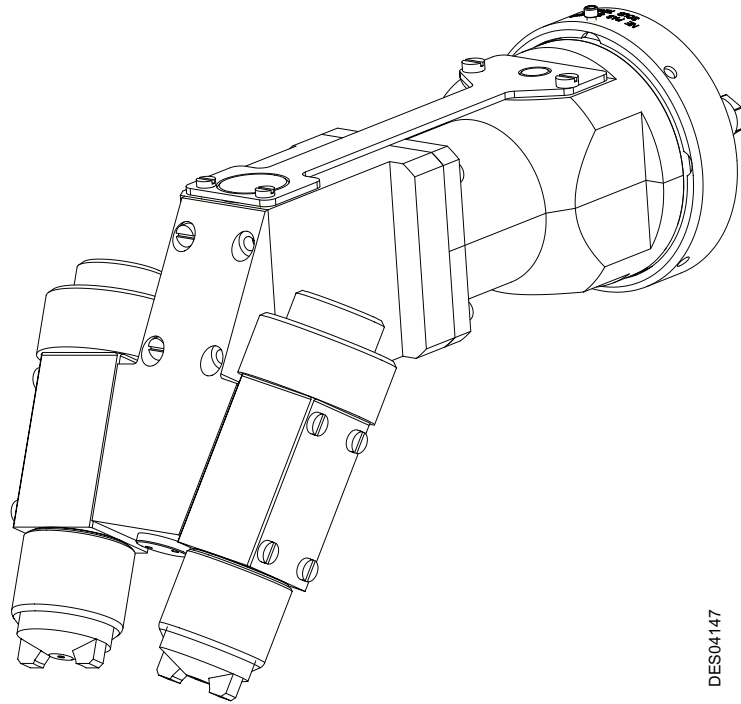




From February 1st, 2017 SAMES Technologies SAS becomes SAMES KREMLIN SAS
A partir du 1/02/17, SAMES Technologies SAS devient SAMES KREMLIN SAS



DES04147

User manual

TRP 502 Robotic without High voltage

FRANCE

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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.

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TRP 502 Robotic
without
High voltage

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1. Health and Safety Instructions

This manual contains links to the following user manual:

- [see RT Nr 7005](#) for the user manual of the TRP 500 air spray gun.

1.1. Precautions for Use

This document contains information that all operators should be aware of and understand before using the **robotic TRP 502** without high voltage. 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.

1.2. 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 :

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.

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.

In addition, a careful check must be made to ensure that any conducting or semi-conducting part with explosive atmosphere 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.

1.3. Important Recommendations

1.3.1. Paint resistivity

see [RT Nr 7005](#)

1.3.2. 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 502.

1.3.3. Product Quality

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

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

1.3.4. 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 502** is only guaranteed to operate correctly if it is used with seals whose size and material conform to this manual.

1.3.5. Ventilation

Do not begin applying paint with the **TRP 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.

1.3.6. 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.

1.3.7. Safety devices

During installation of the TRP 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 air pressure drops.
- Detection of ventilation failure.
- Detection of fire.
- Detection of turbine rotation speed faults.

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

1.3.8. Mechanical Collision

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

1.3.9. Ambient Temperature

The sprayer is designed to work normally under room temperature between 0°C and + 40°C.

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

The storage temperature will never exceed +60°C.

1.3.10. Specific maintenance provisions

The access of the booth, near the atomizer in operation, will have to be proscribed and controlled by safety devices ([see § 1.3.7 page 7](#)) 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).

1.4. 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 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 atomizers **TRP 502 without high voltage** are covered by a one-year guarantee for use in two 8-hour shifts under normal operating conditions.

The guarantee does not apply to wearing parts such as diaphragms, 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

