

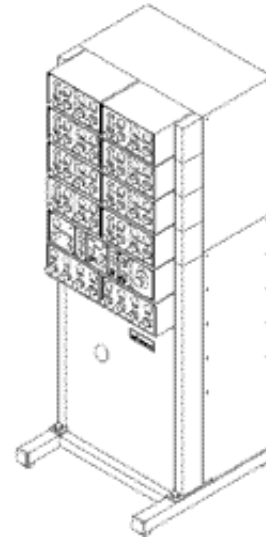


ECOTECH 2007 Automatic Control System

08/97

Danger!

High voltage!
Turn power off
before servicing!
Read rules for
safe operation and
instructions carefully!

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Operating Manual

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1. Introduction



This technical manual contains information and hints for the servicing, repairing and maintenance of the equipment. The observation of this manual is element of the warranty agreements.

WAGNER powder systems are designed to meet the most stringent safety requirements. They can be operated in compliance with generally applicable safety codes and applicable national safety regulations.

This manual contains information which must be read and understood before using the equipment. When you come to an area which has one of the following symbols, pay particular attention and make certain to heed the safeguard.



"Warning"

Important safety information indicates a hazard which may cause serious injury or loss of life.



"Caution"

Important information for preventing damage to equipment or how to avoid causes of minor injuries.

☞ "Hint"

Gives important information which deserves special attention.



Declaration of Conformity

WAGNER herewith declares that the equipment described in this manual has been developed and manufactured in agreement with the demands according to paragraph 5.1.2 of the European Norm EN 50014.



"Warning"

HAZARD

Electrostatic arcing may cause an explosion or fire.
Mixtures of powder and air can explode or ignite causing property damage and/or severe injury.

PREVENTION

- Operator must be grounded. Grounding straps must be used when wearing rubber soled shoes.
- Operator must be in contact with the spraygun handle; cut out palm section and trigger fingers of any work gloves to be used.
- Operator must remove all metal objects from his or her person which are not grounded.
- The object being sprayed must be grounded.
- All metal objects within the spray area must be grounded (including spray booth, part hangers, fire extinguishers, etc.)
- Grounded conductive floor must be provided in spray area.

- Turn off the Power Pack and unplug from outlet before flushing out the gun, cleaning or replacing parts on the gun such as changing tips.

Explosion or fire. Mixtures of powder and air can explode or ignite causing property damage and/or severe injury.

- Exhaust and fresh air introduction must be provided to keep the air within the spray area free of accumulation of flammable atmosphere.
- Smoking must not be allowed in spray area.
- Fire extinguishing equipment must be present and in working order.
- Electrostatic arcing must be prevented. (See Electrostatic arcing)
- When cleaning the system use only materials recommended by the coatings manufacturer. Be sure Power Pack is turned off and unplugged.
- Avoid all ignition sources such as static electricity sparks, open flames such as pilot lights, hot objects such as cigarettes and sparks from connecting and disconnecting power cords and working light switches.

Explosion or fire. Mixtures of powder and air can explode or ignite causing property damage and/or severe injury.

- To prevent hazardous concentrations of flammable atmospheres, spray only in a properly ventilated spray booth.
- Never operate spraygun unless ventilation fans are operating properly.
- Check and follow all National, State and Local codes regarding air exhaust velocity requirements.
- Ventilation must be maintained during the cleaning operation.

Toxic Substances: Some materials may be harmful if swallowed or come in contact with the skin.

- Follow the requirements of the Material Safety Data Sheet supplied by the coatings manufacturer.
- Exhaust and fresh air introduction must be provided within the spray area to keep the air free of high powder accumulations.
- Wear a mask or respirator. Read all instructions for the mask to insure that it will provide the necessary protection against the inhalation of powder.

General

- Read all instructions and safety precautions before operating.
- Comply with all appropriate local, state and national codes governing ventilation, fire prevention, and operation of Electrostatic equipment usage.
- The United States Government Safety Standards have been adopted under the Occupational

Safety and Health Act. These standards, particularly the General Standards, Part 1910 and the Construction Standard, Part 1926, should be consulted.

- NFPA Standard No. 33 is to be followed when setting up your spray area. Contact the National Fire Protection Association, Batterymarch Park, Quincy, Massachusetts, 02269 for more information.
- Check with insurance company for additional requirements.
- Use only identical replacement parts.
- Personnel must be given training in accordance with the requirements of NFPA Standard No. 33 chapter 15.
- It is the duty of all personnel responsible for the spray equipment operation and maintenance to read and understand all safety information furnished with this equipment.

1.1 Safety Regulations



Warning

This equipment can be dangerous if it is not operated in accordance with the safety regulations given in this operating manual! There might be additional regulations to be observed, put into effect by governmental, state- or other official agencies or local security (fire) departments.

The following rules must be observed in order to ensure safe and efficient use of the equipment:

- The user has to observe particularly the safety guidelines of the VdS or the local professional and security institutions. 2) 3) 6) 15)
- The user has to ensure that the medium value of the powder/air concentration does not exceed 50% of the UEG *) (lower explosion limit). If the UEG is not known, the user should assume a value of 20 g/m³. 2) 3) 6)
- If the powder concentration at high total powder output is higher than the allowed values, the user should consult the powder manufacturer.
- The spraygun may only be operated in powder spray booths or powder spray benches equipped with industrial ventilation. 2) 3) 6)
- The mains power connection for operation of the **WAGNER** powder spray equipment **must** be electrically interlocked with the exhaust system of the powder coating booth. 2) 3) 6)
- In the event of faults or defects, repair work is to be performed at the users discretion. 7)
- Repairs may only be carried out by experts who are specially trained for this work. 7)

- Repairs must never be performed in an explosion-hazard area. 7)
- The work area **must** have an electrostatically conductive floor (measured in accordance with DIN 51953). 2) 3) 6)
- All conductive parts in the work area **must** be electrostatically grounded (work area 1.5 m at the sides, 2.5 m to the front of every spray location or opening in the booth). 2) 3)
- Electrostatically conductive footwear **must** be worn by all persons inside the work area. 2) 3)
- If gloves are worn, they must be of antistatic material or have cut-out palm areas. 2) 3)



Warning

Powders containing metal pigments may only be processed in compliance with the powder manufacturer's instructions.

*) UEG: Low explosion limit, i.e. maximum allowed concentration of powder in air.

Applicable Safety Regulations and List of Sources

- | | | |
|---|--|--|
| 1) EN 50050
DIN VDE 0745
Part 100 | Electrical equipment for explosion-hazard areas
Manual electrostatic spraying equipment | (published by
VDE-Verlag,
Berlin) |
| 2) EN 50053 - 2
DIN VDE 0745
Part 102 | Requirements for selection, installation and use of electrostatic spraying equipment for flammable materials | (published by
VDE-Verlag,
Berlin) |
| 3) ZH 1/443 and
ZH 1/444 | Electrostatic powder coating using manual and stationary spraying equipment | (published by
C. Heymanns-Verlag,
Cologne) |
| 4) EX-RL / ZH 1/10 | Guidelines for explosion protection | (published by
C. Heymanns-Verlag,
Cologne) |
| 5) VDE 0165 | Installation of electrical equipment in explosion-hazard areas | (published by
VDE-Verlag,
Berlin) |

- 6) VDMA 24371 Part 1 Guidelines for electrostatic coating using synthetic resin powders
(published by Beuth-Verlag, Berlin)
- 7) ELEX V Regulation for electrical systems in explosion-hazard areas
(published by VDE-Verlag, Berlin)
- 8) VDE 0100 VDE guidelines for the construction of power plants with a nominal voltage up to 1000 V
(published by VDE-Verlag, Berlin)
- 9) EN 60204 Part 1 VDE guidelines for the electrical equipment of machines
VDE 0113
(published by Beuth-Verlag, Berlin)
- 10) VDE 0147 Part 1 Guidelines for the construction of stationary electrostatic spraying equipment
(published by Beuth-Verlag, Berlin)
- 11) VDE 0105 Part 1 Guidelines for the operation of high power plants
(published by Beuth-Verlag, Berlin)
- 12) VDE 0105 Part 4 Operation of high power plants (additional regulation for stationary electrostatic spraying equipment)
(published by Beuth-Verlag, Berlin)
- 13) VDE 0132 Instructions for fire fighting in electric equipment and nearby
(published by Beuth-Verlag, Berlin)
- 14) VDE 0134 Instructions for first aid in case of accident
(published by Beuth-Verlag, Berlin)
- 15) VDS 2093 Association of insurance companies
(Riehlerstr. 36
50668 Cologne)

General Safety Rules

- **Keep your workplace well organized**


A disorganized workplace creates a hazard.

- **Store your tools carefully**

Unused tools should be stored in a dry and locked room within reach of authorized personnel only.

- **Wear suitable work clothing**

- **Use breathing protection**

 Use breathing protection for work which produces dust.

- **Take good care of the system**

Keep the system clean to ensure that it works well and safely. Check the plug and line cord regularly and have them replaced by customer service if damaged. Check the extension cord regularly and replace it when damaged.

- **Always remain alert**

Watch your work. Proceed in a reasonable manner. Do not use tools when you lack concentration.

- **Check your equipment for damage**

Before using the system, carefully inspect slightly worn parts for proper operation. Check whether the moving parts operate properly, whether they jam and whether parts are damaged.

All parts must be properly assembled in order to ensure proper operation of the unit. Damaged parts should be repaired or replaced by a **WAGNER** customer service.



Warning

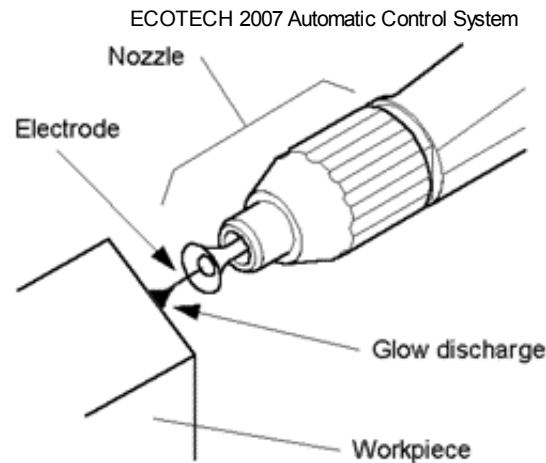
For your own safety, use only accessories and additional equipment listed in the operating manual. The use of individual parts other than those recommended in the operating manual may create a hazard to personal safety.

Use only original replacement parts!

Safety-related information concerning harmless discharge

When the high voltage is turned on, a glow or corona discharge, that is only visible in a dark environment, occurs at the electrode tip. When the electrode approaches the grounded workpiece, this physical phenomenon can be observed.

This glow discharge does not provide any ignition power and does not have any influence on the handling of the installation. When the electrode approaches the workpiece, the control unit automatically reduces the high voltage to a safe level or turns off the high voltage depending on the setting.



If the finger comes in contact with the plastic parts of the spraygun, harmless discharges (so-called brush discharges) can occur. The charging of the plastic parts is caused by the high voltage electrostatic field of the gun. However, these discharges do not provide any ignition power.

1.2 Warranty



What is covered by this warranty:

Faulty and useless parts are replaced according to our general delivery conditions.

Within the applicable warrant period, Wagner will repair or replace, at our option, defective parts without charge if such parts are returned with transportation charges prepaid to the nearest authorized service center. If Wagner is unable to repair this product so as to conform to this Limited Warranty after a reasonable number of attempts, Wagner will provide, at our option, either a replacement for this product or a full refund of the purchase price of this product.

These remedies are the sole and exclusive remedies available for breach of express and implied warranties.

What is not covered by this warranty:

This warranty does not cover any damage or defects:

1. caused by use or installation of repair or replacement parts or accessories not manufactured by Wagner,
2. caused by repair performed by anyone other than a Wagner authorized service center, or
3. caused by or related to abrasion, corrosion, abuse, misuse, negligence, accident, normal wear, faulty installation or tampering in a manner which impairs normal operation.

Limitation of remedies:

IN NO CASE SHALL WAGNER BE LIABLE FOR ANY INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES OR LOSS, INCLUDING TRANSPORTATION COSTS, WHETHER SUCH DAMAGES ARE BASED UPON A BREACH OF EXPRESS OR IMPLIED WARRANTIES, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT, OR ANY OTHER LEGAL THEORY.

Disclaimer of implied warranties:

THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

No ability to transfer:

This warranty is extended to the original purchaser only and is not transferable.

Your rights under state law:

Some states do not allow limitations on how long an implied warranty lasts or the exclusion of incidental or consequential damages, so the above limitation and exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

2. Description of the ECOTECH 2007

2.1 Application



The **WAGNER** ECOTECH-Automatic Control System is designed for use in low and high volume production in industry and trade.

With the **WAGNER** ECOTECH-Automatic Control System there is the possibility to adapt the system to a wide range of application set-ups, whereby automatic sprayguns and manual sprayguns can be used independently of each other simultaneously.

With the standard configuration of the **WAGNER** ECOTECH-Automatic Control System the user can control up to 8 sprayguns.

If more than 8 powder sprayguns are required, there is a possibility of extension to a maximum of 24 powder sprayguns ([see paragraph 2.11 "System extension"](#)).

The following sprayguns can be connected:

- Automatic: PEA-C1, PEA-C2, PEA-M1, PEA-T1, PEA-T2, PEA-TP1
- Manual: PEM-C1, PEM-C2, PEM-T1, PEM-T2, PEM-TP1

2.1.1 System overview



- **CCM : Central Control Module**
Contains master control functions and system power supply
- **TCM : Turbo Control Module**
Contains four individually adjustable air supplies
- **GCM : Gap Control Module**
Controls the powder on/off switching in gaps between workpieces
- **RCM : Reciprocator Control Module**
Controls speed and stroke of up to two reciprocators
- **ICC : Control cabinet (Invert) Control Cabinet**
with two frequency inverters
- **EPG : Electrostatic Power Generator**
Contains high voltage controller and air supplies for powder sprayguns
- **SCM : Slave Control Module**
Controls and supplies additional control cabinets

2.2 What powder materials can be used?



Dependent on the gun type all powder paints can be processed with the ECOTECH-Automatic Control System.

e.g.: epoxy resin, polyester, blended powder EP / PES, PUR.

