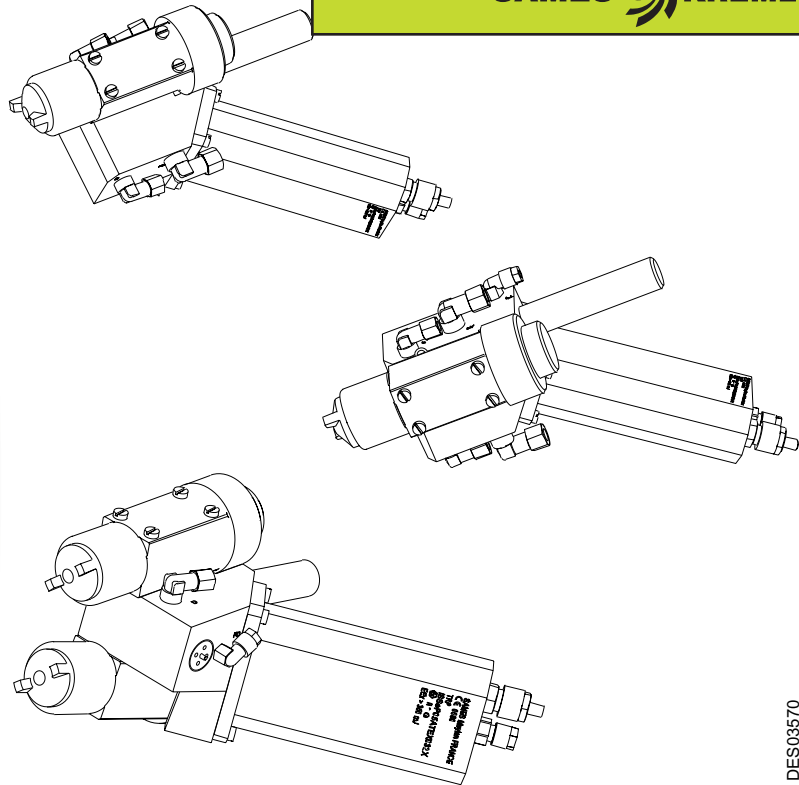




From February 1st, 2017 SAMES Technologies SAS becomes SAMES KREMLIN SAS
A partir du 1/02/17, SAMES Technologies SAS devient SAMES KREMLIN SAS



DES03570

User manual

**TRP 501 left, TRP 501 right
TRP 502 converging**

FRANCE

SAMES Technologies. 13 Chemin de Malacher 38243 Meylan Cedex
Tel. 33 (0)4 76 41 60 60 - Fax. 33 (0)4 76 41 60 90 - www.sames.com

USA

Exel North America, Inc 11998 Merriman Road, Livonia, Michigan, 48 150
Tel. (734) 261.5970 - Fax. (734) 261.5971 - www.sames.com

Any communication or copying of this document, in any form whatsoever, and any use or divulging of its contents is forbidden without express written permission from SAMES Technologies.

The descriptions and characteristics contained in this document may be changed without prior warning and are in no way binding on SAMES Technologies.

© SAMES Technologies 2006



WARNING : Sames Technologies is registered as a "Training Center" approved by the "Ministry of Employment".
Trainings with the aim of getting the necessary know-how to use and for the maintenance of your equipment can be organised all along the year.
A catalog is available upon request. Among the different training programmes proposed, you will be able to find the training which corresponds the best to your needs and production purposes. These trainings can be organised in your premises or in our training center based in our headquarters in Meylan.

Training Department :
Tel.: 33 (0)4 76 41 60 04
E-mail : formation-client@sames.com

TRP 501 left, TRP 501 right
TRP 502 converging

1. Health and Safety Instructions - - - - -	5
1.1. Configuration of the certified equipment	5
1.2. Marking on the atomizer	5
1.3. Precautions for Use	6
1.4. Warnings	6
1.5. Important Recommendations	9
1.5.1. Paint Resistivity	9
1.5.2. Compressed Air Quality	9
1.5.3. Product Quality	9
1.5.4. High voltage	9
1.5.5. O-ring Seals	9
1.5.6. Ventilation	9
1.5.7. Residual pressure	10
1.5.8. Safety devices	10
1.5.9. Mechanical Collision	10
1.5.10. Ambient Temperature	10
1.5.11. Specific maintenance provisions	10
1.6. Guarantee	11
2. Description - - - - -	12
2.1. General	12
2.2. Function of the different parts	13
2.2.1. TRP 500 flat spray	13
2.2.2. Manifold block	13
2.2.3. High voltage unit UHT 156 EEx e	13
3. Characteristics - - - - -	14
3.1. Dimensions (mm)	14
3.1.1. TRP 501 left and right	14
3.1.2. TRP 502 converging	15
3.2. Working characteristics	15
3.3. Operating Principle	15
4. Fluid diagrams - - - - -	16
4.1. TRP 501 ou 502 Single circuit, with dump valve without regulator	16
5. Tools - - - - -	16
6. Installation - - - - -	17
6.1. Precautions to be taken before installing an air spray gun	17
6.2. Installing a TRP 501 or 502	17
6.3. Shutdown and Startup Procedures	17
6.4. Air spray gun replacement procedure	17

7. Assembly / Disassembly - - - - -	18
7.1. TRP air spray gun atomizing head	18
7.2. Manifold block	18
7.2.1. Micro-valve.	18
8. Cleaning- - - - -	19
8.1. Cleaning of the cap	20
8.2. Cleaning of the TRP	20
9. Spare part list - - - - -	21
9.1. TRP 501, left assembly	21
9.1.1. Left Manifold block.	22
9.2. TRP 501, right assembly	23
9.2.1. Right Manifold block.	24
9.3. TRP 502 converging	25
9.3.1. Converging Manifold block.	26

1. Health and Safety Instructions

This manual contains links to the following user manuals:

- [see RT Nr 7005](#) pour le pistolet TRP 500.
- [see RT Nr 6245](#) pour l'unité haute tension UHT 156 EEx e.
- [see RT Nr 6021](#) pour la microvanne.
- [see RT Nr 6213](#) pour le module de commande GNM 200.

