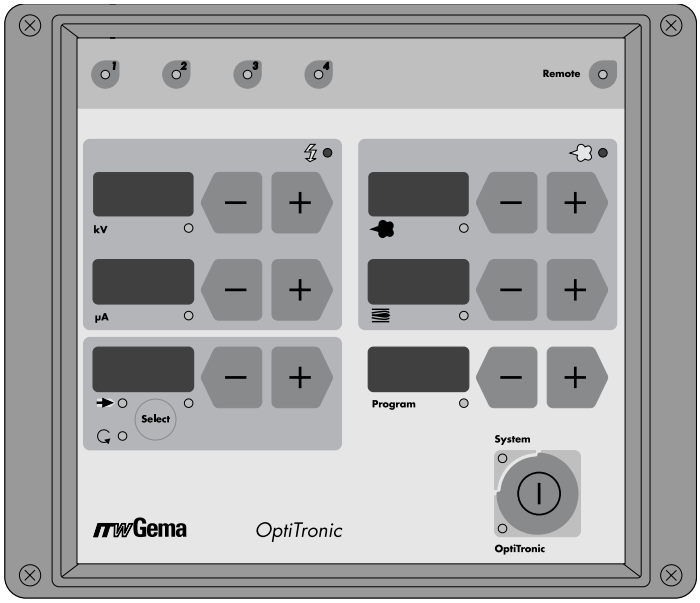
E

Operating Instructions and Spare Parts List

OptiTronic
Powder Gun Control
(CG03)



⚠ IMPORTANT

Before using this equipment, carefully read all instructions in this manual. Keep this Manual for future reference!

ITW Gema

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SAFETY RULES FOR ELECTROSTATIC POWDER COATING OPERATIONS

1. This equipment is dangerous when not operated according to the following standards:
   EN 50 050 (or VDE 0745, Part 100), EN 50 053, Part 2 (or VDE 0745, Part 102) and the Specification Sheet ZH 1/443 for electrostatic powder coating.

2. All electrically conductive parts located within 5 m of the coating area and especially the workpieces must be properly grounded.

3. The floor in the coating area must be electrically conductive. Normal concrete is generally conductive.

4. The operating personnel must wear electrically conductive footwear (e.g. leather soles).

5. The operating personnel should hold the gun in the bare hand. If gloves are worn, they must be electrically conductive.

6. Connect the grounding cable (yellow/green) supplied to the grounding terminal on the control module. The grounding cable must have a good metal to metal connection with the coating booth, recovery unit, and the workpiece conveyor system, especially with the workpiece suspension.

7. The electrical, and powder feed lines to the guns must be laid out so that they are protected from possible mechanical damage.

8. The powder coating equipment should only be switched on after the booth is in operation. If the booth breaks down then the powder coating equipment must also switch off.

9. Check the grounding of all electrically conductive parts at least once a week.

10. When cleaning the gun or changing nozzles the control module *must* be switched off.

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TECHNICAL DATA

OPTITRONIC - BASIS MODEL

Mains connection:	
Input voltage:	90-264 VAC
Power consumption:	48 VA
Frequency:	47-463 Hz
Type of protection:	IP54
Temperature range:	0° C to +40° C *(+32° F to +104° F)*
Pneumatic data:	
Input pressure:	5.0 bar
Max. water vapour content:	1.3 g/m^3
Max. oil vapour content:	0.1 mg/kg (Oil/Water)
Max. compressed air consumption:	11 m^3/h
Dimensions:	
Width:	203 mm
Height:	174 mm
Depth:	222 mm
Weight:	4.8 kg
Attachable electrostatic guns:	
Nominal output voltage:	12 V (G2 guns)• 10 V (G1 guns)‡
Automatic guns:	PG 1-A‡ / PG 2-A‡ / GA 01 OptiGun 1•/ GA02 OptiGun 2‡
Manual guns:	PG 1‡ / GM 01 EasySelect•
Tribo guns:	Connection possible

OPTITRONIC TYPE DEFINITION AND POSSIBLE OPTIONS

(see Control unit rear wall)

Example:
Label with Version number and Order number: **V 2 386 162**
(see Version table)

ABBREVIATIONS:

FL	Conveying air
ZL	Supplementary air
‡G1	**GA** 02 OptiGun 2 / **PG** 1 / **PG** 1-A / **PG** 2-A Guns
•G2	**GA** 01 OptiGun 1 / **GM** 01 EasySelect Guns

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OPTITRONIC POWDER GUN CONTROL

ABOUT THESE OPERATING INSTRUCTIONS

These operating instructions contain all important information which is required to operate your OptiTronic powder coating equipment.
It will guide you safely through the installation stage, give you notes and tips for the optimum use of your new powder coating equipment.
Information about the functioning of individual system components will be found in the respective documentation.

