits

↓ ↓ ↓ ↓

see page 80

- Not included:
 - bell cup, air shroud and tools (refer to page 84)
 - Robot wrist adapters (contact Sames)

Robotic Bell Spray

PPH707 EXT

Robotic sprayer for waterbased paint with external electric charge

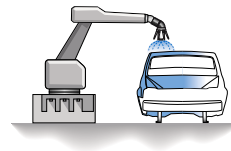


- > High finishing quality
- > High transfer efficiency
- > Easy to integrate

PPH707EXT external charge sprayer is dedicated to the application of waterbased materials. The performances of atomizer and components are the same than the PPH707 SB (dedicated to solvent paints); it is the benchmark in the area of automotive finishing with external charge thanks to its Hi-TE technology.

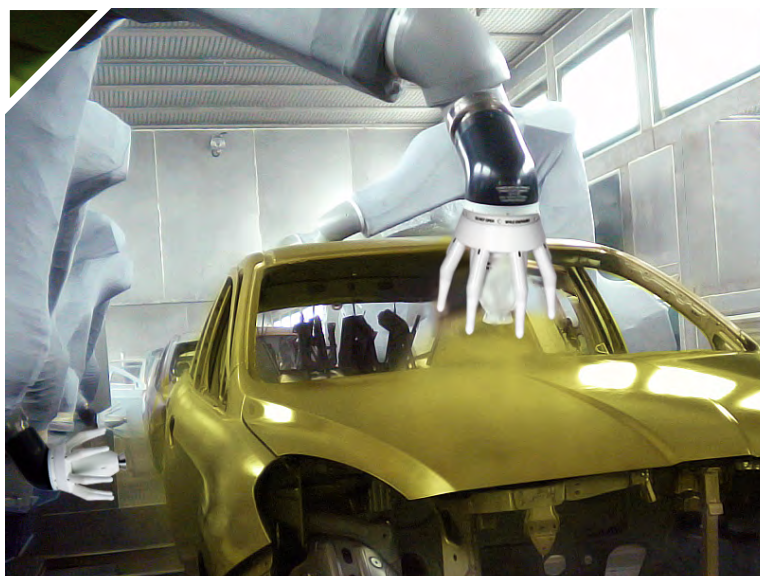
FIELD OF APPLICATION

Whichever the product, the operating modes may be:



Primer	•
Base	•
Clearcoat	-

PPH707 EXT can be built-in into any type of multi-axis robot.



a few kΩ.cm water based paint

7.7 kg



80 kV - 500 μA (HVU330)
65 kV - 350 μA (HVU330c)

up to 700 cc/min

Dual Shaping air

Magnetic Bellcup

up to 70 000 rpm



WWW

CUSTOMERS' BENEFITS

Performance

- High rotating speed whatever the paint flow for the finest atomizing
- High voltage unit gives the maximum electrostatic effect for highest transfer efficiency possible
- Hi-TE dual shaping air with patented mixing straight and vortex airs
- The dual circuit allows a very fast color change <10sec

Productivity

- The large range of bell cups EC50, EX65 and EX80 adapts to every layer to paint
- The lightweight design of PPH707 EXT is suitable to every painting robot
- Remote bell monitoring device avoid to spray without the bell cup

Productivity

- High reliability of every component for high production rate
- Titanium bellcup for longer life, high resistance to abrasion
- 7 years/30,000h warranty turbine
- Magnetic bellcup fastening system : the easiest system on the market



Robotic Bell Spray

Technical Data

Weight	PPH707 EXT
Spare atomizer, without cable or hose	7.7 kg

Pneumatic supply	PPH707 EXT
Nano-valve drive air pressure	8 bar mini (120psi) - 10 bar max. (150psi)
Magnetic turbine bearing air pressure	5 mini (75psi) - 7 bar max. (105psi) from 130 to 180 L/min
Shaping air pressure	6 bar (90psi) recommended on manifold
Micro air pressure	0.5 mini (7,5psi) at 1 bar maxi. (15psi) from 20 L/min to 40 L/min
Drive air consumption	10 NI/min.
Magnetic turbine bearing air consumption	125 NI/min.
Shaping air consumption (with respect to air shroud and bell being used)	From 100 to 600 NI/min.
Turbine rotation air consumption	From 100 to 700 NI/min. ⁽¹⁾
Safeguard air quantity	25 litres at 6 bar (90 psi)

(1): with respect to sprayed flow and rotation speed

Product supply	PPH707 EXT
Standard product supply pressure	6 (90psi) to 8 bar (120psi)
Maximum product pressure	10 bar (150psi)
Paint flow (depending on paint type)	30 to 700 cc/min. ⁽²⁾ maxi.
Viscosity scale (for minimum results)	20 to 40 seconds FORD #4 Cup

(2): with a product density < 1.1 gr/cm3 and/or of the combination bell and air shroud being used

Performances	HVT	
Rotation speed	15 to 70 000 rpm (upon diameter of bell cup used)	
Application speed	up to 900 mm/sec	
Color change	PPH707 EXT	
Paint consumption	25 cm ³ (paint circuit) & 25 cm ³ (pump circuit)	
Rinsing product consumption	300 cm ³ (not included rinsing box)	
Standard process time	10 sec (with REVERSE FLUSH)	
Optimized process time	5 sec (with REVERSE FLUSH on circuit 1 & 2)	
Same Color (head rinsing + bell cup)	PPH707 EXT	
Time	6 sec.	
Rinsing product consumption	50 cm ³	
High Voltage	HVU330	HVU330c
Voltage maxi.	80 kV	65 kV
Current maxi.	500 µA	350 µA

Marking:

PPH707 EXT

CE UK
CA
II 3 G T6 X
0.24 mJ < E < 350 mJ
Type B-L

BSC300

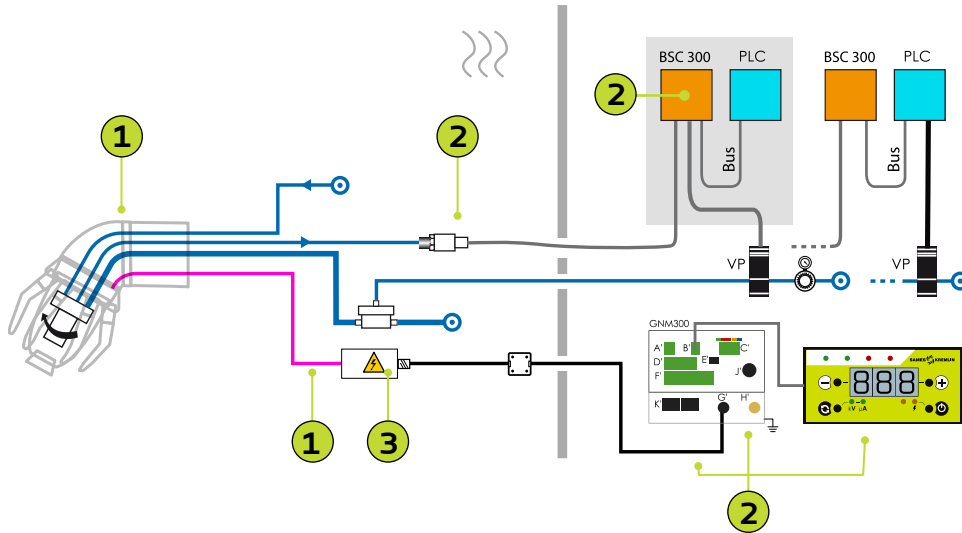
CE 0080 UK
CA²⁵⁰³
II (2) GD [Ex ia Ga] IIC
[Ex ia Da] IIIC
INERIS 17ATEX0031X
CML 21UKEX2794X

GNM300⁽³⁾

CE 0080 UK
CA²⁵⁰³
II (2) G
[350 mJ < E < 2J]
INERIS 20ATEX0035X
INERIS 19ATEX0009X
INERIS 18ATEX0044X
CML21UKEX9798X
CML21UKEX9796X
CML21UKEX9795X

(3): This control module allows piloting the HVU. It is an associated equipment that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.

Build your Atomizer



Preferred control: BSC 300 reads microphone and drives proportional valve.

Alternative control: BSC 300 reads microphone and PLC drives proportional valve.

BSC: Bell Speed Controller
 PLC: Programmable logic controller
 VP: Proportional valve

1 Mark 1		REFERENCE ATOMIZER PPH707 EXT
		with Microphone
Atomizer		910030745
Body		910030929
8-finger electrode set		910030878
complete body with turbine		910008734SAV
High Voltage connection		910008742
2 Mark 2		see page 80
<p>You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...</p>		
Description		
System for electric kits		
3 Mark 3		
Description		
High voltage unit UHT 330		910007139
High voltage unit UHT 330c		910030615

• Not included:

- Bell and Air Shroud ((refer to page 85)
- Robot wrist adapters (contact Sames)

Robotic Bell Spray

PPH707 EXT-MT

Robotic rotary bell atomizer with external charge electrodes & multi-trigger technology for water-based materials



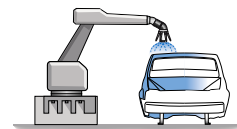
- > High finishing quality
- > High transfer efficiency
- > Easy to integrate

PPH707 EXT-MT external charge sprayer is dedicated to the application of waterborne materials.

The performances of atomizer and components are the same as the PPH707 SB (dedicated to solvent paints); it is the benchmark in automotive finishing with external charge thanks to its **Hi-TE technology**. This version of the PPH707 EXT-MT features **Multi-Trigger technology**, which integrates a color change block in the body of the atomizer. This color change block allows for 1 super-high runner and 5 high runners, saving paint on color changes.

FIELD OF APPLICATION

Whichever the product, the operating modes may be:



Exterior

Primer	•
Base	•
Clearcoat	-

PPH707 EXT-MT can be built-in into any type of multi-axis robot.



a few kΩ.cm water based paint

10.2 kg



80 kV - 500 μA (HVU330)
65 kV - 350 μA (HVU330c)

up to 700 cc/min

Dual Shaping air

Magnetic Bellcup

up to 70 000 rpm



PPH707 EXT-MT

CUSTOMERS' BENEFITS

High Performance

- High rotating speed
- High voltage unit
- Hi-TE dual shaping air
- Dual circuit for fast color change

Productivity

- Easy integrate waterborne process
- Wide or narrow pattern
- Bell/Bell quality
- Remote bell monitoring device
- Light weight for any painting robots

Sustainability

- Long life HVU (High Voltage Unit)
- 7 years/30 000h. warranty* turbine
- Titanium bellcup for longer life
- 2.5 million cycles life of valves
- High reliability for Automotive applications

* Whichever is the sooner

Easy to Maintain

- Magnetic bellcup fastening system
- Quick disconnect
- Easy access to valves & fittings
- Specific body design preventing & dust or droplet
- No calibration tool required



Robotic Bell Spray

Technical Data

Weight	PPH707 EXT-MT
Spare atomizer, without cable or hose	10.2 kg

Pneumatic supply	PPH707 EXT-MT
Nano-valve drive air pressure	8 bar mini (120psi) - 10 bar max. (150psi)
Magnetic turbine bearing air pressure	5 mini (75psi) - 7 bar max. (105psi) from 130 to 180 L/min
Shaping air pressure	6 bar (90psi) recommended on mani-fold
Micro air pressure	0.5 mini (7,5psi) at 1 bar maxi. (15psi) from 20 L/min to 40 L/min
Drive air consumption	10 NI/min.
Magnetic turbine bearing air consumption	125 NI/min.
Shaping air consumption (with respect to air shroud and bell being used)	From 100 to 600 NI/min.
Turbine rotation air consumption	From 100 to 700 NI/min. ⁽¹⁾
Safeguard air quantity	25 litres at 6 bar (90 psi)

(1): with respect to sprayed flow and rotation speed

Product supply	PPH707 EXT-MT
Standard product supply pressure	6 (90psi) to 8 bar (120psi)
Maximum product pressure	10 bar (150psi)
Paint flow (depending on paint type)	30 to 700 cc/min. ⁽²⁾ maxi.
Viscosity scale (for minimum results)	20 to 40 seconds FORD #4 Cup

(2): with a product density < 1.1 gr/cm3 and/or of the combination bell and air shroud being used

Performances	HVT	
Rotation speed	15 to 70 000 rpm (upon diameter of bell cup used)	
Application speed	up to 900 mm/sec	
Color change	PPH707 EXT-MT	
Paint loss per color – high runners	4 cm3	
Rinsing product consumption	94 cm3 (atomizer only, not included rinsing box)	
Standard process time	5.6 sec	
High Voltage	HVU330	HVU330c
Voltage maxi.	80 kV	65 kV
Current maxi.	500 µA	350 µA

Marking:

PPH707 EXT-MT

CE UK
CA
II 3 G T6 X
0.24 mJ < E < 350 mJ
Type B-L

BSC300:

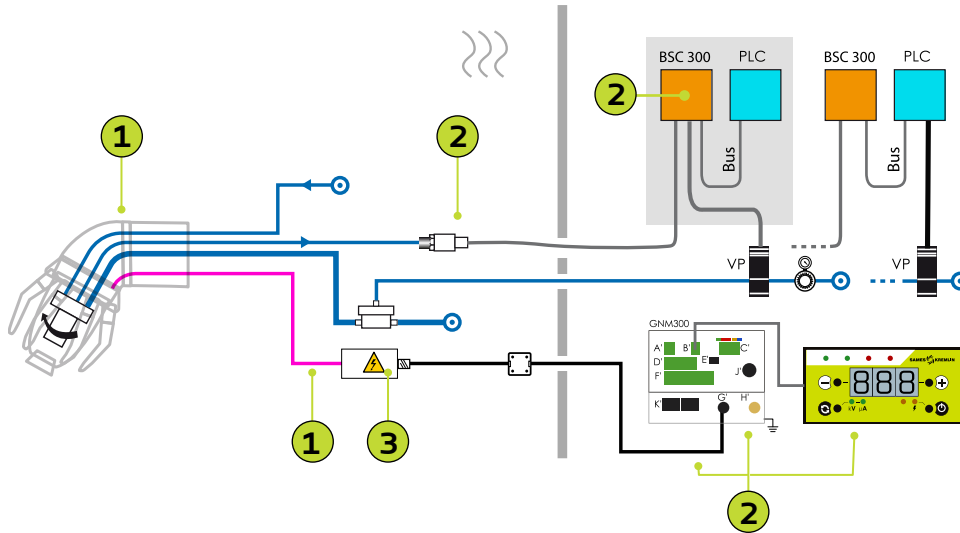
CE 0080 UK
CA²⁵⁰³
II (2) GD [Ex ia Ga] IIC
[Ex ia Da] IIIC
INERIS 17ATEX0031X
CML 21UKEX2794X

GNM300⁽³⁾

CE 0080 UK
CA²⁵⁰³
II (2) G
[350 mJ < E < 2J]
INERIS 20ATEX0035X
INERIS 19ATEX0009X
INERIS 18ATEX0044X
CML21UKEX9798X
CML21UKEX9796X
CML21UKEX9795X

(3): This control module allows piloting the HVU. It is an associated equipment that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.

Build your Atomizer



Preferred control: BSC 300 reads microphone and drives proportional valve.

Alternative control: BSC 300 reads microphone and PLC drives proportional valve.

BSC: Bell Speed Controller
 PLC: Programmable logic controller
 VP: Proportional valve

1	Mark 1	REFERENCE ATOMIZER PPH707 EXT-MT
		with Microphone
	Atomizer	910030393
	Body	910030394
	8-finger electrode set	910030878
	High Voltage connection	910008742

2	Mark 2	
	<i>You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...</i>	
	Description	
	System for electric kits	see page 80

3	Mark 3	
	Description	
	High voltage unit UHT 330	910007139
	High voltage unit UHT 330c	910030615

- Not included:
 - Bell and Air Shroud (see page 85)
 - Robot wrist adapters (contact Sames)

PPH707 EXTi

Fingerless external charge electrostatic rotary bell atomizer.



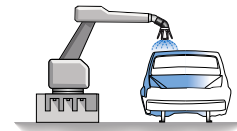
- > Outstanding productivity
- > Highly performing by nature
- > Eco-friendly solution at low investment cost

PPH707 EXTi is designed to access complex shape parts, as interior cut-ins of vehicles or plastic bumpers, and to paint waterborne material continuously.

PPH707 EXTi improves productivity in allowing continuous waterborne application without refill time between jobs as for canister system and without paint volume limitation as for insulated paint system.

PPH707 EXTi brings a solution environmentally friendly by the use of water-borne materials which are better for the environment than solvent-borne. In addition, the investment cost is drastically reduced because the system is less expensive than any other internal charge waterborne solutions such as canister or insulated paint system.

FINGERLESS EXTERNAL CHARGE FOR AUTOMOTIVE INTERIOR CUT-INS AND PLASTIC PARTS



Whichever the product, the operating modes may be:

Primer	•
Base	•
Clearcoat	-

PPH707 EXTi can be built-in into any type of multi-axis robot.



- a few kΩ.cm water based paint
- 7.6 kg
- Dual Shaping air
- Magnetic Bellcup
- 75 kV - 400 μA (HVU330)
- up to 600 cc/min
- up to 70 000 rpm



CUSTOMERS' BENEFITS

Performance

- **1** - Fingerless conception combined with compact design to access complex shape parts, as interior cut-ins of vehicles or plastic bumpers
- **2** - Renowned range of high-speed magnetic bell cups (EC43, EC50 & EX65) for uniform atomization
- **3** - High Velocity Turbine for high rotation speed allowing fine atomization
- **4** - 16 electrodes arranged around the charge ring to charge properly the droplets

Sustainability

- **4** - Charge ring in non-conductive PTFE material for 8 hours without manual cleaning
- **5** - Patented air blow ring to protect the charge ring from contamination
- No more paint volume limitation for waterborne application in comparison to insulated systems
- Continuous waterborne application for outstanding productivity

Productivity

- **6** - Electrodes edges are equipped with large pins to make the cleaning easier and safer for operators
- **7** - Easy operation and maintenance thanks to many common parts between EXT and EXTi
- **8** - Most robust turbine on the market providing the longest warranty: 7 years/30 000 hours
- Eco-friendly solution by the use of water-borne materials which are better for the environment than solvent-borne



Robotic Bell Spray

Technical Data

Weight	PPH707 EXTi
Spare atomizer, without cable or hose	7.6 kg

Pneumatic supply	PPH707 EXTi
Nano-valve drive air pressure	8 bar mini (120psi) - 10 bar max. (150psi)
Magnetic turbine bearing air pressure	5 mini (75psi) - 7 bar max. (105psi) from 130 to 180 L/min
Shaping air pressure	6 bar (90psi) recommended on manifold
Micro air pressure	0.5 mini (7,5psi) at 1 bar maxi. (15psi) from 20 L/min to 40 L/min
Drive air consumption	10 NI/min.
Magnetic turbine bearing air consumption	125 NI/min.
Shaping air consumption (with respect to air shroud and bell being used)	From 100 to 600 NI/min.
Turbine rotation air consumption	From 100 to 700 NI/min. ⁽¹⁾
Safeguard air quantity	25 litres at 6 bar (90 psi)

(1): with respect to sprayed flow and rotation speed

Product supply	PPH707 EXTi
Standard product supply pressure	6 (90psi) to 8 bar (120psi)
Maximum product pressure	10 bar (150psi)
Paint flow (depending on paint type)	30 to 600 cc/min. ⁽²⁾ maxi.
Viscosity scale (for minimum results)	20 to 40 seconds FORD #4 Cup

(2): with a product density < 1.1 gr/cm3 and/or of the combination bell and air shroud being used

Performances	HVT	
Rotation speed	15 to 70 000 rpm (upon diameter of bell cup used)	
Application speed	up to 900 mm/sec	
High Voltage	HVU330i	HVU330c
Voltage maxi.	75 kV	65 kV
Current maxi.	400 µA	350 µA

Marking:

PPH707 EXTi

CE UK
CA
II 3 G T6 X
0.24 mJ < E < 350 mJ
Type B-L

BSC300:

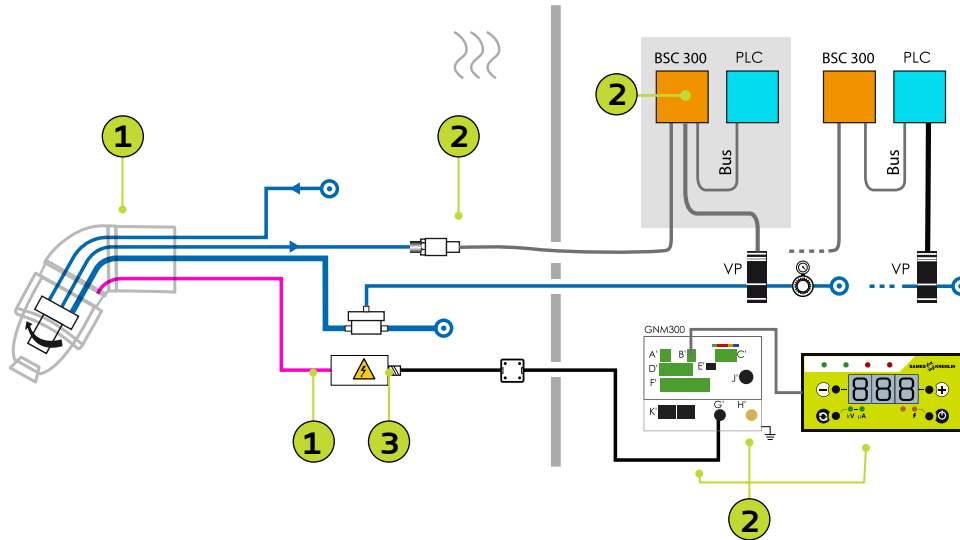
CE 0080 UK
CA 2503
II (2) GD [Ex ia Ga] IIC
[Ex ia Da] IIIC
INERIS 17ATEX0031X
CML 21UKEX2794X

GNM300⁽³⁾

CE 0080 UK
CA 2503
II (2) G
[350 mJ < E < 2J]
INERIS 20ATEX0035X
INERIS 19ATEX0009X
INERIS 18ATEX0044X
CML21UKEX9798X
CML21UKEX9796X
CML21UKEX9795X

(3): This control module allows piloting the HVU. It is an associated equipment that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.

Build your Atomizer



Preferred control: BSC 300 reads microphone and drives propotional valve.

Alternative control: BSC 300 reads microphone and PLC drives proportional valve.

BSC: Bell Speed Controller
PLC: Programmable logic controller
VP: Proportional valve

1	Mark 1	REFERENCE ATOMIZER PPH707 EXT I with Microphone
	Atomizer	910033322
	Rear support	910030145
	8-finger electrode set	910031933
	complete body with turbine	910030147SAV
	High Voltage connection	910008742
		↓
2	Mark 2	
	<i>You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...</i>	
	Description	
	System for electric kits	see page 80
3	Mark 3	
	Description	
	High voltage unit UHT 330i	910030104

• Not included:

- Bell and Air Shroud ((refer to page 85)
- Robot wrist adapters (contact Sames)

Robotic Bell Spray

Accubell 709 Evo

Robotic sprayer for water based paint with internal electric charge



- > Compact atomizer for all application
- > Fast color change
- > Low paint loss

Accubell® 709 Evo can be built-in into any type of multi-axis robot.

