

Operating Instructions and Spare parts list

EasySelect Manual Powder Gun

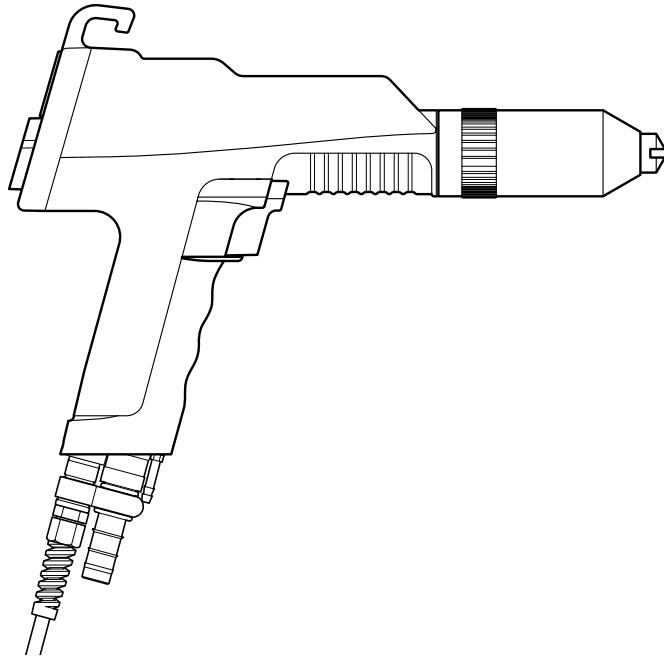


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Safety regulations for electrostatic manual powder spraying equipment

1 Safety symbols (Pictograms)

This chapter sets out the fundamental safety regulations that must be followed by the user and third parties using the powder spraying equipment. These safety regulations must be read and understood before the powder spraying equipment is used.

The following warnings for ITW Gema operating instructions are shown here with their meanings. The general safety precautions must also be followed as well as the regulations in the operating instructions.



Danger!

Danger due to live electricity or moving parts. Possible consequences: Death or serious injury.



Warning!

Improper use of the equipment could damage the machine or cause it to malfunction. Possible consequences: minor injuries or damage to equipment.





Information!

useful tips and other information.

2 Conformity of use

1. The manual powder spraying equipment is built exclusively for the normal application of powder coating according to current recognized technological and safety regulations.
2. Any other use is considered as non-conform. The manufacturer is not responsible for damage resulting from improper use of this equipment; the end-user alone is responsible. If the manual powder spraying equipment is to be used for other purposes or other substances outside of our guidelines then ITW Gema AG should be consulted.
3. Observance of the operating, service and maintenance instructions specified by the manufacturer is also part of conformity of use. The hand held powder spraying equipment should only be used, maintained and started up by trained personnel who are informed about and are familiar with the possible hazards involved.
4. Unauthorized modifications to powder spraying equipment exempts the manufacturer from any liability from resulting damage.
5. The relevant accident prevention regulations, as well as other generally recognized safety regulations, occupational health and structural regulations are to be observed. (see appendix "Standards")
6. Furthermore the country-specific safety regulations must be observed.

Explosion protection	Type of protection	Temperature class
  II 2 D	IP54	T6 (zone 21) T4 (zone 22)

3 Safety Technical Information

3.1 General information

The powder spraying equipment from ITW Gema is safe to operate and is built according to the latest technological specifications. This equipment can be dangerous if it is not used for its specified purpose. It should also be noted that because of this there exists:

- A danger to life and limb of the user or third party.
- A danger of damage to the equipment and other machinery belonging to the user.
- A hazard to the efficient operation of the equipment.

1. The powder spraying equipment should only be started up and used once the operating instructions have been carefully studied.
2. Before every Start-up check the equipment for operational safety (regular servicing is essential)!
3. Safety regulations BGI 764 and VDE regulations DIN VDE 0147, Part 1, must be observed for safe operation.
4. Safety precautions specified by local legislation must be observed.
5. The plug must be disconnected before the machine is opened for repair.
6. Only original ITW-Gema replacement parts should be used, because the explosion protection will also be preserved that way. Damage caused by other parts is not covered by guarantee.
7. If ITW-Gema powder spraying equipment is used in conjunction with machinery from other manufacturers then their safety regulations must also be taken into account.
8. Caution must be exercised when working with a powder/air mixture! A powder/air mixture in the right concentration is flammable! No smoking during powder coating.
9. As a general rule for all powder spraying installations, persons with pacemakers should never enter high voltage areas or areas with electromagnetic fields. Persons with pacemakers should not enter areas with powder spraying installations!



Warning!

We emphasize that the customer themselves is responsible for safe operation of equipment. ITW-Gema is in no way responsible for any resulting damages.

3.2 Safety conscious working

Each person responsible for the assembly, start-up, operation, service and repair of powder spraying equipment must have read and understood the operating instructions and the "Safety" chapter. The operator must ensure that the user has had the appropriate training for powder spraying equipment and is aware of the possible sources of danger.

The control devices for the spray guns must only be set up and used inside of the zone 22, and the spray guns should be used in the zone 21.

3.3 Individual safety regulations for the operating firm and/or operating personnel

1. Any operating method which will negatively influence the technical safety of the powder spraying equipment is to be avoided.
2. The operator is under obligation to check the powder spraying equipment at least once a month for signs of external damage, defects or changes (including the operating characteristics) which could influence safety and to report them immediately.
3. The operator is obliged to check that the powder spraying equipment is only operated when in satisfactory condition.
4. As far as is necessary, the operating firm must ensure that the operating personnel wear protective clothing (e.g. facemasks).
5. The operating firm must guarantee cleanliness and an overview of the workplace with suitable instructions and checks in and around the powder spraying equipment.

3.4 Notes on special types of hazard

3.4.1 Power

High voltage equipment must not be opened - the plug must first be taken out – otherwise there is the danger of electric shock.

3.4.2 Powder

Powder/air mixtures can be ignited by sparks. There must be sufficient ventilation in the powder coating booth. Powder lying on the floor around the powder spraying device is a potentially dangerous source of slipping.

3.4.3 Static charges

Static charges can have the following consequences: Charges from people, electric shocks, sparking. Charges from objects must be avoided – see Earthing

3.4.4 Earthing

All electricity conducting parts and machinery found in the workplace (according to DIN VDE 0745, Part 102) must be earthed 1.5 m either side and 2.5 m around each booth opening. The earthing resistance of each piece of machinery must amount to 1 M Ω . The resistance must be tested on a regular basis. The condition of the machinery surroundings as well as the suspension gear must ensure that the machinery remains earthed. If the earthing of the machinery includes the suspension arrangements then these this must constantly be kept clean in order to keep the necessary conductivity. The appropriate measuring devices must be kept ready in the workplace in order to carry out the testing.

