Operating instruction

CL-151S Series

Manual book for Model 151S, 151S-B , 151S-Auto

POWDER COATING SYSTEM TYPE

Colo-151S-F

Colo-151S-B

COLO-151S-Auto

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General safety regulations

Technical safety regulations for electrostatic powder spraying equipment

This equipment can be dangerous if it is not used for its specified purpose. Consequently it should be noted that 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 and 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. Improper use of the controlling device can lead to accidents, malfunction or damage to the control itself.
2. Before every start-up check the equipment for operational safety (regular servicing is essential)!
3. Safety regulations 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. The plug and socket connection between the powder spraying equipment and the mains network should only be taken out when the power is switched off.
7. The connecting cable between the controlling device and the spray gun must be set up so that it cannot be damaged during operation. Safety precautions specified by local legislation must be observed!
8. Only original spare parts should be used, because the explosion protection will also be preserved that way. Damage caused by other parts is not covered by guarantee.
9. Before starting work familiarize yourself with all installations and operating elements, as well as with their functions! Familiarization during operation is too late!
10. Caution must be exercised when working with a powder/air mixture! A powder/air mixture in the right concentration is flammable! Smoking is forbidden in the entire plant area!
11. 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!

Notes on special types of hazard

Power

It is necessary to refer once more to the danger of life from high-voltage current if the shut-down procedures are not observed. High voltage equipment must not be opened - the plug must first be taken out – otherwise there is danger of electric shock.

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.

Static charges

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

Grounding/Earthing

All electricity conducting parts and machinery found in the workplace must be earthed 1.5 meters either must amount to maximally 1 MOhm. 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 must constantly be kept clean in order to guarantee the necessary conductivity. The appropriate measuring devices must be kept ready in the workplace in order to check the earthing.

Compressed air

When there are longer pauses or stand-still times between working, 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.

Crushing and cutting

During operation, moving parts may automatically start to move in the operating area. It must be ensured that only instructed and trained personnel go near these parts. The operator should ensure that barriers comply with the local security regulations.

Access under exceptional circumstances

The operating firm must ensure that local conditions are met when repairs are made to the electronic parts or when the equipment is restarted so that there are additional measures such as barriers to prevent unauthorized access.

Prohibition of unauthorized conversions and modifications to machines

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

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, in particular the machinery within 5 meters 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 maximally 1 MOhm.
10. The control device must be switched off if the hand gun is cleaned or the nozzle is changed.
11. When working with cleaning agents there may be a risk of hazardous fumes. The manufacturers instructions 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.
15. Repairs must only be carried out by specialists and under no circumstances should they be carried out in the operating area. 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 10 g/m³ should be used.

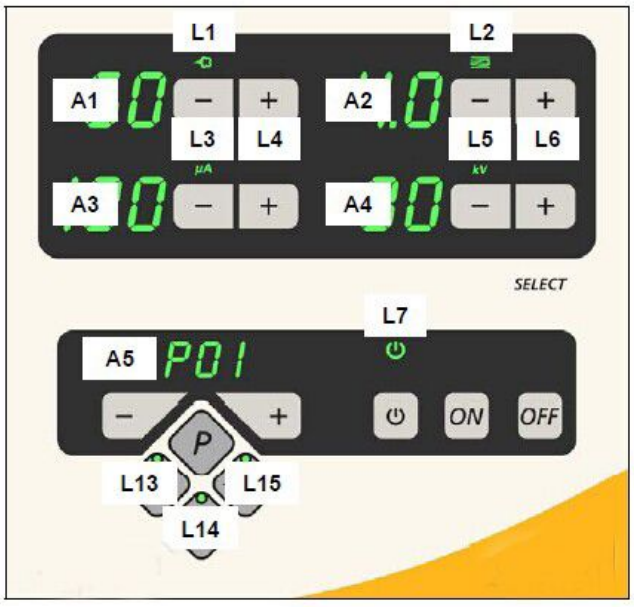
Technical Data—control unit (CG07/06/CL-151)

Mains input voltage	100-240 VAC
Operating frequency	50-60 Hz
Input power	40 VA
Nominal output voltage (to the gun)	max. 12 V
Nominal output current (to the gun)	max. 1 A
Protection type	IP6x ◀ FM ▶ IP54
Ambient temperature range	0°C - +40°C (+32°F - +104°F)
Max. operating temperature	85°C (+185°F)

Compressed air connection	1/4" male quick release
Input pressures (must be set in the software)	5,5 bar 6,0 bar 6,5 bar
Max. input pressure	10 bar / 145 psi
Min. input pressure (while unit in operation)	6 bar / 87 psi
Max. water vapor content of the compressed air	1.3 g/m³
Max. oil vapor content of the compressed air	0.1 mg/m³

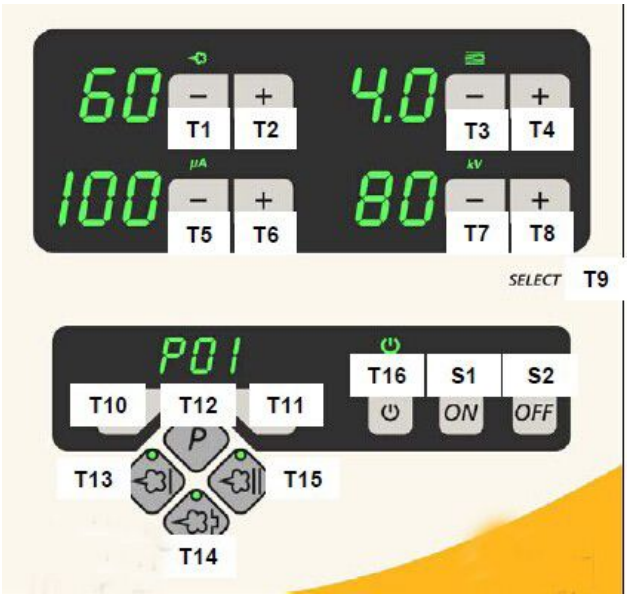
Control unit function

Operating and display elements



Designation	Function
A1-A4	Display of actual / preset values and system parameters
A5	Display of program numbers, error diagnosis codes and status information
L1	Powder output display (in %)
L2	Total air volume display (in Nm³/h)
L3	Spray current display (in µA)
L4	Fluidizing display (in Nm³/h)
L5	High voltage display (in kV)
L6	Electrode rinsing air display (in Nm³/h)
L7	Activation of vibration/fluidization
L13	Application mode for flat parts is activated
L14	Application mode for complicated parts is activated
L15	Application mode for recoat parts is activated

Input keys and switches



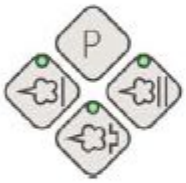
Designation	Function
T1-T8	Input keys for preset values and system parameters
T9 (Select)	Switch between display levels
T10-T11	Program change
T12 (P)	Program selection for user-defined programs (max. 20)
T13	Application mode for flat parts (fixed values)
T14	Application mode for complicated parts with depressions (fixed values)
T15	Application mode for overcoating parts already coated (fixed values)
T16	Switching on and off the fluidization (OptiFlex F) Switching on and off the vibration and the fluidization (Opti-Flex B) Switching on and off the stirrer (OptiFlex S) Switch to system parameter mode (press for 5 seconds)
S1/S2	Power switch On/Off

General information

Display of the programs

The number of the adjusted program is shown on display **A5**. A **P=Program** is placed in front of the two digit program number as a reference.

Display of the values



Display of the actual values

The actual values are shown on the displays **A1-A4**. By operating the keys **T1-T8** and **T12-T15**, preset values display will be switched over.

Display of the preset values/setting values

The preset values are shown on the displays **A1-A4**. If no operation takes place during 3 seconds, the actual values displayed will be switched over.

Edit and save the preset values

The preset values can be adjusted in steps by ± 1 with the keys **T1-T8**. Modified preset values are saved automatically, after 2 seconds, in the current program.

Change between program and application mode

Pressing the keys **T10** and **T11** in one of the three predefined application modes (Preset mode), causes the unit to change to the user-defined programs. These keys also allow the change of programs in the program mode.

The simultaneous operation of the + and - key on the back of the powder gun (OptiSelect gun) causes the control unit to rotate between the 3 predefined programs (Preset mode) and the first (P1) user-defined program (Program mode).

Viewing of preset values

To change from the actual value to the preset value display without changing a preset value at the same time, the corresponding keys must be lightly touched.

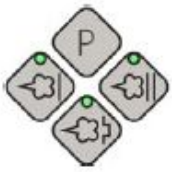
Example:
Lightly touching key **T1** indicates the preset values, pushing harder on this key, reduces the powder output. This behavior does not apply to the program select keys, where the program number is directly changed.

