SAMES KREMLIN

Electrostatic spraying & equipment

Catalog V1.0

Expertise for high finishing quality & efficiency

Apply your Skills

Document, products and pictures shown are not contractual - Contact: **marketing@sames-kremlin.com** – Printed in France - January 2022 - Ref: **573 745 002**

Editor's note

In order to help you increase your competitiveness, **SAMES KREMLIN** daily dedicates itself to excellence in terms of innovation and reliability.

We constantly improve our performances as well as quality to satisfy your needs.

We also help you in defining the equipment allowing your installation to comply with V.O.C. directives.
We enable you to benefit from reliable technologies while ensuring you a swift return on investments.

You will find in this catalogue the equipment that will enable you to reach the paint application results you are aiming at.

Providing you with the best, whatever your requirements, is our mission.

All **SAMES KREMLIN** team is at your disposal to answer your questions.

Enjoy your reading.

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SYMBOLS

One-component material

Two-components material

Solvent based paint

Water based paint

Electrical charge by direct contact (internal charge)

Electrical charge by external electrodes (EXT)

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

Customer satisfaction

SAMES KREMLIN 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 KREMLIN** Customer satisfaction department, is at your disposal to answer your needs within the shortest time.

> HOTLINE

SAMES KREMLIN has a quality hotline which takes care of our customer satisfaction.
Please fill 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

> 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 KREMLIN** 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 KREMLIN 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 insurance

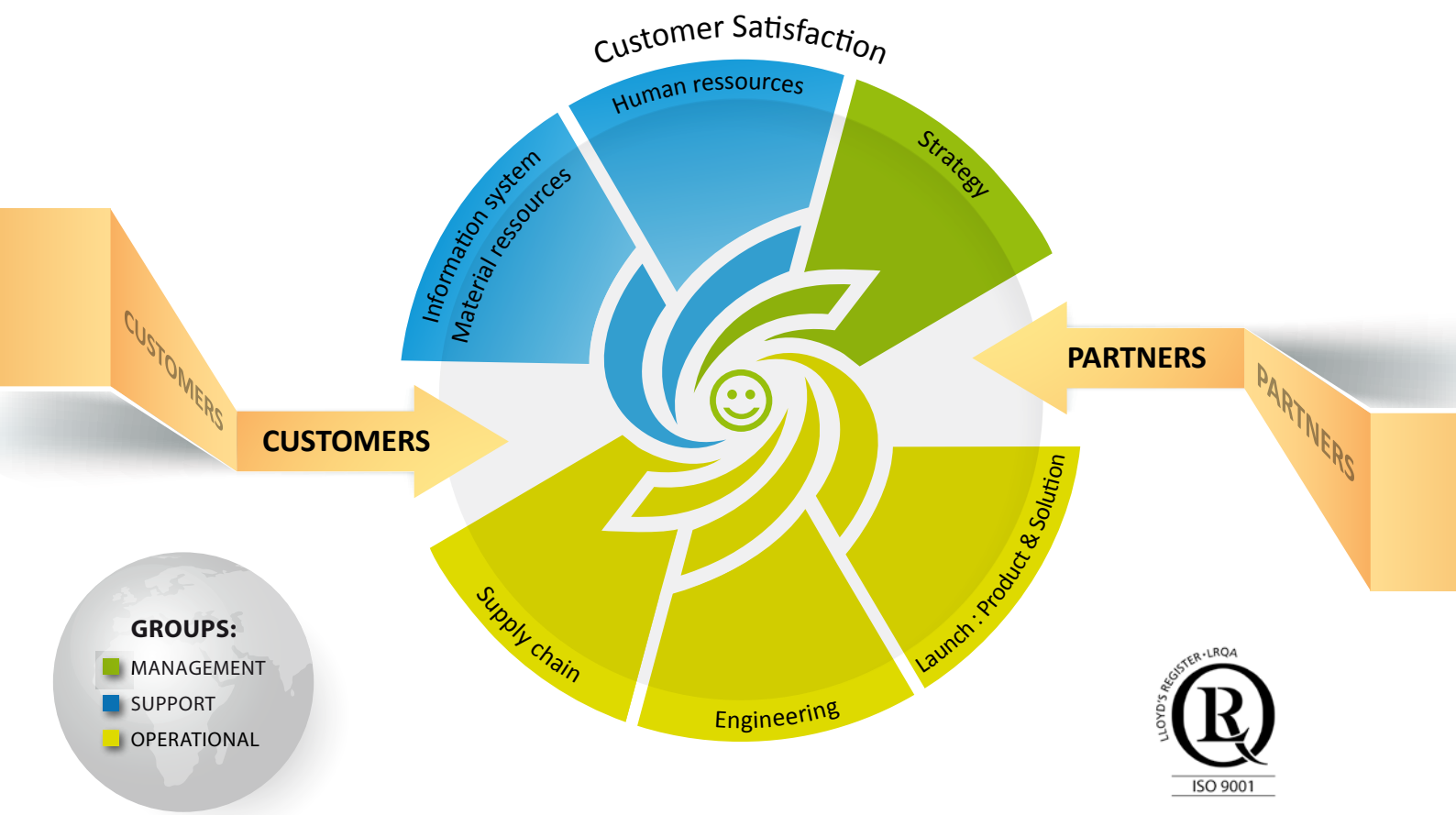
In conformity with the ISO9001 standard - issue 2008, the requisite procedures and registrations are mastered. The seriousness with which SAMES KREMLIN' quality policy is dealt ensures you an optimum quality at each stage of the production and of the assembly of the components.

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

- 2014/34/UE Explosive Atmospheres
- 2006/42/CE Machinery
- 2014/35/UE Low Voltage
- 2014/30/UE Electromagnetic Compatibility
- 2011/65/UE RoHS Restriction of Hazardous Substances in electrical and electronic equipment
- 2012/19/UE WEEE Waste of Electrical and Electronic Equipment
- 1907/2006/CE REACH Registration, Evaluation, Authorization and Restriction of Chemicals.

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



ISO 9001

Global presence

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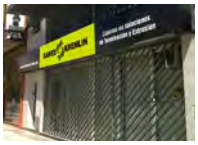

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Office

Application Center

Range of the liquid sprayers

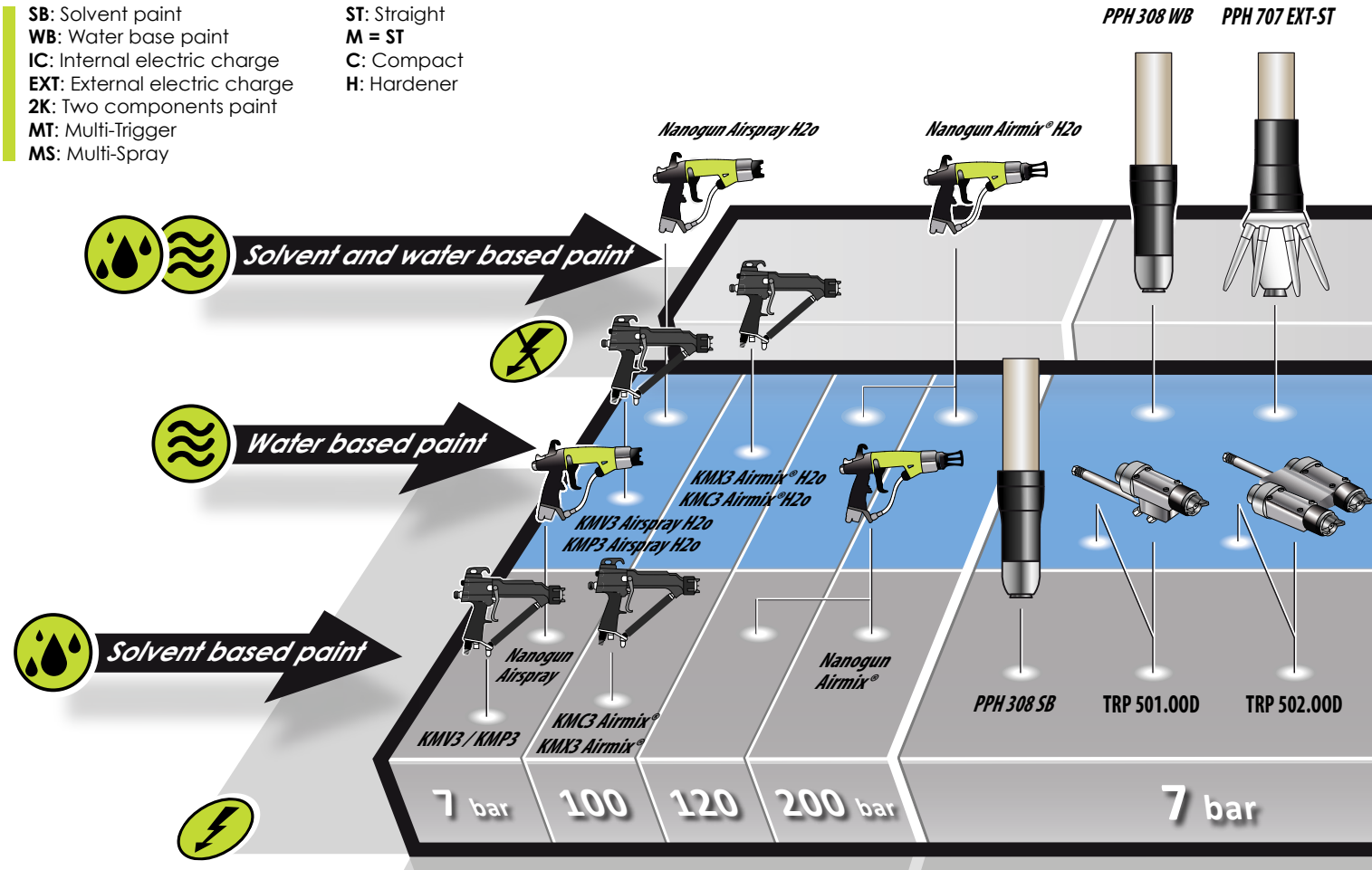
THE **SAMES KREMLIN** LIQUID ELECTROSTATIC RANGE IS MADE OF THREE TYPES OF SPRAYERS:

- **MANUAL GUN** for electrostatic application of paint with high transfer efficiency and good ergonomics. Most of the time, they are used for small batches or for pre-touch/touch-up within an automatic paint process.
- **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.

WWW

SB: Solvent paint
WB: Water base paint
IC: Internal electric charge
EXT: External electric charge
2K: Two components paint
MT: Multi-Trigger
MS: Multi-Spray

ST: Straight
M = ST
C: Compact
H: Hardener



7 bar ≈ 101 psi
120 bar ≈ 1740 psi
200 bar ≈ 2900 psi

*«**MANUAL ELECTROSTATIC RANGE**», including KM and Newest Nanogun sprayers for airspray and airmix® applications.*

*«**RANGE 3**», including PPH 308 and Nanobell 2, the all-around bell turbine automatic and robotic sprayers for general industry applications.*

Range of the liquid sprayers

WHEN USING GUN OR BELL ?

Gun Sprayer

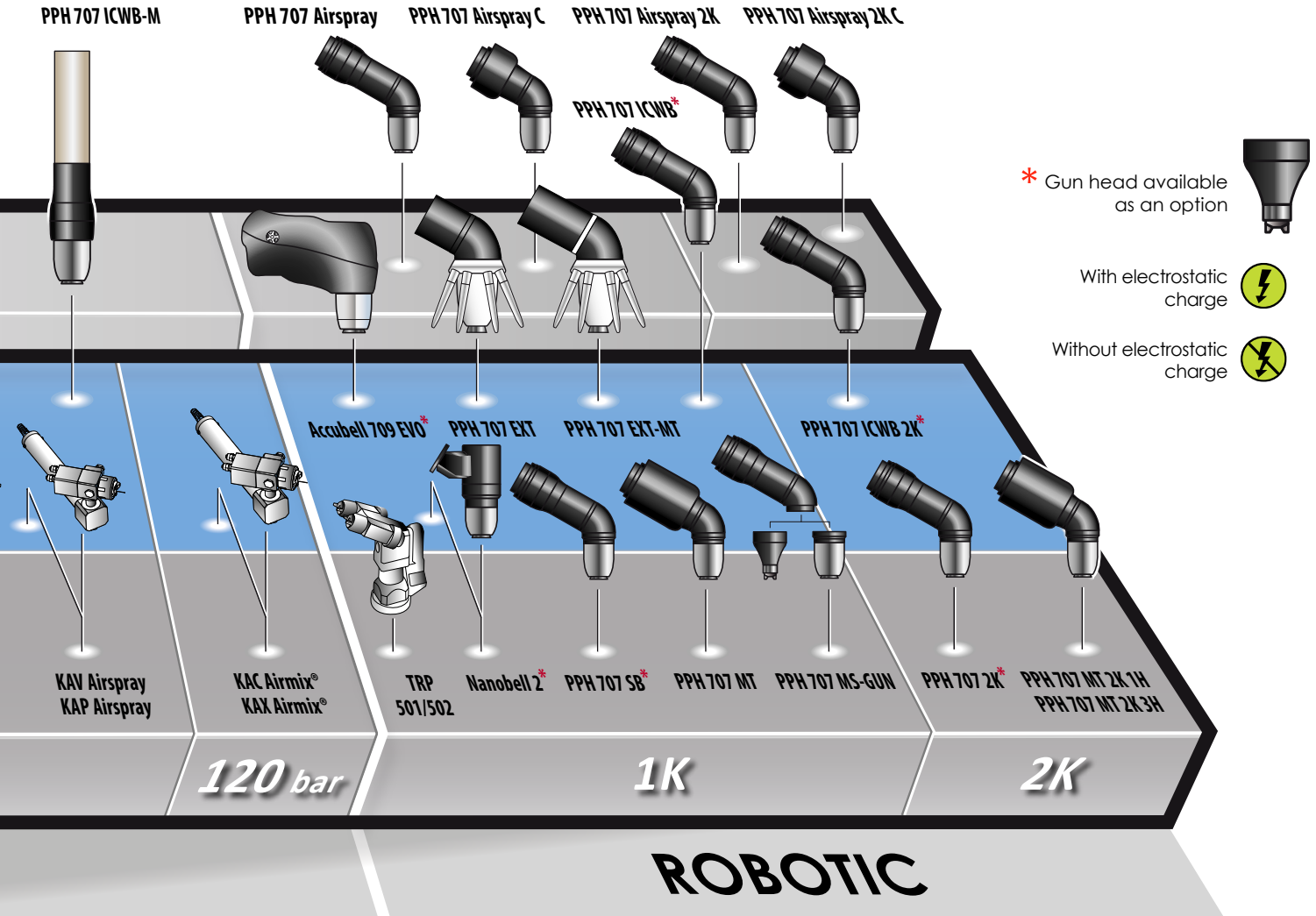
Very versatile, the fan spray favors penetration in recesses and folds. Target distance may be a factor.

- 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



*«**RANGE 7**», including PPH 707 external and internal charge with high speed turbine for enhanced finishing quality.*

«**AUTOMATIC ELECTROSTATIC RANGE**», including TRP and KA sprayers for airspray and airmix® applications.

Nanogun Airspray

Manual electrostatic low pressure gun

- Lightweight electrostatic gun
- Outstanding finish quality
- High voltage & current for more paint savings

0.5 to 500 MΩ.cm

488 g

60 kV
80 µA

up to
750 cc/min

Nanogun Airspray is a manual air spray gun, for the spraying of solvent materials. Paint may be supplied to it via a pump, a pressure tank or a circulating.

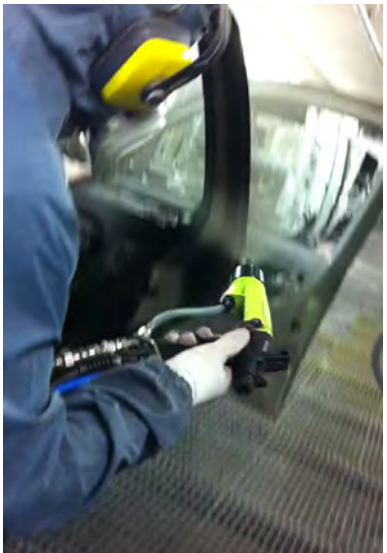
When spraying, the charged paint drops follow the lines of the electric field to the part. Electrostatics result in paint savings and wrap around, reduced overspray and pollution. Adding compressed air to it, allows penetration into cavities.

Fan spray

Super VORTEX
Round Spray

FIELD OF APPLICATION

- Aerospace
- Metallic furniture
- Cycles & Motorcycles
- Wood industry
- Aluminium profiles
- Agricultural & construction equipment
- Automotive
OEM, Tier One and Tier Two



www

Nanogun Airspray

CUSTOMERS' BENEFITS

Intuitive controls

- High voltage On/Off
- Pattern width
- Paint flow rate

Option

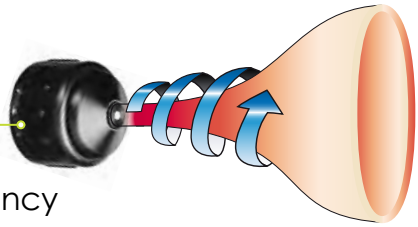
- A coil fluid hose to facilitate safe application of metallic paints

Enhanced ergonomics

- Lightweight
- Perfectly balanced
- Grip & barrel design based on firearms manufacturers' studies
- Flexible hoses
- High Resistivity version

Aircap innovation

- Super Vortex technology for finest atomization
- Good homogeneity between edge and center of pattern
- New round spray design: less overspray for 10% higher efficiency
- New fan spray aircap: 19% higher efficiency



GNM 6080 Control Module

- Easy to maintain:
  - Scheduled alert
  - Diagnostic alert
- Easy to use:
  - kV setup value
  - 3 presets
  - High visibility of the display value

Technical Data

GUN	Nanogun Airspray	
Gun weight without hoses or cables	488 g	
Gun lenght	230 mm	
Hose lengths available	7.5 m, 15 m and 25 m (option)	
Type of spray	**Super Vortex round spray** dia.(mm) 6, 8 and 12	**Fan spray**
Spray width, 25 cm away, 60kV	Fan spray : 37 cm |Round spray Ø6 : 19 cm, Ø8 : 20 cm, Ø12 : 21 cm	
Wetted parts	Titanium, Tungsten, Chemraz®, PA12, PEBD, PEEK	
Pneumatic supply	**Nanogun Airspray**	
Max air supply pressure	7 bar (101psi)	
Product supply	**Nanogun Airspray**	
Paint flow rate	from 100 to 750[1] cc/min.	
Max paint supply pressure	7 bar (101psi)	
Recommended product viscosity	14 to 50 seconds AFNOR #4 Cup	
Fluid max temperature	45 (°C)	

(1): depending on viscosity

High Voltage	GNM6080
Voltage maxi.	60 kV
Current maxi.	80 µA

ATEX marking:

NANOGUN AIRSPRAY

CE 0080 Ex II 2 G *CI I, GP D, Spray Mtl Refer to manual 7105*
0.24 mJ
INERIS14ATEX0014

GNM6080:

CE 0080 Ex II (2) G
[0.24 mJ]
INERIS14ATEX0014

Control module should not be installed in an ATEX zone (potentially explosive).

TWO VERSIONS DEPENDING ON YOUR NEEDS:

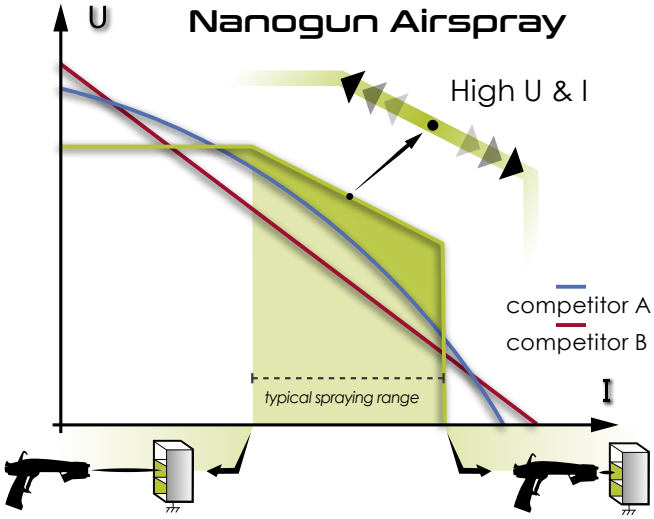
GUN VERSION:	Compatible with	Paint resistivity
HR / QD **(High Resistivity/Quick Disconnect)**	solvent based paint	10 to 500 MΩ.cm
LR **(Low Resistivity)**	solvent based paint	0.5 to 200 MΩ.cm
H2O : use with Isocube insulating cabinet **(Low Resistivity)**	water based paint or non-flammable product	few kΩ.cm

NANOGUN AIRSPRAY STANDS FOR HIGH VOLTAGE & CURRENT:

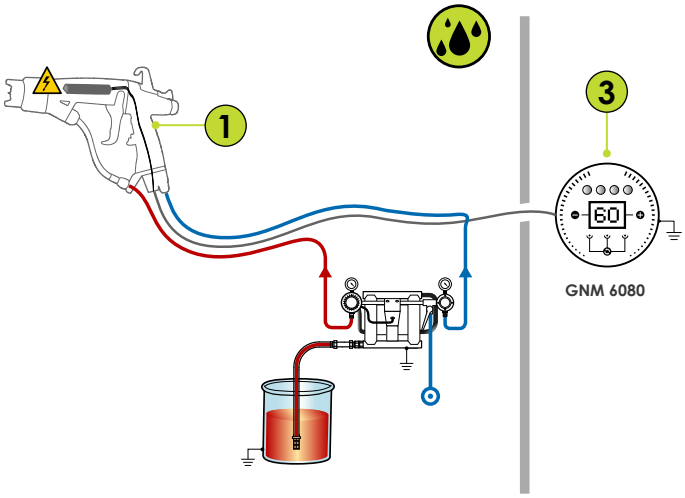
Taking full advantage of our 65 years of expertise with electrostatic technology, SAMES KREMLIN has developed the only electrostatic gun to spray with BOTH high current and high voltage, guaranteeing:

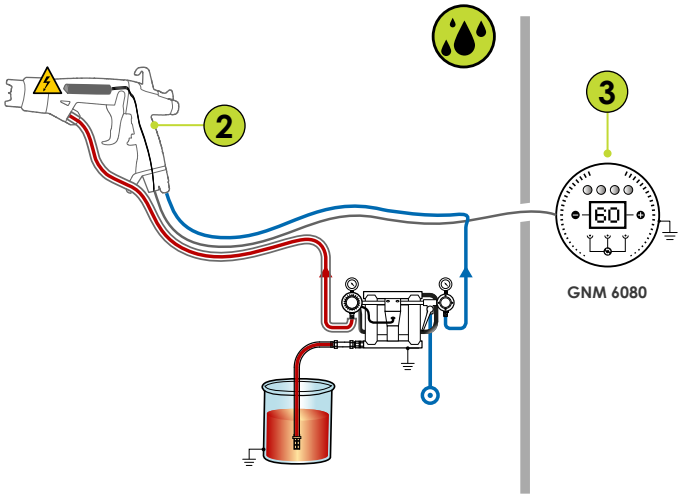
- Optimal paint charge
- Efficient paint transportation to the part

This combination delivers up to 20% higher transfer efficiency compared to previous gun designs.



Build your Gun





: ATEX area

Mark	NANOGUN AIRSPRAY SET EU (Handgun + hoses + Control module + tools)			
	with **Fan spray**	with **Super Vortex Round Spray ø6 mm**	with **Super Vortex Round Spray ø8 mm**	with **Super Vortex Round Spray ø12 mm**
1 **HR / QD** VERSION				
Paint hose = 7.5 m	**910017223-07**	contact us	**910017224-07**	**910017741-07**
Paint hose = 15 m	**910017223-15**	contact us	**910017224-15**	**910017741-15**
2 **LR** VERSION				
Paint hose = 7.5 m	**910017221-07**	contact us	**910017222-07**	**910017742-07**
Paint hose = 15 m	**910017221-15**	contact us	**910017222-15**	**910017742-15**

HR / QD = High Resistivity & Quick Disconnect
LR = Low Resistivity

3 Mark 3	CONTROL MODULE
GNM6080 EU	**910017193**
GNM6080 CSA	**910017192**

OPTION NOZZLES AND AIRCAPS

Fan spray nozzle

Description	type	Reference
Fan spray	nozzle	1406402
	high efficiency air cap	900009014
	air cap	737549
	SPE Air Cap (narrow fan spray)	737550
	SPL Air Cap (broad fan spray)	737552

= air cap fan spray

Round spray nozzle - Super VORTEX cap

Injector (ø mm)	type	Reference
6	nozzle	910018322
	air cap	900011365
8	nozzle	910003847
	air cap	900010503
12	nozzle	910003920
	air cap	900010504

= air cap round spray

KM 3 Airspray

Manual electrostatic low pressure gun

- Lightweight electrostatic gun
- Outstanding finish quality
- Paint savings (high transfer efficiency up to 95%)

> 5 MΩ.cm

800 g

85 kV
100 µA

up to
1000 cc/min

KM 3 Airspray is a manual air spray gun, for the spraying of solvent materials. Paint may be supplied to it via pump, pressure tank or circulating. He is ideal for parts that require fine finish quality delivered by electrostatic technology.

When spraying, the charged paint drops follow the lines of the electric field to the part. Electrostatics result in paint savings and wrap around, reduced overspray and pollution. Adding compressed air to it, allows penetration into cavities.

FIELD OF APPLICATION

- Metallic furniture
- Rolling equipment
- Exterior joinery
- Aluminium profiles
- Agricultural & construction equipment

www

KM 3 Airspray

There are 2 basic versions:

KMV 3 Airspray round spray version is perfect for complex tubular parts such as tubes, frameworks, undercarriage, tables.

KMV 3 integrates **HPA technology**

This technology delivers an excellent finishing quality for a large range of materials & viscosities. With a gamut to choose from, our aircaps work easily with primers, high gloss, top coats, varnishes, lacquers & even adhesives.

KMP 3 Airspray fan spray version is ideal for all parts requesting high quality finish together with an excellent edge covering for office furniture, rolloing equipment, accessories...

KMP 3 integrates **HTI technology**

HTI means High Transfer Innovation.
This technology gives an outstanding finishing quality for low & medium viscosity materials, such as primers, stains, base/top/clear coats, high gloss finishing, metallic or UV paints.

CUSTOMERS' BENEFITS

Performance

- Reliable perfomance with high end production
- Adjustable high voltage to adapt the electrostatic effect to the part to be painted

Productivity

- Increased operator comfort
- Easy and quick flushing (no deadzone in paint tube)
- User friendly with simple control
- Light and ergonomic to minimize operator fatigue
- Easy fan pattern adjustment

Sustainability

- Quality of selected components ensure reliability
- Fewer parts for easy field repair
- Reduced booth maintenance due to reduction in overspray

Technical Data

GUN	KMV 3 Airspray	KMP 3 Airspray
Gun weight without hoses or cables	800 g	
Gun lenght	285 mm	
Hose lengths available	10 m, 15 m and 30 m	
Type of spray	**Round spray** : Swirling fan nozzle	**Fan spray**
Fan width at 25 cm away	20 cm	30 cm
Wetted parts	Stainless steel - Polyamide - PETP - Nickel-plated brass - PTFE elastomer - Polyacetale - Polyethylene	
Pneumatic supply	**KMV 3 Airspray**	**KMP 3 Airspray**
Max air supply pressure	6 bar (87psi)	
Fitting Air	M 1/4" NPS	
Fitting hose (resistivity > 5 Mohms.cm)	M 1/2" JIC	
Fitting hose (resistivity < 5 Mohms.cm)	F 1/2" JIC	
Product supply	**KMV 3 Airspray**	**KMP 3 Airspray**
Paint flow rate	1000(1) cc/min Maxi.	
Max paint supply pressure	10 bar (145psi)	
Recommended product viscosity	40 seconds CA4 Maxi.	
Fluid max temperature	60 (°C)	
(1): depending on viscosity		
High Voltage	**STD 9**	
Voltage maxi.	20 to 85 kV	
Current maxi.	100 µA	

ATEX marking:

KMV3 Ex & KMP3 Ex

CE 0080 Ex II 2 G
0.24 mJ
INERIS03ATEX0026X

STD9:

CE 0080 Ex II (2) G
[0.24 mJ]
INERIS03ATEX0026X
INERIS04ATEX0093X

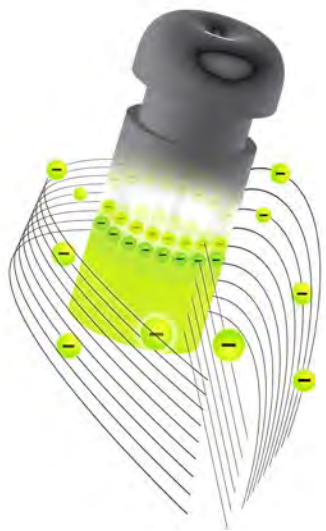
Control module should not be installed in an ATEX zone (potentially explosive).

GUN VERSION:	Compatible with	Paint resistivity
KMV3 & KMP3	solvent based paint	> 5 MΩ.cm

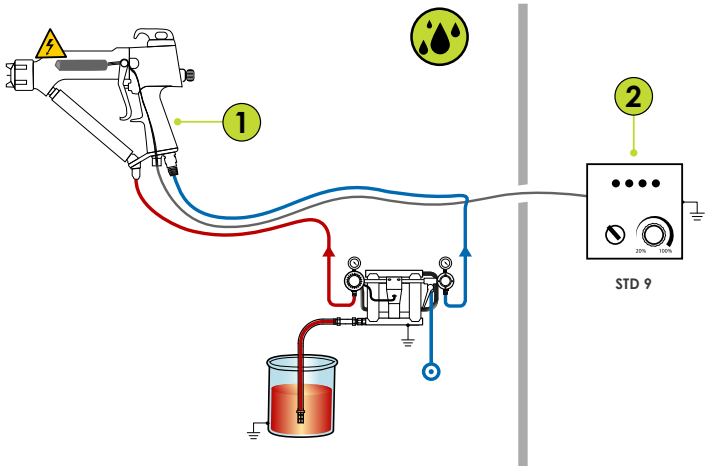
For low resistivity materials (< 5M MΩ.cm), please order the gun, the isolated hose and the control box separately.
For more information contact SAMES KREMLIN.

ELECTROSTATIC TECHNOLOGY

The advantages of electrostatic spraying are considerable under protection conditions where more than 15 gallons of paint is used per week.
• Paint savings : 10-30% vs Airspray or Airmix® technology
• Faster application times thanks to the ease of reaching difficult areas and a high transfer efficiency.
• Better quality of coat – totally consistent layer thickness, perfect coverage of angles.
• Preserved environment for the painter: elimination of overspray.
•Protection of the environment – VOC emission level considerably reduced simpler maintenance thanks to the reduction in spray booth pollution.