3.4.5 Compressed air

When there are to be longer pauses or stand-still times between working then the powder spraying equipment should be drained of compressed air. There is a danger of injury when pneumatic hoses are damaged and from the uncontrolled release and improper use of compressed air.

3.5 Prohibition of unauthorized conversions and modifications to equipment

All unauthorized conversions and modifications to powder spraying equipment are forbidden for safety reasons.

The powder spraying equipment should not be used if damaged, the faulty part must be immediately replaced or repaired. Only original ITW-Gema replacement parts should be used. Damage caused by other parts is not covered by guarantee.

Repairs must only be carried out by specialists or in ITW-Gema workshops. Unauthorized modifications can lead to personal injury and damage to machinery. The ITW Gema AG guarantee would no longer be valid.

4 Safety requirements for electrostatic powder coating

1. This equipment is dangerous if the instructions in this operating manual are not followed.
2. All electrostatic conductive parts and in particular the machinery, within 5m of the coating equipment must be earthed.
3. The floor of the coating area must conduct electricity (normal concrete is generally conductive).
4. The operating personnel must wear electricity conducting footwear (e.g. leather soles).
5. The operating personnel should hold the gun with bare hands. If gloves are worn, these must also conduct electricity.
6. The supplied earthing cable (green/ yellow) must be connected to the earthing screw of the electrostatic powder spraying hand appliance. The earthing cable must have a good metallic connection with the coating booth, the recovery unit and the conveyor chain and with the suspension arrangement of the objects.
7. The electricity and powder supply to the hand guns must be set up so that they are fully protected against heat and chemical damage.
8. The powder coating device may only be switched on, once the booth has been started up. If the booth cuts out then the powder coating device must be switched off.
9. The earthing of all electricity conducting devices (e.g. hooks, conveyor chains) must be checked on a weekly basis. The earthing resistance must amount to $\leq 1 \text{ M}\Omega$.
10. The control device must be switched off if the hand gun is cleaned or the nozzle is changed. The control device is also to be switched off when filling powder, so that ex atmosphere is not produced unnecessarily.
11. When working with cleaning agents there may be a risk of hazardous fumes. The manufactures information must be observed when using such cleaning agents.
12. The manufacturers instructions and the applicable environmental requirements must be observed when disposing of powder lacquer and cleaning agents.
13. If any part of the spray gun is damaged (broken parts, tears) or missing then it should not be used.
14. For your own safety, only use accessories and attachments listed in the operating instructions. The use of other parts can lead to risk of injury. Only original ITW-Gema replacement parts should be used.
15. Repairs must only be carried out by specialists and under no circumstances should they be carried out in the operating area. All unauthorized conversions and modifications may lead to injury or damage to machinery. The former protection must not be reduced.
16. Conditions leading to dangerous levels of dust concentration in the powder spraying booths or in the powder spraying areas must be avoided. There must be sufficient technical ventilation available, to prevent a dust concentration of more than 50% of the lower explosion limit (UEG) (UEG = max. permissible powder/air concentration) If the UEG is not known then a value of 20 g/m^3 should be used.

5 A summary of the rules and regulations

The following is a list of relevant rules and regulations which are to be observed:

5.1 Guidelines and Regulations, German professional association

BGV A1	General Regulations.
BGV A2	Electrical equipment and material.
BGI764	Electrostatic coating
BGR132	Guidelines for the avoidance of the dangers of ignition due to electrostatic charging (Guideline "Static Electricity")
VDMA 24371	Guidelines for electrostatic coating with synthetic powder ¹⁾ - Part 1 General requirements. - Part 2 Examples of use.

5.2 Leaflets

ZH 1/310	Leaflet on the use of tools in locations where there is danger of explosion. ¹⁾
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5.3 European Standards EN

RL94/9/EG	The approximation of the laws of the Member States relating to apparatus and safety systems for their intended use in potentially explosive atmospheres
EN 292-1 EN 292-2	Machine safety ²⁾
EN 50 014 to EN 50 020 identical DIN VDE 0170/0171	Electrical equipment for locations where there is danger of explosion ³⁾
EN 50 050	Electrical apparatus for potentially explosive atmospheres - Electrostatic hand-held spraying equipment ²⁾
EN 50 053 Part 2	Requirements for the selection, installation and use of electrostatic spraying equipment for flammable materials - Hand-held electrostatic powder spray guns ²⁾
PR EN 12981	Coating plants - Spray booths for application of organic powder coating material - Safety requirements
EN 60529 identical DIN 40050	IP-Type protection: contact, foreign bodies and water protection for electrical equipment. ²⁾
EN 60 204 identical DIN VDE 0113	VDE Regulations for the setting up of high-voltage electrical machine tools and processing machines with nominal voltages up to 1000 V ³⁾

5.4 VDE (Association of German Engineers) Regulations

DIN VDE 0100	Regulations for setting-up high voltage equipment with nominal voltages up to 1000 V. ⁴⁾
DIN VDE 0105	VDE Regulations for the operation of high voltage equipment. ⁴⁾
Part 1	General regulations.
Part 4	Supplementary definitions for stationary electrical spraying equipment.
DIN VDE 0147	Setting up stationary electrostatic spraying equipment ⁴⁾
Part 1	
DIN VDE 0165	Setting up electrical equipment in locations where there is a danger of explosion. ⁴⁾

Source:

¹⁾ Carl Heymanns Verlag KG, Luxemburger Strasse 449, 5000 Köln 41, or from the appropriate employers association.

²⁾ Beuth Verlag GmbH, Burggrafenstrasse 4, 1000 Berlin 30

³⁾ Generalsecretariat, Rue Bréderode 2, B-1000 Brüssel, or the appropriate national committee.

⁴⁾ VDE Verlag GmbH, Bismarckstrasse 33, 1000 Berlin 12

EASYSELECT MANUAL POWDER GUN

The very light EasySelect Manual Powder gun with an integrated High-voltage cascade has very good penetration and because of the patented, vented electrode a high, and constant transfer efficiency. The gun can be easily dismantled, making it maintenance and repair-friendly.