- a few kΩ.cm waterbased
- full robot compatibility
- up to 1 m/sec.
- 15 kg
- up to 1000 cc/min
- Dual Shaping air
- Magnetic Bellcup
- Up to 90 kV
- Up to 85 000 rpm
- Paint flow accuracy +/- 1cc/min
- Color change 0-13cc loss 12 sec.

Accubell® system is improving again performances and efficiency to a class-leading level for **water based paint** application with **internal charge**.

Accubell® 709 Evo is a compact internal charge bell atomizer with a docking station fixed on the booth wall. Compared to previous generation of Accubell® system, this atomizer still includes an insulated paint reservoir that allows:

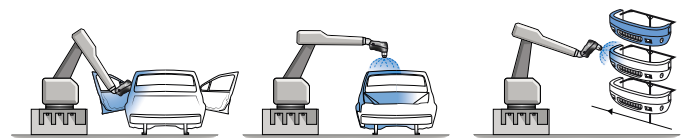
- loading the exact necessary paint quantity,
- applying the high voltage to the paint in the best efficiency technology internal charge,
- controlling with highest accuracy the paint flow rate
- freeing the robot arm from paint hoses.

During the gap between parts, the atomizer is connected to a filling station called «Docking» to transfer the necessary amount of paint for the next part or batch:

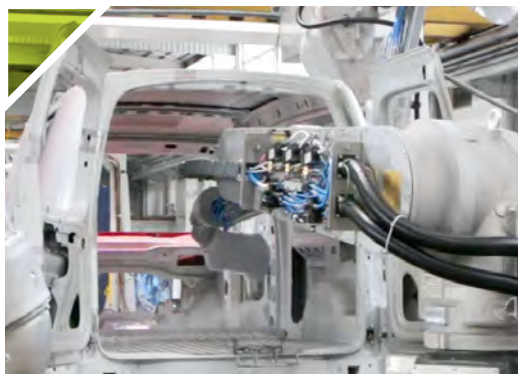
- Infinite choice of colours,
- Fast color change,
- Only one 800cm³ reservoir,
- Maintenance outside the booth
- No risk for paint during transfer

FIELD OF APPLICATION

Whichever the product, the operating modes may be:



Primer	•	•	•
Base	•	•	•
Clearcoat	-	-	-



WWW

Accubell 709 Evo

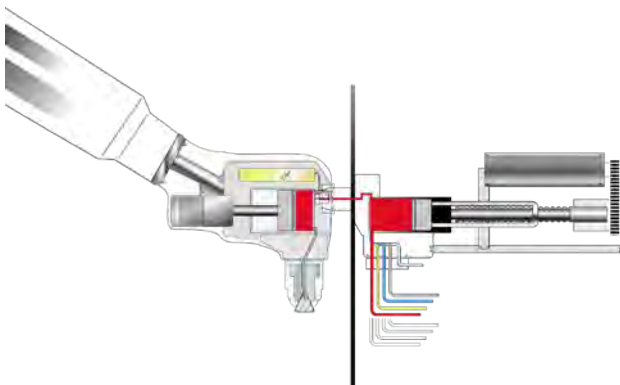
CUSTOMERS' BENEFITS

Fast color change

- During Evo painting, next color is filling the transfer tank

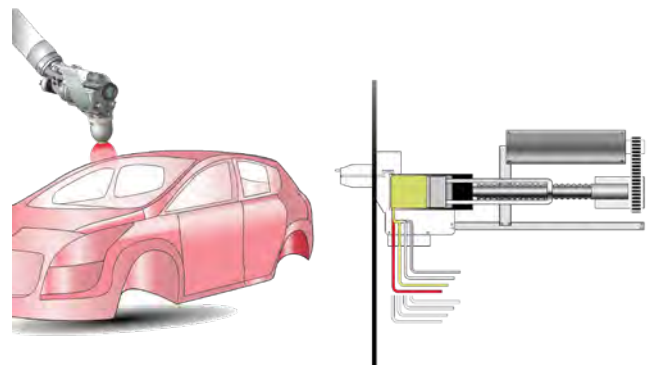
First phase:

a transfer tank, located in the docking station, fast fills with the exact amount of paint, into the tank of the atomizer



Second phase:

The atomizer sprays, while the transfer tank is preparing the next colour



- Transfer filling station: compatible with every existing paint circulating supply
- Color change block outside the booth
- 12 sec. color change
- Minimum paint loss:
 - 0cc for same color
 - 13cc for different color
- High accurate paint flow rate +/- 1cc/min equals -2% consumption vs gear pump.

Accubell 709 Evo is a compact internal charge bell with a docking station fixed on the booth wall.



Flexibility

This solution improves waterborne applications:

- Compact design for every type of application
- The internal charge atomizer gives a strong pattern, compatible with any tip speed, up to 1,000 mm/s
- Available Gun version (cf PPH MS-GUN)

- Available 2K version (contact Sames)
- The internal charge bell repels the overspray, dramatically reducing contamination and the cleaning down time
- Double circuit for additional SB paint

Robotic Bell Spray

Technical Data

Weight	Accubell 709 Evo
Spare atomizer, without cable or hose	14 kg

Pneumatic supply	Accubell 709 Evo
Nano-valve drive air pressure	8 bar mini (120psi) - 10 bar max. (150psi)
Magnetic turbine bearing air pressure	5 mini (75psi) - 7 bar max. (105psi) from 130 to 180 L/min
Shaping air pressure	6 bar (90psi) recommended on manifold
Micro air pressure	0.5 mini (7,5psi) at 1 bar maxi. (15psi) from 20 L/min to 40 L/min
Drive air consumption	10 NI/min.
Magnetic turbine bearing air consumption	125 NI/min.
Shaping air consumption (with respect to air shroud and bell being used)	From 200 to 850 NI/min.
Turbine rotation air consumption	From 100 to 700 NI/min. ⁽¹⁾
Safeguard air quantity	25 litres at 6 bar (90 psi)

(1): with respect to sprayed flow and rotation speed

Product supply	Accubell 709 Evo
Standard product supply pressure	6 (90psi) to 8 bar (120psi)
Maximum product pressure	10 bar (150psi)
Paint flow (depending on paint type)	50 to 1000 cc/min. ⁽²⁾ maxi.
Viscosity scale (for minimum results)	20 - 250 mpa/s.

(2): with a product density < 1.1 gr/cm3 and/or of the combination bell and air shroud being used

Performances	HVT
Rotation speed	15 to 85 000 rpm (upon diameter of bell cup used)
Application speed	up to 1000 mm/sec

Color change (head rinsing + bellcup)	Accubell 709 Evo
Paint consumption	12 cm ³
Rinsing product consumption ⁽³⁾	250 - 350 cm ³
Color change time	9.5 sec. + 1 sec. for 166 cm ³
Total colorchange time	14.5 sec. for 800 cm ³ filled

Refilling paint tank	Accubell 709 Evo
Paint loss	0 cc
time	< 10 sec.

High Voltage	UHT 157w	UHT 157i
Voltage maxi.	90 kV	60 kV
Current maxi.	200 µA	200 µA

(3): standard cleaning cycle, depending on paint properties & solvent efficiency

ATEX marking:

Accubell 709 Evo

CE 0080
II 2 G T6
350 mJ < E < 2J
INERIS 19ATEX0009X

BSC300

CE 0080 UK 2503
II (2) GD [Ex ia Ga] IIC
[Ex ia Da] IIC
INERIS 17ATEX0031X
CML 21UKEX2794X

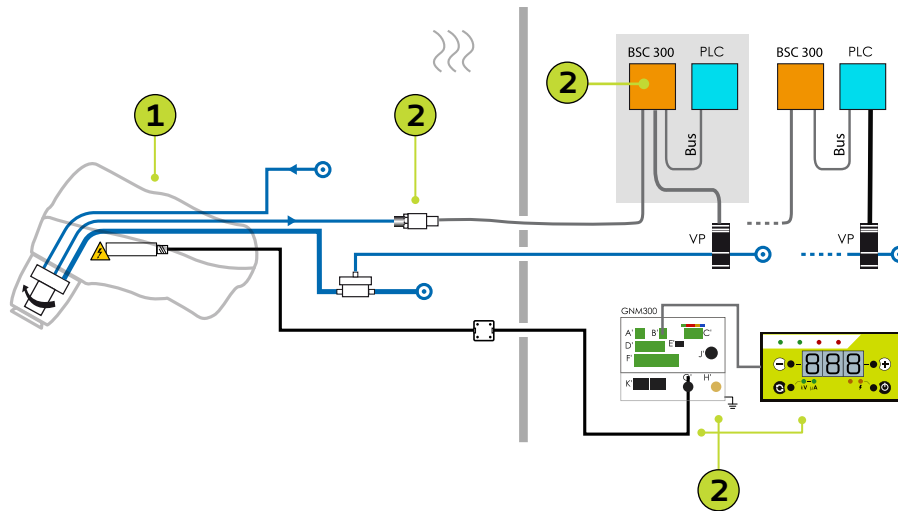
GNM300⁽⁴⁾

CE 0080 UK 2503
II (2) G
[350 mJ < E < 2J]
INERIS 20ATEX0035X
INERIS 19ATEX0009X
INERIS 18ATEX0044X
CML21UKEX9798X
CML21UKEX9796X
CML21UKEX9795X

(4): This control module allows piloting the UHT 157w and UHT 157i. It is a device that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.



Build your Atomizer



Preferred control: BSC 300 reads microphone and drives proportional valve.

Alternative control: BSC 300 reads microphone and PLC drives proportional valve.

BSC: Bell Speed Controller
PLC: Programmable logic controller
VP: Proportional valve

1 Mark 1

Atomizer
Head assembly
Elbow
Wrist - Quick disconnect
Microvalve type
Nanovalve type
Motor
High speed turbine
High Voltage Unit UHT 157 / UHT 157i

REFERENCE ATOMIZER Accubell 709 Evo	
with Microphone	with Fiber Optic
910010908*	910010908FO*
910010900SAV	910010900FOSAV
910010901SAV	910010901SAV
910010899SAV	910010899SAV
1507375	1507375
1510004	1510004
1523259-080	1523259-080
1525849	1525849
910011910 / 910016744	910011910 / 910016744

2 Mark 2

You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...

Description
System for electric kits

see page 80

*: with UHT 157i, add «INT» on the reference number
(exemple: 910004013INT for PPH707-SB with UHT 157i or 910004013FO becomes 910004013INTFO)

- Not included:
- bell cup, air shroud and tools (refer to page 84)
- Robot wrist adapters (contact Sames)

Robotic Bell Spray

PPH707 Airspray

Non Electrostatic Robotic rotary bell atomizer



- > High performance bell atomizer
- > High reliability for Automotive paintshop
- > Easy to maintain

PPH707 Airspray is dedicated to the application of waterborne materials without electrostatic effect.

The high level of atomization of PPH707 Airspray is same as the PPH707 Airspray (Electrostatic internal charge); it is the benchmark in automotive finishing thanks to its **Hi-TE technology**. This version of the PPH707 Airspray features same bell cup and air shroud, same high speed turbine, and same robust fittings and valves.

Four versions are available depending on your needs:

- PPH707 Airspray = mono material paint
- PPH707 Airspray 2K = 2 components paint
- PPH707 Airspray Compact = standard body (same dimension as PPH707 Airspray)
- PPH707 Airspray 2K Compact = Compact body (for interior cut-in application).

FIELD OF APPLICATION

All applications, All layers



PPH707 Airspray Compact

- Waterborne materials
- 5.75 - 6.35 kg
- Dual Shaping air
- Magnetic Bellcup
- up to 85 000 rpm

PPH707 Airspray

CUSTOMERS' BENEFITS

Performance

- High rotating speed
- Hi-TE dual shaping air
- Dual circuit for fast color change

Productivity

- Easy to set complex trajectories
- Large range of bell cups
- Lightweight for any painting robot
- Remote bell monitoring device

Sustainability

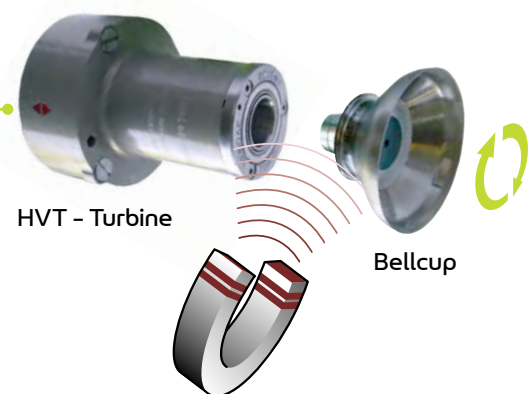
- High reliability for Automotive applications
- 2.5 million cycle valve life
- Titanium bell cup for longer life
- 7 years/30 000h. turbine warranty*

* Whichever is the sooner



Easy to Maintain

- Magnetic bell cup fastening system
- Quick disconnect
- Easy access to valves & fittings
- Body designed to prevent dust & droplets
- No calibration tool required



Robotic Bell Spray

Technical Data

Weight	PPH707 Airspray 6 & Airspray 2K	PPH707 Airspray C & Airspray 2K C
Spare atomizer, without cable or hose	6.35 kg	5.75 kg
c: compact sprayer		
Pneumatic supply	PPH707 Airspray	
Nano-valve drive air pressure	8 bar mini (120psi) - 10 bar max. (150psi)	
Magnetic turbine bearing air pressure	5 mini (75psi) - 7 bar max. (105psi) from 130 to 180 L/min	
Shaping air pressure	6 bar (90psi) recommended on manifold	
Micro air pressure	0.5 mini (7,5psi) at 1 bar maxi. (15psi) from 20 L/min to 40 L/min	
Drive air consumption	10 NI/min.	
Magnetic turbine bearing air consumption	125 NI/min.	
Shaping air 1 and air 2 consumption (with respect to air shroud and bell being used)	From 100 to 600 NI/min.	
Turbine rotation air consumption	From 100 to 700 NI/min. ⁽¹⁾	
Safeguard air quantity	25 litres at 6 bar (90 psi)	
<i>(1): with respect to sprayed flow and rotation speed</i>		
Product supply	PPH707 Airspray all versions	
Standard product supply pressure	6 (90psi) to 8 bar (120psi)	
Maximum product pressure	10 bar (150psi)	
Paint flow (depending on paint type)	30 to 700 cc/min. ⁽²⁾ maxi.	
Viscosity scale (for minimum results)	20 to 40 seconds FORD #4 Cup	
<i>(2): with a product density < 1.1 gr/cm3 and/or of the combination bell and air shroud being used</i>		
Performances	HVT	
Rotation speed	15 to 70 000 rpm (upon diameter of bell cup used)	
Application speed	up to 900 mm/sec	
Color change	PPH707 Airspray all versions	
Paint loss per color - high runners	25 cm ³	
Rinsing product consumption	300 cm ³ (atomizer only, not included rinsing box)	
Standard process time	12 sec	
Optimized process time	5 sec (with REVERSE FLUSH on circuit 1 & 2)	
High Voltage	No high voltage	

ATEX marking:

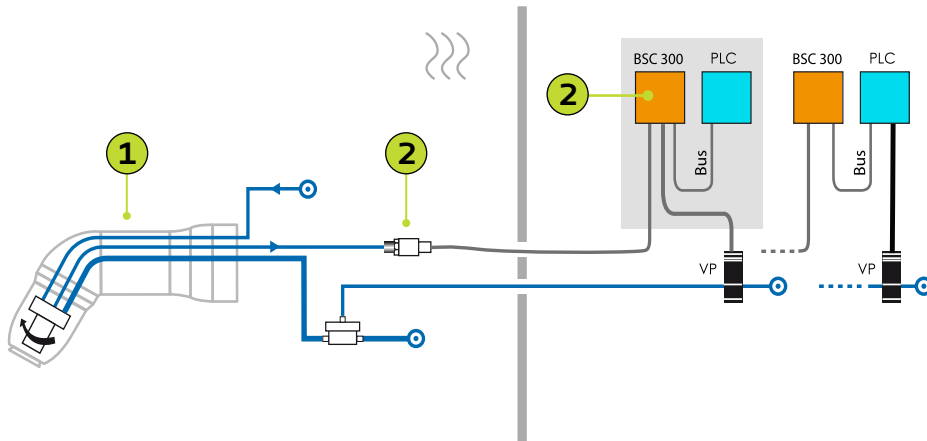
PPH707 Airspray

CE UK CA Ex II 2 G Ex h IIA T6 Gb

BSC300

CE 0080 UK CA 2503
 Ex II (2) GD [Ex ia Ga] IIC
 [Ex ia Da] IIIC
 INERIS 17ATEX0031X
 CML 21UKEX2794X

Build your Atomizer



Preferred control: BSC 300 reads microphone and drives proportional valve.

Alternative control: BSC 300 reads microphone and PLC drives proportional valve.

BSC: Bell Speed Controller
PLC: Programmable logic controller
VP: Proportional valve

1 Mark 1

	REFERENCE ATOMIZER			
	PPH707 Airspray with Microphone	PPH707 Airspray 2k with Microphone	PPH707 Airspray C with Microphone	PPH707 Airspray 2K C with Microphone
Atomizer	910005906	910023059	910019975	910023060
Body	910004455SAV	910005570SAV	910004455SAV	910005570SAV
Microvalve type	1507375	910010850	1507375	910010850
Nanovalue type	1510004	1510004	1510004	1510004
High speed turbine	1525849	1525849	1525849	1525849

2 Mark 2

You can define the type of control module to control the high voltage, the junction blocks, the control of the rotation speed, etc...

Description	
System for electric kits	see page 80

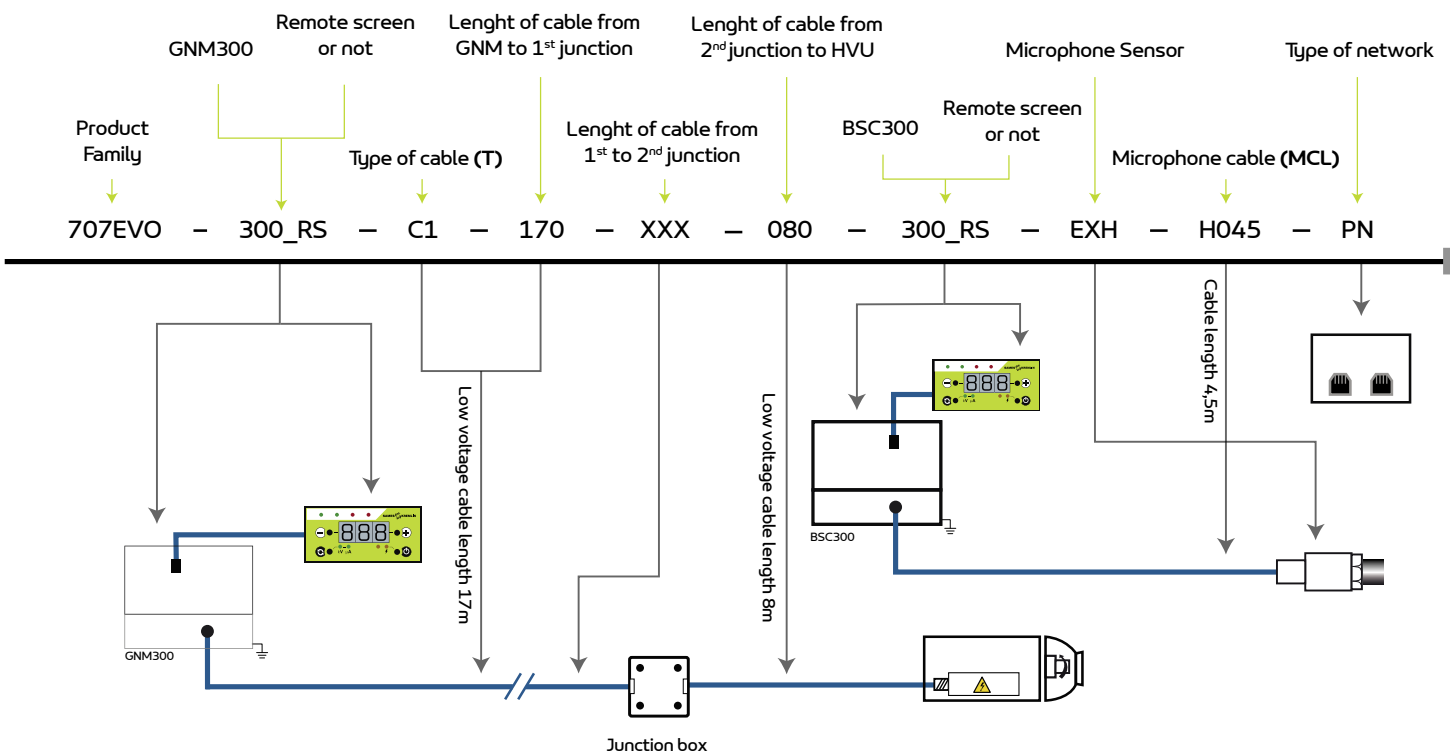
- Not included:
 - bell cup, air shroud and tools (refer to page 84)
 - Robot wrist adapters (contact Sames)

Electrical kits

HOW TO ORDER ELECTRICAL KITS ?

There is no need to list numerous part numbers "9100xxxxx", you can now use this new reference system.

DESCRIPTIVE DIAGRAM BETWEEN THE ELECTRICAL WIRING AND THE REFERENCE CRITERIA



EXAMPLE OF PART NUMBER:

P/N = KIT ELEC-707EVO-300_RS-C1-170-XXX-080-300_RS-EXH-H045-PN

is an electrical kit for PPH707 SB, PPH707 MT, ACCUBELL 709 EVO (...) equipped with UHT157 or UHT157W, with GNM300 + remote screen + Profinet board, 17m of low voltage from GNM300 to junction box + 8m of low voltage cable from junction box to high voltage unit, with BSC300 + remote screen + Profinet board, with microphone sensor + high flexible cable of 4.5m.

