



# E-FEED **V2** POWDER COATING INJECTOR USER'S MANUAL

V2



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## 1-General Safety Regulations

This section contains the basic safety rules for the user of the E-FEED V2 powder coating injector. These rules must be read and understood before operating the injector.

### 1.1-Safety Symbols

You can also find the following warnings and their meanings in the SYSTEM TECHNICAL OPERATING INSTRUCTION. General safety precautions and rules are also included in the operating instructions.



#### **WARNING!**

*Electrical and moving parts are dangerous.  
Possible consequences: Death or serious injury.*



#### **ATTENTION!**

*Improper use will damage the injector or cause a malfunction.  
Possible consequences: Minor injuries or damage to the equipment.*

### 1.2-Conformity of Use

- 1.E-FEED V2 Powder Coating Injector is technically produced according to the latest safety rules. Its design is based on normal powder coating application.
- 2.Other uses are unsuitable. The manufacturer is not responsible for malfunctions resulting from improper use. The end user is responsible for these situations.
3. Operating, service and maintenance instructions are specified by the manufacturer. Use, maintenance and commissioning of the E-FEED V2 Injector must be carried out by trained personnel.
4. Commissioning of the E-FEED V2 powder coating injector must be carried out according to the operating instructions.
5. The E-FEED V2 injector must be commissioned in accordance with EN 60204-1 (Machine Safety).

### 1.3-Notes on Specific Hazards

1. **Power:** The current shutdown procedures must be observed in case of high voltage hazards. On high voltage, equipments must not be opened and unplugged. There is a danger of electric shock.
2. **Powder coating:** Powder-air mixtures can catch fire. There must be sufficient ventilation. Powder coating may cause slippage when on the ground.
3. **Static Load:** Static load can cause electric shock and glare. Objects must be removed from static charge.
4. **Grounding:** All materials and / or machines with electrical conductivity in the working area shall be constructed at a distance of maximum 1.5 meters from one point and at least 2.5 meters from both sides of the cabinet openings. The ground resistance must be at most 1M $\Omega$ . Earthing resistors should be tested at regular intervals. Earthing testers should be kept permanently available for regular measurement.
5. **Compressed Air:** Compressed air should be evacuated in the equipment during long term stops. Damaged or free-ended pneumatic hoses, improper use of compressed air poses risks to occupational safety.

### 1.4-Safety Requirements for Electrostatic Powder Coating

1. This equipment is dangerous unless the instruction manual is used.
2. All electrostatic conductive parts, especially machine coating equipment, must be earthed at a distance of 5 meters.
3. The powder coating area is generally conductive.
4. The operator should wear appropriate work clothes while working.
5. The operator should wear protective gloves.
6. The control unit must be switched off when sprayers are replaced and the gun is cleaned.
7. Should not be used if any part of the injector cracks or breaks.
8. For your own safety, use only the accessories listed in the instruction manual.

## 2-Transporting and Storage

The finished injectors are shipped with the shipment list prepared for the buyer to check the compatibility of the materials on the delivery date. The injector and its parts are packed and shipped. The injector and its parts must be secured so that it cannot move in the vehicle during transport.

### 2.1-Transfer

During transport it is important to observe the following rules:

1. Necessary precautions should be taken to prevent the injector parts from being affected by environmental conditions during transportation.
2. Care should be taken to avoid damage to the environment and equipment during transport.
3. Do not stand under or near the lifting gear in the event of incorrect movement of the lifting device, falling parts and unexpected accidents.
4. Falling or hitting the ground quickly can cause damage. The load must be transported and released with gentle movements.

### 2.2-Control

The following points should be observed when receiving the injector:

1. Whether the product received is an ordered product,
2. Whether any damage occurred during shipping,
3. If any damage or deficiency is detected in the equipment, please inform our company verbally or in writing as soon as possible.

### 2.3-Storage

1. The equipment must be properly stored until shipped after installation.
2. The equipment must be stored as shipped to avoid environmental influences. If assembly is to be delayed, additional measures must be taken.


### 3- E-FEED V2 POWDER COATING INJECTOR

#### 3.1-Usage Area

The E-FEED V2 Injector is used for conveying the organic type of powder paint used in the industry from any paint hopper to the spray gun where the application is made. E-FEED V2 powder paint injector is supplied ready to use together with special PTFE material made of Teflon bushing and sintered inlet filters.