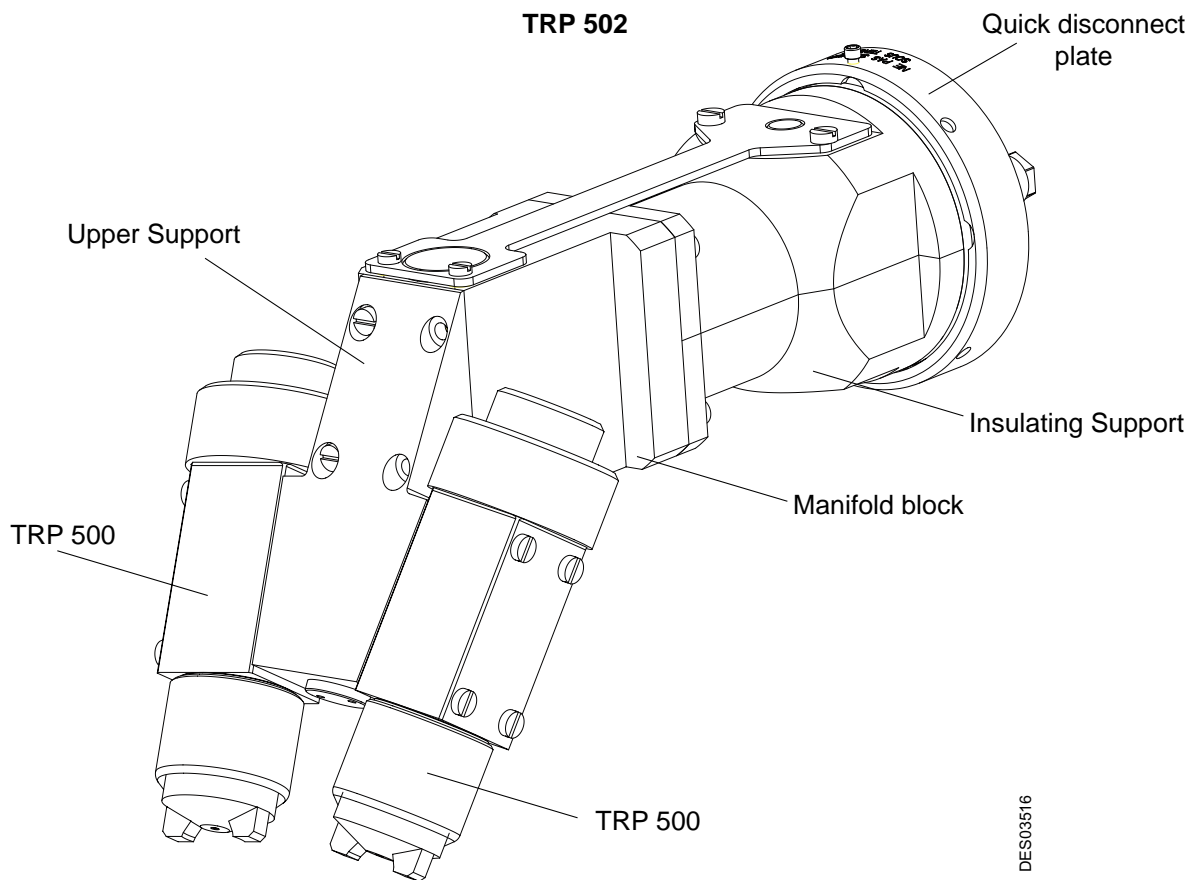
Robotic air spray gun **TRP 502** is designed for pneumatic electrostatic and automatic spraying of single-component or multi-component solvent or water-base liquid paints. It is equipped with two atomizing heads TRP 500: **TRP 502**.

Each atomizing head is fitted with an air cap and a 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:



2.2. Function of the parts

2.2.1. TRP 500 fan spray

[see RT Nr 7005](#)

2.2.2. Upper support

It allows the fixing, the orientation (60 or 90°) and the connection of each atomizing head (one or two according to the type TRP 501 or 502).

2.2.3. Manifold block

In the case of a TRP 502, it is common to the two atomizing heads.

- The manifold blocks have duct for spraying air, trigger air, paint. They have a paint inlet, a paint dump outlet, four air inlets fitted with plastic unions. The air inlets are as follows:
 - pilot trigger (**PT**),
 - pilot dump (**PD**),
 - atomizing air (for the fan spray) or directionnal air (for the round spray),(**AA**),
 - fan air (for the fan spray) or vortex air (for the round spray),(**FA**).
- A paint circuit dump system is built into the manifold; it comprises a needle, a seat, a spring, a diaphragm support, a diaphragm and a cover.

Paint arrives under pressure on the spring side of the dump valve. The diaphragm is placed on the paint dump side. The chamber between the diaphragm and the cover is connected to the pilot dump air.

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.

The TRP 502 manifold blocks can be equipped with a single dump (**SP**) of the paint circuit (one paint supply) or a dual dump (**DP**) (two paint supplies). In version TRP 502, the air and product supplies are common to the both atomizing heads.