SCOPE OF DELIVERY:

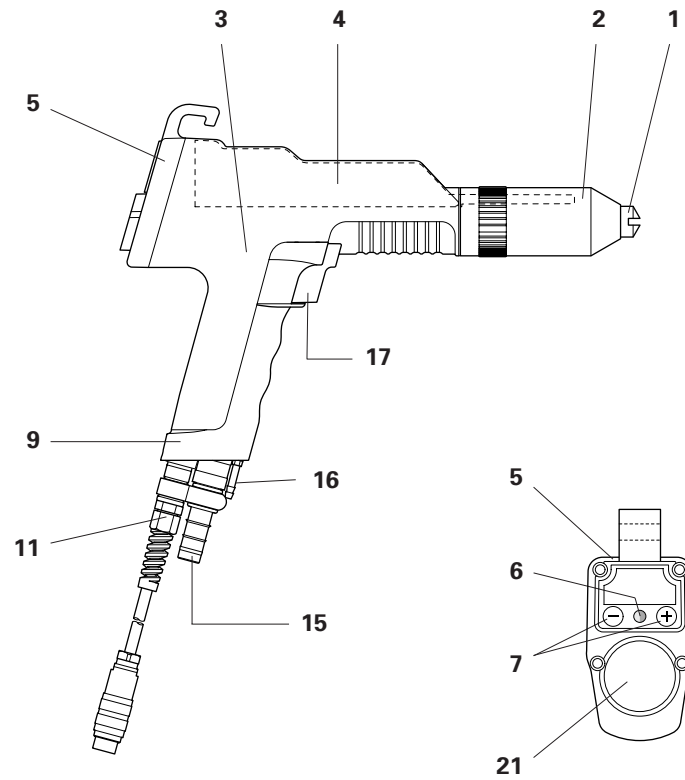
- EasySelect Manual Powder gun
- Powder hose
- Rinsing air hose
- 40 mm Nozzle holder
- \varnothing 16, \varnothing 24, and \varnothing 32 mm vented deflector plates
- Deflector plate holder with electrode, and nozzle
- Flat jet nozzle with electrode, and holder
- Cable binding with Velcro straps
- Gun cleaning brush
- Spare parts set

TECHNICAL DATA FOR EASYSELECT MANUAL POWDER GUN

Nominal input voltage:	0–12 V DC (depending on mode)
Nominal output voltage:	80 kV
Polarity:	Negative (Option - Positive)
Max. Output current:	150 μ A
High-voltage display:	2 Light emitting diodes - LEDs (for displaying 3 modes, and gun triggering)
Flash protection:	
Approval:	

Connection: The EasySelect must only be connected to the EasyTronic Control unit.

EASYSELECT MANUAL POWDER GUN



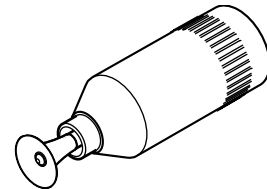
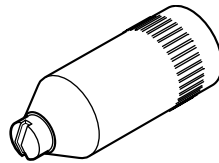
- | | |
|-----------------------|--------------------------------|
| 1 Spray Nozzle system | 9 Grip |
| 2 Threaded sleeve | 11 Powder gun cable connection |
| 3 Shaft | 15 Powder hose connection |
| 4 H-V cascade | 16 Rinsing air hose connection |
| 5 End plate with hook | 17 Trigger |
| 6 LEDs | 21 Powder tube knee |
| 7 Remote control keys | |

Figure 1

The EasySelect Manual gun can be fitted with following Spray nozzles:

40 mm Nozzle

Flat jet nozzle with vented central electrode

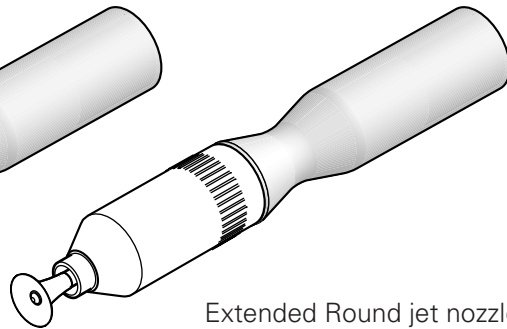
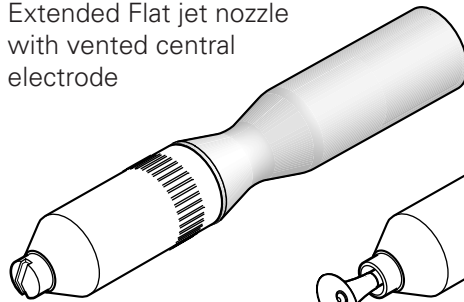


Round jet nozzle with vented deflector plate and vented central electrode

150 mm Nozzle

(does not belong to the standard set, available separately – see Spare parts list)

Extended Flat jet nozzle with vented central electrode



Extended Round jet nozzle with vented deflector plate and vented central electrode

300 mm Nozzle

(not shown - does not belong to the standard set, available separately – see Spare parts list)

Figure 2

1. HIGH-VOLTAGE GENERATION

The control unit supplies DC voltage to the gun. This is fed through the powder gun cable (11) to the high-voltage generation section (4). The integrated electronics (c) in the gun generates an alternating current from the direct current. This alternating current is stepped up in the multiplier (d) to the rectified high-voltage required for the application. The High-voltage is now fed to the electrode (e) in the spray nozzle (compare Figs 5 and 6).

The coating mode chosen - Flat parts, Complicated parts, Over-spraying - is indicated through a red, and a green LED (Light emitting diode).

2. SWITCHING

In addition to the low voltage a switching current is fed into the gun through the gun cable.

If the gun trigger (17) is pulled, a reed switch closes the current circuit. The control unit switches the modulated low voltage, powder conveying, and the rinsing air on.

The reed switch complies with the safety regulations of all recognized standards.