1.1. Configuration of the certified equipment

The whole of these user manuals defines the configuration of the certified equipment.

1.2. Marking on the atomizer

SAMES Meylan France

CE 0080

TRP

P/N : *

ISSeP05ATEX032X**



II 2 G

EEx > 350mJ

(Serial number)

* ATEX TRP 501 / 502 Configurations

Left manifold - P/N 910002688	Right manifold - P/N 910002690	Converging manifold - P/N 910002692	TRP 500 - P/N 752949	High voltage unit UHT 156 EEx e P/N: 1518965	TRP 501 / 502 (*) P/N	GNM 200A P/N 1517071
X			X	X	910002687	X
	X		X	X	910002689	X
		X	X	X	910002691	X

These part numbers are standard equipped with plastic nozzles and caps.

On option, they can be fitted with metal nozzles and caps. But in this case, the atomization exclusion area is different (see page 8).

** The sign "X" signifies that respecting the safety distance (between the parts of the atomizer that are under high voltage and the grounded parts) mentioned in this user's manual, ensures a safe use of the equipment..

1.3. Precautions for Use

This document contains information that all operators should be aware of and understand before using the **TRP 501 or 502**. This information highlights situations that could result in serious damage and indicates the precautions that should be taken to avoid them. The equipment must only be used by personnel trained by SAMES Technologies.

1.4. Warnings



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



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



WARNING :

This equipment has to be used only within areas designed for spraying with respect to EN 50176, EN 50177, EN 50223, or with similar ventilation conditions. The equipment has to be used only within ventilated in order to reduce risks for the health of the operators, fire or explosion. The efficiency of the extraction ventilation system has to be daily checked.

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

Before carrying out any cleaning or general work on atomizers in the spraying area, the high voltage generator must be switched off and the atomizer HV circuit discharged to the ground.

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

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

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

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

Cleaning operations must be carried out either in authorised areas equipped with a mechanical ventilation system, or using cleaning liquids with a flash point at least 5 °C higher than room temperature.

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

Inside the booth it is forbidden to use a naked flame, glowing object or a device likely to produce sparks. It is also forbidden to store inflammable products, or vessels that have contained them, close to the booth.

The surrounding area must be kept clear and clean.



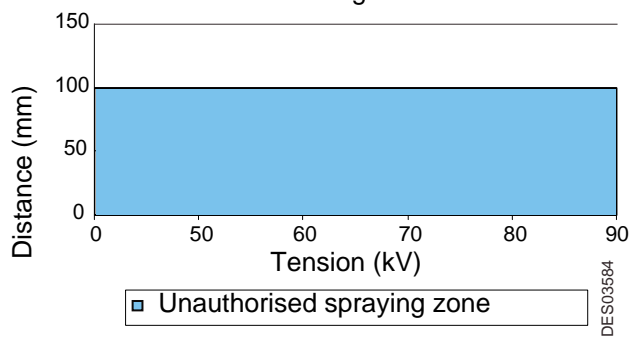
WARNING : The use of very high voltage increases the risk of sparks. **SAMES Technologies** atomizers and high-voltage electrostatic generators are designed to minimize this risk. Although the HV electrode is the only accessible part, a safety distance of X mm (refer to: Board) has to be maintained between the parts of the sprayer that are under high voltage and all the parts that are grounded.

TRP 501/502 with plastic nozzle and cap and UHT 156 EEx e

Authorised spraying distance

Voltage (kV)	Distance (mm)
0	100
50	
60	
70	
80	
90	
100	

"X" safety distance depending on the voltage

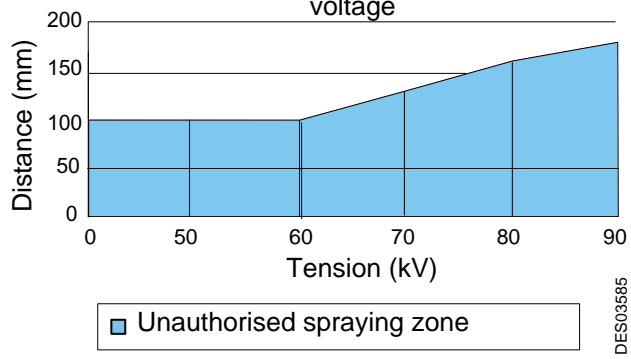


TRP 501/502 with metallic nozzle and cap and UHT 156 EEx e

Authorised spraying distance

Voltage (kV)	Distance (mm)
0	100
50	
60	
70	130
80	160
90	180
100	200

"X" safety distance depending on the voltage



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

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

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

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

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

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

The effectiveness of the overcurrent protection (di/dt) must be checked every day. This check must be carried out in an area with **no explosive atmosphere** by placing a ground device near the electrode of the atomizer when the atomizer is switched on (the operator must be connected to ground); the control module must switch to the fault state.

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

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

1.5. Important Recommendations

1.5.1. Paint Resistivity

see RT Nr 7005

1.5.2. Compressed Air Quality

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

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

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



WARNING : The guarantee does not cover damage caused by foreign matter such as paint, solvent or other substances entering the air circuits of the TRP 501 / TRP 502.

1.5.3. Product Quality

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

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

1.5.4. High voltage

Disable the high voltage if the atomizer is not operated for a prolonged period (conveyor shutdown, no objects to be painted, slack periods, etc.) to prevent ionization of the air.

1.5.5. O-ring Seals

Use the seals recommended in this manual. For solvent-based products, seals in contact with the product must be chemically inert seals resistant to swelling or chemical attack. The **TRP 501 or 502** is only guaranteed to operate correctly if it is used with seals whose size and material conform to this manual.