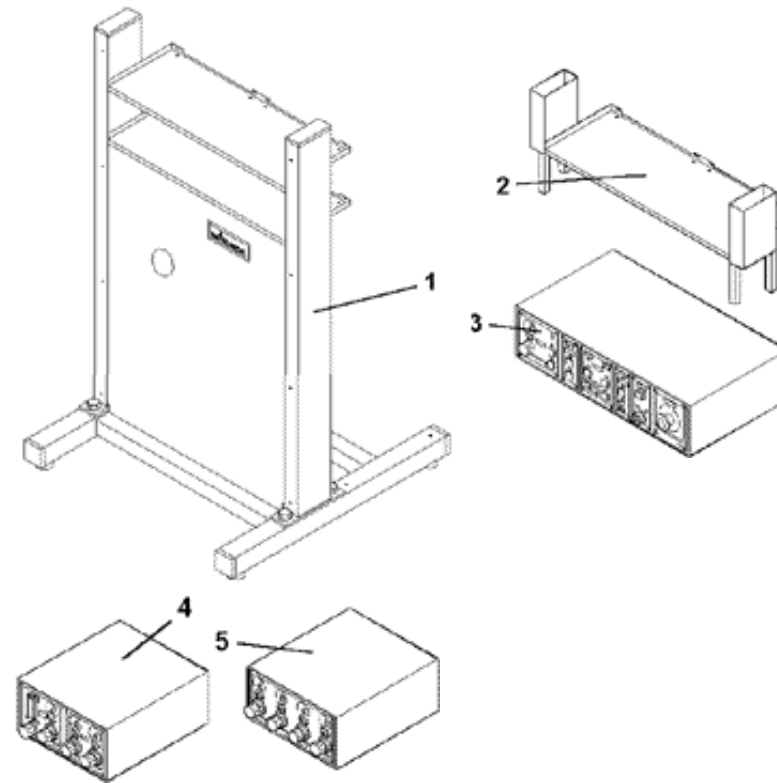


Caution

Powder containing metal pigments may only be processed in compliance with the powder manufacturer's instructions and the spraygun PEA-M1.

2.3 Selection table





Basic equipment

Pos	Components	Quantity							
		1	2	3	4	5	6	7	8
-	Spraygun: without turbo air	1	2	3	4	5	6	7	8
1	Rack****	1	1	1	1	1	1	1	1
2	Module support	0	0	1	1	2	2	3	3
3	Control unit CCM 2007****	1	1	1	1	1	1	1	1
4	Control unit EPG 2007****	1	2	3	4	5	6	7	8
5	Control unit TCM 2007****	0	0	0	0	0	0	0	0
6	Connection set**	1	2	3	4	5	6	7	8

7	Mains cable	1	1	1	1	1	1	1	1	1
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Basic equipment

Pos	Components	Quantity							
		1	2	3	4	5	6	7	8
-	Spraygun: with turbo air *	1	2	3	4	5	6	7	8
1	Rack****	1	1	1	1	1	1	1	1
2	Module support	0	1	1	2	3	3	4	4
3	Control unit CCM 2007***	1	1	1	1	1	1	1	1
4	Control unit EPG 2007***	1	2	3	4	5	6	7	8
5	Control unit TCM 2007***	1	1	1	1	2	2	2	2
6	Connection set**	1	2	3	4	5	6	7	8
7	Mains cable	1	1	1	1	1	1	1	1

* Turbo air can be (dependent on gun type):

- Flushing air - for PEA-M1 (Airmatic Metallic)
- Tribo air - for PEA-TP1 (TriboPLUS)
- Tribo air - for PEA-T1 (Tribo)

** The connection set is used for connecting the control unit EPG 2007 to the control unit CCM 2007.

Extension sets and additional cables: see selection table [paragraph 3.3. "Connecting the ECOTECH 2007"](#).

*** Use PUR hoses to connect the control units with the air manifold. Length of hoses depending on the installation:

- Hose **6/8**: Part No. **9982 078** customized

*** Use Polyamide hoses to connect control units with powder sprayguns:

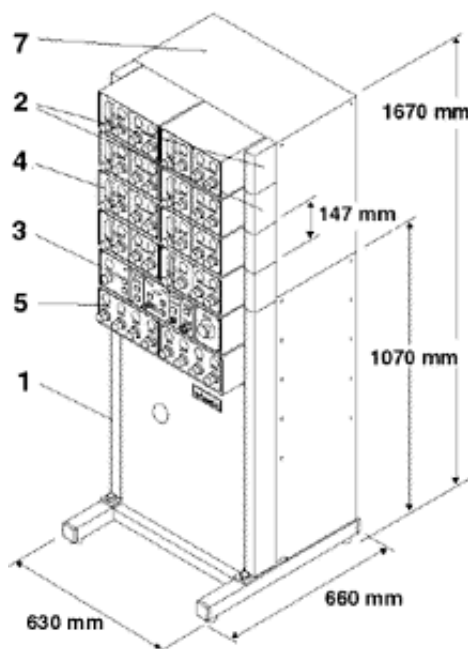
- Hose **4/6**: Part No. **9981 939** customized
- Hose **6/8**: Part No. **9981 938** customized

**** The main compressed air connection ([see paragraph 3.3.3.](#) and [3.3.4.](#) "Connection diagrams") to the air manifold in the rack (1/2" internal thread) is to be supplied by the customer.

When extending the system to more than 8 sprayguns, ask for the selection table at the **WAGNER** service center.

Item Description of the components

Item	Description of the components	Part No.
1	Rack (incl. air manifold on the frame)	0263090
2	Module support	0263 302
3	Control unit CCM 2007 (incl. mounting screws)	0263 110
4	Control unit EPG 2007 (incl. mounting screws)	0263 112
5	Control unit TCM 2007 (incl. mounting screws and interconnect cable to the CCM 2007)	0263 111
6	Connection set (not shown) consisting of: Interconnect cable EPG 2007 - CCM 2007 1.2 m (0263 214) Mains cable 0.55 m (0241 269)	0263 092
7	Cover plates (special accessories)	0263 091
8	Mains cable (not shown)***	-

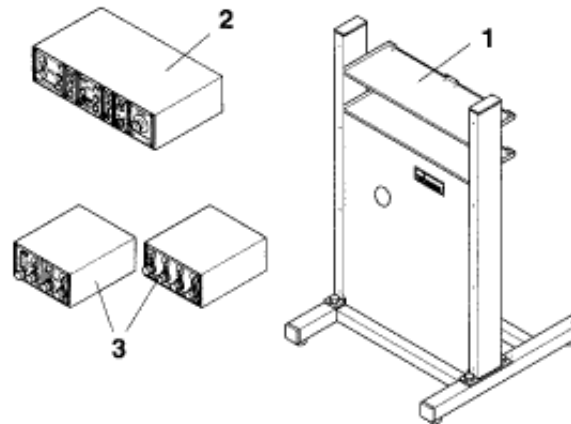




2.4 Mechanical assembly

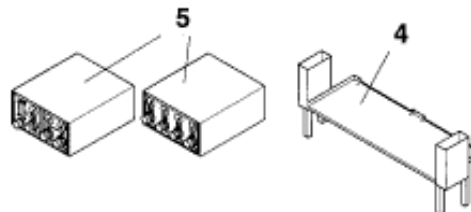
Rack Part No. 0263 090

The rack (1) is the support for the individual units of the ECOTECH-Automatic Control System. The minimum setup for one or two powder sprayguns consists of one central control unit (CCM 2007) (2) and two gun control units (EPG 2007 or TCM 2007) (3) (see selection table, [paragraph 2.3.](#)).



Module support Part No. 0263 302

The module support plate (4) provides space for a maximum of two gun control units (EPG 2007 or TCM 2007) (5) in each level. As a maximum 4 module support plates (for a system extension up to 5) can be assembled on top of each other.



Cover plates (special accessories)

Part No. 0263 091

Is used for optical (design) reasons.

*** Mains cable type depends on destination country:

EURO: **Part No. 0241 270**

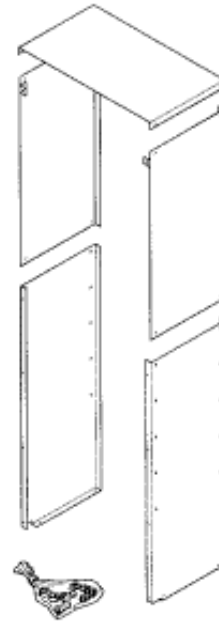
USA: **Part No. 0264 626**

Japan: **Part No. 0264 625** with grounding cable Part No. 0236 219

Switzerland: **Part No. 0241 271**

Extension sets and additional cables

See selection table, paragraph [3.3. "Connecting the ECOTECH 2007"](#)



2.5 Specification of the complete system

Equipment with eight EPG 2007 and two TCM 2007

Dimensions:

Width: 630 mm

Height: 1670 mm



Depth: 665 mm
Weight: approx. 140 kg

Electrical:

Mains power:* (AC) 85 VAC to 264 VAC
Frequency: 47 Hz to 440 Hz
Input power: max. 270 W (with system extension up to 750 W)
EMI filter: EN 55022 class B
VDE 0878 PT3 class B
Protection class: IP 64
Radio interference level: FN

* see individual control unit ([paragraph 2.6.](#) and [2.7.](#))

Pneumatic:

Input air pressure: 86.5-115.3 psi (6-8 bar)

Compressed air quality acc. to ISO 8573.1:

Residual water content in compressed air: max. 1,3 g H₂O/Nm³ at a dew point of 7°C
Residual oil content in compressed air: max. 0,01 mg oil/Nm³
Residual dust content in compressed air: max. 1 mg dust/Nm³

Ambient conditions: If low temperature powders are used the ambient temperature may have to be lower than 30°C.

2.6 Control unit CCM 2007 (Central Control Module)

2.6.1 Application

The control unit **CCM 2007** is the central control unit of the ECOTECH-Automatic Control System **ECOTECH 2007**. It connects the following control units and components to a powder coating system for Manual and/or Automatic powder sprayguns:



- 1 to 8 units, EPG 2007
for Manual or Automatic powder sprayguns and injectors, see EPG 2007.
- 0 to 2 units TCM 2007
each with 4 "Turbo air" outputs for Airmatic-Metallic-,
TriboPlus Automatic and Tribo powder sprayguns, see TCM 2007.
- Fluid air control for a powder container with fluid base or an Airfluid unit.
- Additional connections and interlocking possibilities for:
 - Gap controls (external) GCM 2007
 - Extension control module SCM 2007 (when using more than 8 guns)
 - Twin-reciprocator control module RCM 2007
 - Bell speed controller BCM 2007
 - Conveyor interlocks
 - Booth interlocks
 - For later extensions: spare socket



Caution

This equipment may only be used for the above described application.

2.6.2 Specification of the CCM 200



Dimensions:

Width:	540 mm
Height:	145 mm
Depth:	440 mm
Weight:	approx. 8 kg

Electrical:

Mains power:	(AC) 85 VAC to 264 VAC
Frequency:	47 Hz to 440 Hz

Input power: max. 40 W
EMI filter: EN 55022 class B
VDE 0878 PT3 class B
Protection class: IP 64
Radio interference level: FN

Pneumatic:

Input air pressure: 86.5-115.3 (6-8 bar)
Output air pressure: 0...36 psi (0...2.5 bar)

2.6.3 Operation of the CCM 2007



- At the control unit **CCM 2007** the fluid air is switched on and adjusted for a powder container with fluid base or an Airfluid unit .
- The **CCM 2007** interlocks up to 8 **EPG 2007**.
- The **CCM 2007** controls and supplies:
 - **one** gap control **GCM 2007** and
 - **one** Twin-reciprocator control module **RCM 2007**.
- The **CCM 2007** shows a Central Emergency Stop.
- The **CCM 2007** offers the following inputs and outputs:
 - External Emergency Stops
 - Emergency Stop, switch normally closed
 - Input for an external gap control
 - Inputs for interlocking of conveyor and booth (air system)
 - Fault message for conveyor system
- The **CCM 2007** controls up to two **TCM 2007** (Turbo air) for the air supply of powder Automatic sprayguns with one additional air.
- The **CCM 2007** is designed "openly", so that later extensions can be implemented and interlocked logically.

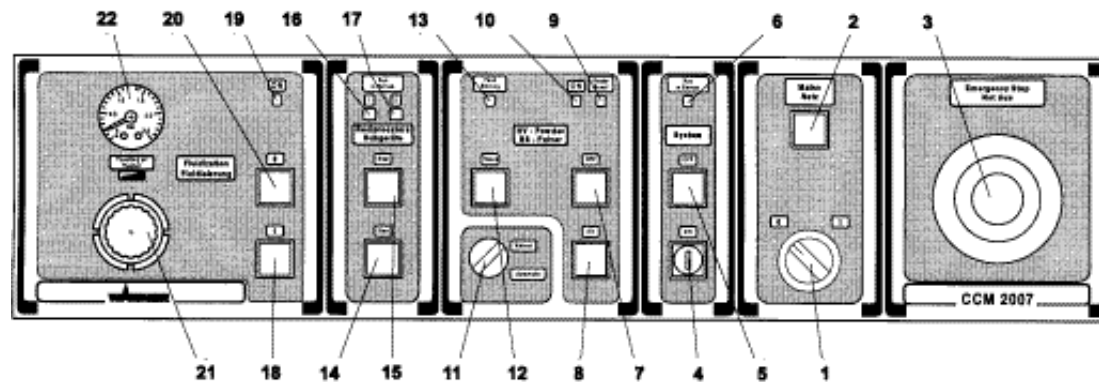
2.6.4 Part numbers of the CCM 2007

Part No. 0263 110 consisting of:

Part No.	Quantity	Description
0263 227	1	Control unit CCM 2007
0130 215	1	Grounding cable
0264 900	1	Set of spare parts

2.6.5 Operating elements of the CCM 2007

Front of the CCM 2007



1. Mains switch

Switch for the mains power of the CCM 2007 and the complete system

2. Indicator: "Mains"

Lights up when the CCM 2007 is connected to the mains power and the main switch is turned on

3. Emergency Stop with lock-in position

When actuating the Emergency Stop, the following functions will be released by force:

- High voltage and powder delivery to all EPG's "OFF"
- Fluidization "OFF"
- Reciprocators "STOP"

The system can be started up again if the Emergency Stop is mechanically unlocked by turning the locking ring clockwise.