Daily start up

The daily start-up of the OptiStar CG07 Manual gun control unit takes place by the following steps:

Select the operating mode

Select the application mode with three predefined modes (Preset mode) or the user-defined program mode with 20 user-defined programs (Program mode).



1. Turn on the gun control unit with the **ON** key
2. Select the corresponding application mode with key **T12** (for Program mode) or keys **T13/T14/T15** (for Preset mode)

The predefined mode automatically set values for high voltage and spraying current:

Presetting	Desired µA	Desired kV
Flat parts	100	100
Complicated parts	22	100
Overcoating	10	100

Predefined application mode (Preset mode)

Select the preset mode with the application keys **T13/T14/T15**. The LED of the corresponding key illuminates. No program number will be shown on the display **A5**. The air values can be individually specified and are automatically stored in the corresponding program.

Application mode for flat parts

This application mode is suitable for the coating of simple, flat workpieces without larger cavities.

Application mode for complicated parts

This application mode is suitable for the coating of three-dimensional workpieces with complicated shapes (e.g. profiles).

Application mode for recoating parts already coated

This application mode is suitable for recoating of workpieces which are already coated.

Exiting the Preset mode

Exit the Preset mode with the keys **T10**, **T11** or **T12**. The preset values of the Program mode used before the Preset mode are displayed by the control unit memory.

User-defined mode (Program mode)

Select this application mode with the key **T12**. Here, 20 user-defined programs can be set and saved. The programs 1-20 were loaded with presets by factory (4.0 Nm³/h total air, 60% powder output, 80 kV high voltage, 80 µA spray current, 0.2 Nm³/h electrode rinsing air and 1.0 Nm³/h fluidizing air).

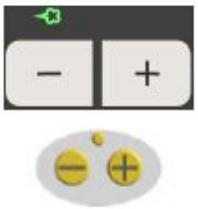
Setting powder output and powder cloud

The powder output is dependent on the selected powder amount (in %) and the adjusted total air volume.

Setting the total air volume

1. Adjust the total air volume with the keys **T3**/**T4** (see also the injector operating manual)
   - Adjust the total air volume according to the corresponding coating requests

Setting the powder output



1. Adjust the powder output volume (e.g. according to the desired coating thickness)
   - The selection takes place with the keys **T1/T2** on the control unit or with the +/- keys on the rear side of the powder gun (OptiSelect gun type). Factory default setting of 60% is recommended for initial spraying. The total air volume is thereby kept constant automatically by the control unit
2. Check the powder fluidizing in the hopper and ensure you have a small simmer or very low boiling action
3. Point the gun into the booth, press the gun trigger and visually check the powder output

Note:
As a factory default value, a powder rate of 60% and a total air volume of 4 Nm³/h are recommended. By inserting values, which the equipment cannot convert, the operator is made aware by flashing of the appropriate display and a temporary out of range message!

Setting the electrode rinsing air

1. Adjust the correct electrode rinsing air according to the applied nozzles (deflector plate, flat jet nozzle), see note below for default/starting values
   - Press key **T9** (**SELECT**)
     The second display level is switched over
   - Press keys **T7/T8**:
     Here, the corresponding air volume value is entered

- If this display level is not operated for 3 seconds, the first display level is switched over independently

Note:
By using flat jet nozzles, the factory default value is approx. 0.2 Nm³/h, by using round jet nozzles with air-rinsed deflector plates, the factory default value is approx. 0.5 Nm³/h!

Setting the fluidizing

The fluidizing can be adjusted on the OptiFlex B, OptiFlex S and OptiFlex F manual device.

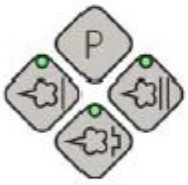
The powder fluidizing depends on the powder type, the air humidity and the ambient temperature. Fluidizing and vibration start by switching on the control unit.

Procedure:

1. Adjust the air mover by turning the ball valve fully open and adjusting needle valve as required. The ball valve and needle valve are located on the air mover (OptiFlex F)
2. Open the powder hopper cover
3. Press key **T9** (**SELECT**)
   The second display level is switched over
4. Adjust the fluidizing air with the keys **T5/T6**
   - If the adjustment keys (+ or -) are not operated after 3 seconds, the display will go back to the **µA** display
   - The powder should "simmer" inside the hopper. Occasional mixing of the powder might be required
5. Close the cover again
6. According to the device type, stirrer, vibration and/or fluidizing can be switched on now

Powder coating

Attention:
Make sure first, that all electrically conductive parts within 5 m of the coating booth are grounded!

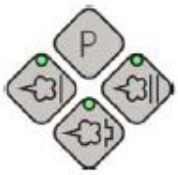


1. Take the gun into the hand and hold it into the coating booth, but do not yet direct it to the object to be coated
2. Select the operating mode:
   Select the operating mode with program key **T12** or application keys **T13/T14/T15**. The LED of the corresponding application key illuminates
3. Adjust powder delivery and total air settings as required. This will need to be done as the gun is triggered to visualize the spray pattern
4. Press the powder gun trigger
5. Coat the objects

Remote control by GM02 manual gun

Various functions can be remotely controlled with the + and - keys on the back side of the powder gun (OptiSelect gun type):

- Adjust the powder output by pressing the + or - key on the gun. The powder output will be increased or decreased accordingly
- Change application modes (Preset mode/Program mode) by pressing the + and - keys on the gun at the same time. The change takes place counterclockwise. Check by observing the key LEDs on the control unit



Note:
By pressing one of the keys, the preset values display will be shown!

Shut-down

The shut-down of the OptiStar CG07 Manual gun control unit takes place in following steps:

1. Remove the powder gun trigger
2. Switch off the control unit
3. Switch off the Airmover (OptiFlex F)

Note:
The adjustments for high voltage, powder output, electrode rinsing air and fluidizing remain stored!

If in disuse during several days

1. Remove the mains plug
2. Clean the coating equipment (see the corresponding operating manual)
3. Turn off the compressed air main supply

Saving programs

Note:
The values in programs 1-20 and the 3 preset application modes are saved automatically, without confirmation!

Remarks:Optistar CG07 (151S control) ,GM02(colo-06)

System parameter P0

Configure the OptiStar CG07 Manual gun control unit with the system parameter **P0**, which determines the device type (F, B, S etc.). This value will automatically be saved in the control unit memory once set.

Entering the system parameter

1. To enter the system parameter mode, press and hold the key **T16** until the displays changes (approx. 5 seconds)
2. The system parameter number is shown in the display **A1** with a **P**
3. Adjust the corresponding system parameter value (device type) with the keys **T5/T6**.
   The value of the adjusted system parameter appears on display **A3**

Name	Description	Values	Display
P0	Device type	0 - Fluidizing device (type F) 1 - Box device (Vibr.) (type B) 2 - Stirrer device (type S) 3 - Automatic device 4 - Man. equip. with fluidization	F B S A S Fd

Notice:
The manual equipment with fluidization (S Fd) is used if an OptiFlex 1/2-S has a fluidization.

In the case of a OptiFlex 2-F double equipment, the device without fluidization air connection has the S-type parameterization (P0 = 2).

Exiting the system parameter mode

Exit the system parameter mode with the key **T16** and the display will switch to actual values. The modified values will be saved in the equipment memory.

If the equipment is switched off while in the system parameters mode, any changes made will not be stored by the equipment memory.

Trigger counter and software request

The status information can be indicated on display **A5** by pressing a combination of two different keys as shown. First press and hold key **T12**, then press either **T10** or **T11** depending on requested information.

Status information	Key combination
Trigger hours counter (total time in hours of gun trigger time). The trigger counter can't be reset!	**T12** with **T10**
Software version	**T12** with **T11**

The status display is shown as long as a key is held.

Keyboard lock

The OptiStar CG07 Manual gun control unit contains a keyboard lock, which prevents changing individual values for each parameter (kV, µA etc.) within an application mode (Preset or Program). The following is not affected by the keyboard lock and will still operate under normal conditions:

- Program selection
- Display of preset values of the current program
- Display of the actual values
- Error acknowledgement

The keyboard lock is activated and deactivated by pressing and holding key **T9** (**SELECT**) and then key **T11**, the LED **L11** (**REMOTE**) is flashing.

The keyboard lock status remains stored, when switching the equipment off and on.

Operation with other guns

Operation and configuration of the Tribo gun

Connect the Tribo gun to the OptiStar CG07 Manual gun control unit with the corresponding adapter. The Tribo gun can be configured by holding the keys **T7** and **T8** when switching on. The selected adjustment remains stored, when the device is switched off. To deactivate the Tribo gun mode, repeat the steps above.

Operation of the Tribo gun without adapter

For continuous operation, the Tribo gun can be operated without corresponding adapter to the OptiStar CG07 Manual gun control unit (automatic and manual equipment). To use the Tribo gun without the Tribo adapter, move the wire from Pin 5 to Pin 1.

