

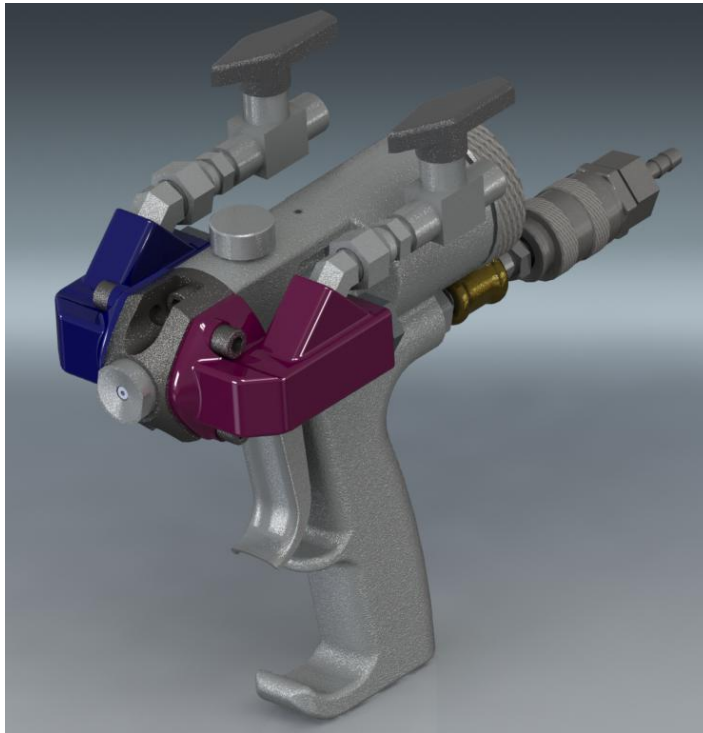
**SAFETY AND
USE MANUAL**

C-S 03-X

Translation of the original manual

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Instruction manual for the safe handling and use of the Celtipol C-S03-X polyurethane projection gun

Advantages of the Celtipol Gun

The Celtipol projecting gun is a lightweight but robust construction, very handy and comfortable for the operator and with great ease of assembly and disassembly. With the Celtipol projecting gun, all your projection needs will be solved, since a simple change of nozzle on the gun will suffice.

The spray gun handle is designed and made to provide maximum ergonomics to the operator during spraying.

The internal design of the spray gun makes it possible to stop and restart spraying as many times as necessary, without danger of loosening the spray gun.

The spray gun is equipped with check valves that prevent the crossing of isocyanate and polyol. In addition, the most important internal joints of the spray gun allow easy checking without disassembly.

Quick-closing manual stopcocks allow simple operation without the need for tools.

The collision of the two products inside the chamber at high pressure and without air, greatly improves mixing and ensures greater equipment performance.

On the other hand, the alternative mixing chambers allow the variation of the volume of material as well as the flow rate.

Technical specifications

- 1. Required compressed air pressure: Between 6-7 kg/cm².**
- 2. Required flow of compressed air: Between 20-26 l/minute.**
- 3. Production: Adjustable according to chamber
and machine pressure, 1-25 kg/min.**
- 4. Weight: 1.290 grams.**

Safety conditions

The first consideration to take into account is that during the design and project stage of the CS 03-X spray gun, the regulations in force regarding machine Safety and Prevention of Risk in the Work Place have been scrupulously respected. Therefore, we can firmly state that the machine is intrinsically safe.

Nevertheless, in common with any machine or tool, incorrect use of the same may cause more or less hazardous situations. These recommendations have been drafted to avoid such situations to ensure safe use and handling of the system.

Leading on from the above, clearly, all personnel that have anything to do with the spraying and handling operations of the machine must have an in-depth knowledge of these recommendations as well as all other recommendations that may be provided by the manufacturers of chemical products.

Throughout these operations, the intention is to provide a non-exhaustive list of the possible risks that may arise from spraying operations. For this reason, and depending on each particular application, it must be the user of the system who should carefully study the risks arising from the same, in line with the Regulation in force on the Prevention of Risks in the Work Place.

Another aspect for consideration is the prevention of possible risks arising from the use of different chemical products, some of which may be hazardous if used incorrectly. Special attention should be paid to any fumes issued during use of polyurethane foam and polyurea systems since isocyanate compounds are used in spraying operations.

In short, to ensure that the handling and use of the spraying equipment is as safe as possible, the user must strictly follow the aspects indicated in this manual.

Application safety

- It is advisable for personnel with a history of respiratory complaints to avoid exposure to all isocyanates.
- Chemical products must be handled safely in accordance with manufacturer's recommendations. The manufacturer should provide information on the toxicity of the products used as well as actions to take in the event of accident (wounds, irritation, etc.).
- It should be taken into account that solvents that may be used in cleaning operations may also entail additional risk during handling.
- Do not apply until adequate ventilation is ensured, either naturally or forced, if required. Suppliers of chemical products must be applied to in order to determine the values at which the concentrations of fumes may be hazardous.
- The appropriate procedures and systems must be applied to detect hazardous concentrations of fumes.
- In the event of not being able to ensure appropriate ventilation, both the personnel applying substances and those working in the area influenced by fumes must, without fail, use certified breathing apparatus.
- At all times, users must use the appropriate personal protection equipment (gloves, breathing masks, goggles, protective clothing, etc.).
- Users must be completely familiar with the chemical products and with the use of the equipment.
- Avoid working with the equipment when any indication of malfunction has been detected.
- Do not look through the gun mixing chamber hole in any case.
- No part of the body should be placed on the spray path or point at any person.
- Know the risks arising from spray finishing operations, in particular concerning to dual components and organic peroxides.

Safe handling of chemical products

- Products such as polyisocyanates, organic solvents and diamines should be stored in a place exclusively for and adapted to such a purpose, with restricted access. Maximum temperatures must be strictly adhered to, both in the application and in storage of chemical products, at all times following the manufacturer's recommendations.
- Also, chemical products are to be stored at all times in suitable containers, following the manufacturer's recommendations.
- Containers must not be opened until immediately before being used in order to avoid contamination by damp. Any leftover product after being applied should be put back into the original container and be stored in a dry, ventilated place.
- During cleaning tasks of spilt components, it will be essential to use eye protection, gloves and wearing breathing apparatus. Spilt isocyanate can be collected with any absorbent inert product, such as sawdust. In any case, it is important to avoid skin contact. The absorbent product is to be immediately collected and dumped into an open container through the upper part.
- Throughout the entire operation explained above, the area must be correctly ventilated.