ELECTRICAL KITS REFERENCE SYSTEM

	SPRAYER	HIGH VOLTAGE					SPEED REGULATION			NETWORK	
	KIT ELEC - SPRAYER	GNM	T	CGJ	CJJ	CJH	BSC	TMI	MCL	NET	
	KIT ELEC - 707EVO	300_RS	C1	170	XXX	080	300_RS	EXH	H045	PN	
SPRAYER	PLEASE CONFIGURE YOUR CONTROL SET ->										
	PRODUCT FAMILY Electric Kit for bell sprayer	KIT ELEC									TYPE OF NETWORK
	SPRAYER BY TYPE OF HVU	707EVO									PN Profinet IP Ethernet/IP CC CC-link PB Profibus EC Ethercat XX No network
	PPH707 SB, PPH707 MT, ACCUBELL 709 EVO (...) with UHT157, UHT157W	707EVO_I									
	PPH707 SB, PPH707 MT, ACCUBELL 709 EVO (...) with UHT157I										MICROPHONE CABLE ⁽³⁾
	PPH707 EXT with UHT330 & UHT330c, PPH707 EXTI for UHT330I										
	PPH707 ICWB & PPH 308 WB for UHT288	OTHER									H010 High flexible 1m H020 High flexible 2m H045 High flexible 4,5m H200 High flexible 20m xxx No cable
	PPH 308 SB HR for UHT155										
	NANOCELL 2 for UHT158 & UHT287										TYPE OF MICROPHONE
	TRP501 & TRP502 for UHT152, UHT156, UHT180, UHT188										
	PPH707 AIRSPRAY, NANOCELL 801	PPH_									BELL SPEED CONTROLLER TYPE
		WOHV									
HIGH VOLTAGE	GNM MODEL	GNM300	GNM300								EXH Exhaust microphone XXX No microphone
	GNM300 with Remote Screen	300_RS									
	No GNM	XXX									
	TYPE OF CABLE	BW									BSC300 BSC300 module 300_RS BSC300 module with remote screen XXX No BSC
	Bare wires for Junction Box	C1									
	Connectors on both sides	XX									
	No cable										
	CABLE GNM - FIRST JUNCTION ⁽¹⁾	6	060								
		7	070								
		12	120								
	17	170									
	18	180									
	20 ⁽²⁾	200									
	22	200									
	No cable	XXX									
CABLE FIRST JUNCTION - SECOND JUNCTION	5,2m	052									
	6m	060									
	1.2m	120									
	1.8m	180									
	Only 1 junction	XXX									
CABLE SECOND JUNCTION - HIGH VOLTAGE UNIT ⁽¹⁾	1	010									
	1,5	015									
	2,5	025									
	3	030									
	4	040									
	4,8	048									
	8	080									
	Direct to GNM ⁽²⁾	XXX									

(1) Total length of cable GNM to HVU must be under 30m
 (2) 20m cable connects directly GNM to HVU
 (3) Total length of microphone cable must be under 50m

Bell Process

Range of bells & Air shrouds

For 40 years, Sames is focusing the design of bell cup and air shrouds on Finishing performances: improving atomization, pattern control and transfer efficiency. Being the latest part in contact with paint, the Bell cup is the key of your finishing performances.

The interior shape of these cups have been carefully validated for each paint layer, and Sames equipments are used with every paint supplier in the world. Our Paint lab are available to validate your complete paint process with our latest equipments.

RANGE

The use of air shrouds and bell cup depend on the sprayer you choose and are compatible with:

- The sprayers of the **RANGE #7** with a HVT turbine is used and the **RANGE #8** with a new T8 turbine is used

- | | |
|----------|-------------|
| EC35 NW | EX65 NW |
| EC43 NW | EX80 BSW |
| EC50 NW | |
| EC50 PSW | EX65 NW EXT |
| EC50 CSW | |



FIELD OF APPLICATION

Five different diameters are available: ø35, 43, 50, 65 and 80 mm enabling to reach the target application result. Sprayer bells are easily swaped thanks to a simple tool.

The "EX" shape, for Exponential, will be used on large parts or parts requiring an exceptional finishing. Each bell is thus combined to an air shroud with Vortex effect.

«EC» range distinguishes itself by a tulip-shape bell;

EC35 & EC43 perfectly meets the application requirements of car body interiors (cut-ins...).

In Tier 1, this small diameter, enables a thorough penetration of recesses as the spray pattern is narrowed; for primer, base or clear application.

EC50 is ideal for the car body exteriors in primer, base in 1st coat and clear. In Tier 1, it meets the requirements in primer, base and clear.

EX65 works well for bumper, in particular to base coats and more precisely to an improved colour- match with Bell/Bell process. Combined to External charge PPH707 EXT or PPH707 EXTi, this bell suits to basecoat exterior carbody application.

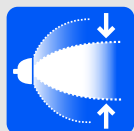
EX80 is exclusively dedicated to exterior car bodies, in particular to base coats and more precisely to an improved colour- match with Bell/Bell process. for Tier 1, EX80 is the preferred tool for larger parts with the highest flow rates.



Uniform & stable pattern for the whole variation range of paint spraying



Highest transfer efficiency reduction by more than 30% of product losses



Variable patterns during spraying process, while guarantying the sturdiness of the pattern range with swift transitions



Working more quickly up to 1m/sec



The insurance of the best finishing quality, color-match index IV, the highest



NW: Narrow Wide, PSW: Primer Super Wide, CSW: Clearcoat Super Wide, EXT: for External electric charge with fingers; EXTi: for fingerless external electric charge

Range of bells & air shrouds

CUSTOMERS' BENEFITS

Performances:

- Technology of mixing straight and vortex airs
- Two technologies of air-shroud:
NW for flexible pattern from 100 to 300mm;
SW for super wide pattern 400-500mm
- Less shaping air consumption compared to competition
- All paints: High solid solvent or waterborne paint, 1K or 2K
- All applications: Primer, Base, Clear
- High voltage gives benefits for transfer efficiency and quality: homogeneous spray, wrap around effect, stable application.

Easy to use:

- Unique design of magnetic bell cup
- Smooth surface easy to clean
- Automatic bell cleaning machine available

Application:



Widened front profile of the bell, optimized for a better atomization.



EX65

Narrow front face, reducing pollution while spraying.



EC50

Bell Process

Choose your bell

RANGE #7 BELL CUP SYSTEM

Atomizer equipped with INTERNAL CHARGE

Description	Bell Material	Reference
EC35 NW	1 - system	910020612
	2 - Shaping air	910020606
	3 - Bell cup	Aluminium 910000636
	1 - system	910020613
	2 - Shaping air	910020606
	3 - Bell cup	Titanium 910011188
EC50 NW	1 - system	910020610
	2 - Shaping air	910020605
	3 - Bell cup	Aluminium 910003159
	1 - system	910020611
	2 - Shaping air	910020605
	3 - Bell cup	Titanium 910008756
EC50 PSW	1 - system	910015776
	2 - Shaping air	910015761
	3 - Bell cup	Aluminium 910003159
	1 - system	910015777
	2 - Shaping air	910015761
	3 - Bell cup	Titanium 910008756
EC50 CSW	1 - system	910015780
	2 - Shaping air	910015763
	3 - Bell cup	Aluminium 910003159
	1 - system	910015783
	2 - Shaping air	910015763
	3 - Bell cup	Titanium 910008756
EX65 NW	1 - system	910028371
	2 - Shaping air	910027137
	3 - Bell cup	Aluminium 910004615
	1 - system	910027138
	2 - Shaping air	910027137
	3 - Bell cup	Titanium 910009383
EX80 BSW	1 - system	910014659
	2 - Shaping air	910013214
	3 - Bell cup	Titanium 910012705



NW: Narrow pattern
 PSW: Primer Super Wide
 BSW: Basecoat Super Wide
 CSW: Clearcoat Super Wide,

Bell Process

Choose your bell

RANGE #7 BELL CUP SYSTEM

Atomizer equipped with **EXTERNAL CHARGE**
(PPH707 EXT)

Description	Bell Material	Reference
EX65 NW EXT	1 -system BELL SERRATED	910014654
	2 -Shaping air	910013133
	3 -Bell cup Aluminium	910004615
	1 -system BELL NOT SERRATED	910014655
	2 - Shaping air	910013133
	3 - Bell cup Aluminium	910008549

EXT: for external electric charge with fingers



RANGE #7 BELL CUP SYSTEM

Atomizer equipped with **FINGERLESS EXTERNAL CHARGE**
(PPH707 EXTi)

Description	Bell Material	Reference
EC43 NW	1 - system	910030721
	2 - Shaping air	910028336
	3 - Bell cup Titanium	910028230
EC50 NW	1 - system	910033779
	2 - Shaping air	910033775
	3 - Bell cup Aluminium	910003159
	1 - system	910033778
	2 - Shaping air	910033775
	3 - Bell cup Titanium	910008756
EX65 NW	system	910030862
	Shaping air	910030826
	Bell cup Aluminium	910004615
	system	910030863
	Shaping air	910030826
	Bell cup Titanium	910009383

EXTi: for fingerless external electric charge



Electrostatic Sprayers

Bell process

Paint Flow Control & Peripherals

Tools & Accessories

Bell Process



Choose your bell

RANGE #8 BELL CUP SYSTEM
Atomizer equipped with INTERNAL CHARGE

Description	Bell Material	Reference
EC35 NW	1 - Bell cup	Aluminium 91000636
	2 - Shaping air	900018351
	1 - Bell cup	Titanium 91001188
	2 - Shaping air	900018351
EC50 NW	1 - Bell cup	Aluminium 910003159
	2 - Shaping air	900018225
	1 - Bell cup	Titanium 910008756
	2 - Shaping air	900018225
EX65 NW	1 - Bell cup	Aluminium 910004615
	2 - Shaping air	900018362
	1 - Bell cup	Titanium 910009383
	2 - Shaping air	900018362



NW: Narrow pattern

CHARACTERISTICS



RANGE #7, #8	EC35 NW EC43 NW EC50 NW	EC50 PSW EC50 CSW	EX65 NW	EX80 BSW
Robot speed	up to 1500 mm/sec.			
Paint flow	100 to 600 cc/min (EC35)	200 to 700 cc/min	100 to 700 cc/min	150 to 850 cc/min
	250 to 700 cc/min (EC50)			
Impact diameter	75 to 300 mm	300 to 450 mm	150 to 350 mm	300 to 450 mm
recommended for	• Optimized for coating narrow surfaces and difficult recesses	• CSW (Clear coat Super Wide) for the clear coat application • PSW (Primer Super Wide) version is recommended for the primer application	• Optimized for the BELL/BELL process • High performance on color-match • Very useful for basecoat 2 on plastic parts	• BSW (Base coat Super Wide) version is recommended for the Base coat application
Rotation speed of bellcup	25 to 85 krpm		30 to 80 krpm	25 to 65 krpm

The values of parameters given below are indicative

Choose your bell

AUTOMOTIVE PROCESS

Technologies

	Type of paints	Internal charge 	External charge 
Exteriors (Large surfaces, hoods, roofs, wings, doors ...)	Primer	EC50 PSW	EX65 NW EXT
	Basecoat 1	EX80 BSW	
	Basecoat 2	EX80 BSW	
	Clearcoat	EC50 CSW	-
Interiors (Cut-ins, rocker panels, motors ...)	Primer	EC50 PSW	-
	Basecoat 1	EC35 NW EC43 NW	EC43 NW
	Clearcoat	EC43 NW	-
Bumpers	Primer	EC50 NW	-
	Basecoat 1	EC50 NW EX65 NW	EX65 NW
	Basecoat 2	EX65 NW	EX65 NW
	Clearcoat	EC50 NW	-

The technologies are only for advise, paint tests could conclude to alternate solution




BELL CUP MANUFACTURED WITH THE HIGHEST PRECISION TECHNIQUES USED FOR AERONAUTIC AND AEROSPACE INDUSTRIES



Immersion washer for bell cups and shaping air assemblies



The washer is designed to clean the bell cups and shaping air shrouds of all Sames atomizer.

-  Save cleaning time
-  Easy to use
-  Compact design

This device allows a swift and thorough cleaning of the air shrouds and bells. Its use is easy and guaranties a complete and perfect cleaning in a minimum of time. Ergonomic, this device has been designed to simplify its use. The machine allows cleaning in masked time up to twelve air shrouds and bells. Compact and assembled on casters, this set perfectly fit into your maintenance hall.

CUSTOMERS' BENEFITS

Easy to use

- It provides thorough cleaning, in concurrent time, for up to twelve bell cups or air shrouds, arranged in pairs. It requires only standard compressed air and solvent.
- The automatic system protects the health of the operators:
 - no risk of solvent inhalation that are noxious with prolonged exposures.
 - no risk of injury during handling for a manual cleaning.
- Longer service life of maintained bells and air shrouds. Possible re-use of the rinsing product that is filtered for several cycles.

Compact design

- With its compact, light and movable design, this set is easily moved on its casters. The wash' up is not noisy; it requires only a minimum maintenance and its use has been simplified at its maximum, only two buttons: switch on/off and washing time setting.

Save cleaning time

- Important capacity with the possibility of cleaning simultaneously up to twelve bells (possible combination of bells of different diameters) or twelve air shrouds.
- Cleaning in masked time during production to have permanently clean bells and air shrouds at your disposal.

Immersion washer

WORKING PRINCIPLE

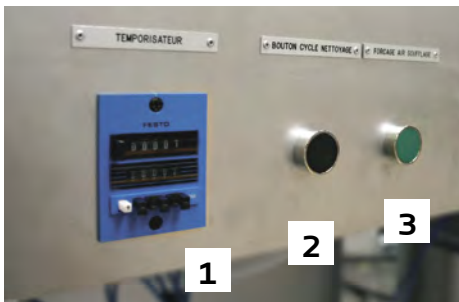
This device is composed of:

- A frame holding a stainless steel tank to place the shrouds.
- An on/off press-button that ensures the general cut of the system.
- A timer (1) that sets the cleaning cycle time.
- A press-button (2) to start the cycle.
- A control (3) to force blowing air.
- A gauge that gives the air flow pressure.
- A dump valve to dump the solvent.

Once having assembled the shrouds and bells on to their dedicated support and placed the support set in its housing at the bottom of the bath, fill in the tank with solvent to completely cover the bells and shrouds (approx. 25 litres).

Set the cleaning time thanks to a timer (from 0 to 120 min) with respect to the level of dirtiness of the shrouds. After immersing the shrouds within the cleaning solution, batches of pressurised air and solvent are sprayed upon shrouds surfaces and within the holes. The action of the pressurised air and solvent sprays triggered in turn allow an unclogging and efficacious elimination of paint deposits.

Once this operation is over, a dump valve allows emptying the solvent from the tank. Possibility of re-using the solvent thanks to two filters which ensure a constant cleanness of the bath.



Holder set for bells



Holder set for air shrouds

REFERENCES

Description	Capacity and Type	Reference
Immersion washer		910001851SAV
Holder assembly for	magnetic bell cups	910004800
	shaping air assemblies	910004815

Both holder sets are not included in the machine, contact-us

TECHNICAL DATA

Dimensions: H x L x D	1120 x 980 x 470 mm
Net weight:	approx. 100 kg
Capacity:	up to 12 shrouds (assembled by pair) or 12 bells (assembled by pair) washed simultaneously
Average cleaning time:	80 min (from 30 to 120 min)
Air supply:	standard air network at 6 bar (90psi), quick coupling 1/2" G
Electrical supply:	220 V (50/60 Hz)
Standards to be met:	Installation and use instructions are mentioned within our User's Guide



ATEX marking:

CE II 2 G c T6

Dossier technique :
Machine à laver les bols et les jupes

BAC automatic bell atomizer cleaner

Cleaning system for gun and bell atomizer to avoid drops and dirt on painted parts.

This tool perfectly fits into paint lines to optimize the quality of application, the maintenance process and the cleaning cycles.



- > Automatic bell cleaner
New version for more efficiency
- > Simple & reliable system
- > Only 50cc* solvent = reduce your VOC



CUSTOMERS' BENEFITS

Performance

- 1 - Dynamic cleaning effect
- 2 - Air shroud cleaning device for a steady application
- 3 - Easy to mount in the paint booth, only air and fluid supply

Productivity

- Increase your working time by reducing production stops
- Shorten cycle time
- 4 - Automatic process managed by paint automation

Productivity

- 5 - Reclaiming all cleaning material = validated for dry scrubbers
- Only 50cc⁽¹⁾ solvent consumption = reduce your VOC
- Minimal maintenance operation



⁽¹⁾ Depending on performances of solvent for cleaning

Bell Process

DESCRIPTION OF THE SYSTEM

A clean atomizer is a must have for a good performance of painting process. No drop on painted part is the basic you can ask to your Bell Atomizer Cleaner. So after a good cleaning, you need a good drying process to avoid any solvent drops leaving the air shroud.

The solvent required to clean the sprayer is minimal, reducing VOC of your paintshop.

The maintenance of the Bell Atomizer Cleaner is reduced to very few components : the impeller seal and bearing every year for only few minutes.

For each gun or bell cup and air shroud dimension, a specific adaptation of the cleaning box is required.



TECHNICAL DATA

Weight	
Bell Atomizer Cleaner	12 kg
Pressure	
Impeller Air	4 bar (58 PSI)
Drying Air	5.5 bar mini. (min. 80 PSI)
Solvent	3 bar (43.5 PSI)

Consumption	
Shaping air	100 to 250 NI/min
Blowing air	50 to 500 NI/min
Solvent	60 cc/min to 270 cc/min

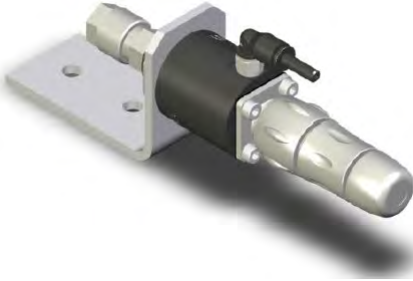
Marking:

CE Ex II 2 G Ex h IIA T4 Gb

EQUIPMENT

Description	Reference
Electrodes Cleaner PPH 707 EXT	130002039
Bell Atomizer Cleaner Nanobell 2 EC35	130002246
Bell Atomizer Cleaner Nanobell 2 EC50	130002247
Bell Atomizer Cleaner Nanobell 2 EC65	130002248
Gun Atomizer Cleaner Single gun TRP	130002243
Gun Atomizer Cleaner Dual gun TRP	130002244
Gun Atomizer Cleaner Single gun AVX	130002254
Gun Atomizer Cleaner Single gun ASB	130002255
Gun Atomizer Cleaner Single gun A35	130002256
Bell Atomizer Cleaner Range 7 EC43 External Charge Fingerless	130002242
Bell Atomizer Cleaner Range 7 EX65 External Charge Fingerless	130002253
Bell Atomizer Cleaner NANOBELL 80X EX65	130002251
Bell Atomizer Cleaner NANOBELL 80X EC50	130002250
Bell Atomizer Cleaner NANOBELL 80X EC35	130002249
Bell Atomizer Cleaner Range 7 EX80 External Charge	130002241
Bell Atomizer Cleaner Range 7 EC43 Internal Charge	130002245
Bell Atomizer Cleaner Range 7 EX65 External Charge	130002240
Bell Atomizer Cleaner Range 7 EC50 External Charge	130002239
Bell Atomizer Cleaner Range 7 EX80 Internal Charge	130002238
Bell Atomizer Cleaner Range 7 EX65 Internal Charge	130002237
Bell Atomizer Cleaner Range 7 EC50 Internal Charge	130002236
Bell Atomizer Cleaner Range 7 EC35 Internal Charge	130002235

Microphone



The microphone sensor is designed for reading and regulating the turbine rotation speed of all the **Sames** sprayers.

The principle of rotation speed acquisition is based on acoustics. An air flow hits a groove machined on the turbine axis on part of its perimeter. Alternatively, the air flow passes or stops, creating a pulse received by the microphone. Converted into an electric signal, it allows the speed acquisition and control.

CUSTOMERS' BENEFITS

Longer service life

- Pneumatic hose through the robot arm and not through a cable (torsion, numerous movements ...)

Simple and reliable

- The connecting components are not sensitive to the dirt (paint)
- Pneumatic signal not influenced by electrostatic phenomena or CEM (electromagnetic compatibility)
- 100% compatible use with high voltage (breakdown, creeping ...)

THE NEW CONNECTOR, EASY TO TIGHT BY HAND, GIVES A MORE ROBUST FIXATION OF ELECTRICAL CABLE.

The new microphone sensor can be installed instead of the previous version:

- Same mechanical fixation as the previous one but full length increased by 15mm on connection side and height increased by 13mm
- Same signal to the bell speed control module (BSC300)
- ATEX and FM approved

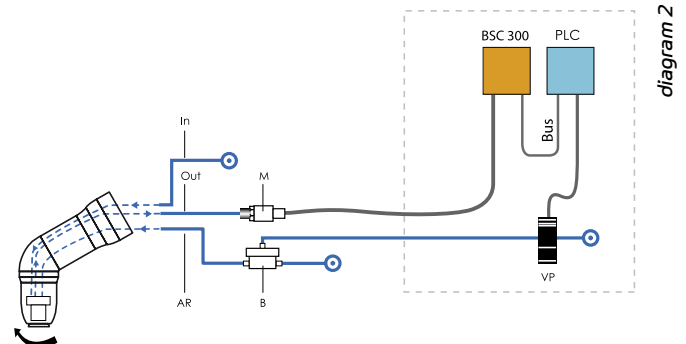
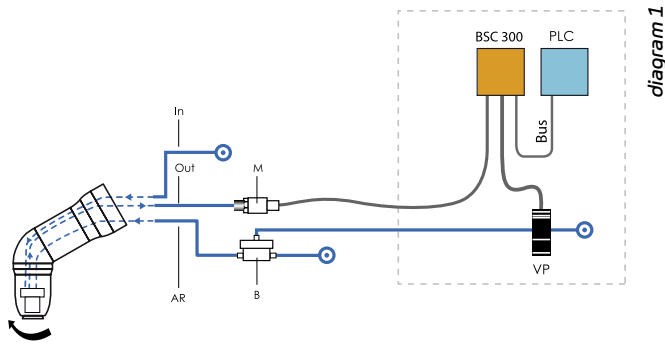


Bell Process

POSSIBLE UNIT CONFIGURATIONS

There are two possible uses to control the bell rotation speed:

- Preferred control: BSC 300 reads microphone and drives proportional valve (diagram 1).
- Alternative control: BSC 300 reads microphone and PLC drives proportional valve (diagram 2).



M: microphone sensor
B: air super-charger
VP: Proportional valve

In: air inlet inside the sprayer
Out: air outlet towards the micro sensor
AR: turbine rotation air

BSC: speed regulation card
PLC: programmable logic controller

MICROPHONE SENSOR

Description	Length (m)	Reference
Microphone sensor	-	910028565
	1	910028627-010
	2	910028627-020
Electrical cable	4,5	910028627-045
	20	910028627-200
	25	910028627-250
	50	910028627-500
	Complete Kit Microphone + Cable	1
2		910031927-020
20		910031927-200
25		910031927-250
50		910031927-500



Description	Mark	Reference
Proportional valve	VP	R3V VPR 230
DP50 3/8 Air booster	B	220000331
Speed regulation module BSC 300	BSC	910024029

Bell Process

BSC300



The BSC300 module drives a Rotary bell atomizer: PPH 707, PPH 308, NANOBELL, ACCUBELL 709 EVO

- Bell cup speed and presence monitoring
- Network modules available for any PLC
- Remote display for visual monitoring available

BSC300 reads the frequency signal coming from **Sames** microphone speed sensor or an optical fiber converter. Additionally, **BSC300** detects bell cup presence and air bearing issue, avoiding this kind of issue for a safe production. Thanks to its compact design, the BSC300 is perfectly adapted to fit on robots pressurized compartments.