Abbreviations used in these Operating Instructions:

EL	Electrode rinsing air
FL	Conveying air
FL_min	Minimum powder output
GL	Total air volume
HV_BG	High-voltage setting
I_BG	Current setting
PA%	Powder output (percent)
SKW%	Powder output correction value
ZL	Supplementary air

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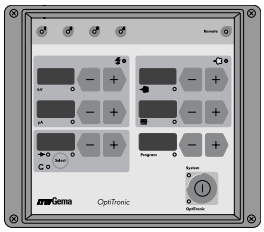
OPTITRONIC CONTROL UNIT

FIELD OF APPLICATION

The OptiTronic Control Unit was designed to meet the special requirements of job coaters.

THE BASIC OPTITRONIC UNIT



The OptiTronic Control Unit is a complete control unit for one powder gun.
The concept of the OptiTronic control unit permits the operator to adapt his individual solution requirements to his individual applications.
The control electronics, based on a micro-controller, makes it possible to expand the functions, with corresponding electronic modules, at any time.
The basic equipment contains all the control and monitoring functions required to operate a manual or an automatic powder gun.
See the Version tables to determine the equipment version, and for expanding existing equipment (Retrofitting) to another version.
All coating parameters (desired values and actual values) have their individual display and input unit to give the highest user-friendly operation.
Up to 255 coating programs can be stored and instantly recalled.
The stored programs help considerably to increase the repeatability of uniform coating results and quality, at any time, independent of the operator and type of powder used.
The powder volume is set independent from the total air volume. The allotment of the conveying air and supplementary air takes place automatically.
With freely selectable high-voltage or spraying current optimum high-voltage generation is guaranteed, also for the highest application demands.
Various diagnostic functions, indicated through LEDs and seven segment displays, increase the process reliability and make operation easier.

The most important characteristics of the OptiTronic are:

- 255 stored coating programs possible
  A coating program is composed of:
  - High-voltage (kV)
  - Spraying current (µA)
  - Electrode rinsing air (Nm^3/h)
  - Powder output (%)
  - Total air volume (Conveying air + Supplementary air - Nm^3/h)

- Individual inputs, and display windows for high-voltage, spraying current, electrode rinsing air, powder output, total air volume, and programs.
- High-voltage or spraying current setting
- Diagnostic functions

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CG 03 OPTITRONIC VERSION TABLE

Version	OptiTronic Order No.	G1*	G2*
1	**384 640**		X
2	**386 162**	X	

*G1 = GA02 OptiGun 2 / PG 1 / PG 1-A / PG 2-A
*G2 = GA01 OptiGun 1 / GM 01 EasySelect

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PLUG AND SOCKET CONNECTIONS

The OptiTronic control unit is ready for use from the factory.
Only certain cables and hoses must be connected by the customer.

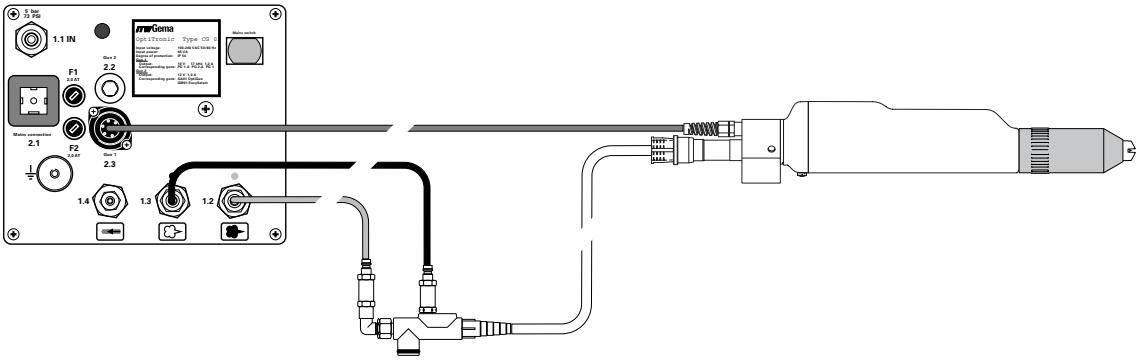
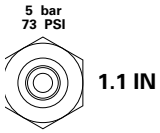


Figure 1



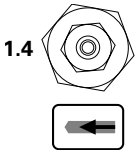
The hose for the compressed air supply from the compressed air circuit is connected directly to the main air connection - **1.1 IN** on the rear of the control unit

⚠ NOTICE

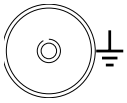
The main compressed air **input pressure** must be set at **5.0 bar**.
The compressed air must be free from oil and water.