2.2.4. Insulating support

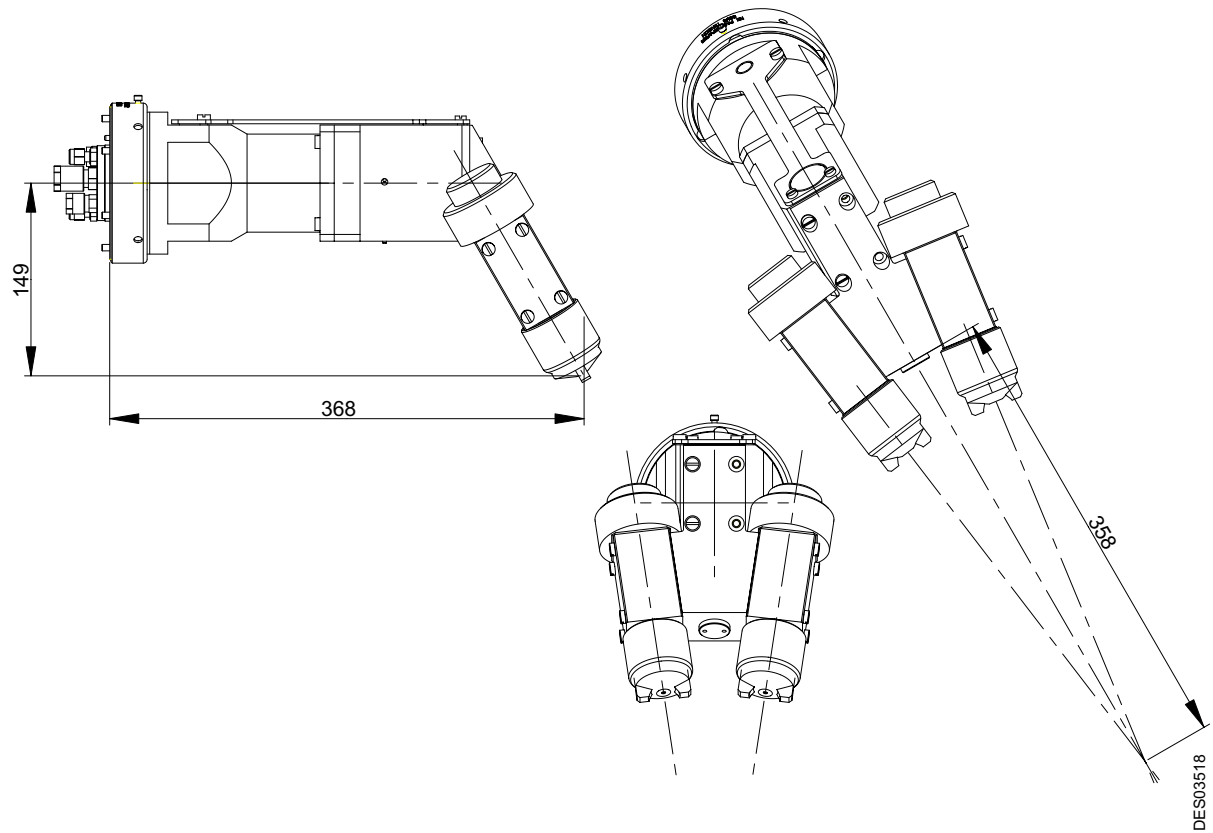
It allows the transit of air and product supplies via the atomizing head(s).

2.2.5. Quick disconnect plate

Equipped with fittings, it allows the passage of the different air and product supplies coming from the robot arm.

3. Technical Characteristics

3.1. Dimensions



3.2. Working characteristics

[see RT Nr 7005](#)

3.3. Operating Principle

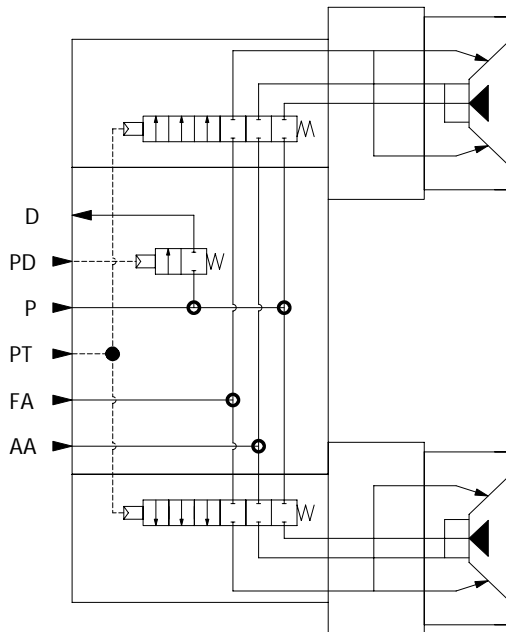
[see RT Nr 7005](#)