Of course, the **BSC300** enters easily into process cabinet. With its enhanced connectivity, it is able to communicate to any kind of PLC with the adapted communication network board: Profinet, Ethernet/IP, CC-link or Profibus.

The advanced configuration is allowed via the USB connection and the **Sames** software.

SPEED REGULATION

Description	Reference
Speed regulation module BSC300	910024029
Network board: Ethernet/IP	110002470
Network board: PROFINET	110002391
Network board: PROFIBUS	110002473
Network board: CC-Link	110002472
Remote Display	910024883

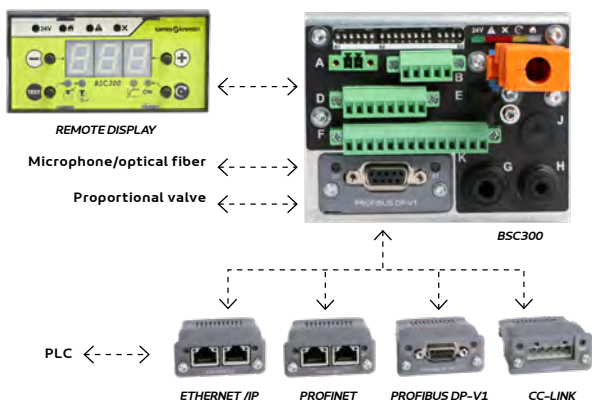
ATEX marking:

BSC300

CE 0080 UK 2503

II (2) GD [Ex ia Ga] IIC
[Ex ia Da] IIIC

INERIS 17ATEX0031X
CML 21UKEX2794X



CUSTOMERS' BENEFITS

Performance

- The compact BSC300 makes it easy to integrate close to the rotary bell atomizer. Then Speed control is faster than ever.
- BSC300 manages bell cup detection and air supply issue, thanks to its integrated air pressure sensors.
- Connectivity is a "must have" for smart process control. As **Sames** atomizers may suit to any kind of robots, anywhere in the world, BSC300 is able to communicate to any kind of Programmable Logic Controller (PLC).

Productivity

- A mini-USB plug allows advanced settings for performance tuning.

Sustainability

- Easy monitoring options: standard analog wired, optional visually monitoring with a remote screen, optional monitoring with a network board.



GNM300



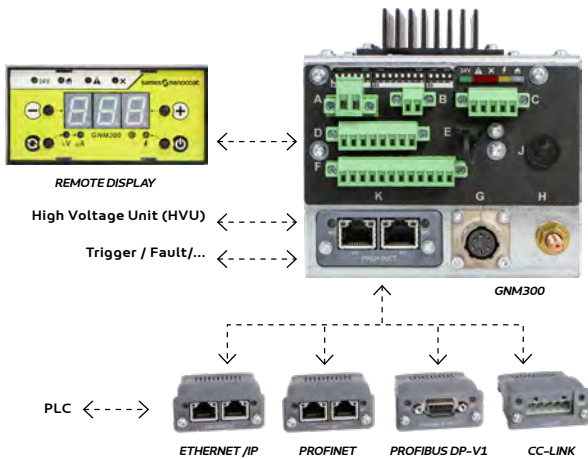
The GNM300 controls the high voltage unit (HVU) for electrostatic guns and bell sprayers.

- Compact design for easy integration
- Network modules available for any PLC
- Easy to wire and connect

GNM300 is a control module to be installed into electrical cabinet, only requiring 24V for power supply. The open network architecture allows to communicate with all available fieldbus technologies.

Thanks to the network communication, your installation may send all settings and receive all logs & alerts for your supervision system. The Industry 4.0 is already here !

The optionnal remote screen can be fixed in front door cabinet to allow to monitor and set the voltage and current consumption. The GNM300 is available for all our rotary bell sprayers: PPH707, Accubell709 Evo, N, Nanobell2.



MANAGES HIGH VOLTAGE UNIT

Description	Reference
GNM300 control module	910024028
Network board: Ethernet/IP	110002470
Network board: PROFINET	110002391
Network board: PROFIBUS	110002473
Network board: CC-Link	110002472
Remote Display	910024883
Low voltage cable GNM300 to UHT330/UHT330c/UHT330i	910027308-200
Low voltage cable GNM300 to Junction Box - L=7 m	910027011-070
Low voltage cable GNM300 to Junction Box - L=17 m	910027011-170
Low voltage cable GNM300 to Junction Box - L= 22 m	910027011-220
Low voltage cable Junction Box to UHT 330/330c/330i - L=4.8 m	1527252
Low voltage cable Junction Box to UHT 330/330c/330i - L=8 m	910001236
Low voltage cable Junction Box to UHT 157 - L= 1.5 m	910004015-015
Low voltage cable Junction Box to UHT 157 - L=3 m	910004015-030
Low voltage cable Junction Box to UHT 157 - L=8 m	910004015-080
Low voltage cable Junction Box to UHT 157 - L=10 m	910004015-100
Low voltage cable Junction Box to UHT 157 - L=15 m	910004015-150
Low voltage cable Junction Box to UHT 157 - L=17 m	910004015-170
Junction Box for UHT 157/157i & GNM300	900003576AT
Low voltage cable Junction Box to UHT 157i - L=1.5 m	910018431-015
Low voltage cable Junction Box to UHT 157i - L=8 m	910018431-080
Junction Box for UHT 330/330c/330i & GNM300	1303899AT

CUSTOMERS' BENEFITS

Performance

- The GNM300 manages high voltage output of the High Voltage Unit (HVU) with the highest level of safety for people and equipment.
- Connectivity is a "must have" for smart process control. As Sames atomizers may suit to any kind of robots, anywhere in the world, GNM300 is able to communicate to any kind of Programmable Logic Controller (PLC).

Productivity

- A mini-USB plug allows advanced settings for performance tuning.

Sustainability

- Easy monitoring options: standard analog wired, optionnal visually monitoring with a remote screen, optionnal monitoring with a network board.

ATEX marking:

GNM300

CE 0080 UK 2503

II (2) G

[350 mJ < E < 2J]

INERIS 20ATEX0035X

INERIS 19ATEX0009X

INERIS 18ATEX0044X

CML21UKEX9798X

CML21UKEX9796X

CML21UKEX9795X



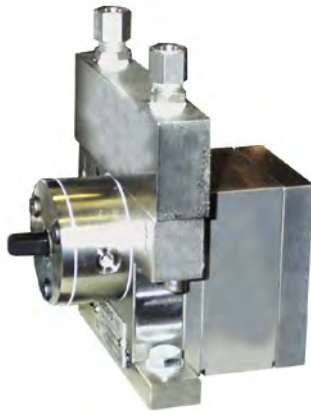
www



Paint Flow Control

Gear pump

Flow management



The gear pump enables liquid, solvent-based and water-soluble paints for general industrial applications to be sprayed using all the SAMES automatic spray guns (PPH 308, TRP 500, NANO BELL2, etc...).

RANGE

This type of pump has 6 displacements defined by the number of cubic centimeters of paint delivered per revolution:

- 0.6 cm³ /R
- 1.2 cm³ /R
- 2.4 cm³ /R
- 3 cm³ /R
- 6 cm³ /R
- 10 cm³ /R

These different displacements cover a flow rate range of 0.5 to 80 L/hour. They are chosen according to the required flow rate and the rotation speed range. It is preferable for the operating speed to be less than 120 rpm.

Three types of coating are available for each pump:

- **STEEL:** for solvent-based product use,
- **STAINLESS STEEL:** for water-based product use,
- **ADLC:** intense coating which increases surface hardness and has a better coefficient of friction. This type of pump cleans to 100% by injecting a powerful flow of rinsing product, the pump cleans itself very quickly therefore. The use of water-based products necessitates the use of suitable positive displacement pumps.

TECHNICAL DATA

Pressure	Valve drive	Supply	Use
Maxi. operating air pressure . (bar)	6 (90 psi)		
Mini. operating air pressure (bar)	3 (45 psi)		
Pilot air supply (mm)	ø2.7x4		
Mini. inlet material pressure (bar)		0.5 (7.5 psi) to facilitate priming	
Maxi. inlet material pressure (bar)		2 (30 psi)	
Maxi. outlet material pressure (bar)			10 (150 psi)
Maxi. rotation speed (rpm)			220

Connections	Inlet	Outlet
Pump connection bar (BSP)	1/4	1/4

ATEX marking:
 CE II 2 G Ex h IIA T6 Gb



Example of an insulated system



WWW

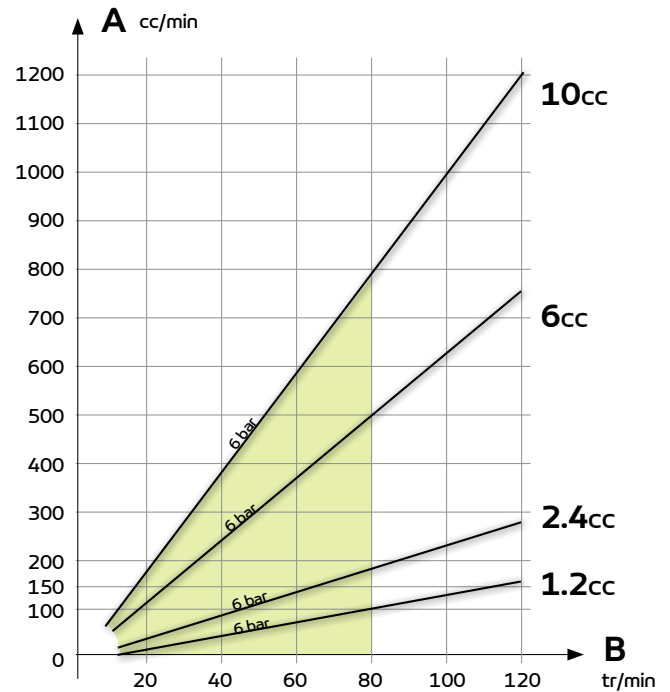
Choose the pump

TYPE OF PUMP SELECTION



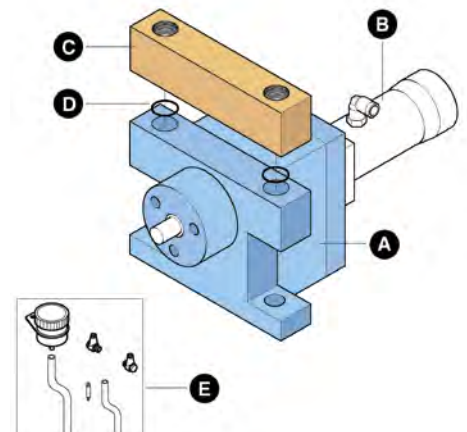
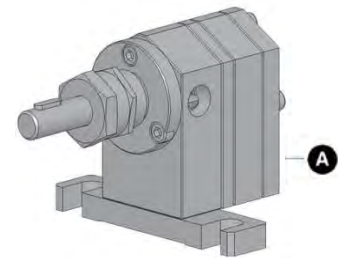
A: Material flow in cc/min
B: Pump rotation speed in rpm
 The curve indicates the flow of the pump with a back-pressure from 0 to 6 and from 6 to 10 bar.
 One must not select a pump of which flow would be too close to the minimum or maximum speed, but close to 80 rpm.

= recommended working zone



Gear pumps

Description	Mark	Capacity (cm ³ /rev)	Reference
Pump STEEL (1)	A	0.3	Y1PCDL025AT
		0.6	Y1PCDL026AT
		1.2	Y1PCDL028AT
		2.4	Y1PCDL030AT
		3	Y1PCDL036AT
		6	Y1PCDL037AT
Pump STAINLESS (1)	A	0.6	Y1PCDL101AT
		1.2	Y1PCDL053AT
		2.4	Y1PCDL044AT
		3	Y1PCDL045AT
		6	Y1PCDL055AT
Pump STAINLESS RINSABLE (2)	A	1.2	758704
		2.4	756515
		10	756560
Pump ADLC (2 & 3)	A	1.2	1410767
		2.4	1410670
		6	1410031
Shunt valve kit	B	1.2 / 2.4 / 6 / 10	910007369
Connection base	C	1.2 / 2.4 / 6 / 10	730269
O-ring (x2)	D	1.2 / 2.4 / 6 / 10	J3TTCN011
MESAMOL Adaptation kit (4)	E	1.2 / 2.4 / 6 / 10	854279
MESAMOL OIL		1 liter container	H1HMIN037



- (1): Seal kit for Pump Steel and Inox, REF: 752203
- (2): Seal kit for Pump Inox rinsable & ADLC, REF: Y1AJDP054
- (3): ADLC = coating with high surface hardness (more durable)
- (4): The pumps can be equipped with a sealing system to prevent the passage of air in the fluid circuit (if used with a hardener).

2K Gear pump

Flow management



The gear pump is used for the supply of liquid paints, either solvent or water based, for all SAMES KREMLIN automatic sprayers.

- > Isocyanate specific design
- > Accurate dosing
- > Compact design

RANGE

This type of pump comes in 6 capacities defined by the number of cm³ per revolution:

- 0.3 cm³ / rev
- 0.6 cm³ / rev
- 1.2 cm³ / rev
- 2.4 cm³ / rev

The choice is made with respect to the target flow and the rotation speed bracket. It is recommended to run between 30 and 80 rpm.

CUSTOMERS' BENEFITS

Long life pump

- Low wearing parts
- Stainless steel ADLC

Robust design

- Long know-how gearpump design
- Rotation locked to the motor by a pin, ceramic surface reinforced

TECHNICAL DATA

2K gear pump

CAPACITY		0.3 cc	0.6 cc	1.2 cc	2.4 cc
Dimensions (mm)	Length	130	136	130	136
	Height	85	85	85	85
	Width	46	46	61	61
Weight (kg)		1.33	1.39	1.91	2.1
Max. pressure		15 bar			
Rotation speed (RPM)		30 to 80			
Accuracy in normal conditions ⁽¹⁾		± 2 %			

(1): 30-80 rpm, rinsing viscosity 25 sec. DIN4, ΔP ± 2 bar
Use only PTFE hoses

ATEX marking:

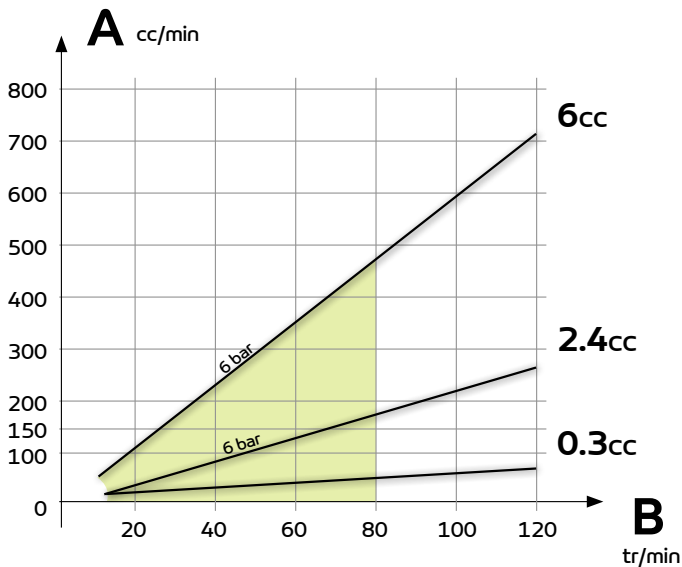
CE II 2 G Ex h IIA T6 Gb



WWW

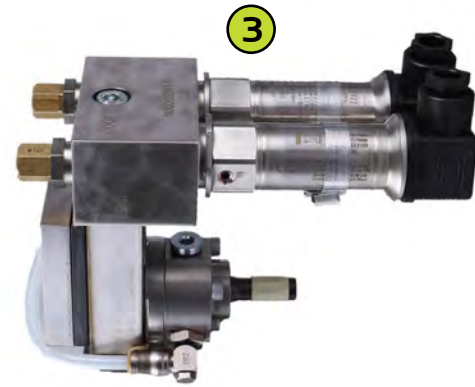
2K Gear Pump

TYPE OF PUMP SELECTION



A: Material flow in cc/min
 B: Pump rotation speed in rpm
 The curve indicates the flow of the pump with a back-pressure from 0 to 6 and from 6 to 10 bar.
 One must not select a pump of which flow would be too close to the minimum or maximum speed, but close to 80 rpm.

■ = recommended working zone

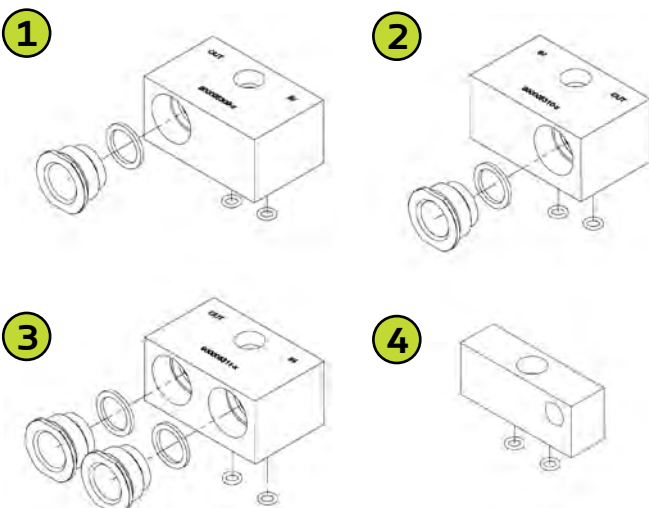


2K Gear Pump

Description	Capacity (cm ³ /rev)	Reference
Pump only	0.3	270000071
	0.6	270000072
	1.2	270000068
	2.4	270000069
	6	270000070

Connecting Flanges

Description	Mark	Reference
1 Pressure switch flange	1	910007407
1 Pressure switch reverse flange	2	910007408
2 Pressure switch flange	3	910007409
Fitting fixing flange	4	910008031



For long life pump with hardener

Description	Reference
MESAMOL adaptation kit	854279
MESAMOL Oil	H1HMIN037



Easy pump Gear pump

Flow management



Made of stainless steel, the Easy pump is dedicated to manage the flow of most standard water-based and solvent-based paints. The wide range of outputs (from 1,2 to 10cc per revolution) will cover a full range of applications.

- Accurate Dosing
- Improved Cleaning
- Easy Maintenance

RANGE

This type of pump comes in 6 displacements defined by the number of cm³ per revolution:

- 1.2 cm³ / rev
- 2.4 cm³ / rev
- 3 cm³ / rev
- 4.5 cm³ / rev
- 6 cm³ / rev
- 10 cm³ / rev

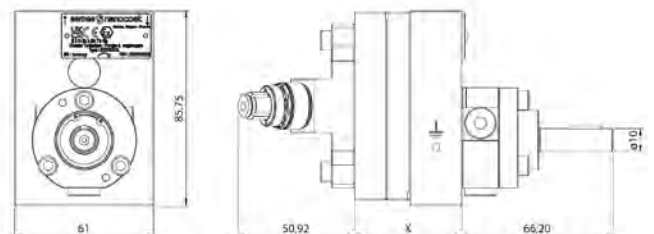
These different models cover a flow rate range from 2 to 50 l/ hour. The gear pump ensures a paint flow that is proportional to its rotation speed. The choice is made with respect to the target flow and the rotation speed range. It is recommended to operate the pump at a speed lower than 80 rpm.

All the EasyPump range is fully compatible with the Upside CCV color change block. To allow high flexibility, these pumps can also fit perfectly the robot motor coupling.

Accurate Dosing: The design helps reducing the gap in gear assembly, which gives accurate flow for high finishing results.
Improved Cleaning: Revolutionary design reducing drastically the dead zones to allow a faster and easier flushing.
Easy Maintenance: High quality raw materials (stainless steel) for an improved lifetime combined with dedicated maintenance kits with seals to reduce downtimes.

TECHNICAL DATA

		Easy pump					
CAPACITY		1.2cc	2.4cc	3cc	4.5cc	6cc	10cc
Dimensions (mm)	X	41.2	45.4	47.5	52.75	58	72
Weight (kg)		2.1	2.2	2.3	2.4	2.7	3.2
Max. pressure		15 bar					
Rotation speed (RPM)		10 to 200					
Accuracy in normal conditions ⁽¹⁾		± 2 %					
Pilot air supply (mm)		Ø2.7 x 4					



Marking:

UK CA CE Ex II 2 G Ex h IIA T4 Gb

(1): 30-80 rpm, rinsing viscosity 25 sec. DIN4, ΔP ± 2 bar

CUSTOMERS' BENEFITS

Performance

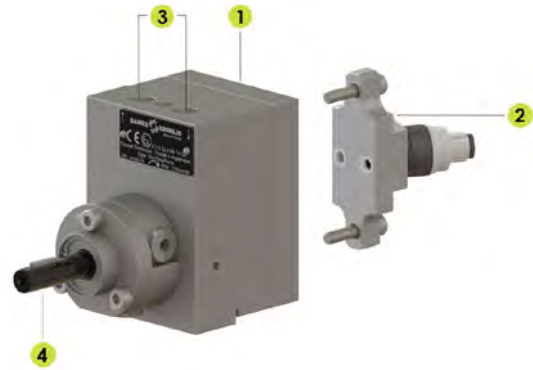
- 1 - Specifically designed to reduce the gap in gear assembly and give accurate flow for high finishing results
- 2 - Efficient flushing thanks to the bypass block at the rear of the pump
- Limited amount of dead zones to allow a faster and easier flushing

Productivity

- 2 - During flushing and loading there is a bypass function around the gearwheels, in parallel to an internal flushing of gearwheels and shafts
- 3 - Same interface between all the pumps for unlimited compatibility
- Wide range of outputs from 1,2 to 10cc per revolution

Sustainability

- 4 - Robust transmission shaft, treated and maintained by several bearings and an axial stop
- All parts in contact with product are in Stainless Steel
- The cleaning process helps to lubricate rotating parts
- Maintenance kits (including seals) are dedicated for each type of gearpump



Robotic Paint Gear Pump

Description	Capacity (cm ³ /rev)	Reference
EasyPump assembly with bypass Block	1.2	270000156
	2.4	270000157
	3	270000158
	4.5	270000159
	6	270000160
	10	270000161

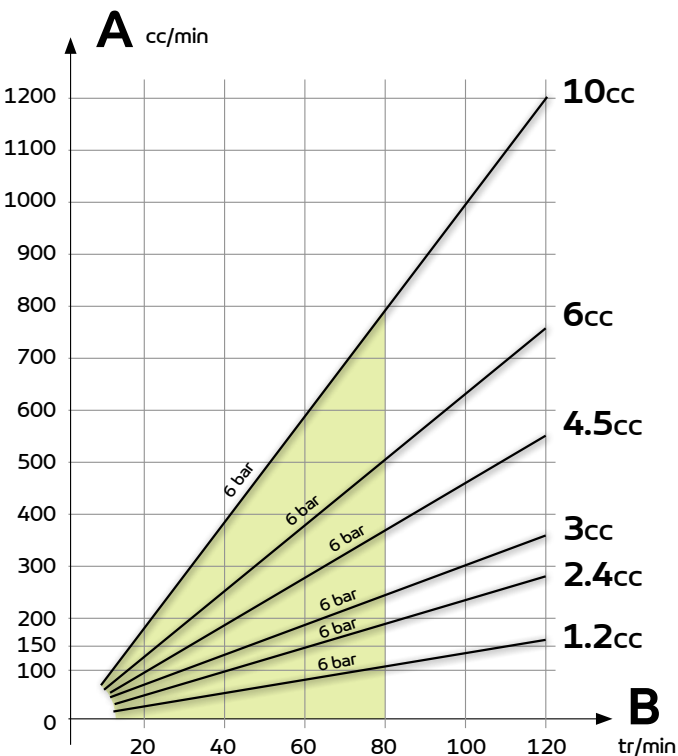
The EasyPump can be adapted to an existing installation of Compact, Easy Rinsing, FCG or H pumps with the following kits.