1.5.6. Ventilation

Do not begin applying paint with the **TRP 501 or 502** before starting up the ventilation system in the spraying booth. If the ventilation is cut, toxic substances such as organic solvents or ozone may remain in the spraying booth, resulting in a risk of fire, poisoning or irritation.

1.5.7. Residual pressure

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

1.5.8. Safety devices

During installation of the **TRP 501 ou 502**, it is important to set up safety devices enabling high voltage power, paint, solvent and air supplies to be cut immediately if there is a problem.

- Detection of control system faults
- Detection of high voltage surges linked with the SAMES high voltage module.
- Detection of air pressure drops.
- Detection of ventilation failure.
- Detection of fire
- Detection of human presence.

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

1.5.9. Mechanical Collision

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

1.5.10. Ambient Temperature

The sprayer is designed to work normally under room temperature between 5°C and + 40°C.

In order to optimise application quality, it is advised to work under room temperature between + 15°C and + 28°C.

The storage temperature will never exceed +60°C.

1.5.11. Specific maintenance provisions

The access of the booth, near the atomizer in operation, will have to be proscribed and controlled by safety devices ([see § 1.5.8 page 10](#)) which will have to stop the equipment in case of intrusion of people in the area.

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

1.6. Guarantee

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

The guarantee claim must define, in writing, the exact nature of the fault concerned.

The **SAMES Technologies** guarantee only covers equipment that has been serviced and cleaned according to standard procedures and our own instructions, that has been fitted with parts approved by SAMES or that has not been modified by the customer.

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

- the customer's negligence or inattentiveness,
- incorrect use,
- failure to follow the procedure
- use of a control system not designed by SAMES Technologies or a SAMES Technologies control system modified by a third party without written permission from an authorized SAMES Technologies technical agent,
- accidents such as: collision with external objects, or similar events,
- flooding, earthquake, fire or similar events,
- inadequately filtered bearing air (solid particles more than 5 µm in diameter),
- inadequately filtered paint and solvent,
- use of seals not complying with SAMES Technologies recommendations,
- pollution of air circuits by fluids or substances other than air.

SAMES Technologies atomizer **TRP 501 ou 502** is covered by a one-year guarantee for use in two 8-hour shifts under normal operating conditions.

By concession, the guarantee is extended to 10000 hours on the air turbine of the **TRP 501 ou 502**. The guarantee does not apply to wearing parts such as atomizing bellcups, diaphragms, clips, seals, etc.

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

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

2. Description

2.1. General

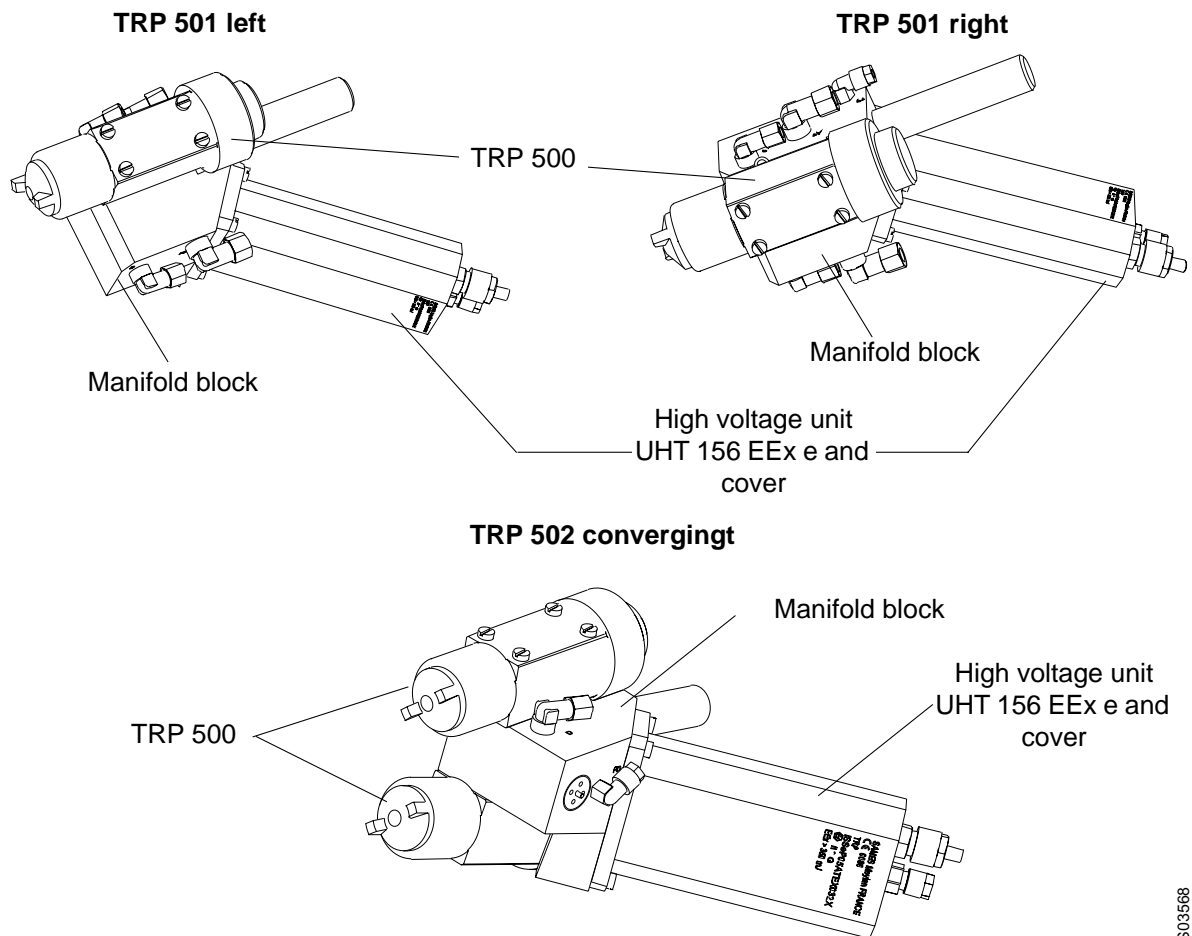
Air spray guns **TRP 501 or 502** are designed for pneumatic electrostatic and automatic spraying of single-component or multi-component solvent or water-based liquid paints. The TRP 501 is fitted with one TRP500 atomizing head. The TRP 502 is fitted with two TRP500 atomizing heads.