Build your Gun



: ATEX area

Mark	KM 3 (Spray gun + Electrical cable)			
1 VERSION	KMV 3	KMP 3	2 VERSION	CONTROL MODULE
Electrical cable length = 10 m	135.287.420	135.286.420	STD 9	148.200.100
Electrical cable length = 15 m	135.287.425	135.286.425		

KM 3 KITS (Spray gun + hoses(1) + with or no STD 9)				
	KMV 3	KMP 3	KMV 3	KMP 3
VERSION(1)	without control module		with control module	
Hoses length = 5 m	151.260.660	-	151.260.661	-
Hoses length = 10 m	151.260.665	151.260.685	151.260.666	151.260.686
Hoses length = 15 m	-	151.260.690	-	151.260.691

(1): air hose Ø 8 mm (i.d 5/16») + fluid hose Ø 4.8 mm (i.d 5/16»)

Fitting to connect with Airspay pumps
(PMP150/02-C85 & 02.75)
Adaptator F3/8" NPS / M1/2" JIC; Ref = **050.123.306**

AIRCAPS, TIPS & RINGS

Spray gun	type		Reference
KMV	Tip		129.277.040
	Aircap w/o ring	16 Nm3/h at 4 bar	129.277.354
	Aircap Ring		129.277.370

Spray gun	type		Reference
KMP	Tip	Ø 1.2 (supplied with gun)	129.276.205
		Ø 1.5	129.276.220
	Aircap w/o ring	24 N m3/h at 4 bar	132.286.000
	Aircap Ring		129.277.370

CONVERSION KITS

Tip	Supplied with aircap	Kit conversion	Reference
1.2	KP 3	in KMP 3	129.286.300
Round spray	KMV	in KMV 3	129.287.300
09.135	KX 16	in KMX 3	129.284.300
K 30	KXC5	in KMC 3	129.283.300

Whatever the gun type is (KMP, KMV, KMX, KMC), it is possible to switch to another version (for example from KMC to KMX) by choosing the appropriate conversion kit.

REPAIR KIT (CARTRIDGE, NOZZLE, NEEDLE, AIRCAP AND SEALS)

Spray gun	Reference
KMV	129.277.355
KMP	129.276.350

SPRAY GUN COVER

Description		Reference
Pack of covers	Quantity = 10	129.270.095
Hoses sleeve	Length = 10 m, Ø 40mm	129.270.087

Nanogun Airmix®

Manual electrostatic airmix® gun

- Airmix® technology for productivity and outstanding transfer efficiency of 93%
- Electrostatic charge delivers more paint savings
- Lightweight and ergonomically designed

Nanogun Airmix® Manual Electrostatic gun is designed for applying solvent-based materials.

Available in 2 pressure calibrations, 120 and 200 bars (1740 and 2900 psi), it meets a wide range of application requirements.

0.5 to 500 MΩ.cm

488 g

60 kV
80 µA

up to
1230 cc/min

FIELD OF APPLICATION

- Aerospace
- Metallic furniture
- Cycles & Motorcycles
- Wood industry
- Aluminium profiles
- Agricultural & construction equipment
- Automotive
  OEM, Tier One and Tier Two

www

Nanogun Airmix®

CUSTOMERS' BENEFITS

- Premium performance for exceptional finish
- High productivity and transfer rate (93%)
- Very wide range of AIRMIX® tips
- Increased user comfort and reduced fatigue
- Easy to maintain:
  reduced number of components
  advanced diagnostics via the control module
  ready to use

Intuitive controls

- High voltage On/Off
- Pattern width

Enhanced ergonomics

- Grip & barrel design for comfortable use
- Lightweight
- Perfectly balanced
- Quick disconnect version
- Flexible hoses

Airmix® spray aircap

- All the SAMES KREMLIN know-how have been gathered in designing the tip to provide unrivalled spray atomization and finishing quality
- Homogeneity of the spray, less overspray

GNM 6080 Control Module

- Easy to maintain:
  Scheduled alert
  Diagnostic alert
- Easy to use:
  kV setup value
  3 presets
  High visibility of the display value

Technical Data

GUN	Nanogun Airmix®
Gun weight without hoses or cables	640 g
Gun lenght	310 mm
Hose lengths available	7.5 m, 15 m and 30 m (option)
Type of spray	**Adjustable flat spray**
Spray width, 250 mm away	120 to 370 mm
Pneumatic supply	**Nanogun Airmix®**
Max air supply pressure	7 bar (101psi)
Product supply	**Nanogun Airmix®**
Paint flow rate - water	from 250 to 1230[1] cc/min.
Max paint supply pressure	200 bar (2900psi)
Recommended product viscosity	20 to 120 seconds CA4 Cup
Max fluid temperature	40 (°C)

(1): depending on viscosity and gun version

High Voltage	GNM6080
Voltage maxi.	60 kV
Current maxi.	80 µA

ATEX marking:

NANOGUN Airmix®

CE 0080 Ex II 2 G *CI I, GP D, Spray Mtl Refer to manual 7115*
0.24 mJ
INERIS14ATEX0014

GNM6080:

CE 0080 Ex II (2) G
[0.24 mJ]
INERIS14ATEX0014

Control module should not be installed in an ATEX zone (potentially explosive).

4 VERSIONS TO MEET ALL YOUR NEEDS:

NANOGUN VERSION:	Compatible with: solvent based paint HR	Compatible with: solvent based paint LR	Compatible with: water based paint H2o	Working with paint resistivity (MΩ.cm)	Recommended working pressure (bar)
Airmix® 120	√			10 to 500	60 - 120
		√		0.5 to 200	
			√	few kΩ.cm	
Airmix® 200 use with ISOCUBE insulating box	√			10 to 500	90 - 200
		√		0.5 to 200	
			√	few kΩ.cm	

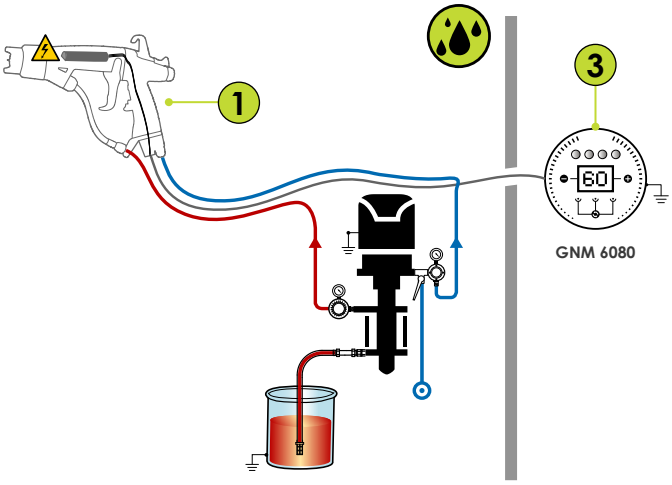
HR: High Resistivity (paint) ***with Quick Disconnect***

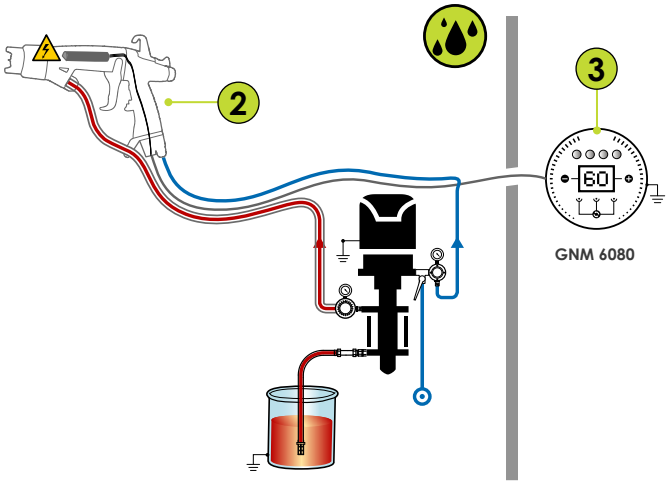
LR: Low Resistivity (paint)

SPRAY GUN STANDS FOR AIRMIX® AND HIGH VOLTAGE & CURRENT TECHNOLOGY:

Nanogun Airmix®: the association of 65 years of expertise of unique Airmix® spraying technology and the electrostatic application technology from **SAMES KREMLIN**.
Associated to the unique Airmix® spraying technology from **SAMES KREMLIN**, the electrostatic technology of the Nanogun delivers a terrific transfer efficiency. Airmix® low speed and small size paint particle bring a clear advantage for efficiency of the electrostatic effect.
We have developed the only electrostatic gun to spray with both high current and high voltage, guaranteeing optimal paint charge and maximal efficient paint transportation to the part.
Available for solvented low, high resistivity or waterbased paint application, Nanogun is connected with a large range of pumps, 1 or 2K solutions, insulated or not.

Select your Gun





: ATEX area

Mark	Nanogun Airmix® (Handgun + hoses + Control module + tools + 09-091 tip)			
	Airmix® 120 with 09-091 Tip		Airmix® 200 with 09-091 Tip	
1 HR VERSION	EU	US	EU	US
Paint hose = 7.5 m	910021113-07	910021113-072	910021115-07	910021115-072
Paint hose = 15 m	910021113-15	910021113-152	910021115-15	910021115-152
Paint hose = 30 m	910021113-30	910021113-302	910021115-30	910021115-302
2 LR VERSION				
Paint hose = 7.5 m	910021114-07	910021114-072	910021116-07	910021116-072
Paint hose = 15 m	910021114-15	910021114-152	910021116-15	910021116-152
Paint hose = 30 m	910021114-30	910021114-302	910021116-30	910021116-302

HR = High Resistivity & Quick Disconnect
LR = Low Resistivity

3 Mark 3	CONTROL MODULE
GNM6080 EU	910017193
GNM6080 CSA	910017192

NOZZLES

Tips	Water flow rate (cc/min) at 120 bar	Water flow rate (cc/min) at 200 bar	Fan width (cm) at dist. = 25 cm	Reference
04.111	290	380	25	130001414
06.151	430	570	33	130001419
09.091	590	770	21	130001420
12.111	790	1030	25	130001425
14.131	940	1230	29	130001430

More tips available, contact us

Everclean Hand
900011711#
Set of 10

KM 3 Airmix®

Manual electrostatic middle and high pressure gun

- Lightweight electrostatic gun
- Outstanding Airmix® finish quality
- Paint savings (high transfer efficiency up to 95%)

KMX3 Manual Airmix® is ideal for parts that require fine finish quality delivered by electrostatic Airmix® technology.

> 5 MΩ.cm

800 g

85 kV
100 µA

according to the nozzle

FIELD OF APPLICATION

- Metallic furniture
- Rolling equipment
- Exterior joinery
- Aluminium profiles
- Agricultural & construction equipment
- Transportation

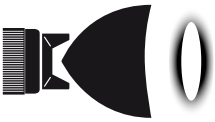
www

KM 3 Airmix®

There are 2 basic versions:

KMC 3 Armix® in the round spray version is perfect for complex tubular parts such as tubes, frameworks, undercarriage.

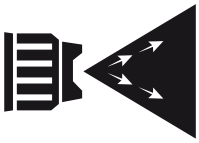
KMC 3 integrates **Hollow shape technology**



The hollow cone nozzles produce an especially fine, atomized liquid flow, with spray patterns characterized by a ring-shaped impact area. These nozzles are ideal for spray applications such as tubes, shock absorber, springs.

KMX 3 Armix® in the fan spray version is ideal for all parts requesting high quality finish together with an excellent edge covering for office furniture, rolloing equipment, transportation...

KMX 3 integrates **Airmix® technology**



Airmix® is an intermediate spray technology that combines the advantages of both conventional and Airless technology & is the industry standard for medium pressure atomization today.

CUSTOMERS' BENEFITS

Performance

- Reliable perfomance with high end production
- Adjustable high voltage to adapt the electrostatic effect to the part to be painted

Productivity

- Increased operator comfort
- Easy and quick flushing (no deadzone in paint tube)
- User friendly with simple control
- Light and ergonomic to minimize operator fatigue
- Easy fan pattern adjustment

Sustainability

- Quality of selected components ensure reliability
- Fewer parts for easy field repair
- Reduced booth maintenance due to reduction in overspray

Technical Data

GUN	KMC 3 Airmix®	KMX 3 Airmix®
Gun weight without hoses or cables	800 g	
Gun lenght	285 mm	
Hose lengths available	10 m, 15 m and 30 m	
Type of spray	**Round spray** : Swirling fan nozzle	**Fan spray**
Wetted parts	Stainless steel - Polyamide - PETP - PTFE - Polyacetale - Polyethylene	
Pneumatic supply	**KMC 3 Airmix®**	**KMX 3 Airmix®**
Max air supply pressure	6 bar (87psi)	
Fitting Air	M 1/4" NPS	
Fitting hose (resistivity > 5 Mohms.cm)	M 1/2" JIC	
Fitting hose (resistivity < 5 Mohms.cm)	F 1/2" JIC	
Product supply	**KMC 3 Airmix®**	**KMX 3 Airmix®**
Paint flow rate	1000(1) cc/min Maxi.	
Max paint supply pressure	100 bar (1450psi)	
Recommended product viscosity	40 seconds CA4 Maxi.	
Fluid max temperature	60 (°C)	
(1): depending on viscosity		
High Voltage	**STD 9**	
Voltage maxi.	20 to 85 kV	
Current maxi.	100 µA	

GUN VERSION:	Compatible with	Paint resistivity	Recommended working pressure
KMC3 & KMX3	solvent based paint	> 5 MΩ.cm	60 - 100 bar

For low resistivity materials (< 5M MΩ.cm), please order the gun, the isolated hose and the control box separately.
For more information contact SAMES KREMLIN.

ATEX marking:

KMC3 Ex & KMX3 Ex

CE 0080 Ex II 2 G
EEX 0.24 mJ
INERIS03ATEX0026X

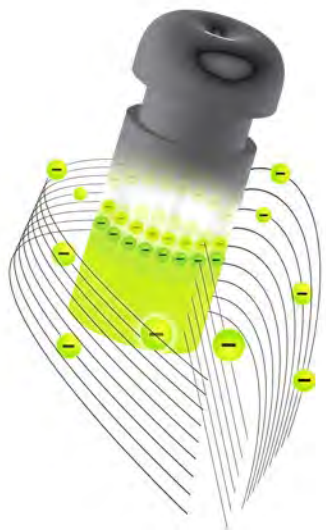
STD9:

CE 0080 Ex II (2) G
[0.24 mJ]
INERIS03ATEX0026X
INERIS04ATEX0093X

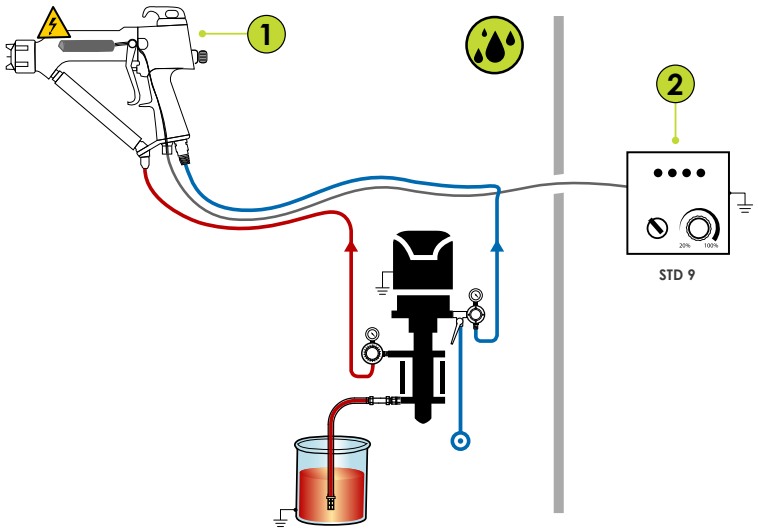
Control module should not be installed in an ATEX zone (potentially explosive).

ELECTROSTATIC TECHNOLOGY

The advantages of electrostatic spraying are considerable under protection conditions where more than 15 gallons of paint is used per week.
• Paint savings : 10-30% vs Airspray or Airmix® technology
• Faster application times thanks to the ease of reaching difficult areas and a high transfer efficiency.
• Better quality of coat – totally consistent layer thickness, perfect coverage of angles.
• Preserved environment for the painter: elimination of overspray.
•Protection of the environment – VOC emission level considerably reduced simpler maintenance thanks to the reduction in spray booth pollution.



Build your Gun



: ATEX area

Mark	KM 3 (Spray gun + Electrical cable)	
1 VERSION	KMC 3 (Tip K30)	KMX 3 (Tip 09.135)
Electrical cable length = 10 m	135.283.430	135.284.420
Electrical cable length = 15 m	135.283.435	135.284.425
Electrical cable length = 30 m	135.283.440	135.284.430

2 VERSION	CONTROL MODULE
STD 9	148.200.100

KM 3 KITS (Spray gun + hoses(1) + with or no STD 9)

	KMC 3	KMX 3	KMC 3	KMX 3
VERSION(1)	without control module		with control module	
Hoses length = 10 m	151.260.715	151.260.716	151.260.700	151.260.701
Hoses length = 15 m	151.260.720	151.260.721	151.260.705	151.260.706
Hoses length = 30 m	151.260.735	-	151.260.725	-

(1): air hose Ø 8 mm (i.d 5/16») + fluid hose Ø 4.8 mm (i.d 5/16»)

Fitting to connect with Airspay pumps
(PMP150/02-C85 & 02.75)
Adaptator F3/8" NPS / M1/2" JIC; Ref = **050.123.306**

AIRCAPS, TIPS & NEEDLES

Spray gun	Aircap			TIP			Needle
	Type	Air output	Reference	Size (mm)	Fluid output	Reference	Reference
KMC	KX 55 w/o ring	8 Nm³/h at 2 bar	132.400.100	K20	200 cm3/mn	134.873.020	129.272.100
				K30	300 cm³/mn	134.873.030	
				K40	400 cm³/mn	134.873.040	
				K50	500 cm³/mn	134.873.050	
				K60	600 cm³/mn	134.873.060	
				K70	700 cm³/mn	134.873.070	
	KXC5 with ring		132.273.100				
KMX	KX 116 (fixed fan)	5 Nm³/h at 2 bar	132.284.100	see special Airmix® Tips page 26			129.272.100
	KX 16 (adjustabble fan)	8 Nm³/h at 2 bar	132.284.000				
	with ring for KMX/KAX		129.276.001				

Build your Gun

REPAIR KIT (CARTRIDGE, TIP, NEEDLE, AIRCAP AND SEALS)

Spray gun	Reference
KMC 3	129.273.350
KMX 3	129.274.350

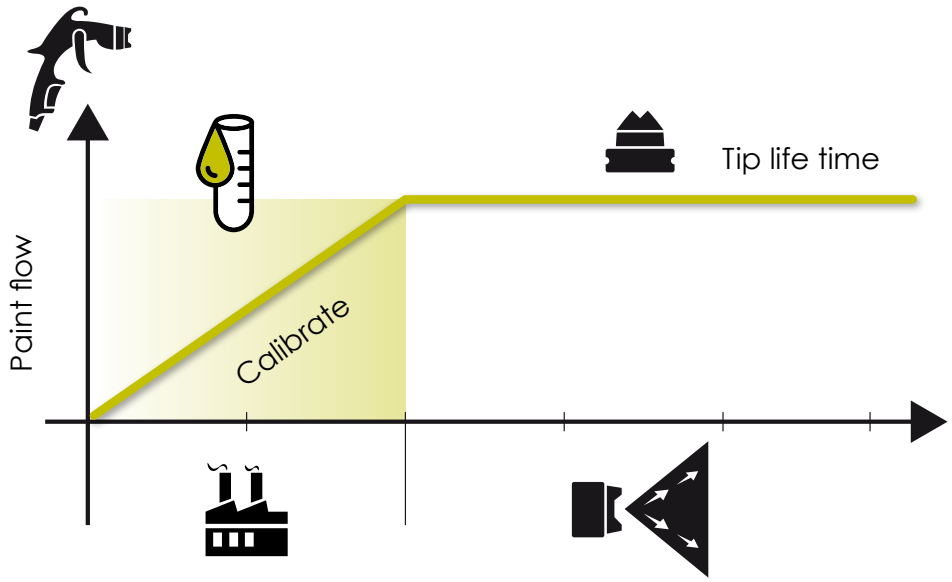
SPRAY GUN COVER

Description		Reference
Pack of covers	Quantity = 10	129.270.095
Hoses sleeve	Length = 10 m, Ø 40mm	129.270.087

WHY CHOOSE OUR TIPS?

To make sure that every tip built in our factory yields the best results, we follow a precise machining process that guarantees consistent material output at different spray angles each & every time.

Our tips are built with carefully selected materials to guarantee a lifetime production compatibility with the main paint tip.



SPECIAL AIRMIX® TIPS WITH DIELECTRIC INSERT

Size(1)	Water output in l/mn			Ø (mm) equivalent	Screen mark	pump filter		Avarage width of fan at 25cm				
	20 bar	35 bar	50 bar		gun filter			13cm	19cm	23cm	27cm	35cm
06	0.15	0.20	0.30	0.28	4	4 or 6	number marked on the tip	06.075	06.095	06.115	06.135	-
09	0.20	0.30	0.45	0.33	6	6 or 8		09.075	09.095	09.115	09.135	-
12	0.26	0.36	0.55	0.38	6	6 or 8		-	12.095	12.115	12.135	-
14	0.30	0.40	0.70	0.41	6	8 or 12		-	14.095	-	-	14.175

(1) To determine the part number of a tip, use the number listed in the table and replace the crosses in the following part number: **134.5xx.xxx**

ex: Size 06 and width 23cm of fan **= 134.506.115**

Air and Fluid hoses

Air hoses

Spray gun	Lenght (m) 5 m	10 m	15 m	30 m
KMP	050.389.101 Ø 8	050.389.102 Ø 8	050.389.105 Ø 8	050.389.106 Ø 8
KMV	050.389.101 Ø 8	050.389.101 Ø 8	050.389.105 Ø 8	050.389.106 Ø 8
KMX	050.382.109 Ø 7	050.382.110 Ø 7	050.382.116 Ø 7	050.389.106 Ø 8
KMC	050.382.109 Ø 7	050.382.110 Ø 7	050.382.116 Ø 7	050.382.106 Ø 8

Fluid hoses for solvent paint high resistivity (> 5M MΩ.cm)

Spray gun	Lenght (m) 5 m	10 m	15 m	30 m
KMP	050.450.801	050.450.802	050.450.811	050.450.710
KMV				
KMX				
KMC				

Fluid hoses isolated for solvent paint low resistivity (< 5M MΩ.cm)

Spray gun	Lenght (m) 5 m	10 m	15 m	30 m
KMP	-	129.292.310	129.292.315	129.292.320
KMV				
KMX				
KMC				

ISOBUBBLE II

Insulating Box
Manual application of waterborne paint

- 100% safe operation for manual electrostatic waterborne applications
- Compact
- Simple to install and run

CE INERIS 90691/07
EN 50059
non ignitable liquid only

> 1 kΩ.cm
< 250 1 kΩ.cm

75 kV
100 µA

YOUR SAFETY COMES FIRST !

water-based paints, the pump and paint should be isolated in an ISOBubble. The ISOBubble II, with a compact design, can be installed near the working area. With a large sliding cover, it allows for fast and easy pressure adjustements and colour changes. A built-in safety device ensures the system is grounded when the gun is not triggered or if the cover is opened.

PERFORMANCE

Quick response safety system for grounding

Steel rack for advanced grounding of the paint container

PRODUCTIVITY

Spacious area for loading and unloading paint containers

Simple and reliable design

No special maintenance required

SUSTAINABILITY

Easy hose assembly and connection to smart manifold panel

Removable steel rack for easily cleaning the paint containers

GUN VERSION:	WORKING WITH (> 1 kΩ.cm & < 250 kΩ.cm)	PRESSURE (bar)
Airpsay	Waterborne paints non flamable and not easily flamable	10
Airmix®		100

WWW

Technical Data

Designation	KM 3 Airspray H2O	KM 3 Airmix® H2O	ISOBUBBLE II
Maximum Fluid Pressure	10 bar (146 psi)	100 bar (1450 psi)	
Maximum Air Pressure	6 bar (87 psi)	6 bar (87 psi)	6 bar (87 psi)
Recommended Material viscosity range	40 sec. CA4		
High voltage (maximum)	75 kV	75 kV	
Current	100 µA	100 µA	
Weight			30 kg (1058 OZ)
Paint tank capacity			30 l. (8 gal)
Height			1453 mm
External diamater			721 mm
Discharge time on door opening			< 0.8 sec.

Build your Gun

ISOBUBBLE II (isulating box without spray gun)

Designation	Recommended hoses	Hoses Length (m)	Barrel	Reference
ISOBubble II	Non conductive air hoses	5	-	**148 260 000**
		5	yes (for mounting with H2O gun or automatic guns	**148 260 100**

ELECTROSTATIC SPRAY GUN (without feeding hoses)

Designation	Fan shape	Aircap	Tip - Size (mm)	Reference
KMV3 Airspray H2o	Round	KMV	Swirling fan	**135 297 000**
KMP3 Airspray H2o	Flat	KP3	1.2	**135 296 000**
KMC3 Airmix® H2o	Round hollow fan	KXC5	K30	**135 293 000**
KMX3 Airmix® H2o	Ajustable flat fan	KX16	09.135	**135 294 000**

Feeding hoses for H2o spray gun

The special double sleeve hose allows for an optimum electrostatic effect by preventing any condensation.

Designation	10 m length.	15 m length.	30 m length.
Isolated fluid hoses for H2o Spray gun	129 292 310	129 292 315	129 292 320
Air hose - Ø 7 (KMX3 H2o, KMC3 H2o)	050 382 110	050 382 116	-
Air hose - Ø 8 (KMP3 H2o, KMV3 H2o)	050 389 102	050 389 105	050 389 106

Aircaps, Tips & Rings for H2o spray gun

Designation	Aircap	Tips
KMP3 Airspray H2o	Refer to page 17	
KMV3 Airspray H2o		
KMX3 Airmix® H2o	Refer to page 25	special Airmix® Tips, refer to page 26
KMC3 Airmix® H2o	Refer to page 25	

Power supply for H2o Spray gun

Designation	Reference
STD 9B	**148.200.200**

ISOCUBE

Insulating Box
Manual application of waterborne paint

- 100% safe operation for manual electrostatic waterborne applications
- Plug and Spray: Easy to install, to move around, to maintain
- User friendly for outstanding finish quality

> 1 kΩ.cm
< 250 1 kΩ.cm

60 kV
80 µA

Insulating cabinet for electrostatic water borne coating application with Nanogun Airspray or Nanogun Airmix® - manual applications - up to 30 liters paint containers.

When spraying waterborne coatings, spray equipment must be isolated in a closed cabinet. The Isocube by SAMES KREMLIN fully complies to this requirement. This compact insulating cabinet can be installed close to the paint location. A large door provides easy access to load the paint tank. A built-in safety system ensures the grounding of the paint circuit when the gun is not spraying or when the door is opened.

FIELD OF APPLICATION

- Construction
- Agricultural
- Woods
- Industrial

ISOCUBE

PERFORMANCE

1 • Electrical safety of operators: automatic discharge to earth in case of a power shutdown or when the operator opens the door (<0.8s)
1 • Perfect quality of electrostatic insulation for efficient wrap-around effect
1 • Immediate productivity internal charge (60 kV): generator built in the gun
2 • Discharge resistor

PRODUCTIVITY

1 • Plug and spray: set-up and running within 10 minutes
1 • All unit control remote to front side
3 • Easy integration thanks to clean side and back faces
4 • Easy access to the pump and paint container
6 • Retains product leaks and rinsing fluids

SUSTAINABILITY

5 • Robust design for durability
6 • Easy to clean working cell. Polypropylene welded body
7 • Easy hose assembly and connection to smart manifold panel
8 • Removable rack for easily cleaning the paint containers

Technical Data

Designation	Nanogun Airspray H2o	Nanogun Airmix® H2o	Unit
Maximum Fluid Pressure	7	7 to 200	bar
Maximum Air Pressure	7		bar
Maximum Fluid Temperature	40	40	°C
Recommended Material viscosity range	14 to 50	20 to 120	sec. CA4
High voltage (maximum)	60		kV
Current	80		µA
Weight	168	170	kg
Paint tank capacity	30		l
Discharge time on door opening	< 0.8		sec.
Dimension (L x W x P)	1100 x 1640 x 650		mm

GUN VERSION:	WORKING WITH (> 1 kΩ.cm & < 250 kΩ.cm)	PRESSURE (bar)
Airpsay	Waterborne paints non flamable and not easily flamable	7
Airmix®		120 - 200

CE CSP c US
EN 50059
non ignitable liquid only

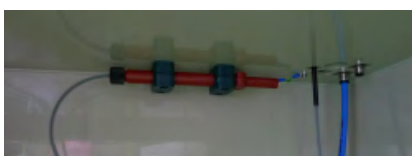
YOUR SAFETY COMES FIRST!

To provide the safest equipment for the painters, the Isocube insulating cabinet is designed and manufactured with full welded polypropylene panels to be electrostatic proof, integrates the most advanced technologies to keep your productivity at its best

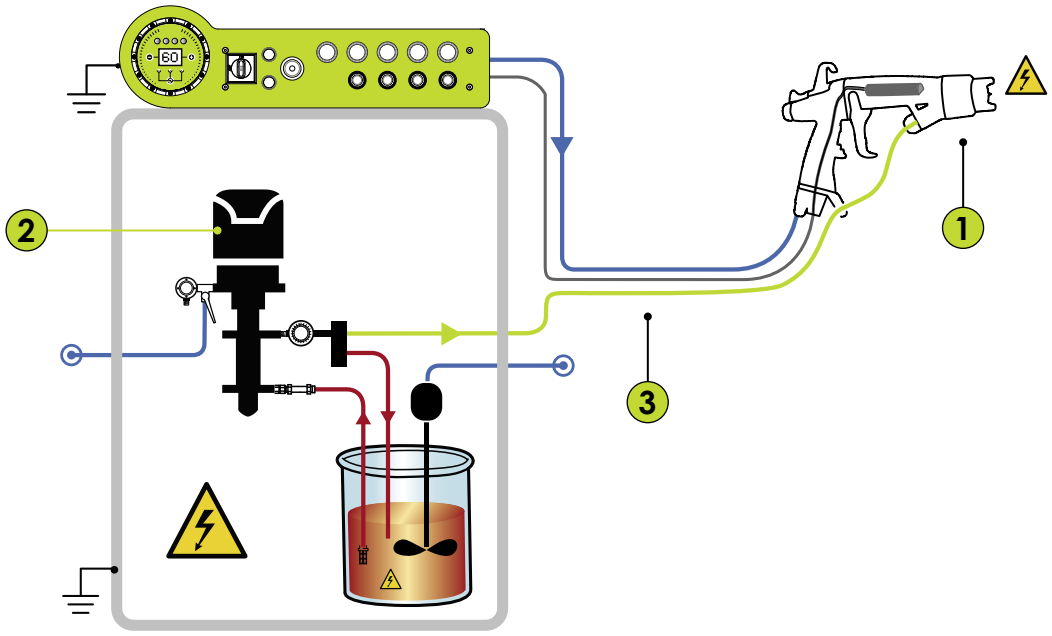
– among of them a single and complete control panel

and is beyond the environmental and safety regulations:

- retention tray to collect spillage of product out of the paint bin
- a ground resistor to drain electrostatic charges in less than 10 sec. when not spraying
- quick and full charge drain on door opening or power shutdown or emergency stop (<0.8 s) with its fast response grounding air piston.