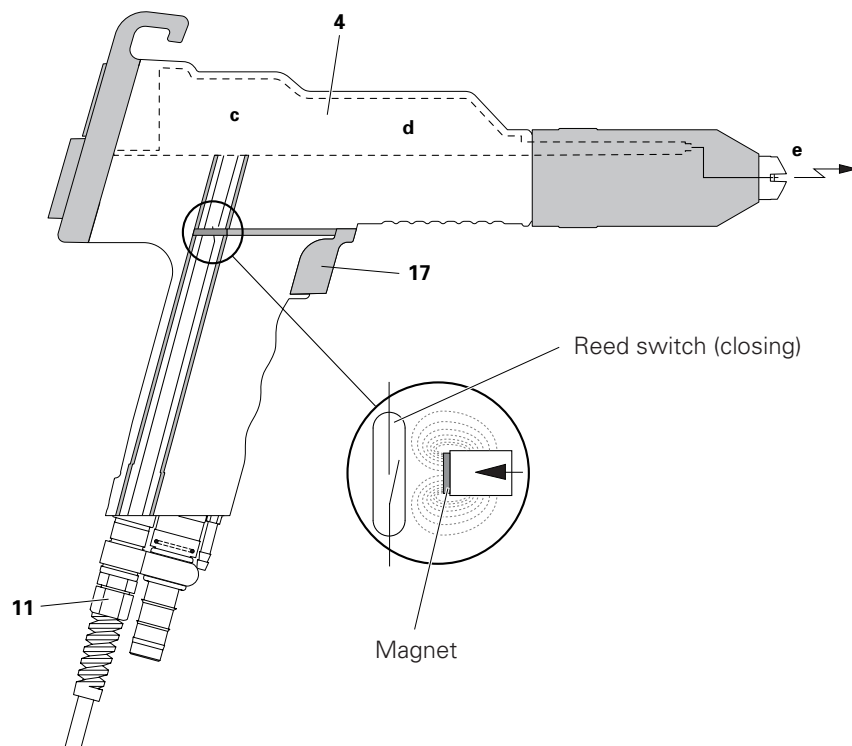


Figure 3

3. POWDER FLOW AND RINSING AIR

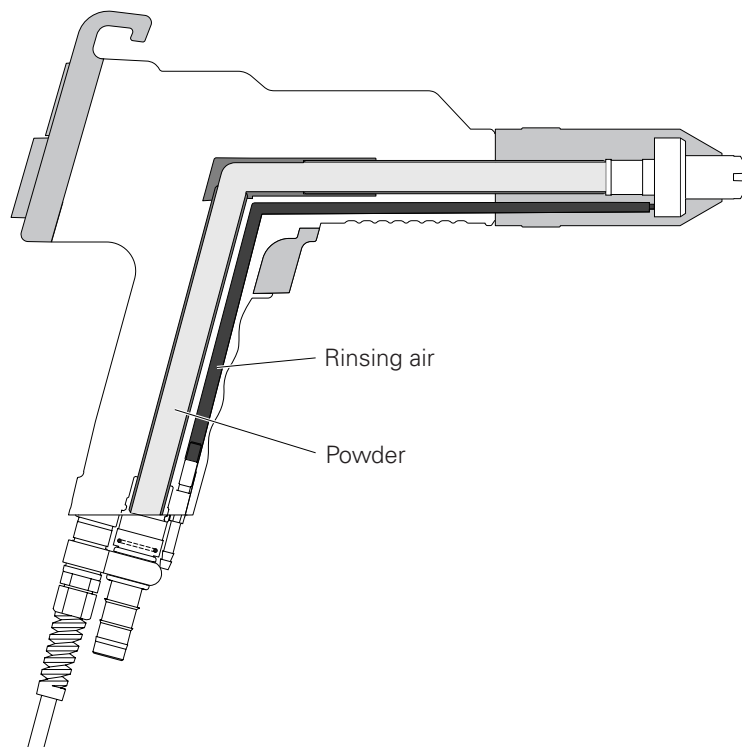


Figure 4

The rinsing air is connected to the corresponding connection on the rear of the control unit when using vented spray nozzles (see Control unit Operating Instructions).

The function of the spray nozzles are described in the corresponding section (see page 6).

4. FLAT JET NOZZLE WITH VENTED CENTRAL ELECTRODE

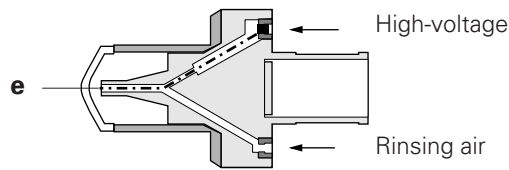


Figure 5

The vented Flat jet nozzle serves to spray, and charge the powder. The powder cloud acquires an oval spray profile from the slotted opening. The powder is charged by means of a central electrode. The High-voltage, generated in the powder gun is fed through the black contact ring of the nozzle holder to the central electrode.

To avoid powder sintering on the electrode, it is rinsed with compressed air during spraying. The rinsing air is fed through the small hole in the black contact of the nozzle holder in the electrode holder.

The adjustment of the rinsing air on the control unit is explained in the "Operating Instructions of the Control unit").

5. ROUND JET NOZZLE WITH VENTED DEFLECTOR PLATE AND VENTED CENTRAL ELECTRODE

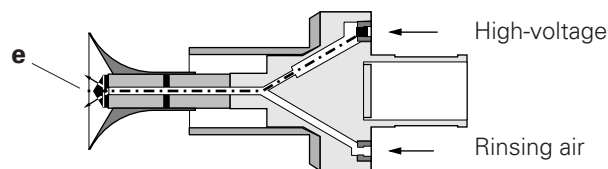


Figure 6

In order to give the powder stream leaving the powder gun the shape of a powder cloud, a deflector plate is used. The powder is charged by means of a central electrode. High-voltage is generated in the powder gun, and is fed through the black contact ring of the nozzle holder to the central electrode.

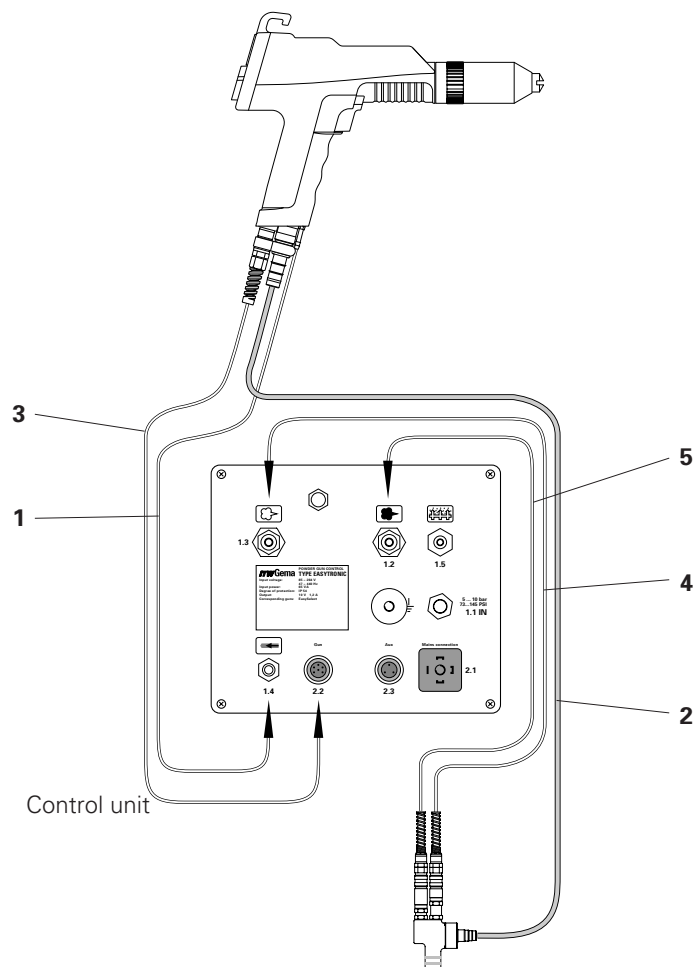
Because powder sinters on the back of the deflector plate it must be rinsed with air. Rinsing air is fed through the small hole in the black contact ring of the nozzle holder in the electrode holder and so deflected that it flows over the back surface of the deflector plate. The strength of the rinsing air is dependent on the powder, and its sintering properties.