Each atomizing head is fitted with an air cap and flat spray nozzle that accurately adjusts the spraying angle by means of adjusting rings.

Dimensions of the fan spray can be adjusted according to fan-air and atomizing air values.

The two atomizing heads of the TRP 502, whose fan sprays converge on the object to be painted forming a single spray, are supplied in parallel and controlled simultaneously. The maximum paint atomizing rate of the assembly is twice that of the TRP 501 and it has a greater air consumption.

Main components:



DES03568

2.2. Function of the different parts

2.2.1. TRP 500 flat spray

[see RT Nr 7005](#)

2.2.2. Manifold block

The manifold supports and connects each atomizing head (one or two heads, depending on the model: TRP 501 or 502).

- The manifolds have ducts for atomizing air, control air, paint and the HV supply. The manifolds include a paint inlet, a paint dump outlet, four air inlets fitted with plastic connections and an HV connector. The following air intakes are fitted:
 - pilot trigger, marking (**PT**),
 - pilot dump, marking (**PD**),
 - Atomizing air (for the fan spray) or directional air (for the round spray), marked (AA),
 - Fan air (for the fan spray) or vortex air (for the round spray), marked (FA)
- A paint dump control micro-valve is fitted into the manifold

The valve remains closed until the air in its control circuit is pressurized. When the air is pressurized, the valve opens and the paint flows into the dump hose.

In the TRP 502 version, the air and paint feeds are common to both atomizing heads.

2.2.3. High voltage unit UHT 156 EEx e

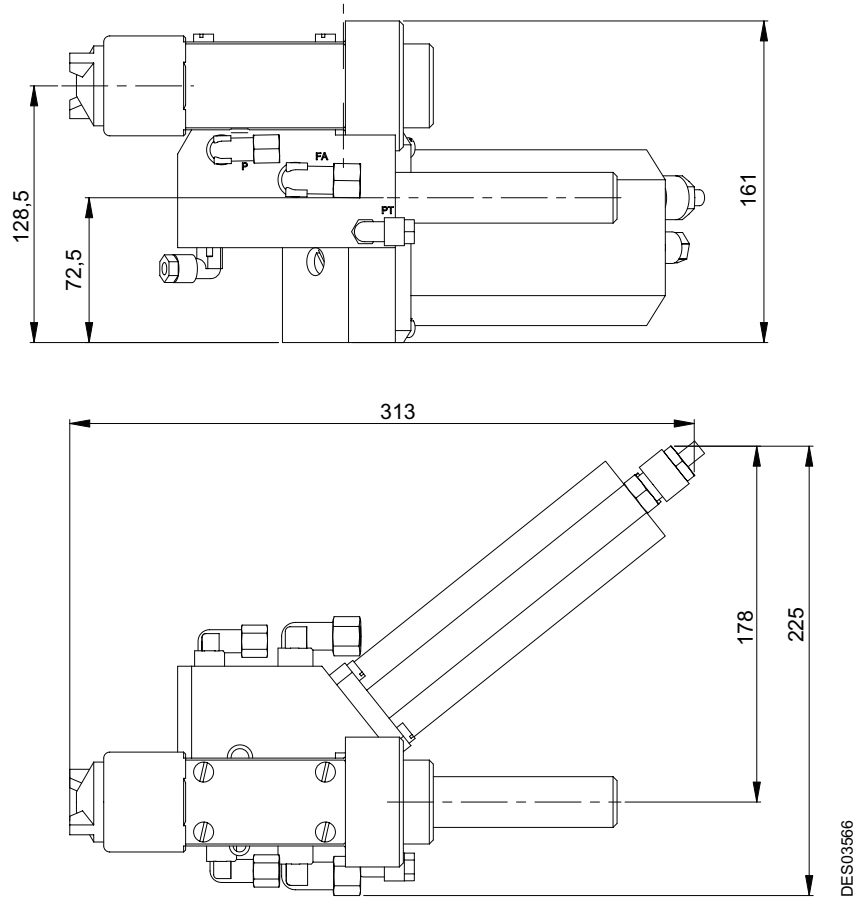
[see RT Nr 6245](#)

Receives a low voltage supply that it converts into high voltage for charging the atomized paint particles