Select your Gun



EQUIPMENTS (isulating box + Spray gun)

Designation	1 Spray gun	2 Pump	Product pressure - bars (PSI)	3 Hose length -m (ft)	Spray type	Reference
ISOCUBE	Airspray	02C85	7 (102)	7.5 (24)	ø6 mm	**910 023 635**
					ø8 mm	**910 023 634**
					ø12 mm	**910 023 633**
					Flat	**910 023 636**
				15 (49)	ø6 mm	**910 026 034**
					ø8 mm	**910 026 033**
					ø12 mm	**910 026 032**
					Flat	**910 026 035**
	Airmix®	15C25	120 (1740)	7.5 (24)	09.091 (standard tip)	**910 023 637**
				15 (49)		**910 026 036**
		15C50		7.5 (24)		**910 023 703**
				15 (49)		**910 026 038**
		17F60		7.5 (24)		**910 025 756**
				15 (49)		**910 026 037**
		30C25	200 (2900)	7.5 (24)		**910 023 638**
				15 (49)		**910 026 039**
		30C50		7.5 (24)		**910 023 704**
				15 (49)		**910 026 041**
		34F60		7.5 (24)		**910 025 757**
				15 (49)		**910 026 040**

North America Versions, please contact us

F = Technology FLOWMAX®

KA Airspray

Automatic electrostatic low pressure gun

- Lightweight
- Outstanding finish quality
- High current and voltage for paint saving

> 5 MΩ.cm (solvent paint)

1100 g with barrel

85 kV 100 µA

up to 1000 cc/min

KA Airspray gun is an automatic electrostatic gun with a high spraying quality and a maximum wraparound effect on complex parts.

FIELD OF APPLICATION

- Metallic furniture
- Machine Tools
- Steel Drums
- Interior & Exterior Joinery
- Containers
- Home Appliances
- Gas Tanks & Bottles
- Interior & Exterior Joinery
- Agricultural & construction equipment

WWW

KA Airspray

There are 2 basic versions:

KAV Airspray in the swirling fan spray for the ultimate wrap-around effect on tubular parts.

KAP Airspray in the fan spray version is ideal for all parts requesting high quality finish together with an excellent edge covering for office furniture, rolloing equipment, accessories...

KAV et **KAP** integrate several technologies:

HPA

This technology delivers an excellent finishing quality for a large range of materials & viscosities. With a gamut to choose from, our aircaps work easily with primers, high gloss, top coats, varnishes, lacquers & even adhesives.

HTI

HTI means High Transfer Innovation.
This technology gives an outstanding finishing quality for low & medium viscosity materials, such as primers, stains, base/top/clear coats, high gloss finishing, metallic or UV paints.

CUSTOMERS' BENEFITS

Performance

- High productivity and excellent finish quality
- Adjustable electrostatic effect to the substrate
- Adjustable fluid spray

Productivity

- High voltage generator (cascade) near the gun
- Cascade barrel with 3 axis positioning

Sustainability

- High quality materials used to make the best products
- Quick maintenance and reduced number of parts

Technical Data

GUN	KAV Airspray	KAP Airspray
Gun weight without hoses or cables	1100 g with BG Ex barrel	
Gun lenght	340 mm	
Type of spray	**Round spray**: Swirling fan nozzle	**Fan spray:** KP 3 aircap
Fan width at 25 cm away	20 cm	30 cm
Wetted parts	Stainless steel - Polyacetal - carbide - brass	
Pneumatic supply	**KAV Airspray**	**KAP Airspray**
Max air supply pressure	6 bar (87psi)	
Fitting Air	Spraying (polyamide 6x8), pilot (polyamide 4x6)	
Fitting hose (resistivity > 5 Mohms.cm)	M 1/2" JIC	
Fitting hose (resistivity < 5 Mohms.cm)	F 1/2" JIC	
Product supply	**KAV Airspray**	**KAP Airspray**
Max paint flow rate	1000(1) cc/min Maxi.	
Recommended paint flow rate	220 cc/min	240 cc/min
Max paint supply pressure	10 bar (145psi)	
Recommended product viscosity	40 seconds CA4 Maxi.	
Fluid max temperature	60 (°C)	
(1): depending on viscosity and nozzle		
High Voltage	**STD9 A**	
Voltage maxi.	20 to 85 kV	
Current maxi.	100 µA	
BT electric cable length	12 m for assembly with KA. Ex gun 6 m for assembly with ISOBUBBLE or ISOCUBE	

GUN VERSION:	Compatible with	Paint resistivity
KAC & KAX	solvent based paint	> 5 MΩ.cm
	solvent based paint or water based paint	0 to 5 MΩ.cm

ATEX marking:

KAV Ex & KAP Ex
CE 0080 Ex II 2 G
0.24 mJ
INERIS04ATEX0093X

STD9 A:
CE 0080 Ex II (2) G
[0.24 mJ]
INERIS03ATEX0026X
INERIS04ATEX0093X

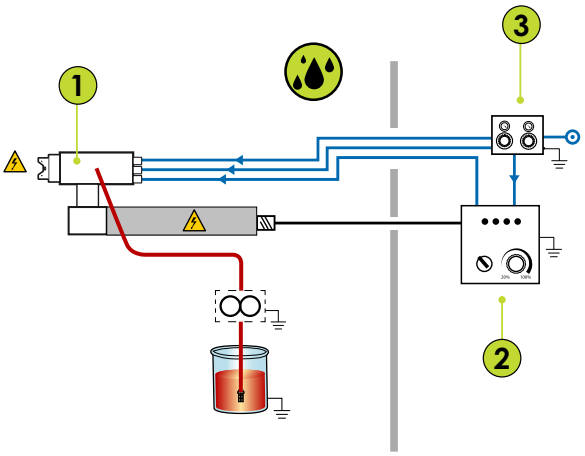
Control module should not be installed in an ATEX zone (potentially explosive).

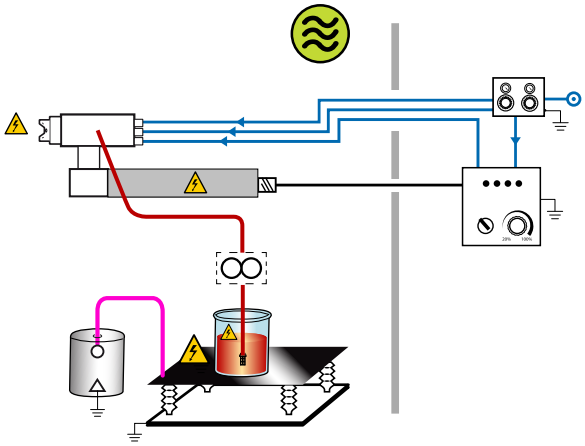
From 0 to 5 M.cm (solvent paint or water-based paint) assembly with an insulated specific hose, 10 or 15 m long.
For water-based paints, the pumping system should be isolated from the ground.
For more information, contact SAMES KREMLIN

ELECTROSTATIC TECHNOLOGY

The advantages of electrostatic spraying are considerable under protection conditions where more than 15 gallons of paint is used per week.
• Paint savings : 10-30% vs Airspray or Airmix® technology
• Faster application times thanks to the ease of reaching difficult areas and a high transfer efficiency.
• Better quality of coat – totally consistent layer thickness, perfect coverage of angles.
• Preserved environment for the painter: elimination of overspray.
•Protection of the environment – VOC emission level considerably reduced simpler maintenance thanks to the reduction in spray booth pollution.

Build your Gun





: Explosive area

Mark	KA (Spray gun + generator barrel)	
1 VERSION	KAV	KAP
without generator barrel	129.397.300	129.397.400
with generator barrel	KAV	KAP(1)
Electrical cable length = 10 m	135.397.735	135.397.745
Electrical cable length = 15 m	135.397.730	135.397.740

(1): with aircap KP3 and nozzle dia. 1.2

- Not included (contact SAMES KREMLIN):
  - air supply hoses
  - pumping system
  - color change block
  - air regulator
  - Insulating table, Short-circuiting, Safety lock, High voltage discharge

2 VERSION	CONTROL MODULE
STD9 A	148.200.450

3 VERSION	AIR CONTROL (OPTION)
Air control cabinet	148.250.000

Turn electrostatic gun into a non-bleeding gun
Controls air pressures
Equipped with 2 air regulators for atomization and fan air control
Pneumatic switches for gun trigger control.

AIRCAPS, TIPS & NEEDLES

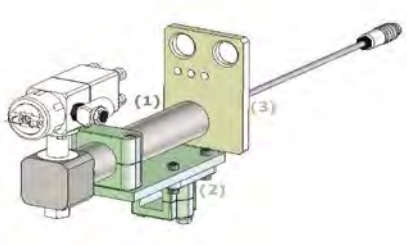
Spray gun	type	Reference
KAV	Tip	129.277.040
	Needle	129.397.311
	Aircap w/o ring 16 Nm3/h at 4 bar	129.277.354
	Aircap Ring	129.277.370

Spray gun	type		Reference
KAP	Tip	Ø 1.2 (supplied with gun)	129.276.205
		Ø 1.5	129.276.220
	Aircap	fan width 30cm	132.286.000
	Aircap	fan width 30cm	132.880.100

GENERATOR BARREL, SPECIAL HIGH VOLTAGE CABLE

All automatic electrostatic guns must be fitted on a generator bar connected to an STD 9 A power supply.

Description	Lenght (m)	Reference
Generator barrel with 30m electrical cable - for mounting with automatic guns	30	129.397.660
Generator barrel with 12m electrical cable - for mounting with automatic guns	12	129.397.600
Generator barrel with 6m electrical cable - for mounting with IsoBubble	6	129.397.650
HV cable for an automatic gun remote mounting	1.5	129.397.800
Generator barrel fixing unit	-	129.397.950
Generator barrel fixing plate	-	129.397.960



KA Airmix®

Automatic electrostatic high pressure gun

- Lightweight
- Outstanding Airmix® finish quality
- High current and voltage for paint saving

> 5 MΩ.cm (solvent paint)

1120 g with barrel

85 kV 100 µA

according to the nozzle

KA Airmix® gun is an automatic electrostatic gun with a high spraying quality fan and a maximum wraparound effect on complex parts.

The spray gun is usually used with a reciprocating machine or in a fixed station. Using a multi-axis robot is also possible.

FIELD OF APPLICATION

- Metallic furniture
- Machine Tools
- Steel Drums
- Interior & Exterior Joinery
- Containers
- Home Appliances
- Gas Tanks & Bottles
- Interior & Exterior Joinery
- Agricultural & construction equipment

www

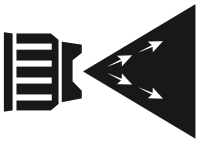
KA Airmix®

There are 2 basic versions:

KAC Airmix® in the swirling fan spray for the ultimate wrap-around effect on tubular parts.

KAX Airmix® in the fan spray version is ideal for all parts requesting high quality finish together with an excellent edge covering for office furniture, rolloing equipment, accessories...

AIRMIX® TECHNOLOGY



Kremlin created Airmix® in 1975. Airmix® is an intermediate spray technology that combines the advantages of both conventional and Airless technology & is the industry standard for medium pressure atomization today.

Liquid spraying technology

Airmix® is a unique medium pressure spraying technology in between Airspray (known for high finishing quality with limited flow rate ideally under 400cc/min) & Airless (known for good results for high flow but without quality finishing).
Airmix® gives a high finishing quality & uniform film build for high productivity on paint flow rates from 400 to 2000 cc/min.
Unattainable benefits from other medium pressure technologies such as air assisted airless.

CUSTOMERS' BENEFITS

Performance

- High productivity and excellent finish quality
- Adjustment of the electrostatic effect to the part to be painted and the fluid sprayed

Productivity

- High voltage generator (cascade) near the gun
- Cascade barrel with 3 axis positioning

Sustainability

- High quality materials used to make the best products
- Quick maintenance and reduced number of parts

Technical Data

GUN	KAC Airmix®	KAX Airmix®
Gun weight without hoses or cables	1120 g with BG Ex barrel	
Gun lenght	340 mm	
Type of spray	**Round spray**: Swirling fan nozzle	**Fan spray:** KP 3 aircap
Fan width at 25 cm away	20 cm	30 cm
Wetted parts	Stainless steel - Polyacetal - carbide	
Pneumatic supply	**KAC Airmix®**	**KAX Airmix®**
Max air supply pressure	6 bar (87psi)	
Fitting Air	Spraying (polyamide 6x8), pilot (polyamide 4x6)	
Fitting hose (resistivity > 5 Mohms.cm)	M 1/2" JIC	
Fitting hose (resistivity < 5 Mohms.cm)	F 1/2" JIC	
Product supply	**KAC Airmix®**	**KAX Airmix®**
Max paint flow rate	1000(1) cc/min Maxi.	
Max paint supply pressure	120 bar (140psi)	
Recommended product viscosity	40 seconds CA4 Maxi.	
Fluid max temperature	60 (°C)	
(1): depending on viscosity and nozzle		
High Voltage	**STD9 A**	
Voltage maxi.	20 to 85 kV	
Current maxi.	100 µA	
BT electric cable length	12 m for assembly with KA. Ex gun 6 m for assembly with ISOBUBBLE or ISOCUBE	

GUN VERSION:	Compatible with	Paint resistivity
KAC & KAX	solvent based paint	> 5 MΩ.cm
	solvent based paint or water based paint	0 to 5 MΩ.cm

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KAC Ex & KAX Ex
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0.24 mJ
INERIS04ATEX0093X

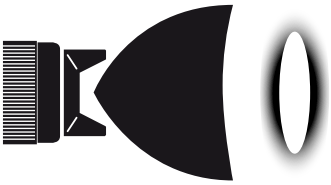
STD9 A:
CE 0080 Ex II (2) G
[0.24 mJ]
INERIS03ATEX0026X
INERIS04ATEX0093X

Control module should not be installed in an ATEX zone (potentially explosive).

From 0 to 5 M.cm (solvent paint or water-based paint) assembly with an insulated specific hose, 10 or 15 m long.
For water-based paints, the pumping system should be isolated from the ground.
For more information, contact SAMES KREMLIN

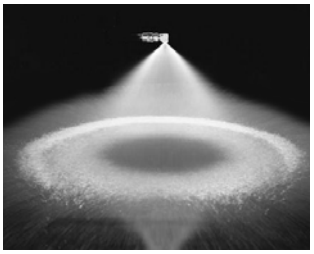
HOLLOW SHAPE

The hollow cone nozzles produce an especially fine, atomized liquid flow, with spray patterns characterized by a ring-shaped impact area. These nozzles are ideal for spray applications such as tubes, shock absorber, springs.

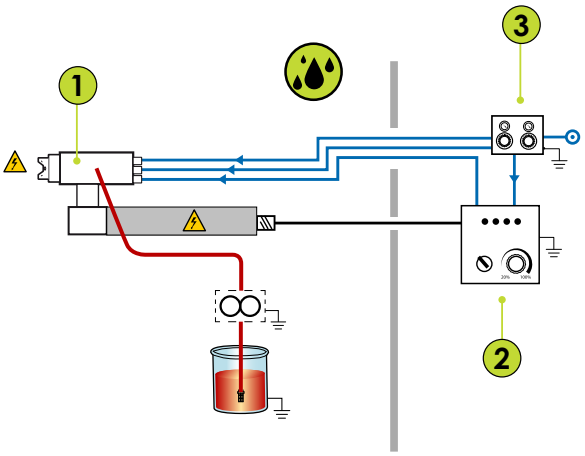


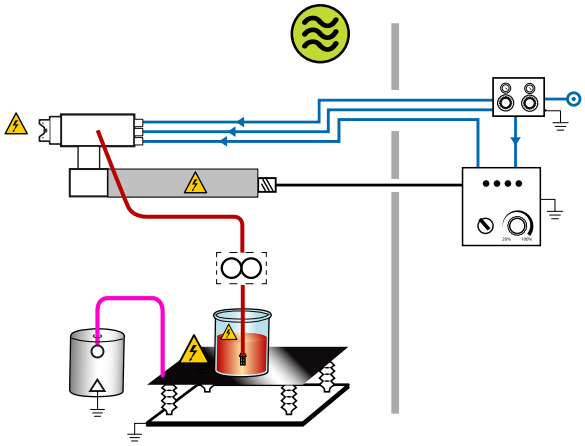
Liquid spraying technology

The hollow cone nozzle produces a super fine, atomized liquid flow with spray patterns characterized by a ring-shaped impact area.
These nozzles, with an added electrostatic effect, are ideal for spray applications on tubes, shock absorbers, springs, and long- & thin-shaped parts.



Build your Gun





: Explosive area

Mark	KA (Spray gun + generator barrel)

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without generator barrel	129.397.300	129.397.400
with generator barrel	KAC	KAX(1)
Electrical cable length = 10 m	135.397.735	135.397.745
Electrical cable length = 15 m	135.397.730	135.397.740

(1): with aircap KP3 and nozzle dia. 1.2

- Not included (contact SAMES KREMLIN):
  - air supply hoses
  - pumping system
  - color change block
  - air regulator
  - Insulating table, Short-circuiting, Safety lock, High voltage discharge

2 VERSION	CONTROL MODULE
STD9 A	148.200.450

3 VERSION	AIR CONTROL (OPTION)
Air control cabinet	148.250.000

Turn electrostatic gun into a non-bleeding gun
Controls air pressures
Equipped with 2 air regulators for atomization and fan air control
Pneumatic switches for gun trigger control.

AIRCAPS, TIPS & NEEDLES

Spray gun	type	Reference
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	Needle	129.397.311
	Aircap w/o ring 16 Nm3/h at 4 bar	129.277.354
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GENERATOR BARREL, SPECIAL HIGH VOLTAGE CABLE

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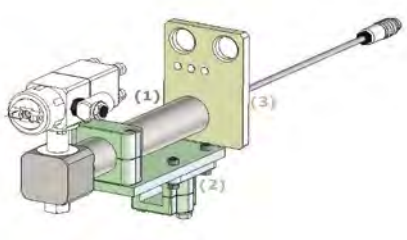


TRP 501.00D & 502.00D

Automatic pneumo-electrostatic sprayer

- High paint savings
- Increased productivity
- Simplified maintenance
- Easy to use

1 to 500 MΩ.cm (solvent paint)

800 g - 1200 g

100 kV (UHT188)
200 µA (UHT180)
500 µA (UHT288)

up to 1200 cc/min

TRP sprayer allows the application of solvent or water-soluble liquid paints in automotive and general industry. It ensures a perfect finishing combined with significant paint savings. The additional benefit of the TRP is to apply very high flow rates (up to 1200 cm3/min in some configurations).

TRP is usually used with a reciprocating machine or in a fixed station. Using a multi-axis robot is also possible.

For over 20 years, TRP is the reference in the world of finishing in the fields of industry and automotive, often copied never equaled.

FIELD OF APPLICATION

- Metallic furniture
- Cycles & Motorcycles
- Wood industry
- Aluminium profiles
- Agricultural & construction equipment
- Automotive
OEM, Tier One and Tier Two

www

TRP 501/502

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.

Easy to Maintain

• The high transfer efficiency reduces emissions of VOCs (volatile organic compounds) which facilitates the compliance of the installation with environmental laws and rules , reduces dirt from the spray booth due to the application. Moreover, a purge valve is integrated to the sprayer, which allows priming, rinsing and draining of the equipment, with a minimum projection of paint into the cabin, maintenance is reduced.

RANGE

The spray head **TRP 500** is the basic component of sprayer models, **TRP 501** and **502**. It can be equipped to produce a round spray or fan spray. An air control system enables or disables the spray trigger, thus releasing the air spray and allowing the closing of the fluid needle.

The combination of a supply block and a spray head is called **TRP 501.00D**.

The combination of a supply block and two spray heads is called **TRP 502.00D**.

• **TRP 501.00D** 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 three calibres:
- calibre ø8 mm = standard
- calibre ø6 and 12 mm = on demand

• **TRP 502.00D** sprayer is equipped with two fan spray guns. The converging patterns are directed to the part as one pattern, and are supplied and piloted simultaneously. TRP 502 versions provide twice the paint flow offered by TRP 501 versions.

• The gun is assembled onto a support allowing two tilt angles.

Technical Data

Dimensions	TRP 501.00D	TRP 502.00D	GNM 200
Length (mm) **L1**	302	319	95
Width (mm) **L2**	44	180	140
Height (mm) **L3**	120	120	205
Weight (Without hoses) (g)	800	1200	2200
IP			20

Pneumatic supply	TRP 501 / 502	GNM 200
Air pressure maxi. (bar)	6 (90 psi)	
Fluid pressure maxi. (bar)	6 (90 psi)	
Normal pilot pressure (PT - PD)	5 (75 psi)	
Response time opening fluid (ms)	25 (indicative)	
Response time cutting fluid (ms)	30 (indicative)	
Electrical supply		110 V / 220 V 50 Hz / 60 Hz
Voltage maxi. (kV)		100
Current maxi. (µA)		100 (UHT188), 200 (UHT 180)

Spraying	Round spray	Fan spray	Fan spray (TRP 502)
Impact width (mm) (for information only)	100 to 400	100 to 500	660
Total air wide (Nm3/h)	7 - 27	7 / 40	14 / 80
Paint flow (cc/min)	from 100 to 500	from 100 to 800	from 200 to 1200
Viscosity seconds (AFNOR Cup n°4)	from 15 to 68	from 15 to 68	from 15 to 68
Solvent paint, resistivity maxi. (MΩ.cm)		500	
Solvent paint, resistivity mini. (MΩ.cm)		1	
Recommended application distance (mm)	from 100 to 350	from 150 to 350	

ATEX marking:

TRP 501.00D & TRP 502.00D:

CE 0080 Ex II 2 G

EEx > 350mJ
ISSeP06ATEX032X

UHT 180 EEx e
UHT 188 EEx e

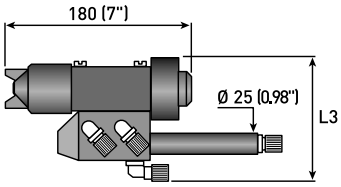
Ex II 2 GD
EEx e II
ISSeP01ATEX002U

GNM200 *(1)*:

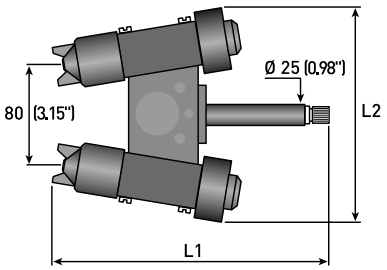
CE Ex II (2) G

[EEx > 350 mJ]
ISSeP05ATEX032X
ISSeP06ATEX032X

(1): 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.



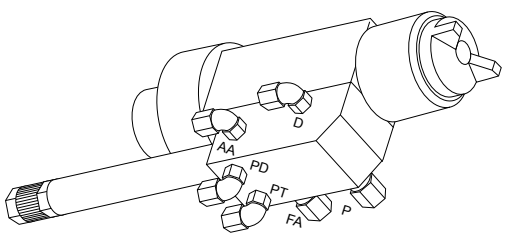
TRP 501-00D



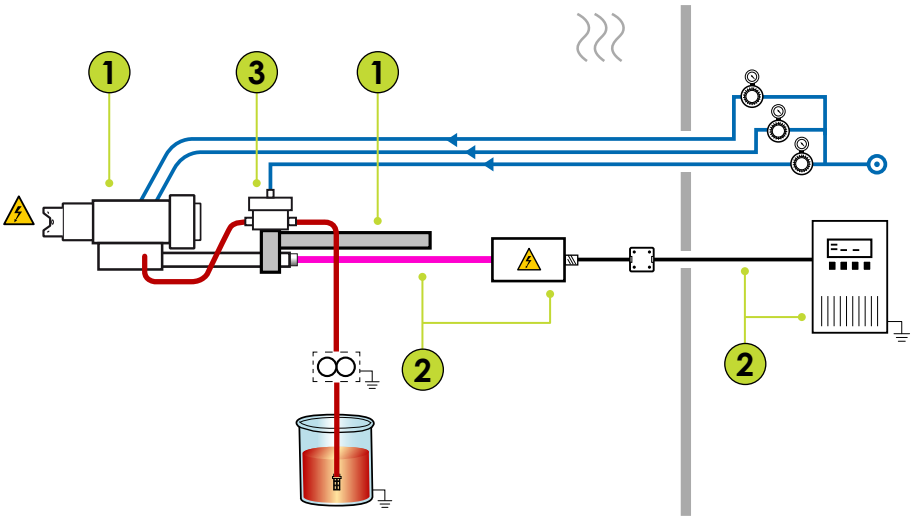
TRP 502-00D

Air / Product interfaces

AA: center air
FA: fan air
P: paint supply
D: dump
PD: pilot dump
PT: trigger



Build your Gun



USE FOR SOLVENT-BASED PAINT

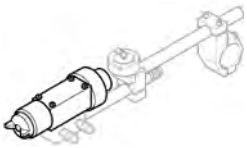
1 Mark 1	REFERENCE AUTOMATIC SET TRP 501.00.D		
	with **Fan spray**	with **Super Vortex Round Spray ø8 mm**	with **Super Vortex Round Spray ø12 mm**
TRP set	**910014590**	**910014589**	**910014588**
Sprayer	910003599	910003598	910003603
TRP support	437293	437293	437293
fixing nut (Ø27/50mm)	732018	732018	732018

2 Mark 2				
Cable high voltage 100kV (9 m), High voltage connection TRP (2nd for 2 TRP), UTH 180 EExe (kit UHT 188 EEXe for 2nd output), Male plug 7cts, Tighten cable PG11(7/12), Cable low voltage (UHT-Terminal box: 4.8m), Cable low voltage (GNM200-Terminal box: 17m), Fem plug 19cts, GNM200A 220V + sector connection (2.5m), Colorless Rilsan hose Dia.10/12 (9m)				
Description				
High voltage kit solvent based paint	for 1 TRP 501	**910014592**	**910014592**	**910014592**
	for 2 TRP 501	**910014593**	**910014593**	**910014593**

3 Mark 3			
Description			
Paint regulator (2nd for 2 TRP)	**750016**	**750016**	**750016**

- Not included (contact SAMES KREMLIN):
  - air supply hoses
  - pumping system
  - color change block (refer to page 134)
  - air regulator (contact SAMES KREMLIN)

SPRAYING HEAD

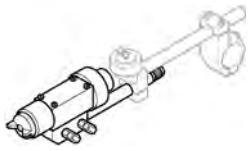


TRP 500 alone

Description	Type of nozzle	Reference
TRP 500 FS	FS	752 949
TRP 500 RS	RS Ø8mm	752 991
TRP 500 RS	RS Ø12mm	752 992

FS: fan spray, RS: round spray

SPRAYER



TRP 500 built on manifold

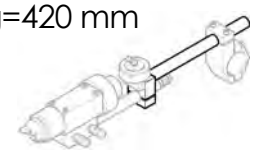
Description	Type of nozzle	Reference
TRP 501.00D	FS	910003599
TRP 501.00D	RS Ø8mm	910003598
TRP 501.00D	RS Ø12mm	910003603

FS: fan spray, RS: round spray

COMPONENTS

Isolated support Ø27mm, lg=420 mm

Description	Reference
Support TRP	437293



Fixing nut Ø27/50 mm

Description	Reference
nut	732018

OPTION NOZZLES AND AIRCAPS

Fan spray nozzle

Description	Injector (ø mm)	Reference
Nozzle FS single circuit	1.1	730 355
injector INOX	1.2	755 287
	1.5	439 058
Nozzle FS single circuit	1.2	428 375(1)
Complete nozzle INOX	1.5	429 064(1)
Nozzle FS double circuit	1.5	752 055

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

Aircap - Fan spray

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

Round spray nozzle (VORTEX)

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

#: set of 5

Aircap - Round spray

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

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
FS Cap (same as FS cap 436 939)	Brass	437 257(2)

(2): standard pattern

Nuts

Description	Reference
Nut for nozzle FS	745 066
Nut for nozzle RS	749 982

Automatic Bell Spray

PPH 308

Rotary bell atomizer for solvent based and waterborne paint

- High transfer efficiency (up to 80%*)
- Superb gloss and regularity of film build
- Easy and fast maintenance

* under certain conditions

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

2.5 kg

90 kV/100 µA (UHT155)
100 kV / 200 µA (UHT188)
500 µA (UHT288)

up to 500 cc/min

Magnetic Bellcup

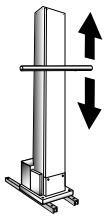
up to 45 000 rpm

The sprayer PPH 308 allows the application of liquid solvent-based or water-based paint in general industry. Known as the best rotary bell sprayer, PPH 308 benefits from technologies developed for Automotive markets.
It is usually used with a reciprocating machine or in fixed station.

FIELD OF APPLICATION

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

EXAMPLES OF INSTALLATIONS

Type	Characteristics	Markets
 Fixed base	• Small-sized parts on flat or vertical line • Line speed from 1 to 6 m/mn	• Wood: Bed frames • Metal: rims, wheels, heating resistance • Glass: perfume bottles, spirits • Plastic: lipsticks
 Reciprocator 1 axis	• Line speed from 1 to 6 m/mn • Object on satellites with simple geometry	• Wood: picture frames, rod curtain • Metal: shock absorbers, metallic bottles, aluminium profiles

www

PPH 308

CUSTOMERS' BENEFITS

High Transfer Efficiency

- 90 kV, 100 µA integrated High Voltage cascade
- VORTEX air shroud technology for higher performance

INCREASED PRODUCTIVITY

- Flow rate up to 500cc/min
- Technology inspired from automotive industry
- for less wear

Easy Maintenance

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

Excellent Finishing

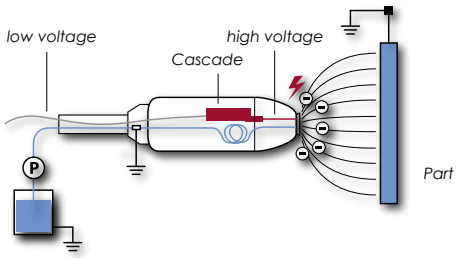
- High speed turbine up to 45000 rpm
- Selected range of shaping air shrouds and bell cups to spray all materials
- Good penetration effect even with difficult parts

RANGE

Depending on the type of application (solvent based or water-based) the version of the sprayer PPH 308 is different by the wiring elements connected to high voltage circuits' product and rinsing:

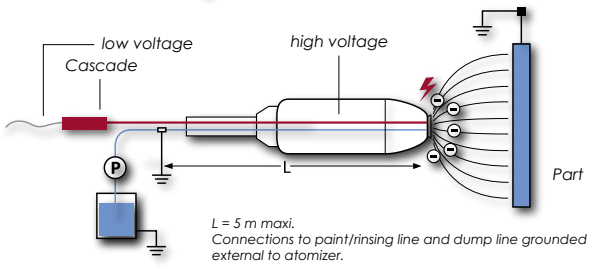
PPH 308 SB

For an application of **SOLVENT-BASED** PAINT with a **resistivity ≥ 6 MΩ.CM**:
- The product distribution system is connected to potential of the ground.
- High voltage unit (UHT155) integrated into the sprayer.
- Coil hose back on paint circuit and purge return.