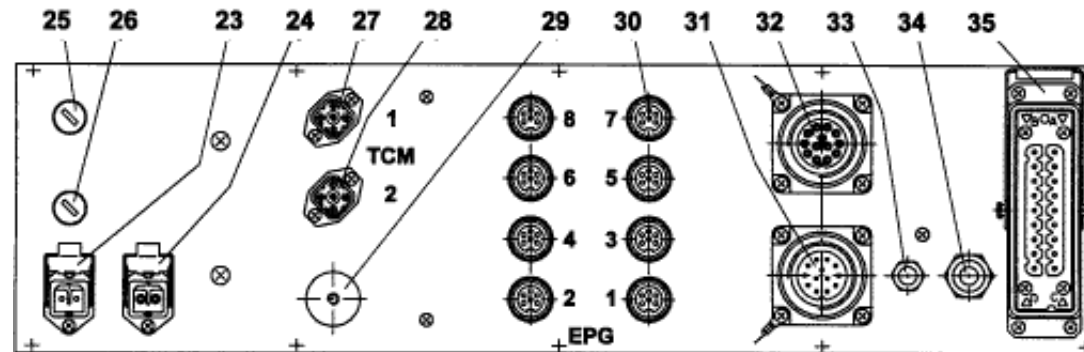
4. Key switch: System "ON"

- By turning the key clockwise:

- The system is ready to operate (the indicator (6) lights up green) and may be started
 - The fluidization is not turned on: it **must** be switched on separately
 - The key can be removed afterwards, the system remains operational
 - For re-starting the system the key is required again
5. **Push button: System "OFF"**
 - When actuated, the indicator (6) stops lightening:
 - The high voltage, the powder delivery and the fluidization are turned off
 6. **Green indicator: System "RUN"**
 - Lights up while the system is operational
 7. **Push button: HV-Powder "OFF"**
 - Mode "**Manual**": The high voltage and the powder delivery are turned off if actuated
 - Mode "**Automatic**": The stand-by mode for the high voltage and the powder delivery are turned off if actuated
 - The fluidization will not be turned off
 8. **Push button: HV-Powder "ON" or "Ready"**
 9. **Indicator: "Ready"**
 - Lights up yellow if the conditions mentioned under Pos. 10 are not fulfilled
 10. **Indicator: "ON"**
 - Lights up green
 - Mode "**Manual**": The high voltage and the powder delivery will be released if the booth exhaust system is turned on
 - Mode "**Automatic**": The high voltage and the powder delivery will be released if the booth exhaust system and the conveyor are turned on
 11. **Selector switch: "Manual" or "Automatic"**
 - Switching from Manual to Automatic (see Pos. 7 to 9)
 12. **Push button: Fault reset**
 - Reset of a stored fault message of an EPG in the CCM
 - Reset of the fault message to the conveyor system
 - Reset of the fault message in the EPG's
 13. **Indicator red: Fault**
 - lights up red, if one or more of the EPG's cause a fault
 - Fault message to the conveyor system (external)
 14. **Push button: Reciprocator Start**
 - Starts up 1 or 2 RCM 2007 reciprocator control modules
 15. **Push button: Reciprocator Stop**
 - Stops 1 or 2 RCM 2007 reciprocator control modules

16. **Indicator: Reciprocator 1 "Run"**
 - lights up green, if reciprocator 1 is operational
17. **Indicator: Reciprocator 2 "Run"**
 - lights up green, if reciprocator 2 is operational
18. **Push button: Fluidization "1"**
 - Turns on the pneumatic valve of the powder fluidization
19. **Indicator: Fluidization "ON"**
 - lights up green if fluidization is turned on
20. **Push button: Fluidization "0"**
 - Turns off the pneumatic valve of the powder fluidization (at longer coating interruption or a manual powder refill)
21. **Pressure regulator: Fluid air**
 - Adjusting of the fluid air pressure
22. **Pressure gauge: Fluid air pressure**
 - Fluid air pressure indicator

Back plate of the CCM 2007



23. **Equipment plug: Mains power input**
24. **Equipment connector: Mains power output**
25. **Secondary fuse**
 - 2 AT (slow blow)
26. **Primary fuse**
 - 1 AT (slow blow)
27. **Equipment plug: TCM 2007 -1-**

- Valve control
28. **Equipment plug: TCM 2007 -2-**
- Valve control
29. **Grounding nut: System ground**
30. **Equipment connectors: Interlock cable CCM 2007 ➔ EPG 2007 (8x)**
31. **Equipment plug: Extension**
- Connection for system extensions
(RCM 2007, BCM 2007)
 - If no extension is connected, the short circuit insert (Part No. 0263 217) must be built-in under the sealing cap

7 [See paragraph 3.3. "Connecting the ECOTECH 2007"](#)

32. **32 Equipment connector: Gap control**
- Connection possibility of an external gap control (GCM 2007), distributes the HV-powder enabling signal to the 8 EPG's
 - If no gap control is used, the shorting plug (Part No. 0263 218) must be built-in under the sealing cap

8 [See paragraph 3.3. "Connecting the ECOTECH 2007"](#)

33. **Compressed air input: from the compressed air manifold**
34. **Compressed air output: to the fluid base / Airfluid unit**
35. **Equipment connector: Interlocks**
- **Conveyor system**
 - Interlock of the conveyor, see [paragraph 3.3.9.](#)
 - Fault message to the conveyor system, see [paragraph 3.3.9.](#)
 - **Booth system**
 - Interlock of the booth exhaust air, see [paragraph 3.3.9.](#)
 - External Emergency Stops, see [paragraph 3.3.9.](#)
 - **Emergency Stop Reset for external equipments**



2.7 Control unit EPG 2007

2.7.1 Application of the EPG 2007

The control unit **EPG 2007** is used in the ECOTECH-Automatic-Control System **ECOTECH 2007** and controls the following powder sprayguns:

- Airmatic manual spraygun **PEM - C1, PEM - C2**
- Tribo manual spraygun **PEM - T1, PEM - T2**
- TriboPLUS manual spraygun **PEM - TP1**
- Airmatic Automatic spraygun **PEA - C1, PEA - C2**
- Tribo Automatic spraygun **PEA - T1, PEA - T2**
- TriboPLUS Automatic spraygun **PEA - TP1**
- Airmatic Metallic Automatic spraygun **PEA - M1**



Caution

This equipment may only be used for the above described application.

For specification, see separate [operating manual: No. 0263 830 USA/UK](#)

2.8 Control unit TCM 2007 (Turbo Control Module)

2.8.1 Application of the TCM 2007



The control unit **TCM 2007** is used in the ECOTECH-Automatic Control System **ECOTECH 2007** and supplies up to max. 4 additional airs for the following Automatic powder sprayguns:

- **PEA-M1** Flushing air
- **PEA-T1, PEA-T2** Tribo air
- **PEA-TP1** Tribo air



Caution

This equipment may only be used for the above described application.

2.8.2 Specification of the TCM 2007



Dimensions:

Width:	270 mm
Height:	145 mm
Depth:	340 mm
Weight:	approx. 5 kg

Electrical:

Input voltage:	24 V DC
Input power:	max. 2 W
Protection class:	IP 64
Radio interference level:	FN

Pneumatic:

Input air pressure:	86.5-115.3 psi (6-8 bar)
Output air pressure:	0...36 psi (0...2,5 bar)

2.8.3 Operation of the TCM 2007

Four additional airs may be adjusted at the control unit **TCM 2007**. The on/off switching of the airs is controlled by the control unit **CCM 2007**.

2.8.4 Part numbers of the TCM 2007

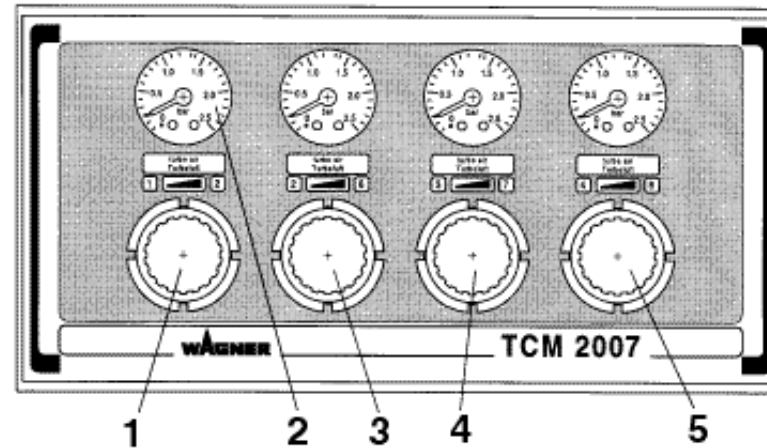
Part No. 0263 111



Part No.	Quantity	Description
0263 226	1	Control unit TCM 2007
0263 212	1	Cable assembly

2.8.5 Operating elements of the TCM 2007

Front of the TCM 2007



1. Turbo air regulation

- Adjusting the turbo air for the 1st or 5th spraygun *
- Regulation range: 0 - 2,4 ±0,3 bar

2. Pressure gauge Turbo air

- Turbo air indicator for the 1st or 5th spraygun *
- Display range: 0 - 2,5 bar

3. Turbo air regulation for the 2nd or 6th spraygun *

4. Turbo air regulation for the 3rd or 7th spraygun *

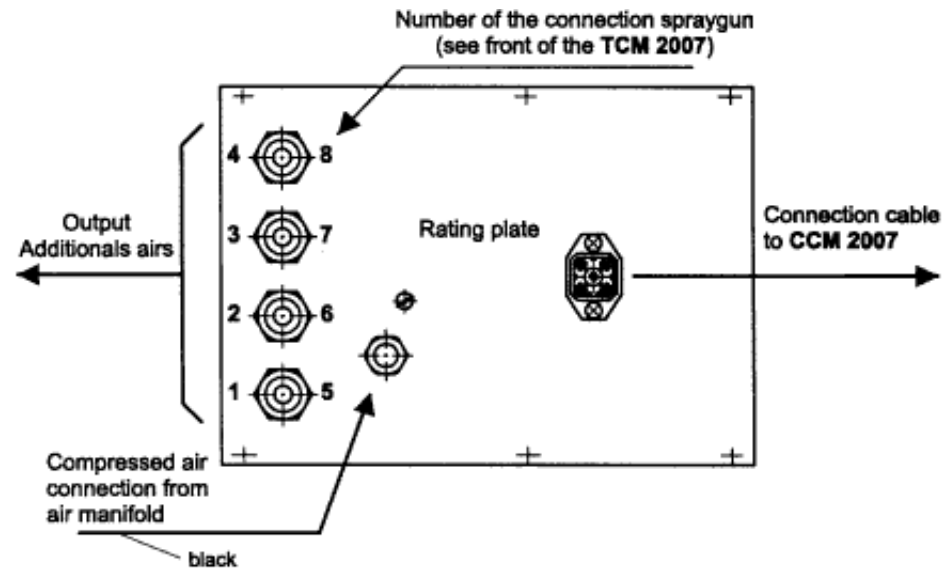
5. Turbo air regulation for the 4th or 8th spraygun *

* Using two TCM 2007 the sprayguns 5 to 8 will be supplied with additional air from the second TCM 2007.

Remark

Unused regulators must be closed if not all four airs of a TCM 2007 are used, otherwise air flows out unnecessarily.

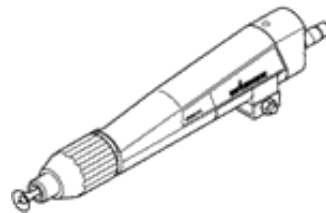
Back plate of the TCM 2007



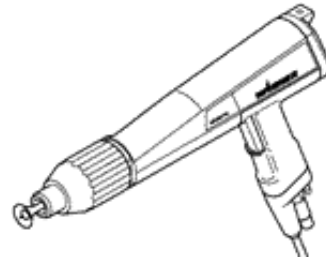
2.9 Powder sprayguns



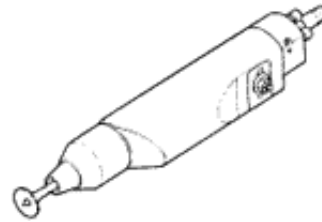
Airmatic Automatic spraygun PEA-C2 Part No. 0351 001



Airmatic Manual spraygun PEM-C2 Part No. 0351 021



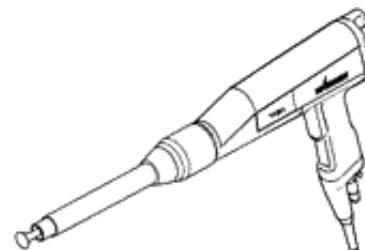
Airmatic Metallic Automatic spraygun PEA-M1 Part No. 0260 002



Tribo Automatic spraygun PEA-T1 Part No. 0260 004



Tribo Manual spraygun PEM-T1 Part No. 0259 003



2.10. Accessories

Connection Set Part No. 0263 092

Connection of the control unit **EPG 2007** to the control unit **CCM 2007**.

2.11 System extensions

2.11.1 Control unit GCM 2007 (Gap Control Module)



Application of the GCM 2007

The gap control module **GCM 2007** is used in the ECOTECH-Automatic Control System **ECOTECH 2007** to turn off the powder supply in the gaps between the workpieces and to turn off or reduce the high voltage.

In a coating system with powder recycling the amount of recovery powder is kept low through the gap control. Also the wear of the sprayguns is reduced.



Caution

This equipment may only be used for the above described application.

2.11.2 Twin reciprocator control module RCM 2007 / ICC 2007



Application of the RCM 2007

The twin reciprocator control module **RCM 2007** is used in the ECOTECH-Automatic Control System **ECOTECH 2007** and controls up to 2 reciprocators.



Caution

This equipment may only be used for the above described application.

For specification, see separate operating manual: No. **0263 906 USA/UK**

2.11.3 Additional extensions



- Extension control module **SCM 2007** for sprayguns no. 9 to no. 16 (one additional rack with module supports) and for sprayguns no. 17 to no. 24 (two additional racks with module supports)

For more information, please ask your **WAGNER** service center.