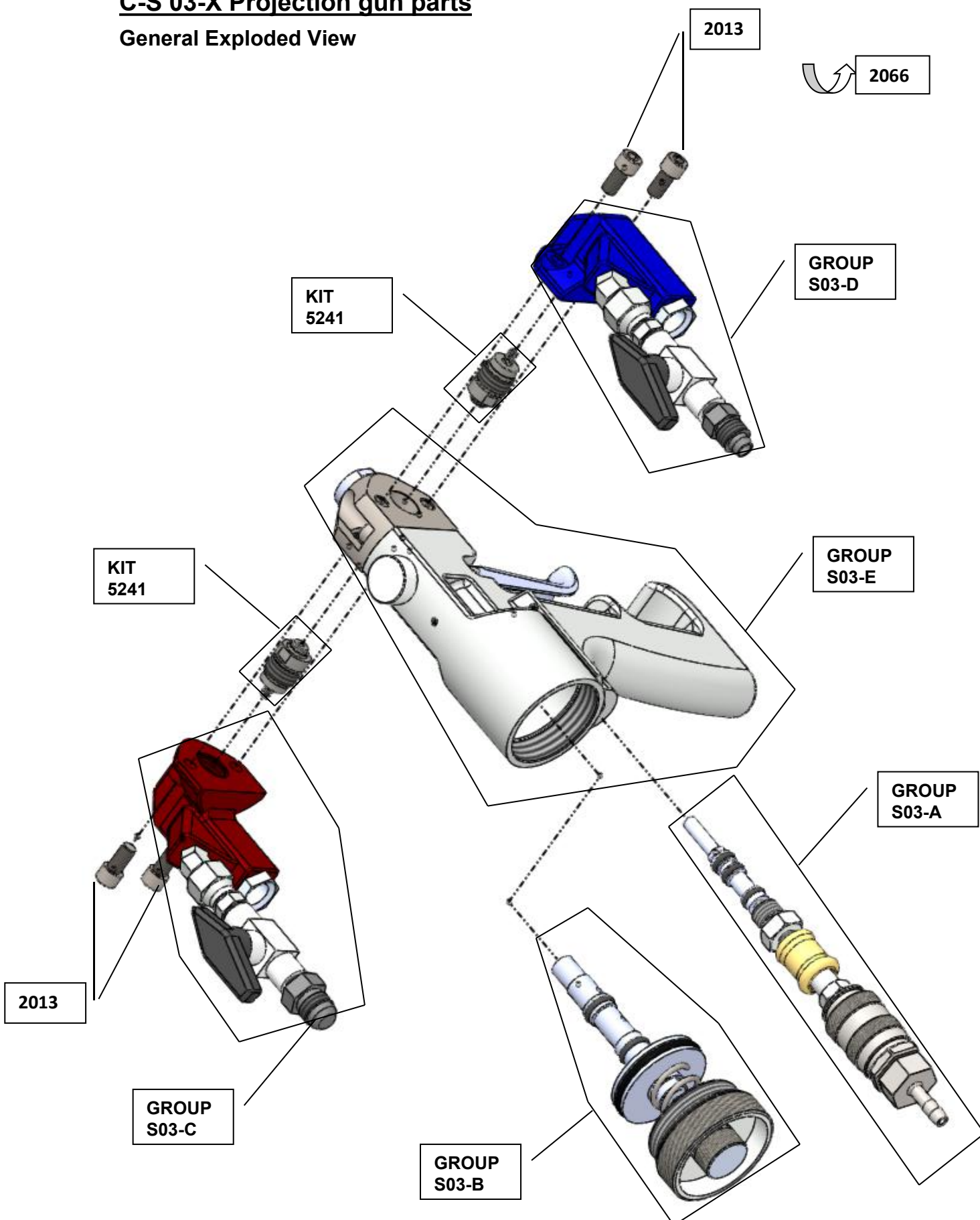
Safety personnel equipment:

Celtipol recommends the following personnel safety equipment for operations with foaming (see table):

- Protective mask for airways.
- Goggles to protect the eyes.
- Headset to protect against noise.
- Gloves to protect hands.
- Protective clothing for the body.

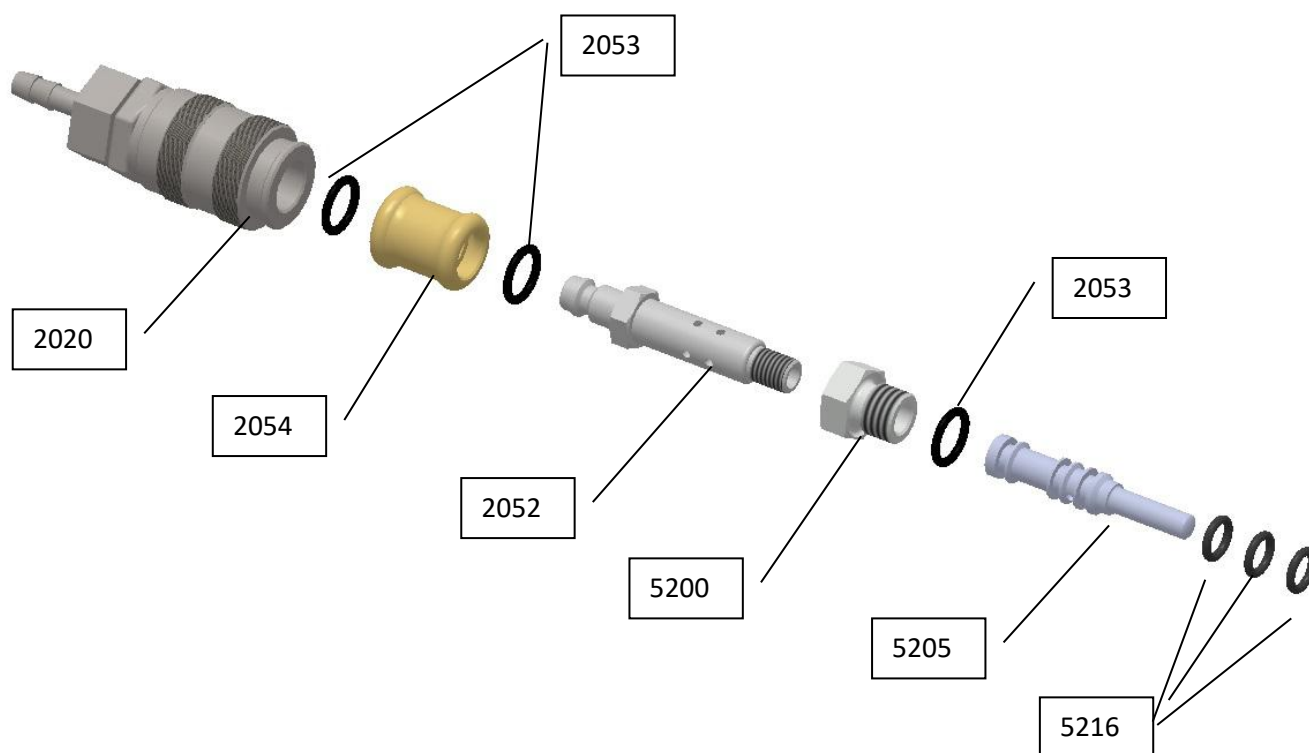
C-S 03-X Projection gun parts

General Exploded View



2066: Gun screwdriver

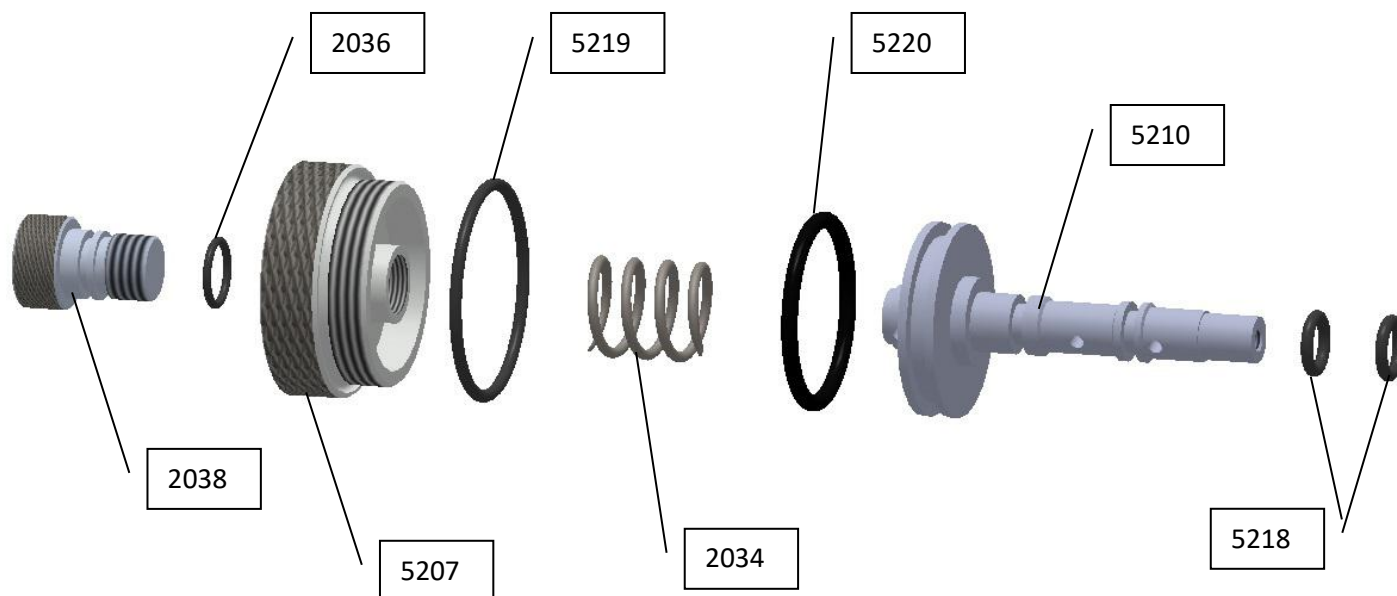
GROUP S03-A



S03-A Group part list

Reference	Description	Amount
2020	Female quick connector	1
2052	Air inlet valve	1
2053	O-ring Øint10x2	3
2054	Air valve actuator	1
5200	Air inlet valve coupling	1
5205	Trigger valve	1
5216	O-ring Øint6x2	3