4. Diagrams

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

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

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



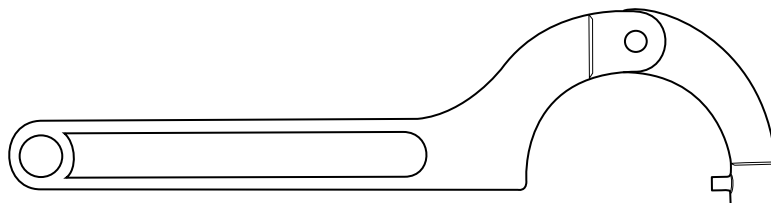
DES03487

D	Dump - D: 6/8
PD	Dump pilot - D: 4/6 or 2.7 /4
P	Paint supply - D: 4/6
PT	Pilot trigger - D: 4/6 or 2.7 /4
FA	Fan air - D: 7/10
AA	Atomizing air - D: 7/10

Note: Hose dimensions are in mm.

5. Tools

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



DES02179

Part number	Description	Qty	Sale unit
W6CERG036	Tool to tighten the fixing nut	1	1

6. Installation

6.1. Precautions to be followed before installation of the air spray gun



WARNING :

- The robot wrist and the atomizer must be in position 0°.
- The hoses must remain without constraint, as well in torsion as in length. Without respect of this instruction (0° with ± one turn), the risk of pulling up or rupture of hoses as well as the deterioration of the fittings becomes important.



WARNING : In the event of hose replacement, a sufficiently long length must be envisaged in order to respect the instruction above.

6.2. Installation of the air spray gun

- Connect the air and product supply hoses on the quick disconnect plate.
- Fix the quick disconnect plate on the robot flange and tighten the six screws, install correctly the assembly, align the alignment pin on the robot arm.
- Maintain with one hand the atomizer, with the other hand tighten the locking nut then secure with the tool P/N W6CERG036.

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 robot to maintenance position.
- 3 Switch the air and paint supplies. If necessary, decrease the circuit pressure using the trigger pilot valve, but first switch off all supplies 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 off.
- 6 With one hand hold the air spray gun, and with the other hand loosen the nut securing the insulating support to the quick disconnect plate.
- 7 Remove the air spray gun.
- 8 Put in place the new air spray gun.



WARNING : Check that the correct restrictors are used. This is necessary, because the restrictor must be exactly the same as on the previous installation if the paint application is correct.

- 9 Maintain with one hand the air spray gun, with the other tighten the locking nut then secure with the tool P/N W6CERG036.
- 10 Switch on the air supplies.
- 11 Run a functional test (cycles, application simulation).

7. Installation / Removal

7.1. TRP air spray gun atomizing head

- Loosen the four screws securing each atomizing head on the support.
- Pull the TRP along the axis to separate it from the support.
- For removal and installation of the TRP atomizing head, of the nozzle or of the cap ([see RT Nr 7005](#)).
- For the reassembly, proceed in reverse order.

7.2. Upper block

- Remove the TRP head(s).
- Loosen the four screws to separate the upper block from the manifold block.
- For the reassembly, proceed in reverse order.

7.3. Manifold block and insulating support

- Remove the TRP head(s).
- Unscrew the four screws to separate the upper block from the manifold block.
- Unscrew the two screws (located on the manifold block) of the plate of grounding.
- Unscrew the four screws M6 x 20 securing the insulating support to the manifold block.
- Unscrew the three screws M5 x16 fixing the lower half part of the insulating support on the flange.
- Withdraw the lower half part.
- Disconnect the hoses.
- Remove the screw of the thimble of the green/yellow cable (located at the middle of the flange).
- Unscrew the three screws M5 x16 securing the upper half part and remove it, the plate of grounding remains on the upper half part, it is not necessary to remove it.
- Check the conditions of the different components (o-rings, fittings) located on the manifold block and on the insulating support. Replace them if necessary.
- For the reassembly, proceed in reverse order.

8. Cleaning

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

- Stop the atomizer.

Before any operation, please refer to the safety rules [see § 1.2 page 5](#).



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.

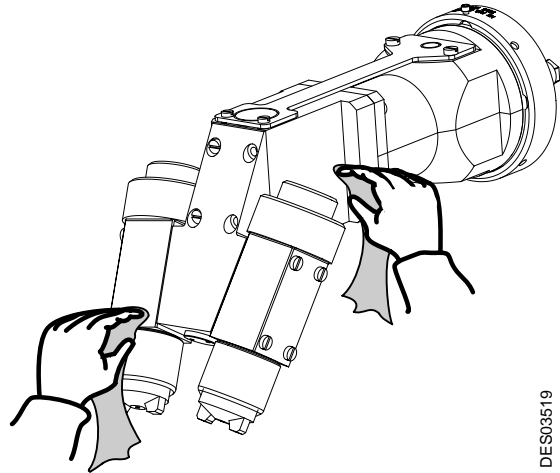
Under no circumstances must the atomizer or any of its components be sprayed with solvent or water at high or low pressure.