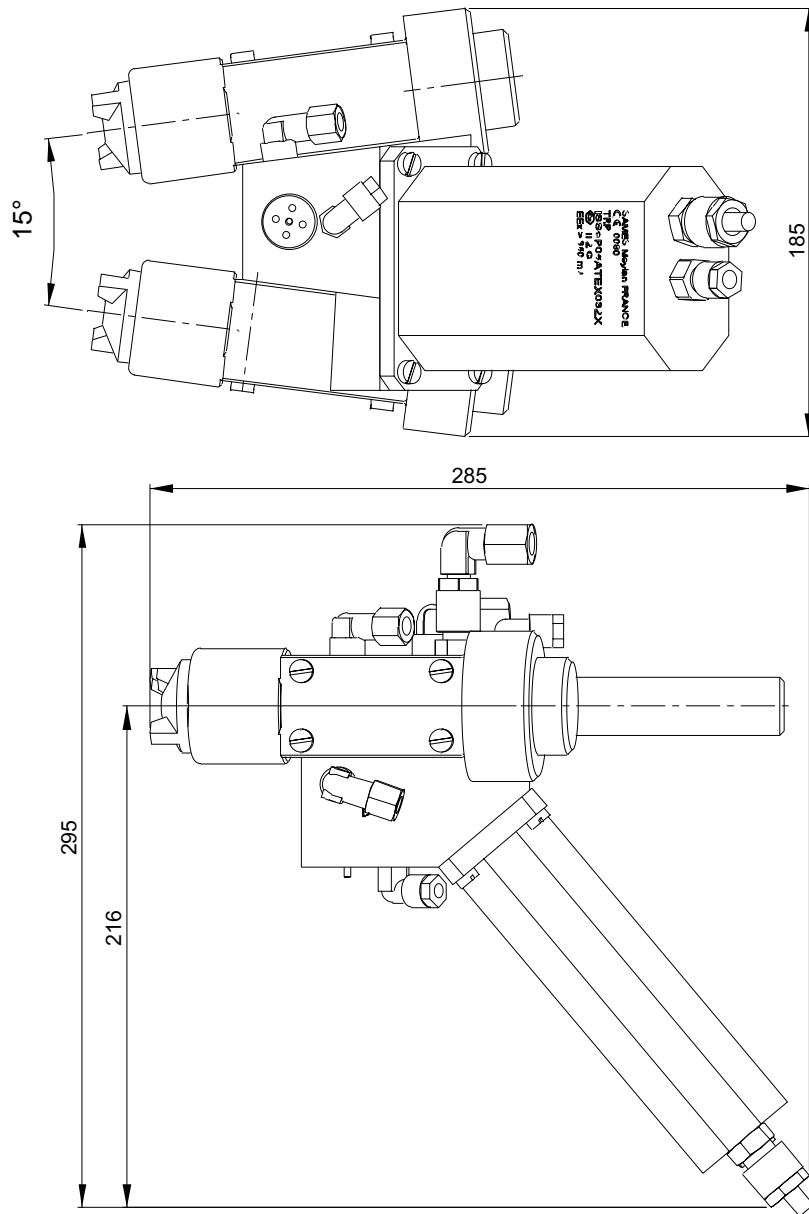
3. Characteristics

3.1. Dimensions (mm)

3.1.1. TRP 501 left and right



3.1.2. TRP 502 converging



DES03567

3.2. Working characteristics

[see RT Nr 7005](#)

3.3. Operating Principle

[see RT Nr 7005](#)

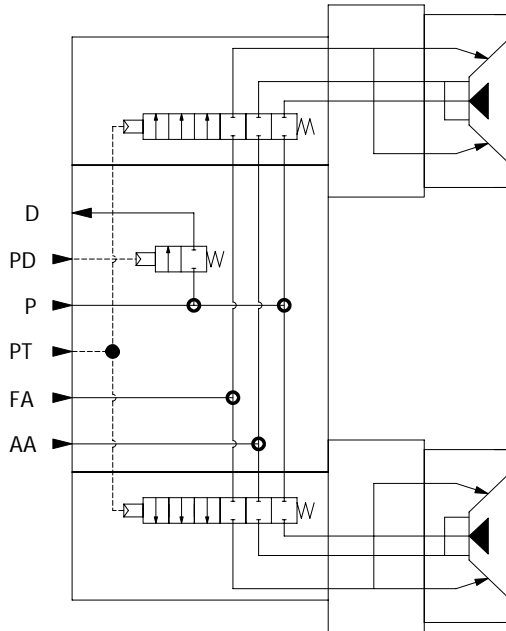
4. Fluid diagrams

The trigger pilot air is used to start or stop spraying.

The atomizing air provides a fine spray and projects the mist well clear of the air cap, avoiding soiling.

The fan air determines the impact spray diameter (wide or narrow).

4.1. TRP 501 ou 502 Single circuit, with dump valve without regulator



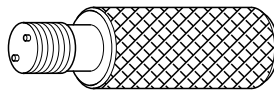
D	Dump - D: 6/8
PD	Pilot dump - D: 4/6 ou 2,7 /4
P	Paint supply - D: 4/6
PT	Pilot trigger - D: 4/6 ou 2,7 /4
FA	Fan air - D: 7/10
AA	Atomizing air - D: 7/10

Note: Hose dimensions are in mm.

DES03487

5. Tools

For the TRP 500: [see RT Nr 7005](#).



DES00591

Part Number	Description	Qty	Sale unit
1303689	Microvalve removal tool	1	1

6. Installation

6.1. Precautions to be taken before installing an air spray gun



WARNING : If you need to replace a hose, make sure you use a sufficient length to prevent any hoses from being pulled out.

6.2. Installing a TRP 501 or 502

- Pass the fixing tube of the manifold block TRP 501 or 502 through the fixing nut and tighten with the four screws
- Connect the air and paint hoses to the manifold.
- Connect the LV cable and the grounding wire.

6.3. Shutdown and Startup Procedures

see [RT Nr 7005](#)

6.4. Air spray gun replacement procedure

- 1 Run a rinse cycle.
- 2 Set the machine to maintenance position.
- 3 Switch off the different air and paint supplies. If necessary, decrease the circuit pressure using the trigger pilot valve, but first switch off all feeds and power supplies (automatic or manual cycles).
- 4 Check that the main air indicator lamp is off.
- 5 Make sure that the atomizing air pressure switch is in the off position.
- 6 Disconnect the air and paint supplies from the manifold. Disconnect the LV cable and the grounding cable.
- 7 Remove the four screws from the fixing nut, then remove the entire air spray gun assembly.
- 8 Removing the air spray gun TRP 501 or 502 assembly.
- 9 Proceed in reverse order to install the new air spray gun assembly.