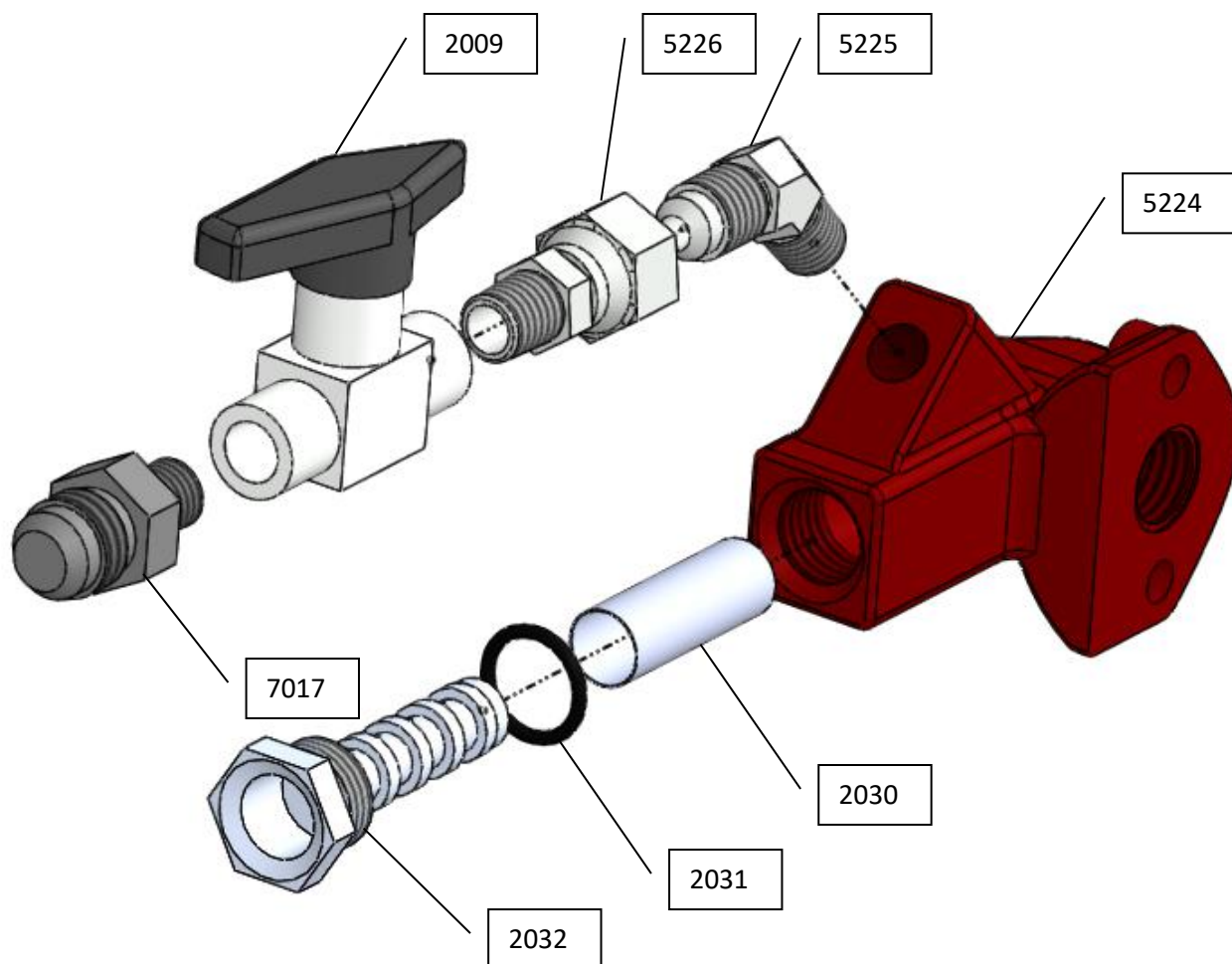
GROUP S03-B



S03-B Group part list

Reference	Description	Amount
2034	Safety spring	1
2036	O-ring Øint12x2	1
2038	Camera adjustment bolt	1
5207	Piston cap	1
5210	Piston	1
5218	O-ring Øint8x2,5	2
5219	O-ring Øint41x2	1
5220	O-ring Øint34x2,5	1

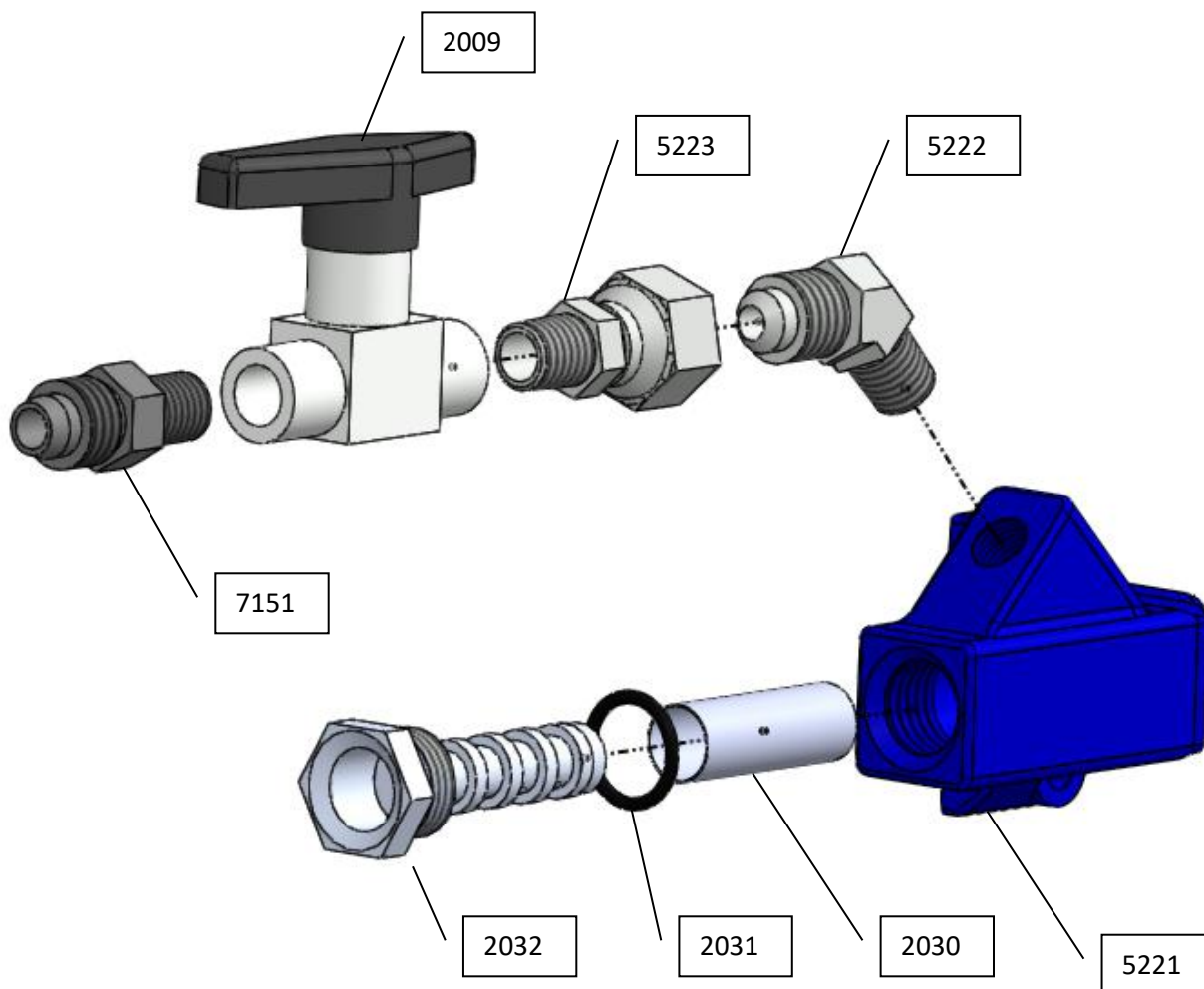
GROUP S03-C



S03-C Group part list

Reference	Description	Amount
2009	1/8" Isocyanate stop valve	1
2030	Filter	1
2031	O-ring Øint13x2	1
2032	Filter holder	1
5224	ISO side case	1
5225	Connector 45° M-M 1/8"NPT - 7/16"SAE	1
5226	Connector M-F 1/8"NPT - 7/16"SAE	1
7017	Connector M-M 1/8"NPT - 1/2"SAE	1