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

Sames Technologies advises the use of textile cover or dielectric grease.

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



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8.1. Cleaning of the cap

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



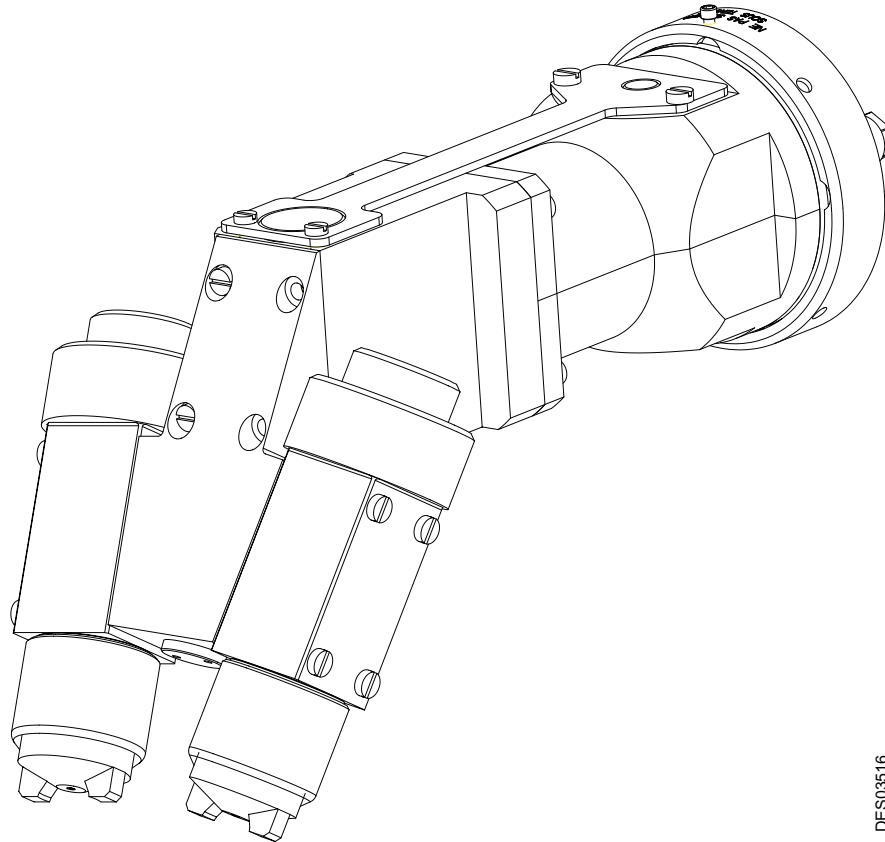
WARNING : The fan air sprays caps must be replaced daily with clean fan air spray caps.

8.2. Cleaning of the TRP

[see RT Nr 7005](#)