WARNING : Check that the correct restrictor are used. This is necessary because the restrictor must be exactly the same as on the previous installation if the paint booth is to operate correctly.

- 10 Switch on the air feeds.
- 11 Run a functional test (cycles, application simulation).

7. Assembly / Disassembly

7.1. TRP air spray gun atomizing head

- Remove the four screws from each atomizing head on the manifold.
- Pull the TRP along the direction of the axis in order to separate it from the manifold.
- For instructions on removing and reassembling the TRP atomizing heads, the nozzle or the air cap, ([see RT Nr 7005](#)).

- Proceed in reverse order for the reassembly



WARNING : When reassembling the TRP atomizing head on the upper support, coat the HV well with dielectric grease.

7.2. Manifold block

- Remove the TRP 500 head(s)..
- Remove the four screws from the HV unit cover.
- Remove the two connections from the rear of the cover then slide the coupling and the gland onto the cable and the grounding cable.
- Slide open the cover in order to gain access to the HV unit.
- Disconnect the HV unit.
- Remove the High Voltage connection from the Manifold.
- Disconnect the hoses.
- Check the condition of the different components (seals, coupling, micro-valve, resistor, spring) on the manifold. Replace them if necessary.

- Proceed in reverse order for the reassembly



WARNING : When reassembling the HV unit and the TRP air spray gun, coat the two HV wells on the manifold with dielectric grease.

7.2.1. Micro-valve

For the micro-valve disassembly or the reassembly , [see RT Nr 6021](#)

8. Cleaning

According to the frequency of use and in all the cases at the end of each cycle

- Stop the atomizer and switch off the power supply.

Before any operation, refer to the health and safety rules ([see § 1.4 page 6](#)).



WARNING : Always wear safety goggles.

Whenever solvent is handled, rubber gloves must be worn.

Work in a well ventilated area whenever solvent is used.



WARNING : It is imperative to pass a rag soaked with water on the atomizer before cleaning it using a rag and an approved cleaning product. Do not use a manual solvent gun.

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



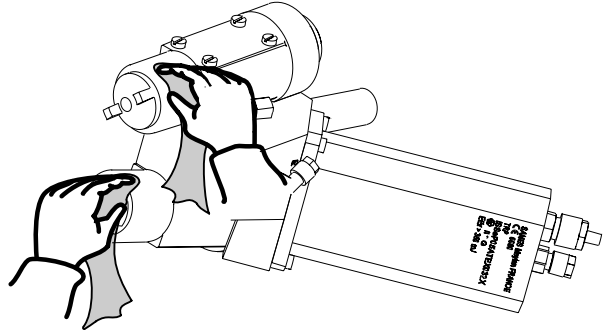
WARNING : SAMES Technologies disadvises the use of protective plastic sheets.

If, despite this warning, plastic sheets are used to protect the atomizer, do not choose "anti-static" sheets as these conduct electricity and will short-circuit the high voltage if they are used to protect insulating parts such as the atomizer body. Sames Technologies advises the use of textile cover or dielectric grease.



WARNING : In all the cases, the protections installed must be insulating to avoid any risk of over-consumption in current. This is why, these protections must be regularly replaced in order to keep an acceptable leakage current by the high voltage generator (of HV defaults will be able to appear if clogging in painting is too important).

- Every eight hours, clean the outside of the air spray gun with a clean cloth dampened with solvent.
- Make sure that the cap holes are not blocked.
- Dry carefully with compressed air



DES03569

8.1. Cleaning of the cap

- Remove the cap ([see RT Nr 7005](#)).
- Leave to soak the cap in solvent then clean with a clean cloth and soft brush.
- Dry carefully with compressed air.



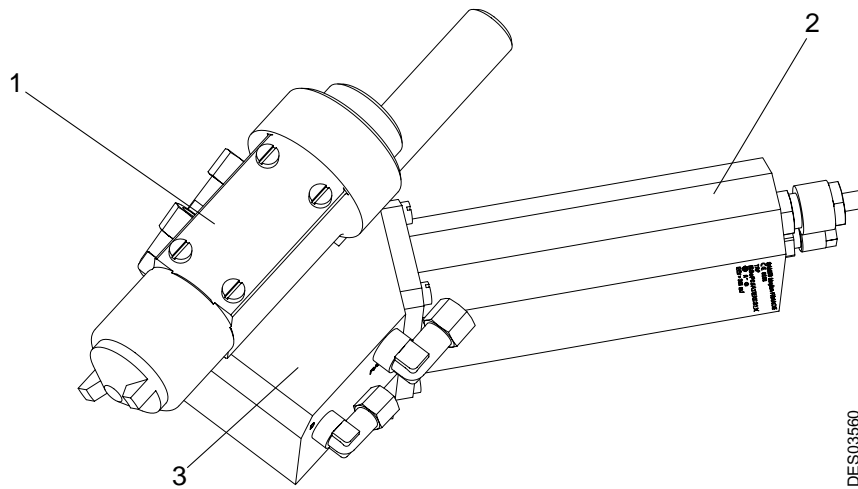
WARNING : The flat spray air caps must be replaced daily with clean flat spray air caps.