3. Start up

Recommendation

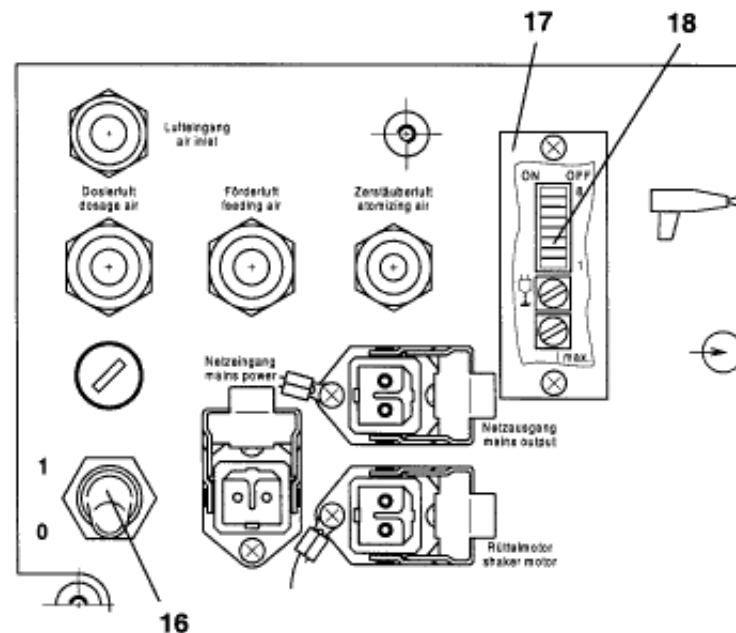
Before installing and starting up, become familiar with the respective operating manuals.

3.1 Preparation



Preconditions:

- Operating modes must be set according to the paragraph 3.1. "**Setting codes of the mode switch**" in the operating manual of the control unit [EPG 2007 \(No. 0263 830 USA/UK\)](#).
- Turn off Control unit **EPG 2007** and Central Control Module **CCM 2007**.



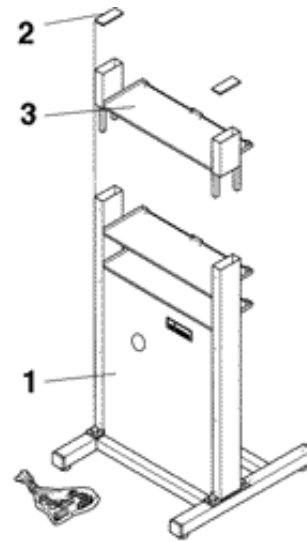
Course order when starting up for the first time:

1. Turn off the control unit **EPG 2007** by switching the main switch (16) to the **"0"** position.
2. Unscrew cover (17) of the mode switch (18) and set the dip switches depending on the application mode acc. to paragraph 3.1. **"Setting codes of the mode switch"** in the operating manual of the control unit [EPG 2007 \(No. 0263 830 USA/UK\)](http://www.anaengineering.com/wagner_lit/bal/eco/0263826_e.htm).

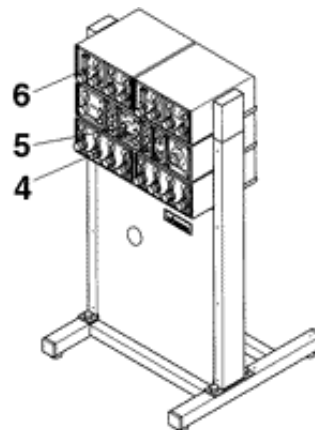
3.2 Mechanical assembly of the ECOTECH 2007



- The safety rules (paragraph 1) must be observed when setting up an ECOTECH-Automatic Control System.

**Course order:**

1. Assemble the rack (1).
2. Remove lids (2) from the rack (1).
3. Attach required number of the module support plates (3).
4. Attach lids (2) onto the upper module support plate (3).

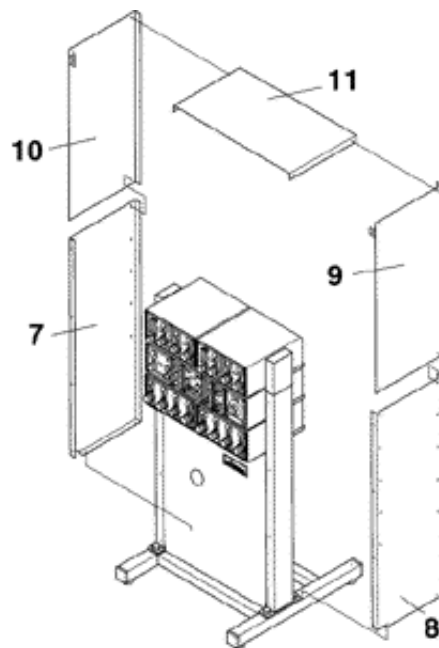


5. Mount the control units (4, 5, 6) to the rack with the corresponding screws.

Advice:

Mount the control units **TCM 2007** (4) on the lowest position.

Mount the **CCM 2007** (5) directly above the TCM's for convenient operation height.



6. **If available**, screw on cover plates (7, 8, 9, 10, 11).
7. Connect the mains power to the mains power input of the **CCM 2007**.
Connect the mains power output of the **CCM 2007** to the mains power input of the first **EPG 2007**.
Connect the mains power output of the first **EPG 2007** to the mains power input of the second **EPG 2007** (and so on).
Plug the sealing cap on the mains power output of the last **EPG 2007** (part of the **CCM 2007** package).
8. Connect interlock cable **CCM 2007** ➔ **EPG 2007**.
9. Connect rack grounding cable to the **CCM 2007** ([see paragraph 3.4. "Grounding"](#)).
10. Connect the gun cables to the control units **EPG 2007**.
11. Connect all compressed air connections to the control units with the provided pneumatic hoses to the air manifold of the rack ([see connection diagram paragraph 3.3.2. and 3.3.4.](#)).
12. Connect the compressed air outputs of the control units to the corresponding equipment ([see connection diagram paragraph 3.3.2. to 3.3.8.](#)).
13. If necessary connect interlock plug ([see paragraph 3.3.9. "Connection diagram: Cable connector interlock"](#)).

3.3 Connecting the ECOTECH 2007


- The safety rules ([paragraph 1](#)) must be observed when setting up a ECOTECH-Automatic Control System.
- Assemble the ECOTECH-Automatic Control System according to the following diagrams.

3.3.1. Extension sets and additional cables:



Item	Description of the components	Part No.
1	Connection set consisting of: Interconnect cable EPG 2007 → CCM 2007 1,2 m (0263 214) Mains cable 0,55 m (0241 269)	0263092
2	Interconnect cable GCM 2007 → CCM 2007 1,4 m	0263241
3	Extension set 10 m consisting of: Cable extension ECOTECH 10 m (0263 232) Mains extension 10 m (0263 233)	0263093
4	Extension set 1,4 m consisting of: Cable extension ECOTECH 1,4 m (0263 248) Mains extension 1,4 m (0263 249)	0263094
5	Cable extension ECOTECH 1,4 m	0263248
6	Mains cable: EURO USA Japan Switzerland	0241270 0264626 0264625 0241271

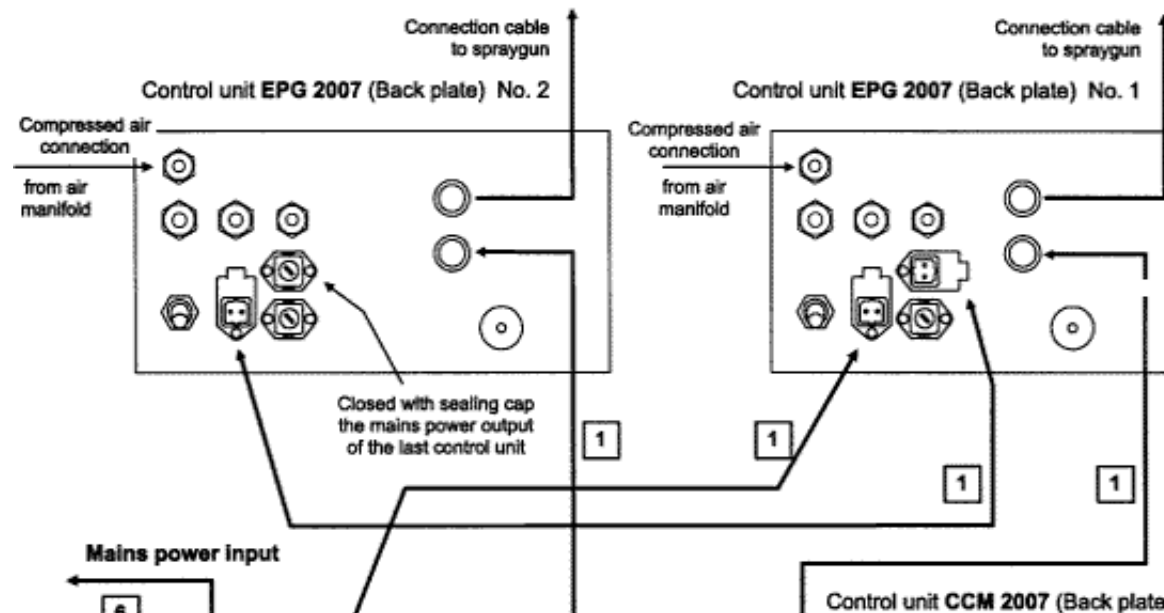
7	Short-circuit insert * is included in the CCM 2007 - see paragraph 2.6.5 . "Operating elements of the CCM 2007" (Back plate of the CCM 2007)	0263217
8	Shorting plug ** is included in the CCM 2007 - see paragraph 2.6.5 . "Operating elements of the CCM 2007" (Back plate of the CCM 2007)	0263218

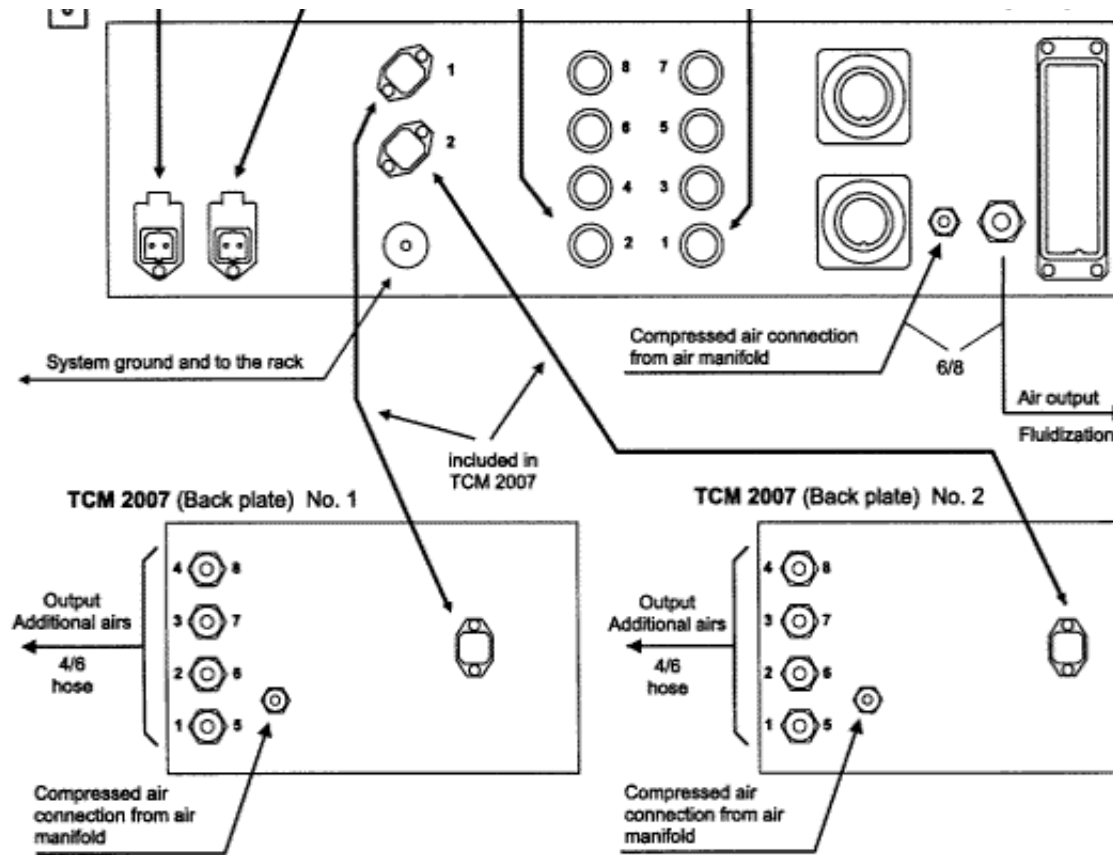
 Items see following connection diagrams

* At the last equipment this short-circuit insert must be built-in in the equipment connector. The equipment connector must be closed with the sealing cap.

** If no gap control is used, this shorting plug must be built-in in the equipment connector. The equipment connector must be closed with the sealing cap.