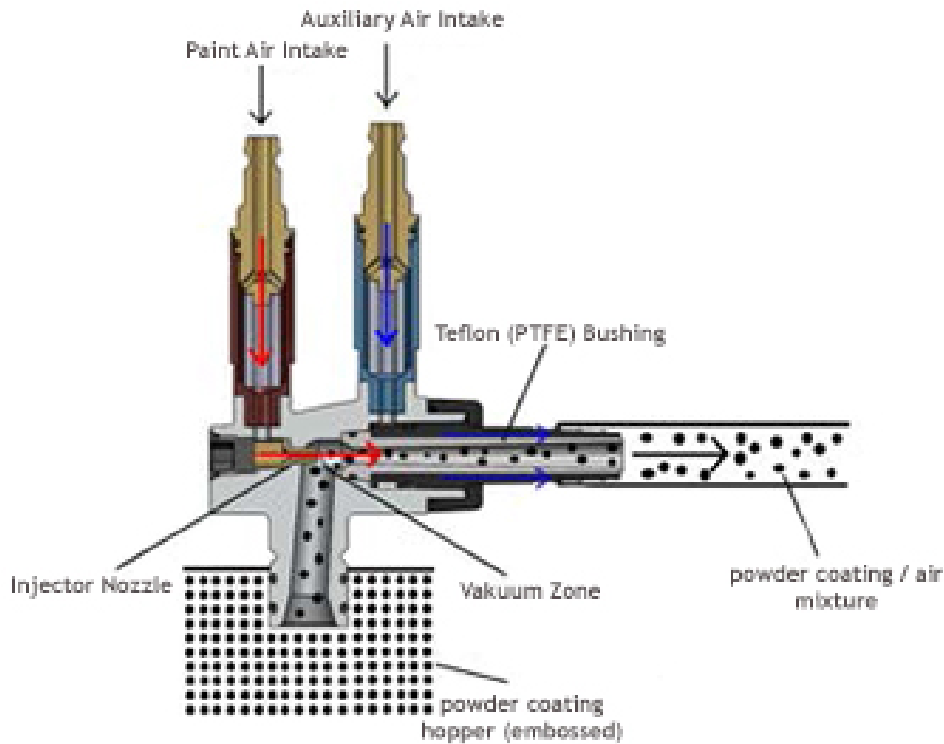
*E-FEED V2 Powder Coating Injector*

Explosion Protection	Protection Type	Temperature Class
CE  II 3 D	IP54	

***NOTE:** The explosion protection class mentioned above is only valid if the E-FEED V2 Powder Coating injector is used with “Anti-Static with Discharge Line” type powder paint hoses and the electrical resistance from the injector body to the application field is below 1 Mohm.*

### 3.2-INJECTOR STRUCTURE AND POWDER COAT TRANSFER PRINCIPLE

As a result of aerodynamic rules, the air exiting a nozzle creates a vacuum at the recess inlet, which is proportional to the fluid velocity when it is directed from the suction line to a narrower recess as shown in the picture below. This vacuum allows the powder paint to be sucked into the recess through the chamber where the fluid velocity is low and rapidly enters into the line leading to the gun. This physical condition, also known as the venturi effect, allows the powder coating to be dispensed from a desired reservoir to the application gun.



*Injector Working Principle and Pneumatic Flow Ways*

As can be seen in the picture above, the powder coating / air mixture is sucked from the powder coating hopper and carried to the paint hose and then to the powder paint application gun. The paint density of the powder coating / air mixture coming out of the gun tip is adjusted with the “Auxiliary Air” and “Paint Air” settings, and the paint quality, injector teflon bushing abrasion rate, hose metering, hose curl and turn number, hose diameter, gun outlet nozzle type and height varies between the injector and the gun. As a general rule, the Teflon bushing, which has the highest effect on the paint output rates, should be specifically monitored and replaced as a consumable material.

Pneumatic conveying of very thin solid materials such as powder coating in the hose is achieved by ensuring the correct air flow rates in the hose and the optimum levels of these flow rates vary according to the hose diameters. According to the experimental data in powder coating applications, this air flow rate is approximately 67 l/min (4 m<sup>3</sup>/s) in a Ø11 mm hose. “Paint Air” is used to adjust the powder coating / air mixture coming out of the gun tip and it is requested to make paint. Reducing the paint air will result in a 67 l/min flow rate in the air filter coming out of the hose, which may result in intermittent paint and vomiting in the paint, as the optimum flow will deteriorate. In such an environment increasing the “Auxiliary Air” flow, the optimum fluid can be increased to at least 67 l/min again. This setting is fully automatic for E-COAT Master Type electrostatic powder coating applicators.