9. Spare parts list

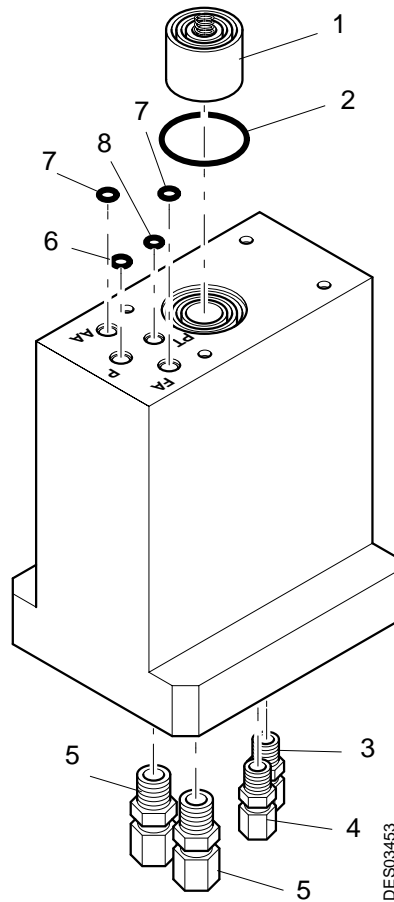
9.1. TRP 502 without high voltage



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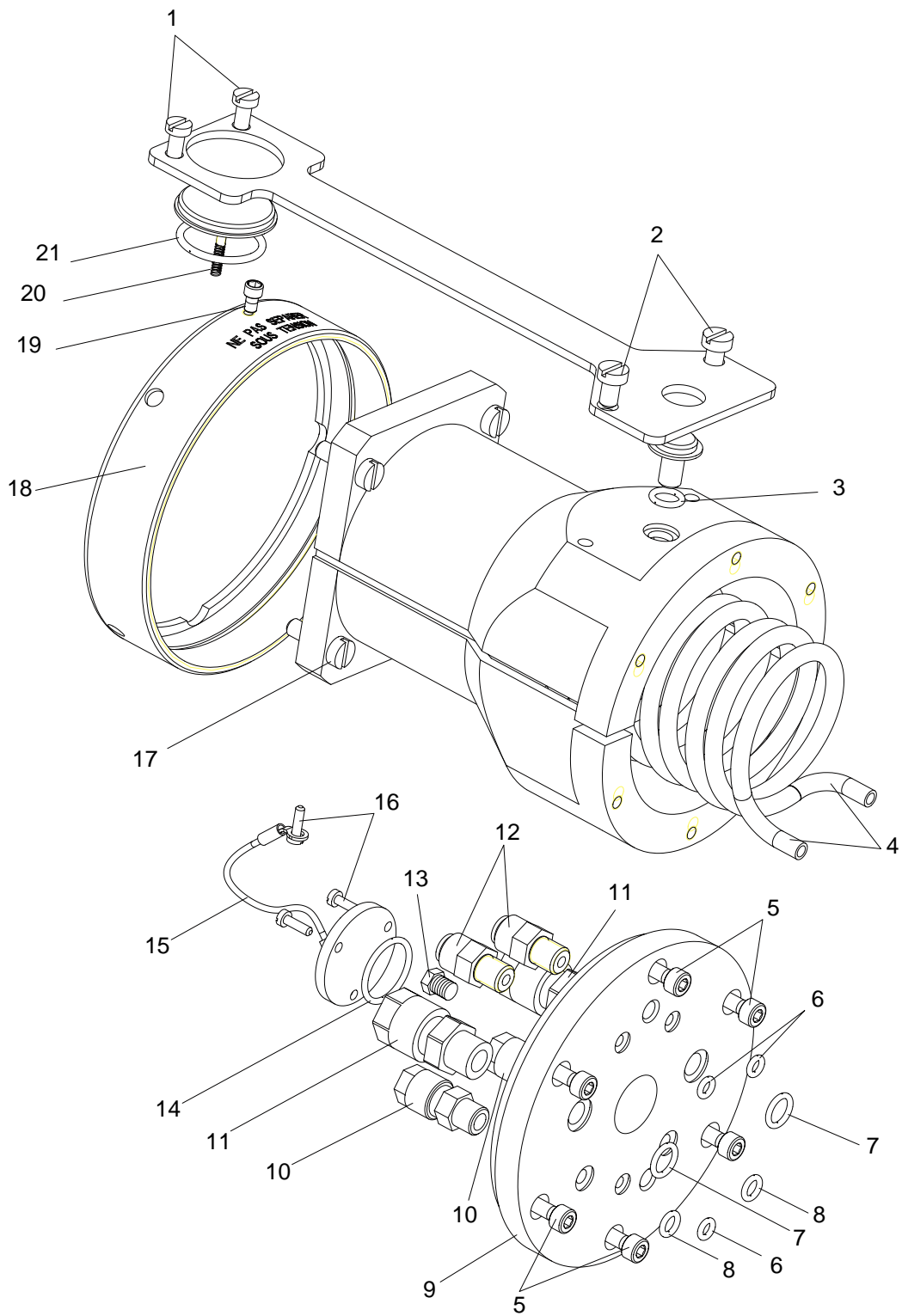
Item	Part number	Description	Qty	Sale Unit
	910005413	TRP 502, 60° Single circuit without regulator	1	1
1	1504903	Quick disconnect plate (see § 9.4 page 22)	1	1
2	910002670	Insulating support (see § 9.3 page 20)	1	1
3	1507754	Manifold block (see § 9.2 page 19)	1	1
4	752949	TRP 500 (see RT Nr 7005)	2	1
5	459351	Upper support (see § 9.5 page 23)	1	1

9.2. Manifold block



Item	Part number	Description	Qty	Sale Unit	First Emergency	Consumable
	1507754	Manifold block, Single Circuit, without regulator	1	1	X	
1	448768	Main insulator	1	1	X	
2	J3ETOR046	O-ring - EP 851 (included in item1)	1	2	X	
3	F6RPUK326	Nylon fitting (P)	1	1		X
4	745578	Nylon fitting (PT)	1	1		X
5	F6RPUK334	Nylon fitting (AA - FA)	2	1		X
6	J3STKL011	O-ring - chemically inert (P)	1	1		X
7	J2FTCF018	O-ring - viton (AA and FA)	2	1		X
8	J2FTCF043	O-ring - viton (PT)	1	1		X