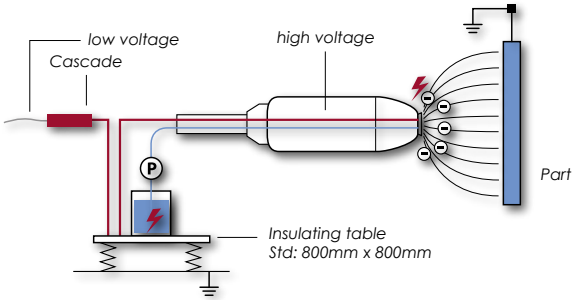
PPH 308 SB

For an application of **SOLVENT-BASED PAINT** with a **resistivity > 0.5 MΩ.CM**:
- The product distribution system is connected to potential to the ground.
- High voltage unit (UHT188) remote sprayer
- No Coil hose



PPH 308 WB

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 (UHT288) remote sprayer.
- The number of colors is limited.



Technical Data

Weight	PPH 308
Spare atomizer, without cable and hose	2.5 kg

Pneumatic supply	PPH 308
Operating air pressure maxi. (bar)	6 (90 psi)
Normal pilot air (bar)	6 to 10 (90 to 150 psi)
Magnetic bearing air pressure (bar)	7 (105 psi)
Amount of air bearing backup (bar)	25 liters - 6 bars (90 psi)
Total air consumption (Nm3/h)	20 to 45

Fluid supply	PPH 308
Fluid pressure maxi. (bar)	10 (150 psi)
Paint flow (cc/min)	30 to 500(1)
Viscosity range (seconds) Coupe FORD n°4	15 to 45

(1): depending on viscosity

Performances	Turbine		
Rotation speed	5000 to 45 000 rpm (upon diameter of bell cup used)		
High Voltage	**UHT 155 EEX em**	**UHT 188 EEX e**	**UHT 288 EEX e**
Voltage maxi.	90 kV	100 kV	100 kV
Current maxi.	100 µA	200 µA	500 µA

ATEX marking:

PPH 308
solvent-based product with R ≥ 6 MΩ.cm:

CE 0080 Ex II 2 G
EEx > 350mJ
ISSeP05ATEX032X

UHT 155 EEx em:

Ex II 2 G
EEx em II
ISSeP01ATEX012U

PPH 308
solvent-based product with R > 0.5 MΩ.cm & water-based paint:

CE 0080 Ex II 2 G
EEx > 350mJ
ISSeP06ATEX032X

UHT 188 EEx e & UHT 288 EEx e:

Ex II 2 GD
EEx e II
ISSeP01ATEX002U

GNM200(2):

CE Ex II (2) G
[EEx > 350 mJ]
ISSeP05ATEX032X
ISSeP06ATEX032X
ISSeP07ATEX001X

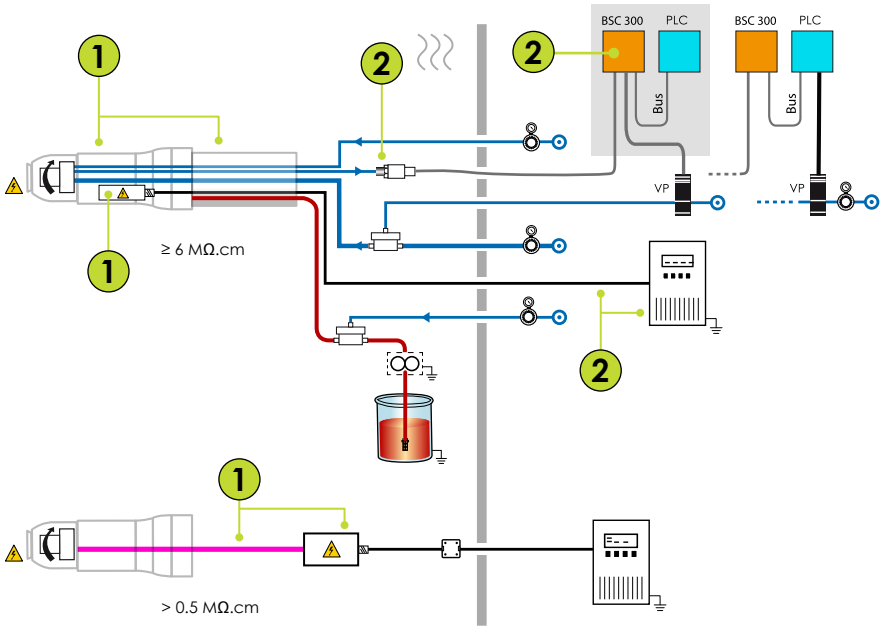
(2): This control module allows piloting the UHT. It is an associated equipment that is part of the configuration of the certified equipment and that contributes to its good working. It has to be installed into a non explosive area.

THREE VERSIONS DEPENDING ON YOUR NEEDS:

VERSION	Compatible with	Product Resistivity
PPH 308 SB High voltage unit (UHT 155 EEx em) integrated into the sprayer	solvent based paint	≥ 6 MΩ.cm
PPH 308 SB Remote high voltage unit (UHT 188 EEx e) from sprayer	solvent based paint	> 0.5 MΩ.cm
PPH 308 WB Remote high voltage unit (UHT 288 EEx e) 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



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

USE FOR SOLVENT-BASED PAINT

1 Mark 1

	REFERENCE ATOMIZER PPH 308 SB	
	solvent-based paint with a resistivity ≥ 6 MΩ.cm	solvent-based paint with a resistivity > 0.5 MΩ.cm
PPH 308 SB set	**910001669**	**910003721**
UHT 155 EEx em or UHT 188 EEx e	1520282	910001759
Reciprocator support	1203616	1203616
fixing nut	1204441	1204441

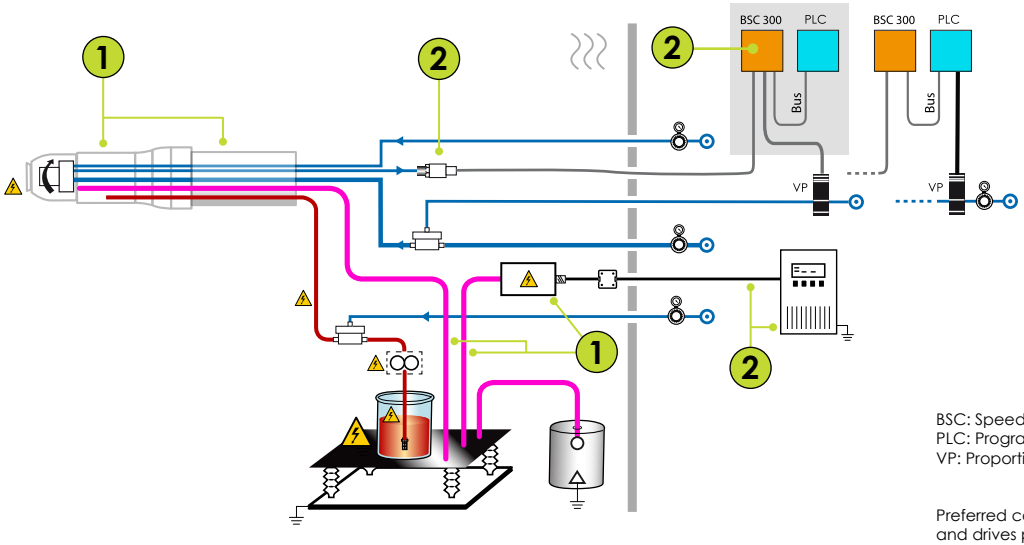
2 Mark 2

Control module GNM200 + sector connection (2.5m),
Low voltage cable (8m) (Ref: 910004015-080),
Microphone,
Speed regulation BSC 300

Description		
Electrical kit with speed regulator	220 V	**910027016**
	110 V	**910027069**

• Not included:
- bell cup and air shroud (refer to page 112)
- air supply hoses (contact SAMES KREMLIN)
- pumping system (contact SAMES KREMLIN)
- color change block (refer to page 134)
- air regulator/pilot (contact SAMES KREMLIN)

Build your Atomizer



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

USE FOR WATER-BASED PAINT

1 Mark 1

	REFERENCE ATOMIZER PPH 308 WB
	water-based paint with a ≈ KΩ.cm
PPH 308 WB set	**910003722**
UHT 288 EEx e	910002864
Reciprocator support	1203616
fixing nut	1204441

2 Mark 2

Control modul GNM200 + sector connection (2.5m),
Low voltage cable (8m),
Microphone,
Speed regulation BSC 300

Description		
Electrical kit with speed regulator	220 V	**910027016**
	110 V	**910027069**

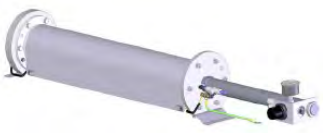
• Not included:
- bell cup & air shroud (refer to page 112)
- air supply hoses (contact SAMES KREMLIN)
- pumping system (contact SAMES KREMLIN)
- color change block (refer to page 134)
- air regulator (contact SAMES KREMLIN)
- Insulating table, Short-circuiting, Safety lock, High voltage discharge

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 PPH 308 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

Mark	Descrition	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

PPH 707 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 PPH 707 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 developped for automotive OEM and Tier 1 markets, PPH 707 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

www

PPH 707 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 KREMLIN bellcup range
- Wide or narrow pattern

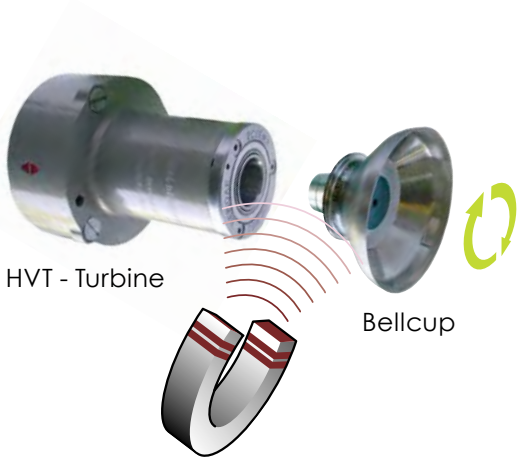
High Reliability

- 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

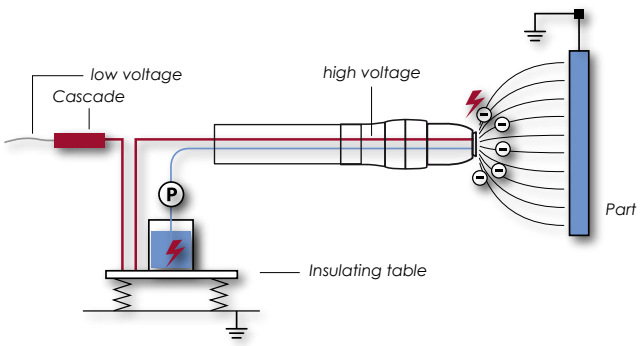
- Magnetic bellcup fastening system
- Quick disconnect
- Easy access to valves, fittings
- No calibration tool required



RANGE

PPH 707 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.



Technical Data

Weight	PPH 707 ICWB M
Spare atomizer, without cable or hose	8.5 kg

Pneumatic supply	PPH 707 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 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 Nl/min.
Magnetic turbine bearing air consumption	125 Nl/min.
Shaping air 1 and air 2 consumption (with respect to air shroud and bell being used)	From 100 to 600 Nl/min.
Turbine rotation air consumption	From 100 to 700 Nl/min.(1)
Safeguard air quantity	25 litres at 6 bar (90 psi)

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

Product supply	PPH 707 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

ATEX marking :

PPH 707 ICWB M: UHT 288 EEx e:

CE 0080 Ex II 2 G
EEx > 350mJ
ISSeP06ATEX032X

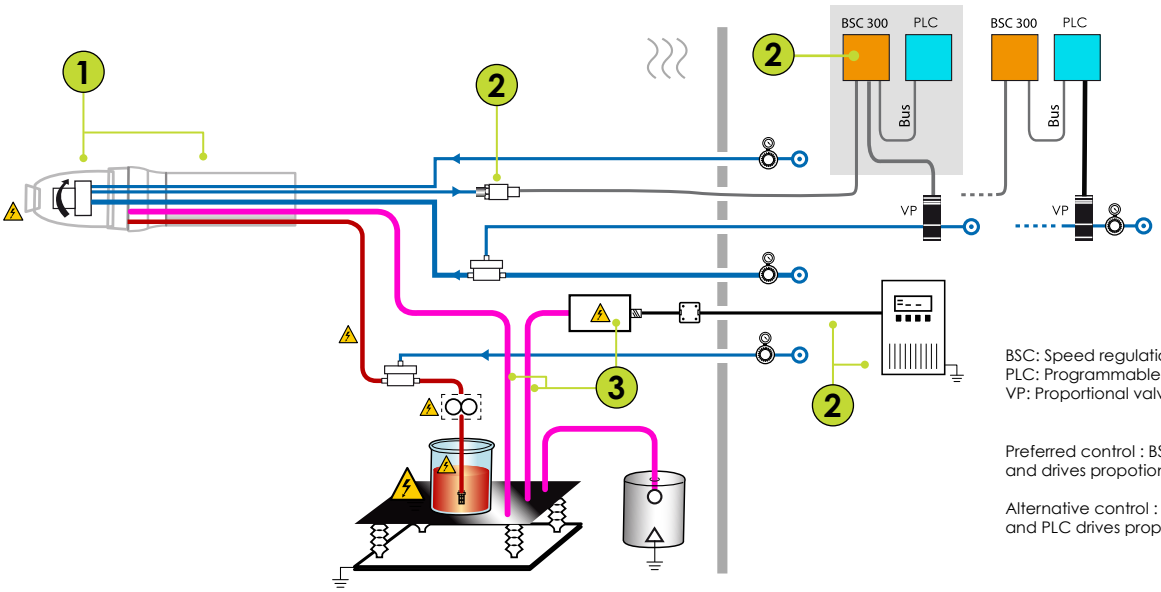
Ex II 2 GD
EEx e II
ISSeP01ATEX002U

GNM200(2)*:*

CE 0080 Ex II (2) G
[EEx > 350 mJ]
ISSeP05ATEX032X
ISSeP06ATEX032X

(2): This control module allows piloting the UHT. It is an assiociated 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



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

USE FOR WATER-BASED PAINT

1 Mark 1	REFERENCE ATOMIZER PPH 707 ICWB-M
PPH 707 ICWB-M set	910009002

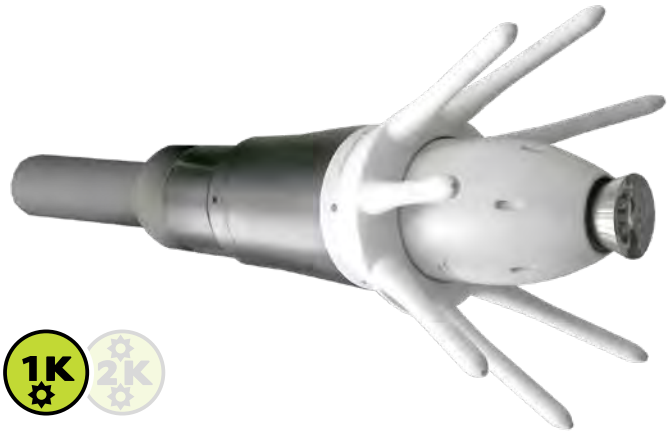
2 Mark 2

Control module GNM200 + sector connection (2.5m),
Low voltage cable (8m) (Ref: 910004015-080),
Microphone,
Speed regulation BSC 300

Description		
Electrical kit with speed regulator	220 V	910027016
	110 V	910027069

3 Mark 3	
Description	
High voltage unit UHT 288 EEx e	910002864

• Not included:
- bell cup and air shroud (refer to page 112)
- air supply hoses (contact SAMES KREMLIN)
- pumping system (contact SAMES KREMLIN)
- color change block (refer to page 134)
- air regulator/pilot (contact SAMES KREMLIN)



PPH 707 EXT-ST

Rotary bell atomizer for waterbased paint
with external electrodes

- High productivity
- Easy to integrate
- High finishing quality

PPH 707 EXT-ST is dedicated for applying non-flammable or hardly flammable water-based paints. Equipped with SAMES KREMLIN Hi-TE spraying technology patented by SAMES KREMLIN, PPH 707 EXT-ST is THE benchmark for external charge spraying.

The electrostatic charge made by ionization (or indirect charge) is called « external charge »: The particles get electrically charged by passing close to electrodes outside the sprayer. Equipped with SAMES KREMLIN Hi-TE spraying technology, the performances in terms of productivity, transfer efficiency and quality of finish position SAMES KREMLIN as THE reference of the external charge applicators.

The paint feeding system remains ground wired:
• No necessary modification of the existing paint circuit.
• From an existing solvent installation switched to waterborne, only the PPH 707 EXT-ST would be installed in order to spray the new materials = limited costs.

≈ KΩ.cm
(waterborne paint)

Kg 6.6 kg

85 kV
500 µA

up to
700 cc/min

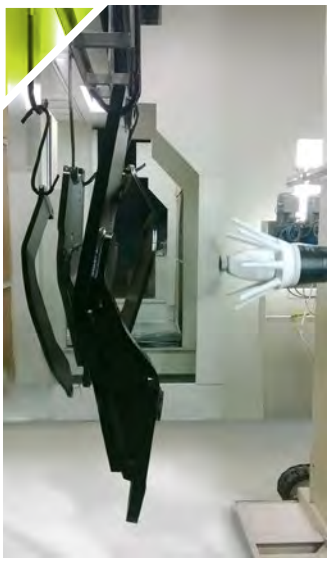
Dual
Shaping air

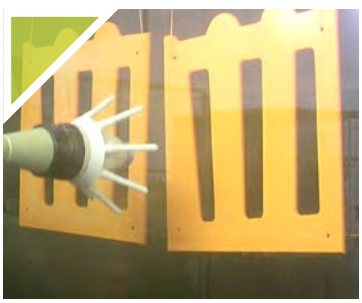
Magnetic
Bellcup

up to
70 000 rpm

FIELD OF APPLICATION

- Automotive
OEM, Tier One & Tier Two
- Metallic furniture
- Wood industry
- Drums & gas containers
- Cycles & Motorcycles
- Aluminium extrusions
- Agricultural & construction equipment





www

PPH 707 EXT-ST

CUSTOMERS' BENEFITS

Optimized productivity

- High transfer rate
- Spraying at high flow rates at very high-speed (robot movement up to 1 m/s)
- Large pattern size (between 325 and 475 mm)
- Fast colour change
- Variable pattern during spraying for seamless transitions between small and large surfaces

Easy integration

- Implementation on existing installations without modification of paint supply system
- No short circuiter nor insulating table needed
- Unlimited number of colors

High Reliability

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

** Whichever is the sooner*

Easy to Maintain

- Easy access to valves, fittings
- Magnetic bellcup fastening system
- Quick disconnect
- Specific body design preventing & dust or droplet

RANGE

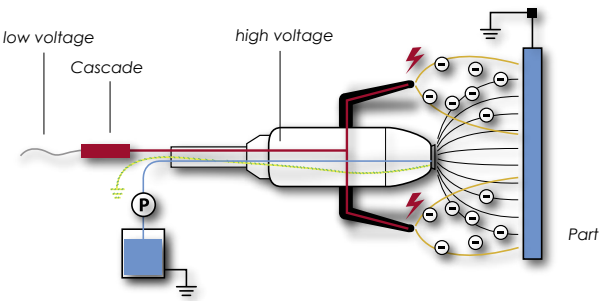
Due to the conductivity of the paint particles, the application of water-based paint with the PPH 707 EXT-ST differs by its external ionizing electrode:

- Particles charge in the vicinity from external electrodes.

PPH 707 EXT-ST

For application of water-based product non-flammable or hardly flammable:
- The product distribution system is at ground potential.
- The application is done by external charge.
- High Voltage Unit (UHT330) Remote Sprayer.
- The number of colors is unlimited

- The scanning speed with **PPH 707 EXT-ST** can reach up to **900 mm/sec**.



Technical Data

Weight	PPH 707 EXT-ST
Spare atomizer, without cable or hose	6.6 kg

Pneumatic supply	PPH 707 EXT-ST
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 Nl/min.
Magnetic turbine bearing air consumption	125 Nl/min.
Shaping air consumption (with respect to air shroud and bell being used)	From 100 to 600 Nl/min.
Turbine rotation air consumption	From 100 to 700 Nl/min.(1)
Safeguard air quantity	25 litres at 6 bar (90 psi)

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

Product supply	PPH 707 EXT-ST
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)

High Voltage	UHT 330 EEx e
Voltage maxi.	85 kV
Current maxi.	500 µA

ATEX marking :

PPH 707 EXT-ST: UHT 330 EEx e:

CE 0080 Ex II 2 G — EEx > 350mJ — ISSeP06ATEX032X

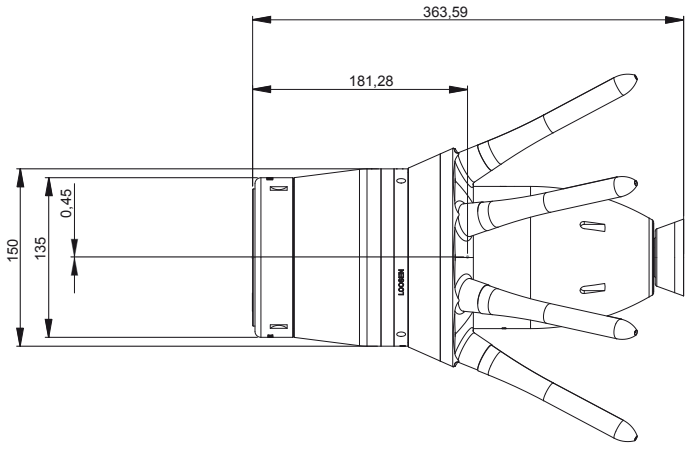
Ex II 2 GD — EEx e II — ISSeP01ATEX002U

GNM200(2):

CE 0080 Ex II (2) G

[EEx > 350 mJ]
ISSeP05ATEX032X
ISSeP06ATEX032X

(2): This control module allows piloting the UHT. It is a combined material 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.



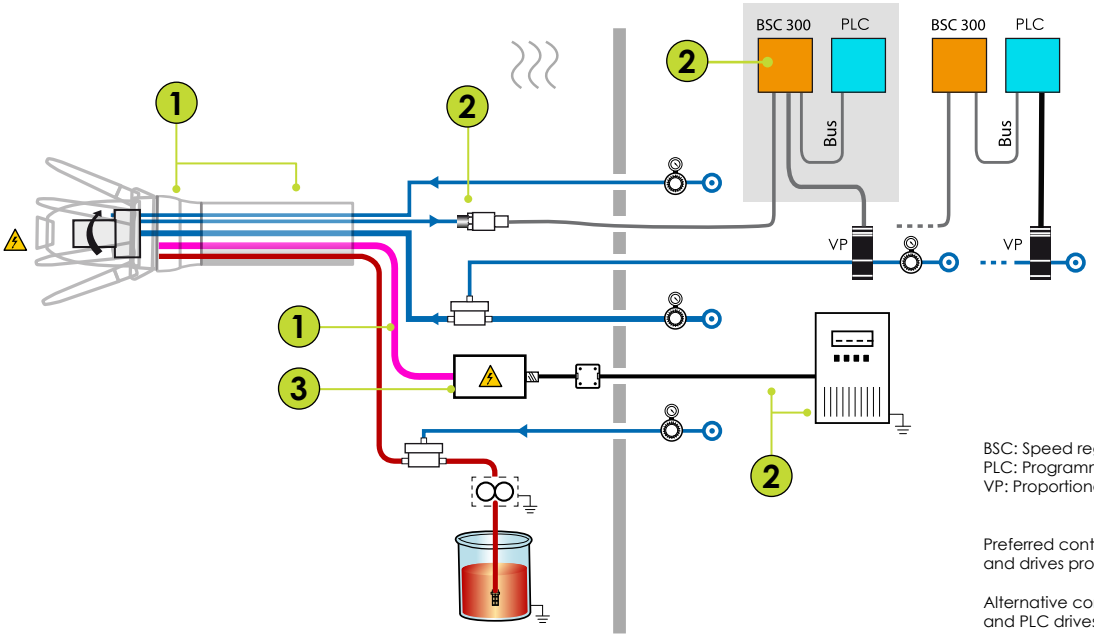
Hi-TE TECHNOLOGY:

The external shroud is composed of couples of combined air holes. This external shroud allows several aimed 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



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

USE FOR WATER-BASED PAINT

1 Mark 1

	REFERENCE ATOMIZER PPH 707 EXT-ST
PPH 707 EXT-ST set (with arm support and nut)	**910025127**

2 Mark 2

Control module GNM200 + sector connection (2.5m), Low voltage cable (8m) (Ref: 910004015-080), Microphone, Speed regulation BSC 300

Description		
Electrical kit with speed regulator	220 V	**910027016**
	110 V	**910027069**

3 Mark 3

Description	
High voltage unit UHT 330 EEx e	**910007139**

• Not included:
- bell cup and air shroud (refer to page 112)
- air supply hoses (contact SAMES KREMLIN)
- pumping system (contact SAMES KREMLIN)
- color change block (refer to page 134)
- air regulator/pilot (contact SAMES KREMLIN)

TRP 501 & TRP 502

Electro pneumatic robotic gun

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

> 1 MΩ.cm (solvent paint)

4.7 - 5.5 kg

100 kV
200 µA

up to 1200 cc/min

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

www

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.

New Capability improvement

• Available on 2 sets of TRP 501/502, the Heavy Duty Kit let your robotic gun last longer.
The newly piston makes the guns able to trigger thousands of time per day.

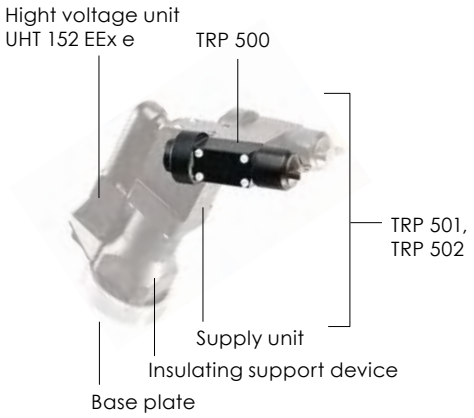
Kit Heavy Duty TRP: P/N 910019437

RANGE

• **TRP 501** 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



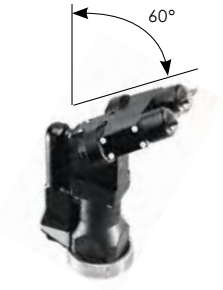
• **TRP 502** sprayer is equipped with two fan spray guns. The converging patterns are directed at the part as one pattern, and are supplied and piloted simultaneously.
TRP 502 versions provide twice the paint flow offered by TRP 501 versions.

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

• 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).

• The paint supply of both **TRP 501 & 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 TRP 502 version, the air and product supplies are shared by both spraying heads.



TRP 502

TRP 502

Technical Data

Weight	TRP 501	TRP 502
Spare atomizer, without cable or hose	4.7 kg	5.5 kg

Pneumatic supply	TRP 501 - TRP 502
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	TRP 501 - TRP 502
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 (TRP 501)	Fan spray (TRP 502)
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 KREMLIN 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 KREMLIN for more information).