### 3.3-PAINT AND MIXTURE VALUE TABLES

#### 3.3.1-E-FEED V2 General Usage Value

The amount of air flowing through the hose and the paint ratio must be adjusted correctly to ensure correct paint output patterns in powder coating application guns. This flow rate is approximately 65-85 lt/min (4-5 m<sup>3</sup>/s) in a Ø11mm paint hose, while it is approximately 50-85 lt / min (3-5 m<sup>3</sup>/s) in a Ø10mm hose. In general, the lowest air flow quantities and paint output levels can be achieved by using a Ø10mm type hose in powder coating applications and a Ø12mm type hose should be used when high amount of paint output is desired. As a general rule, irregular paint output and vomiting at the paint output indicate insufficient hose air flow and the flow level should be increased.

E-FEED V2 General Usage and Test Conditions	
Paint Type	Polyester / Epoxy
Auxiliary Air Nozzle Ø (mm)	1,5
Paint Air Nozzle Ø (mm)	1,5
Paint Hose Ø (mm)	11
Paint Hose L (m)	5

#### 3.3.2-Use of E-COAT Series Devices with E-FEED V2

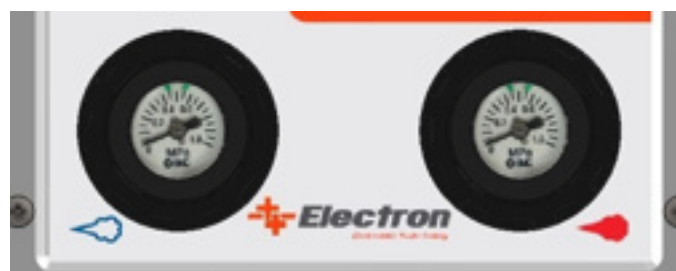
E-COAT Series devices are divided into 3 different control units. These are called E-COAT Pro V2, E-COAT Master and E-COAT Master P in increasing order according to the option levels. While the E-COAT Master is able to keep the total air flow in the powder hose between the E-FEED V2 powder coating injector and the powder spray gun fully automatic at the total air volume set on the screen, this setting can be set on the E-COAT Pro V2. It must be made by the user through the manometer regulators located on the front panel of this device.

##### 3.3.2.1- E-COAT Pro V2 Device

The appearance of the manometer regulators on the front panels of the E-COAT Basic and E-COAT Pro devices enables the adjustment of “Paint Air” and “Auxiliary Air” settings as follows.

The user must make adjustments using the following manometer regulators in order to achieve the correct flow rate in the paint hose. According to the inlet air pressures of the E-FEED V2 injector, the air flowing out of the nozzles and reaching the powder paint hose is given in the tables below.

According to the settings, the flow rate in the powder coating hose can be calculated as the sum of the flow rate of these two air (“Paint Air” and “Auxiliary Air”) and the flow rate for the correct hose can be obtained.



“auxiliary air” and “paint air” pressure setting interface of E-Coat Basic and E-Coat Pro devices. (Left(Blue): “Auxiliary Air”, Right(Red): “Paint Air”)

E-FEED V2 Paint Air (Red Inlet) pressure dependent flow rate and paint transfer rate generated under test conditions can be examined in the table below. The Paint Air Flow column in the table represents the air flow rate from the injector nozzle in the injector to the teflon bushing recess and from there into the powder coating hose. The powder coating should be included in the calculation of the total air flowing through the hose. It should be noted that the air flow rate in the powder coating hose is the sum of the values of “Paint Air“ and “Auxiliary Air”.