Powder preparation

The preparation of the coating powder for conveying takes place principally by fluidization and vibration or stirrer. Fluidization and vibration or stirrer are switched on and off with the key **T16**. Depending on the manual equipment type, additional functions are available.

The activated fluidization and vibration status is indicated by the **L7** LED on the display.

OptiFlex F (with fluidized powder hopper)

The fluidization is switched on by gun triggering or pressing the key **T16**. If the gun trigger has been released for one minute, the fluidization will automatically turn off. Upon engaging gun trigger again, the fluidization will turn on again. This mode of operation can be override by use of the key **T16**. By fluidizing, the powder receives a liquid-similar consistency and can be conveyed by means of injector principle (see the injector operating manual). This manual equipment type has no vibration.

The activated fluidization and vibration status is indicated by the **L7** LED on the display.

OptiFlex B (with powder box)

The fluidization and the vibration are switched on and off by gun triggering or pressing the key **T16**. The vibration causes the powder movement to the suction tube. If the gun trigger has been released for one minute, the fluidization will automatically turn off and after 1 minute, the vibration will turn off. By pressing the key **T16**, the fluidization and the vibration is switched on and off and overrides the gun trigger control.

The activated fluidization and vibration status is indicated by the **L7** LED on the display.

Cleaning mode

The cleaning mode enables blowing off powder accumulations in the powder hose with preset air pressure. This function is a two step process to activate.

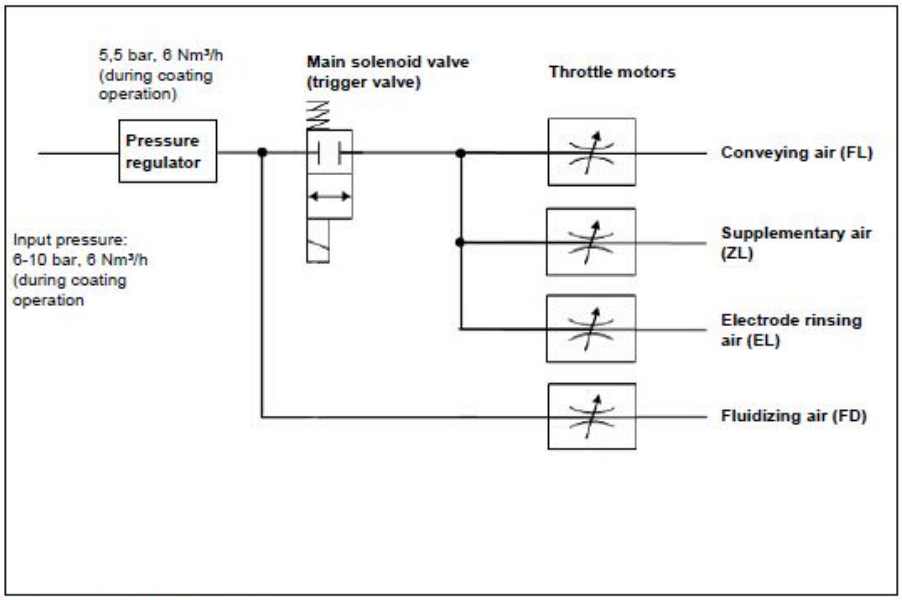
First press and hold program key **T12** (approx. 3 seconds) until the circulating luminous segment is shown in display **A5**. Then press the gun trigger and cleaning will start.

Note:
When using OptiFlex F manual coating equipment, the injector (pump) must be disconnected prior to cleaning procedure, on OptiFlex B, the suction unit must be lifted, and on OptiFlex S, the powder container must be empty!

The cleaning mode is terminated by pressing the program key **T12**.

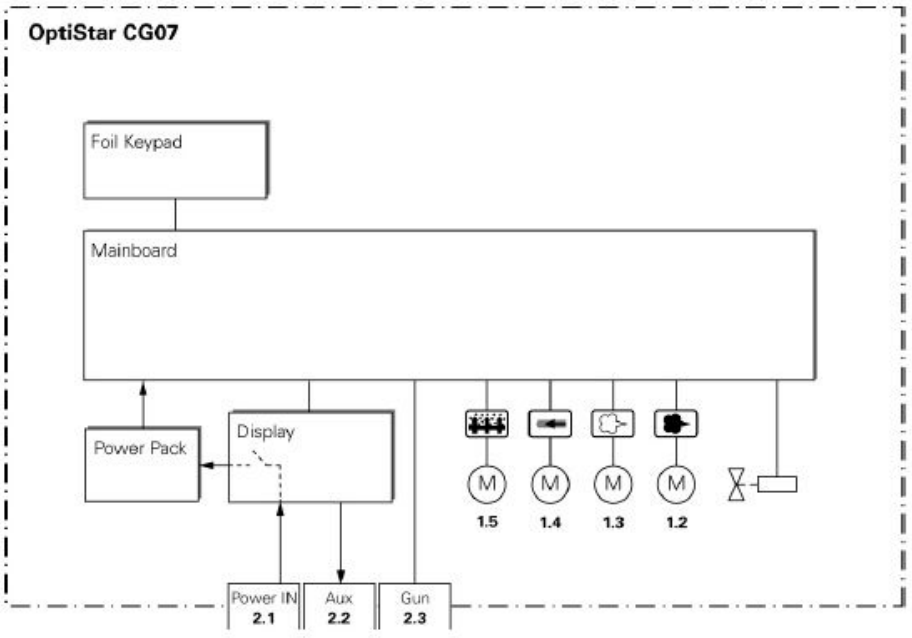
Schematic diagrams

Pneumatical diagram - OptiStar CG07



Pneumatical diagram - OptiStar CG07

Block diagram - OptiStar CG07



Block diagram - OptiStar CG07

Remarks: optistar CG07(151S control)

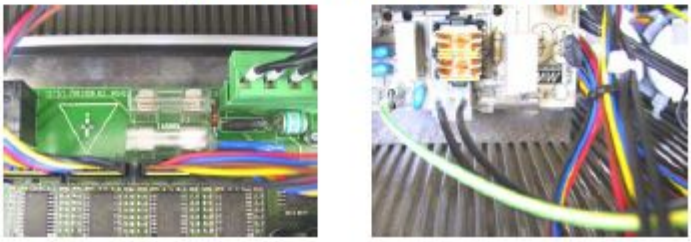
Troubleshooting

Repairing the electrical part of the control unit

Attention, danger!
Before starting to work on the control unit, disconnect the mains plug!

Replacing the fuse(s)

1. Loosen the screws on the front side of the housing
2. Hold the front plate with one hand, remove the fuse(s) (quick-acting) from the fuse holder and replace with a new one



Fuse(s)

3. Reattach the front plate
4. Reconnect the mains cable

Replacing the power supply board

1. Loosen the screws on the front side of the enclosure
2. Disconnect the plugs on the defective board
3. Squeeze the standoffs with a pointed pliers and remove the power supply board. Replace the defective standoffs
4. Place the new board on the standoffs, press them into the board and snap into mounting bracket within enclosure. Re-connect the plugs.
5. Reassemble the control unit in reverse order as described above and install it

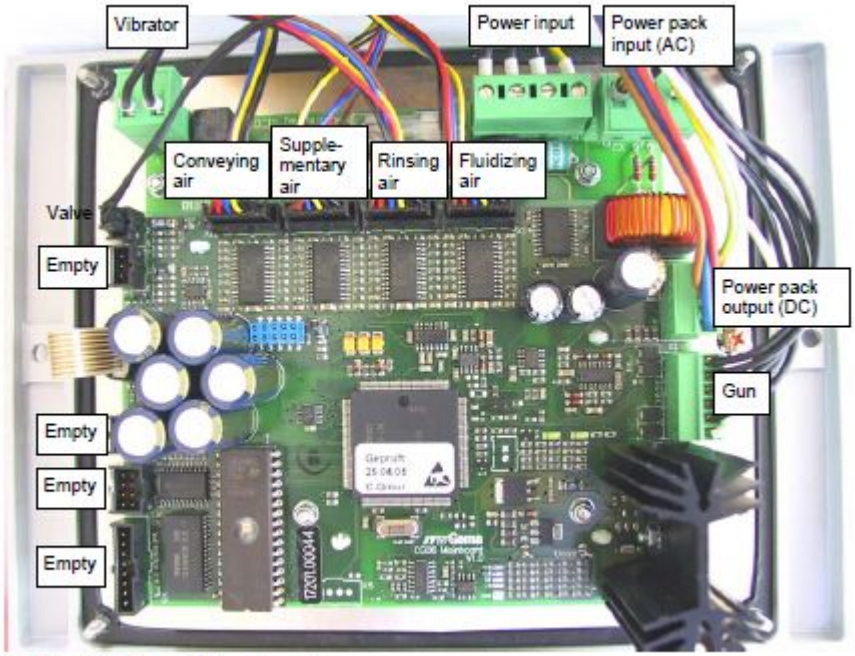
6. Reconnect the mains cable

Replacing the front plate

1. Loosen the screws on the front side of the enclosure
2. Disconnect all plugs from the front plate
3. Replace the front plate
4. Reassemble the front plate and the control unit in reverse order as described and install it

Attention:
The motor plugs are to be put in according to the annotation!