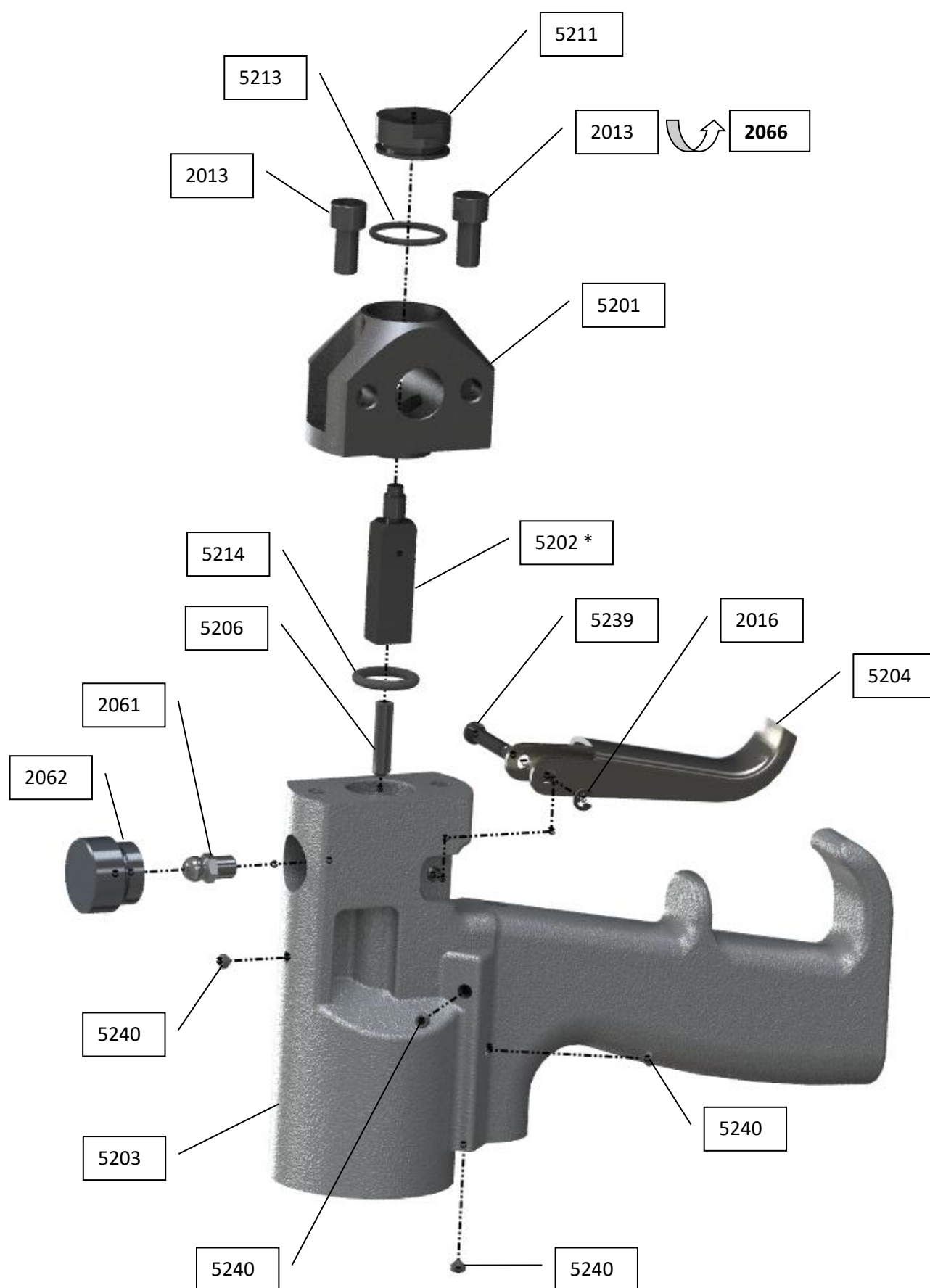
GROUP S03-D



S03-D Group part list

Reference	Description	Amount
2009	1/8" Polyol stop valve	1
2030	Filter	1
2031	O-ring Øint13x2	1
2032	Filter holder	1
5221	POLI side case	1
5222	Connector 45° M-M 1/8"NPT – 1/2"SAE	1
5223	Connector M-F 1/8"NPT – 1/2"SAE	1
7151	Connector M-M 1/8"NPT – 9/16"SAE	1

GROUP S03-E

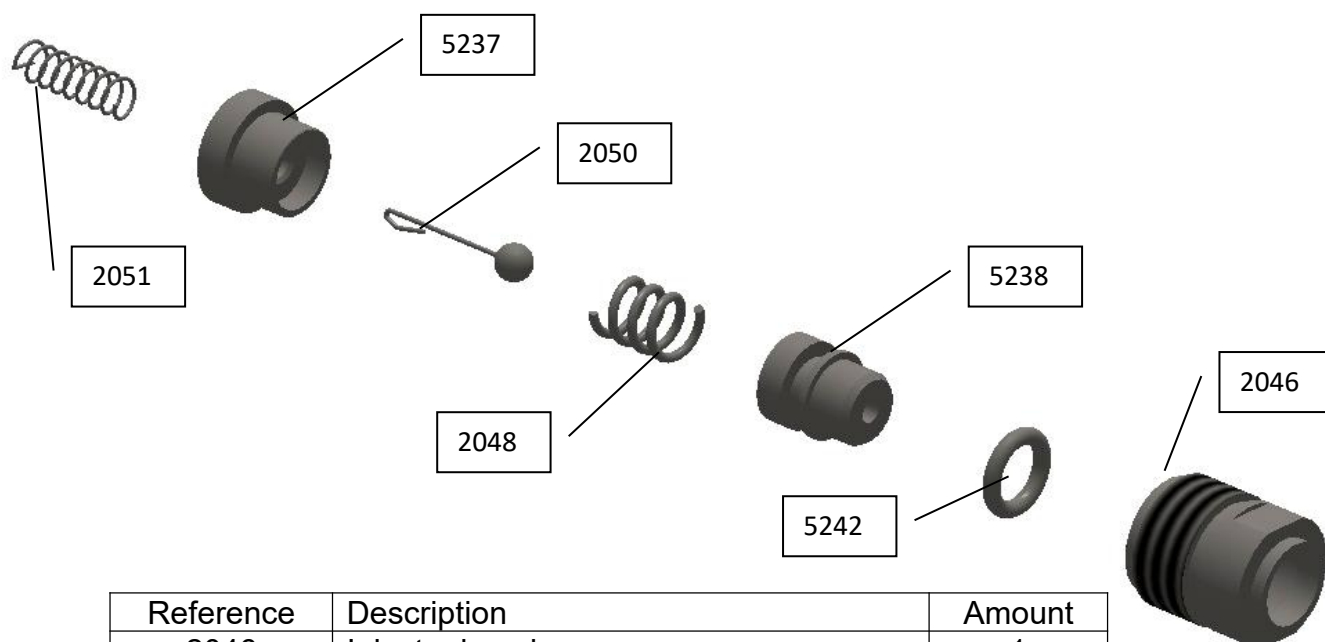


*:different sizes

S03-E Group part list

Reference	Description	Amount
2013	Cylindrical head screw 1/4 UNC x12mm	2
2016	Trigger shaft ring	1
2061	Grease fitting	1
2062	Grease cap	1
2066	Gun screwdriver	1
5201	Camera block	1
5202-0	Mixing chamber n° 0	-
5202-00	Mixing chamber n° 00	-
5202-0X	Mixing chamber n° 0X	-
5202-00X	Mixing chamber n° 00X	-
5202-1	Mixing chamber n° 1	-
5202-2	Mixing chamber n° 2	-
5202-3	Mixing chamber n° 3	-
5203	Main body	1
5204	Trigger	1
5206	Stud M5x20	1
5211	Mixing chamber cover	4
5213	O-ring Øint15x2	1
5214	O-ring Øint14x2	1
5239	Trigger support	1
5240	M4 plug	4