Paint Air Pressure [BAR]	Paint Air Flow [lt/dk]	Paint Transfer [gr/dk]
0,6	20	20
0,9	29	56
1,5	39	127
1,9	47	175
2,9	66	255
3,8	82	313
4,5	94	340
4,8	100	348

*E-FEED V2 Paint Air (Main air) Inlet Pressure - Flow Chart*

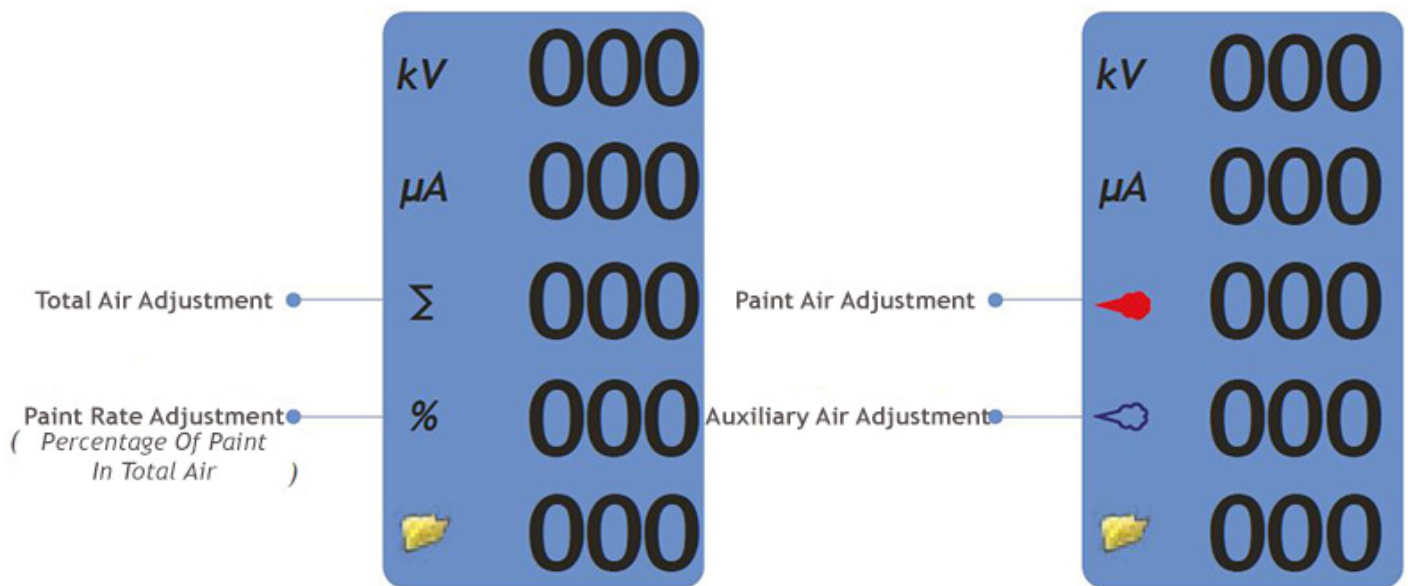
Auxiliary Air Pressure [BAR]	Auxiliary Air Flow [lt/dk]
0,6	31
1	43
1,5	63
2	86
2,5	102
3	124
4	164
5	200

*E-FEED V2 Auxiliary Air Inlet Pressure - Flow Chart*

### 3.3.2.2-E-COAT Master Devices

For making the “Paint Air” and “Auxiliary Air” settings in E-COAT Master devices front panel the digital screenshots are as follows.

E-COAT Master type devices allow the user to operate in a mode where both Auxiliary and Dye Air are adjusted independently and the total air flow in the Powder Coating hose and the paint ratio in this flow are adjusted automatically by the device at the desired levels. When the total air is set to fully automatic mode, the E-COAT Master keeps the total air quantity entered on the screen constant by automatically adjusting the auxiliary air even if the paint ratio is changed. When the air settings are set to stand-alone mode, the E-COAT Master device works in the same way as the Pro and Basic device types, allowing both air to be set independently.



*E-COAT Master Pneumatic Control Interface.  
Total Air Autotune Configuration (Left).  
Independent Air Setting Configuration (Right).*