Regulation of the rinsing air on the control unit is explained in the "Operating Instructions of the Control unit").

PREPARATION FOR START UP

A) CONNECTING THE EASYSELECT POWDER GUN

1. Connect the gun plug to the control unit (see Control unit Operating Instructions)
2. Connect the rinsing air hose from the control unit to the gun
3. Connect the powder hose from the powder gun to the injector



- | | |
|--------------------|--------------------------|
| 1 Rinsing air hose | 4 Supplementary air hose |
| 2 Powder hose | 5 Conveying air hose |
| 3 Powder gun cable | |

Figure 7

B) FUNCTION CHECK

If a fault is present, see "Troubleshooting Guide", page 19.
(also consult the Control unit Operating Instructions)

1. Switch on the control unit
2. Press the desired application key on the control unit.
(See also the Control unit Operating Instructions).
3. Pick the gun up and point it at a **grounded** object, at a distance of approx. 20 cm.
4. Press the gun trigger
 - The LED No. 8 for the High-voltage display illuminates on the control unit. High-voltage is present in the EasySelect Manual Powder gun.
 - The High-voltage can be set with the corresponding keys (See also the Control unit Operating Instructions).
5. Press the gun trigger and select the powder output and total air volume.
 - The display indicates the powder output and total air volume.
6. Press the corresponding key for the rinsing air on the control unit (according to the nozzle used).

When all the checks are positive, the gun is ready for operation. When a malfunction occurs the cause of fault can be determined with the aid of the "Troubleshooting Guide" page 19.

START UP**A) SETTING THE POWDER OUTPUT AND POWDER CLOUD**

The powder output is dependent on the powder, and the total air volume.

SETTING THE TOTAL AIR VOLUME

1. Switch on the control unit
2. Set the Total air volume

The total air volume is dependent on the length of the powder hose, the number of turns of the hose, the hose diameter, the conveying air pressure, and the supplementary air. The "Functioning of the injectors and the influence of supplementary air" is described in the EasyFlow Operating Instructions.

The set value for the total air volume can be left as it is, as long as the same powder hose is used. If the hose length and/or the hose diameter are changed, then the total air volume must be reset.

SELECT THE POWDER OUTPUT VOLUME

3. Select the powder output volume in relation to the desired coating thickness.


The selection is done with the aid the keys **+** and **-**, either on the control unit or on the remote control keys on the back of the gun. Before starting, it is recommended to use a standard setting of 60%. The total air volume is held constant automatically.

4. Check the fluidizing of the powder
5. Point the gun into the booth and press the gun trigger


SELECT ELECTRODE RINSING

6. Select the correct electrode rinsing

When using Flat jet nozzles

- Press the key with the corresponding symbol . The LED of the corresponding key illuminates.

When using Round jet nozzles with vented deflector plate

- Press the key with the corresponding symbol . The LED of the corresponding key illuminates.

7. Adjust the powder cloud on a test piece

When using Flat jet nozzles

- Loosen the threaded sleeve by turning it approx. 45°, so that the Flat jet nozzle (or extension) can barely be turned
- Turn the Flat jet nozzle in the desired axial direction
- Retighten the threaded sleeve


When using Round jet nozzles with vented deflector plate

- Change the deflector plate (ø 16, 24, and 32 mm) are supplied with the powder gun

B) START UP - POWDER COATING




Make sure that all electrically conductive parts within a 5 m radius around powder coating stand are grounded!

1. Switch on the control unit.
2. Pick up the gun and hold it in the powder coating booth, however, do not point it at the object to be coated.
3. Choose the application setting
Press the corresponding application key  on the control unit. The LED of the corresponding key illuminates.
4. Press the gun trigger
5. Set the High-voltage:
High-voltage control on the LED 8 on the control unit
6. Wait until the first powder surge has left the gun.
7. The workpieces can now be coated.

C) REMOTE CONTROL THROUGH THE GUN

The different functions can be remotely controlled with aid of the keys **+** and **-** on the back of the gun:

1. Select the application settings
Press the Keys  on the powder gun **simultaneously**.
Check by observing the LED display on the powder gun:
RED = Flat parts
GREEN = Complicated parts
RED/GREEN (alternating) = Spraying over
2. Change the powder output
Press the Key **+** or **-** on the powder gun. The powder output is increased or decreased correspondingly.

D) SHUTDOWN

1. Release the gun trigger.
2. Switch off the control unit
The settings for High-voltage, rinsing air and powder output remain in the memory.
3. For work interruptions such as lunch breaks, overnight, etc., disconnect the compressed air supply.

E) RINSING THE POWDER HOSE

Before long idle periods residual powder must be removed from the powder hose as follows:

1. Remove the powder hose from the hose connection on the injector (see "EasyFlow Injector" Operating Instructions)
2. Point the manual gun in to the booth

(cont.)

3. Blow the powder hose through with compressed air
The powder hoses can be cleaned well when a foam rubber cube, from the packing material, is blown through with compressed air. Our specially designed compressed air gun (**Order No. 346 055**) should be used for this purpose. Foam cubes can be ordered in sheets of 100 pieces (**Order No. 241 717**).
4. Reconnect the powder hose to the hose connection on the injector.

MAINTENANCE SCHEDULE

Regular, and conscientious maintenance will increase the operating life of the unit and ensure a constant coating quality longer!

A) DAILY E MAINTENANCE:

- 1a Clean the gun, see below

B) WEEKLY MAINTENANCE:

- 1b Clean the injector, and gun, and if present the powder hopper. (Only fill the powder hopper shortly before starting the coating operation).
- 2b Check the grounding connections of the control unit with the powder coating booth, the workpiece hangers or the chain conveyor .