Build your Atomizer

SPRAYER

TRP 501/502

Description	Regulator	Angle adapter	Reference
TRP 501 SP AR QD	Yes	60°	1 521 595
		90°	1 518 921
TRP 501 SP SR QD	No	60°	910 019 845*
		90°	910 002 320
TRP 502 SP AR QD	Yes	60°	910 002 319
		90°	910 002 317
TRP 502 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	1.1	730 355
injector INOX	1.2	755 287
	1.5	439 058
Nozzle JP single circuit	1.2	428 375(3)
Complete nozzle INOX	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

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

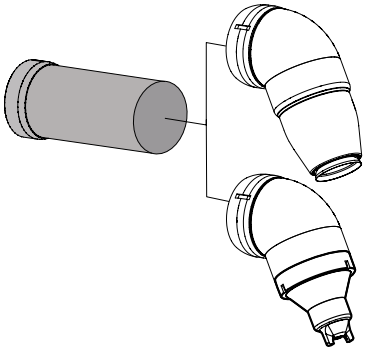
Aircap - Round spray

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

PPH 707 MS-GUN

Robotic multi-process gun sprayer for solvent based paint

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



PPH 707-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 (PPH 707 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 (PPH 707 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. PPH 707 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

> 3 MΩ.cm

6 kg

Up to 100 kV

up to 1000 cc/min

WWW

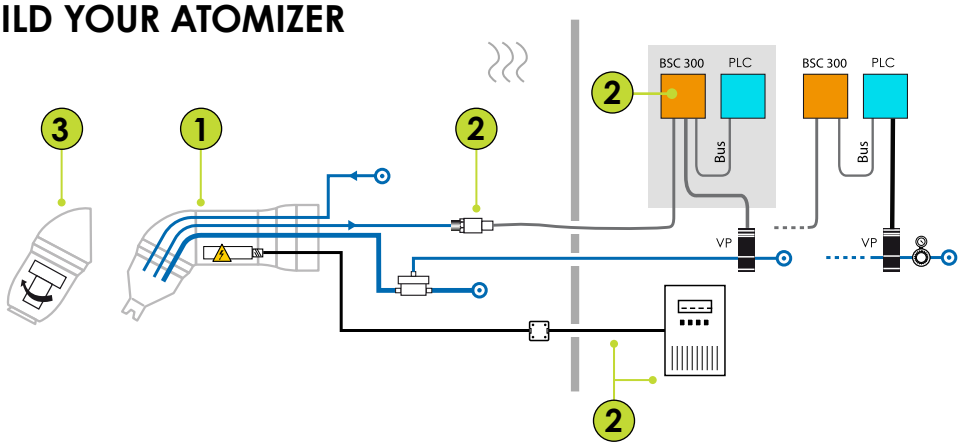
PPH 707 MS-GUN

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: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

1 Mark 1

Atomizer	PPH 707 MS-GUN with Microphone with Coil	PPH 707 MS-GUN 2K with Microphone with Coil
	910006755	910023166
Elbow	910003414SAV (1)	910020180SAV (1)
Microvalve type	1507375	1507375
Nanovalve type	1510004	1510004
High Voltage Unit UHT 157	910002870	910002870

(1): equiped with GUN sprayer

2 Mark 2

Control module GNM200, Low voltage connection 8m (Ref: 910004015-080), Microphone, Speed regulation BSC300

	Description		
Electrical kit with speed regulator	220 V	**910027015**	**910027015**
	110 V	**910027248**	**910027248**

3 Mark 3

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

- **Not included :**
- **Bellow and Air Shroud (refer to page 112)**
- **Robot wrist adapters (contact SAMES KREMLIN)**

ATEX marking:

PPH 707 MS-GUN:

CE 0080 Ex II 2 G
EEx > 350 mJ
ISSeP05ATEX032X

NANOBELL 2

Rotary atomizer bell for Robotic application

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

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

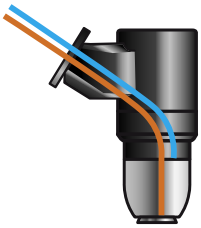
up to 40 000 rpm

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

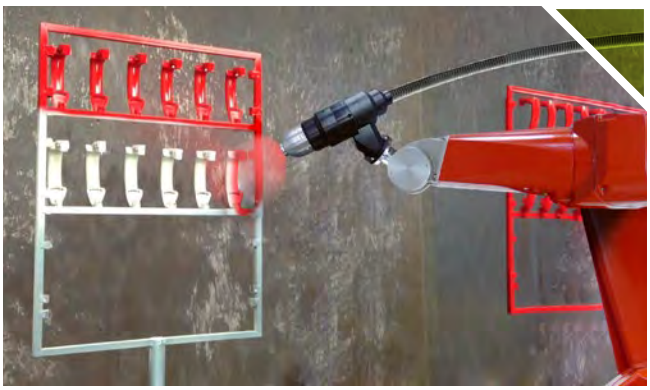
hollow wrist robot:



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

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 magnteic 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 EEx 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

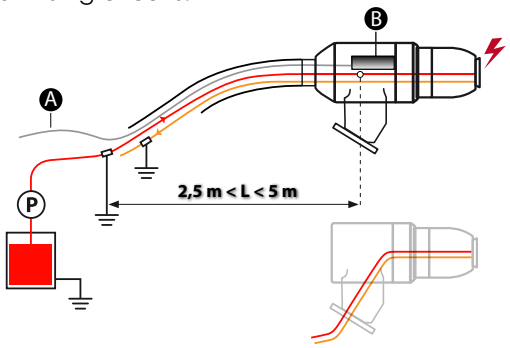
- Magnetic bellcup fastening system
- Optimised design for assembly/disassembly

RANGE

Depending on the type of application (solvent-based or water-based), the spray version NANOBELL2 differs through the wiring of the elements connected to the high voltage and product and rinsing circuits:

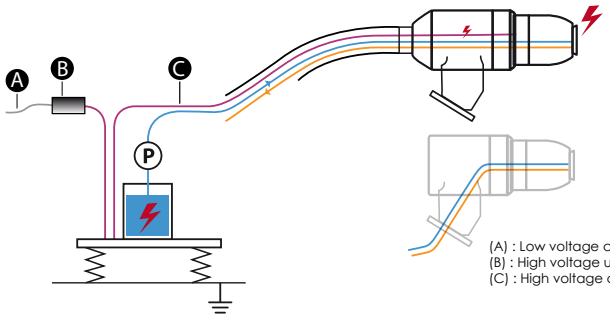
NANOBELL 2 SB

For an application of **solvent-based paint** with a resistivity ≥ 6 MΩ.cm:
- The product distribution system is connected to ground potential.
- High Voltage Unit **(B)** UHT158 [70kV/100µA] is integrated to the sprayer.
- Two versions are available:
  - hollow wrist robot
  - non-hollow wrist robot



NANOBELL 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/500µA] 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

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 Nl/min.
Air shroud pressure (bar)	6 (90 psi) constant
Micro air pressure (bar)	1.9 to 3 bar constant
Operating consumption (Nl/min.)	10
Bearing air consumption (Nl/min.)	125
Air shroud consumption (Nl/min.)	0 to 600 (depending skirt)
Turbine air consumption (Nl/min.)	190 to 700

Performances	Turbine	
Rotation speed	5000 to 40 000 rpm (upon diameter of bell cup used)	
High Voltage	**UHT 158 EEX e**	**UHT 287 EEX e**
Voltage maxi.	70 kV	70kV
Current maxi.	100 µA	500 µA

ATEX marking:

NANOBELL 2 solvent-based product with R ≥ 6 MΩ.cm:
CE 0080 II 2 G
EEx > 350mJ
ISSeP05ATEX032X

UHT 158 EEx e: 70kV/100µA
II 2 G
EEx e II
ISSeP01ATEX002U

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

UHT 287 EEx e: 70kV/500µA
II 2 GD
EEx e II
ISSeP01ATEX002U

GNM200(2):
CE II (2) G
[EEx > 350 mJ]
ISSeP05ATEX032X
ISSeP06ATEX032X

(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.

HI-TE TECHNOLOGY

PATENTED

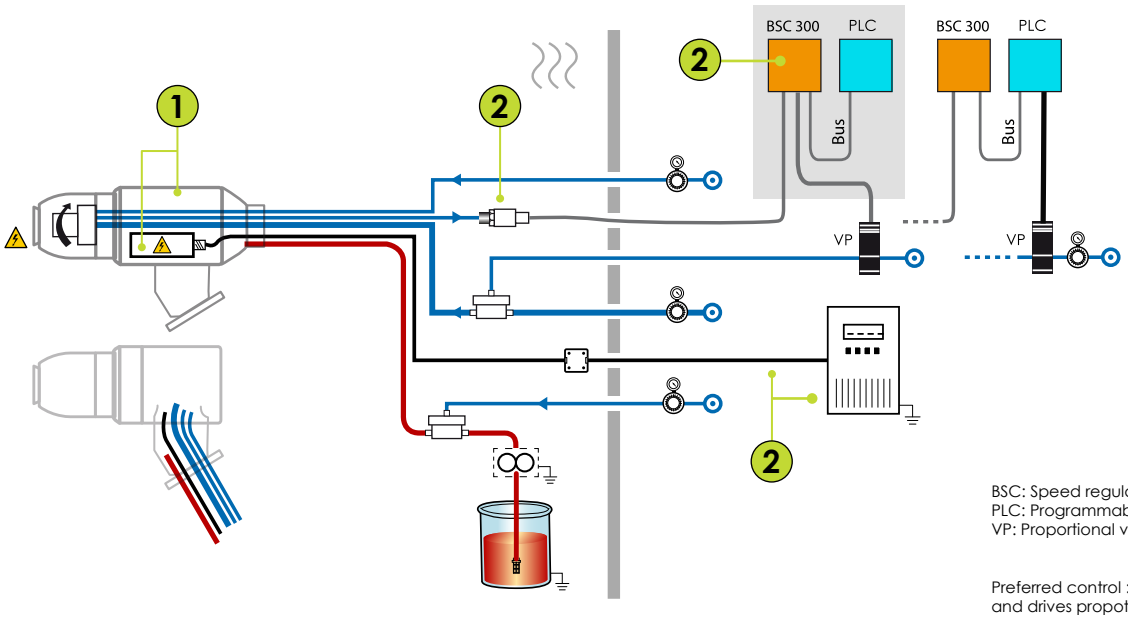
The external shroud is composed of couples of combined air holes. This external shroud allows many applications; the pattern can fastly vary from a narrow and penetrating spray to a wide and wrapping spray for an optimal transfer efficiency.

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

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

Build your Atomizer



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

USE FOR SOLVENT-BASED PAINT

1 Mark 1	REFERENCE ATOMIZER NANOBELL 2 SB
	solvent-based paint with a resistivity ≥ 6 MΩ.cm
NANOBELL 2 SB (hollow wrist robot)	910016011
NANOBELL 2 SB (non-hollow wrist robot)	910016012

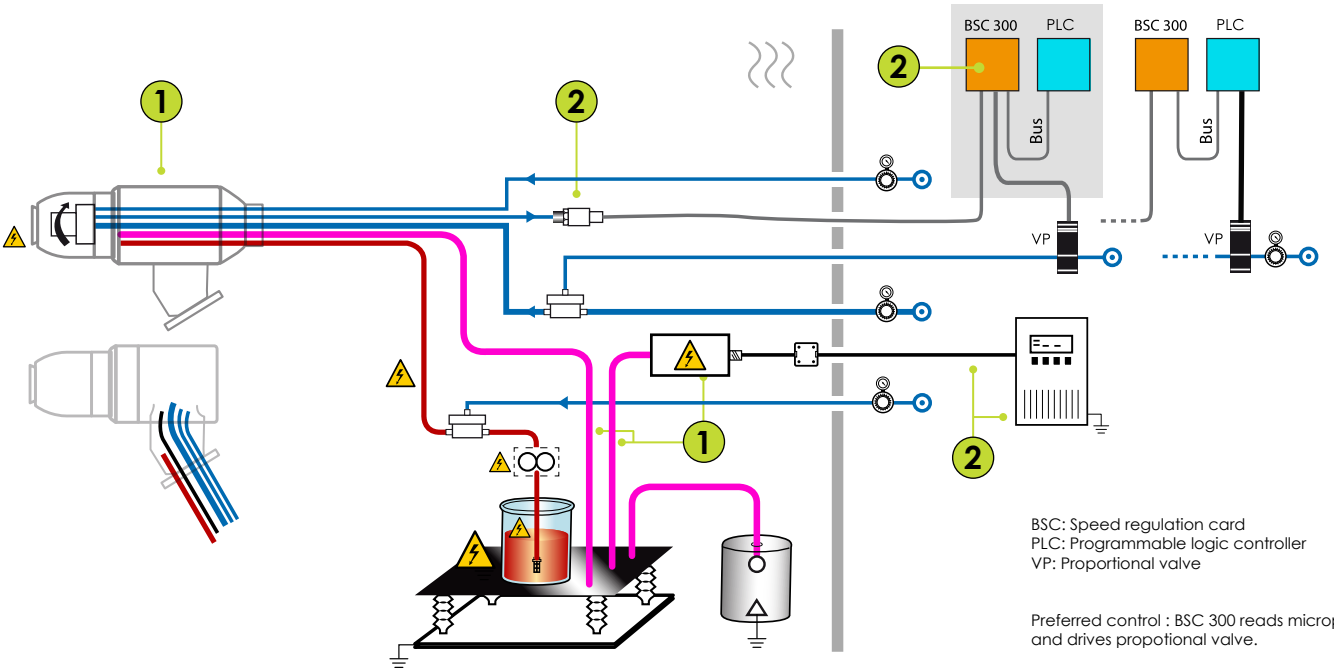
2 Mark 2

Control module GNM200 + sector connection (2.5m),
Low voltage cable (8m) (Ref: 910004015-080),
Microphone,
Speed regulation BSC 300

Description		
Electrical kit with speed regulator	220 V	910027016
	110 V	910027069

• Not included:
- bell cup and air shroud (refer to page 112)
- air supply hoses (contact SAMES KREMLIN)
- pumping system (contact SAMES KREMLIN)
- color change block (refer to page 134)
- air regulator/pilot (contact SAMES KREMLIN)

Build your Atomizer



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

USE FOR WATER-BASED PAINT

1 Mark 1

	REFERENCE ATOMIZER NANOBELL 2 WB water-based paint with a ≈ kΩ.cm
NANOBELL 2 WB (hollow wrist robot)	910016903
NANOBELL 2 WB (non-hollow wrist robot)	910016902

2 Mark 2

Control modul GNM200 + sector connection (2.5m),
Low voltage cable (8m),
Microphone,
Speed regulation BSC 300

Description		
Electrical kit with speed regulator	220 V	910027016
	110 V	910027069

• Not included:
- bell cup & air shroud (refer to page 112)
- air supply hoses (contact SAMES KREMLIN)
- pumping system (contact SAMES KREMLIN)
- color change block (refer to page 134)
- air regulator (contact SAMES KREMLIN)
- Insulating table, Short-circuiting, Safety lock, High voltage discharge

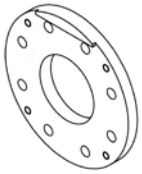
Build your Atomizer

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 KREMLIN



BE MORE FLEXIBLE

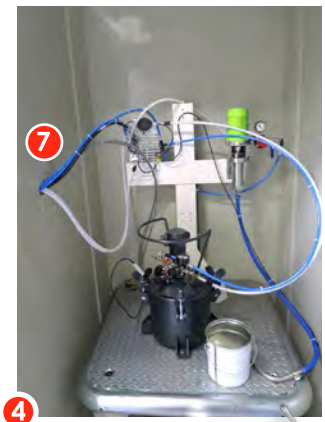
NANOBELL 2 with **GUN head** (option)
Switch easily from bell to gun process for more penetration.
This feature available as an option of Nanobell sprayer replaces all bell components (turbine, shroud, and bell cup) by fan shaped electro pneumatic sprayer, without disassembling the body.

Description	Reference
GUN head	**910019815**

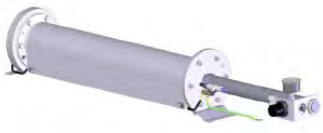
DISCHARGE SYSTEM OF SUPPLY WATER-BASED PAINT

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 alows the grounding of the electrostatically charged paint circuit when not in us

5 Safety lock

Mark	Descrition	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

PPH 707 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

> 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

PPH 707 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):

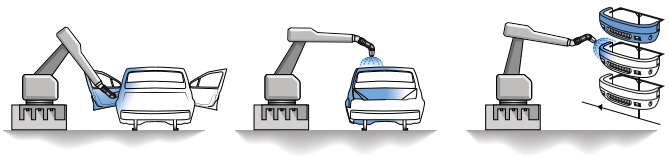
- better atomization fineness,
- high paint flow

The level of finishing quality proposed by the **PPH 707 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

PPH 707 SB is dedicated to the Automotive Industry and Tier 1 for solvent based application.



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

PPH 707 SB can be built-in into any type of multi-axis robot.

www

PPH 707 SB

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

Technical Data

Weight	PPH 707 SB
Spare atomizer, without cable or hose	7 kg

Pneumatic supply	PPH 707 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 Nl/min.
Magnetic turbine bearing air consumption	125 Nl/min.
Shaping air 1 and air 2 consumption (with respect to air shroud and bell being used)	From 100 to 600 Nl/min.
Turbine rotation air consumption	From 100 to 700 Nl/min.(1)
Safeguard air quantity	25 litres at 6 bar (90 psi)

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

Product supply	PPH 707 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	**PPH 707 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)	**PPH 707 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:

PPH 707 SB:

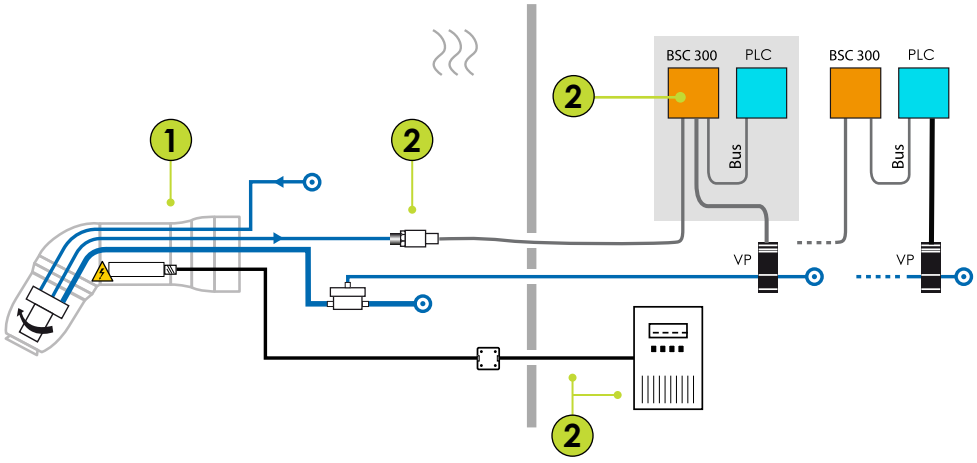
CE 0080 Ex II 2 G
EEx > 350 mJ
ISSeP05ATEX032X

GNM 200(3):

CE 0080 Ex II (2) GD
[EEx > 350 mJ]
ISSeP05ATEX032X
ISSeP06ATEX032X

(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



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

1 Mark 1

	REFERENCE ATOMIZER			
	PPH 707 SB			PPH 707 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

**Control module GNM200,
Low voltage connection 8m
(Ref: 910004015-080),
Microphone,
Speed regulation BSC300**

Description					
Electrical kit with speed regulator	220 V	**910027015**	**910027015**	**contact us**	**910027016**
	110 V	**910027248**	**910027248**	**contact us**	**910027069**

*: with UHT 157i, add «INT» on the reference number (exemple: 910004013INT for PPH 707 SB with UHT 157i or 910004013FO becomes 910004013INTFO

- **Not included :**
  - **Bell and Air Shroud (refer to page 113)**
  - **Robot wrist adapters (contact SAMES KREMLIN)**

PPH 707 MT

Robotic sprayer for solvent based paint equipped with **multi trigger technology**

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

> 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

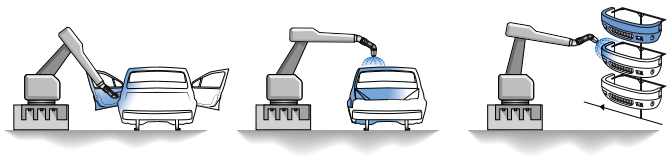
Multi trigger technology means that the color change block is integrated inside this atomizer's body.

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	-	•	•

PPH 707 MT can be built-in into any type of multi-axis robot.

www

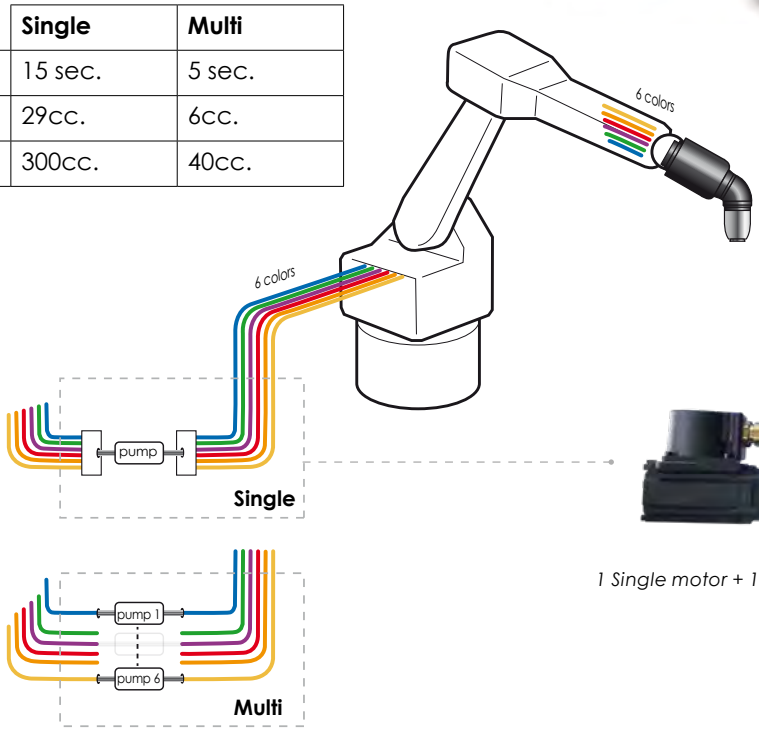
PPH 707 MT

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

Safety

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

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*

Technical Data

Weight	PPH 707 MT
Spare atomizer, without cable or hose	9.2 kg (with coil) - 8.8 kg (without coil)

Pneumatic supply	PPH 707 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 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 Nl/min.
Magnetic turbine bearing air consumption	125 Nl/min.
Shaping air 1 and air 2 consumption (with respect to air shroud and bell being used)	From 100 to 600 Nl/min.
Turbine rotation air consumption	From 100 to 700 Nl/min.(1)
Safeguard air quantity	25 litres at 6 bar (90 psi)

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

Product supply	PPH 707 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 - witht coil	15 sec	5 sec
High Voltage	**UHT 157**	
Voltage maxi.	100 kV	
Current maxi.	200 µA	

ATEX marking:

PPH 707 MT:

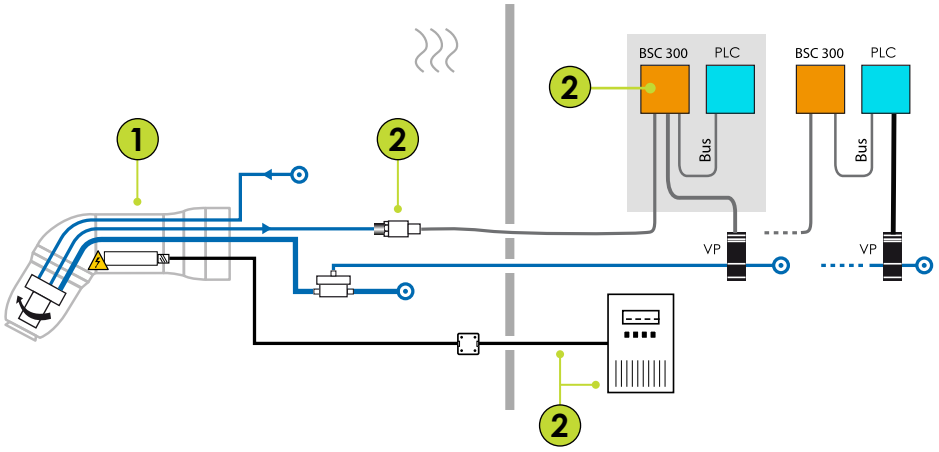
CE 0080 Ex II 2 G
EEx > 350 mJ
ISSeP05ATEX032X

GNM 200(3):

CE 0080 Ex II (2) GD
[EEx > 350 mJ]
ISSeP05ATEX032X
ISSeP06ATEX032X

(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



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

1 Mark 1

	REFERENCE ATOMIZER PPH 707 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

**Control module GNM200,
Low voltage connection 8m
(Ref: 910004015-080),
Microphone,
Speed regulation BSC300**

Description				
Electrical kit with speed regulator	220 V	**910027015**	**910027015**	**contact us**
	110 V	**910027248**	**910027248**	**contact us**

- **Not included :**
  - **Bell and Air Shroud (refer to page 113)**
  - **Robot wrist adapters (contact SAMES KREMLIN)**

PPH 707 SB-2K

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

- Low material loss
- High reliability
- Easy to maintain

> 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

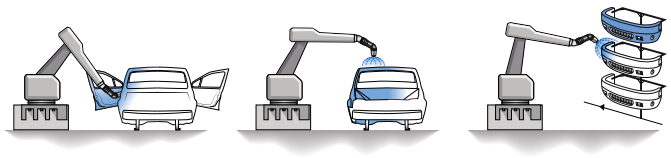
up to
85 000 rpm

PPH 707 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	•	•	•

PPH 707 SB-2K can be built-in into any type of multi-axis robot.

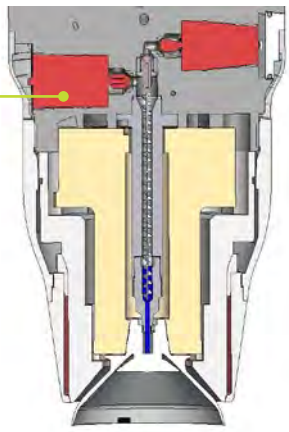
www

PPH 707 SB-2K

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 PPH 707 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

Technical Data

Weight	PPH 707 SB-2K
Spare atomizer, without cable or hose	7.15 kg

Pneumatic supply	PPH 707 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 Nl/min.
Magnetic turbine bearing air consumption	125 Nl/min.
Shaping air 1 and air 2 consumption (with respect to air shroud and bell being used)	From 100 to 600 Nl/min.
Turbine rotation air consumption	From 100 to 700 Nl/min.(1)
Safeguard air quantity	25 litres at 6 bar (90 psi)

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

Product supply	PPH 707 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	**PPH 707 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)	**PPH 707 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:

PPH 707 SB-2K:

CE 0080 Ex II 2 G
EEx > 350 mJ
ISSeP05ATEX032X

GNM 200(3):

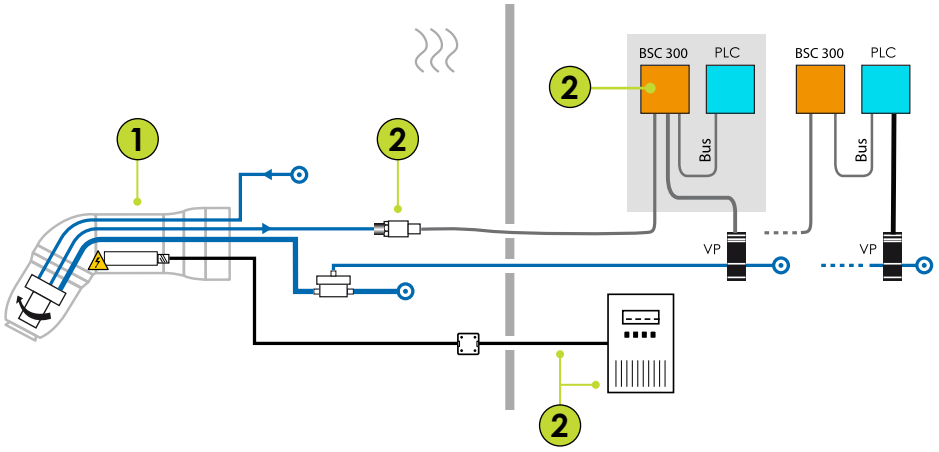
CE 0080 Ex II (2) GD
[EEx > 350 mJ]
ISSeP05ATEX032X
ISSeP06ATEX032X

(3): This control module allows piloting the UHT 157 and UHT 157i and UHT288 EEx e. 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.

PPH 707 ICWB-2K:

CE Ex II 3 G X T6
W > 2J

Build your Atomizer



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

1 Mark 1

	REFERENCE ATOMIZER		
	PPH 707 SB-2K		PPH 707 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
Nanovalve 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

**Control module GNM200,
Low voltage connection 8m
(Ref: 910004015-080),
Microphone,
Speed regulation BSC300**

Description				
Electrical kit with speed regulator	220 V	**910027015**	**910027015**	**910027016**
	110 V	**910027248**	**910027248**	**910027069**

- **Not included :**
  - **Bell and Air Shroud (refer to page 113)**
  - **Robot wrist adapters (contact SAMES KREMLIN)**

PPH 707 MT-2K 1H

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

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

> 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

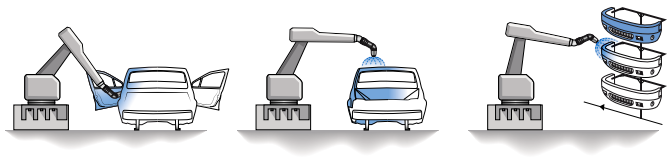
up to
85 000 rpm

PPH 707 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	-	•	•

PPH 707 MT-2K 1H can be built-in into any type of multi-axis robot.

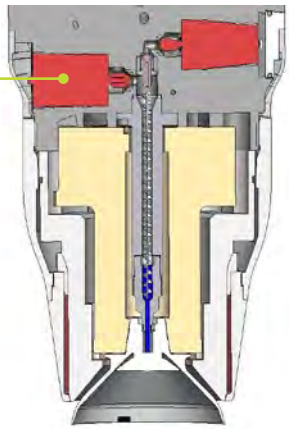
www

PPH 707 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 & Read
- 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

Technical Data

Weight	PPH 707 MT-2K 1H
Spare atomizer, without cable or hose	9.22 kg (with coil) 8.83 kg (without coil)

Pneumatic supply	PPH 707 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 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 Nl/min.
Magnetic turbine bearing air consumption	125 Nl/min.
Shaping air 1 and air 2 consumption (with respect to air shroud and bell being used)	From 100 to 600 Nl/min.
Turbine rotation air consumption	From 100 to 700 Nl/min.(1)
Safeguard air quantity	25 litres at 6 bar (90 psi)

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

Product supply	PPH 707 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:

PPH 707 MT-2K 1H:

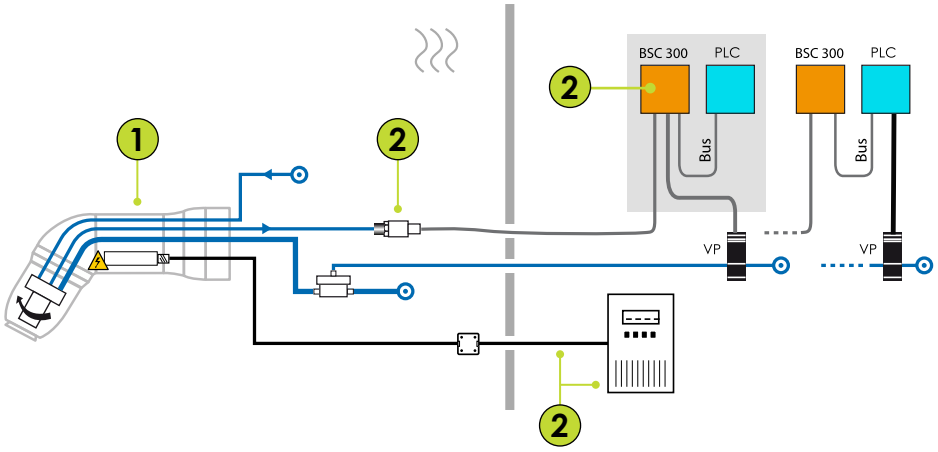
CE 0080 Ex II 2 G
EEx > 350 mJ
ISSeP05ATEX032X

GNM 200(3):

CE 0080 Ex II (2) GD
[EEx > 350 mJ]
ISSeP05ATEX032X
ISSeP06ATEX032X

(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



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

1 Mark 1

	REFERENCE ATOMIZER PPH 707 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

**Control module GNM200,
Low voltage connection 8m
(Ref: 910004015-080),
Microphone or Optical fibre sensor
Speed regulation BSC300**

Description			
Electrical kit with speed regulator	220 V	**910027015**	**910027015**
	110 V	**910027248**	**910027248**

- **Not included :**
  - **Bell and Air Shroud (refer to page 113)**
  - **Robot wrist adapters (contact SAMES KREMLIN)**

PPH 707 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

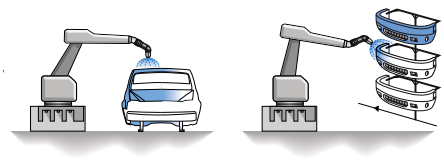
up to 85 000 rpm

PPH 707 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	•	•

PPH 707 MT-2K 3H can be built-in into any type of multi-axis robot.

www

PPH 707 MT-2K 3H

Performance

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

Productivity

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

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

Technical Data

Weight	PPH 707 MT-2K 3H
Spare atomizer, without cable or hose	9.16 kg (with coil) 8.28 kg (without coil)

Pneumatic supply	PPH 707 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 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 Nl/min.
Magnetic turbine bearing air consumption	125 Nl/min.
Shaping air 1 and air 2 consumption (with respect to air shroud and bell being used)	From 100 to 600 Nl/min.
Turbine rotation air consumption	From 100 to 700 Nl/min.(1)
Safeguard air quantity	25 litres at 6 bar (90 psi)

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

Product supply	PPH 707 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:

PPH 707 MT-2K 3H:

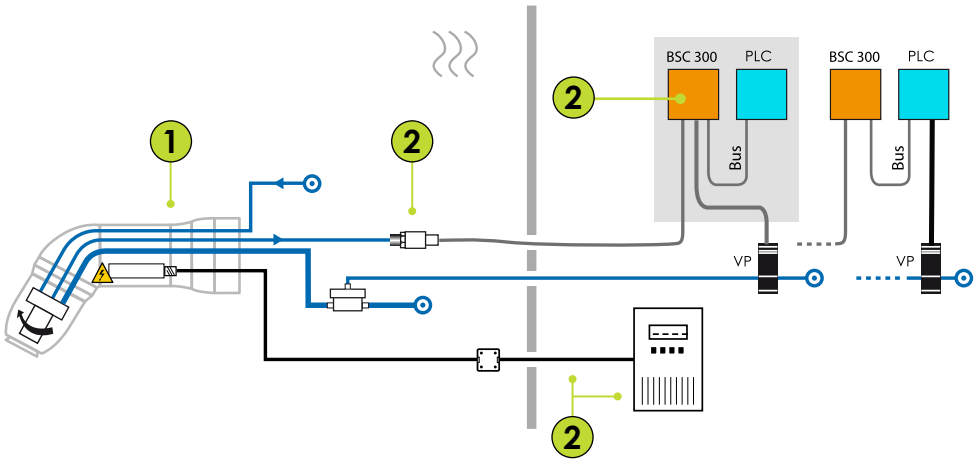
CE 0080 Ex II 2 G
EEx > 350 mJ
ISSeP05ATEX032X

GNM 200(3):

CE 0080 Ex II (2) GD
[EEx > 350 mJ]
ISSeP05ATEX032X
ISSeP06ATEX032X

(3): This control module allows piloting the UHT 157 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



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

1 Mark 1

	REFERENCE ATOMIZER PPH 707 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
For UHT 157i use	add «INT» at the end of the atomizer reference. Ex. **910020183INT**			

2 Mark 2

**Control module GNM200,
Low voltage connection 8m
(Ref: 910004015-080),
Microphone,
Speed regulation BSC300**

Description					
Electrical kit with speed regulator	220 V	**910027015**	**910027015**	**910027015**	**910027015**
	110 V	**910027248**	**910027248**	**910027248**	**910027248**

- **Not included :**
  - **Bell and Air Shroud (refer to page 113)**
  - **Robot wrist adapters (contact SAMES KREMLIN)**

PPH 707 EXT

Robotic sprayer for waterbased paint with external electric charge

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

a few kΩ.cm water based paint

7 kg

Up to 85 kV

up to 700 cc/min

Dual Shaping air

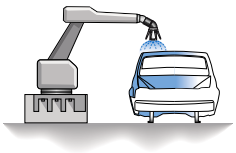
Magnetic Bellcup

up to 85 000 rpm

PPH 707 EXT external charge sprayer is dedicated to the application of waterbased materials. The performances of atomitzer and **components** are the **same** than the **PPH 707 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	-

PPH 707 EXT can be built-in into any type of multi-axis robot.

www

PPH 707 EXT

CUSTOMERS' BENEFITS

High Performance

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

Flexibility

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

High Reliability

- 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

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

Safety

- Remote bell monitoring device
- ATEX zone 1

Technical Data

Weight	PPH 707 EXT
Spare atomizer, without cable or hose	7 kg

Pneumatic supply	PPH 707 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 Nl/min.
Magnetic turbine bearing air consumption	125 Nl/min.
Shaping air consumption (with respect to air shroud and bell being used)	From 100 to 600 Nl/min.
Turbine rotation air consumption	From 100 to 700 Nl/min.(1)
Safeguard air quantity	25 litres at 6 bar (90 psi)

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

Product supply	PPH 707 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 85 000 rpm (upon diameter of bell cup used)
Application speed	up to 900 mm/sec
Color change	**PPH 707 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)	**PPH 707 EXT**
Time	6 sec.
Rinsing product consumption	50 cm^3
High Voltage	**UHT 330 EEx e**
Voltage maxi.	85 kV
Current maxi.	500 µA

ATEX marking:

PPH 707 EXT:

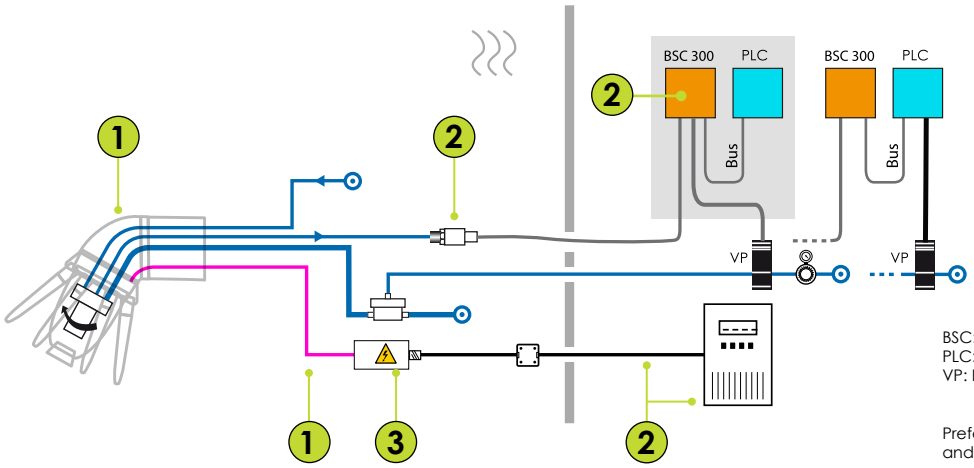
CE 0080 Ex II 2 G
EEx > 350 mJ
ISSeP06ATEX032X

GNM 200(3):

CE 0080 Ex II (2) GD
[EEx > 350 mJ]
ISSeP05ATEX032X
ISSeP06ATEX032X

(3): This control module allows piloting the UHT 330. 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



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

1 Mark 1

	REFERENCE ATOMIZER PPH 707 EXT
	with Microphone
Atomizer	**910023980FO**
Body	910008734SAV
Microvalve type	1507375
Nanovalve type	1510004
High speed turbine	1525849
High Voltage connection (9m)	910008742
High Voltage Unit UHT 330	**910007139**

2 Mark 2

Control module GNM200 + sector connection (2.5m),
Low voltage cable (8m),
Microphone,
Speed regulation BSC 300

Description		
Electrical kit with speed regulator	220 V	**910027016**
	110 V	**910027069**

3 Mark 3

Description	
High voltage unit UHT 330 EEx e	**910007139**

- **Not included :**
  - **Bell and Air Shroud (refer to page 113)**
  - **Robot wrist adapters (contact SAMES KREMLIN)**

PPH 707 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

a few kΩ.cm
water based paint

10.2 kg

85 kV
500 µA

up to
700 cc/min

Dual
Shaping air

Magnetic
Bellcup

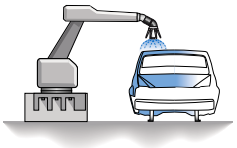
up to
85 000 rpm

PPH 707 EXT-MT external charge sprayer is dedicated to the application of waterborne materials.

The performances of atomitzer and components are the same as the **PPH 707 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 **PPH 707 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	-

PPH 707 EXT-MT can be built-in into any type of multi-axis robot.

www

PPH 707 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

Technical Data

Weight	PPH 707 EXT-MT
Spare atomizer, without cable or hose	10.2 kg

Pneumatic supply	PPH 707 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 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 Nl/min.
Magnetic turbine bearing air consumption	125 Nl/min.
Shaping air consumption (with respect to air shroud and bell being used)	From 100 to 600 Nl/min.
Turbine rotation air consumption	From 100 to 700 Nl/min.(1)
Safeguard air quantity	25 litres at 6 bar (90 psi)

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

Product supply	PPH 707 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	**PPH 707 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	**UHT 330 EEx e**
Voltage maxi.	85 kV
Current maxi.	500 µA

ATEX marking:

PPH 707 EXT-MT:

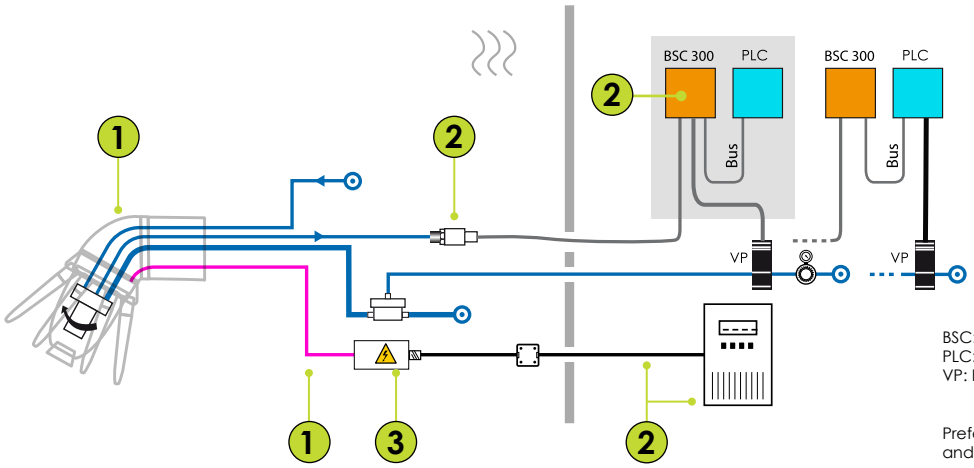
CE 0080 Ex II 2 G
EEx > 350 mJ
ISSeP06ATEX032X

GNM 200(3):

CE 0080 Ex II (2) GD
[EEx > 350 mJ]
ISSeP05ATEX032X
ISSeP06ATEX032X

(3): This control module allows piloting the UHT 330. 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



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

1 Mark 1

	REFERENCE ATOMIZER PPH 707 EXT-MT	
	with Microphone	**with Fiber optic**
Atomizer	**910023989**	**910023989FO**
Body	**910021131**	**910021131FO**
Microvalve type	1507375	1507375
Nanovalve type	1510004	1510004
High speed turbine	1525849	1525849
High Voltage connection (9m)	910008742	910008742
High Voltage Unit UHT 330	**910007139**	**910007139**

2 Mark 2

Control module GNM200 + sector connection (2.5m), Low voltage cable (8m) (Ref: 910004015-080), Microphone, Speed regulation BSC 300

Description			
Electrical kit with speed regulator	220 V	**910027016**	**contact us**
	110 V	**910027069**	**contact us**

3 Mark 3

Description	
High voltage unit UHT 330 EEx e	**910007139**

- **Not included :**
  - **Bell and Air Shroud (refer to page 113)**
  - **Robot wrist adapters (contact SAMES KREMLIN)**

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:

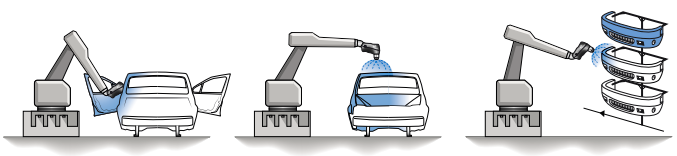
- loading the exact necessary paint quantity,
- applying the high voltage to the paint in the best efficiency technology internal charge,
- controlling with highest accuracy the paint flow rate
- freeing the robot arm from paint hoses.

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:

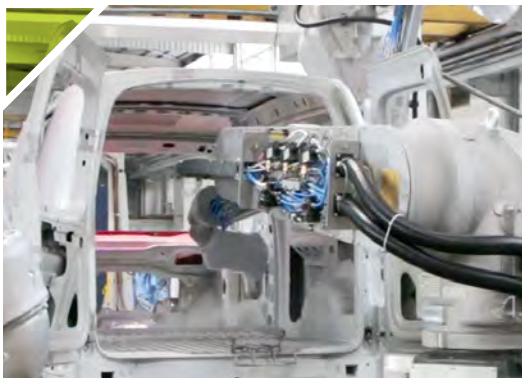
- Infinite choice of colours,
- Fast color change,
- Only one 800cm³ reservoir,
- Maintenance outside the booth
- No risk for paint during transfer

FIELD OF APPLICATION

Whichever the product, the operating modes may be:



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



www

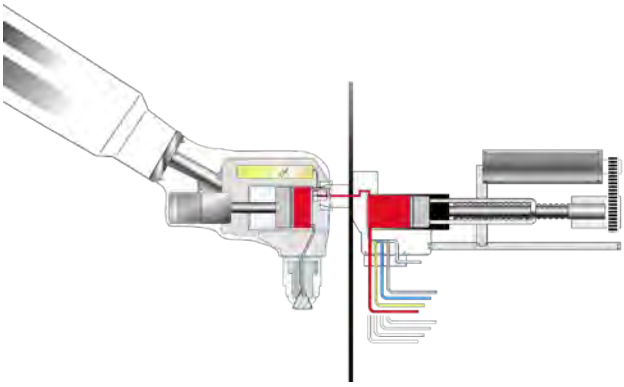
ACCUBELL 709 EVO

CUSTOMERS' BENEFITS

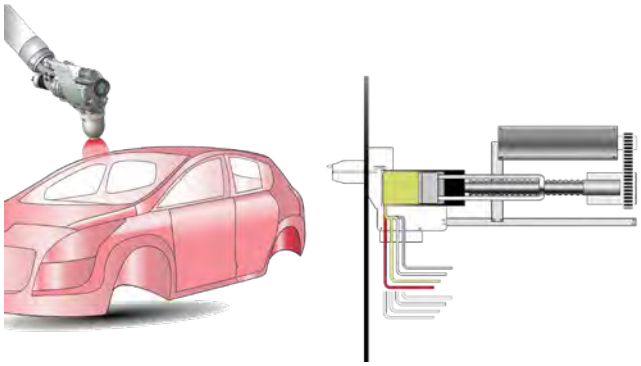
Fast color change

- 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 KREMLIN)
- The internal charge bell repels the overspray, dramatically reducing contamination and the cleaning down time
- Double circuit for additional SB paint

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 Nl/min.
Magnetic turbine bearing air consumption	125 Nl/min.
Shaping air consumption (with respect to air shroud and bell being used)	From 200 to 850 Nl/min.
Turbine rotation air consumption	From 100 to 700 Nl/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 Ex II 2 G

EEx > 350 mJ
ISSeP05ATEX032X

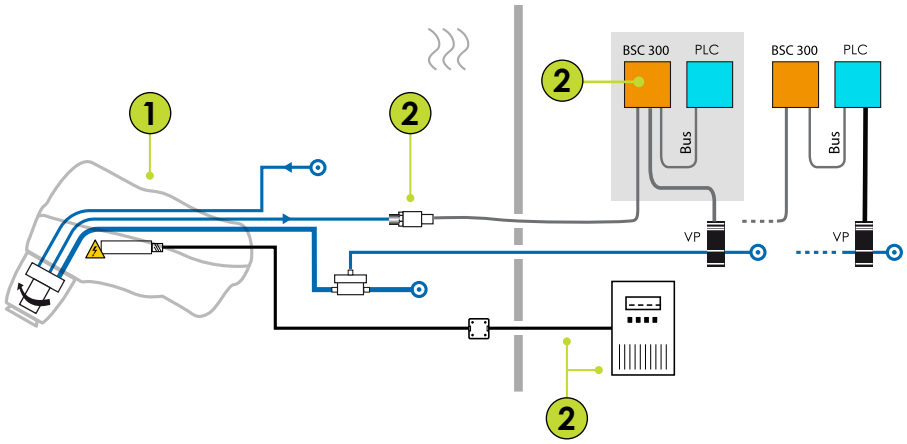
GNM 200(4):

CE 0080 Ex II (2) GD

[EEx > 350 mJ]
ISSeP05ATEX032X
ISSeP06ATEX032X

(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



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

1 Mark 1

	REFERENCE ATOMIZER ACCUBELL 709 EVO	
	with Microphone	with Fiber Optic
Atomizer	**910010908***	**910010908FO***
Head assembly	910010900SAV	910010900FOSAV
Elbow	910010901SAV	910010901SAV
Wrist - Quick disconnect	910010899SAV	910010899SAV
Microvalve type	1507375	1507375
Nanovalve type	1510004	1510004
Motor	1523259-080	1523259-080
High speed turbine	1525849	1525849
High Voltage Unit UHT 157 / UHT 157**i**	910011910 / 910016744	910011910 / 910016744

2 Mark 2

Control module GNM200 + sector connection (2.5m), Low voltage cable (8m) (Ref: 910004015-080), Microphone or Optical fibre sensor, Speed regulation BSC 300

Description			
Electrical kit with speed regulator	220 V	**910027015**	**contact us**
	110 V	**910027248**	**contact us**

Atomiser flexible cover

Collect dust on the easy to clean washable fabric cover. Specific design for Accubell 709 Evo with energized ring around the connection

910018372

*: with UHT 157i, add «INT» on the reference number
(exmple: 910004013INT for PPH 707-SB with UHT 157i or 910004013FO becomes 910004013INTFO

- **Not included :**
  - **Bell and Air Shroud (refer to page 113)**
  - **Robot wrist adapters (contact SAMES KREMLIN)**

PPH 707 Airspray

Non Electrostatic Robotic rotary bell atomizer

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

5.75 - 6.35 kg

up to 700 cc/min

Dual Shaping air

Magnetic Bellcup

up to 85 000 rpm

PPH 707 Airspray is dedicated to the application of waterborne materials without electrostatic effect.

The high level of atomization of **PPH 707 Airspray** is same as the **PPH 707 Airspray** (Electrostatic internal charge); it is the benchmark in automotive finishing thanks to its **Hi-TE technology**. This version of the **PPH 707 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
- **PPH 707 Airspray 2K** = 2 components paint

- **PPH 707 Airspray Compact** = standard body (same dimension as PPH 707 Airspray)
- **PPH 707 Airspray 2K Compact** = Compact body (for interior cut-in application).

FIELD OF APPLICATION

All applications, All layers

PPH 707 Airspray Compact

PPH 707 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

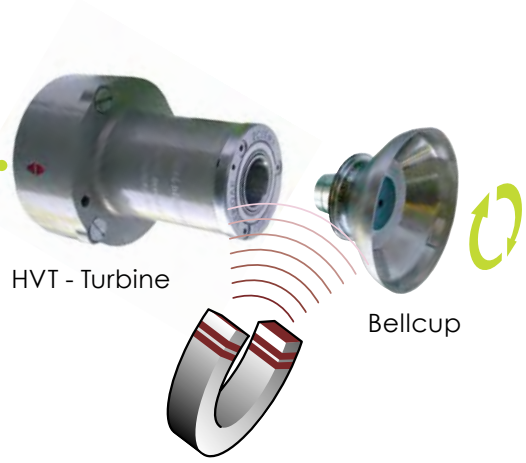
Sustainability

- 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



Technical Data

Weight	PPH 707 Airspray & Airspray 2K	PPH 707 Airspray C & Airspray 2K C
Spare atomizer, without cable or hose	6.35 kg	5.75 kg
		c: compact sprayer

Pneumatic supply	PPH 707 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 Nl/min.
Magnetic turbine bearing air consumption	125 Nl/min.
Shaping air 1 and air 2 consumption (with respect to air shroud and bell being used)	From 100 to 600 Nl/min.
Turbine rotation air consumption	From 100 to 700 Nl/min.(1)
Safeguard air quantity	25 litres at 6 bar (90 psi)

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

Product supply	PPH 707 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

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

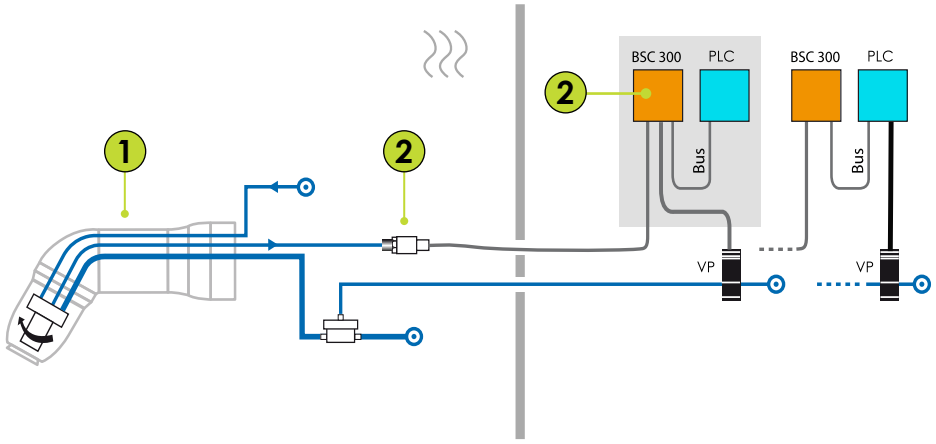
Performances	HVT
Rotation speed	15 to 70 000 rpm (upon diameter of bell cup used)
Application speed	up to 900 mm/sec
Color change	**PPH 707 Airspray all versions**
Paint loss per color - high runners	25 cm^3
Rinsing product consumption	300 cm^3 (atomizer only, not included rinsing box)
Standard process time	12 sec
Optimized process time	5 sec (with REVERSE FLUSH on circuit 1 & 2)
High Voltage	**No high voltage**

ATEX marking:

PPH 707 Airspray:

CE Ex II 2 G c T6

Build your Atomizer



BSC: Speed regulation card
PLC: Programmable logic controller
VP: Proportional valve

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

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

1 Mark 1

	REFERENCE ATOMIZER			
	PPH 707 Airspray with Microphone	PPH 707 Airspray 2k with Microphone	PPH 707 Airspray C with Microphone	PPH 707 Airspray 2K C with Microphone
Atomizer	**910005906**	**910023059**	**910019975**	**910023060**
Body	910004455SAV	910005570SAV	910004455SAV	910005570SAV
Microvalve type	1507375	910010850	1507375	910010850
Nanovalve type	1510004	1510004	1510004	1510004
High speed turbine	1525849	1525849	1525849	1525849

2 Mark 2

Microphone,
Speed regulation BSC300

Description				
Speed regulator - 220 V	**910027017**	**910027017**	**910027017**	**910027017**

- **Not included :**
  - **Bell and Air Shroud (refer to page 113)**
  - **Robot wrist adapters (contact SAMES KREMLIN)**

Range of bells & Air shrouds

For 35 years, SAMES KREMLIN 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 KREMLIN 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.

For the **RANGE #3**, a **TPAM** turbine is used (**45 krpm** max)
The choice of the bell is linked to the sprayer:

EC35	EC35 Hi-TE
EC50	EC50 Hi-TE
EC65	EX65 Hi-TE

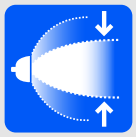
The use of air shrouds and bell cup depend on the sprayer you choose.

For the **RANGE #7**, a **HVT** turbine is used (**85 krpm** max)
The choice of the bell is linked to the sprayer:

EC35 NW	EX65 Hi-TE
EC50 NW	EX80 BSW
EC50 PSW	
EC50 CSW	EX65 Hi-TE EXT

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 proess, 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

FIELD OF APPLICATION

Four different diameters are available:
ø35, 50, 65 and 80 mm enabling to reach the target application result. Sprayer bells are easily swaped thanks to a simple tool.
«EC» range distinguishes itself by a tulip-shape bell; the "EX" shape, for Exponential, is now also available with 80mm cup. Each bell is thus combined to an air shroud with Vortex effect only with the **HI -TE technology.**

EC35 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 PPH 707 EXT, 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.

Hi-TE: Vortex air + Straight air, NW: Narrow Wide, PSW: Primer Super Wide, CSW: Clearcoat Super Wide, EXT: for External electric charge

Range of bells & air shrouds

CUSTOMERS' BENEFITS

Performances:

- High transfer efficiency with Hi-TE
- 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:

NW

Narrow pattern

On the edges and the small surfaces = Less paint outside the target

very swift transition

Wide pattern

On wide surfaces = Reduction of spraying time

SW

Super Wide pattern

On wide surfaces = Reduction of spraying time and paths

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

PATENTED

EX65

Narrow front face, reducing pollution while spraying.

A shrould composed of a pair of air flows on the same diameter.

PATENTED

EC50

Choose your bell

RANGE #3 BELL CUP SYSTEM

Atomizer equipped with **INTERNAL CHARGE**

Description		Bell Material	Reference
EC 35	1 - system		
	2 - Shaping air		910001297
	3 - Bell cup	Aluminium	910000877
		Titanium	910008677
EC 50	system		**910014441**
	Shaping air		910001298
	Bell cup	Aluminium	910000876
		Titanium	910012098
EC 65	system		
	Shaping air	Vortex air shroud	910001196
		Straight air shroud	910001695
	Bell cup	Aluminium	1527176
		Titanium	1527175
		Aluminium for application wood	910009283
EC 35 Hi-TE	system		**910008515**
	Shaping air		910008975
	Bell cup	Aluminium	910000877
EC 50 Hi-TE	system		**910008514**
	Shaping air		910007433
	Bell cup	Aluminium	910000876
EX 65 Hi-TE	system		**910008513**
	Shaping air		910008211
	Bell cup	Aluminium	910008179

RANGE #7 BELL CUP SYSTEM

Atomizer equipped with **EXTERNAL CHARGE**

Description		Bell Material	Reference
EX 65 Hi-TE EXT	system **BELL SERRATED**		**910014654**
	Shaping air		910013133
	Bell cup	Aluminium	910004615
	system **BELL NOT SERRATED**		**910014655**
	Shaping air		910013133
	Bell cup	Aluminium	910008549

Choose your bell

RANGE #7 BELL CUP SYSTEM

Atomizer equiped with **INTERNAL CHARGE**

Description		Bell Material	Reference
EC 35 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
EC 50 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
EC 50 PSW	system		**910015776**
	Shaping air		910015761
	Bell cup	Aluminium	910003159
	system		**910015777**
	Shaping air		910015761
	Bell cup	Titanium	910008756
EC 50 CSW	system		**910015780**
	Shaping air		910015763
	Bell cup	Aluminium	910003159
	system		**910015783**
	Shaping air		910015763
	Bell cup	Titanium	910008756
EX 65 Hi-TE	system		**910008511**
	Shaping air		910008535
	Bell cup	Aluminium	910004615
	system		**910010196**
	Shaping air		910008535
	Bell cup	Titanium	910009383
EX 80 BSW	system		**910014659**
	Shaping air		910013214
	Bell cup	Titanium	910012705

PSW: Primer Super Wide, BSW: Basecoat Super Wide
CSW: Clearcoat Super Wide,
VX: Vortex air, Hi-TE: Vortex air + Straight air
EXT: for External electric charge

Choose your bell

CHARACTERISTICS

RANGE #3

EC35 EC50 EX65 -> for finer atomization
EC65 -> for larger impact

Robot speed	up to 1000 mm/sec.		
Paint flow	20 to 450 cc/min	30 to 500 cc/min	35 to 600 cc/min
Impact diameter	75 to 350 mm	100 to 450 mm	150 to 550 mm
Rotation speed of bellcup	25 to 45 krpm		

The values of parameters given below are indicative

RANGE #7

EC35 NW EC50 PSW
EC50 NW EC50 CSW EX65 HI-TE EX80 BSW

Robot speed	up to 1500 mm/sec.			
Paint flow	100 to 600 cc/min (EC35) 250 to 700 cc/min (EC50)	200 to 700 cc/min	100 to 700 cc/min	150 to 850 cc/min
Impact diameter	100 to 300 mm	300 to 450 mm	220 to 450 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 metal base application	• 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

AUTOMOTIVE PROCESS

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

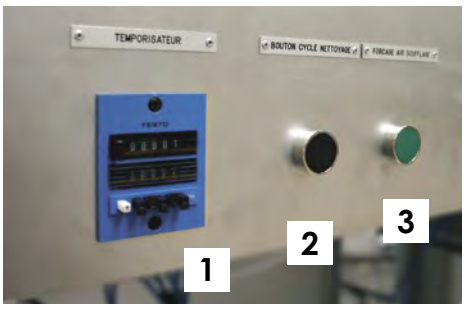
WORKING PRINCIPLE

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

WWW

ATEX marking:

CE Ex II 2 G c T6

Dossier technique :`
Machine à laver les bols et les jupes

Rinsing Box

Automatic cleaning system of the spray head

SAMES KREMLIN «rinsing box» allows the automatic cleaning of the pollution outside the atomizer, drying this latter, and then draining the used material during rinsing as well as the wastes from eliminated paints. It is specially designed for atomizers like **ACCUBELL** and **PPH** models, that can be equipped with all the existing types of bells : ø35 mm, ø50 mm, ø65 mm or ø80mm.

The system thus allows a thorough cleaning at the level of the atomizer tip.

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

WWW

CUSTOMERS' BENEFITS

Production increase

• This system guaranties a working time increase of the atomizers between manual cleaning phases: stopping for an operator's intervention is no longer required and the line can go on producing for a longer time. With respect to both applied paint and process, the operator synchronizes the rinsing cycles of the working atomizer.

Reduced maintenance

• With an automatic cleaning of the spraying head, production stops necessary to the interventions are drastically reduced; the cleaning quality is better ensured.
• It allows reclaiming all the materials used for cleaning. Customers can thus pride themselves on protecting the environment from polluting materials avoiding for instance the wastes into the gratings.

This function is optional

• An air/material separator has to be installed. With a cyclonic effect, this separator is located between the box output and the venturi, thus creating an aspiration. This allows separating the air flow from the liquid materials that are then reclaimed into a dump collector.

Rinsing Box

DESCRIPTION OF THE SYSTEM

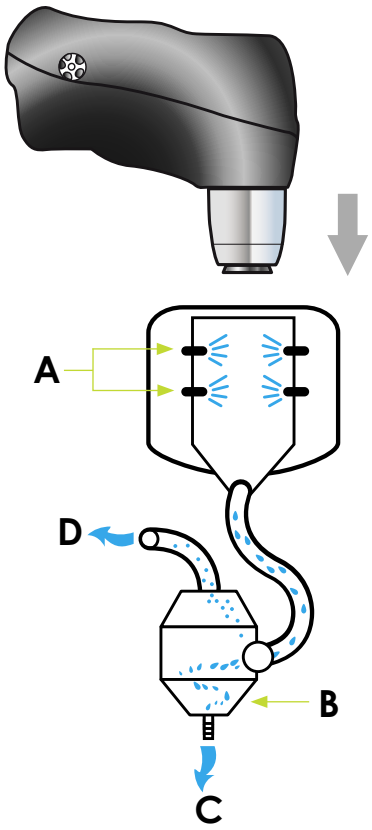
The whole unit is assembled onto a frame within the booth and has to be absolutely placed into a ventilated area. There are numerous usages of the box:

1 – Automatic cleaning of the shroud nozzle as well as the bell in order to avoid dirt build up due to the overspray that then generates spraying of grains.

2 – Drying of the outer part of the atomizer

3 – Reclaim of the rinsing material.

A: Rinsing and blowing discs
B: Air/material separator (option)
C: Material flows towards a collector (separation rate between B and D superior to 90%)
D: Air flow exhaust towards the venturi



TECHNICAL DATA

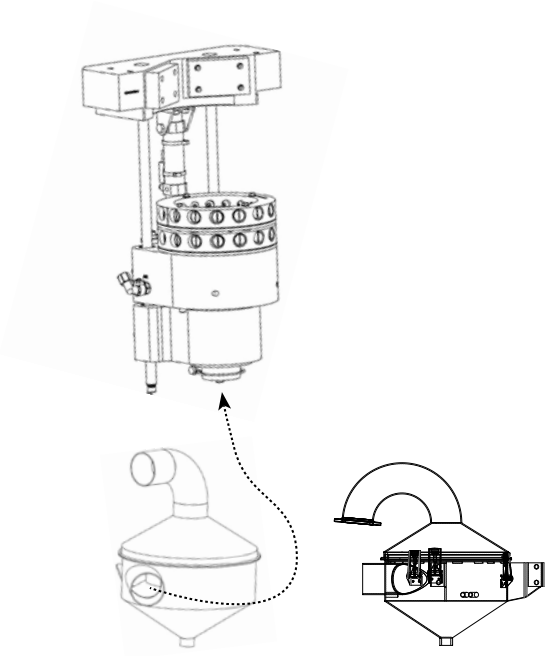
Supplies	Recommended pressure	Recommended flow
Air rinsing disc	6 bar (90psi) ± 0.5 bar (7,5psi)	200 at 400 Nl/min.
Material rinsing disc	6 bar (90psi) ± 0.5 bar (7,5psi)	2000 cc/min.
Air blowing disc	6 bar (90psi) ± 0.5 bar (7,5psi)	350 Nl/min.
Air Venturi	6 bar (90psi)	700 at 800 Nl/min.