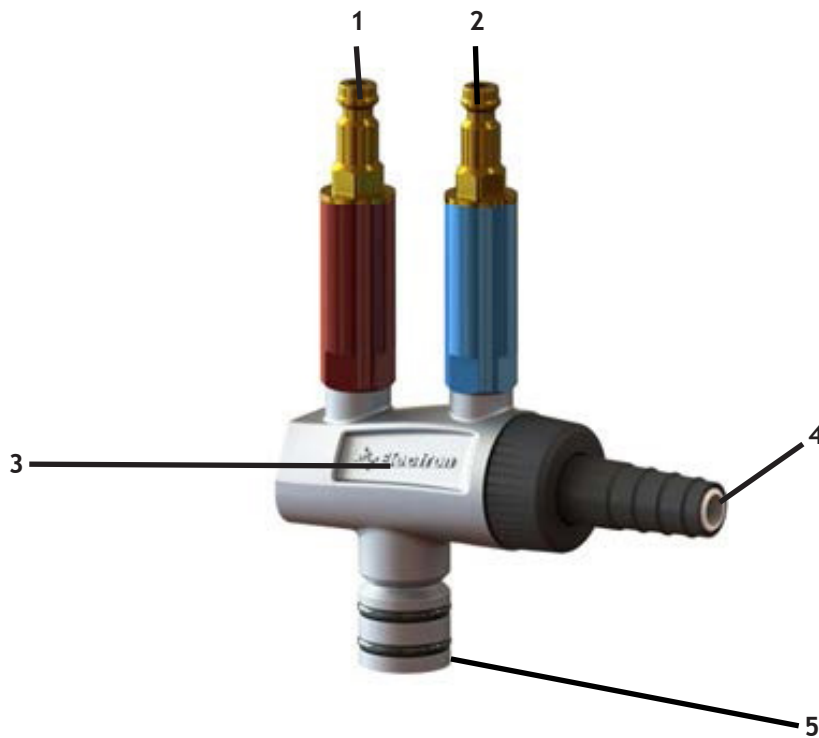
The configuration of the E-COAT Master type devices, the total air and paint ratios according to the total air and paint ratios set when the total air is in fully automatic mode are given in the table below.

*E-FEED V2 Paint Output Quantities according to Total Air / Paint Percentage Settings.*

	Total Air		
	50	75	100
Paint Percentage (%)	Powder Coat Output (g/dk)		
20	5	10	25
40	25	60	130
60	60	165	240
80	130	240	307
100	185	290	360

## 4-CLEANING AND MAINTENANCE

### 4.1-Injector Cleaning



1. Paint Air Filter Module
2. Auxiliary Air Filter Module
3. Injector Body
4. Conductive Hose Connection
5. Paint Inlet / Hopper Connection

E-FEED V2 injector surface cleaning procedure is as follows.

1. Disconnect the injector from the Hopper.
2. Remove the powder coating hose from the Conductive Hose Connector (4).
3. Clean the Hose Connection with oil and water-free compressed air.
4. Thoroughly clean the injector body (3) with oil and water-free compressed air, including the interior of the Paint Inlet / Hopper Connection (5). When pressurized air is applied to the Paint Inlet Area (5), Check to it will exit from the Hose Connection (4).
5. Install the syringe in place on the reservoir and insert the powder coating hose into the Hose Connector (4).

**Note:** If the injector contains heavily molded paint and the surface cleaning is insufficient, the E-FEED V2 must be completely disassembled and thoroughly cleaned. Disassemble all parts using the correct wrenches. Rinse all parts with compressed air. Do not scrape off air-clean and stereotyped remnants. Cellulosic thinner can be used for cleaning these parts if necessary. Do not use acetone, do not scrape solidified residues. Never expose the Filter Modules and the white solid filters contained in them to any liquid or solvent. Clean only with air. Replace if necessary.



1. Filter Module Quick Connect Hose Adapter
2. O-Ring
3. Solid Filter

## 5- POSSIBLE FAILURE AND SOLUTIONS

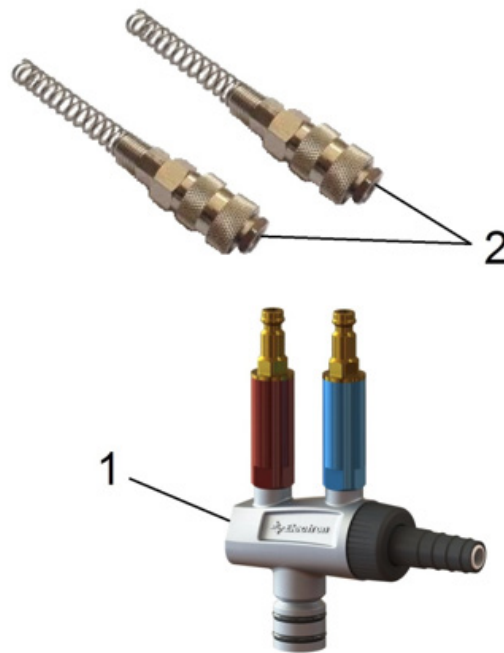
If the Paint Air and Auxiliary Air are supplied by the Powder Coating device, while the powder does not come out of the spray gun, the injector and the paint line between the injector with gun must be checked for blockages.