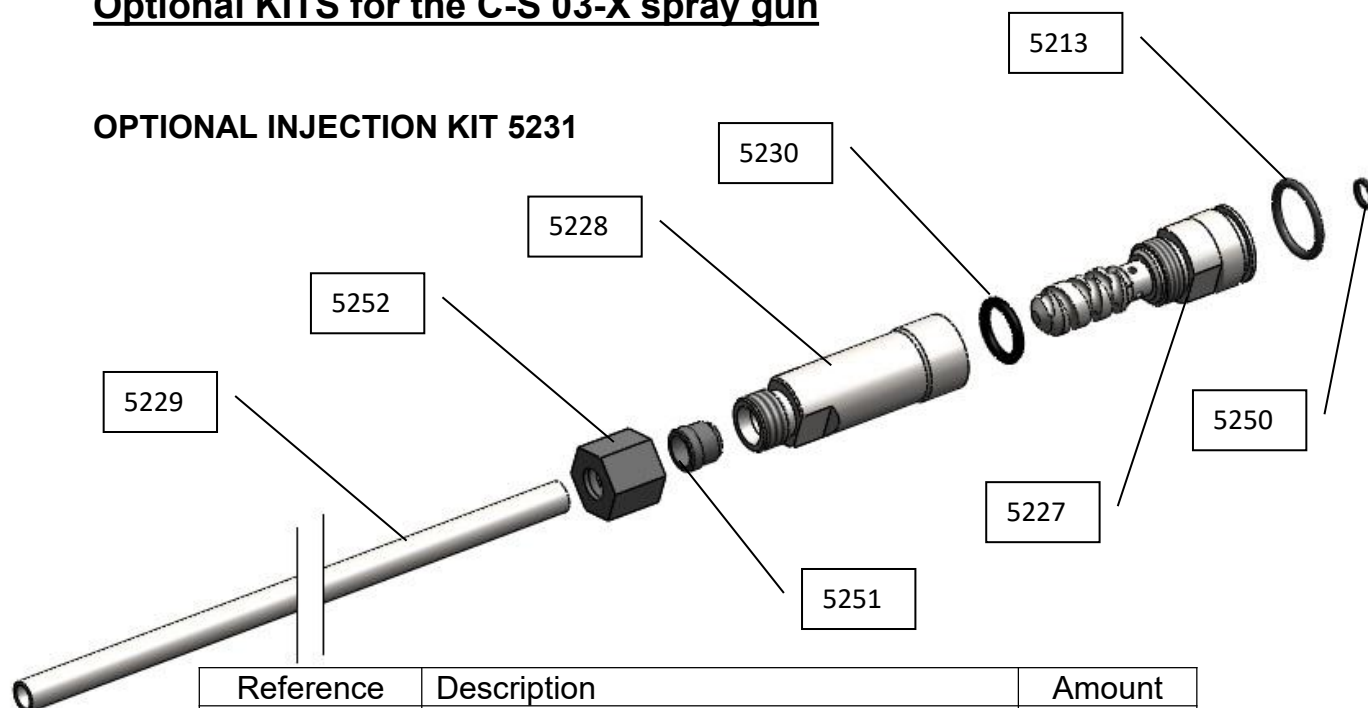
INJECTOR KIT 5241



Reference	Description	Amount
2046	Injector housing	1
2048	Injector pressure spring	1
2050	Ball valve with hook	1
2051	Valve pressure spring	1
5237	Valve housing	1
5238	Injector	1
5242	O-ring Øint6x2	1

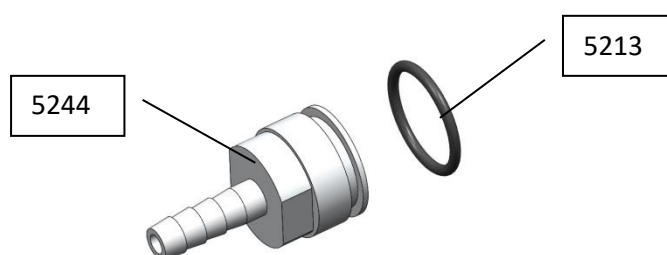
Optional KITS for the C-S 03-X spray gun

OPTIONAL INJECTION KIT 5231



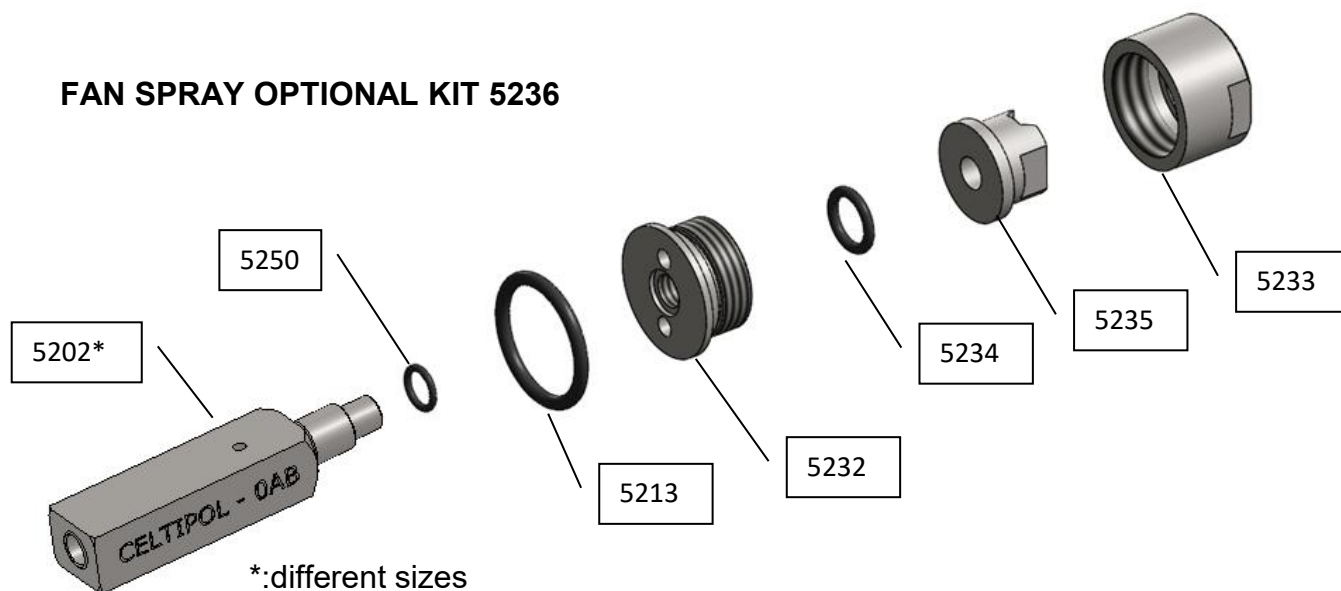
Reference	Description	Amount
5213	O-ring Øint15x2	1
5227	Static mixer	1
5228	Static mixer housing	1
5229	Injection extension	1
5230	O-ring Øint13x2,5	1
5250	O-ring Øint4x2	1
5251	Olive	1
5252	M14 Stop	1