Description	Reference
Retrofit kit Compact pump in EasyPump	910032527
Retrofit kit Easyrinsing Pump in EasyPump	910032528
Retrofit kit FCG Pump in EasyPump	910032530
Retrofit kit H Pump in EasyPump	910032532

Spare parts

Description	Reference
Bypass block equipped	270000162
UPvalve, pilot valve	910012239S
Seal PTFE	160000283
Complete Sealing Kit for Pump 1.2 cc	160000277
Complete Sealing Kit for Pump 2.4 cc	160000278
Complete Sealing Kit for Pump 3 cc	160000279
Complete Sealing Kit for Pump 4.5 cc	160000280
Complete Sealing Kit for Pump 6 cc	160000281
Complete Sealing Kit for Pump 10 cc	160000282
Seals Kit	160000288
Lip seal, viton	270000032

TYPE OF PUMP SELECTION



A: Material flow in cc/min

B: Pump rotation speed in rpm

The curve indicates the flow of the pump with a back-pressure from 0 to 6 and from 6 to 10 bar.

One must not select a pump of which flow would be too close to the minimum or maximum speed, but close to 150 rpm.




■ = recommended working zone

Robotic Paint Gear pump

Flow management



The Robotic Paint Gear pump “RPG” is dedicated for robotic applications. It combines fast color change with the most compact design of the market allowing both low paint loss and high flowrate output.

-  Compact Design
-  Fast Color Change
-  High Reliability

RANGE

This type of pump comes in 3 displacements defined by the number of cm³ per revolution:

- 4.5 cm³ / rev
- 6 cm³ / rev
- 9 cm³ / rev

These different models allow covering a flow range from 8 to 65 l/hour.

The choice is made with respect to the target flow and the rotation speed range. We recommend to run at less than 150 rpm. The gear pump ensures a paint flow that is proportional to its rotation speed. In the case of a distribution system, the material pressure regulator is to be connected before the pump, whereas a flow meter is always connected after the pump. Upstream pressure facilitates priming but also ensures the flow corresponding to the capacity and speed of the pump.

All the RPG range is fully compatible with the UPSide CCV color change block from Sames. To allow high flexibility, these pumps can also fit perfectly the robot motor coupling. The Robotic Paint Gearpump «RPG» is 15% lighter than our previous range of gearpump. New pressure sensors are available to monitor the process with a compact design to be integrated directly in the robot process arm.

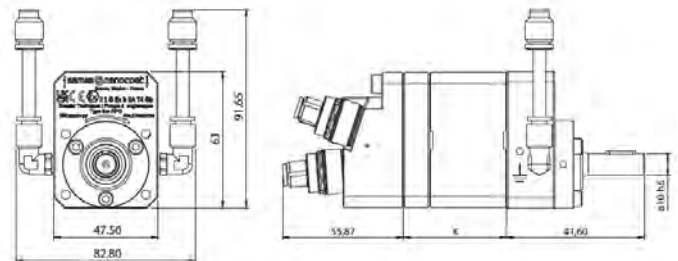
Compact Design: Designed to be the most compact of the market integrating a paint pressure sensor with a ¼” only interface to reduce the paint loss during color change and ease the integration on robot arm.

Fast Color Change: Thanks to the ADLC coating and the dedicated solvent valve to clean the gear teeth, the color changing is faster than ever.


High Reliability: Lifetime of the pump is increased thanks to the fact that key operating components are made of ceramic.

TECHNICAL DATA

		RPG pump		
CAPACITY		4.5 cc	6 cc	9 cc
Dimensions (mm)	X	58.6	57.8	69.7
Weight (kg)		1.75	1.72	1.95
Max. pressure		15 bar		
Rotation speed (RPM)		10 to 200		
Accuracy in normal conditions ⁽¹⁾		± 2 %		
Pilot air supply (mm)		Ø2.7 x 4		



Marking:

UK CA CE  II 2 G Ex h IIA T4 Gb

(1): 30-80 rpm, rinsing viscosity 25 sec. DIN4, ΔP ± 2 bar

Choose the pump

CUSTOMERS' BENEFITS

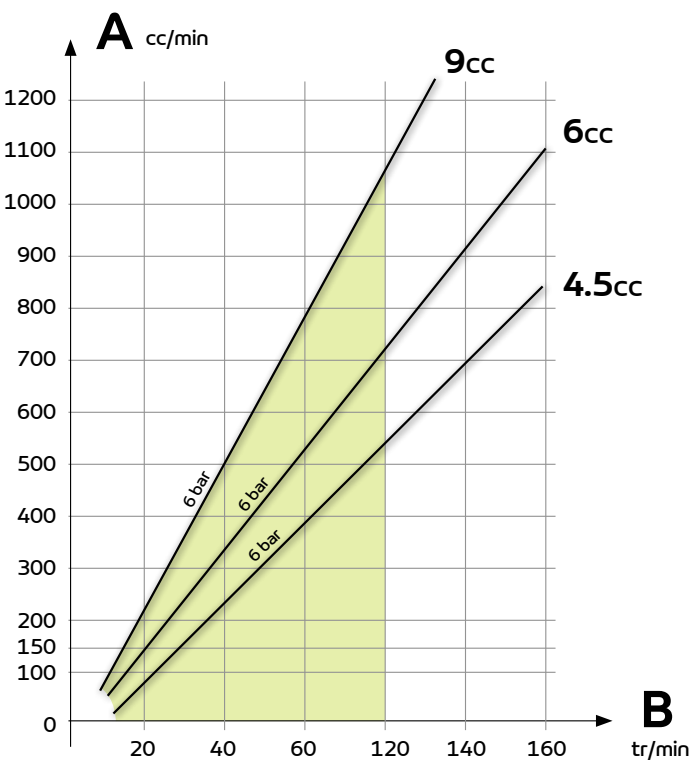
Performance

- 1 - Most compact robotic gearpump on the market (63mm height x 48mm width)
- 2 - Quick color change thanks to its direct solvent injection system
- High mechanical precision components ensure accurate & stable flow
- High cleaning performance upon color change phase

Productivity

- 2 - Process Plate Bypass & Fast cleaning enables optimum gear rinsing (teeth and axles)
- 3 - Integrated lubrication system
- 3 - Leak detection system thanks to transparent hoses revealing color in case of leakage
- Three range capacities: 4.5 cm³/rev - 6 cm³/rev - 9 cm³/rev, with up to 150 rpm

TYPE OF PUMP SELECTION



A: Material flow in cc/min

B: Pump rotation speed in rpm

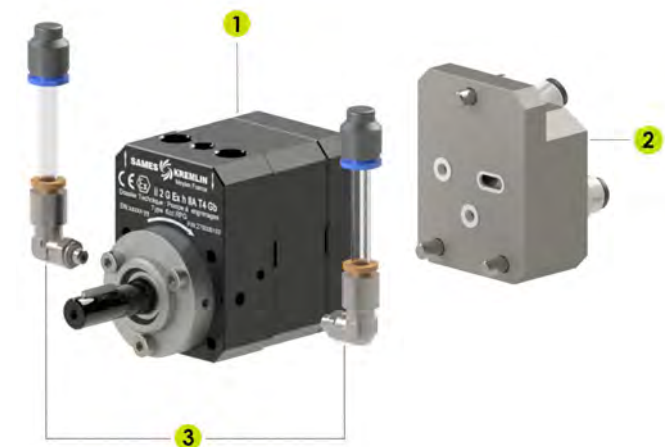
The curve indicates the flow of the pump with a back-pressure from 0 to 6 and from 6 to 10 bar.

One must not select a pump of which flow would be too close to the minimum or maximum speed, but close to 150 rpm.

■ = recommended working zone

Sustainability

- ADLC stainless steel Coating for an improved lifetime
- Easy to upgrade from previous generation with dedicated upgrade kits
- Low running costs - Low wearing parts with stainless steel ADLC
- Cleaning lubricates rotating parts for longer life



Robotic Paint Gear Pump

Description	Capacity (cm ³ /rev)	Reference
RPG Pump with bypass Block	4.5	270000152
	6	270000153
	9	270000154

The RPG pump can be adapted to an existing installation of Easy Rinsing or FCG pumps with the following kits.

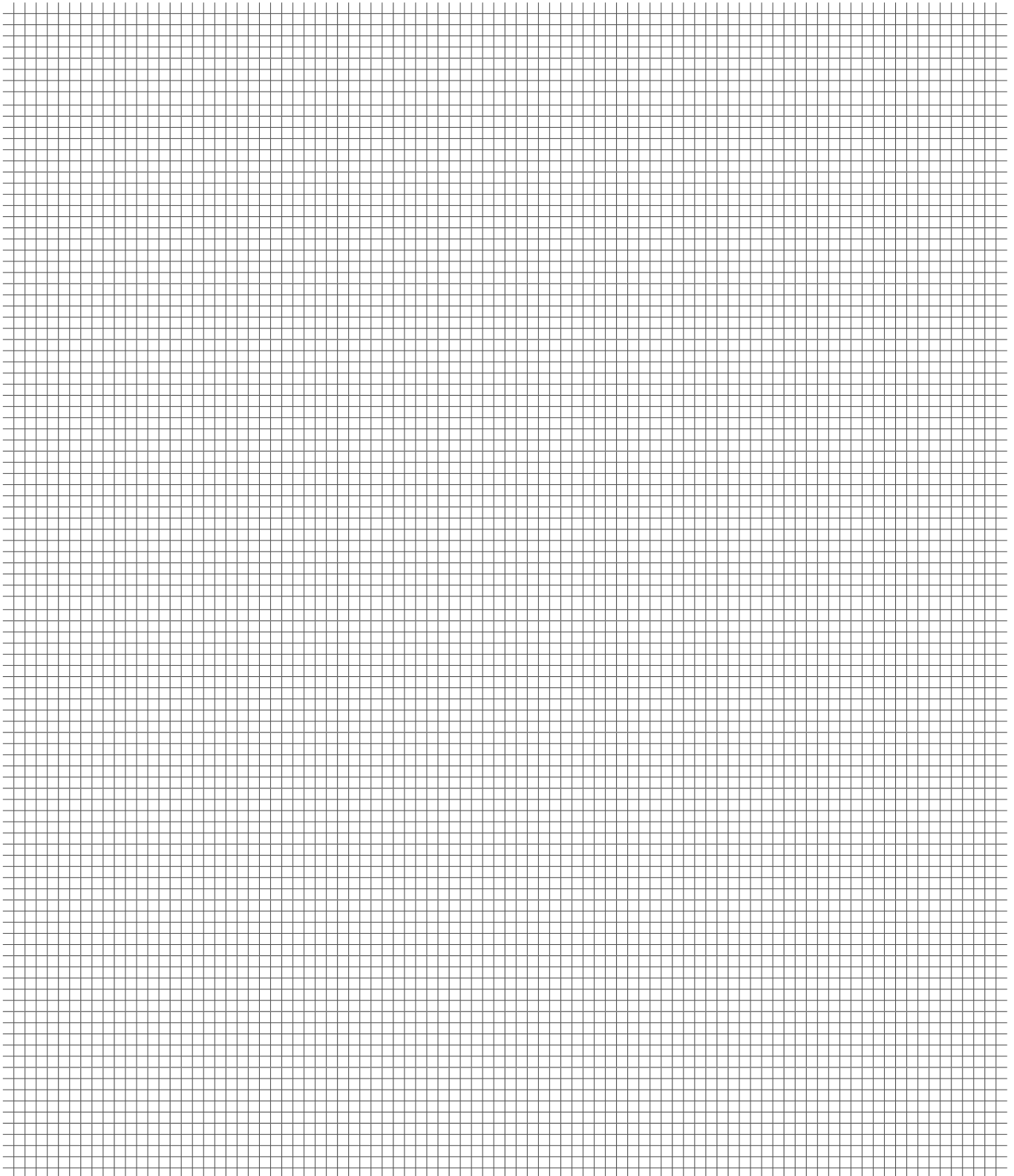
Description	Reference
Retrofit kit Easyrinsing in RPG pump	910032529
Retrofit kit FCG in RPG pump	910032531

Spare parts

Description	Reference
Bypass block equipped	270000155
UPvalve, pilot valve	910012239S
Seal PTFE	160000284
Seal Oblong	160000285
O-Ring Seal	160000286
Main lip seal with O-Ring Seals	160000287
Oil Mesamol (1L)	H1HMIN037
Ball Bearing	180000580

Paint Flow Control





Regulator

> Stand-alone ball regulator that is independently installed onto the paint circuit as closely as possible to the sprayer (recommended).



DESCRIPTION

The regulator allows **absorbing** the variations of paint pressure generated by the supply system (pulsation effect) and **adjusting** the target flow with accuracy.

For a given pilot air pressure of the regulator, the paint flow will also depend on the pressure drop downstream of the regulator (on sprayer side): hose diameter, size of the restrictor, sprayer injector and product viscosity.

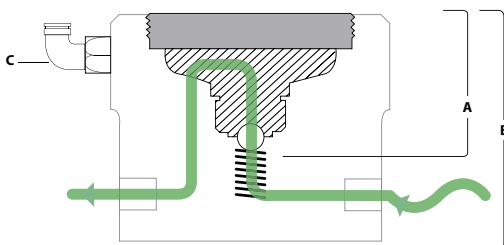
INSULATED STANDALONE REGULATOR

Description	Mark	Version	Reference
Integrated ball regulator	A	Europe	1 514 104
		US	1 514 104
Complete insulated ball regulator ⁽¹⁾	B	Europe	1 526 677
Elbow union ⁽²⁾ (pilot air)	C	Europe	F6R LCS 304
		US	F6R PDQ 206

(1): Paint circuit connection type EU = 1/8 GAZ and US = 1/8 NPSM
 (2): Only for insulated regulator (included with insulated regulator reference)

PAINT REGULATOR KIT

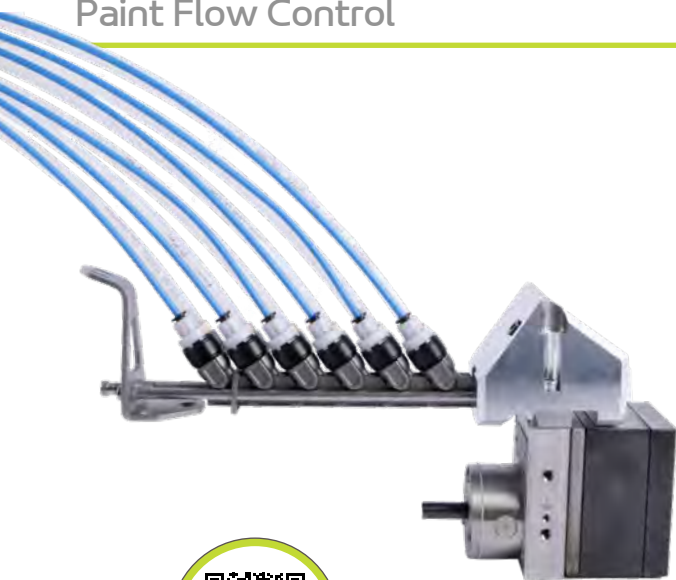
Paint	Hose	Atomizer	Reference
Solvent	Ø6 mm	TRP	contact us
		PPH308	910015320
		NANOHELL 2	contact us
	Ø8 mm	TRP	910018411
		PPH308	910009591
		NANOHELL 2	contact us
Water-based	Ø10 mm	TRP	910018412
		PPH308	910009592
		NANOHELL 2	contact us



Paint Flow Control

UPside CCV

Color change block



- > Lightweight design
- > Easy maintenance
- > Flexible assembly

UPside CCV is the universal robotic color change block. The compact and modular design gives several solutions to integrate on robot arms.

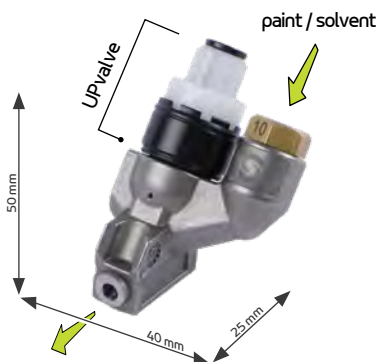
Innovations are in every parts: stainless steel modules, **new UPvalve**, compact fittings, oriented hoses for easy integration, integrated regulator.



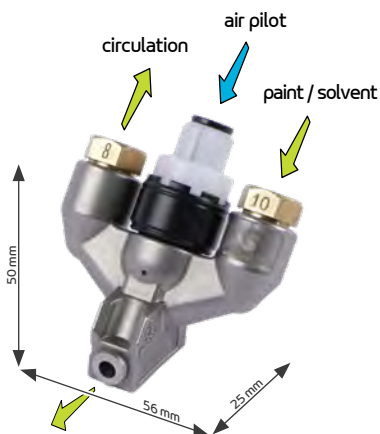
2 MODULES:

UPside CCV without return

UPside CCV with return



Based on microvalve technology, UPvalve has its air pilot fitting included on its TOP.



This module is more compact than market CCV.

FIELD OF APPLICATION

- Car body interiors
- Door cut-ins
- Rocker panels
- Penetration in hollow body (dead areas...)
- Any type of openings (ventilation louvers on bumpers...)
- Metallic base coat: 2nd base coat with Bell/Gun process
- Bumper

MATERIAL HANDLED

Every type of paint, primer, basecoat, clearcoat, 1K or 2K material, solventborne or waterborne

TECHNICAL DATA

WEIGHT	
Upside CCV with return equipped with 1 valve & 2 ø8/10 fittings	101 g
Upside CCV without return equipped with 1 valve & 1 ø8/10 fitting	78 g
AIR PRESSURE	
Valve pilot	6 bar (90 psi) - 10 bar (150 psi)
PAINT	
Orifice diameter	ø 4 mm
Operating pressure	0 bar (0 psi) to 20 bar (3000 psi)
Viscosity solvented paints	20 to 50 seconds - FORD cup#4
Viscosity waterborne paints	200 mPa.s at 250s ⁻¹
Body material	Stainless Steel

Applicable tubing
ØI.D x ØO.D.
3 x 6
4 x 6
5 x 8
6 x 8
7 x 10
8 x 10

For fractional dimension of hose, contact us

ATEX marking:

UPside CCV: CE UK CA

II 2 G Ex h IIA T4 Gb

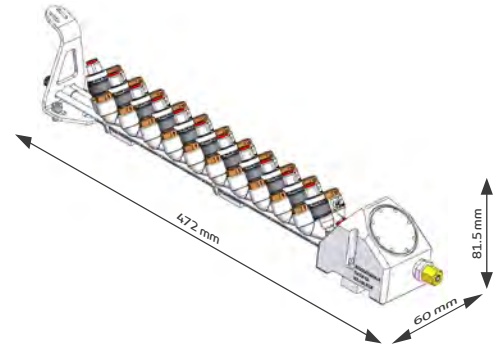
Customers' benefits

Robotic design

- Lightweight design:
78g per color including fitting (52% lighter)
- Compact size: 30% less volume
- Oriented fittings:
reduces space requirement
- Robust design:
metal-in-metal fittings and valve seats

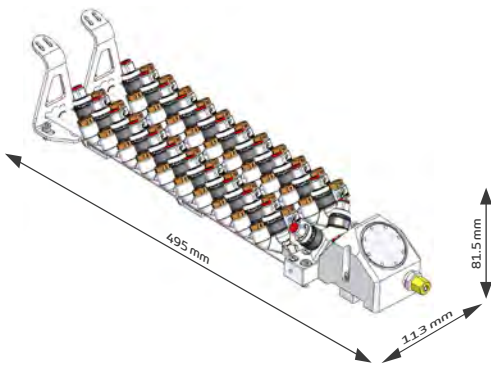
In line [12 COLORS]

One line, each module equals one color



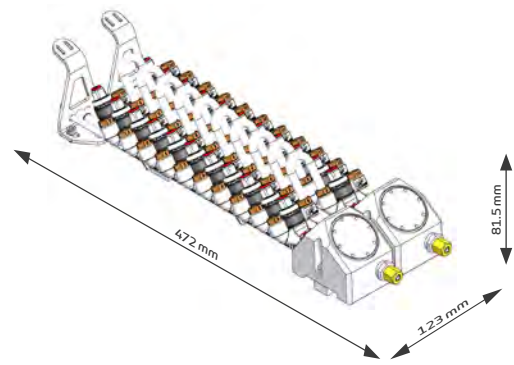
Switch [24 COLORS]

For low paint loss and compactness choose «SWITCH» module minimizing paint volume. Recommended if more than 12 colors.



Double circuit [12 COLORS]

During painting with 1st circuit, the 2nd one prepares the next color for a very fast color change combined with PPH707 double circuit.