5. Reconnect the mains cable



OptiStar CG07 - mainboard layout

Repairing the pneumatic part

Replacing the pneumatic part

1. Remove every electric and pneumatic connection on the rear side of the control unit (disconnect mains cable and remove compressed air supply)
2. Loosen the screws on the rear side of the housing
3. Remove the pneumatic hoses from the part to be replaced (see chapter "Removing the pneumatic hoses")
4. Dismantle the defective part and replace it
5. Reconnect the pneumatic hoses (see chapter "Fitting the pneumatic hoses")
6. Reassemble the control unit in reverse order as described and install it

Removing the pneumatic hoses

Before replacing a pneumatic part, all corresponding pneumatic hoses should always be disconnected first. This happens by pressing the ring on the quick release coupling of the hose. The hose can be pulled out easily.

Fitting the pneumatic hoses

In order to reconnect the pneumatic hoses, proceed as follows:

- Insert the hose in the quick release coupling up to the end stop. The hose is held firmly again

Error diagnosis of the software

General information

The correct function of the OptiStar CG07 Manual gun control unit is constantly monitored. If the equipment software determines a fault, an error message is indicated with an error code. Following is monitored:

- High voltage technology
- Air technology
- Power supply

Help codes

The error diagnosis codes (error codes) are shown in the display **A5**. The error codes are stored in an error list in the order of their occurrence. Each error in the list must be individually acknowledged with the keys **T10** or **T11**.

The error codes are shown with the format **Hnn**, whereby **nn** is the numeric code, if necessary with a leading zero.

The errors are displayed in the order of their occurrence. The keys **T10** and **T11** cannot be used for other functions, as long as an error code is shown on **A5**.

Here is the complete listing of all error codes possible for the OptiStar CG07 Manual gun control unit:

Code	Description	Criteria	Remedy
Pneumatics:			
H06	Trigger valve (main solenoid valve)	Solenoid coil current lower than preset limiting value Valve defective, main board or cable defective	Main solenoid valve error, connection cable from main solenoid valve to basic electronics is missing, check main solenoid valve
H07	Supplementary air volume too high (total air setting on display)	The preset value for supplementary air is too high compared to your conveying air setting	Reduce supplementary air value or increase conveying air value to balance air volume to injector and clear help code
H08	Conveying air volume too high (powder % setting on display)	The preset value for conveying air is too high compared to your supplementary air setting	Reduce conveying air value or increase supplementary air value to balance air volume to injector and clear help code
H09	Powder output higher than 100%	The powder output multiplied with the powder hose length factor and the daily correction value is larger than 100% Daily correction value too large	Reduce powder output Reduce daily correction value
H10	Conveying air range lower deviation	The theoretical value for conveying air falls below minimum Total air is smaller than minimum	Limit conveying air to conveying air minimum
High voltage:			
H11	Gun error	No oscillation, cable broken, oscillator or gun defective	Replace gun cable, cascade etc.
Power supply:			
H20	Overvoltage +15V supply	Power pack defective or overloaded	Replace the power pack, if error is permanent
H21	Undervoltage +15V supply	Power pack defective or overloaded	Replace the power pack, if error is permanent
H22	Undervoltage -15V supply	Power pack defective or overloaded	Replace the power pack, if error is permanent
H23	Undervoltage +5V supply	Power pack defective or overloaded	Replace the power pack, if error is permanent

Code	Description	Criteria	Remedy
EEPROM (equipment memory):			
H24	EEPROM content invalid	EEPROM error	Load factory settings initialize EEPROM (see therefore in chapter "RAM reset")
H25	Timeout during EEPROM writing	EEPROM error	
H26	Values not correctly stored in EEPROM during switching off	EEPROM error	
Throttle motors:			
H60	Conveying air reference position not found	Throttle motor or needle blocked, limit switch defective, throttle motor error	Calibrate again, replace throttle valve
H61	Supplementary air reference position not found	Throttle motor or needle blocked, limit switch defective, throttle motor error	(see above)
H62	Electrode rinsing air reference position not found	Throttle motor or needle blocked, limit switch defective, throttle motor error	(see above)
H63	Shaping air / fluidizing air reference position not found	Throttle motor or needle blocked, limit switch defective, throttle motor error	(see above)
H64	Conveying air throttle does not move	Short circuit in limit switch, throttle motor defective	(see above)
H65	Supplementary air throttle does not move	Short circuit in limit switch, throttle motor defective	(see above)
H66	Electrode rinsing air throttle does not move	Short circuit in limit switch, throttle motor defective	(see above)
H67	Shaping air / fluidizing air throttle does not move	Short circuit in limit switch, throttle motor defective	(see above)
H68	Conveying air position lost	Lost steps, limit switch defective, throttle motor defective	(see above)
H69	Supplementary air position lost	Lost steps, limit switch defective, throttle motor defective	(see above)
H70	Electrode rinsing air position lost	Lost steps, limit switch defective, throttle motor defective	(see above)
H71	Shaping air / fluidizing air position lost	Lost steps, limit switch defective, throttle motor defective	(see above)

Help codes list

The last appeared four errors are stored in a list by the software. If an error appears, which is already in the list, it will not be listed again. If the list is full, no more new entries are added.

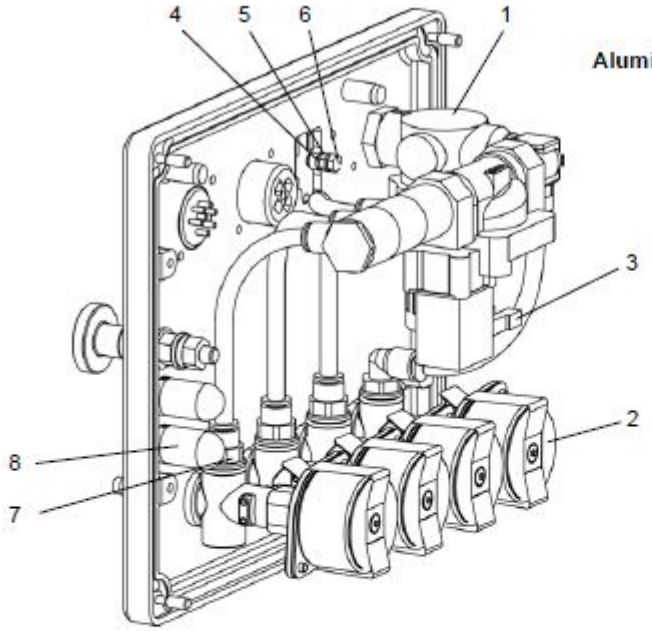
Appearance of errors

It is possible that an error appears just shortly, but after the acknowledgement it will disappear. In this case, switch off the OptiStar control unit and switch it on again (Reset by restarting).

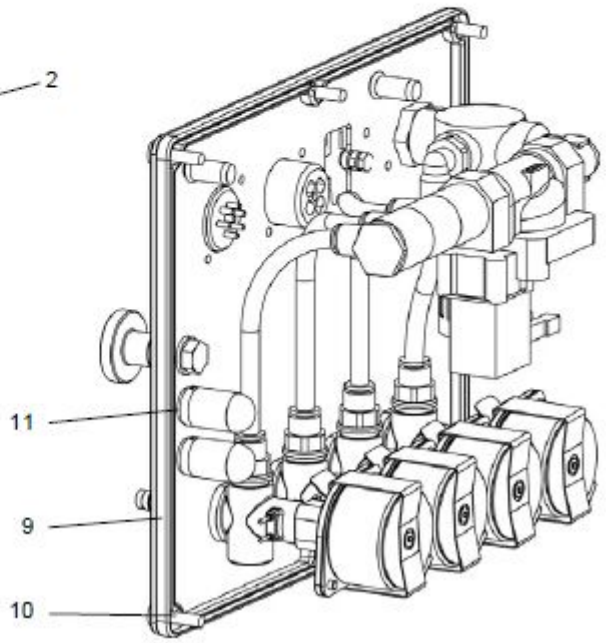
Spare parts list

OptiStar CG07 Manual gun control unit - rear wall

1	Pneumatic group - complete	1001 029
2	Throttle motor - completely assembled	1000 064
3	Main solenoid valve cable - CG07	1001 410
4	Spring washer - M3 R	201 880
5	Hexagon nut - M3	202 142
6	Cylinder screw - M3x16 mm	221 074
7	Screw-in nipple - 1/8", Ø 6 mm, OR	262 315
8	Fluidizing pad - 1/8"a	237 264
9	Gasket (steel version only)	1003 528
10	Cap screw K-SL - M4x16 mm (steel version only)	216 801
11	O-Ring - Ø 8,73x1,78 mm (steel version only)	248 428