3.3.2 Connection diagram: Mains power, EPG and TCM





Pneumatic hoses, see [paragraph 2.3. "Selection table"](#)



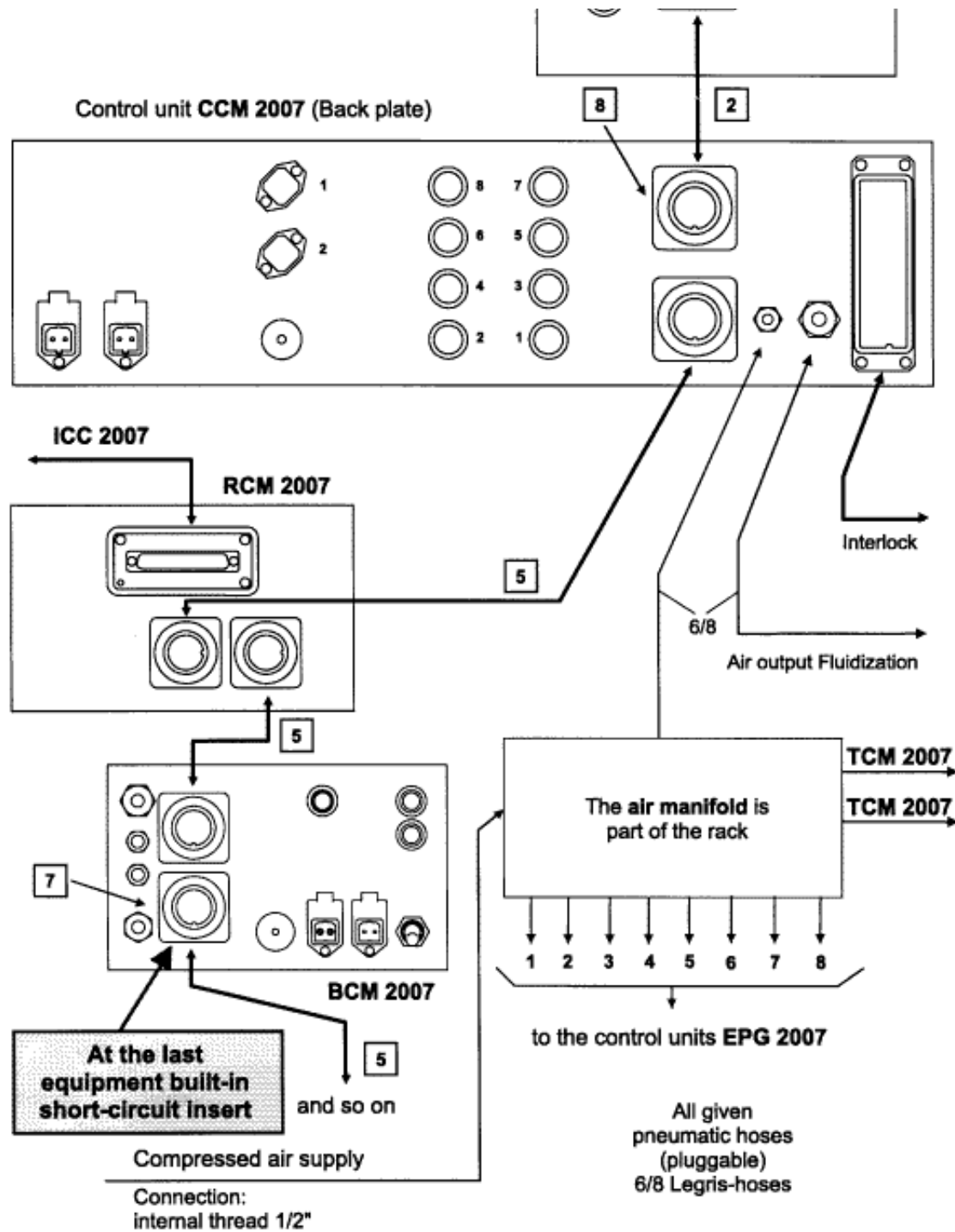
Items, see [paragraph 3.3.1. "Extension sets and additional cables"](#)

3.3.3 Connection diagram: Pneumatic, Interlock for 1 ... 8 guns



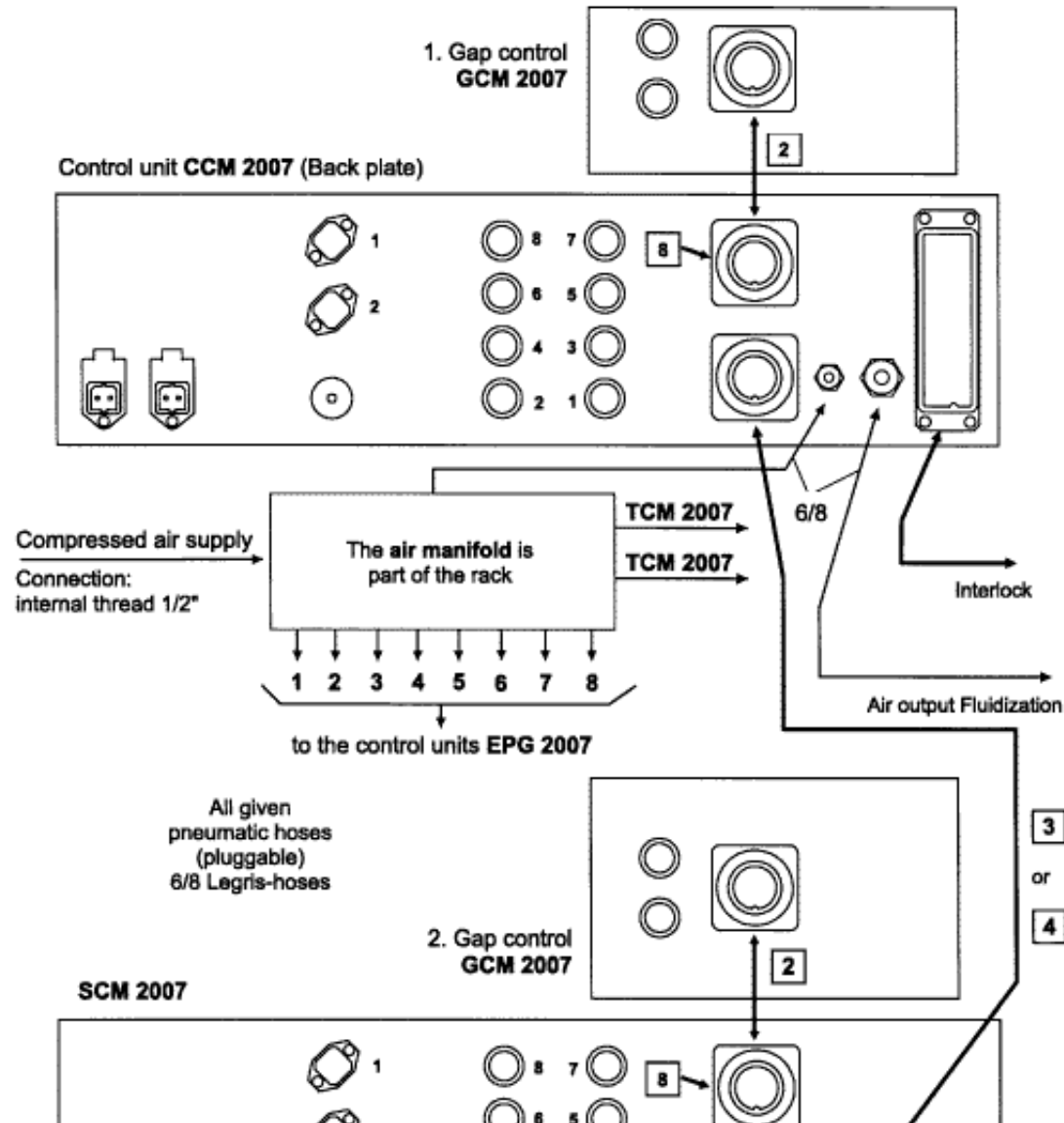
Gap control
GCM 2007

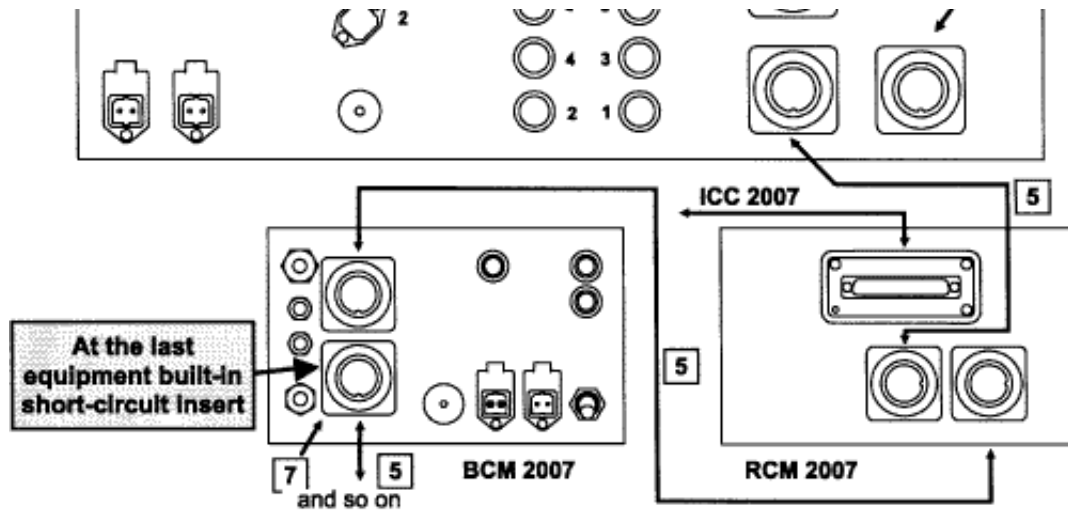




 Items, see [paragraph 3.3.1. "Extension sets and additional cables"](#)

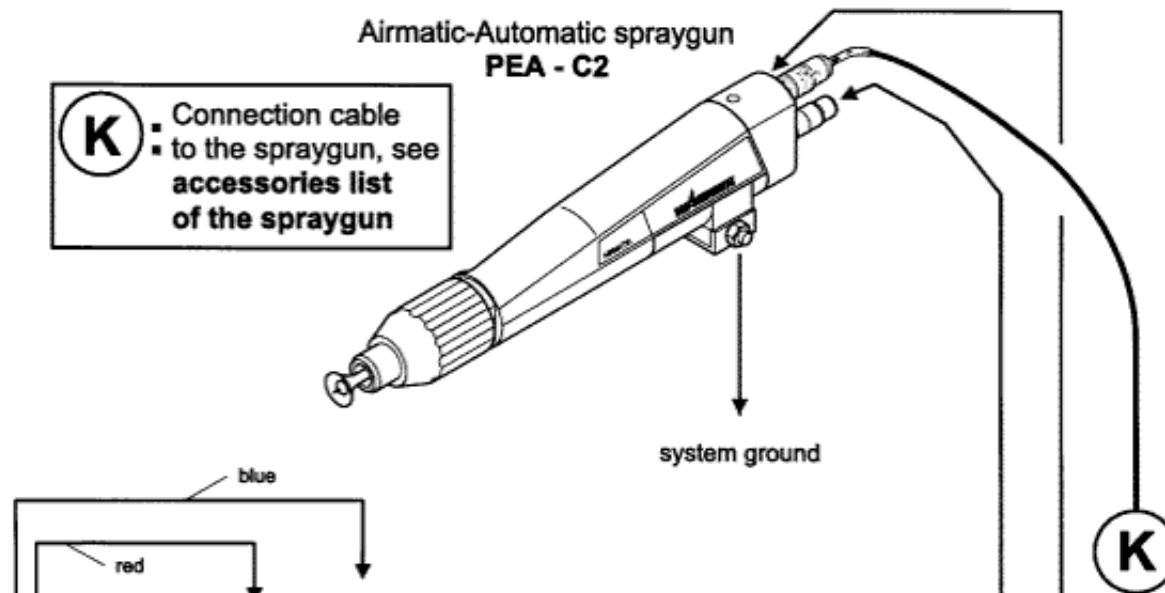
3.3.4 Connection diagram: Pneumatic, Interlock, Extension for 9 ... 16 guns

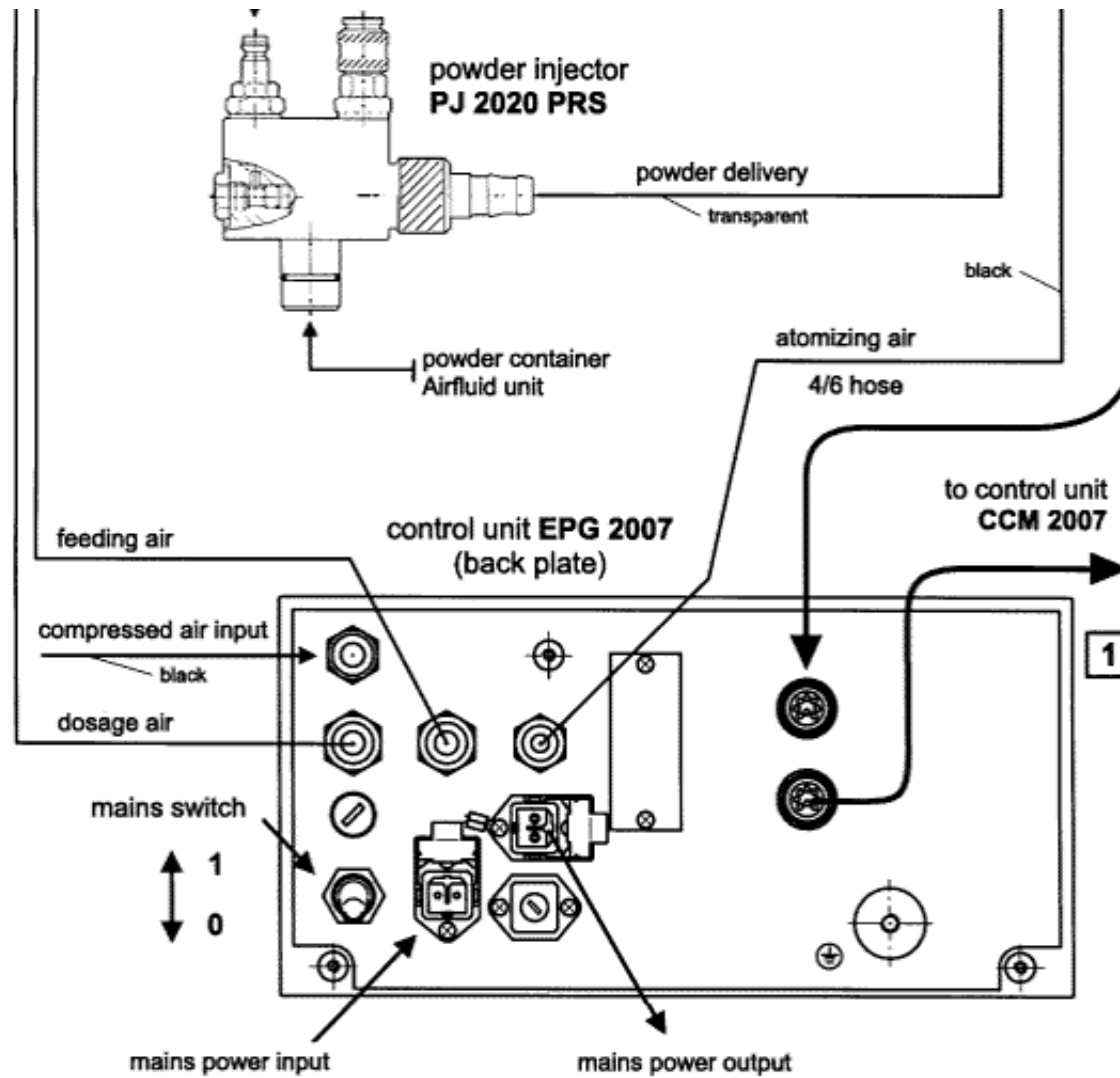




 Items, see [paragraph 3.3.1. "Extension sets and additional cables"](#)