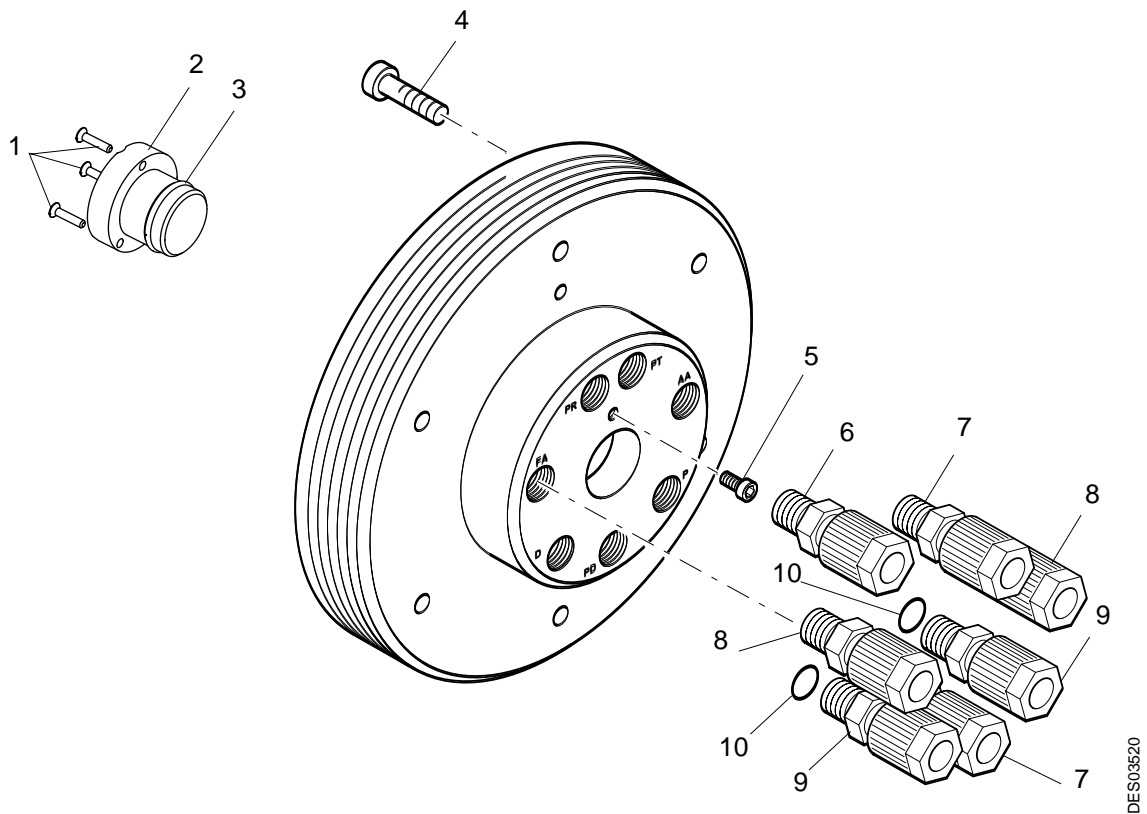
9.3. Insulating Support



DES03524

Item	Part number	Description	Qty	Sale Unit	First Emergency	Consumable
	910002670	Insulating support, single circuit, without regulator	1	1	-	-
1	X9SVCB181	C M5 x 10 screw (glass filled nylon)	2	1	X	
2	X9NVCB221	C M6 x 10 screw (nylon)	2	1	-	-
3	J2CTCN015	O-ring - HP1S	1	1		X
4	436528	Paint hose	2	1		X
5	X4FVSY184	CHc M5 x 16 screw (stainless steel)	6	1	-	-
6	J2FTCF043	O-ring - viton	3	1		X
7	J2FTCF018	O-ring - viton	2	1		X
8	J3STKL008	O-ring - chemically inert	2	1		X
9	415282	Lower flange	1	1	-	-
10	F6RPUK326	Nylon fitting (D - P)	2	1	1	X
11	F6RPUK334	Nylon fitting (AA - FA)	2	1	1	X
12	745578	Nylon fitting (PT - PD)	2	1	1	X
13	F6RPBA002	Nylon plug (PR)	1	1	-	-
14	J2CTCN042	O-ring	1	1		X
15	910002794	Equipped ground wire	1	1	X	
16	X2BVCB067	C M3 x 10 screw (zinc plated)	4	1	-	-
17	X9SVCB226	C M6 x 20 screw (glass filled nylon)	4	1	X	
18	1407512	Locking nut	1	1	-	-
19	X3AVSY116	CHc M4 x 6 screw (zinc plated)	1	1	-	-
20	640113	Spring	1	1	X	
21	J2FTCF051	O-ring - viton	1	1		X
	U1GLBT177	Blue polyurethane hose, outer dia.: 4 mm (for fitting item 12)	0.6 m	m		X
	U1GLBT133	Blue polyurethane hose, outer dia.: 10 mm (for fitting item 11)	0.6 m	m		X