COMPARISON

	In Line	Switch	Double circuit
Compactness	+	+++	++
Lightweight	+++	++	++
Color change	+	++	+++

BUILD YOUR COLOR CHANGE BLOCK

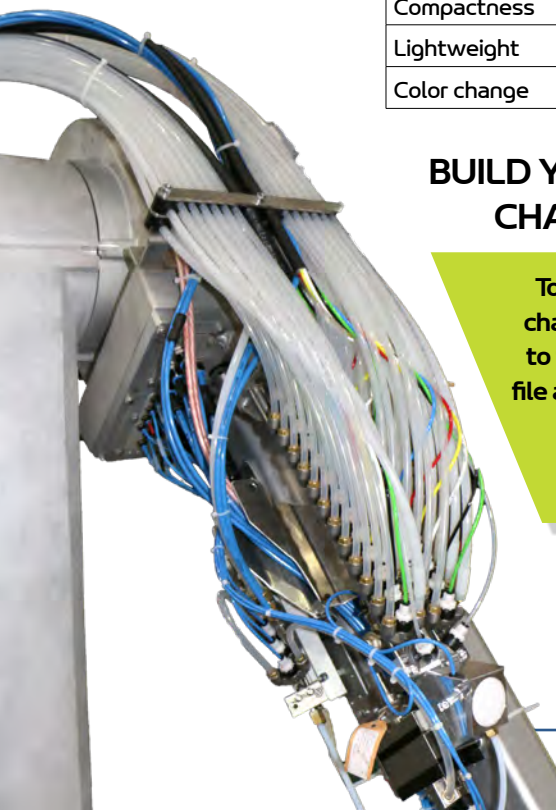
To build your color change block, refer to the configurator file available at your SAMES contact.

Easy to use

- Plug & use modules, including fittings
- Direct access:
all fittings and valves located on one side
- Easy to clean CCV + Regulator + Pump:
low solvent consumption
- Dedicated tool kit

Flexibility

- One color = One module
- Adapts to every robot arm
- Included recirculation feature
- Remote or integrated regulator
- Backward or forward rinsing direction





Reverse Flush

Solution for optimization of the paint line rinsing system

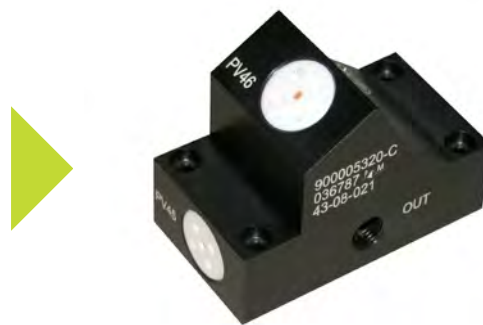
Reverse Flush is a block that allows dumping and rinsing the material supply system without going through the sprayer.

it can be installed within all the paint unit configurations: It will depend on the distance between the pump and the sprayer.

Reverse Flush comes in 2 versions, remote and built-in;

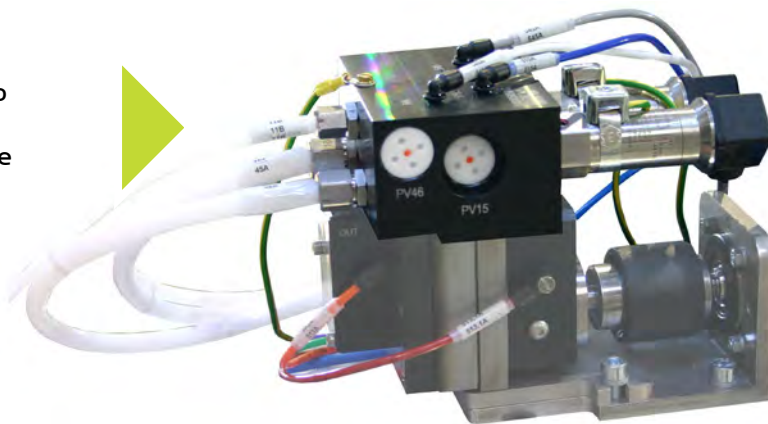
REMOTE REVERSE FLUSH BLOCK

When the pump is to be placed far away from the sprayer (distance > to 1.5 m) as in the case of the "Slim Arm" on which no pump can be assembled, then the so-called "remote" reverse flush block is used and is ideally placed at a distance comprised between 1 to 1.5 m from the sprayer.

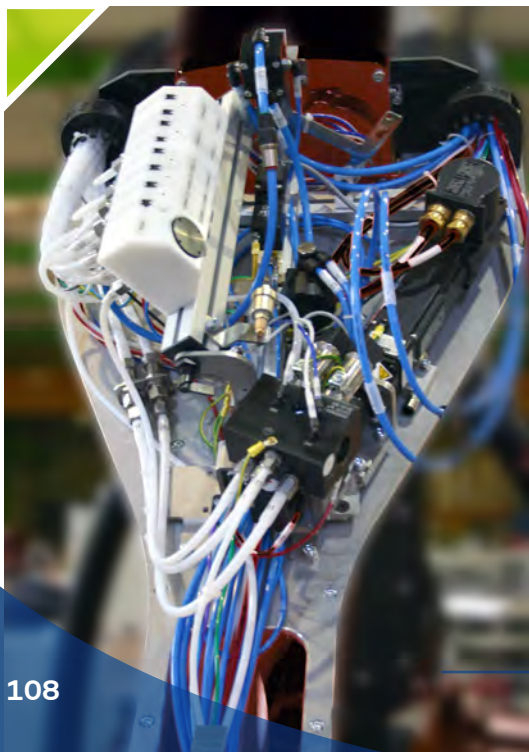


BUILT-IN REVERSE FLUSH BLOCK

When the pump is placed close to the sprayer (distance < to 1.5 m) as in the case of the "Process Arm", then the reverse flush block is directly assembled onto the pump. The reverse flush block called "built-in" is used. This configuration is optimal with a simplified installation.



Process arm



- DECREASE OF RINSING TIME AND COLOR CHANGING TIME
- RINSING MATERIAL SAVING
- PAINT SAVING
- PRODUCTIVITY INCREASE
- UPDATING OF EXISTING INSTALLATION
- REDUCED BULK OF THE EQUIPMENT
- REINFORCED SAFETY

CUSTOMERS' BENEFITS

High Performance

- The dump hose always remains clean and dry, thus high voltage return is not possible = reinforced safety
- The pump is kept apart from the material circuit, thus rinsing is easier and is carried out in masked time:
More over, pump and sprayer rinsing can be carried out independently = Cycle time decreased and solvent saving.
- The block is close to the sprayer thus allowing a smaller product hose diameter (Dia.: 4 mm instead of 5mm) = Paint saving.
- The pump priming with circuit 2 during the end of the spraying of circuit 1 becomes possible = Cycle time decreased and color change time decreased.
- When the paint circuit is equipped with long hoses, the block can be placed any where on the paint circuit to cut the circuit, thus allowing dissociating the rinsing of both parts = Optimization of rinsing times.

EXAMPLES OF INSTALLATIONS THAT HAVE BEEN ASSEMBLED:

The Reverse Flush block can be installed with any type of sprayer in internal charge version (solvent based paints) or external charge (water based paints), single or dual circuit, equipped with:

- a trigger valve and
- a dump valve

Ex: PPH 707-SB, PPH 707-MS-GUN, ...

1 Single circuit sprayer: pump placed at 1.5 m from sprayer => **Built-in Reverse Flush** block: The reverse flush allows decreasing the cycle time from 18 to 15 sec; i.e.: **16% saving on color change time.**

2 Single circuit sprayer: pump placed at 5 m from sprayer => **Remote Reverse Flush** block: The reverse flush allows decreasing the cycle time from 29 to 21 sec; i.e.: **27% saving on color change time.**

3 Double circuit sprayer: pump placed at 1.5 m from sprayer => **Built-in Reverse Flush** block: The reverse flush allows decreasing the cycle time from 14.5 to 5 sec; i.e. **62% saving on color change time !**

4 Double circuit sprayer: pump placed at 5 m from sprayer => **Remote Reverse Flush** block: The reverse flush allows decreasing the cycle time from 26 to 7 sec; i.e.: **80 % saving on color change time !**

Note: These values depend on the characteristics of the installation (hose diameters, type of material...)

CHARACTERISTICS

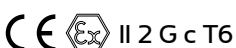
Working pressure	Pressure
Rinsing material (bar)	5.5 (82,5psi) - 6 (90psi)
Rinsing air (bar)	5.5 (82,5psi) - 6 (90psi)
Material supply (bar)	5.5 (82,5psi) - 6 (90psi)

REFERENCES

Description	Version	Reference
Reverse Flush Block	Remote	910 007 340 ⁽¹⁾
	Built-in	910 007 773 ⁽²⁾

(1): The four fittings are included into the remote reverse flush block

(2): The four fittings are not included into the block reference:
Please, consult SAMES






Type: REVERSE FLUSH
Dossier technique : BLOC PV

Range of vales

MICROVALVE NANOVALVE UPVALVE



COLOR-CHANGING VALVES ELECTROSTATIC
MICROVALVES
NANOVALVES
UPVALVES

-  Huge paint savings
-  Innovative System and Design
-  Improved Maintenance

Sames has designed a full range of 2-ways and 3-ways valves dedicated to the rotary bell atomizers of its electrostatic range. The compact dimensions of Sames valves allow them to be housed close to the sprayer, with resulting savings in paint, solvent and time required for changing colors.

Each valve has specific color for easy & fast identification, without removing from the atomizer or CCV. The position indicator of Microvalves has a specific color for each diameter of needle, and the top cover has a specific color for each type of microvalve: 2K, safe or standard. We propose a range of tools to install & remove properly each type of valve. Please remember to apply a thin coat of Vaseline to the body before inserting a valve into its housing.

CUSTOMERS' BENEFITS

Performance

- Fast response time
- Quick color changing time
- Perfectly fitting our atomizers

Sustainability

- High Reliability - 2.5 million cycles life
- Robustness for mechanical stress
- Chemical resistance to solventborne thinner

Productivity

- Paint & Solvent savings
- Easy & Fast identification to reduce downtimes
- Innovative Removal Tools

US OF THE COLOR-CHANGING VALVES WITHIN THE ELECTROSTATIC RANGE:

MICROVALVES

AUTOMATIC BELL ATOMIZER:

PPH 308, PPH 707 ICWB-M,
PPH 707 EXT-ST

ROBOTIC SPRAY GUN:

PPH 707 MS-GUN

ROBOTIC BELL ATOMIZER:

NANOBELL 2, PPH 707 SB, PPH 707 ICWB
PPH 707 MT, PPH 707 SB-2K,
PPH 707 ICWB-2K, PPH 707 MT-2K 1H
PPH 707 MT-2K 3H, PPH 707 EXT
PPH 707 EXT-MT, ACCUBELL 709 EVO,
PPH 707 Airspray

PAINT FLOW CONTROL:

Reverse Flush

NANOVALVES

AUTOMATIC BELL ATOMIZER:

PPH 707 ICWB-M, PPH 707 EXT-ST

ROBOTIC SPRAY GUN:

PPH 707 MS-GUN

ROBOTIC BELL ATOMIZER:

PPH 707 SB, PPH 707 ICWB, PPH 707 MT
PPH 707 SB-2K, PPH 707 ICWB-2K
PPH 707 MT-2K 1H, PPH 707 MT-2K 3H
PPH 707 EXT , PPH 707 EXT-MT
ACCUBELL 709 EVO
PPH 707 Airspray

UPVALVES

PAINT FLOW CONTROL:

UPside CCV
Easypump
RPG pump

EQUIPMENT

Designation	Top cover color	Position Indicator	Type of valve	Opening Air Pressure	Reference
2K with bellow Microvalve D:6	Black + "2K"	Orange	2-ways	5 Bar	910010850
Safety Microvalve D:7	Red + "safe"	Green	2-ways	5 Bar	910019884
Microvalve D:6	White	Orange	2-ways	5 Bar	1507375
Microvalve D:6 Beige body	White	Orange	2-ways	5 Bar	910028484
Microvalve D:7	White	Green	2-ways	5 Bar	1508516
Microvalve D:9	White	Red	3-ways	5 Bar	852426
Nanovalve	White	Orange	2-ways	8 Bar	1510004
Nanovalve Shield	White	Black	2-ways	8 Bar	910021569
UPvalve	White (Black grip)	Orange	2-ways	5 Bar	910012239S
2K with bellow UPvalve	White (Grey grip)	Orange	2-ways	5 Bar	910016428S

ACCESSORIES

Designation	Reference
Manual Removing Tool for Microvalve	1303689
Automatic tool for tightening of Microvalve	1403478
Manual Removing Tool for Nanovalve	1301832
Automatic tool for tightening of Nanovalve	1403498
Removing and Tightening Tool for UPValve	910013686

Peripherals

SLR Rack

Control solution for bell & gun type sprayers



SLR Cube



SLR Tall cabinet

SLR rack range is dedicated to control an automatic paint installation. Each SAMES sprayer (rotary atomizer or pneumo-electrostatic gun) is driven by its dedicated module “S-BOX Bell or S-BOX Gun” that is integrated to SLR with the following way:

- in a “SLR cube” (to drive one single sprayer)
- in a “SLR tall cabinet” (to drive up to 2 bell sprayers or 4 pneumo electrostatic guns).

Thanks to the SLR range, installation and control of paint systems is made easier.



FUNCTIONS

The SLR module is designed to feed and control the two S-Box modules (Bell/Gun) as far as possible. This module provides access to two control modes for S-Box modules:

- Local mode (manual adjustment of spray setting on the front panel of the module)
- Remote mode (external control trigger + remote high voltage for robotic applications for example)

CUSTOMER INTERFACE (IN)

- Information / Control:
- Emergency stop
 - Ventilation default
 - Conveyor default
 - Part detector at the booth entrance
 - External spray request (external trigger)
 - Request for high voltage authorisation
 - External bleed request
 - safety contact (door, etc.)

SLR MODULE

- Power supply: 230 VAC PH+N
• 7 bar



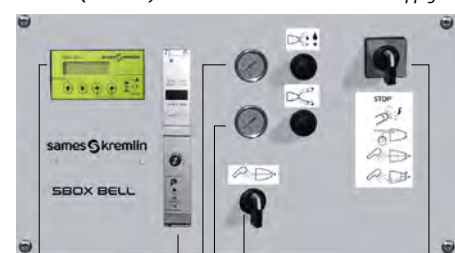
CUSTOMER INTERFACE (OUT)

- Customer feedback:
- Emergency stop
 - System defect
 - System in remote control mode
 - High voltage for sprayer no 1 in service
 - High voltage for sprayer no 2 in service
 - Short-circuit management

«S-BOX BELL» MODULE = X1 BELL

- Power supply:
• 230 VAC (GNM200)

- Consumption 45Nm³/h. per sprayer
- General air supply 7 bar



Adjustment of the value of high voltage

Adjustment of the speed of rotation

Air/solvent selector (injector/bell rinsing phase)

Adjustment of shaping air

Adjustment of product flow (optional paint regulator*)

- Off
- On (Spray + HV)
- Open dump circuit
- Open rinsing/filling
- Open injector/bell rinsing

«S-BOX GUN» MODULE = X1 or 2 GUNS

- Power supply:
• 230 VAC (GNM200)

- Consumption 45Nm³/h. per sprayer
- General air supply 7 bar



Adjustment of the value of high voltage

Adjustment of fan air

Adjustment of atomizing air

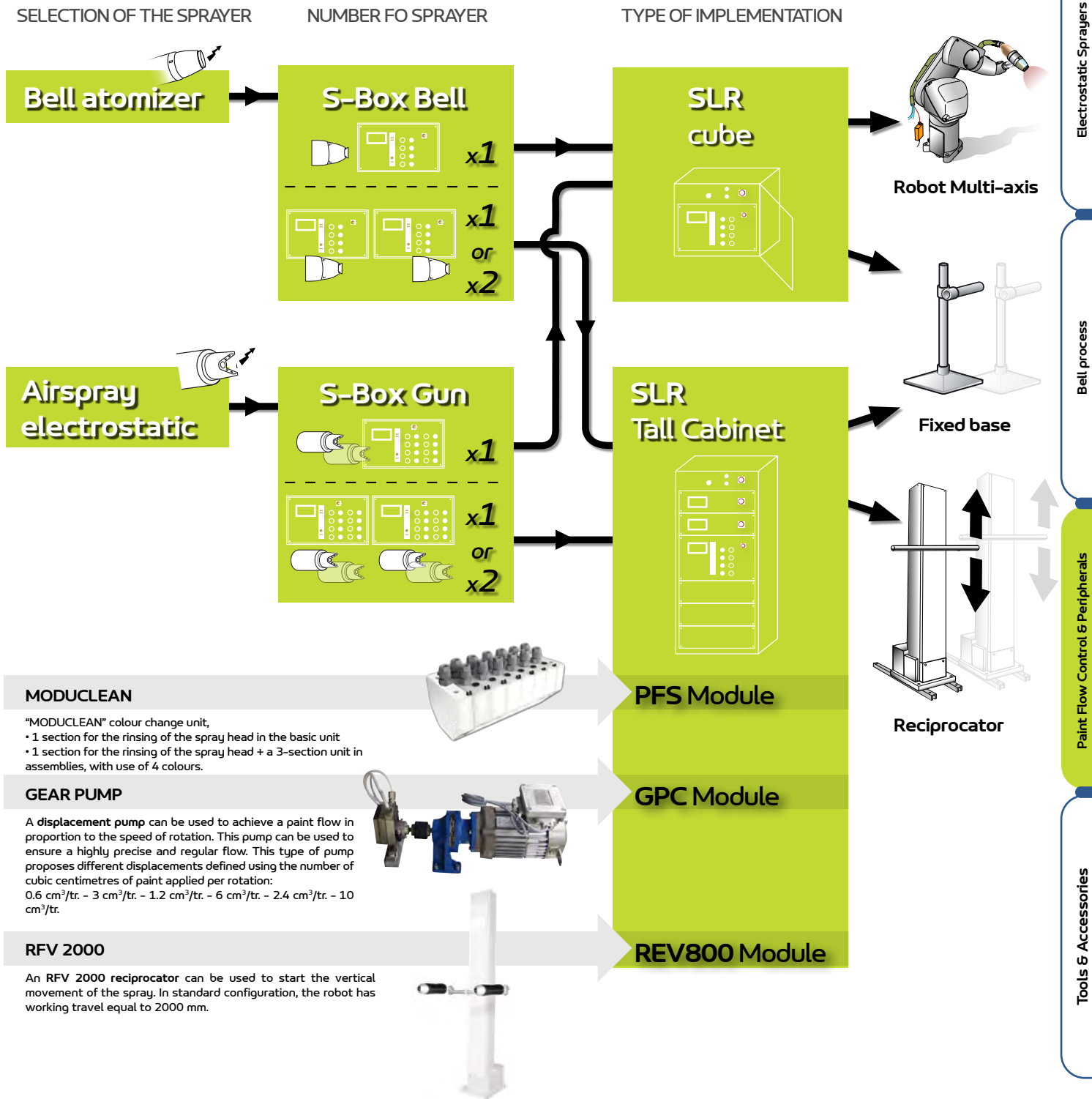
Adjustment of product flow (optional paint regulator*)

1 or 2 Gun(s) selector

- Off
- On (Spray + HV)
- Open dump circuit
- Open rinsing/filling

POSSIBLE CONFIGURATIONS

To create your list of references, contact SAMES







Peripherals

REV800

Electrostatic paint management



The REV800 module is intended to drive an automatic liquid electrostatic paint installation.

-  Reciprocator motion type
-  Light curtains parts detection
-  Independent spray triggers
-  Conveyor pulse control



TECHNICAL DATA

Supply	
Inlet voltage (V)	REV800 230 single
Inlet frequency (Hz)	47 - 63
Inlet current (A)	16
Supply of API (V)	24
Dimensions	
Weight (kg)	13,8
Height (U)	4
Width (inches)	19
Protection degree	
Rack version	IP54 (front panel) IP20 (rear panel)
Control screen	
Screen	7 inches LCD TNT
Display	resistive analog touch-sensitive screen, controlled by a finger, non-pointed object or glove.
Conditions of use	
Ambient temperature (°C)	< 40
Ambient humidity	< 85 % without condensation
Installation	Not for use in hazardous location

It can operate:

- the "up & down" axis of one or two reciprocator(s) SAMES RFV 2000 type,
- spray guns activation and the input/output interfacing with the installation.

The REV800 also manages the parts parameters required by the application via an integrated PLC:

- sweeping movement with parameters set for one to three zones: reversing points and speed change points,
- zone speeds adjustable from 0 to 60 m/min. stop/start running up to six spray guns per robot,
- management of ten memorized programmes (production runs for parts for painting).

The REV800 module is interfaced with the installation to:

- detect the parts,
- detect external faults,
- detect that the booth is operating correctly: conveyor belt and ventilation,
- manage faults: signaling system and external output authorizing start up (example: conveyer belt),
- manage timeouts for the application between parts, between two robots and three spray gun configurations.



CUSTOMERS' BENEFITS

 **REV800 module allows the operator to run his installation in a very simple way**

- **Very user-friendly:** learning the process is quick and intuitive - graphic icon display.
- **System reliability:** the system is managed by a programmable logic controller (PLC).
- **Easy to use:** the intuitive interface simplifies the selection of each menu to the maximum.
- **Time saving:** easy calibration of the high and low points and the robot axis. The parameter table choice can be made on line during production, without stopping the conveyor belt.
- **Ergonomics:** wide, easy to read and operate color touch-screen.

FUNCTIONS

The REV800 integrates the basic functions of an application process:

- 2 “up & down” type reciprocators - 1 axis
- up to 6 sweeping zones per reciprocator
- controls up to 6 sprayers per reciprocator
- 20 parts production runs per reciprocator

The 19 inch standard dimensions of the REV800 module allows easy integration into a SAMES modular cabinet and connection to the various SAMES spray gun control modules.

With the following functionalities, the REV800 module interfaces easily with an industrial application:

- parts detection (handles spraying and timed delays)
- external faults (recip stops, spraying stops)
- booth ventilation
- conveyor pulse
- conveyor stop
- E-stop
- external faults (warning, signals, other...)
- conveyor start authorization

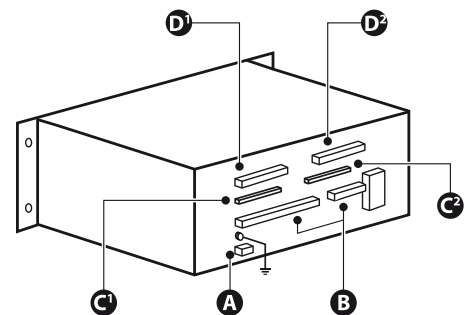
CONTROL MODULE REV800

Description	Reference
REV800 RACK VERSION	910019970
SCREEN PROTECTION SHEET	110002029
CONNECTING CABLES REV800 TO RFV2000	910003807



CONNEXIONS

Description	Mark	Function	mm2	Reference
Electrical supply	A		3G2.5	E4PCAL580
Inputs	B	Emergency stop	2x1	E2LAAB100
		Conveyor belt running	2x1	E2LAAB100
		Fan operating	2x1	E2LAAB100
		External faults	2x1	E2LAAB100
		Parts detection	3G0.75	E2LDAC075
Outputs	B	Conveyor belt autorisation	2x1	E2LAAB100
		Function OK	2x1	E2LAAB100
Spray gun control ⁽¹⁾	C1 & C2		2x1	E2LAAB100
Motor control	D1 & D2	Motor, lg = 30m	4G1.5	1411222
		Temperature sensor	2x1	1411223
		Potentiometer ⁽²⁾	4G0.75	1409971



(1): cable by the metre necessary for one spray gun, the C1 & C2 connection can each run 6 triggers
 (2): the potentiometer must be connected via a Zener barrier protection device which is a certified (POT31) electric system.
 The Zener barrier is installed at the rear of the control module REV800 on a rail provided for this purpose.
 Part number of the cable connecting the Zener barrier to the REV800: **1411224**
 Part number of the cable of the potentiometer: **1409971**
 Part number of the Zener barrier: **E6GPSR077AT**

Peripherals

RFV2000

Vertical and Horizontal movement system



WWW



RANGE

The RFV reciprocator 2000 is intended to equip automatic installations for painting or powder coating. There are two types of reciprocators that comply with ATEX:

➤ For **liquid paint** applications, mechanism usually located in zone 1 or 2, which determines a category for which the equipment is approved, category = 2.