3.3.5 Connection diagram with a Corona-Automatic spraygun



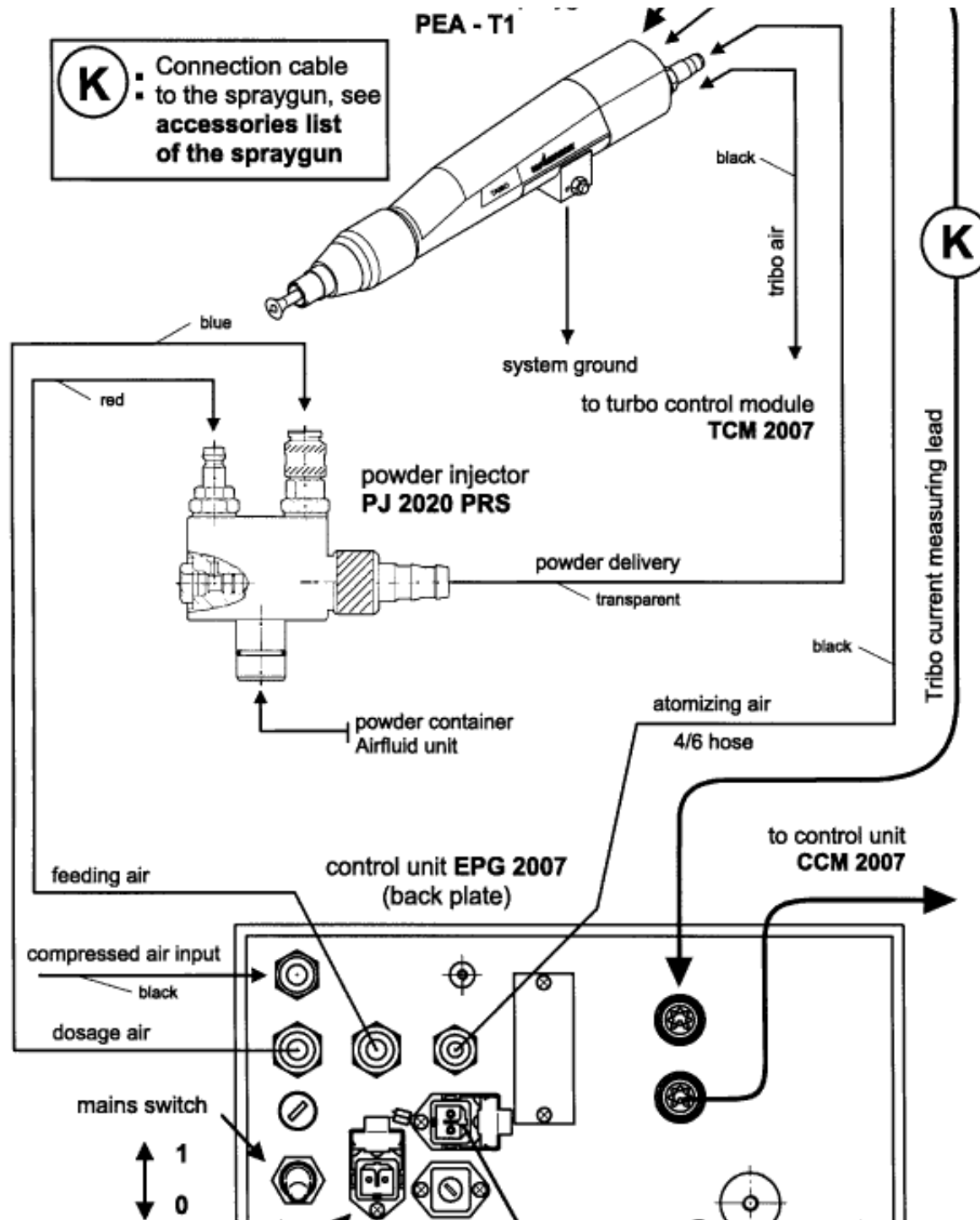


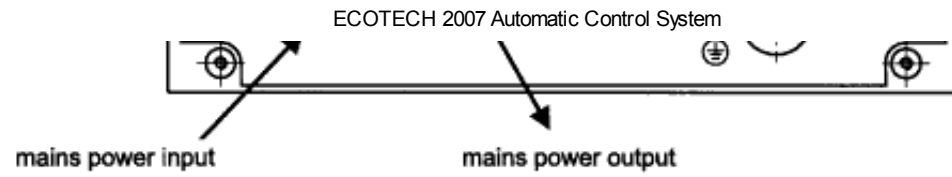
Items, see [paragraph 3.3.1. "Extension sets and additional cables"](#)

3.3.6 Connection diagram with a Tribo-Automatic spraygun



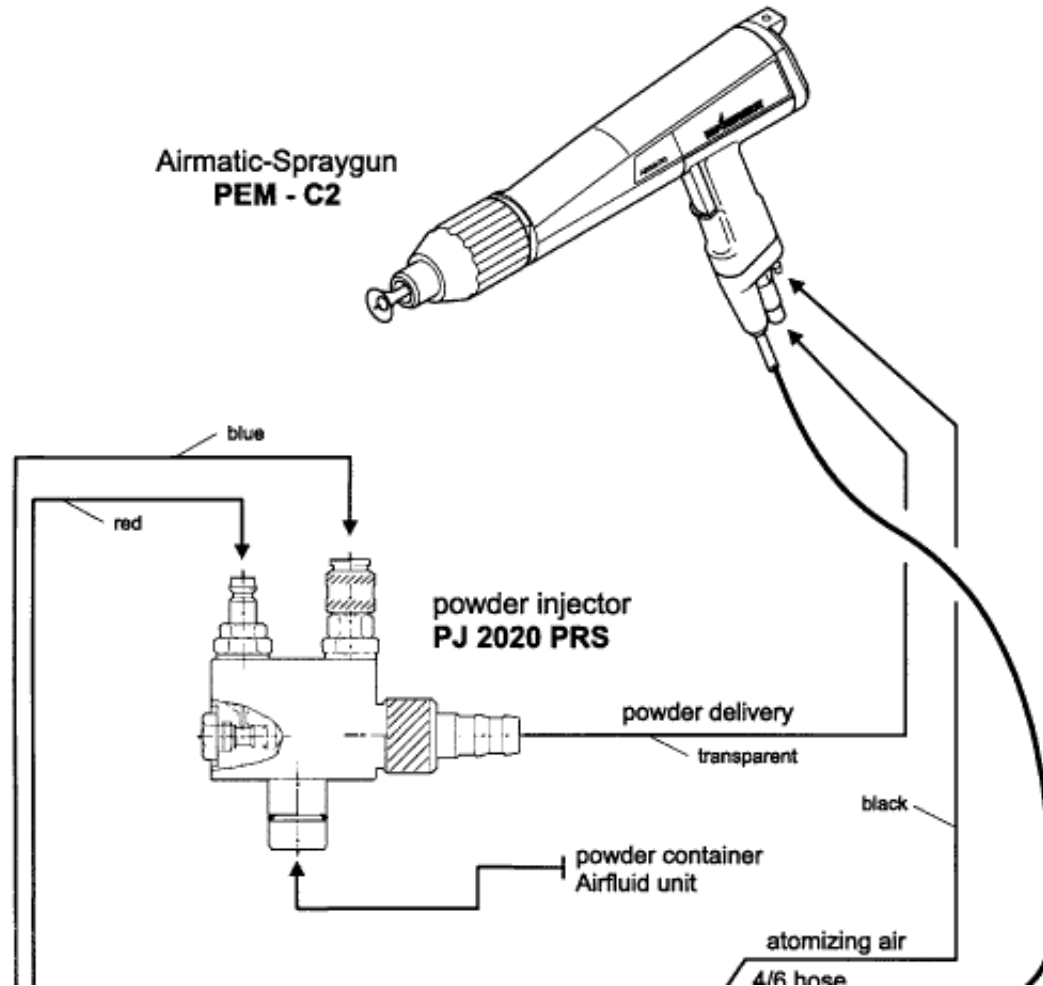
Tribo-Automatic spraygun

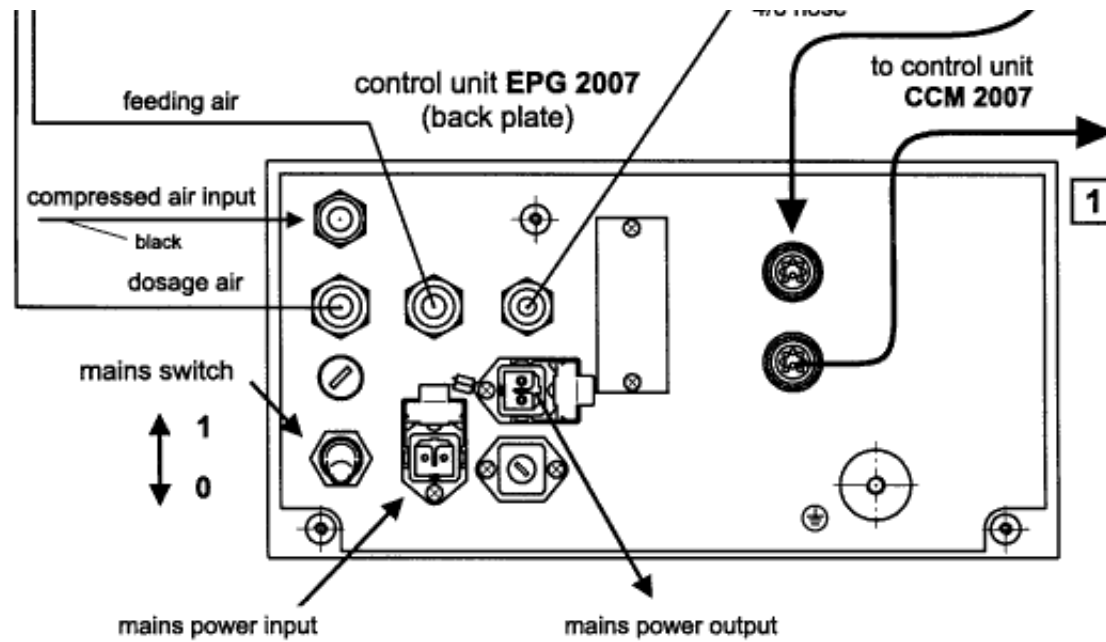




Items, see [paragraph 3.3.1. "Extension sets and additional cables"](#)

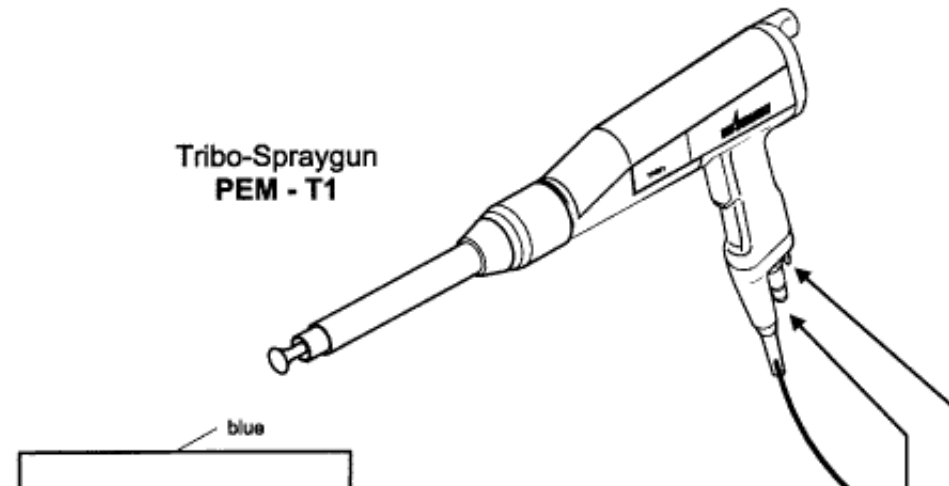
3.3.7 Connection diagram with a Corona-Manual spraygun

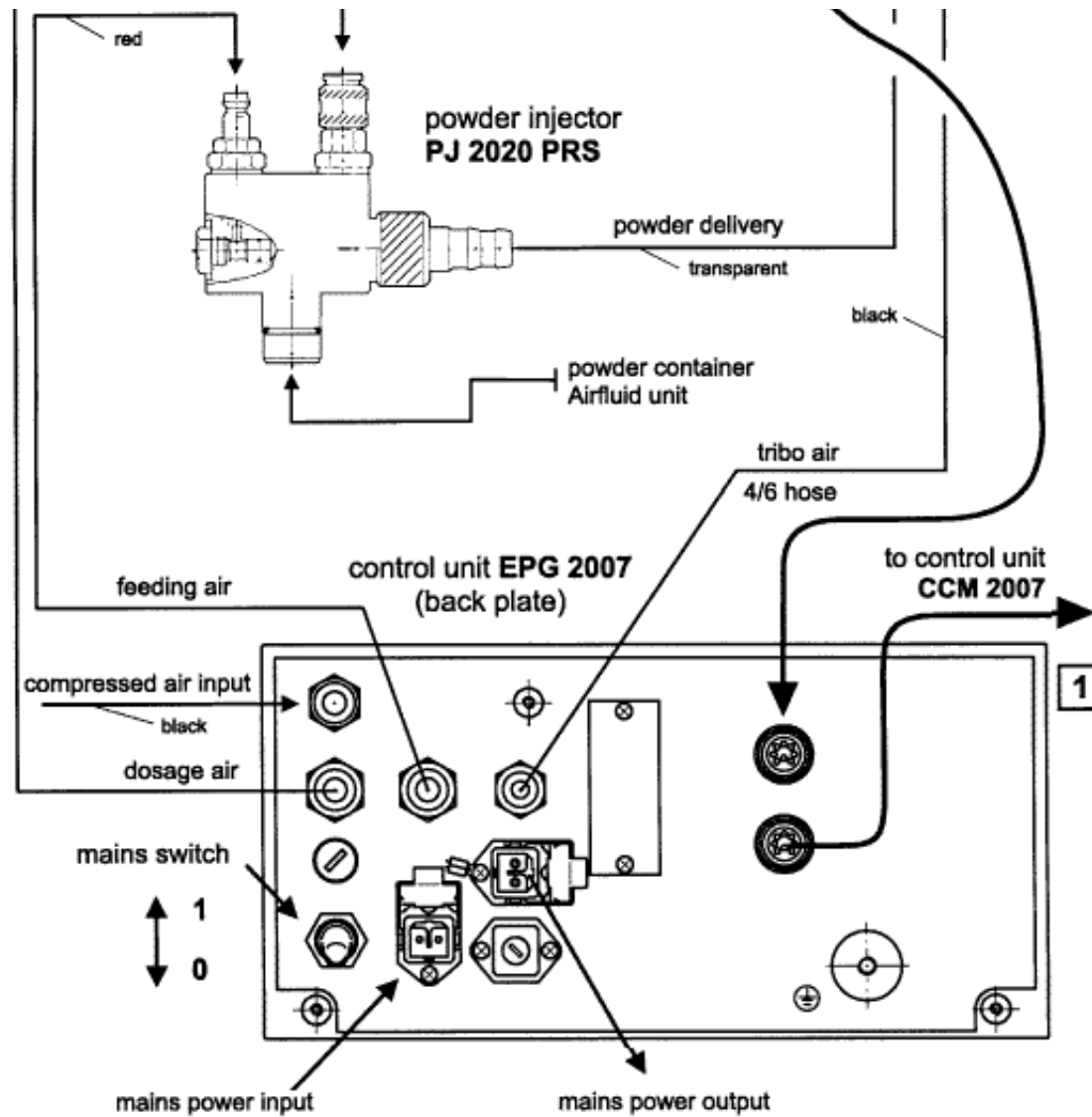




 Items, see [paragraph 3.3.1. "Extension sets and additional cables"](#)