OPTIONAL INJECTION KIT (TEAT) 5244



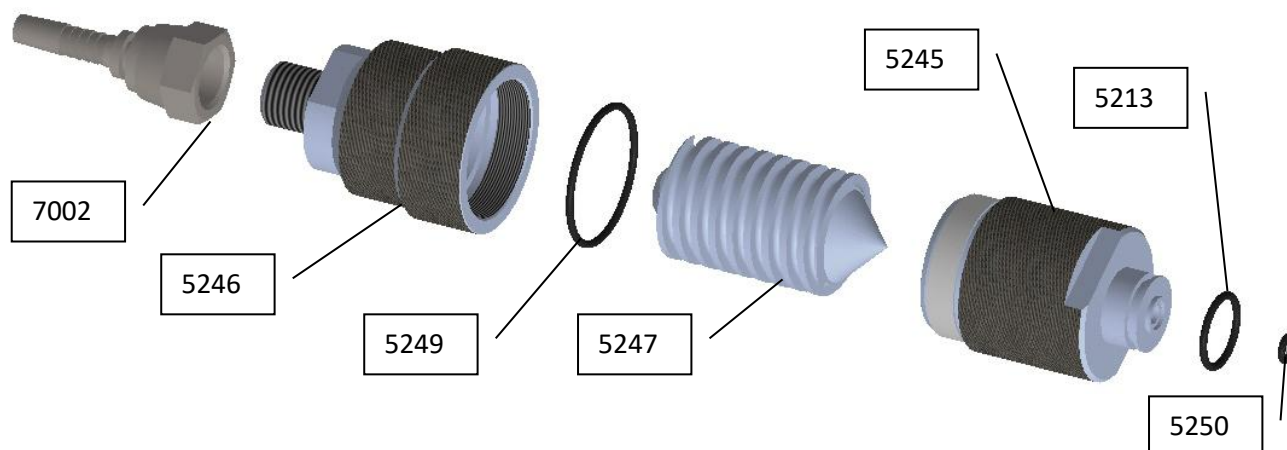
Reference	Description	Amount
5213	O-ring Øint15x2	1
5244	Chamber cover	1

FAN SPRAY OPTIONAL KIT 5236



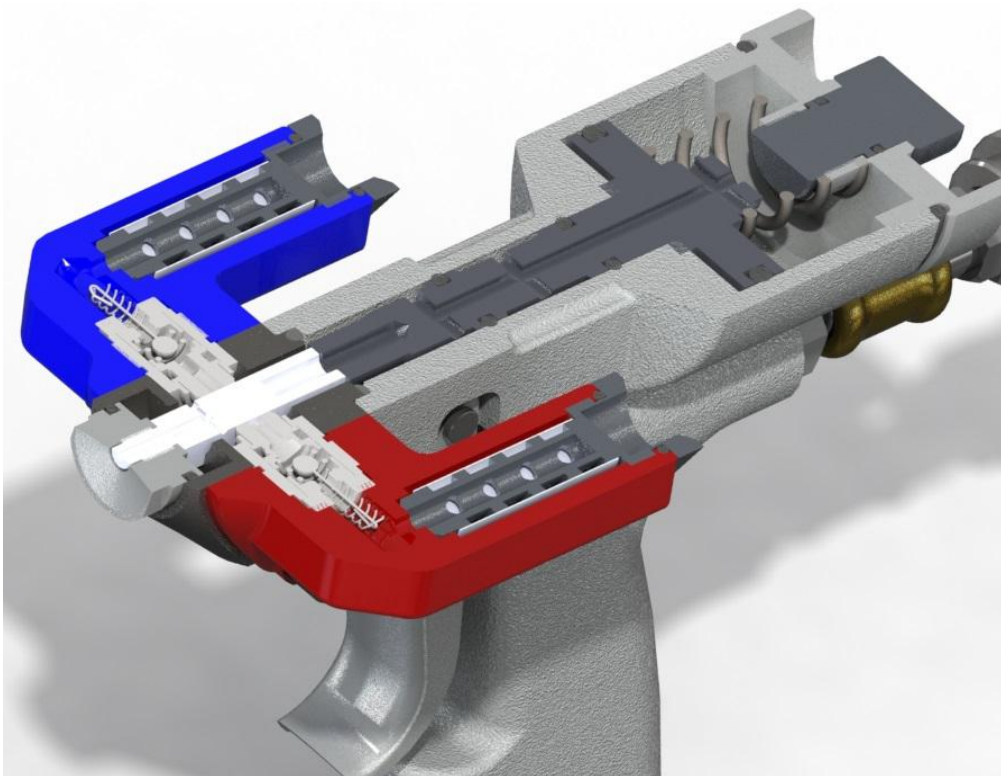
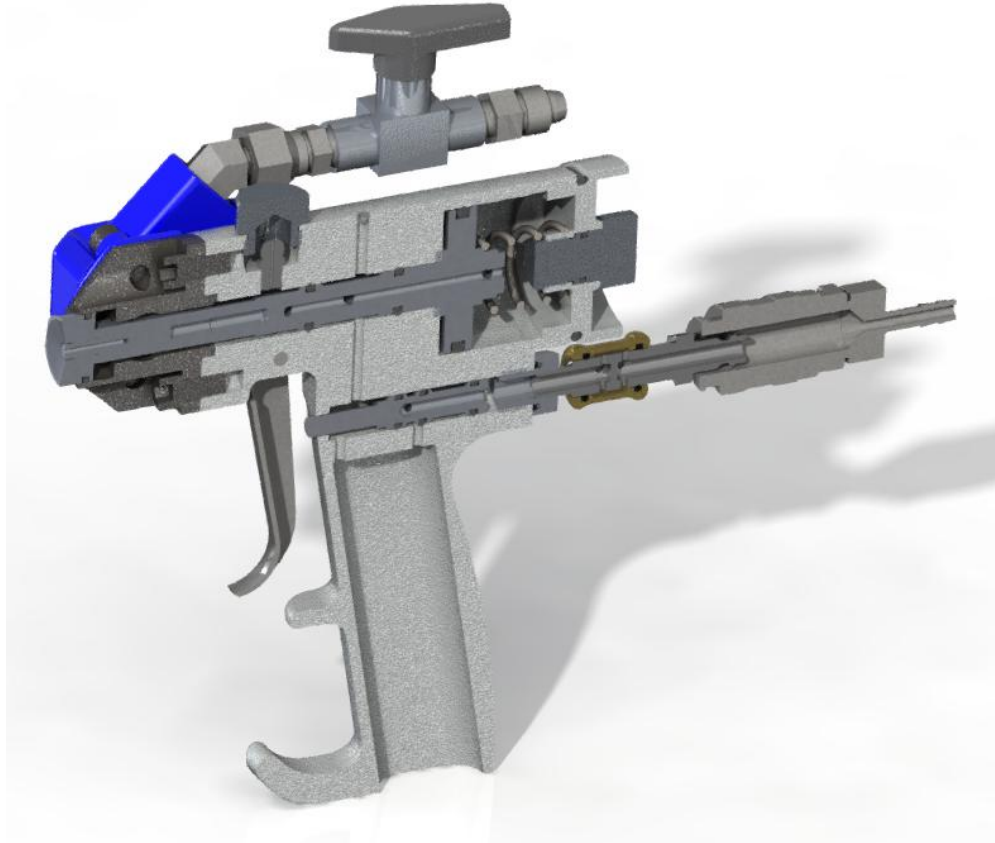
Reference	Description	Amount
5202-0AB	Mixing chamber n°0 for fan	-
5202-1AB	Mixing chamber n°1 for fan	-
5213	O-ring Øint15x2	1
5232	Fan nozzle coupling	1
5233	Fan nozzle cover	1
5234	O-ring Øint7x1,5	1
5235	Fan spray nozzle	1
5250	O-ring Øint4x2	1