It can lead to a combination of paint sprayers such as:

- 2 or 4 paint sprayers PPH 308
- 1 or 2 paint sprayers PPH 707 EXT-ST / ICWB
- 4, 6 or 8 spray paint TRP 501

➤ For **powder coating** applications, mechanism is in zone 22 to note that the regulation nevertheless considered that the equipment is approved, category = 2 instead of 3.

It can lead to a combination of powder projectors such as:

- 4, 6, 8 or 10 projectors powder Auto Mach-Jet
- 2 or 4 INOBELL powder turbines

The RVF 2000 reciprocator is controlled by:

- a control module REV 800 or MCR
- PLC for a more complex automatic installation

CUSTOMERS' BENEFITS

- Extremely simple construction and operation (very long service life).
- Stroke and speed adjustable remotely over a very wide range.
- Optimum safety: the reciprocator is CE approved.
- Reduced maintenance: limited to cleaning the chains and transmission devices.
- No special prepared area (the robot can be positioned or displaced manually without effort).

TECHNICAL DATA

Description	RFV2000 for application of liquid paint
Effective stroke – landmark A	1000 to 3000 depending on the version
Sweeping speed (m/minute) to 50 Hz	adjustable up to 60
Floor surface	0.55 x 0.70 m
Power motor (w)	750
Robot weight (kg)	approx 230
Single phase supply	220 V / 50-60 Hz
Eyebolts	∅ 28 mm
Atex marking	CE II 2 G c IIB T4

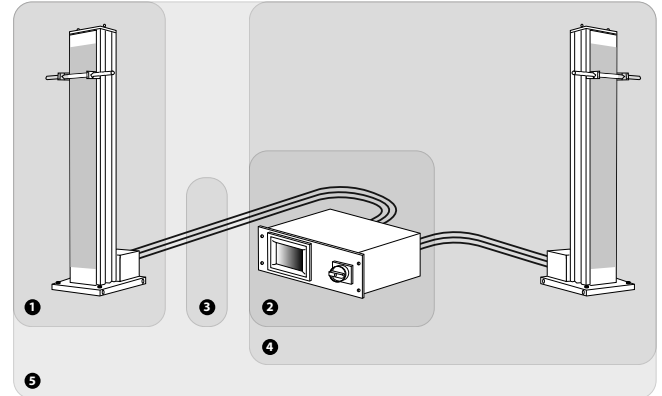


Mechanism of the robot «RFV2000»

Description	Mark	Effective stroke (cm)	Reference
RFV2000	1	200	910006928-200
liquid paint		80 < xx0 < 340	910006928-xxx
RFV2000	1	200	910006929-200
powder paint		80 < xx0 < 340	910006929-xxx

XX0 = effective stroke in cm, ex: 280 cm

It is best to choose a standard mechanical robot (200 cm stroke), even if the stroke is greater than the height of the pieces to be painted, it can adapt to space constraints. Otherwise, the choice will be made either because of environmental stress. (ex: a cabin height of less than 3.4 m) or for heights to be painted over 2m.



Mechanism of the robot «RFV2000» + Control module REV 800

Description	Mark	Pilot of	RFV version	Effective stroke (cm)	Reference
REV 811	4	x1 RFV one axis	liquid paint	200	910002370
			powder paint	200	910002373
REV 821	5	x2 RFV one axis	liquid paint	200	910002371
			powder paint	200	910002374

The assembly includes the electrical control cables (approx. 30m) and the REV 800 (delivered as a rack version)

- ① = Zone 1 or 2 (RFV for liquid paint)
Zone 22 (RFV for powder paint)
- ② = REV 800/MCR, out of ATEX area o ½ and 22 area with sealed version box
- ③ = Electrical connections for 1 x RFV2000,
Ref. = 910003807 =
motor cable: 1 411 222 (4G1.5mm2) +
cable temperature sensor: 1 411 223 (2x1mm2) +
potentiometer cable: 1 409 971 (4G0.75mm2)
- ④ = REV 811 (RFV2000 + REV 800)
- ⑤ = REV 821 (2 x RFV2000 + REV 800)

COMPONENTS

Guide rail kit

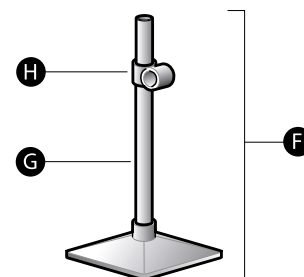
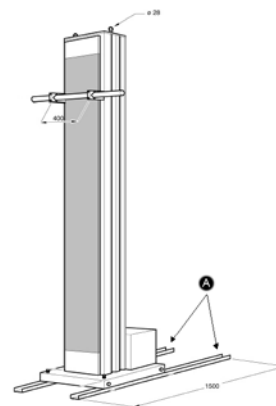
Description	Mark	Lenght (mm)	Reference
2 guiding rails & fixing pins	A	1500	1525228

Components for fixed spray

Description	Mark	Lenght (mm)	Reference
Rod (base + tube)	F	1500	459127
Tube only	G	1200	744097
		1500	1410592
Fixing nut	H	Ø50/30 mm	749805
		Ø50/50 mm	429104
		Ø50/60 mm	1204441

Optional tray

Description	Lenght (mm)	Reference
Cable tray kit	Hose < 2000	1514325
(2 kits per reciprocator)	Hose > 2000	1525208



Tools & Accessories

HVP500

Measuring device
High voltage probe



- **EASY TO READ DISPLAY:** 4 1/2" digit display
- **PORTABLE:** Protected by a foam lined aluminum case
- **FACTORY CALIBRATED:** HVP500 is calibrated to NIST standards



HVP500 is a precision high voltage probe designed to measure DC voltages up to 100 KV.

HVP500 consists of a removable probe containing high voltage resistors and a 4 1/2" digit display.

The probe resistors are very high resistance to minimize loading of the high voltage being measured. The removable probe screws into the hand held base and comes with 2 removable tips, including a ball and a cone. This portable hand held unit comes in a foam lined aluminum case that is lockable.



Description	Reference
HVP500	220000326

Not for use in hazardous atmosphere

TECHNICAL DATA

Description	Reference
Voltage	0 to ± 100 KV
Accuracy	± 0.1%
Resistance	10 G ohm ± 5%
Stability	100 ppm/ °C
Weight	1 lbs. 11 oz.



AP1000

Measuring device
Resistivohmeter



This device is equipped with:

- A metallic box, an open cover, a control plate on which are displayed:
 - > A reading of the measure on 3 separate scales.
 - > The red, black or blue colour buttons allow choosing the measure scale adapted and corresponding to a resistivity bracket of the measured paint.
- A measuring probe, connected to the box thanks to a cable, able to resist to the usual solvents. When the device is not used, the probe is placed into a housing of the box.

USE

The AP1000 resistivohmeter is specially designed to quickly measure with accuracy the resistivity of the paints and clears applied by electrostatics.

This process works with any paints provided that their thinner incorporated before use gives these paints certain qualities making their spraying easier. The resistivity factor is of major importance. This device is of precious help to the paint optimization laboratories, to sub-suppliers control departments or to users of paints applied by electrostatics.

Resistivity correlation:

1 k Ohm = 0.07 M Ohm x cm

1 M Ohm = 70 M Ohm x cm

ex: 280 k Ohm = 20 M Ohm.cm

Beware: The operator must take a paint sample and carry out the measures in a non NON Explosive area zone.

Description	Reference
AP1000	910 005 790

Resistivity measure range:
0.5 MΩ.cm to 1000 MΩ.cm



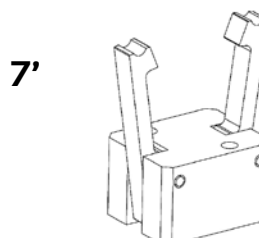
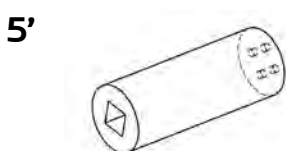
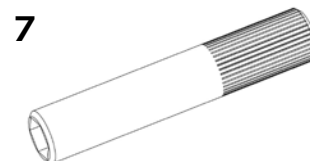
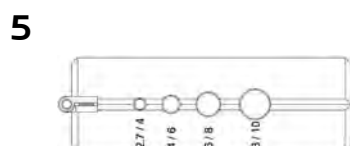
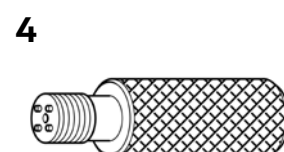
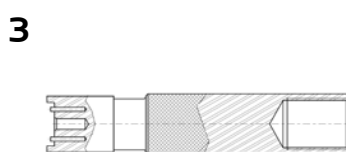
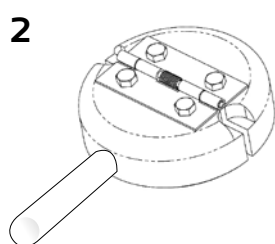
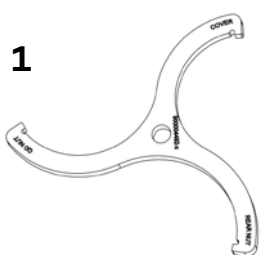
WWW



Maintenance Tools

TOOLS FOR RANGE 7

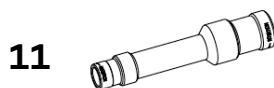
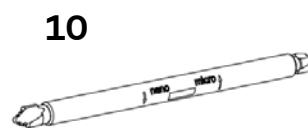
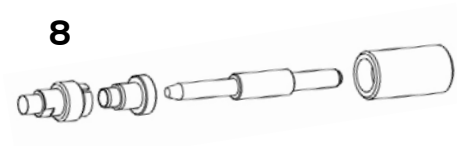
Description	Mark	Type	Reference	
Assembly and disassembly tool for exterior shroud, rear nut and base-plate nut	1	PPH 308 NANOBELL2 ACCUBELL 709 EVO	ø35 mm ø50 mm ø65 mm	1 308 689
		PPH 707 SB / MT / 2K	ø35 mm ø50 mm ø65 mm	900 004 492
		PPH 707 EXT PPH 707 EXT-ST PPH 707 EXT-MT	ø65 mm	900 006 546 900 006 424
		PPH 707 EXT PPH 707 EXT-ST PPH 707 EXT-MT	ø50 mm ø80 mm	900 011 883 900 006 424
Disassembly tool for magnetic bell type EC	2	EC 35		900 005 784
		EC 50		900 000 803
		EC 65, EX 65		1 204 427
		EX 65 EXT		900 005 087
		EX 80		900 008 708
Nano-valve tool	3	disassembly	All sprayer	1 301 832
		assembly	All sprayer	1 403 498
Micro-valve tool	4	Disassembly/ assembly	All sprayer	1 303 689
		assembly	All sprayer	1 403 478
Fitting assembly tool	5		All sprayer	1 313 955
Remove fittings 8-high runner color block	5'		ACCUBELL	900 009 440
Clipped fitting trapezoid tool	6		All sprayer	900 002 665
PV11 microvalve fitting removal	6'		ACCUBELL	1403478
Injector disassembly tool	7		All sprayer	910 000 700
Assembling Docking springs	7'		ACCUBELL	910 011 477



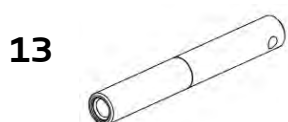
Maintenance Tools

ADVANCED TOOLS FOR YOUR ATOMIZER

Description	Mark	Type	Reference
Installation restrictor o-ring	8	PPH 707 2K	910 011 568
Installation o-ring	9	PPH 707 MT 2K-1H PPH 707 MT-2K-3H	900 006 499
Cleaning tool of nano & microvalve seats	10		900 006 430
Body of seat cleaning tools	11		900 006 489
Cleaning 2K circuits	12		910 009 458



Description	Mark	Type	Reference
Removal tool: high voltage connection & ground cable	13	PPH 707 EXT	900 006 354
Removal tool for charge ring needles	14	PPH 707 EXT-MT	910 009 029

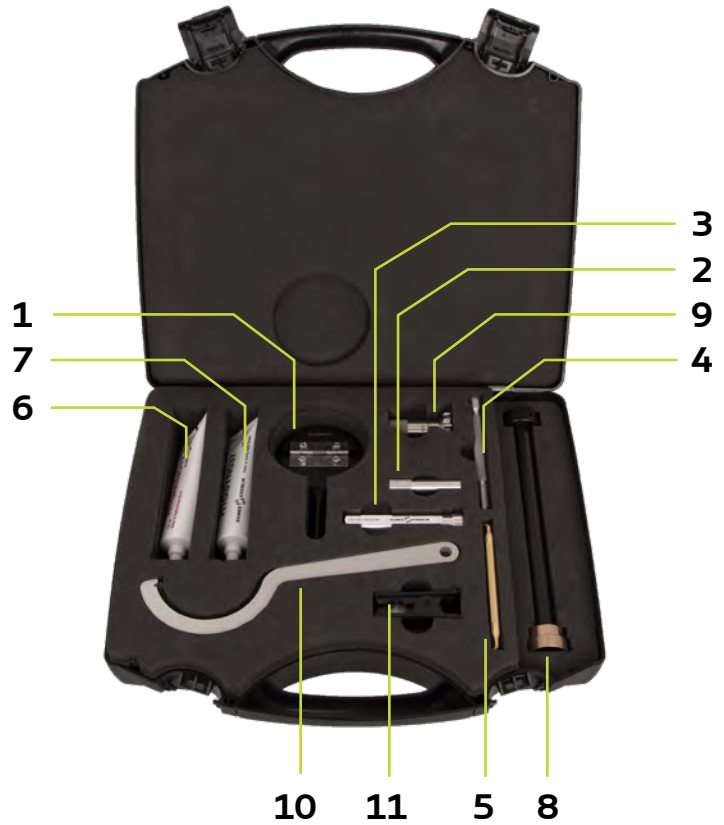


Tools & Accessories

Maintenance Tools

TOOLS FOR RANGE 8

Description	Mark	Reference
Removal tool for EC 35 magnetic bell cup	-	900005784
Removal tool for EC 43 magnetic bell cup	1	900018693
Removal tool for EC 50 magnetic bell cup		900000803
Removal tool for EX 65 magnetic bell cup		1204427
Injector removal tool	2	910000700
Nano5 valve assembly/disassembly tool	3	900019557
Trapezoidal tool for clipped fittings	4	900002665
Seal extractor tool	5	240000301
Vaseline white (100 ml)	6	H1GMIN017
Dielectric grease for high voltage unit (100 ml)	7	H1GSYN037
Assembly / disassembly tool for low voltage connection	8	900019783
Installation / Removal tool for T8 outer cover	9	900017715
Tool for assembling and disassembling the rear nut and the nut from the quick disconnect plate	10	900019642
Hose cutter	11	W3SCTU002



SELECTION OF TOOLS BY TYPE OF RANGE 8

		Mark															
		1	2	3	4	5	6	7	8	9	10	11					
		Designation	Removal tool for EC35 magnetic bell cup	Removal tool for EC50 magnetic bell cup	Removal tool for EX65 magnetic bell cup	Installation / Removal tool for Injector	Installation / Removal tool for Nano 5 Valves	Trapezoidal tool for clipped fittings	Seal extractor tool	Insulating Grease (100ml)	Insulating PTFE grease (100ml)	Installation / Removal tool for LV Connection	Installation / Removal tool for T8 outer cover	Installation / Removal tool for body D90-95	Installation / Removal tool for body D100	Tube Cutter	
Nanobell 801	PART NUMBER	BELL CUP															
	Straight/ RBNH	910033144-35	Bell Cup 35	X			X	X	X	X	X			X	X		X
		910033144-50	Bell Cup 50		X		X	X	X	X	X			X	X		X
		910033144-65	Bell Cup 65			X	X	X	X	X	X			X	X		X
	RBHW	910033145-35	Bell Cup 35	X			X	X	X	X	X			X		X	X
		910033145-50	Bell Cup 50		X		X	X	X	X	X			X		X	X
910033145-65		Bell Cup 65			X	X	X	X	X	X			X		X	X	
Nanobell 803	SB	910033146-35	Bell Cup 35	X			X	X	X	X	X	X	X	X		X	
		910033146-50	Bell Cup 50		X		X	X	X	X	X	X	X	X		X	
		910033146-65	Bell Cup 65			X	X	X	X	X	X	X	X	X	X		X
	ICWB	910033147-35	Bell Cup 35	X			X	X	X	X	X			X	X		X
		910033147-50	Bell Cup 50		X		X	X	X	X	X			X	X		X
		910033147-65	Bell Cup 65			X	X	X	X	X	X			X	X		X



UPSIDE TOOL KIT

Description	Reference
Tool kit case for UPSide CCV	910 017 708

Description	Mark	Reference
Torque limited UPvalve wrench	15	910 013 686
13mm UPSide fittings wrench	16	910018 362
Screw driver 1/4	17	240 000 343
Inter modules seal's mounting tool	18	910 015 840
Nipple's mounting tool	19	900 010 965
Nipple removal tool	20	240 000 292
Extractors set		240 000 293
Ratchet wrench		240 000 294
Anti-seize paste for tubing	21	F6RXZZ129
Hose cutter	22	W3SCTU002
Universal tool paint regulator	23	741 015
White vaseline (100ml.)	24	H1GMIN017

Operator accessories

1 ANTI-STATIC COVERALLS

Size "S" to "XXL". Grey.
Made of special fabric, extremely sturdy, recommended for liquid paints.
Reduces the risk of electric charges accumulation



2 HAT, GREY (ONE SIZE)



3 COVERBOOTS (ONE SIZE)

4 DUST MASK

Meets European standard EN-149-2001, class FFP2. Provides protection only from wearer from mechanically and hermally produced particulates.
May be used to protect against concentrations up to 10 times the Average Exposure Value (AEV), Belgium upper limit (VLB).



5 ANTI-SOLVENT MASK

Complies with European standard EN 405:2001. Protection against most vapours/gases and particles such as:

- Inorganic vapours and acid gas, up to 1000 ppm or 10 x VME/VLB, taking the lowest of the 2.
- Particles up to 50 x VME/VLB



6 GLOVES - NITRILE RUBBER (ONE SIZE)

Provide protection against numerous chemicals such as alcohols, aromatic and chlorinated solvents (within the provisions of the chemical resistance chart).
Complies with European 89/686/CEE Directive.



N°	Reference
1	(S) W5GMAS059
	(M) W5GMAS060
	(L) W5GMAS061
	(XL) W5GMAS062
	(XXL) W5GMAS063
2	W5GMAS070
3	W5GMAS071# (x10 qt)
4	W5GMAS018 (x10 qt)
5	W5GMAS035
6	W5GGAM039

Operator accessories

7 PROTECTIVE OVERALLS

Protects the operator. Comfortable to wear, giving protection for dust or plush.

Conforms to European Standards

- Made in non-woven fabric, they come with elasticated wrists and wide trouser legs to protect footwear



N°	Reference
7	(S) 564504001
	(M) 564504002
	(L) 564504003
	(XL) 564504004
	(XXL) 564504005
8	043250001

N°7 & 8: set of 5 quantity

8 PROTECTIVE HOOD

Protects the head and hair.

- Non-woven, light and lets the skin breathe
- Conforms to European Standards

9 RC 756 RESPIRATORS

Lightweight, comfortable respirators efficient for each type of paint and compliant with the latest european norms.

(Respirator: EN 140, Filters: EN 14393).



Description N° 9	Reference
RC 756 respirator	143380100
RC 756 respirator for SOLVENT-BASED PAINTS - A1 filters	143380200
RC 756 respirator for WATER-BASED PAINTS - A1B1P3 filters	143380300
RC 756 respirator for PLURAL COMPONENT PAINTS - ISOCYANATES - A1B1E1K1P3 filters	143380400

FILTERS AND PRE-FILTERS

Description	Type	Quantity	Reference
Filters for solvented paints	A1	10	143380210
Filters for water-based paints	A1B1P3	5	143380310
Filters for plural-components-isocyanates	A1B1E1K1P3	5	143380410
Pre-filters for A1 filters	-	25	143380110

ACCESSORIES

Description	Quantity	Reference
Spare inlet/outlet valves	3	143380130

Tips pages

Paint

Decoration and protection of metals are always linked.

For that purpose, all kinds of surface treatments exist (chrome or nickel plating, aluminum coating, etc.), and other coatings. In this particular area, paints fill in a large percentage.

Paints are universally utilized, and can be applied to just about everything: wood, metal, stone, leather, plastics, elastomeres... Paints are not a finished product, and the quality of the application will be depending on all the steps of its implementation, generally known as "the painting system".

The steps are:

- surface preparation (pre-treatment)
- spraying of the materials (varnishes, tints, paints...),
- curing

Whatever kind of parts is being sprayed.

For your information, we will review here the basics of each of those steps.

SURFACES PREPARATION (PRE-TREATMENT)

There is a whole range of treatments, mechanical or chemical that any surface must be subjected to, prior to the application of the first layer of paint, tint or varnish.

An appropriate surface treatment is the essential premise for a good protection and the final visual aspect of the finished part. Surface treatment is often the most extensive, and the most expensive area of a painting system.

Material	Physical preparation	Chemical
Steel:	Sanding, Blasting	Brushing acid
Aluminum:	Brushing	Vapor blast
Wood:	Sanding	
Plastic:	Flame	Plasma torch

Once treated, the surfaces must be:

- Free of powdered or non adherent residues,
- Free of oil, grease, humidity

To get a very good anti-corrosion protection, mostly on metals, one sprays:

- either a primer, or a filler
- or an anti-corrosion paint

A primer is a liquid material at approximately 16 s, CA4 (or Ford #4 cup), which is sprayed as a thin film, designed to penetrate the unevenness of the metal's surface.

The phosphoric acid in the primer, attacks the metal surface, resulting in an isolating and inert phosphate.

Primers are appreciated for their very good adhesion to metals.

They MUST be coated with paint, which will eventually shield them.

An anti-corrosion paint is applied in thicker films than primers.

As they contain corrosion inhibitors, they protect metals chemically and mechanically.