CLEANING AND REPAIRS

A) CLEANING

Frequent cleaning the powder gun serves to ensure the quality of the coating.



IMPORTANT

Switch off the control unit, and disconnect the gun plug (3 - Fig. 7) before cleaning the powder gun.

The compressed air used for cleaning must be free from oil and water.

Daily:

1. Blow off the outside of the gun and wipe clean etc.

Weekly:

2. Remove the powder hose from the connection.
3. Remove the spray nozzle from the powder gun and clean.
4. Blow the gun through with compressed air, from the connection in the direction of flow.
5. Clean the gun tube (Fig. 11) with the brush supplied.
6. Blow the gun through with compressed air again.
7. Reassemble the gun and connect.
8. Blow the powder hose through and clean.

B) DISMANTLING THE GUN:



The gun should only be dismantled when this is made necessary by a defect or contamination.

The gun should be dismantled only so much to make the desired parts accessible.

The control unit must be switched off and the gun plug disconnected before cleaning the powder gun.

The High-voltage cascade (4) must not be dismantled, as it is assembled with a special process. Should it be defect or the shaft is broken, then the complete shaft (3) must be sent to an authorized ITW Gema Service Centre.

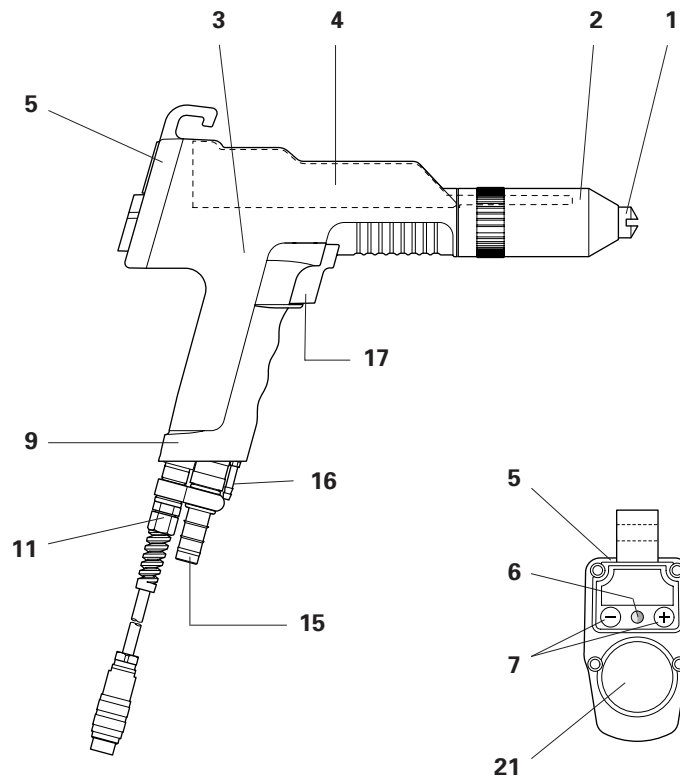


Figure 8

b) Dismantling the gun (cont.):



Figure 9

b) Dismantling the gun (cont.):



Figure 10

b) Dismantling the gun (cont.):



Special box spanner
Order no. 381993

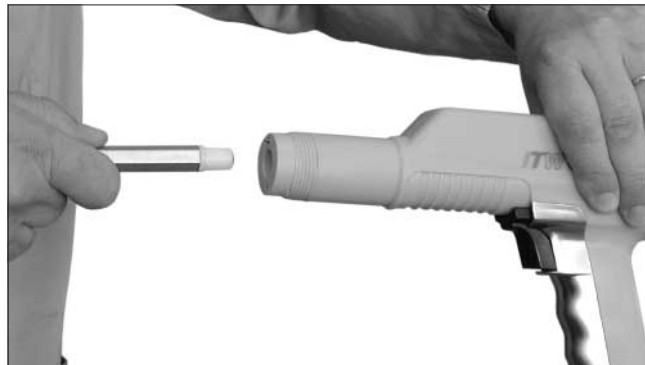
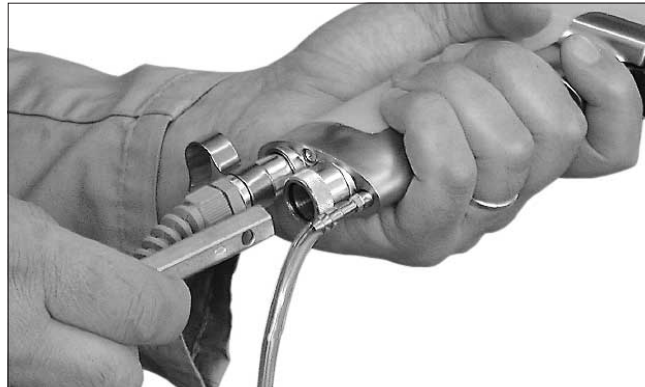


Figure 11

b) Dismantling the gun (cont.):



C) ASSEMBLING THE POWDER GUN

- The assembly of the gun is carried out in the reverse order to that illustrated above.
- It is to be noted, thereby, that the powder tube is to be pressed in up to the stop.



Figure 12

D) REPAIRS ON THE POWDER GUN

Except for the replacement of possibly defect parts, there are hardly any repairs to be made. Replacement of the cascade, and the repair of the powder gun cable connection (**11** - Fig. 8) is **only** permitted by an authorized ITW Gema Repair Centre. Contact your ITW Gema representative.

E) CLEANING THE SPRAY NOZZLE

Daily or after every shift:

- Clean the spray nozzle externally with compressed air. Solvents or other liquids can also be used for cleaning the spray nozzle.

 **IMPORTANT**

Only use a cloth dipped in solvent for cleaning, never immerse the parts in solvents!

- Check the seating of the spray nozzle: Make sure that the threaded sleeve is always well tightened. If the spray nozzle is only loosely fitted, the danger exists that the High-voltage from the powder gun can flash over, which will inevitably lead to damage to the powder gun.

Weekly:

- Remove the spray nozzle and clean inside with compressed air: If sintering has occurred, then this must be removed.

Monthly:

- Check the spray nozzle for wear:

Flat jet nozzles must be replaced when :

- the spray pattern is no longer a regular oval shape.
- there are deep grooves in the nozzle slot, or the wall thickness is no longer recognizable.
- the wedge of the electrode holder worn away.

Nozzles with a deflector plate:

- when the wedge of the electrode holder is worn away, the electrode holder is to be replaced.