3.3.8 Connection diagram with a Tribo-Manual spraygun





Items, see [paragraph 3.3.1. "Extension sets and additional cables"](#)

3.3.9 Connection diagram: Cable connector - interlock

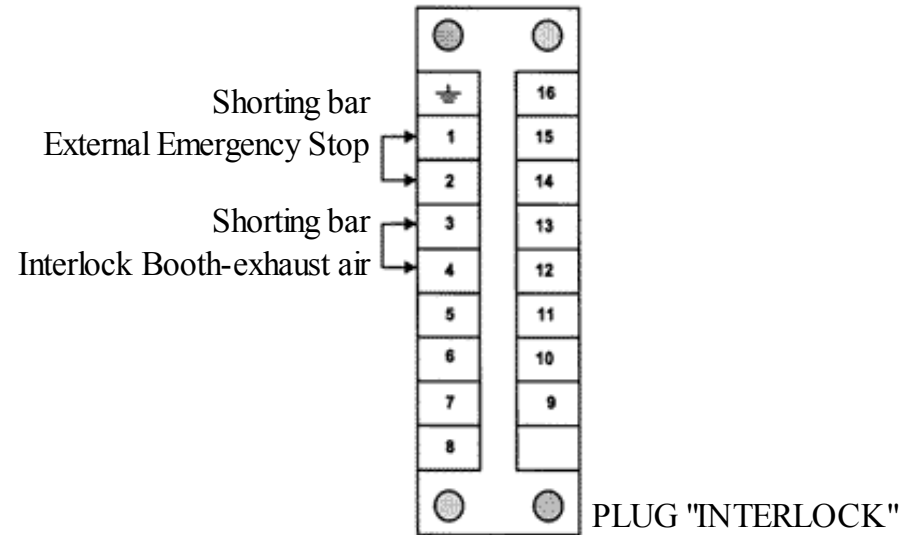


Cable connector with shorting bars ➡ without interlock

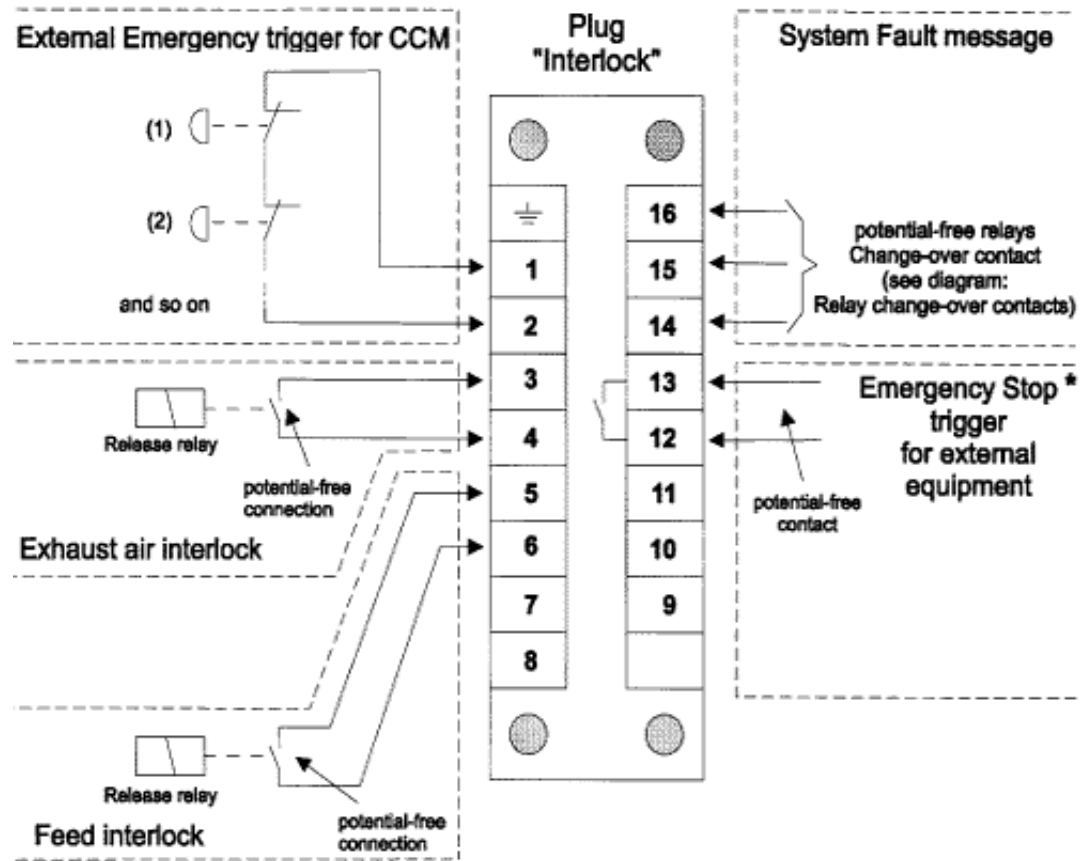


Caution

In this case the exhaust air interlock must be provided via the mains supply. (Interlock electrically the mains supply socket for the CCM 2007 with the exhaust air system. [See 1.1. safety regulations](#)).

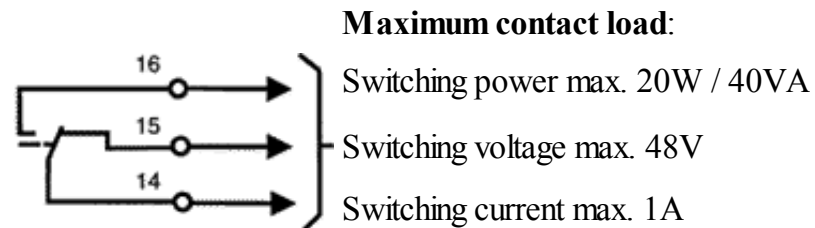


Cable connector with interlock of the control voltage



* During normal operation the switch between Pin 12 and Pin 13 is closed. In case of an emergency stop the switch is opened.

Diagram of the relay - change-over contact in the CCM 2007



(above shown position: no fault message, system o.k.)



Caution

The connector plug "interlock": Pin 1 to 10 and Pin 14 to 16 are designed for a 24 V DC control voltage which is supplied by the CCM 2007. Application of higher voltages damages the CCM 2007.

Pin 12 and Pin 13 can be used as a trigger for external emergency stops. Maximum allowed contact load: 220 V / 2 A.

3.4 Grounding



In order to achieve a good powder coating and for security reasons ([see 1.1., safety regulations](#)), the **ECOTECH**-Automatic-Control System must be properly grounded. The use of a min. 4 mm² copper cable with sufficient mechanical strength is recommended for the connection to the system ground. See also the operating instructions of the powder spraygun.

Good grounding of the workpiece is necessary for optimum powder coating. A poorly grounded workpiece causes:

- very bad wrap-around
- uneven coating
- back-spray onto spraygun and user
- dangerous electric charging of the workpiece



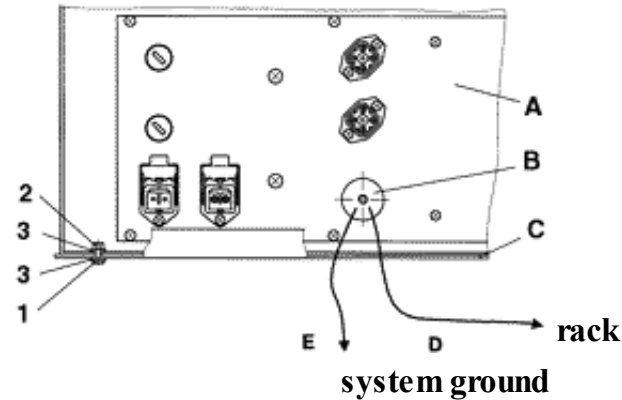
Caution

Sparks between workpiece and conveyor hooks (hangers) can occur if hooks or other hanger parts are not completely cleaned!

Preconditions for good grounding as well as coating are:

- Good grounding of the workpiece to be coated, of conveyors and hangers.
- Grounding of the powder spray booth and the transport and mounting equipment with the installation of a 16 mm² copper conductor to system ground.
- Regular cleaning of hangers from powder deposits.
- The grounding resistance of the workpiece must not exceed 1 MOhm (Mega Ohm).
- Connection of the ground strap at the **ECOTECH** - Automatic Control System and/or control cabinet.

3.4.1 Grounding of the CCM 2007



Course order:

Hint

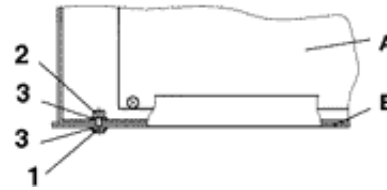
Star washers (3) must be positioned between the screw head (1) and the nut (2), which remove at this point the varnish when tightening the screws. In this way, a good grounding is ensured between the control unit **CCM 2007** (A) and the rack (C) resp. module supports (C).

1. Connect the control unit **CCM 2007** (A) by the fastening screws (1, 2, 3) to the rack (C) resp. module supports (C), ensuring that the connection is electrically conductive.
2. Connect the grounding cable (D) of the rack (C) with the control unit **CCM 2007** (A) to the grounding screw (B), ensuring that the connection is electrically conductive.
3. Connect grounding cable (E) with the control unit **CCM 2007** (A) to the grounding screw (B) and the system ground, ensuring that the connection is electrically conductive.

3.4.2 Grounding of the modules



e.g.: **GCM 2007, RCM 2007, BCM 2007, RCP 2007**

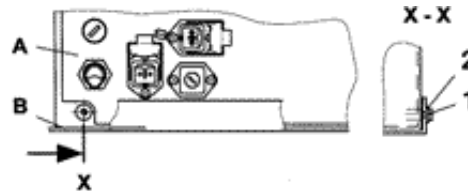


Hint

Star washers (3) must be positioned between the screw head (1) and the nut (2), which remove at this point the varnish when tightening the screws. In this way, a good grounding is ensured between the modules (A) and the rack (B) resp. module supports (B).

- Connect the modules (A) by the fastening screws (1, 2, 3) to the rack (B) resp. module supports (B), ensuring that the connection is electrically conductive.

3.4.3 Grounding of the EPG 2007



Hint

A star washer (2) must be positioned under the screw head (1), which removes at this point the varnish when tightening the screws. In this way, a good grounding is ensured between the control unit **EPG 2007** (A) and the rack (B) resp. module supports (B).

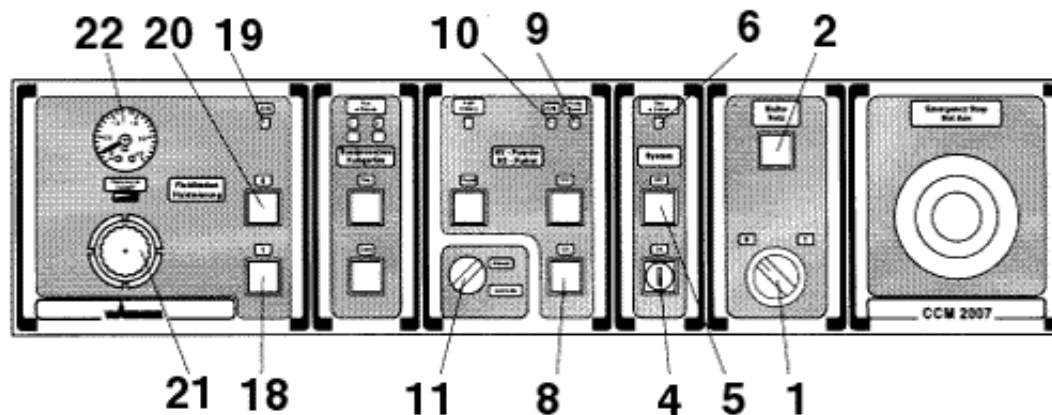
- Connect the control unit **EPG 2007** (A) by the fastening screws (1, 2) to the rack (B) resp. module supports (B), ensuring that the connection is electrically conductive.

3.5 Basic adjustments



Preconditions:

- The sprayguns and the control unit **EPG 2007** must be connected according to the connection diagram in [paragraph 3.3](#).
- The compressed air supply must be within 6 - 8 bar.
- The control unit **CCM 2007** must be turned off.
- All control units **EPG 2007** must be turned on.