Aluminium version

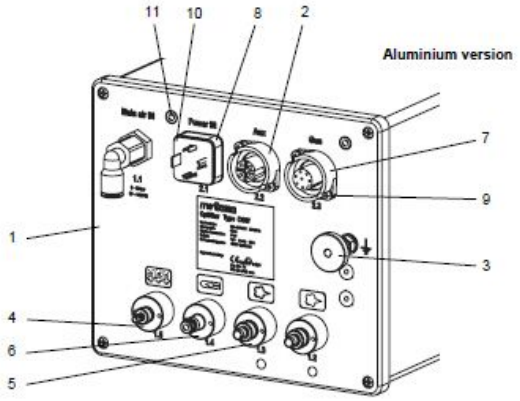


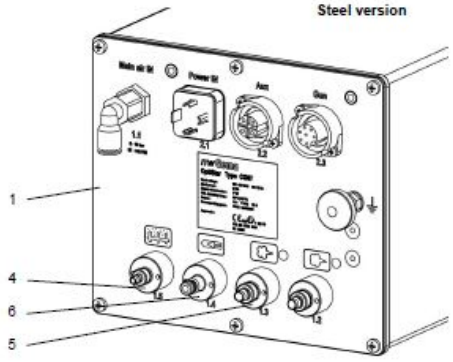
Steel version

Manual gun control unit - outside rear wall

	OptiStar CG07 rear wall - complete (aluminium version)	1000 063
	OptiStar CG07 rear wall - complete (steel version)	1004 500
1	Rear wall (aluminium version)	1000 067
	Rear wall (steel version)	1004 175
2	OptiStar CG07 vibrator connection, assembled	1001 177
3	Milled nut - M6	200 433
4	Hose connection - complete, Ø 6/4 mm (aluminium version)	1001 520
	Hose connection - complete, Ø 6/4 mm (steel version)	1004 184
5	Hose connection - complete, Ø 8/6 mm (aluminium version)	1001 519
	Hose connection - complete, Ø 8/6 mm (steel version)	1004 183
6	Rectus quick release connection - complete (aluminium version)	1001 517
	Rectus quick release connection - complete (steel version)	1004 181
7	Gun connection CG07, assembled	1001 179
8	Mains connection CG07	1001 176
9	Cap screw - M3x8 mm	202 363
10	Cap screw - M3x12 mm (not shown)	216 747
	Shock protection (is fixed on the rear wall, not shown)	1001 058
11	Fixing screws for shock protection (2 pieces) - M5x12 mm	216 348
	Corona/Tribo adapter (not shown)	1001 869
	Protection cap for 2.2 Aux connection (not shown)	206 474
	Connecting cable (power supply) for 2 control units operation (not shown)	1001 867

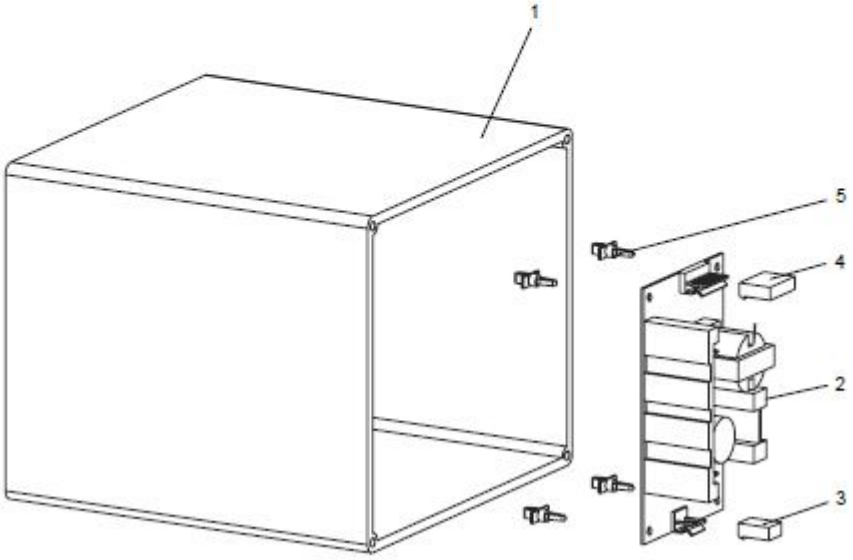
Manual gun control unit - outside rear wall





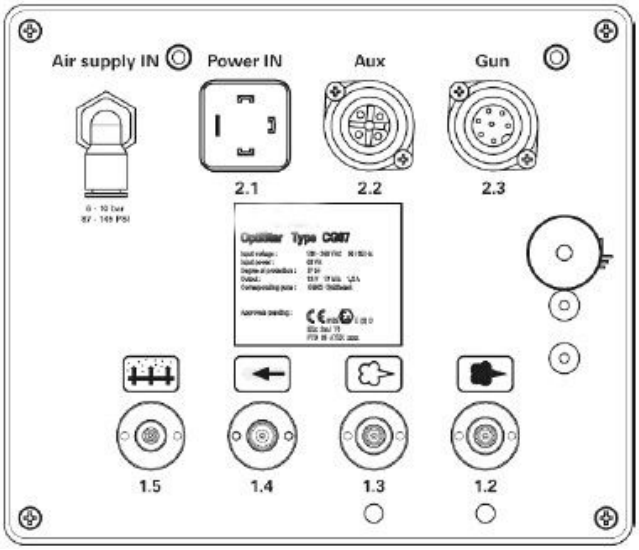
OptiStar CG07 Manual gun control unit - housing and power pack

1	Housing - CG07 control unit (aluminium version)	1001 435
	Housing - CG07 control unit (steel version, not shown)	1004 200
2	Power pack - 15 VDC	374 059
3	Power pack connection cable, assembled	1000 388
4	Connection cable, assembled	1001 178
5	Standoff - Ø 4/4,8/4,8 mm, PA	263 508



OptiStar CG07 Manual gun control unit - power pack and housing

Start-up and operation



Connection	Description
1.1 Air Supply IN	Compressed air connection (6-10 bar / 87-145 PSI)
2.1 Power IN	Mains cable connection (100-240 VAC)
2.2 Aux	Vibration motor connection for OptiFlex B
2.3 Gun	Gun cable connection
1.5	Fluidizing air connection
1.4	Electrode rinsing air connection
1.3	Supplementary air connection
1.2	Conveying air connection
	Grounding connection

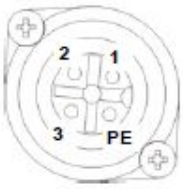
Pin assignment

Power IN

Power IN connection

1	Neutral conductor (power supply)
2	Phase conductor (100-240 VAC)
3	Stirrer output
PE	Ground PE

Aux



Aux connection

1	Vibrator phase output
2	Neutral conductor
3	Not used
PE	Ground PE

Gun

Gun connection

1	Ground
2	Remote control 1 (GM02)
3	Chassis ground
4	Trigger
5	Remote control 2 (GM02)
6	Oscillator
PE	Ground PE

Initial start-up

Setting the device type

Adjust the corresponding device type (fluidizing, box or stirrer device) by pressing the key **T16** (see chapter "System parameter P0" for more details).

Note:
If the control unit is supplied as a component of an OptiFlex complete unit, then the corresponding system parameter is set correctly by the factory!

Manual devices are subdivided into fluidizing, box or stirrer types. These types differ in the control of the vibrator output and the behavior of the fluidizing air.

Device type	AUX output function	Fluidizing air function
Fluidizing device (OptiFlex F)	Always **Off** (no vibration)	Fluidizing air is controlled by two different methods: Turning on the fluidization key **T16** will feed air to the hopper until key is turned off Triggering the gun is turning on the fluidization too, fluidization can be turned off with key **T16**
Box device (OptiFlex B)	Vibration **On** during triggering, delay of 1 minute after releasing gun trigger The key **T16** switches the vibration **On** and **Off** (after 1 min. the vibration switches **Off** automatically)	Fluidizing air is switched **On** parallel by the trigger. It runs after for 1 minute The key **T16** switches the fluidization **On** and **Off** parallel to the vibration
Stirrer device (OptiFlex S)	Stirrer **On** when gun triggered	No fluidization, no function of key **T16**
Manual unit with fluidization (OptiFlex S Fd)	Stirrer **On** when gun triggered	Fluidization is switched **On** and **Off** with trigger The key **T16** switches **Off** the fluidization, it can only be turned **On** by pressing the key again

Note:
The system parameter P0 of the manual unit may not be set on 3 (automatic unit)!
A wrong parameterization leads to various malfunctions!