OPTIONAL KIT 5248



Reference	Description	Amount
5213	O-ring Øint15x2	1
5245	Nozzle base	1
5246	Nozzle cover	1
5247	Mixer	1
5249	O-ring Øint33,5x2	1
5250	O-ring Øint4x2	1
7002	3/8" straight end	1

SECTIONS OF THE CS03-X SPRAY GUN



LIST OF CELTIPOL C-S03-X SPRAY GUN COMPONENTS

2009 1/8" Isocyanate stop valve.....	p-10	5220 O-ring Øint34 x 3,5.....	p-9
2009 1/8" Polyol stop valve.....	p-11	5221 POLI side case.....	p-11
2013 Cyl. head screw 1/4"UNC x12mm..	p-7,12	5222 Connector 45° 1/8"NPT-1/2"SAE....	p-11
2016 Trigger shaft ring.....	p-12	5223 Connector 1/8"NPT – 1/2"SAE.....	p-11
2020 Female quick connector.....	p-8	5224 ISO side case.....	p-10
2030 Filter.....	p-10,11	5225 Connector 45° 1/8"NPT-7/16"SAE...	p-10
2031 O-ring Øint13 x 2.....	p-10,11	5226 Connector 1/8"NPT – 7/16"SAE.....	p-10
2032 Filter holder.....	p-10,11	5227 Static mixer.....	p-14
2034 Safety spring.....	p-9	5228 Static mixer housing.....	p-14
2036 O-ring Øint12x2.....	p-9	5229 Injection extension.....	p-14
2038 Camera adjustment bolt.....	p-9	5230 O-ring Øint13x2,5.....	p-14
2046 Injector housing.....	p-13	5231 Optional injection KIT.....	p-14
2048 Injector pressure spring.....	p-13	5232 Fan nozzle coupling.....	p-15
2050 Ball valve with hook.....	p-13	5233 Fan nozzle cover.....	p-15
2051 Valve pressure spring.....	p-13	5234 O-ring Øint7 x 1,5.....	p-15
2052 Air inlet valve.....	p-8	5235 Fan spray nozzle.....	p-15
2053 O-ring Øint10x2.....	p-8	5236 Fan spray optional KIT.....	p-15
2054 Air valve actuator.....	p-8	5237 Valve housing.....	p-13
2061 Grease fitting.....	p-12	5238 Injector.....	p-13
2062 Grease cap.....	p-12	5239 Trigger support.....	p-12
2066 Gun screwdriver.....	p-7,12	5240 M4 plug.....	p-12
5200 Air inlet valve coupling.....	p-8	5241 Injector KIT.....	p-13
5201 Camera block.....	p-12	5242 O-ring Øint6 x 2.....	p-13
5202 Mixing chamber.....	p-12	5244 Chamber cover.....	p-14
5203 Main body.....	p-12	5245 Nozzle base.....	p-15
5204 Trigger.....	p-12	5246 Nozzle cover.....	p-15
5205 Trigger valve.....	p-8	5247 Mixer.....	p-15
5206 Stud M5x20.....	p-12	5248 Optional KIT.....	p-15
5207 Piston cap.....	p-9	5249 O-ring Øint33,5 x 2.....	p-15
5210 Piston.....	p-9	5250 O-ring Øint4 x 2.....	p-14,15
5211 Mixing chamber cover.....	p-12	5251 Olive.....	p-14
5213 O-ring Øint15x2.....	p-12,14,15	5252 M14 stop.....	p-14
5214 O-ring Øint14x2.....	p-12	7002 3/8" straight end.....	p-15
5216 O-ring Øint6x2.....	p-8	7017 Connector M-M 1/8"NPT-1/2"SAE...	p-10
5218 O-ring Øint8 x 2,5.....	p-9	7151 Connector M-M 1/8NPT-9/16SAE....	p-11
5219 O-ring Øint41 x 2.....	p-9		

Start-up sequence

Once the machine has been started and put into service according to the manufacturer's recommendations, the procedure to be followed will be as follows:

1. Selection of the desired temperature in the preheaters (25°C÷30°C) ¹.
2. Selection of the desired temperature in the hose.
3. Check that the selected temperatures are correct.
4. Adjust the pressure regulator to between 6 and 8 bars ².
5. Check that the output pressure of the two products is equalized (see pressure gauges).
6. Replace the side blocks of the gun.
7. Open the projection gun air stopcock ³.
8. Open the stopcocks of both gun products ⁴.
9. The system is now ready to start the application ⁵.
10. Use the appropriate means of personal protection ⁶.

Observations

- | |
|--|
| <ol style="list-style-type: none">1 The operating temperature varies depending on the weather conditions or the reaction of the different brands of the products.2 Pouring operations will require lower air pressures and higher spraying operations.3 Do not look through the hole in the mixing chamber at any time.4 Do not open the product stopcocks without first opening the gun air stopcock.5 Do not put any part of the body in the spray path or point the gun at other people.6 It is recommended that the operator wear protective goggles, air mask, protective clothing and other safety equipment. In addition, the recommendations of the manufacturers of the chemicals used must be scrupulously respected. |
|--|

Daily stop sequence

- 1 Close the stopcock taps on both products on the gun.
- 2 Activate the gun trigger two or three times to clean ⁷.
- 3 Deactivate heating in the hose with the stop pushbutton ⁸.
- 4 Deactivate heaters with the stop pushbutton.
- 5 Deactivate the cylinder with the stop pushbutton.
- 6 Disconnect the main switch.
- 7 Open the stopcock taps on the products in the gut and pull the trigger several times until the pressure in the products decreases below 30 bars (see output pressure gages) and check that the pump spindles are at their lowest position and fully insert them inside the body of the pump in order to guarantee autolubrication.
- 8 Close the stopcock taps for products on the gun and pull the trigger 2 or 3 times.
- 9 Close the air stopcock on the gun.
- 10 Dismantle the side and front housings of the gun for cleaning. Examine the internal walls of the mixing chamber and pay special attention to the existence of stretch marks or accumulation of material. In the latter case, proceed to a thorough cleaning.
- 11 If necessary, use a drill to clean the outlet hole of the mixing chamber.
- 12 Clean the housings with ethyl glycol and then blow with air and lubricate with petroleum jelly or white lithium grease ⁹.
- 13 Close the main compressed air valve on the machine.
- 14 Electrical disconnection of the machine.

Observations

- 7** Observe if there are any losses in the injectors by repeatedly activating the trigger (losses in the injectors).
- 8** The hoses with hot products should not be bled under no circumstance.
- 9** Never dismantle the side blocks on the gun with the product taps open since the gun may fill up with foam and be a risk for the user.

Extended stop sequence

- 1 Ensure that the stopcock taps on the products on the gun are fully closed.
- 2 Connect the transfer pumps to two separate containers, with an approximate amount of 10 liters of solvent in each.
- 3 Adjust the air pressure regulator between 1.5 ÷ 2 bar ¹⁰.
- 4 Spray material on the side blocks, opening the stopcock taps in the products on the gun. The jet should be aimed at an appropriate container until clean solvent comes out of the side blocks.
- 5 Connect the transfer pumps to two separate containers, with an approximate amount of 10 liters of D.O.P. plasticizer.
- 6 Re-add the spray until all the solvent has been bled from the system and only the plasticizer comes out of the side blocks¹¹.
- 7 Apply a thick layer of Celtipol grease to each side of the front housing of the gun.
- 8 Once again, place the side blocks on the front housing of the gun ¹².
- 9 Remove the adapters from the transfer pumps from the product tanks. Clean the plug adapters with solvent and then cover with white lithium grease or petroleum jelly.
- 10 Clean the large needles in the plug on the material tanks with solvent, cover with Celtipol grease; reinstall the plugs/caps on the drums when received from the material supplier.