8.2. Cleaning of the TRP

[see RT Nr 7005](#)

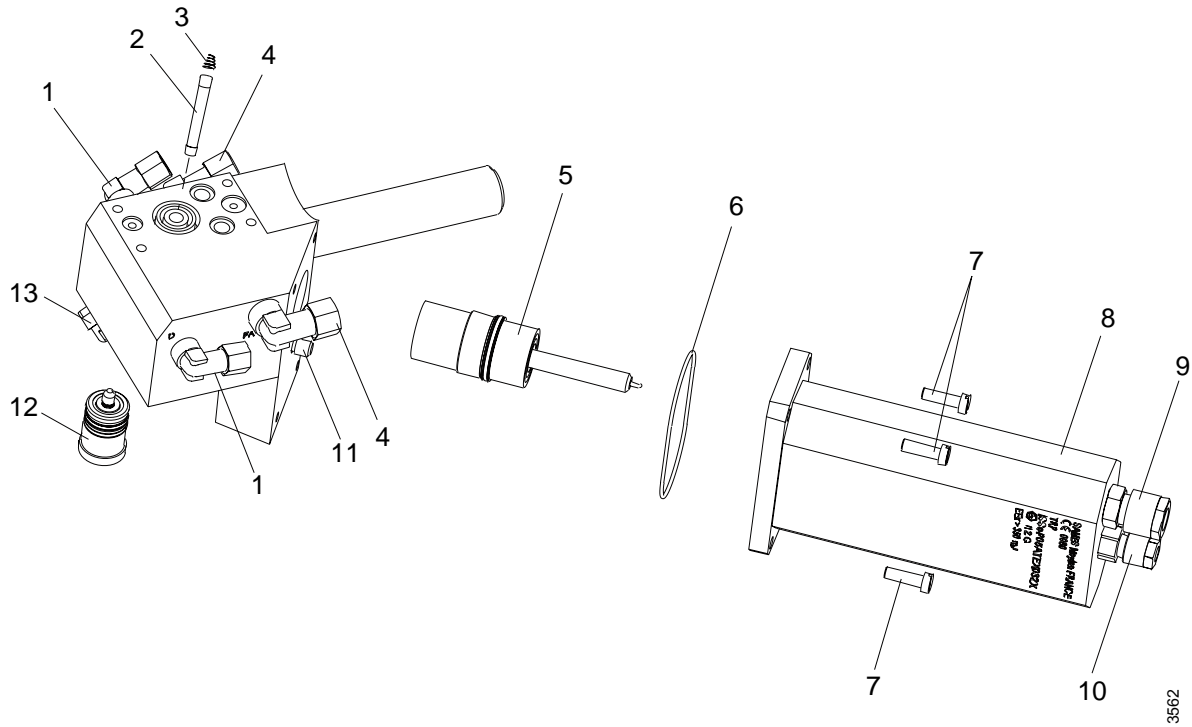
9. Spare part list

9.1. TRP 501, left assembly



Item	Part number	Description	Qty	Sale Unit	First Emergency	Consumable
	910002687	TRP 501, left assembly	1	1	X	
1	752949	TRP 500 (see RT Nr 7005)	1	1	X	
2	1518965	High voltage unit UHT 156 EEx e (see RT Nr 6245)	1	1	X	
3	910002688	Left Manifold block (see § 9.1.1 page 22)	1	1	X	

9.1.1. Left Manifold block

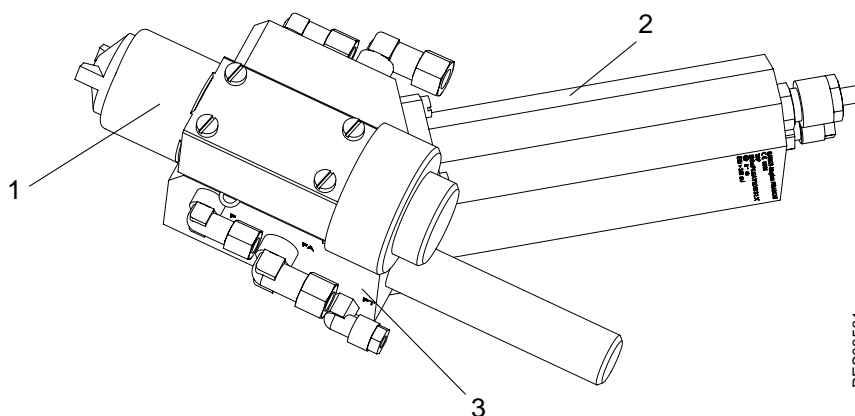


Item	Part number	Description	Qty	Sale Unit	First Emergency	Consumable
	910002688	Left manifold block	1	1	X	
1	F6RPDK310	Fitting - nylon	2	1		X
2	740016	Resistance	1	1	X	
3	740018	Spring	1	1	X	
4	746549	Fitting - nylon	2	1		X
5	910002710	TRP high voltage connection	1	1	X	
6	J2FENV561	O-ring - FEP	1	1		X
7	X9NVCB226	Screw C M6 x 20 nylon	4	1	-	-
8	900002037	Cover UHT 156	1	1	-	-
9	F6RPUK332	Male fitting - nylon	1	1	-	-
10	F6RPUK320	Male fitting - nylon	1	1	-	-
11	1409510	Captive screw	1	1	-	-
12	1507375	Microvalve 2 ways, orange indicator, chemically inert o-rings (see RT Nr 6021)	1	1		X
13	F6RPDK308	Fitting - nylon	2	1		X

Fitting location:

Item	Part number	Marking
1	F6RPDK310	on P and D
4	746549	on AA and FA
13	F6RPDK308	on PT and PD