Remark: Optiflex F (151s-F) optiflexB(151S-B)

Connection guide

1. Check the compressed air connection from filter unit to control unit. Connect the compressed air supply hose from the compressed air circuit directly to the filter unit main connection on the rear side of the equipment (1/4" female BSP)

Note:
The compressed air must be free from oil and water!

2. Connect the black hose for fluidizing air (electrically conductive) to the output **1.5** on the rear side of the control unit
3. Connect the grounding cable to the control unit with the grounding screw, and the 5 m long grounding cable with the clamping clip to the booth or the conveyor. Check ground connections with Ohm meter and ensure 1 MOhm or less
4. Connect the gun cable plug to the socket **2.3** on the rear side of the control unit
5. Connect the rinsing air hose to the electrode rinsing air output **1.4** and to the powder gun
6. Insert the injector, connect the powder hose to the injector and to the powder gun
7. Connect the red hose for conveying air to the corresponding output **1.2** on the rear side of the control unit and to the injector
8. Connect the black hose for supplementary air to the corresponding output **1.3** on the rear side of the control unit and to the injector (this hose is electrically conducting)
9. Connect the mains cable to the **2.1 Power IN** plug and tighten with provided screw

Note:
If no vibration motor (OptiFlex B) is connected, the 2.2 Aux output is to be locked tightly with the provided protection cap!

Model -151s(OPTIFLEX F)

Function description

Field of application

The OptiFlex F manual coating equipment (with fluidized powder hopper) is designed exclusively for electrostatic coating with organic powders. Any other use beyond this is not intended. The manufacturer is not responsible for any damage resulting from this; the risk for this is assumed by the user alone! The OptiFlex F electrostatic powder manual coating equipment with the OptiSelect manual powder gun is ideally suited for manual coating of objects in larger series.

Typical characteristics

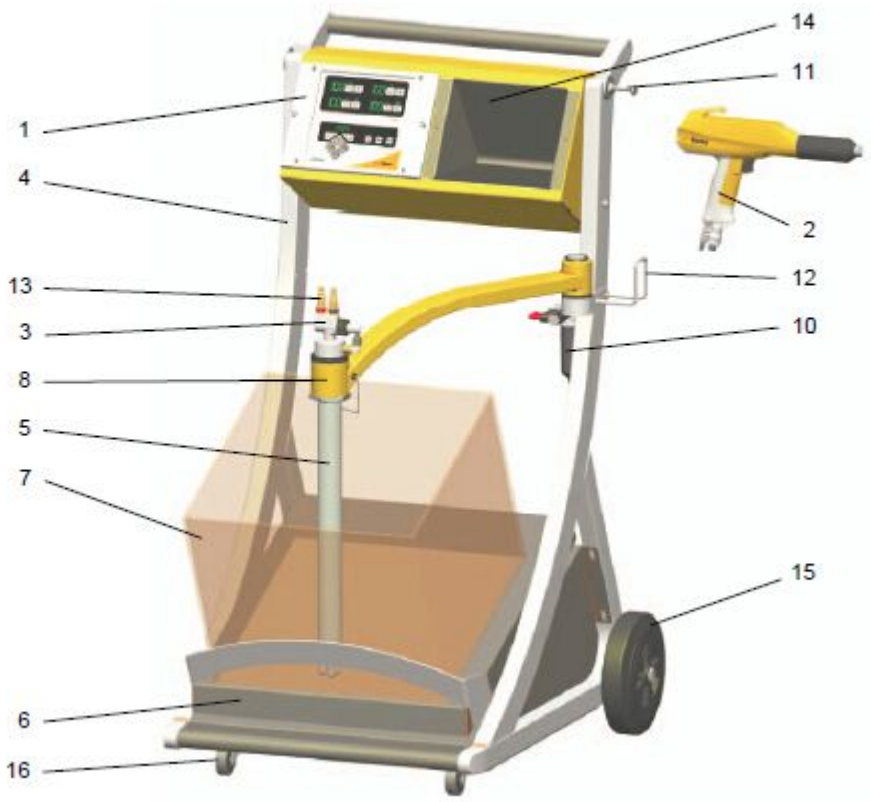
- Processing the powder from the fluidized powder hopper
- Quick and simple color change
- Supplied ready for use
- Available with one or two guns (extensible

OptiFlex F manual coating equipment - structure

1	OptiStar control unit	8	Filter unit
2	OptiSelect manual powder gun	9	Gun holder
3	OptiFlow injector	10	Hose holder
4	Mobile frame with hand rail	11	Powder filler flap
5	Fluidized powder hopper	12	Shelf
6	Hose connections	13	Rubber wheel
7	Swivel wheel	14	Airmover

OptiFlex B manual coating equipment

Structure



OptiFlex B manual coating equipment - structure

OptiFlex B manual coating equipment - structure

1 OptiStar control unit 10 Filter unit

2 OptiSelect manual powder gun 11 Gun holder

3 OptiFlow injector 12 Hose holder

4 Frame with hand rail 13 Hose connections

5 Fluidizing/suction unit 14 Shelf

6 Vibrating base 15 Rubber wheel

7 Powder box 16 Swivel wheel

8 Swivel arm with guide sleeve

Field of application

The OptiFlex B manual coating equipment (with powder box) is built exclusively for electrostatic coating with organic powders. Any other use is considered as non-conform. The manufacturer is not responsible for any damage resulting from this; the risk for this is assumed by the user alone!
The OptiFlex B electrostatic powder manual coating equipment with the OptiSelect manual powder gun is ideally suited for manual coating of objects in small series.

Typical characteristics

- Processing the powder directly from the original powder manufacturer's container
- Total emptying of the powder container due to inclined vibrating base
- Quick and simple color change
- Supplied ready for use
- Available with one or two guns (extensible

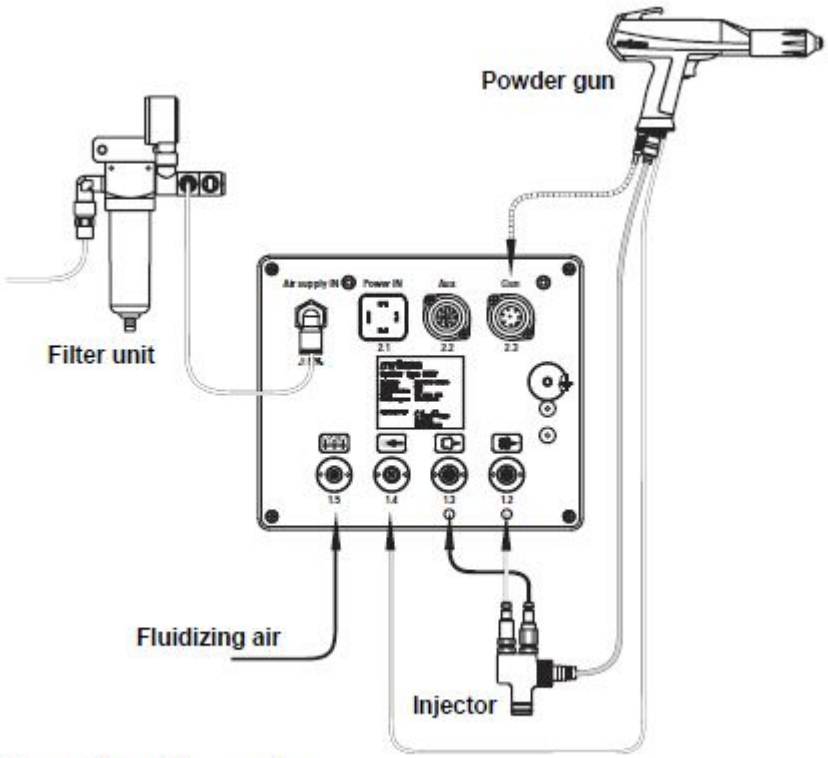
OptiStar control unit

All information about the OptiStar control unit will be found in the corresponding enclosed documentation!

OptiFlow injector

All information about the OptiFlow injector will be found in the corresponding enclosed documentation

Preparation for start-up



Connecting guide - overview

According to your machine model 151s or 151s-B to choose 1) or 2)only

1)Prepare the fluidized powder hopper

1. Set the Airmover
2. Fill in powder
3. Adjust the fluidization on the control unit

2)Preparing the powder container

1. Swivel the fluidizing/suction unit to the side
2. Place the open powder container on the vibrating table
3. Place the fluidizing/suction unit onto the powder

Color change

General information

When a color change takes place, the individual components of the manual coating equipment must be cleaned carefully. Thereby, all powder particles of the former color must be removed!