Failure	Possible Cause	Solution
The paint comes out very little from the gun tip.	<ol style="list-style-type: none"> <li>1. Inlet pressure of paint air is too low.</li> <li>2. There is a blockage in the hose between the injector and the Gun.</li> <li>3. There is blockage in the injector.</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase the paint air value via the powder coating device.</li> <li>2. If there is a break in the hose, straighten it, remove the blockage inside the hose.</li> <li>3. Clean the inside of the injector as described in the Cleaning Section.</li> </ol>
Although the above possible causes have been remedied, the powder coating output is still insufficient.	<ol style="list-style-type: none"> <li>1. Teflon bushing has reached the end of its service life and its inner diameter has been expanded and cannot provide sufficient suction power.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the Teflon bushing with a new one.</li> </ol>
Teflon bushing has completed its life in less time than usual.	<ol style="list-style-type: none"> <li>1. Current usage rates are higher than usual paint output rates in the past or paint type has been changed.</li> <li>2. The injector nozzle has reached the end of its life or is contaminated with a layer-like residue.</li> </ol>	<ol style="list-style-type: none"> <li>1. The more paint is discarded, the teflon bushing as soon as it melts. The newly used paint may be of a more abrasive type. For example; Metallic Paint</li> <li>2. Clean the Injector Nozzle or replace if necessary.</li> </ol>



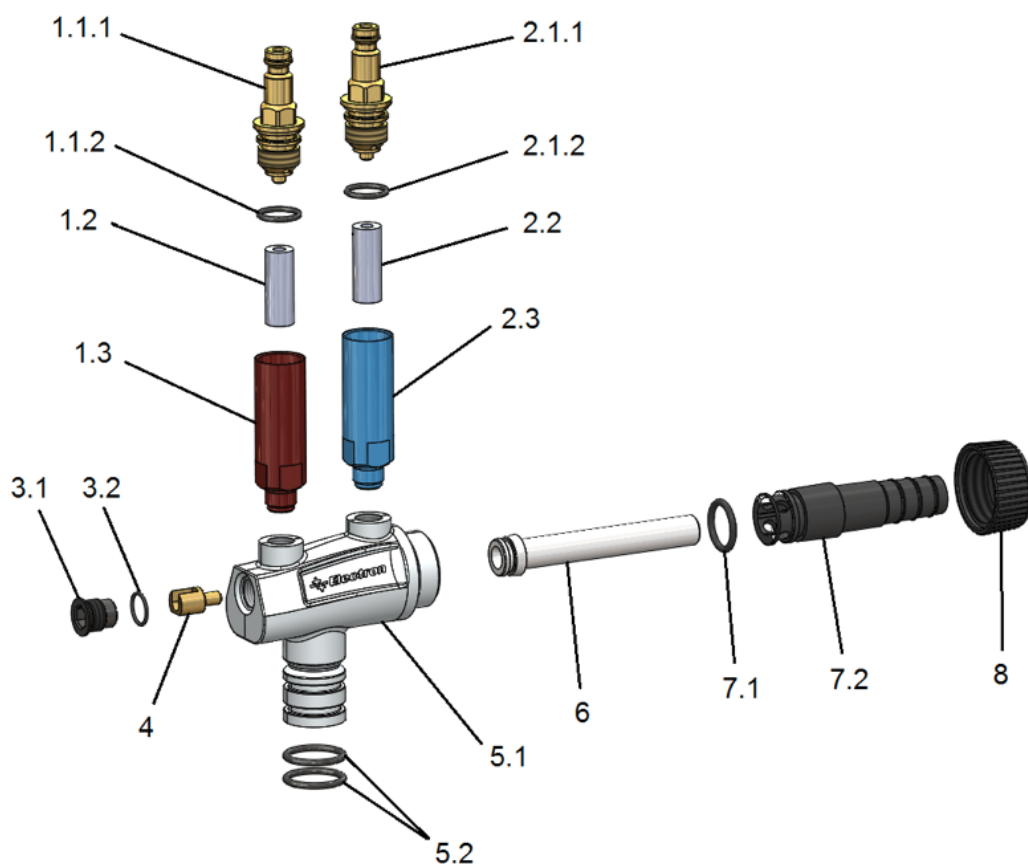
## 6- SPARE PARTS LIST

E-FEED V2 Powder Coating Injector and Fast Pneumatic Connection Fittings and order codes are as follows.