Observations

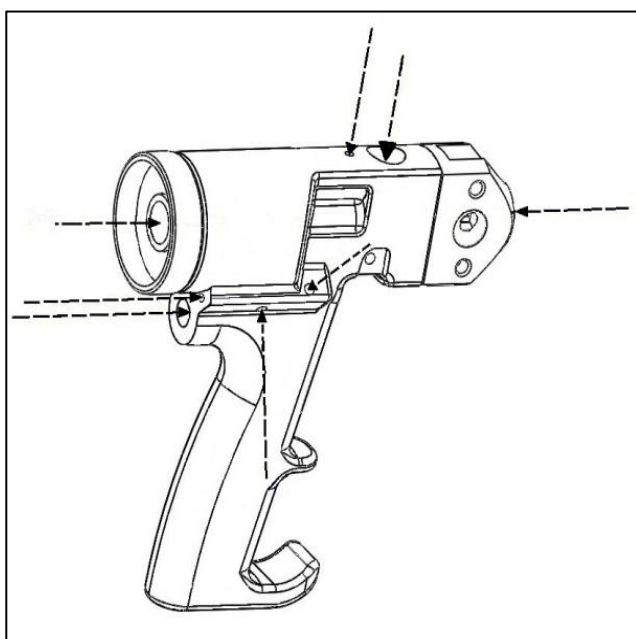
- 10** Point the gun towards the ground, in a safe position for the rest of the personnel, since the pressures of the remaining products could cause material to come out of the side blocks with risk to the user.
- 11** Do not bleed the D.O.P. plasticizing fluid from the system
- 12** Grease should appear on the tip of the mixing chamber. Excess grease should be spread over the rest of the gun to help to eliminate any excess accumulated spray.

Maintenance of the set Injection Equipment - Gun

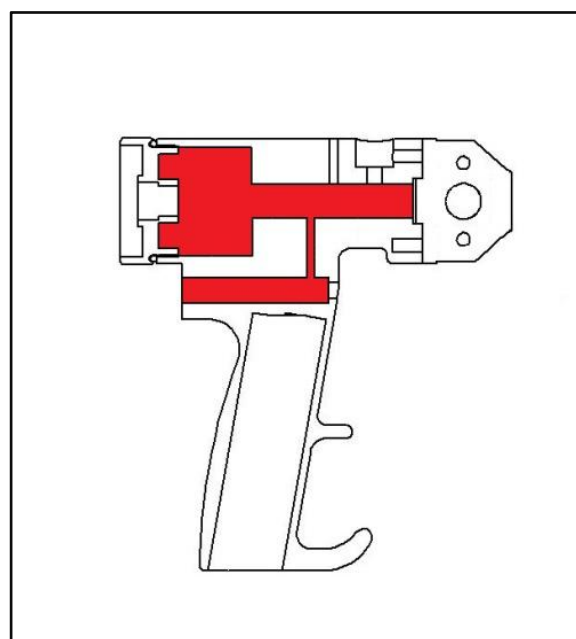
- Lubricate the spindles when stopping the machine with D.O.P. (Daily) ¹³.
- Clean and refill the gun with white lithium grease or petroleum jelly (daily).
- Clean filters on the product input with ethyl-glycol (weekly).
- Regularly refill the lubricating bowl in the filter-regulator-lubricator unit with liquid petroleum jelly.
- Regularly empty the bleed water from the compressed air input regulator.
- Regularly check the status of the hoses (for abrasions or cuts).

Observations

13 It can be done from the outside with the machine closed.



Cleaning input scheme



Air chamber scheme

Drill sizes for mixing chamber cleaning (mm)

Chamber	Ø nozzle drill	Ø mixing chamber drill
5202-0	1,55	0,65
5202-00	1,45	0,45
5202-0X	1,65	0,45
5202-00X	1,55	0,45
5202-1	1,65	0,95
5202-2	1,85	1,15
5202-3	2,15	1,25
5202-AB-0	1,55	0,65
5202-AB-1	1,65	0,95
Hole sizes: +0.05mm		

Troubleshooting

Another way of avoiding incorrect handling of the equipment and to avoid any possible situation of risk is to know how to detect the source of the more frequent breakdowns, as well as to know how to solve them. To achieve this, essentially, the operator/user should be acquainted with:

- The normal working order of the equipment, with its corresponding sequences of start-up and stop.
- The flow diagram of the materials going through the equipment.
- The appearance of the product perfectly applied and its possible variables.

Since the ultimate aim of the equipment is the correct application and finish of the foam, it should be the final appearance of this that we should, in the first place, examine to locate any possible breakdown or anomalies in the application process and, in this way, identify the material that is missing (isocyanate or Polioli).

Therefore, the most appropriate procedure to locate breakdowns is as follows:

1. Identify the product missing.
2. Check the pressure gage corresponding to the material that is missing in such a manner that if the reading is higher than normal, there is an obstruction problem between the pressure gage and the point in the chamber where the gun makes the mix. Conversely, if the reading is lower than normal, there is an obstruction problem between the pressure gage and the transfer pumps¹⁴.
3. In the event that the hydraulic pressure in the material that is deficient is higher than normal, we should start to check for possible causes for the obstruction from the furthest point away from the unit (gun) and move upstream following this sequence:
 - a) **Gun** ¹⁵:
 - Ensure that the product tap is fully open.
 - Check the cleanliness of the front hole on the mixing chamber.
 - Check for the extent of cleanliness in the filter grille.
 - Check the cleanliness of the side hole on the mixing chamber.
 - b) **Hose**:
 - Ensure that the hoses are not blocked.

4. In the event that the hydraulic pressure in the material that is deficient is lower than normal, we should start to check for possible causes for the obstruction in the furthest point away from the machine (product feed) and move downstream, starting with the products tanks:

- Check for product in the tanks.
- Check the temperature of the material, since an excessively cold material, especially in the bottom of the tank, will increase the viscosity of the material and will block the transfer pumps. Conversely, excessive temperature in the material, on the polio side, will cause irregular properties in the material.
- Check the status of the dosing pumps, paying special attention to determine if the flash appears in the ascending or descending run. If the flash appears on the descending run, check the seating of the lower ball. If the flash appears on the ascending run, check the seating of the upper ball.

In any case, repair works should be carried out as soon as possible. The unit should be open and in contact with the air as brief a time as possible in order to avoid other problems such as incoming humidity in the system or crystallization of the isocyanate.

In the event of the unit being exposed to the atmosphere, it will be vital to make it work for enough time to shift the material that there was in the unit when opened ¹⁶.

Observations

- | |
|---|
| <p>14 We should only concern ourselves with the hydraulic pressure on the side where the material is lacking. Furthermore, we should bear in mind that the pressures recorded on both pressure gages do not necessarily have to coincide due to the different products used, different viscosities, etc.</p> <p>15 Prior to any kind of handling or repair of the gun, discharge all the pressures in the fluid and air.</p> <p>16 Do not inspect the filters at any time during the stop.</p> |
|---|

Fault detection in the application

The simplest way to objectively detect if there are faults in the application is to observe the spraying, which is affected by the following parameters:

- **Temperature:** A material that is too hot will produce separation in the fan. A material that is too cold will produce a ripple effect.
- **Pressure:** Too high a pressure will result in excessive or disaggregated spraying. A pressure that is too low will produce a ripple effect.
- **Contamination** of the products in the mixing chamber.
- A foreign object in the mixing chamber will cause bad fanning.

For your reference

Write down here:

Date of purchase: _____ Distributor: _____

Contact: _____ Phone: _____

If you have a problem with the C-S 03-X Pistol, before contacting Celtipol, collect the information below:

Model:

Sistem:

Type of material being projected:

Pressures:

INSPECTION REPORT

Part N°: _____ Inspection by: _____

Serial number: _____ Date of inspection: _____

NEW

REPAIR

RETURN

VISUAL INSPECTION

	Optimum	Defective
Apperance:
Alignment of the side blocks:

GUN PRESSURE TEST

	Optimum	Defective
Side blocks:
Fluid circulation:
Retention valves:
Fluid valves:
Air circulation:
Trigger tension:

DOCUMENTATION

Service manual

Warranty

Notes:

Signature and stamp:

CELTIPOL

**Faustino Santalices, 35
32840 Bande
Ourense (España)**

E-mail: info@celtipol.com

Telf.: (34) 988 443 105

Fax: (34) 988 444 410

www.celtipol.es

**Fabricado en España
Made in Spain**