Procedure:

1. Empty the powder hopper and clean thoroughly/(151S-F model)
1. Clean the fluidizing/suction unit (151S-B model)
2. Clean the powder hose:
- Strip the powder hose from the hose connection on the injector
- Point the gun into the booth
- Blow through the hose manually with a compressed air gun
- Fit the powder hose again to the hose connection on the injector
3. Dismantle and clean the powder gun
4. Clean the injector
5. Prepare the manual coating equipment with new powder for start-up

Maintenance and cleaning

Daily maintenance

1. Clean the injector (see therefore the user manual of the OptiFlow injector)
2. Clean the powder gun
3. Clean the powder hose, see therefore in chapter "Color change

Weekly maintenance

1. Clean the powder hopper, the injector and the powder gun (151S-F)
   1. Clean fluidizing/suction unit, injector and powder gun. Just place the fluidizing/suction unit in the powder shortly before restarting operation (151S-B)

2. Check the control unit grounding connections to the coating booth, the suspension devices of the work pieces, or the conveyor chain

If in disuse for several days

1. Disconnect the mains plug
2. Clean the coating equipment
3. Turn off the compressed air main supply

Cleaning the powder hopper (151S-F)

1. Disconnect the fluidizing air supply
2. Remove the injector
3. Open the cover, blow out with compressed air and clean with a clean dry brush and cloth
4. Clean the suction tube, and injector
5. Empty the remaining powder into a container
6. Vacuum the hopper and, above all, the floor of the hopper
7. Clean the hopper with a cloth
8. Reassemble the powder hopper

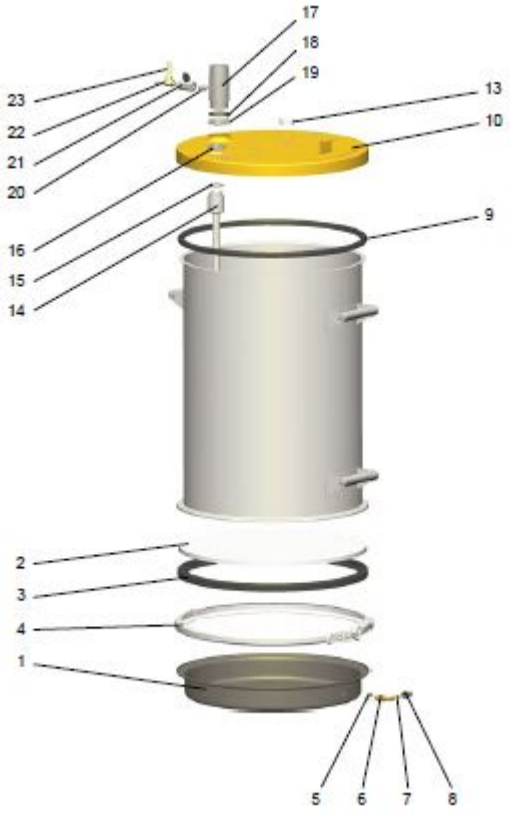
Cleaning the fluidizing/suction unit (151S-B)

1. Remove the injector
2. Remove the fluidizing/suction unit
3. Clean the fluidizing/suction unit with compressed air. Also blow off the suction tube with compressed air
4. Clean the injector (see therefore the

Fault	Causes	Fault elimination
---	Power pack defective	Replace the power pack
---	Main valve defective	Replace main valve coil
---	Gun not connected	Connect the gun
	Gun plug, gun cable or gun cable connection defective	Replace corresponding part or send in for repair
	Remote control on powder gun defective	Replace remote control (gun cap)
---	Rinsing air solenoid valve of flat jet nozzle defective	Replace valve coil
---	Rinsing air solenoid valve of round jet nozzle defective	Replace valve coil
---	Gun plug, gun cable or gun cable connection defective	Replace corresponding part or send in for repair
Gun LED remains dark, although the gun trigger is operated	Gun plug, gun cable or gun cable connection defective	Replace corresponding part or send in for repair
	Remote control on powder gun defective	Replace remote control (gun cap)
Powder does not adhere to object, although the gun trigger is operated and the gun sprays powder	High-voltage and current deactivated	Press the selection key (application key)
	High voltage cascade defective	Send in the gun for repair
	Objects are not properly grounded	Check the grounding

Fault	Causes	Fault elimination
Control unit displays remain dark, although the control unit is switched on	Control unit is not connected to the mains	Connect the equipment with the mains cable
	Power pack fuse defective	Replace the fuse
	Power pack defective	Replace the power pack
The powder is not fluidized	Compressed air not present	Connect the equipment to the compressed air
	Fluidizing air is set too low on the control unit	Set the fluidizing air correctly
	Motor throttle defective	Replace motor throttle
The gun does not spray powder, although the control unit is switched on and the gun trigger is operated	Compressed air not present	Connect the equipment to the compressed air
	Injector, motor throttle or nozzle on injector, powder hose or powder gun are clogged	Clean corresponding part
	Nozzle in the injector is clogged	Replace
	Nozzle is not inserted	Insert the insert sleeve
	Fluidizing not running	(see above)
	No conveying air:	
	Motor throttle defective	Replace the motor throttle
	Solenoid valve defective	Replace the solenoid valve
	Front plate defective	Send in for repair

OptiFlex F manual coating equipment – powder hopper

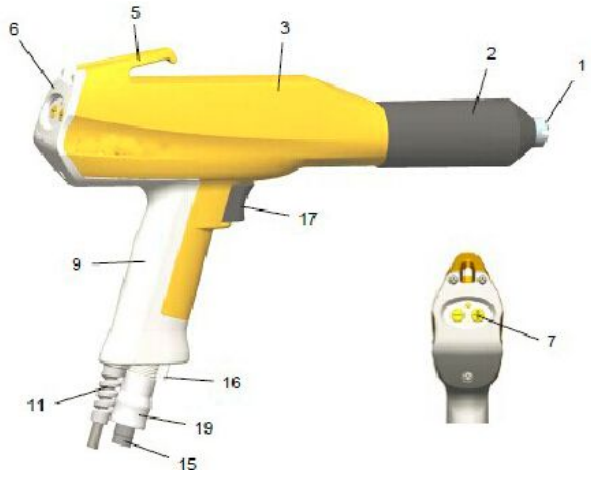


A Powder hopper - complete 1001 655
B Hopper body - complete (pos. 1-9) 1001 644
1 Floor plate 1001 640
2 Fluidizing plate 390 151
3 Fluidizing bed seal 390 186
4 Clamp ring 390 194
5 Sealing ring - Ø 10,2/17x3,8 mm 230 626
6 Elbow screw connection - 1/8"a-1/8"a 1001 079
7 Valve - Ø 1,4 mm 371 912
8 Connector - NW5, 1/8"I 200 859
9 Protective strip 103 837
10 Hopper cover - complete 1001 648
Spiral hose - Ø 40/45 mm, for pos. C (not shown) 100 048
13 Blind grommet - Ø 36x12 mm 238 333
14 Suction tube - complete, L=504 mm (incl. pos. 15) 339 130
15 O-Ring - Ø 28,3x1,78 mm 224 987
16 Lock nut - PG21 234 869
C Airmover - complete (incl. pos. 17-23) 1002 043
17 Venting tube 375 845

18 O-Ring - Ø 38x4 mm 239 151
19 Locknut 342 343
20 Double nipple - 1/8"a-1/8"a 202 258
21 Ball valve 260 967
22 Throttle valve - 1/8"a-1/8"a 1002 127
23 Connector - NW5-1/8"a 237 272

OptiSelect (COLO-06)

Manual powder gun

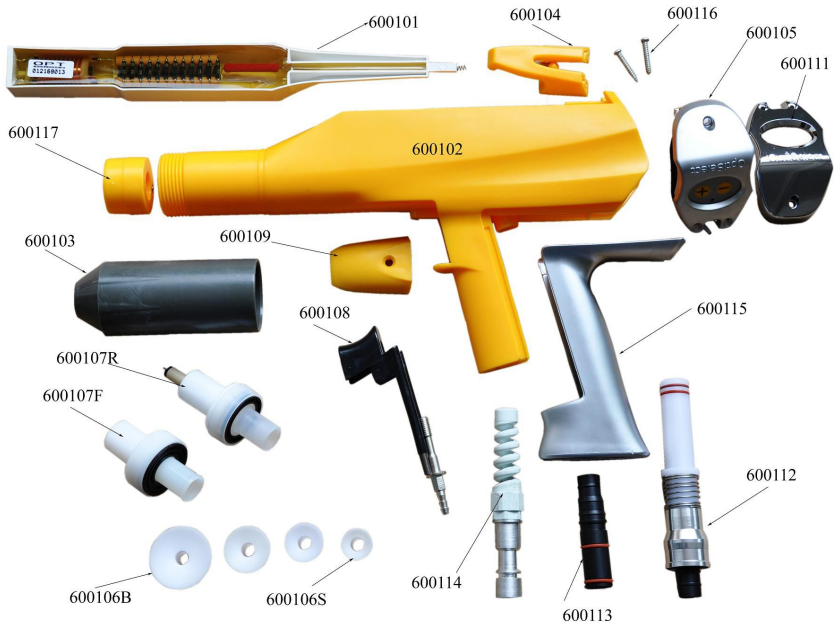


1	Spray nozzle	9	Gun handle
2	Threaded sleeve	11	Gun cable
3	Gun body	15	Powder hose connection
5	Mounting hook (exchangeable)	16	Rinsing air connection
6	Cover with remote control	17	Trigger
7	Remote control keys	19	Powder hose quick release connection