Spare parts list and order codes of E-FEED V2 Powder coating Injector are as follows.

PART	ORDER CODE	PART NAME
1	B07FEEDV2	E-FEED V2 INJECTOR
2	PNBE01005	SPRING BODY QUICK CONNECTION 8X6 MM *** Sold as 1 piece.

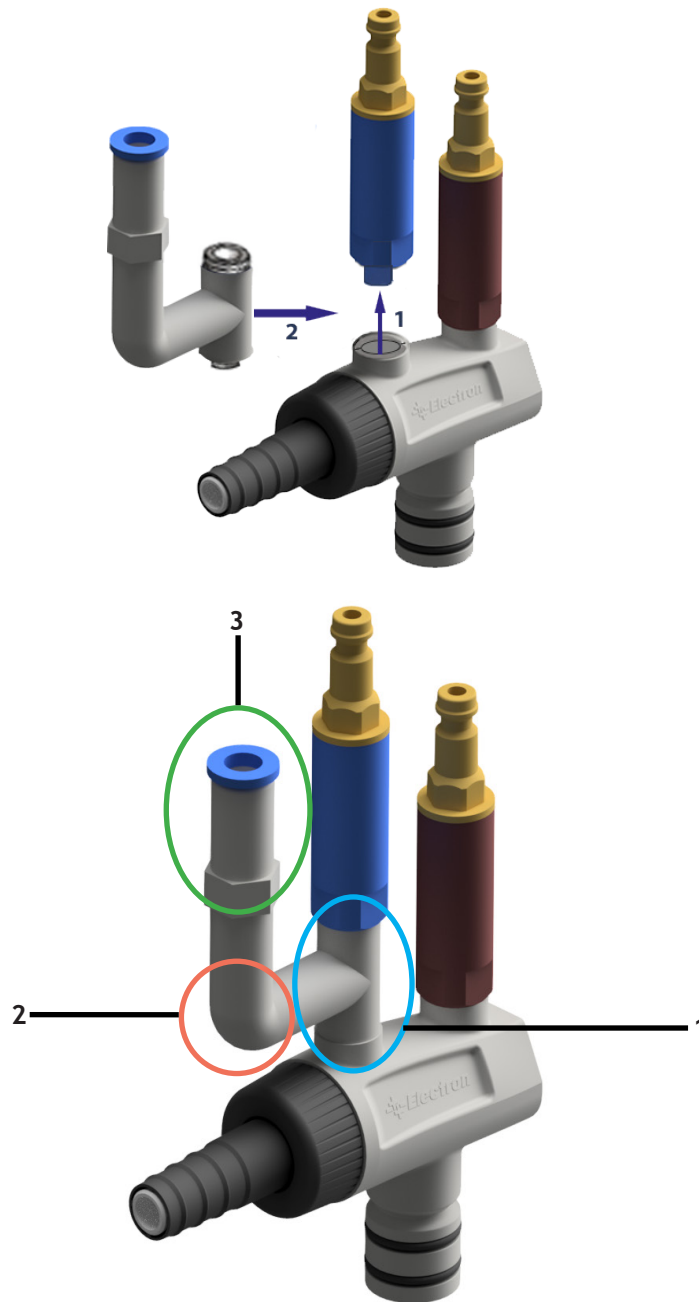




PART	ORDER CODE	PART NAME
1	B07ENJ001	E-FEED V2 MAIN AIR INLET OF FILTER GROUP
1.1	B07ENJ003	E-FEED V2 FEMALE QUICK CONNECTION ADAPTER W/ O-RING
1.1.1	TRTM05012	E-FEED V2 FEMALE QUICK CONNECTION ADAPTER
1.1.2	IZOR01017	O-RING Ø9,5X1,5 NBR
1.2	FRFL08002	E-FEED V2 INJECTOR FILTER
1.3	B07540007	INJECTOR FILTER BEARING 1/8 "RED
2	B07ENJ002	E-FEED V2 AUXILIARY AIR INLET FILTER GROUP
2.1	B07ENJ003	E-FEED v2 FEMALE FAST CONNECTION ADAPTER WITH ORING
2.1.1	TRTM05012	E-FEED v2 FEMALE FAST CONNECTION ADAPTER
2.1.2	IZOR01017	O-RING Ø9,5X1,5 NBR
2.2	FRFL08002	E-FEED V2 INJECTOR FILTER
2.3	B07540006	INJECTOR FILTER BEARING 1/8 "BLUE
3	B07ENJ004	E-FEED V2 INJECTOR REAR PLUG - ORING
3.1	ENEM01057	E-FEED V2 INJECTOR REAR PLUG
3.2	IZOR01002	O-RING Ø9X1 NBR70
4	TRTM05011	E-FEED V2 INJECTOR NOZZLE
5	B07ENJ005	E-FEED V2 INJECTOR BODY WITH ORING
5.1	ENEM03002	E-FEED V2 INJECTOR BODY
5.2	IZOR02004	ORING Ø16X2 SILICON (YELLOW)
6	B07500000	E-FEED V2 TEFLON BUSHING
7	B07ENJ006	E-FEED V2 INJECTOR HOSE FITTING ORIGINAL
7.1	ENEM01058	E-FEED V2 INJECTOR HOSE FITTING
7.2	IZOR02002	O-RING Ø13X2 SILICON (YELLOW)
8	ENEM01059	E-FEED V2 INJECTOR SOMUN

## 6.2- CLEANING MODULE

To install the E-FEED V2 Cleaning module, remove the auxiliary air inlet and insert the lower end of the cleaning module into the empty slot. After doing this, attach the other end to the end of the filter bearing where the auxiliary air intake is made.



PART	ORDER CODE	PART NAME
	B07ENJ010	CLEANING MODULE SET OF E-FEED v2 INJEKTOR
1	PNBE04005	SIDE LEG TEE CHROMATIC PLATED PN. 1/8"
2	PNRD03002	ELBOW TAILED 1/8 "CHROME PLATED
3	PNPE04037	CHECK VALVE SANG-A OUT TYPE 1/8 "Ø8

## 7- SERVICE AND MAINTENANCE TABLE

DATE	MAINT. TYPE -Weekly -Yearly -Service	MAINT. OR SERVICE PERSONNEL	PROCEDURE CHANGED PARTS NOTES	CONTROL SUPERVISOR

## 8- PRODUCT LIFE AND WARRANTY

### 8.1. Product Life

- The economic life of the injector is approximately 10 years.