9.4. Quick disconnect plate - Single circuit with dump valve without regulator

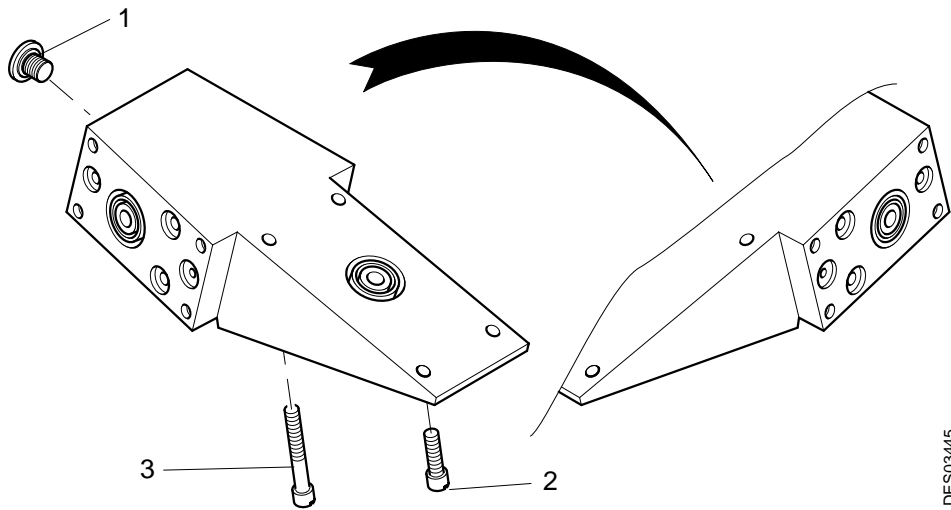


Item	Part number	Description	Qty	Sale Unit	First Emergency	Consumable
	1504903	Quick disconnect plate, single circuit, without regulator with dump	1	1	X	
1	X4FVFP047	F/90 M 2,5 x 12 screw (stainless steel)	3	1	-	-
2	1402765	Plug	1	1	-	-
3	160000054	O-ring - viton	1	1	-	-
4	X4FVSY184	CHc M 5 x 16 screw (stainless steel)	6	1	-	-
5	X4FVSY117	CHc M 4 x 8 screw (stainless steel)	1	1	-	-
6	F6RPBA002	Nylon plug	1	1	-	-
7	F6RPUQ062	Male union	2	1		X
8	F6RPUK330	Nylon fitting	2	1		X
9	F6RPUK328	Nylon fitting	2	1		X
10	J3TTCN009	O-ring - PTFE	2	5		X

Position of fittings:

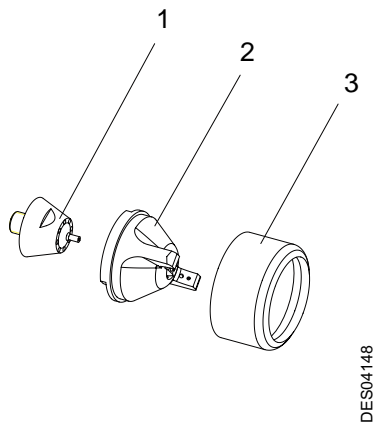
Item	Location
4	PR
5	PT, PD
6	FA, AA
7	P, D

9.5. Upper support of TRP 502, 60°



Item	Part number	Description	Qty	Sale Unit	First Emergency	Consumable
	459351	Upper support of TRP 502 60°	1	1	-	-
1	743394	High voltage plug	1	1	-	-
2	X9SVCB223	C M 6 x 16 screw (glass filled nylon)	2	1	X	
3	X9SVCB230	C M 6 x 40 screw (glass filled nylon)	2	1	X	

9.6. Options



Item	Part number	Description	Qty	Sale Unit	First Emergency	Consumable
1	428375	Fan air spray nozzle (stainless steel)	1	1	X	
2	428376	Fan air spray cap (brass)	1	1	X	
3	1310838	Cap nut (brass)	1	1	X	