ATEX marking:

CE Ex II 2 G Ex ia IIC T5
II 2 G c T5

RINSING BOX

Description	Type of bell	Reference
Rinsing box	35mm	910016391
	50 mm	910015675
	65 mm	910016392
	80 mm	910016393



Description		Reference
Air/material separator (option)		900002487
Air/material separation	wall mount version	900011740

The separator has to be fixed horizontally and lower than the rinsing box, do provide for a correct down-flow slope and avoid all the low points. Place the venturi (ref: 900002578) at the nearest of the cover outlet, and for a maximum efficiency, the connection sheath (ø63.5 mm, ref: F6TCAL044, lg: 1metre) between the box and the separator has to be the shortest as possible.

Microphone

The microphone sensor is designed for reading and regulating the turbine rotation speed of all the SAMES KREMLIN 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.

POSSIBLE UNIT CONFIGURATIONS

There are two possible uses to control the bell rotation speed:
- Preferred control : BSC 300 reads microphone and drives propotional valve (diagram 1).
- Alternative control : BSC 300 reads microphone and PLC drives proportional valve (diagram 2).

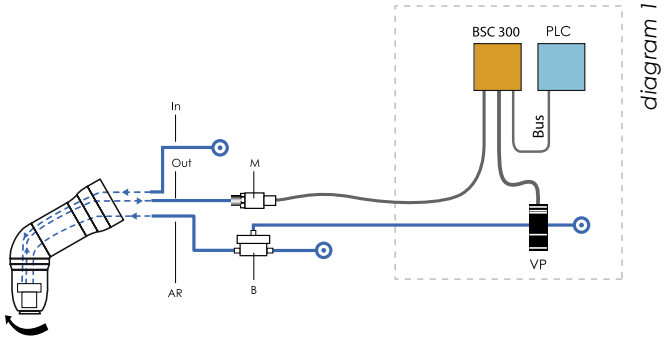


diagram 1

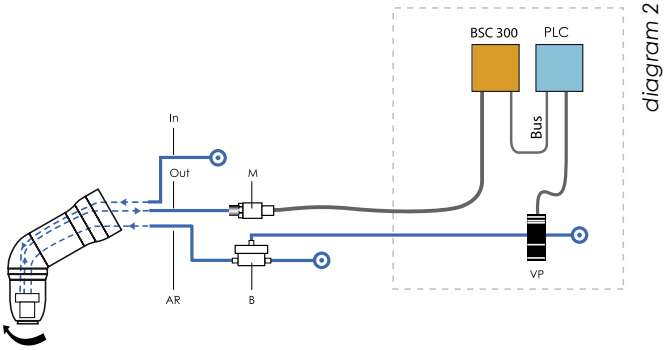


diagram 2

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

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 ...)

MICROPHONE SENSOR

Description	Reference
Microphone sensor plug + cable (0.5mm²)	851510
Electrical cable (2 x 0.5mm²) : 20 meters	910003868
Microphone sensor plug + cable (0.34mm²)	1502919*
Electrical cable (2 x 0.34mm²)	910008941*

** : best for robotic arm*

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

Optical fiber

The turbine rotation speed reading system can also be carried out by optical fiber. This solution is possible with the new range 7 of SAMES KREMLIN sprayers.

The reading of the turbine rotation speed is made thanks to a **Optical fiber** principle.
One of both fibers emits a continuous luminous signal that reflects itself on the turbine shaft in a discontinuous signal of which frequency gives the rotation speed (2 luminous pulses/turbine revolution). This discontinuous signal is transmitted by the second fiber towards the optoelectronic converter (**CFO**), thanks to an optical fiber kit of 8-m long (**FO**). The electrical-pulse signal at converter outlet is recovered and analysed by the speed regulation module BSC 300.

POSSIBLE UNIT CONFIGURATIONS

There are two possible uses to control the bell rotation speed:
- Preferred control : BSC 300 reads optical fiber and drives propotional valve (diagram 3).
- Alternative control : BSC 300 reads optical fiber and PLC drives proportional valve (diagram 4).

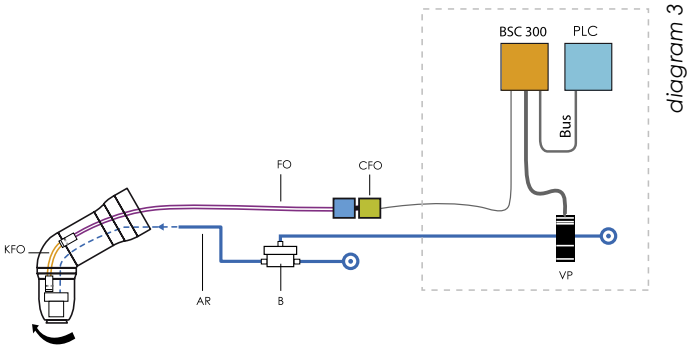


diagram 3

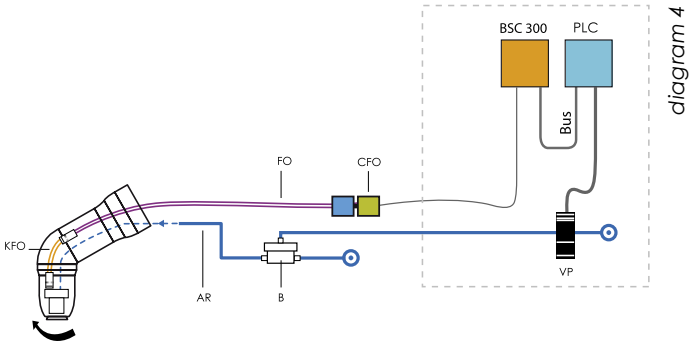


diagram 4

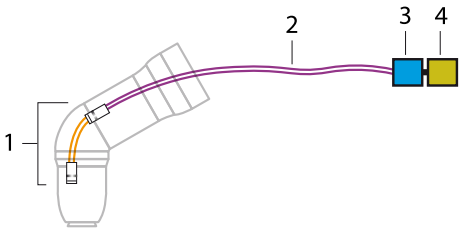
KFO: Optical fiber kit
FO: Fiber kit (8-m long)
CFO: Optical fiber sensor (converter)

B: air super-charger
VP: Proportional valve
AR: turbine rotation air

BSC : speed regulation card
PLC: programmable logic controller

OPTICAL FIBER

Description	Mark	Reference
Spare Optical Kit for PPH 707 elbow	1	910 005 173
8-m fiber kit	2	910 005 172
Optical Sensor ATEX	3	110000846AT
Frequence/Voltage converter	4	1525628



BSC 300

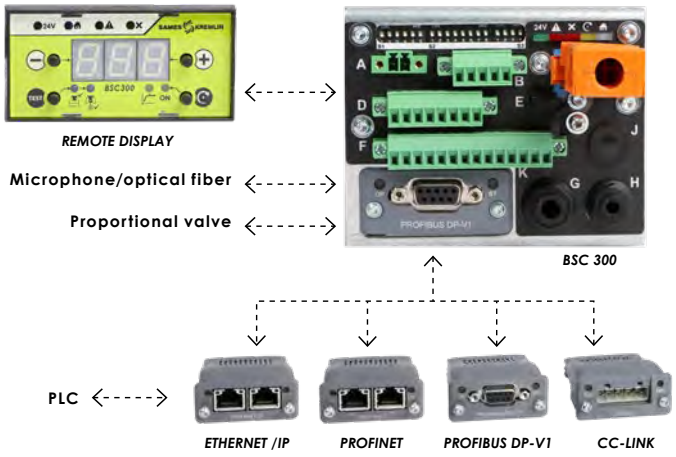
The BSC 300 module drives a Rotary bell atomizer: PPH 707, PPH 308, NANOBELL, ACCUBELL 709 EVO

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

BSC 300 reads the frequency signal coming from SAMES KREMLIN microphone speed sensor or an optical fiber converter.
Additionnaly, **BSC 300** detects bell cup presence and air bearing issue, avoiding this kind of issue for a safe production.
Thanks to its compact design, the BSC 300 is perfectly adapted to fit on robots pressurized compartments.

Of course, the **BSC 300** 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 KREMLIN** software.



SPEED REGULATION

Description	Reference
Speed regulation module BSC 300	910024029
Network board : Ethernet/IP	110002470
Network board : PROFINET	110002391
Network board : PROFIBUS	110002473
Network board : CC-Link	110002472
Remote Display	910024883

ATEX marking:

BSC 300

CE 0080 Ex II (2) GD [Ex ia Ga] IIC
[Ex ia Da] IIIC

INERIS 17ATEX0031X

WWW

CUSTOMERS' BENEFITS

Performance

- The compact BSC 300 makes it easy to integrate close to the rotary bell atomizer. Then Speed control is faster than ever.
- BSC 300 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 KREMLIN atomizers may suit to any kind of robots, anywhere in the world, BSC 300 is able to communicate to any kind of Programmable Logic Controller (PLC).

Productivity

- an 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.

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 KREMLIN automatic spray guns (PPH 308, TRP 500, NANOBELL2, 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 Ex II 2 G c T4

Dossier technique : pompe à engrenage

Example of an insulated system

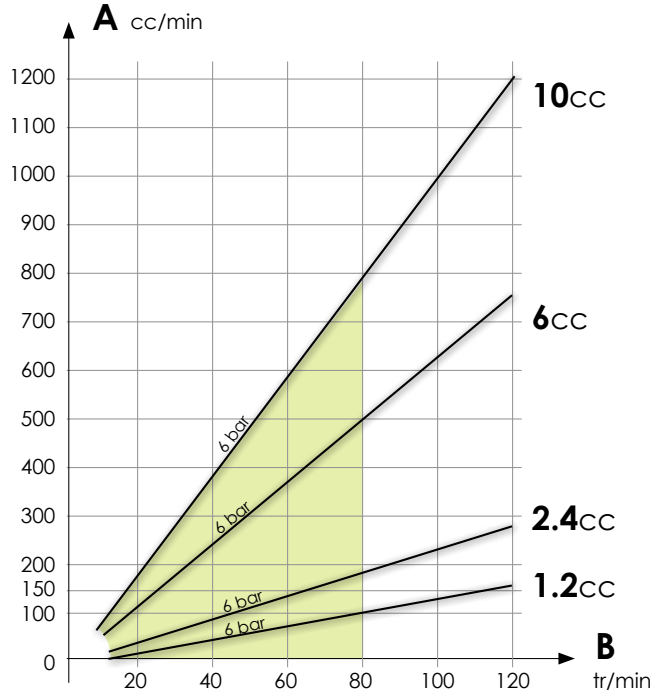
www

Choose the pump

TYPE OF PUMP SELECTION

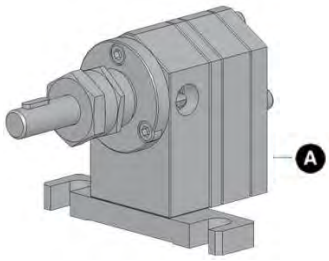
A: Material flow in cc/min
B: Pump rotation speed in rpm
The curve indicates the flow of the pump with a back-pressure from 0 to 6 and from 6 to 10 bar.
One must not select a pump of which flow would be too close to the minimum or maximum speed, but close to 80 rpm.

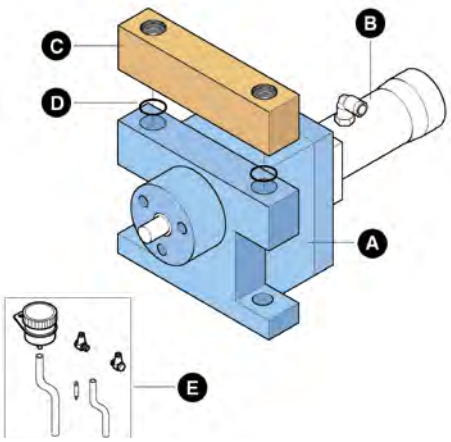
= recommanded working zone



Gear pumps

Description	Mark	Capacity (cm³/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	J3STKL011#
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:

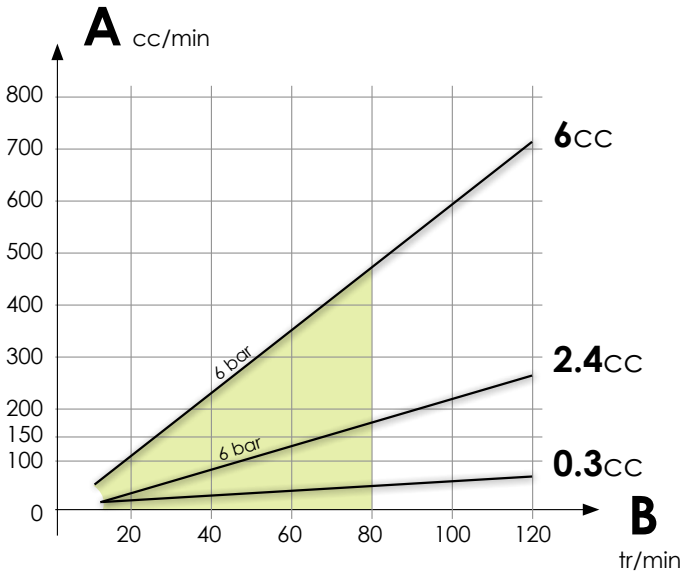
CE Ex II 2 G c T4

Dossier technique : pompe à engrenage

WWW

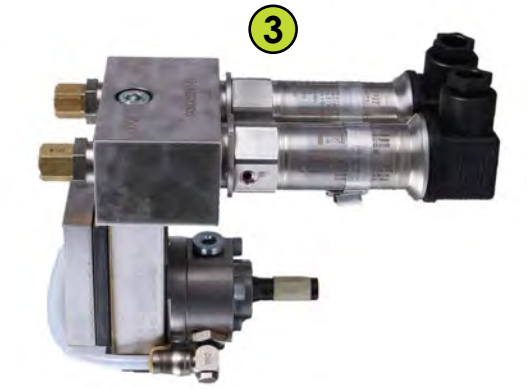
2K Gear Pump

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.

= recommanded working zone

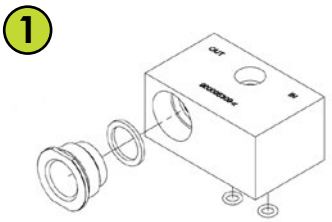


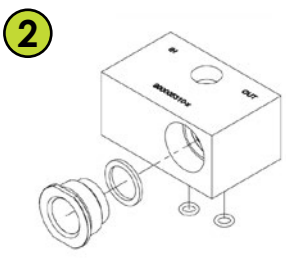
2K Gear Pump

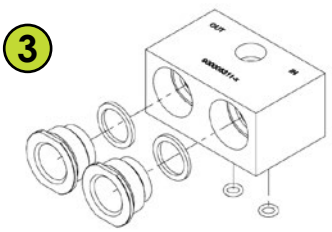
Description	Capacity (cm^3/rev)	Reference
Pump only	0.3	270000071
	0.6	270000072
	1.2	270000068
	2.4	270000069
	6	270000070

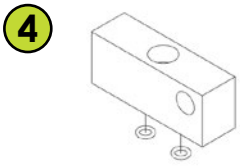
Connecting Flanges

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

Fast Clean 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.

- Accurate dosing
- Compact design
- Fast clean technology

RANGE

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

- 3 cm3 / rev
- 6 cm3 / rev
- 10 cm3 / rev

These different capacities allow covering a flow bracket from 0.5 to 50 L/hour.

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

The gear pump ensures a paint **flow** that is proportional to its rotation speed. Its use ensures a **regular** and **accurate** flow. The pump has to be supplied with a material at 0.5 bar pressure. 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.

TECHNICAL DATA

FCG pump

CAPACITY		3 cc	6 cc	10 cc
Dimensions (mm)	Length	124.5	136	150
	Height	85	85	85
	Width	60	60	60
Weight (kg)		1.91	2.1	2.88
Max. pressure		15 bar		
Rotation speed (RPM)		10 to 80		
Accuracy in normal conditions[1]		± 2 %		
Pilot air supply (mm)		Ø2.7 x 4		

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

ATEX marking:

CE Ex II 2 G c T4

Dossier technique : pompe à engrenages

WWW

Choose the pump

CUSTOMERS' BENEFITS

Long life pump

- Low wear parts
- Stainless steel ADLC
- Cleaning helps to lubricate rotating parts

Efficient cleaning process

- Fast clean of every rotating parts
- Shunt block enables gear rinsing (teeth and axles)

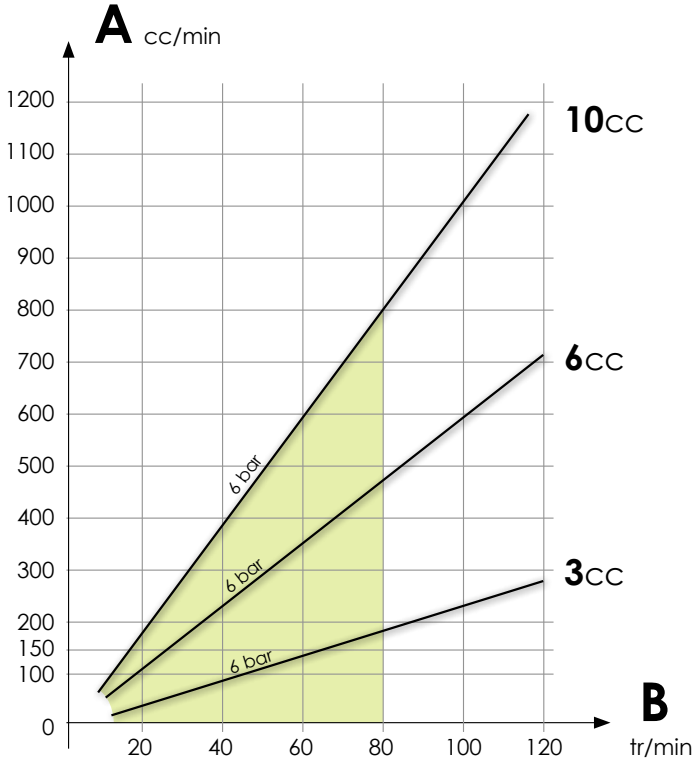
Compatibility

- Can replace Easy Rinsing Pump:
  - same interface with motor
  - same interface with regulators
- Additional UPvalve on shunt block for better cleaning

Robust design

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

TYPE OF PUMP SELECTION

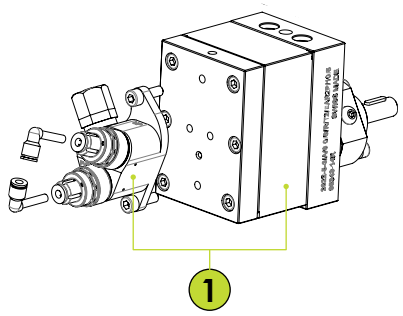


A: Material flow in cc/min
B: Pump rotation speed in rpm
The curve indicates the flow of the pump with a back-pressure from 0 to 6 and from 6 to 10 bar.
One must not select a pump of which flow would be too close to the minimum or maximum speed, but close to 80 rpm.

= *recommanded working zone*

Fast Clean Gear Pump

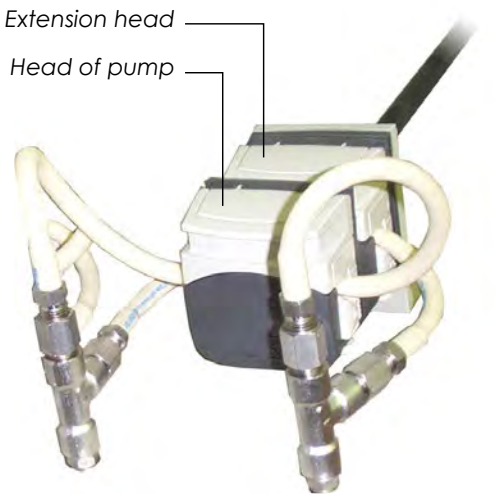
Description	Mark	Capacity (cm^3/rev)	Reference
Pump with Shunt Block	1	3	910020406
		6	910020407
		10	910020408



Description	Reference
Fitting 4/6 - G 1/4''	910007346
Fitting 5/8 - G 1/4''	910007347

Peristaltic pump

Flow management



The peristaltic pump allows abrasive products (without chemical aggressivity), principally liquid vitreous enamel, to be carried to the enamel VEC spray gun.

The peristaltic pump ensures a product flow rate proportional to its rotation speed.

The principle of the peristaltic pump system is three turning rollers which flatten the flexible hose. The assembly comprises two pumps in parallel (pump head and extension head) which feed a single spray gun. The product pulsation on leaving the nozzle is thus reduced and the range of flow rates can be increased if necessary. There is no need to feed the pump with a pressurized or other circulating product.

TECHNICAL DATA

Dimension	Head of pump	Extension head
Width (mm)	85	85
Heigth (mm)	82	82
Depth (mm)	53	58

Pressure	Use
Outlet fluidpressure maxi. (bar)	10 (150 psi)
Rotation speed maxi. (tr/min.)	220
Pump	100% water rinse

Suitable safety sleeve at pump outlet, serving as fuse in the event of overpressure

Flow	Hose (mm)	Flow (cm3/min.)	Speed (tr/min.)
Flow range corresponding (fluid hose length = 10 m)	ø 6.4	720	
	ø 8	1000	
Speed range corresponding (density = 1.75, setup =1.050gr/m2, 2 sides)	ø 6.4	180	30
	ø 6.4	360	60
	ø 6.4	550	90
	ø 6.4	720	125

Connexions	Inlet pump (mm)	Outlet pump (mm)
Fluid hose connexions	ø 9	ø 9

Choose the pump

RANGE

Thanks to the quick flexible hose change, 2 different displacements can be obtained with the same two pumps. This hose is sandwiched at each end of the casing (pump) where it is flattened according to the internal diameter:

ø int. 6.4 mm ≈ 3.1 cm3 /R
ø int. 8 mm ≈ 4.6 cm3 /R

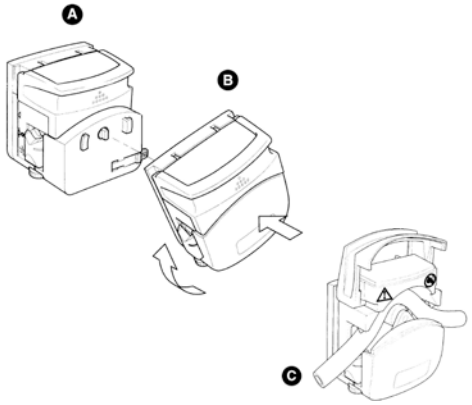
They are chosen according to the required flow rate and the rotation speed range. It is preferable for the motor tp operate at speed lower than 120 rpm.

PERISTALTIC PUMP ALONE AND FLEXIBLE HOSES

Description	Mark	Ø int. (mm)	Reference
Extension head 313XB2	A		**Y1PCDL445**
Head of pump 313D2	B		**Y1PCDL444**

It is possible to assemble several extension headers in parallel with a single drive motor.
Ex: configuration "3 x A x B + 1" can power two sprays but with identical speeds on a shaft.

Description	Mark	Ø int. (mm)	Reference
Flexible hose	C	6.4	**Y1PACC447**
		8	**Y1PACC448**



FITTED SUPPLY UNIT (WITHOUT VARIABLE SPEED DRIVE(S))

Description	Mark	Ø int. (mm)	Reference
CTH 301	720	6.4	**1524174**
	1000	8	**1524175**
CTH 302	720	6.4	**1524177**
	1000	8	**1524178**

WWW

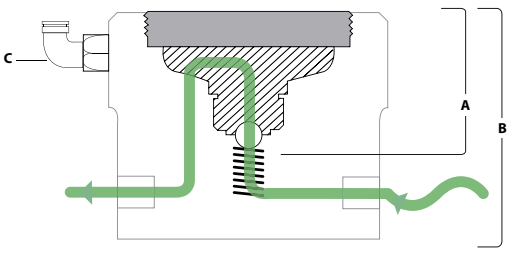
Regulator

> 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
		NANOBELL 2	contact us
	Ø8 mm	TRP	910018411
		PPH308	910009591
		NANOBELL 2	contact us
Water-based	Ø10 mm	TRP	910018412
		PPH308	910009592
		NANOBELL 2	contact us

WWW

WWW

UPside CCV

Color change block

- Lightweight design
- Easy maintenance
- Flexible assembly

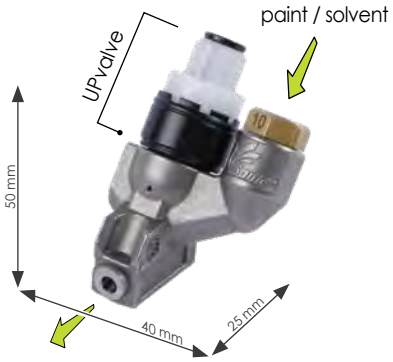
UPside CCV is the universal robotic color change block. The compact and modular design gives several solutions to integrate on robot arms.

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

2 MODULES:

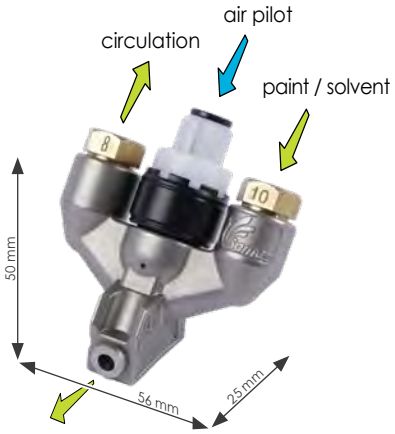
PATENTED

UPside CCV without return



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

UPside CCV with return



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 ø 8/10 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:

UP SIDE CCV:

CE Ex II 2 G c T4

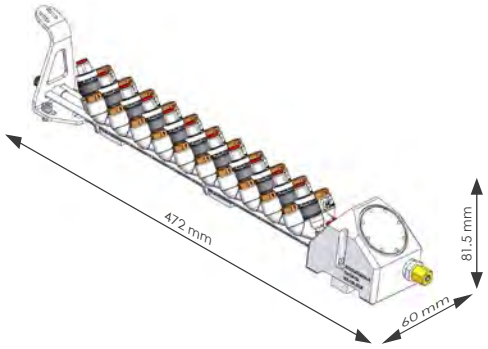
Customers' benefits

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

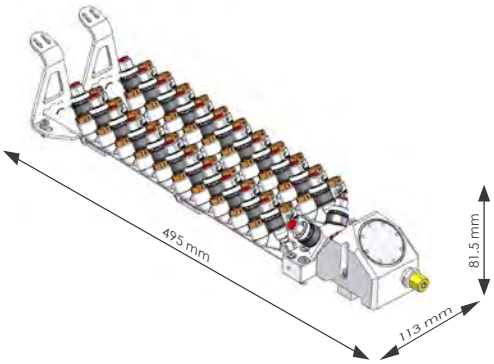
In line [12 COLORS]

One line, each module equals one color



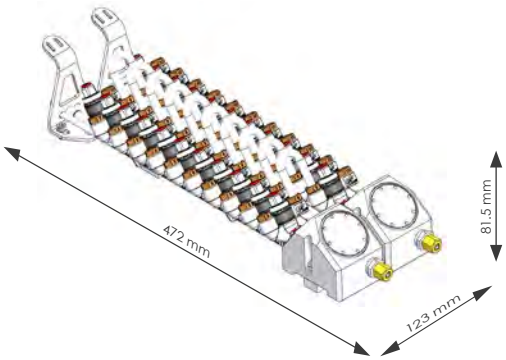
Switch [24 COLORS]

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

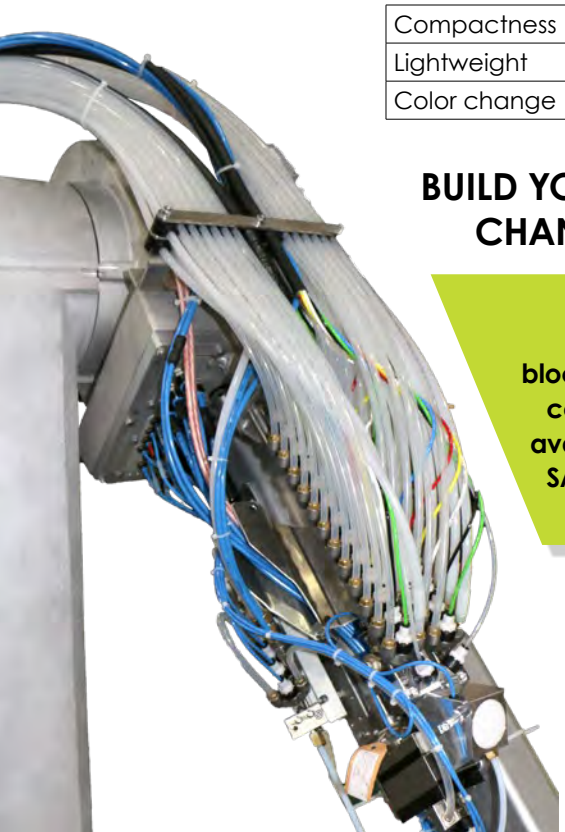


Double circuit [12 COLORS]

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 KREMLIN 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.

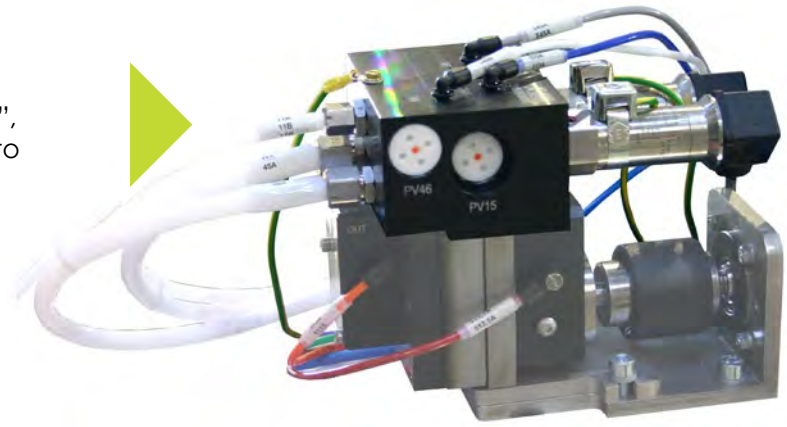
Reverse Flush comes in 2 versions, remote and built-in; it can be installed within all the paint unit configurations: It will depend on the distance between the pump and the sprayer.