- This product life is highly dependent on the periodic maintenances and spare part changes in a timely manner. Improper maintenance will lead to lower product life.
- SİSTEM TEKNİK A.Ş. warrants supplying the needed service and the spare parts for the entire product life.

### 8.2. Warranty and Warranty Conditions

- The injector is warranted for production and parts failure for 2 (two) years.
- Spare parts that are changed from the warranty are free-of-charge.
- The parts that are supplied in the system which are not produced by SİSTEM TEKNİK A.Ş. are warranted with their own manufacturers and their own conditions.
- SİSTEM TEKNİK A.Ş. will not be held responsible for the improper usage of the machine or any unauthorized usage. These are not in the warranty.

### 8.3. Operating Conditions

- Read the user manual before using the injector.
- Only legally allowed people can operate the injector.
- Only trained and authorized people can operate the injector.
- SİSTEM TEKNİK A.Ş.'s suggested spare parts should be used at all times.
- Proper maintenance has to be done and the spare parts has to be changed in a timely manner.
- The operational safety has to be assured by the customer; the operators who are not capable of working under safety rules shouldn't be operating the Control Unit.
- All the suggestions and warnings in this manual have to be carefully considered and applied.

### 8.4. Operating Conditions

- Coating device SYSTEM TEKNİK A.Ş. designed by; is produced in accordance with the required safety and quality standards.
- Installation of Coating Device SYSTEM TEKNİK A.Ş. personnel, necessary tests and controls have been made operational.
- Sistem Teknik A.Ş. if deemed necessary; can make changes to achieve better results.
- User's manual has been prepared by; The information and projects contained there in may not be reproduced, in whole or in part, and may not be given to third parties or companies other than the authority of the company where the facility is established.



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