TROUBLESHOOTING GUIDE

The Diagnostic LEDs 1 - 7 on the control unit illuminate green when switching on, and LED 8 remains dark. It illuminates red, only when the powder gun trigger is pulled.

Fault	Causes	Remedies
LED 5 illuminates red	<ul style="list-style-type: none"> – The gun is not connected – Gun plug, gun cable or gun cable connection defect – Remote control on the gun defect 	<p>Connect the gun</p> <p>Replace corresponding part or send in for repair</p> <p>Replace remote control (gun cover)</p>
LED 6 illuminates red	Solenoid valve for rinsing air of the Flat jet nozzle defect	Replace solenoid valve spool
LED 7 illuminates red	Solenoid valve for rinsing air of the Round jet nozzle defect	Replace solenoid valve spool
LED 8 remains dark, in spite of the gun trigger being pulled and the LED 5 illuminates green.	Gun plug, gun cable or gun cable connection defect	Replace corresponding part or send in for repair
The gun LED remains dark, in spite of the gun trigger being pulled and the LED 8 illuminates red.	<ul style="list-style-type: none"> – Gun plug, gun cable or gun cable connection defect – Remote control on the gun defect 	<p>Replace corresponding part or send in for repair</p> <p>Replace remote control (gun cover)</p>
Powder does not adhere to the workpiece, in spite of the gun trigger being pulled and the gun sprays powder, the gun LED, and the LED 8 illuminate.	<ul style="list-style-type: none"> – High-voltage and current deactivated – High-voltage cascade defect – the workpieces are poorly grounded 	<p>Press the selection button (application button)</p> <p>Send the gun in for repair</p> <p>Check the grounding, see also "Directions of Use"</p>
		(cont.)

TROUBLESHOOTING GUIDE (CONT.)

Fault	Causes	Remedies
<p>The gun does not spray powder, in spite of the control unit being switched on, and the trigger is pressed.</p>	<p>No compressed air present</p> <ul style="list-style-type: none"> – Conveying vacuum too low – Injector, check valve or nozzle on the injector, powder hose or gun clogged – Sleeve in the injector worn or not present – Sleeve in the injector clogged – Fluidizing does not function <p>No conveying air:</p> <ul style="list-style-type: none"> – Reduction valve defect – Solenoid valve defect – Electronic card defect 	<p>Connect the equipment to the compressed air</p> <p>Increase the powder output and/or the total air volume on the control unit</p> <p>Clean the corresponding part</p> <p>Replace or insert</p> <p>Replace</p> <p>Check the fluidizing</p> <p>Replace</p> <p>Replace</p> <p>Send in for possible repair</p>

SPARE PARTS LIST**ORDERING SPARE PARTS**

When ordering spare parts for powder coating equipment, please indicate the following specifications:

1. Type, and serial number of your powder coating equipment
2. Order number, quantity, and description of each spare part

Example:

1. **Type** EasySelect **Serial no:** xxxx xxxx
2. **Order no:** 232 670, 5 pieces, O-ring - \varnothing 13.1 x 1.6 mm

When ordering cable or hose material the lengths required must also be given.

The spare part numbers of yard/metre ware always begins with 1.. ... and are always marked with an * in the spare parts list.

Wear parts are always marked with a #.

All dimensions of plastic powder hoses are quoted as external (o/d), and internal (i/d) diameters :

e.g. \varnothing 8 / 6 mm = 8 mm outside diameter (o/d) / 6 mm inside diameter (i/d).

EASYSELECT MANUAL GUN

REMARKS:

1. Only parts those which the customer can replace himself, without problems, are given in the Spare parts list.
2. Should a part of the shaft (3) be broken or the High-voltage cascade in the shaft is defect, then the complete shaft must be sent in for checking and repair. The High-voltage cascade is fitted in a special process and should, therefore, never be dismantled by the customer.
3. If the powder gun cable (11) is defect, then the complete cable is to be sent in for repair.