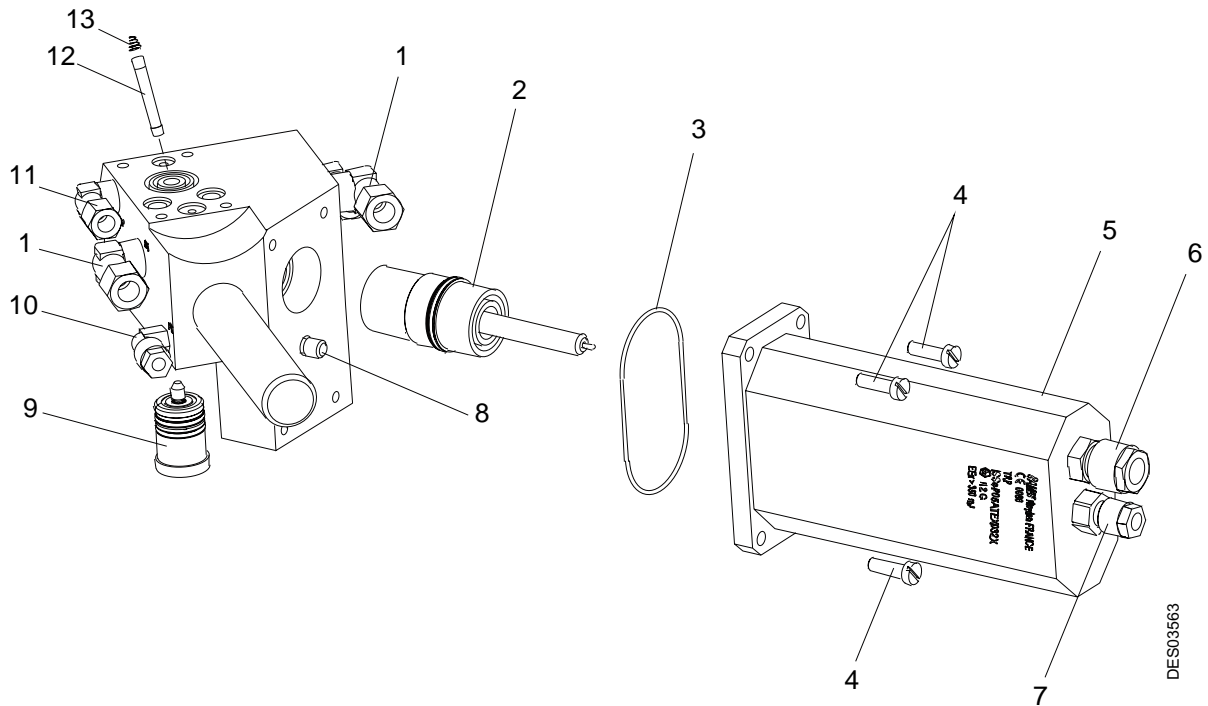
9.2. TRP 501, right assembly



DES03561

Item	Part number	Description	Qty	Sale Unit	First Emergency	Consumable
	910002689	TRP 501, right assembly	1	1	X	
1	752949	TRP 500 (see RT Nr 7005)	1	1	X	
2	1518965	High voltage unit UHT 156 EEx e (see RT Nr 6245)	1	1	X	
3	910002690	Right manifold block (see § 9.2.1 page 24)	1	1	X	

9.2.1. Right Manifold block

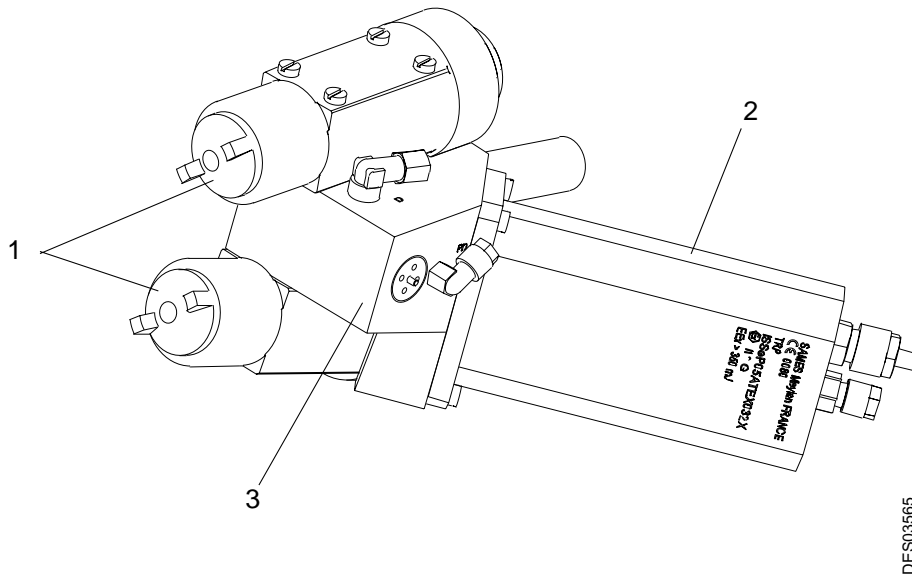


Item	Part number	Description	Qty	Sale Unit	First Emergency	Consumable
	910002690	Right manifold block	1	1	X	
1	746549	Fitting - nylon	2	1		X
2	910002710	TRP high voltage connection	1	1	X	
3	J2FENV561	O-ring - FEP	1	1		X
4	X9NVCB226	Screw C M6 x 20 nylon	4	1	-	-
5	900002037	Cover UHT 156	1	1	-	-
6	F6RPUK332	Male fitting - nylon	1	1	-	-
7	F6RPUK320	Male fitting - nylon	1	1	-	-
8	1409510	Captive screw	1	1	-	-
9	1507375	Microvalve 2 ways, orange indicator, chemically inert o-rings (see RT Nr 6021)	1	1		X
10	F6RPDK308	Fitting - nylon	2	1		X
11	F6RPDK310	Fitting - nylon	2	1		X
12	740016	Resistance	1	1	X	
13	740018	Spring	1	1	X	

Location of the fittings:

Item	Part number	Marking
1	746549	on AA and FA
10	F6RPDK308	on PT and PD
11	F6RPDK310	on P and D

9.3. TRP 502 converging



Item	Part number	Description	Qty	Sale Unit	First Emergency	Consumable
	910002691	TRP 502 converging assembly	1	1	X	
1	752949	TRP 500 (see RT Nr 7005)	1	1	X	
2	1518965	High voltage unit UHT 156 EEx e (see RT Nr 6245)	1	1	X	
3	910002692	Converging manifold block (see § 9.3.1 page 26)	1	1	X	