REMOTE REVERSE FLUSH BLOCK

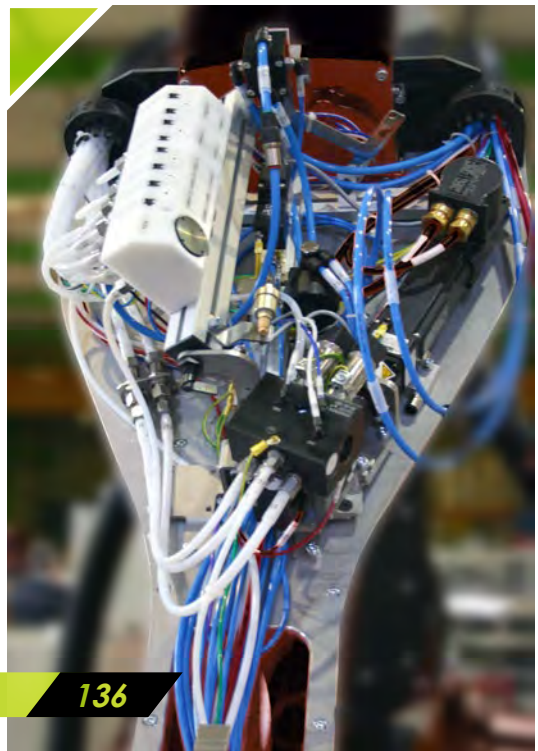
When the pump is to be placed far away from the sprayer (distance > to 1.5 m) as in the case of the « Slim Arm » on which no pump can be assembled, then the so-called "remote" reverse flush block is used and is ideally placed at a distance comprised between 1 to 1.5 m from the sprayer.

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

Reverse Flush

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)

CE Ex II 2 G c T6
Type: REVERSE FLUSH
Dossier technique : BLOC PV

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 KREMLIN

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 KREMLIN 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.

www

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.)*

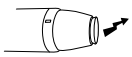
SLR MODULE

Power supply: *230 VAC PH+N*
- *7 bar*

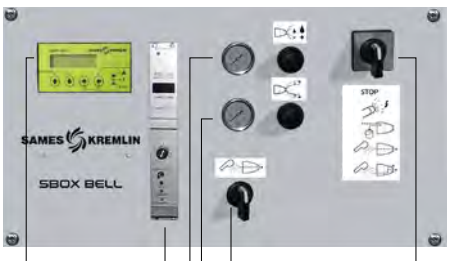
CUSTOMER INTERFACE (OUT)

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

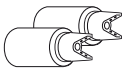


Power supply:
- *230 VAC (GNM200)*
- *Consumption 45Nm3/h. per sprayer*
- *General air supply 7 bar*

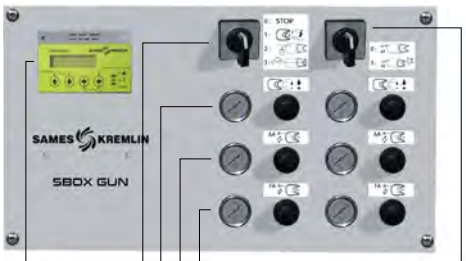


Adjustment of the value of high voltage
Adjustment of the speed of rotation
Adjustment of product flow (optional paint regulator)*
Adjustment of shaping air
Air/solvent selector (injector/bell rinsing phase)
- *Off*
- *On (Spray + HV)*
- *Open dump circuit*
- *Open rinsing/filling*
- *Open injector/bell rinsing*

«S-BOX GUN» MODULE = X1 or 2 GUNS



Power supply:
- *230 VAC (GNM200)*
- *Consumption 45Nm3/h. per sprayer*
- *General air supply 7 bar*

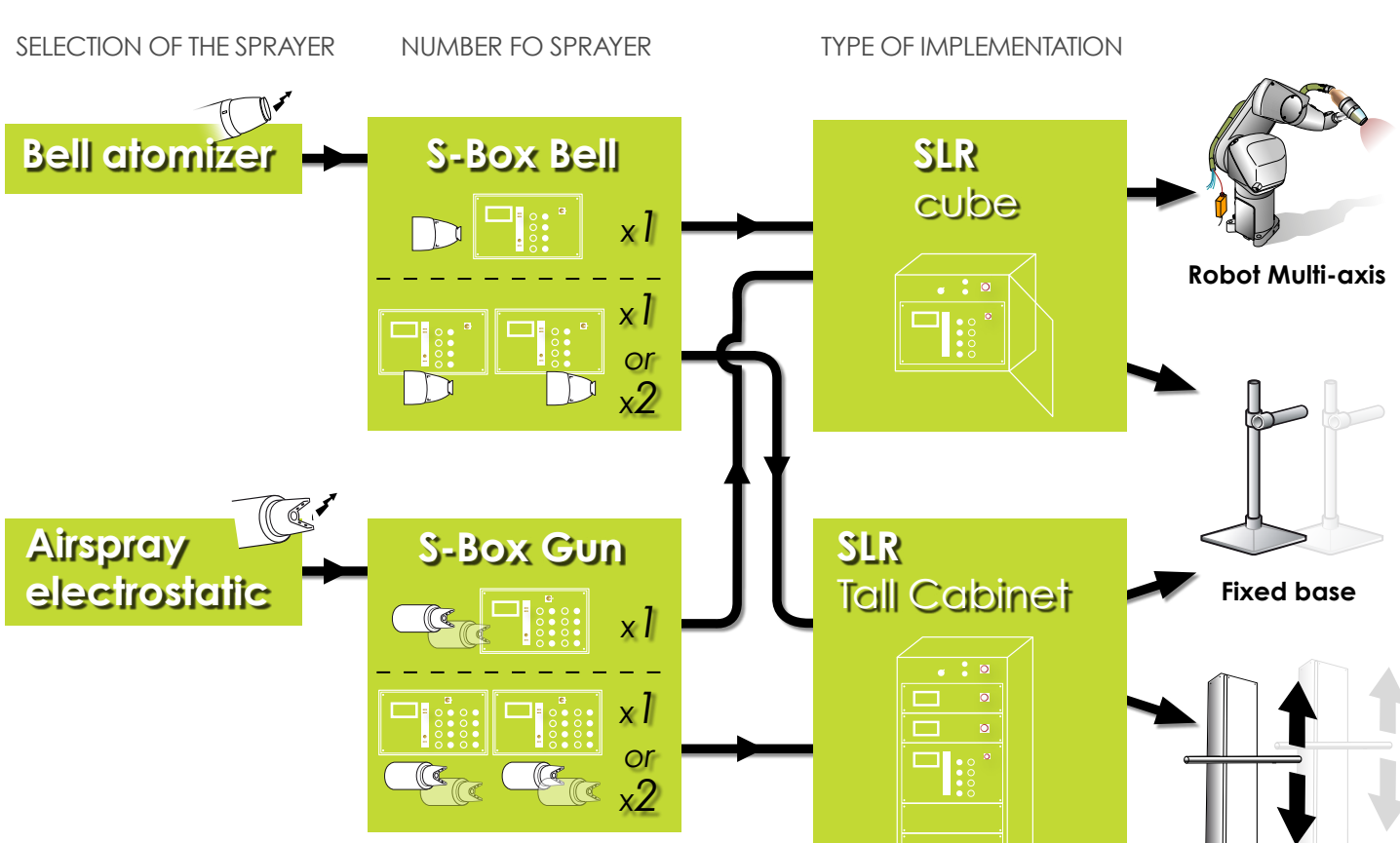


Adjustment of the value of high voltage
Adjustment of product flow (optional paint regulator)*
Adjustment of atomizing air
Adjustment of fan air
1 or 2 Gun(s) selector
- *Off*
- *On (Spray + HV)*
- *Open dump circuit*
- *Open rinsing/filling*

SLR Rack

POSSIBLE CONFIGURATIONS

To create your list of references, contact SAMES KREMLIN



MODUCLEAN

"MODUCLEAN" colour change unit,
• 1 section for the rinsing of the spray head in the basic unit
• 1 section for the rinsing of the spray head + a 3-section unit in assemblies, with use of 4 colours.

PFS Module

GEAR PUMP

A **displacement pump** can be used to achieve a paint flow in proportion to the speed of rotation. This pump can be used to ensure a highly precise and regular flow. This type of pump proposes different displacements defined using the number of cubic centimetres of paint applied per rotation:
0.6 cm^3/tr. - 3 cm^3/tr. - 1.2 cm^3/tr. - 6 cm^3/tr. - 2.4 cm^3/tr. - 10 cm^3/tr.

GPC Module

RFV 2000

An **RFV 2000 reciprocator** can be used to start the vertical movement of the spray. In standard configuration, the robot has working travel equal to 2000 mm.

REV800 Module

REV 800

Electrostatic paint management

The REV 800 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	REV800
Inlet voltage (V)	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**

CE

It can operate:

- the "up & down" axis of one or two reciprocator(s) SAMES KREMLIN 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.

REV800

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

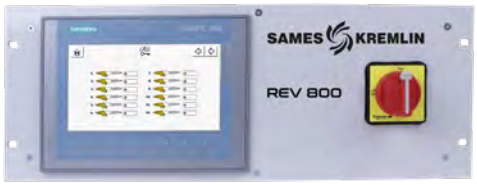
The 19 inch standard dimensions of the REV800 module allows easy integration into a SAMES KREMLIN modular cabinet and connection to the various SAMES KREMLIN spray gun control modules.

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

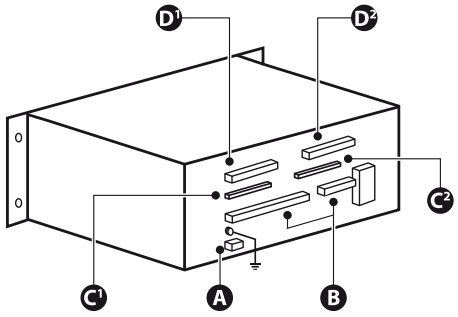
CONTROL MODULE REV800

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 REV 800 on a rail provided for this purpose.
Part number of the cable connecting the Zener barrier to the REV 800: **1411224**
Part number of the cable of the potentiometer: **1409971**
Part number of the Zener barrier : **E6GPSR077AT**

RFV 2000

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	RFV 2000 for application of **liquid paint**	RFV 2000 for application of **powder paint**
Effective stroke – landmark A	1000 to 3000 depending on the version	
Sweeping speed (m/minute) to 50 Hz	adjustable up to 60	adjustable up to 25
Floor surface	0.55 x 0.70 m	
Power motor (w)	750	375
Robot weight (kg)	approx 230	
Single phase supply	220 V / 50-60 Hz	
Eyebolts	ø 28 mm	
Atex marking	CE Ex II 2 G c II B T4	CE Ex II 3 D c T125°C
	Dossier technique : RFV	

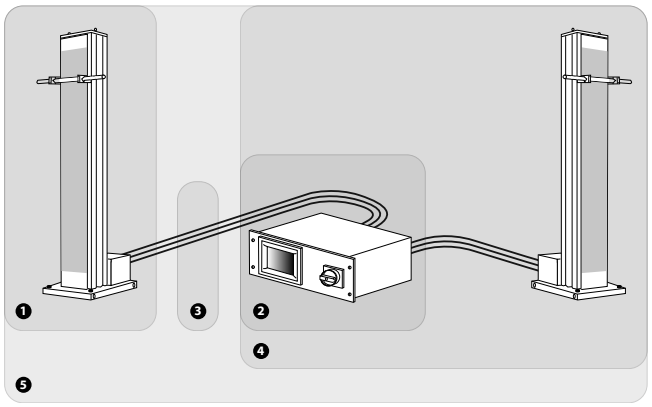
RFV 2000

Mechanism of the robot «RFV 2000»

Description	Mark	Effective stroke (cm)	Reference
RFV 2000	1	200	910006928-200
liquid paint		80 < xx0 < 340	910006928-xxx
RFV 2000	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 contraints. 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 «RFV 2000» + 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

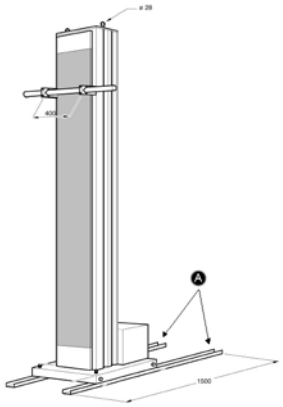
The assembly includes the electrical control cables (approx. 30m) and the REV 800 (delivered as a rack version)

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 (RFV 2000 + REV 800)
5. = REV 821 (2 x RFV 2000 + REV 800)

COMPONENTS

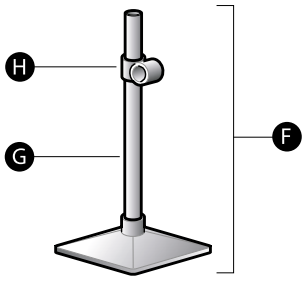
Guide rail kit

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

HVP 500

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.

It has to be used only in NON EXplosive area zone.

Description	Reference
HVP 500	**220000326**

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.

www

AP 1000

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 AP 1000 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.

Descrition	Reference
AP 1000	910 005 790

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

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

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

Maintenance Tools

DAILY TOOLS FOR YOUR ATOMIZER

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**

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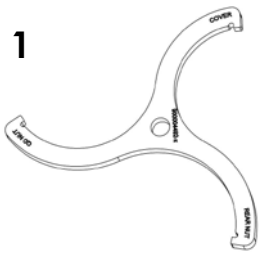

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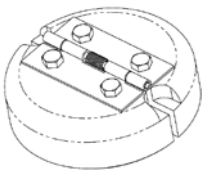

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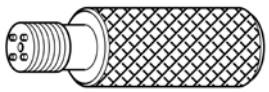

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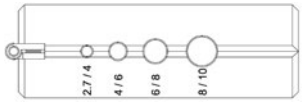

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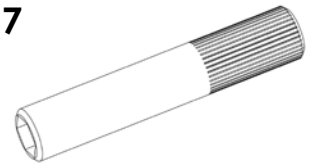
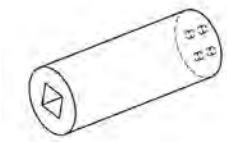
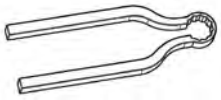


5'



6'



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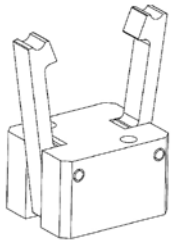

Maintenance Tools

ADVANCED TOOLS FOR YOUR ATOMIZER

Description	Mark	Type	Reference
Installation restrictor o-ring	8	PPH 707 2K PPH 707 MT 2K-1H PPH 707 MT-2K-3H	**910 011 568**
Installation o-ring	9		**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**

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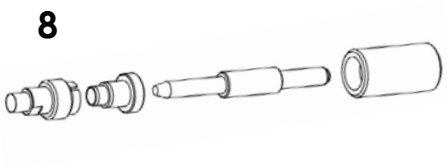

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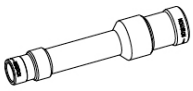

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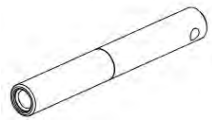
Description	Mark	Type	Reference
Removal tool : high voltage connection & ground cable	13	PPH 707 EXT PPH 707 EXT-MT	**900 006 354**
Removal tool for charge ring needles	14		**910 009 029**

13



14

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 Extractors set Ratchet wrench	20	**240 000 292** **240 000 293** **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 Coverall anti-static

Size "S" to "XXL". Grey.
Extremely sturdy, recommended for liquid paint. Contamination limited, reduced risk of electrostatic charge accumulation.

2 Hat, grey (one size)

4 Dust mask

Meets European standard EN-149, 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).

3 Coverboots (one size)

5 Anti-solvent mask

Complies with European standard EN 405. 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

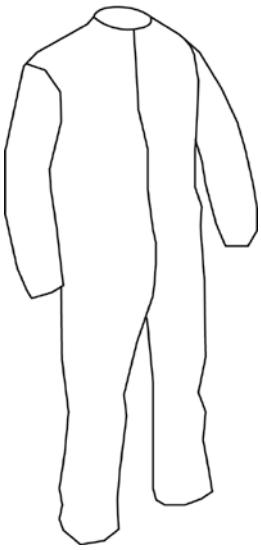
Operator accessories

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 Standards EN388 & EN374.

7 Light protection coverall (one size)

Woven paper overall very sturdy. The use of overalls is recommended to protect against micro-particles, splashing and spray dust, depending on the degree of toxicity of the products and working conditions .
Complies with European EN 13982/1 and EN 13034 standards.
Cat. 3 type 5 & 6



N°	Reference
1	(**S**) W5GMAS059
	(**M**) W5GMAS060
	(**L**) W5GMAS061
	(**X**L) W5GMAS062
	(**XXL**) W5GMAS063
2	W5GMAS070
3	W5GMAS071# (x10 qt)
4	W5GMAS018 (x10 qt)
5	W5GMAS035
6	W5GGAM039
7	W5GMAS024

N°**1**: *Anti-static work-suit, size S, M, L, XL, XXL*

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 penetrated 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.

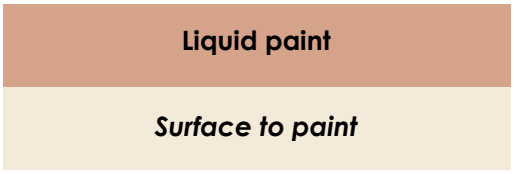

16s CA4


40s CA4

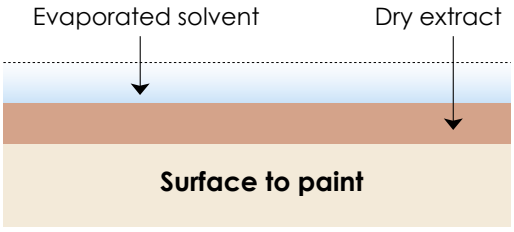
Paint

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:



Wet layer



Dry layer

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)																			
viscosity in seconds CF#4	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
	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
	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

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

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 M Ω.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 KREMLIN are taken with this particular piece of equipment. SAMES KREMLIN 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 KREMLIN feels that paint with a resistivity just under 500 MΩ.cm will generate a low electrostatic efficiency, particularly if the HV is also low (20/30KV).
On the contrary, low resistivity paint (< 10 MΩ.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.

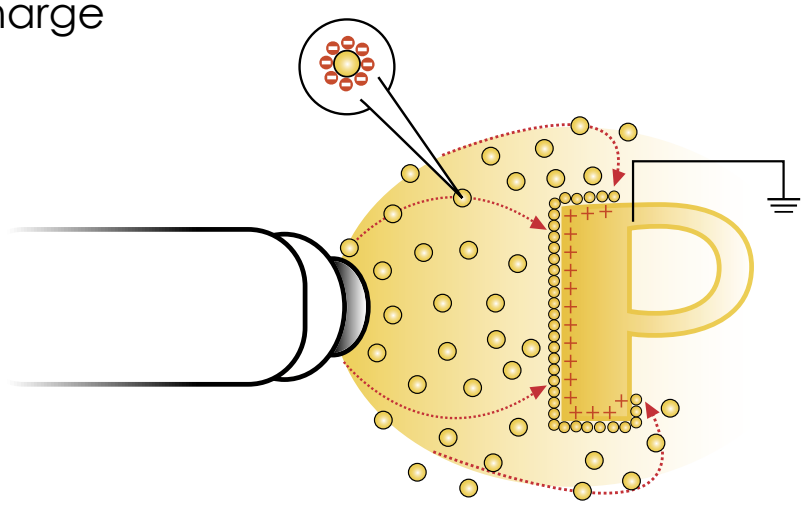
Warning: When measuring resistivity from a metal based paint, the reading is that of the resin and solvent. For electrostatic spraying, the type and quality of the coating of the metal flakes (aluminum), is all important for the non-shorting of the paint line to ground.
Up to a set up value, the paint 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

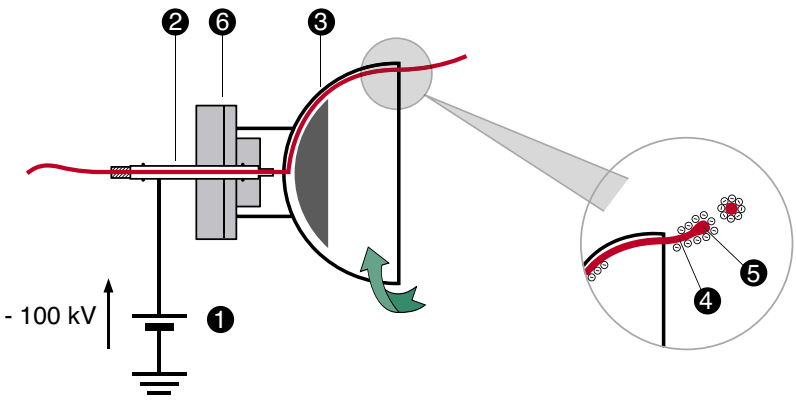
> Conduction charge is only efficient for paints of low resistivities (< 500 MΩ.cm).

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

TRP sprayer

Setting of the air round spray is easier than fan spray.

1/ Assistance in setting air round spray:

The round jet nozzle is used when one wishes to obtain a maximum electrostatic recovery on medium or small parts (tubes, grids, rings, etc...).
The two air streams are dependent because they converge at the air cap and allow for some adjustment of atomization alone or in combination:

- Returns only direct air = small paint paticule atomization with a maximum penetration
- Swirling air alone = gives large paint paticule atomization with maximum enveloping paint application
- Combination of airs = can get all the diameters of impact between the intermediate diameter max. (Directional air alone) and the diameter min. (Swirling air only)

Search results		Direct air alone	Swirling air only	Direct air + swirling air
Impact size	Wraparound effect	AA	FA	AA + FA
Small	Small	•		
Medium	Medium			•
Large	Strong		•	

2/ Assistance in setting air fan spray:

2-1/ The fan spray is used when one wishes to obtain a high quality appearance (brightness, tense) on medium or large parts and flat parts as well as cavity for maximum penetration.
The two air streams are dependent because they converge at the air cap and allow for precise atomization and versatility with this combination:

- Air center = gives thinness of spraying and pushes the mist at the nozzle
- Air horn = adjusts the length of fan pattern

2-2/ A successful application, with, good coverage and thickness uniformity which requires best settings of pneumatic-electrostatic sprayer.
For this, it is important to define the application process, and in particular:

- Paint flow (this is expressed in cm 3 / min or more known cc / min)
- Fan pattern length
- Scanning speed of the robot

Determination of application settings

TRP sprayer

2-3/ Usually the fixed parameters are:

- Chain speed is given respect to the process line (timing) = **Vc**
- Height scan is equal to the height of the parts to paint, to which we add about 150 mm top and bottom (reversal points of the robot outside the area to be painted) = **H**
- The thick file that is fixed by the client's requirements and / or supplier = **Ed**

Warning: It is imperative to respect the spraying distance allowed based on the voltage.
These distances are shown in the equipment manuals.

2-4/ The setup of the gun can then be divided into three stages:

2-4-1/ Calculation of paint flow theory
2-4-2/ Shape and length of impact
2-4-2/ Calculating the speed of scanning

2-4-1/ Calculation of theoretical flow of paint from **a gun**:

$$D = \frac{(100 \times H \times Vc \times Ed)}{(R \times ES)}$$

H: height of scanning robot in cm (fixed parameter)
Vc: chain speed in m / min (fixed parameter)
Ed: thickness to deposit in microns (fixed parameter)
R: atomizer performance in% (1)
Es: dry product to be applied (provided by the manufacturer of paint)

(1): The return of a TRP 500 in an optimal configuration is 55%, that of a TRP 700 ESLP in same conditions is 65%.

2-4-2/ Shape and length of fan pattern:

By equipping the TRP500 with a pressure indicating air cap (See § «Accessories» - page 47), it is possible to adjust the air spray (AA and AF).
After setting these pressures, the fan pattern can be sprayed on to a sheet of aluminum foil with TRP500 equipped with its standard insulating cap. This is done by spraying a short term (1 to 3 sec.) and fixed at an equivalent distance to the distance of the work on line.
The paint fan pattern thus produced will provide paint drips to visualize the shape of the jet.
Measuring the pattern is assessed as follows (see impact 1-2-3):

- The appearance of impact (a form of streaks)
- The length of pattern
- The fine spray
- Uniformity of fan pattern (symmetry of impact)

A fan pattern well adjusted to cover your painted component will ensure the best wrap effect.

Impact 1

Small impact = curved tears

$\frac{FA}{AA} < 0,3$

Ex :
$\frac{0,6 \text{ bar (FA)}}{2 \text{ bar (AA)}} < 0,3$

Impact 2

Optimal impact = flat tears

$\frac{FA}{AA} \approx 1$

Impact 3

Wide impact = cut tears

$\frac{FA}{AA} > 1$

Determination of application settings

TRP sprayer

2-4-3/ Calculating the scan rate (Vb) to obtain an optimal recovery and a perfect thickness uniformity:

Scanning speed of the robot Vb = $Vc \times (2 \times \frac{H}{Li})$

Vc: chain speed in m / min (fixed parameter)
H: height scanning robot in cm (fixed parameter)
Li: impact length in cm
Thus, each point on the surface to be painted is covered twice : the impact of length "**Li**" is equal to the scanning pitch of the robot (**P**). *See Figure 4*.
Depending on system configuration, it is possible to cover the same area (area of the room) four times, six times or n times (n being an even number).

Ex: a length smaller impact (**Li** / 2 = **Vb** x 2) gives a faster scan and therefore more passes before the work part.

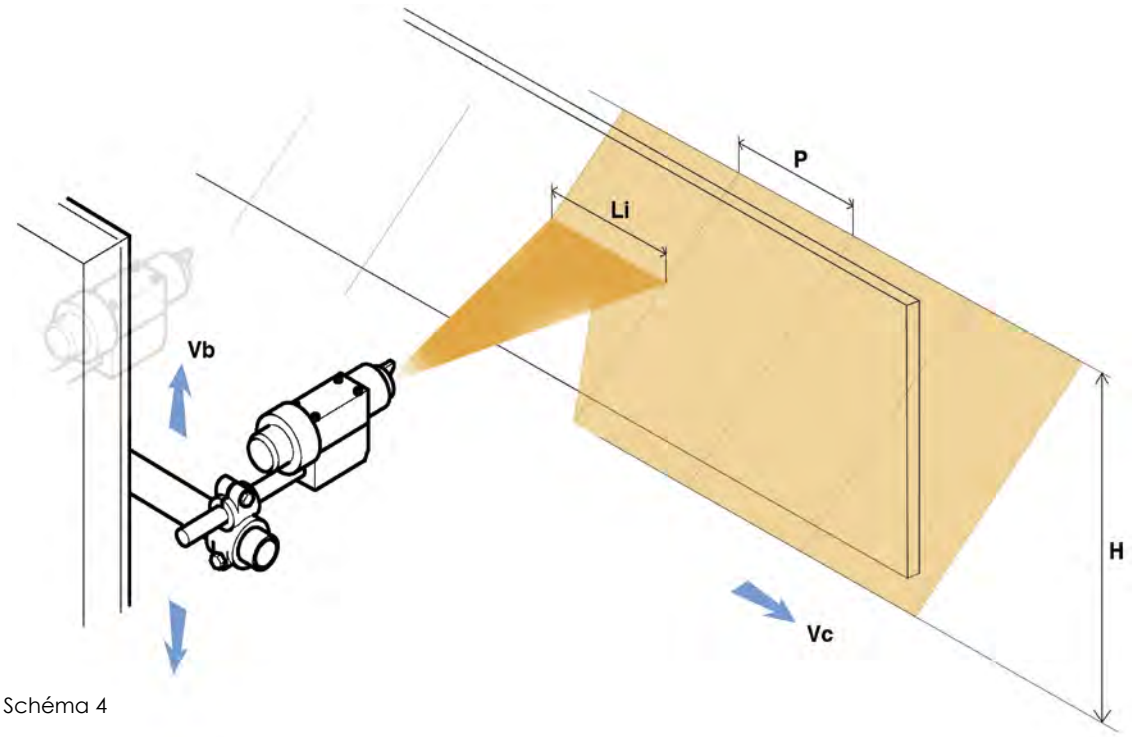


Schéma 4

We can easily set one TRP 500 sprayer to, good coverage and perfect consistency of thickness.

NB: if the scanning speed of the machine is a fixed parameter, then it is possible with the previous formula, to find the length of the ideal theoretical jet (it only remains to adjust the air for the spray calculated length).

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

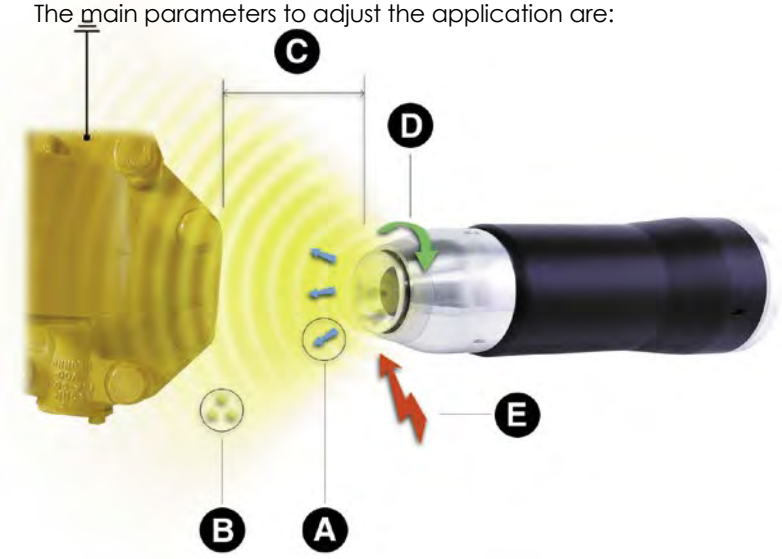
- Define areas to be painted automatically.
- Identify the need (or not) pre-keys or manual retouching
- Define the layers of paint to be deposited and the minimum and maximum tolerances
- Know the speed of the conveyor
- Obtain at least the 4 following characteristics:

(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:

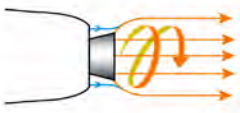


A) Spraying air (air cup)
B) Paint flow
C) Application distance
D) Rotating speed of the bell
E) The value of high voltage

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



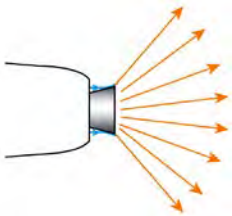
The outer cup incorporates Vortex air outlet holes inclined to the passage of air. This cup is recommended in most configurations thanks to the versatility of the settings. It encourages the transfer efficiency and the electrostatic wraparound effect.

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

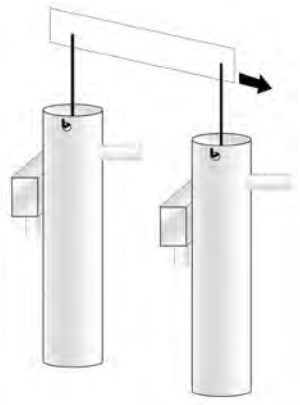
5/ Value of the high voltage

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.

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