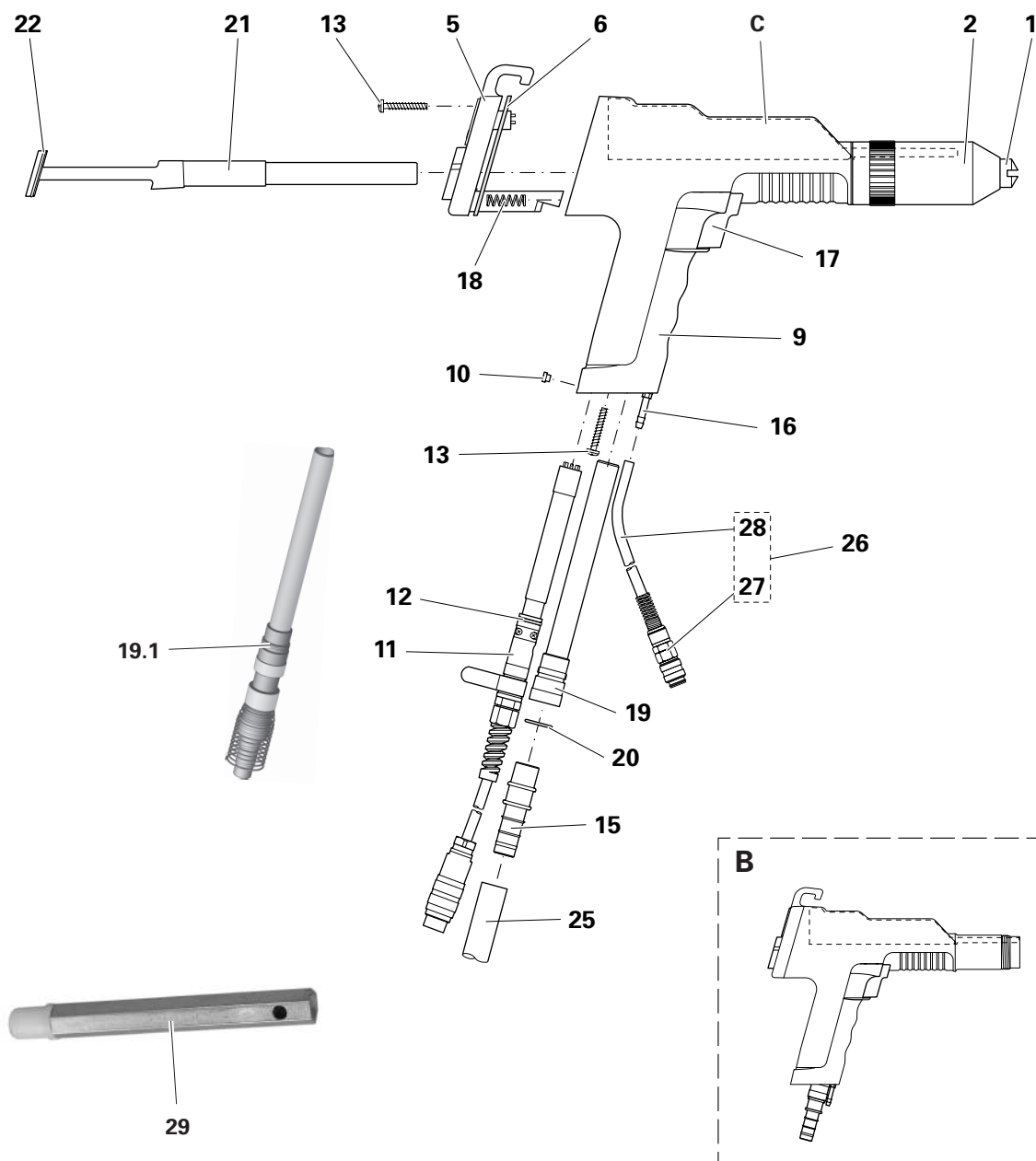


Figure 13

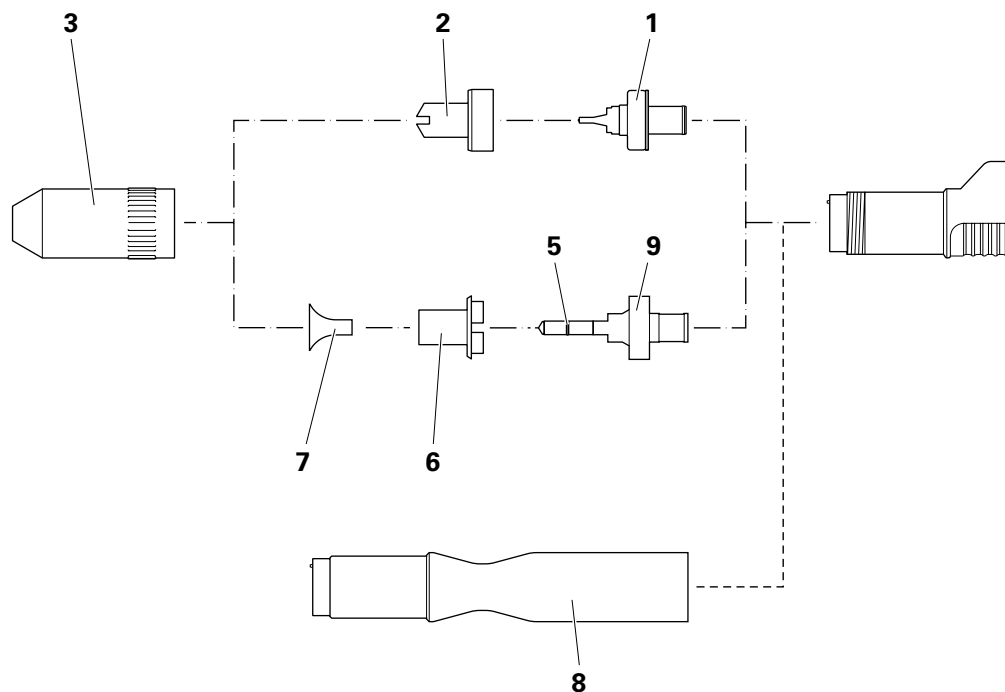
EASYSELECT MANUAL GUN

A	EasySelect Manual Powder gun - complete Negative polarity, incl.: Powder gun cable - 6 m, Rinsing air hose - 6 m, Flat jet nozzle, Brush, and parts set, without powder hose	380300
B	EasySelect Manual Powder gun, incl. Cascade Polarity – (negative) Polarity + (positive)	379646 379654
C	Cascade negative - complete	378046
1	Nozzle - see next page	
2	Threaded sleeve - see next page	
5	End plate with hook	378283
6	End plate seal (for Item 5)	377848
9	Grounding plate	379301
10	Cylinder screw - M 3 x 6 mm	262021
11	Powder gun cable - complete - 6 m Powder gun cable - complete - 12 m	378232 378240
12	O-Ring (for Item 11)	261416
13	"PT" Special screw	261785
15	Quick-release powder hose connection	377988#
16	Rinsing air connection	378003
17	Trigger complete incl. Item 18	379093
18	Return spring	261572
19	Powder tube - complete (incl. Item 20)	379077#
19.1	Metallic powder tube with H-V protection	385778#
20	O Ring (for Item 19)	261564
21	Powder tube knee complete - (incl. Item 22)	378585
22	O-Ring (for Item 21)	261580
25	Powder hose - 1004 - ø 16 / 11 mm (standard) Powder hose - 1005 - ø 20 / 12 mm	103128#* 100080#*
26	Rinsing air hose - 6 m - complete (incl. Items 27 and 28) Rinsing air hose - 12 m - complete (incl. Items 27 and 28)	339954 380261
27	Quick-release connection - ø 6 / 4 mm	200840
28	Rinsing air hose - ø 6 / 4 mm	100854*
29	Special box spanner Brush for powder tube (for Item 19)	381993 333514
	Parts Set consisting of: - Round jet nozzle - complete (incl. ø 16, 24, 32 mm Deflector plates - Cable binders with Velcro straps (303070) - O Ring (Item 20) - Cylinder screw (Item 10)	379638

* Please indicate length required

Wear parts

NOZZLE COMBINATIONS FOR EASYSELECT



	Nozzle set - Flat jet NF08 (Items 1, 2)	1000 047
	Nozzle set - Round jet (Items 5, 6, 9)	382922
1	Electrode holder (Flat jet nozzle)	1000 055 #
2	Flat jet nozzle	1000 049 #
3	Threaded sleeve	379166
5	O-Ring - \varnothing 5 x 1 mm	231606 #
6	Round jet nozzle	378518 #
7	Deflector plate - \varnothing 16 mm	331341 #
7.1	Deflector plate - \varnothing 24 mm	331333 #
7.2	Deflector plate - \varnothing 32 mm	331325 #
8	Extension - 150 mm	378852 #
8.1	Extension - 300 mm	378860 #
9	Electrode holder, incl. Item 5 (Round jet nozzle - central electrode)	382914 #

Wear parts

Figure 14

NOTES:

Documentation EasySelect

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EasySelect

Overview