They save time, as one applies in one pass the corrosion inhibitor and the mechanical protection. These materials are often used for infrastructures and metallic carpentry, as they offer the choice of being left as is, or of being covered with a film of colored finish.



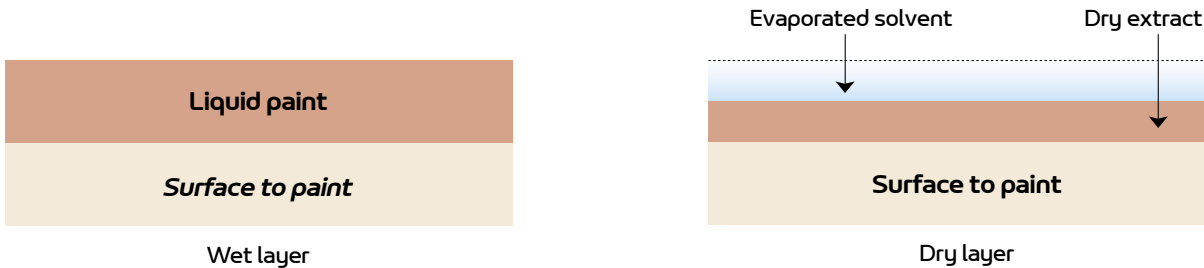
16s CA4



40s CA4

As we all noticed from finished parts, paint is a hard coating. However, we spray a liquid. This change of nature is caused for the most part by elements present in the material, whose function is described below.

The composing elements of paints:



All paints are generally made of several components diluted in solvent (which may be water), which will eventually go back to solid after they dry out on the painted surface:

- binding materials
- pigments
- additives

The binding materials are generally more or less transparent, like a resin. When diluted alone in solvent, it becomes a varnish:

Binding material + solvent = varnish

The paint is often given the name of the type of binding material it is made from; for example, cellulosic paints use cellulose as a binding material. To make the film opaque one adds very fine powders high in color called pigments.

Binding material + solvent + pigment = paint

At last, to give the film particular characteristics (mechanical resistance, for example) quite a few charges and additives are added to the above mixture.

Solvents dissolve the other components of the paint:

- Light solvents: evaporate quite quickly, so much so that the paint drops may dry before they reach the part, and not overlap correctly. They are never used alone, but combined with others.
- Heavy solvents: evaporate rather slowly, allowing the paint to spread well as it hits the surface of the part. They provide the smooth and slick aspect of the film. They are usually added in measured quantities to the light solvents, as they extend the drying time.
- There are medium solvents: they evaporate in a few seconds, allowing the droplets to mix on the surface, and drying quickly enough.

In the manufacture of its paint, the paint manufacturer first considers the list of solvents which will be able to dissolve the binding materials he wants to use, and then picks up the ones whose volatility matches the type of drying method requested (air, oven). Just before the use, the operator may add a thinner to his paint, to give it the fluidity (viscosity) required for his spraying operation.

PAINT CONSISTENCY

Viscosity

This physical dimension characterizes the capability of a fluid to flow under pressure.

All materials are more or less viscous (including solid metals). To make it easier to understand: water is almost not viscous, oil is much more, and mayo even more. To characterize this, physicians use a unit called the Poise: in fact as it is rather a large measurement, they routinely use one hundredth of the Poise, called Centipoise.

To precisely measure the viscosity of a fluid takes a lot of time and heavy expensive equipment. In our industry, we always use consistency cups. They are little pre-sized funnels, with a calibrated hole. One fills up the cup of liquid paint and measures the time needed to empty it, which is why we speak of a paint at 20s, or 40s, or 70s.

To mix it up a little further, there are various consistency cups, of different sizes and with different calibrated holes. The most used ones in Europe are the AFNOR #4 (CA4) and the Ford #4 (CF4), which both have a 4mm calibrated hole. The chart below shows correspondence between various cups, and the matching viscosity in centipoises.

AFNOR 4 (CA4)	ISO 4	mPas.s	Centipoises	Ford 4 (CF4)	DIN 4 (D°)	LCH (Fr)	ZAHN (n°2)
12	-	20	20	10	11	6	18
14	17	25	25	12	12	7	19
16	23	30	30	14	14	-	20
20	34	40	40	18	16	8	22
25	51	50	50	22	20	9	24
29	60	60	60	25	23	10	27
32	68	70	70	28	25	-	30
34	74	80	80	30	26	11	34
37	82	90	90	33	28	12	37
40	93	100	100	35	30	13	41
45	-	120	120	40	34	14	49
50	-	140	140	44	38	15	58
56	-	160	160	50	42	16	66
61	-	180	180	54	45	17	74
66	-	200	200	58	49	18	82
70	-	220	220	62	52	19	-

Nota: 1 poise = 100 centipoises and 1 mPas.s = 1 centipoise (If the density of the paint is equal as 1 and if it is a fluid Newtonien, that is to say no thixotrope).

Temperature and viscosity

The table below shows the changes in viscosity of a glycerophthalic paint as the temperature varies.

Viscosity of paint changes with variations in temperatures (a paint of 40s CF4 at 10°C will have a viscosity of 20s at 30°C), this often explain the concerns of application depending on the geography of a country.

	Temperatures (°C)																				
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	
v i s c o s i t y	27	26	24	23	22	21	21	20	19	18	18	17	17	16	15	15	14	14	14	14	
	33	31	29	27	26	25	23	22	21	20	19	18	18	17	16	16	15	15	14	14	
	39	36	34	32	30	28	26	24	23	22	21	20	19	18	17	17	16	15	15	14	
	46	42	39	36	34	31	29	27	26	24	23	22	21	19	18	17	17	16	15	15	
	54	49	45	41	38	35	32	30	28	26	24	23	21	20	19	18	17	17	16	15	
	56	51	47	43	40	36	33	31	29	27	25	23	21	20	20	19	18	17	16	16	
	61	55	50	46	42	38	35	32	30	28	26	24	22	21	20	19	18	17	16	16	
	69	63	56	52	46	42	39	35	32	30	28	25	24	23	21	20	19	18	17	16	
	77	69	62	55	50	46	41	38	35	32	29	27	25	24	22	21	19	18	17	16	
	84	74	67	61	54	50	44	40	36	34	30	28	26	25	23	22	20	18	17	16	
	95	84	75	66	60	54	48	44	40	36	33	30	28	26	24	22	20	19	18	17	
	104	92	81	73	65	58	52	46	42	38	35	31	29	27	24	23	21	20	19	18	
	112	100	88	76	69	62	54	49	44	40	36	32	30	27	25	23	21	20	19	18	
	122	108	90	85	75	66	59	53	47	42	38	35	31	28	26	24	22	21	19	18	
	CF # 4	132	120	102	90	80	70	63	55	50	44	40	36	33	30	27	25	23	22	20	18
		142	124	108	95	84	74	65	58	52	46	41	37	34	31	27	25	23	22	20	18
	152	132	119	101	90	80	69	61	54	48	43	38	35	31	28	26	24	23	21	18	
	164	140	123	106	94	83	73	64	56	50	45	40	36	32	29	27	24	23	21	18	

PAINT CONSISTENCY

Temperature and viscosity

Example: At 20°C, a paint with a required 22s viscosity, may reach:

- at 12°C, 28s
- at 32°C, 17s

Significant differences in flow and quality will occur during the day:

	Temperatures (°C)	Viscosity - CF#4 (seconds)	Flows (cm ³ /mm)
Morning, cool shop	15	23	460
Mid day, warm shop	20	20	520
Oven on	25	17	560

In this instance, the paint warmed up by 10°C (50 F), changing the viscosity from its original 23s to 17s, and raising the flow at the gun by 22 %, resulting in sags and runs.

Even worse, a paint prepared at 20s in a warm atmosphere (20C), may reach 28s the next morning, before the temperature rises: the sprayed film will be coarser, and will take longer to dry.

Advice:

Keep temperatures as close to 20C (70 F) as possible: that's the temperature of choice given by the paint manufacturer for most applications. If the paints are stocked in a non conditioned room, take to the spray booth the cans that are going to be used the next day at least 12 hours ahead of time. To ensure a constant quality of paint all year long, it is well advised to install a paint-heater on-line, delivering a constant, say 25°C (77 F), to the applicator, regardless of the outside or ambient temperature, and you will eliminate the viscosity variations due to temperature. Warning ! With multi-components materials, the pot-life is dramatically reduced when their temperature is raised. The paint manufacturer must be advising you on such an installation.

Drying paint

All paints breakdown into 2 types of compound:

- The dry content
- The VOC'S, or water for water soluble paints.

To cure a paint, means evaporating the volatile compounds first, and then hardening the solid ones.

One distinguishes drying from hardening.

Drying describes the formation of a dry film by only removing the volatile compounds. This happens in 2 stages: during spraying and in the film itself.

Accounting for such variables as temperature, droplets size, type of applicator, target distance, viscosity, the paint will reach the target in various stages of wetness (or dryness).

Which means that most of the solvent evaporated before the drop reached the target. The drying of the wet film is sped up when the part is circulated in a well ventilated, dry and dust-free room.

Paint resistivity

Resistivity describes the capability of a material to oppose the passage of electricity.

In a paint line, the lower the resistivity of a paint ($< 10 \text{ M}\Omega\cdot\text{cm}$), the higher the amp-draw from the HV generator (UHT), and vice versa.

How does resistivity affect a paint system ?

It will have 2 influences:

- On the electrical consumption of the paint and solvent circuits (and then the configuration of the system).

This is a concern of those direct charge systems, with grounded paint circs, and their amp-draw readings between the HV (injector, bell-cup) and the first grounded part (fitting, flow-meter, pressure pot, Q/D).

- On the charge of the paint droplet (and the application properly speaking):

The lower the resistivity, the better the charge.

The higher the charge, the better the electrostatic field, the higher the transfer efficiency.

However, the drawbacks of electrostatics are going to be also higher; overloaded edges, light coverage inside cavities.

Also, the lower the resistivity, the higher the backspray and applicator soiling: aircaps, and bell body.

What is the best resistivity window ?

We measure it with a meter called the "AP 1000 resistivohmeter".

All values indicated by SAMES are taken with this particular piece of equipment. SAMES insists that the meter only gives an indication, not a precise measurement.

Though no rule may be firmly established, (the level of charge brings forth the notion of time), SAMES feels that paint with a resistivity just under $500 \text{ M}\Omega\cdot\text{cm}$ will generate a low electrostatic efficiency, particularly if the HV is also low (20/30KV).

On the contrary, low resistivity paint ($< 10 \text{ M}\Omega\cdot\text{cm}$) will generate a fast soiling of the equipment, overloads and thin areas, albeit providing generally high transfer efficiency.

Too low resistivity material in the paint line, will result in too much amp-draw for the available current provided by and depending on the UHT.

The risk is, not to be able to spray correctly, with recurrent over-current faults.

When on the edge with some materials, it is mandatory to test them to validate a system design.



Warning: When measuring resistivity from a metal based paint, the reading is that of the resin and solvent. For electrostatic spraying, the type and quality of the coating of the metal flakes (aluminum), is all important for the non-shorting of the paint line to ground.

Up to a set up value, the paint line may consume microamps in relation to the material.

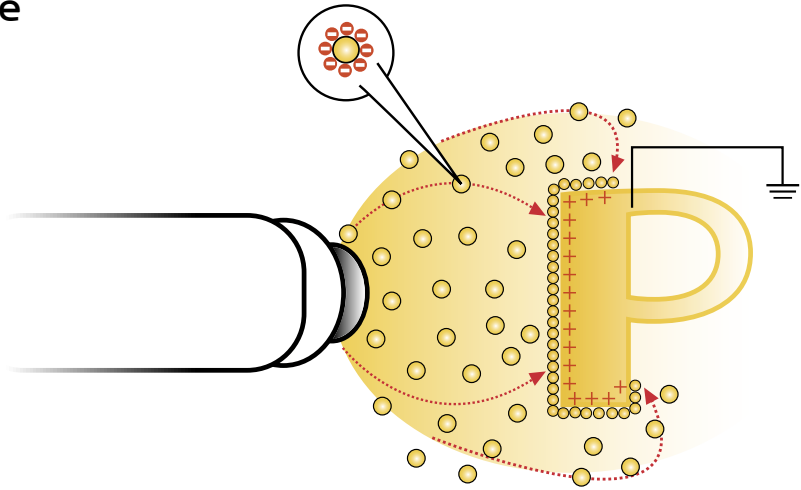
Should that value be reached, the power supply (GNM) faults into disjunction, or by current limitation, resulting in a very low high voltage, or no high voltage at all.

Electrostatic spraying

Atomization by electric charge

> When spraying, the droplets atomized by the nozzle of the gun are electrically charged by the current provided by the UHT, and conveyed into the electrostatic field; 85kV for a handgun, and 70 to 100 kV for an automatic atomizer.

In the electrostatic field established between the gun and the grounded part travel the paint particles, which are deposited uniformly on all faces of the part, providing the highest transfer efficiency.



Schema: wraparound effect

Conduction (contact) charge: bells

> Conduction charge is only efficient for paints of low resistivities (< 500 MΩ.cm).

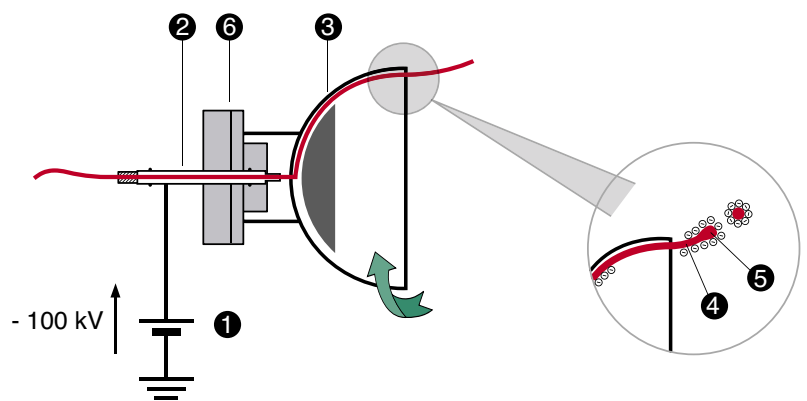
The bell-cup or disc are under high voltage (-100 kV), and are the actual electrodes of the applicator.

The stream of paint out of the injector, hits the disc or cup, and gets its electric charge from it. The surface of the paint becomes equipotential, that is the charges are spread equally well on the surface of the film of paint.

Paint threads are formed by the electric field, and by the superficial tension of the fluid, and break into droplets, at the first instability. Electric charges remain on the surface of the drop.



High speed bell, RPM 5,000 to 45,000 RPM, loaded



- 1: High voltage generator
- 2: injector
- 3: bell cup

- 4: paint
- 5: droplet
- 6: turbine

Determination of application settings

PPH sprayer

This paragraph describes the setting up of a rotating bell painting application. The following advice is not exhaustive: it is often necessary to perform laboratory tests to determine the precise parameters corresponding to the process line.

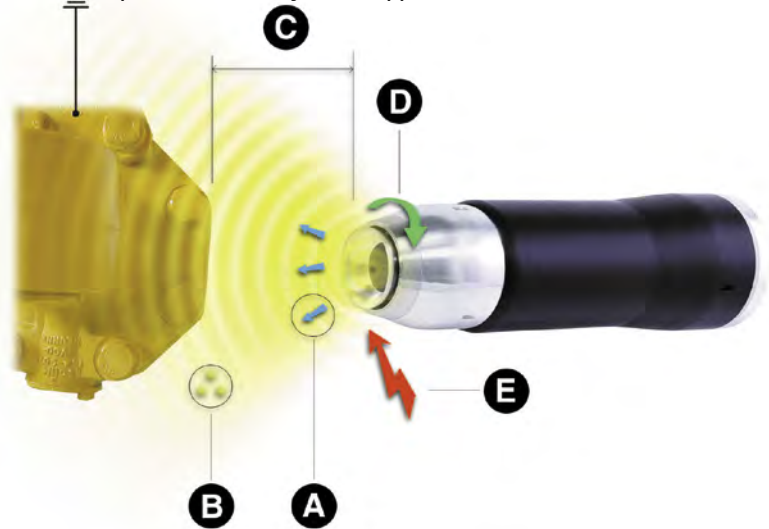
To define application settings, you must first

- Define areas to be painted automatically.
- Identify the need (or not) pre-keys or manual retouching
- Define the layers of paint to be deposited and the minimum and maximum tolerances
- Know the speed of the conveyor
- Obtain at least the 4 following characteristics:
(If the product painting technique)

- > Solids
- > Viscosity
- > Limit bites
- > Sag Limit

(Check periodically the viscosity of the product because it can cause changes on the outcome of application)

Obtain the vertical velocity of air in the spray booth. This value usually ranges between 0.3 and 0.5 m/s.
The main parameters to adjust the application are:



A) Spraying air (air cup)
B) Paint flow
C) Application distance

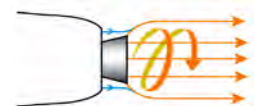
D) Rotating speed of the bell
E) The value of high voltage

THE MAIN PARAMETERS TO ADJUST THE APPLICATION ARE:

1/ The air spray (air skirt)

The air skirt adjusts the size of the fan pattern. The higher the value of the air skirt, results in a narrow and penetrating fan pattern, conversely, a very low air skirt gives a broad fan pattern.

- The desired fan pattern will depend on the surface to be painted, it must allow a homogeneous collection of it and minimize overspray in the booth. Too much air and dirt skirt = fog ⁽¹⁾
 - Too little air skirt = hollow center of fan pattern ⁽¹⁾
 - For the purposes of flat piece = lower air skirt
 - For the application of complex component (entry) = increase air skirt
- (1): Phenomenon sensitive to high volume of paint



The outer cup incorporates Vortex air outlet holes inclined to the passage of air. This cup is recommended in most configurations thanks to the versatility of the settings. It encourages the transfer efficiency and the electrostatic wraparound effect.

2/ The paint flow

The paint flow is the parameter that yields the thickness dry film.

Where no test would have been done in the laboratory, and you do not have precise data: you can then use the formula. Theoretical following as a starting point.

Flow paint sprayer

$$D = \frac{(100 \times H \times Vc \times Ed)}{(R \times ES)}$$

The flow will depend on several factors:

H: height scanning robot in cm (fixed parameter, this corresponds to the height of the part to which is added about half the width of impact. These are the high points and low points of the conversion part)

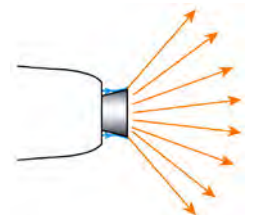
Vc: line speed in m / min (fixed parameter)

Ed: thickness to deposit, in microns (fixed parameter, microns)

R: thickness to deposit, in microns (fixed parameter, microns) % ⁽²⁾

Es: dry product to be applied (provided by the paint manufacturer)

(2): The return of a PPH 308 in an optimal configuration is 90%.



The outer cup incorporates Straight air outlet holes for the passage of air. This cup is recommended when looking for a better penetration into the work part, particularly with a large flow (> 500 cc / min).

Determination of application settings

PPH sprayer

3/ Distance of spraying

The spraying distance is an important parameter that affects the evaporation of solvents in the process of spraying and therefore the tension of the film.

Quick evaporation tends to reduce this tension. Product formulation, including the balance of light and heavy solvents must be adjusted to achieve an optimum.

Heavy solvents help keep a paint film wet longer, but it may increase the risk of running.

Too much light solvent can cause a dry powdery application.

It is therefore possible to adjust the spray distance to influence the evaporation of solvents. However it is advisable to adjust the dilution of products for application in rotating bell.

Distance is often recommended application of the order of 250 mm.

The minimum acceptable distance is 150 mm to 70kV and a maximum of 350 mm:

- Below 150 mm, it will meet with problems of paint impact, and recovery of defects.

Caution is vital to respect the spray distance allowed based on the voltage.

These distances are shown in the equipment manuals.

- Above 350 mm, we begin to experience problems in dirt (over spray) and decreased deposition efficiency.

4/ Rotation speed of the bell (Range #3)

The speed of rotation will help determine the size of paint particles.

The higher the speed, the particles are fine and vice versa.

The speed required is very dependent on the product formulation.

The speed used as the starting value =

30 to 35 000 tr/min for solvents

35 to 40 000 tr/min for water-based materials

These values correspond to average flows (300 cc / min). For small flow rates or lower viscosities, it will decrease the speed and sometimes it will fall to values below 30 000 tr/min.

The key aspects due to:

• Turning too fast

- Spraying too dry
- Matt finish, decrease the brightness
- Low deposition efficiency

• A rotation too slow

- Less good homogeneity in particle size
- Worse controlling the fan pattern of the skirt
- Appearance orange peel
- Worst tense
- Tears

Determination of application settings

PPH sprayer

5/ Value of the high voltage

The high voltage increases the transfer efficiency. Indeed, the charged paint particles are attracted by the part connected to ground. The value of the high voltage will depend on the resistivity of the material being applied.

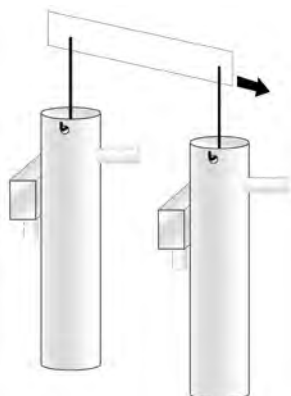
The higher the resistivity, the lower the value of the high voltage.

Typical values are:

- **for products containing solvents (resistivity of 1 to 500 MΩ.cm):**
 - Internal charge = 80 kV
 - To the metallic base, a circuit «Coil» is built into the sprayer PPH 308 and allows the use of high voltage to 80 kV.
- **For water-based materials (resistivity of the order of several kΩ.cm):**
 - Internal charge = 60 kV
 - External charge = 70 kV
- **requirement for penetration into the part = decrease of the high voltage**
- **an application for a single part (flat) = increase in high voltage**
- **to reduce the paint flow = increase of the high voltage**

Example 1:

- **Spray:**
 - Flow = 200 cc / min
 - HV = 50 kV
 - Air cup = 300 L / min
 - Type of bell = ø 65 mm or 70
 - Distance = 200 mm application
 - Speed = 25 000 rpm
- **Data:**
 - Solvent-based product
 - Product solids = 30%
 - Desired thickness = 50 microns
 - Conveyor speed = 3 m/min.



Example 2:

- **Spray:**
 - Flow = 120 cc / min
 - HV = 90 kV
 - Air cup = 150 L / min
 - Type of bell = ø 60 mm or 65
 - Distance = 250 mm application
 - Speed = 35 000 rpm
- **Data:**
 - Solvent-based product
 - Product solids = 30%
 - Desired thickness = 50 microns
 - Conveyor speed = 3 m/min.





A large rectangular area filled with a fine grid of small squares, intended for handwritten notes or technical drawings.

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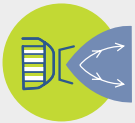
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