Electrical data

OptiSelect manual powder gun

Input voltage 10 V eff.
Frequency approx. 18 kHz
Max. output voltage 100 kV
Polarity negative
(optional positive)
Max. output current 100 µA
High voltage display by LED
Ignition protection Ex 2 mJ T6
Temperature range 0°C - +40°C
(+32°F - +104°F)
Max. operating temperature 85°C (+185°F)



Gun extensions	
L = 150 mm	L = 300 mm
	
378 852	378 860

General information

Fault	Criteria	Solution
H11 (error message on control unit)	Gun not connected	Connect the gun
	Gun plug or gun cable defective	Replace corresponding part or send in for repair
	Remote control on powder gun defective	Replace remote control (gun cap)
Gun LED remains dark, although the gun is triggered	High voltage adjustment is set too low	Increase high voltage
	Gun plug or gun cable defective	Replace defective part or send in for repair
	LED on gun defective	Replace gun back cover
Powder does not adhere to object, although the gun is triggered and sprays powder	High voltage and current deactivated	Check the high voltage and current setting
	High voltage cascade defective	Send in the gun for repair
	Objects are not properly grounded	Check the grounding

Fault	Causes	Fault elimination
The gun does not spray powder, although the control unit is switched on and the gun is triggered	Compressed air not present	Connect the equipment to the compressed air
	Too little conveying air	Increase the powder output and/or total air volume on the control unit
	Injector or nozzle on the injector, powder hose or powder gun clogged	Clean corresponding part
	Insert sleeve in the injector worn or not inserted	Replace or insert
	Nozzle in the injector clogged	Replace
	Fluidizing not running	(see above)
	No conveying air:	
	Motor throttle defective	Replace the motor throttle
	Solenoid valve defective	Replace the solenoid valve
	Front plate defective	Send in for repair

PLS supply the item number will order the spare parts for colo gun !

OptiGun 2-A(X) (GA02) (colo-06-A)

Automatic powder gun

Electrical data

OptiGun 2-A(X)

Nominal input voltage 10 V eff.

Nominal output voltage 98 kV

Polarity negative

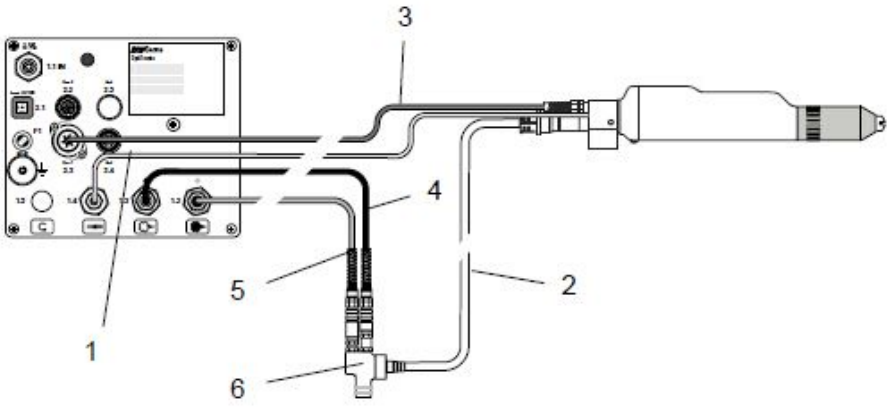
(option: positive)

Max. output current 100 microampère

Cascade 12 stages

Connecting the OptiGun 2-A(X) Automatic powder gun

1. Connect the gun plug to gun control unit (see the OptiTronic control unit operating instructions)
2. Connect the rinsing air hose of the control unit to the gun
3. Connect the powder hose from the gun to injector



Connecting the OptiGun 2-A(X) Automatic powder gun

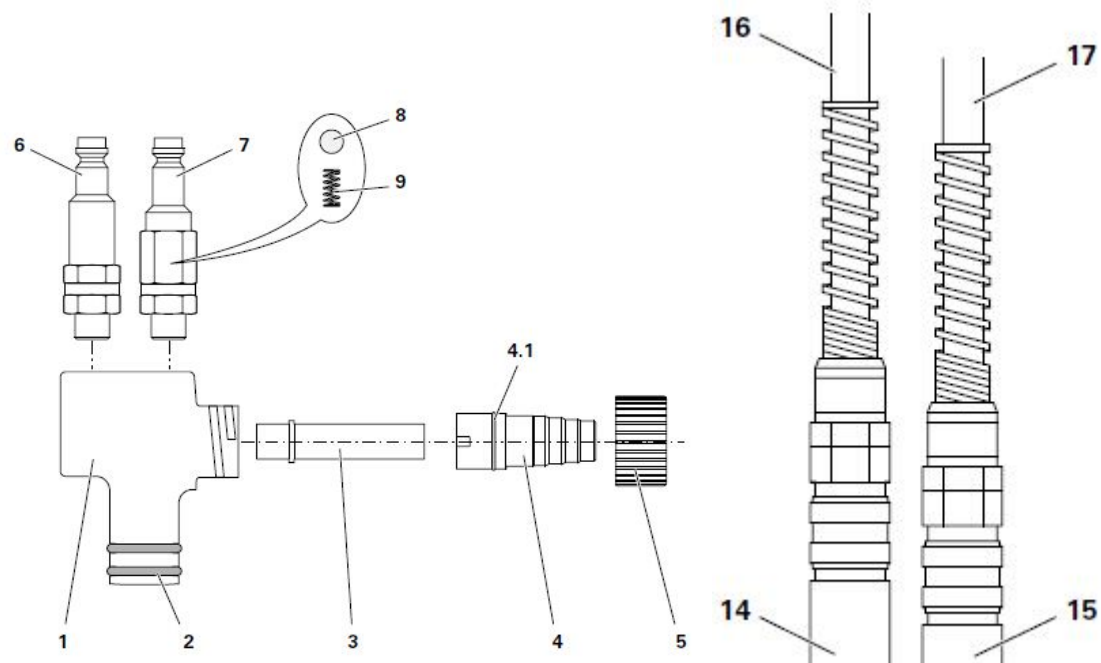
1	Rinsing air hose	4	Supplementary air hose
2	Powder hose	5	Conveying air hose
3	Powder gun cable	6	Injector

Troubleshooting guide

Fault	Causes	Fault elimination
The powder gun does not spray powder, although the powder gun control unit is switched on, the green lamp lights up and compressed air is available	Injector, non-return valve or throttle on injector, powder hose or powder gun clogged	Clean or replace corresponding part
	Insert sleeve in injector is worn	Replace
	No fluidization, no conveying air	See OptiTronic or powder hopper operating instructions
	Pressure control valve on OptiTronic defective	Replace
	Solenoid valve on OptiTronic defective	Replace
	Electronic board in OptiTronic defective	Send in for repair
Powder gun sprays powder, but the powder does not adhere to workpiece	High voltage too low or not available	Adjust high voltage on the control unit
	Gun cable (gun plug or gun connection) defective	Test gun cable on another OptiTronic unit
	High voltage cascade defect	Send in powder gun shaft for repair
	Electronic board in OptiTronic defective	Send in for repair
Powder gun sprays powder, high voltage is available, powder does not adhere to workpiece	Workpiece not properly grounded	Check the grounding

OptiFlow powder injector (G38)

(IG02 type)



OptiFlow powder injector (IG02 type) - spare parts

spare parts list

G38 powder injector (complete, pos. 1-9) 391 530

1 Injector body (without pos. 2) 1000 132

2 O-ring - Ø 16x2 mm 231 517**#**

3 Insert sleeve - Teflon 377 724**#**

4 Hose connection (complete, incl. pos. 4.1) 387 827

4.1 O-ring - Ø 15x1 mm 266 930**#**

5 Threaded sleeve 387 819

6 Check valve conveying air (red marking) - complete (incl. pos. 8 and 9) 261 211

7 Check valve supplementary air (black marking) - complete (incl. pos. 8 and 9) 261 203

8 Ball 240 168

9 Spring 240 176

14 Quick release coupling red for conveying air hose - Ø 8/6 mm 261 645

15 Quick release coupling for supplementary air hose - Ø 8/6 mm 261 637

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