Course order:

1. Turn the voltage regulator (3) at all control units **EPG 2007** counterclockwise beyond the switch point. This will prevent the high voltage and the powder delivery from turning on unexpectedly.
2. Turn on the mains power by switching the main switch (1) at the control unit **CCM 2007**:
The indicator (2) lights up.
3. Turn the key switch (4) clockwise, system is "**READY**":
The indicator (6) lights up "**RUN**".
The key can be removed again.
4. Close the valve (if provided) for the fluid air at the powder container.
5. Turn on the fluidization with the switch (18):
The indicator (19) lights up "**ON**".
6. Adjust fluid air pressure (21, 22) to between 1 and 2 bar at the control unit **CCM 2007**. If there is no valve at the powder container, make the fine adjustment at the control unit **CCM 2007**.
7. Fine-adjust the fluid air with the valve (if provided) at the powder container, until the fluidization of the powder is sufficient.



Caution

Avoid too much dust development

8. Switch the selector switch (11) to "**Manual**".
 9. Press the switch (8) HV-Powder "**ON**" at the control unit **CCM 2007**:
The indicator lights up (9) "**READY**".
 10. Turn on booth exhaust air:
The indicator lights up (10)"**ON**" instead (9) "**READY**".
 11. For further action, see [paragraph 4.1. "Adjusting the powder cloud"](#)
-

4. Operation

4.1 Adjusting the powder cloud



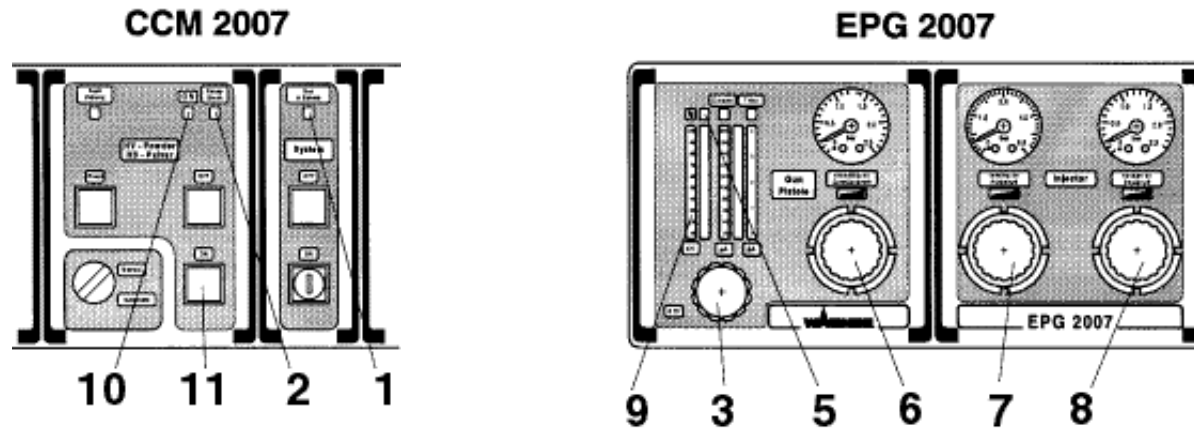
Preconditions:

- The basic adjustments must be carried out, see [paragraph 3.5](#).
- All control units and the control unit **CCM 2007** must be turned on and the indicators 1, 2 and 5 must light up.

Hint

The powder cloud and the high voltage should be adjusted individually for each gun separately at the corresponding control unit **EPG 2007**.

CCM 2007 EPG 2007



Course order:

1. Turn on the high voltage at the first control unit **EPG 2007**:
Turn the voltage regulator (3) clockwise until the minimum high voltage (2) is indicated. (Pull the trigger for manual sprayguns). The voltage display (9) changes from preset to actual value.
(Single LED display → bar graph LED display)
2. Adjust feeding air pressure (6) 0.5 - 4* bar
3. Adjust dosage air pressure (8) ~ 0.8* bar
4. Adjust atomizing air pressure (7) 0.5 - 1* bar
* Recommended values
5. Adjust the powder cloud:
If necessary, readjust the airs (6, 7, 8):
see operating manual of the powder spraygun.
6. Turn the voltage regulator (3) at the first control unit **EPG 2007** counterclockwise beyond the switch point and turn off again the high voltage.
7. Repeat the operation from step 1. to 6. for all control units **EPG 2007** respectively.
8. Press the switch (11) HV-Powder "OFF" at the control unit **CCM 2007**.
9. Adjust the high voltage to the required value (9) at all control units **EPG 2007**.
10. Switch the selector switch (11) to "AUTOMATIC":
The indicator lights up (9) "READY" instead (10) "ON".
11. Turn on the conveyor:
The indicator lights up (10) "ON" instead (9) "READY".
12. Control whether fluid air is turned on and turn on if necessary.

The system is ready for powder coating.

- By pressing the switch (11) HV-Powder "ON" the high voltage and the powder delivery will be turned on at all control units **EPG 2007** via the control unit **CCM 2007**.

4.2 Adjusting the automatic shut-off

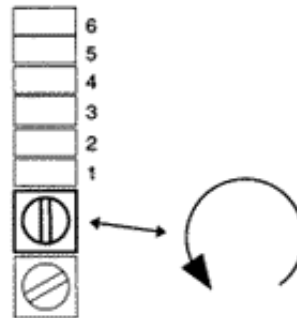


Hint

The EPG 2007 is factory-set for no automatic shut-off in case of workpiece contact. The enabling of the automatic shut-off feature and the adjustment of a certain shut-off distance depends on the gun type used and must therefore be carried out locally.

Course order: (see operating manual of the **EPG 2007** No. 0263 830 USA/UK)

1. Turn potentiometer (RT3) counterclockwise to the stop (screwdriver size 1 to 2).



2. Turn voltage regulator counterclockwise to the stop: The high voltage turns off.



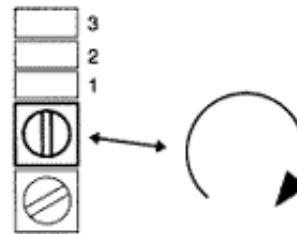
3. Hold manual or automatic spraygun at distance of approx. 1 cm from the grounded workpiece.



4. Turn voltage regulator clockwise to maximum setting. Press trigger on manual gun (current display is higher than voltage display).



5. Slowly turn potentiometer (RT3) clockwise until the high voltage switches off:



The automatic shut-off feature is now adjusted for automatic switch-off at approx. 1 cm distance.



Caution

If the current limitation is adjusted to another value, the shut-off feature must also be readjusted.

4.3 Practical notes

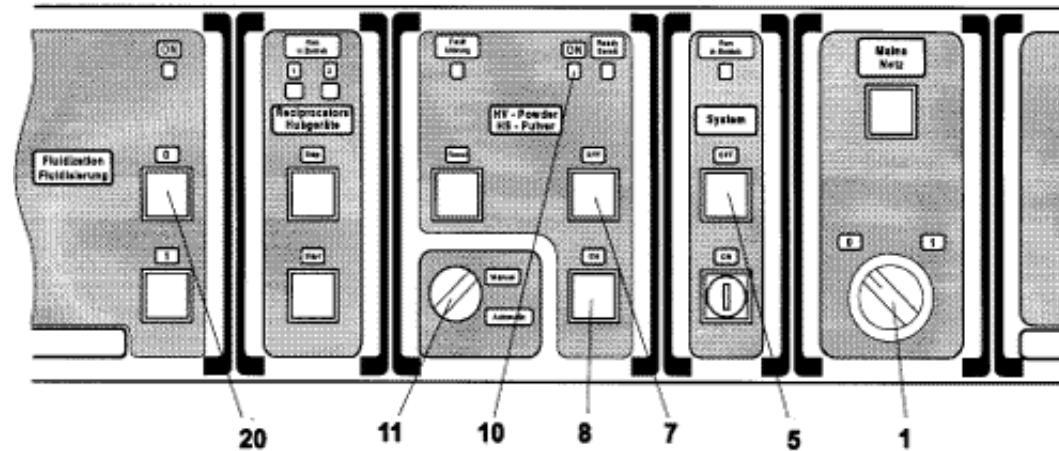
- High ambient temperatures must be avoided; in particular, the hoses must not be routed through factory areas exposed to direct sunlight.
- Powders with a gelling tendency should be processed at low temperatures and the hoses flushed with compressed air every day in order to prevent powder from sintering (baking).

4.4 Work interruption



Hint

The sprayguns and the powder feeding parts should be blown through and cleaned from powder deposits with every interruption of work.



Course order:

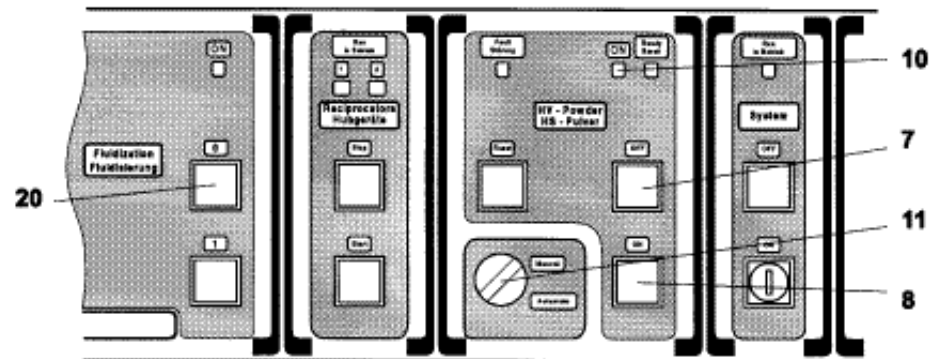
1. Press the switch (7) HV-Powder to "OFF" at the control unit **CCM 2007**.
2. Switch over the selector switch (11) to "MANUAL". The booth exhaust air is turned on and the indicator (10) lights up.
3. Turn off the fluidization by means the switch (20).
4. Remove powder injectors from feed systems to prevent further powder delivery.
5. Press the switch (8) HV-Powder to "ON":
The powder sprayguns are blown empty.
6. Switch the system to "OFF" by means of switch (5).
7. The system can be turned off via the main switch (1).

4.5 Changing powder

Hint

- When changing colors, all powder-transporting components must be cleaned thoroughly.
- During basic cleaning of the booth an empty container should be available which can take the returned powder quantity from the booth.





Caution

- The exhaust system (see point 2 of the course order) must be turned on during the complete cleaning, to prevent high dust development.

Course order: Cleaning

- Set the HV-Powder to "OFF" at the control unit **CCM 2007** via switch (7).
- Switch the selector switch (11) to "MANUAL". The booth exhaust air is turned on and the indicator (10) lights up.
- Turn off the fluidization via switch (20).
- Remove powder injectors from feed systems, to prevent further powder delivery.
- Set the HV-Powder to "ON" via switch (8) and set the dosage airs to maximum.
- Blow off powder hoses and guns.
- Clean the booth.
- For further steps, see operating manual of the individual components:
 - Booth
 - Powder feed center, if available

Course order: Re-starting

- Perform basic adjustments, according to [paragraph 3.5](#).
- Adjust the powder cloud, according to [paragraph 4.1](#).

5. Maintenance and cleaning

5.1 Cleaning of the ECOTECH 2007



Generally the **ECOTECH-Automatic Control System** is maintenance-free, if the user has followed this operating manual.



Caution

- During basic cleaning of the booth an empty container should be available which can take the returned powder quantity of the booth.
- Cleaning of the **ECOTECH-Automatic Control System**, see [paragraph 4.5. "Changing powder"](#)

5.2 Cleaning of the powder sprayguns



Preconditions:

- Turn off the high voltage at the **ECOTECH-Automatic Control System** and ensure that it cannot start up again. (Remove key)
- For further information, see operating manual of the corresponding spraygun.



Warning / Caution

WARNING

WHEN CLEANING THE ELECTROSTATIC SYSTEM, THESE SAFETY PROCEDURES MUST BE FOLLOWED. FAILURE TO FOLLOW THESE PROCEDURES MAY RESULT IN AN EXPLOSION/FIRE.

- Turn power pack to the "OFF" position and unplug from power source before starting to clean.
- Exhaust and fresh air introduction must be maintained during the clean up operation.
- Keep cleaning materials in approved safety containers.
- All personnel and cleaning equipment, including container used in cleaning operation, must be grounded.
- DO NOT turn on the **POWER PACK** until the cleaning operation has been completed, all cleaning materials have been removed from spray area, and spray area is free of any mixtures of powder and air produced by the cleaning operation.

CAUTION

- Clean equipment immediately after use.
- **NEVER IMMERSE SPRAYGUN OR PARTS OF IT IN ANY FLUID AT ANY TIME.**
- Be sure the Power Pack is turned off and unplugged from the power source.

NOTE

- The powder passages of the spraygun should be cleaned while cleaning the powder hose and powder pump, following instructions, provided with the powder pump (injector).
- (See document No. PJ 2020 PRS)

- If defects in the equipment are found, DO NOT use until repairs are completed.
- Clean the spray tip by removing from spraygun, flushing with air and replacing on spraygun.

6. Trouble shooting



Control unit CCM 2007

Malfunction	Cause	Remedy
Powder indicator does not light up	<ul style="list-style-type: none"> - Mains power not turned on - 2 / 1 AT slow blow fuses defective 	<ul style="list-style-type: none"> - Turn on mains power (if necessary release Emergency Stop) - Replace fuses
Fault indicator lights up	<ul style="list-style-type: none"> - One or several EPG 2007 have malfunctions - During the regular operation the mains switch of an EPG 2007 was turned on - An extension device has caused a malfunction 	<ul style="list-style-type: none"> - See EPG 2007 - Push "Reset" button - See operating manual of the extension device
HV and powder do not turn on, despite a release of the CCM 2007	<ul style="list-style-type: none"> - Shorting plug of the gap control is not inserted 	<ul style="list-style-type: none"> - See paragraph 2.6.5., Pos. 32 "Operating elements, back side of the CCM 2007".
System can not bestarted through the key switch	<ul style="list-style-type: none"> - Emergency Stop at the CCM 2007 was actuated - External Emergency Stop was actuated - Emergency Stop bars are not in the interlock plug - The short-circuit insert is not inserted in the extension socket 	<ul style="list-style-type: none"> - Release Emergency Stop - Release external Emergency Stop - See paragraph 3.3.9. "Connection diagram: Cable connector - interlock" - See paragraph 2.6.5., Pos. 31 "Operating elements, back side of CCM 2007".