The red hose for the conveying air is connected to the corresponding output - **1.2** on the rear of the control unit and to the injector.

The black hose for the supplementary air is connected to the corresponding output - **1.3** on the rear of the control unit and to the injector.



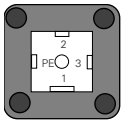
The hose for the rinsing air is connected to the electrode rinsing air output -**1.4** and on the powder gun.



The grounding connection cable is connected to the control unit with the grounding screw, and the 5 m long grounding cable with the clamping clip on the booth or on the hanger device.

(continued)

PLUGS AND SOCKETS (CONTINUED)



Mains connection

2.1

Mains connection - 2.1 - The Main power supply cable is connected to the socket.

Gun 2

2.2

Gun 2 - 2.2 (Automatic Powder Gun **OptiGun 1** / Manual Powder Gun **EasySelect** - Alternatively). The gun cable plug is connected to the socket with a 6 pin plug.

or

Gun 1

2.3

Gun 1 - 2.3 socket (**GA02 OptiGun 2** / **PG 1** / **PG 1-A** / **PG 2-A** Powder Guns - Alternatively) The gun cable plug is connected to the socket with a 7 pin plug.

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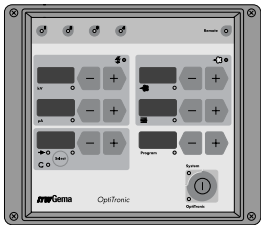
DESCRIPTION OF FUNCTIONS



Each of the coating parameters of the OptiTronic control unit has its own display and its own operating area.

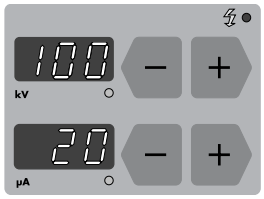
The Fault Diagnostic LEDs indicate certain equipment faults.
The OptiTronic control unit is functioning correctly when the ***Diagnostic LEDs*** **1**, **2**, **3**, and **4** are illuminated (green).

If any of the *Diagnostic LEDs do not* illuminate, please contact an ITW Gema Service Centre.

Functions of the Diagnostic LEDs:

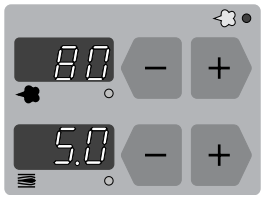
- **1**: +24 V DC internal power supply present - green
- **2**: +15 V DC Internal power supply present - green
- **3**: +5 V DC Internal power supply present - green
- **4**: Main solenoid valve operating - green

The equipment is activated or deactivated with the Main Key pad.
When the control is active the green *OptiTronic LED* (lower left) is illuminated. In addition, if the green *System LED* (upper left) is illuminated the equipment is released by external control and coating can be started.



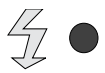
- ***kV*** window for display and setting of High-voltage output (Setting range: 0-100 kV).
- ***µA*** window for display and setting of Spray current output (Setting range: 0-100 µA).

- **Electrode rinsing air** window for display and setting of the electrode rinsing air output.
  (Setting range: 0-2.8 m^3/h. Default value 0.2 Nm^3/h).
  The ***Select*** key pad is used for Swirl Air.
  (Setting range: 0-6.2 Nm^3/h. Default value: 2.0 Nm^3/h)



- **Powder output** window for display and setting of the powder output (Setting range: 0-100 %).
- **Total air volume** window for display and setting of the total air volume (Setting range: 1.8-8.0 Nm^3/h).

- **Program Number** window for display and setting of the program number (Setting range: 1-255), as well as Fault message display and Fault message acknowledgement.



This LED (red) illuminates when there is a fault in the high-voltage system.

This LED (red) illuminates when there is a fault in the pneumatic system.

This LED (green) - **Remote** is not used.

SPECIAL FUNCTIONS

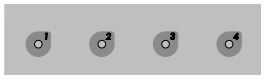
Special functions are:

1. System parameter selection
2. Throttle motor referencing
3. Powder output correction
4. Software version

Special functions can be activated after entering the Special Function mode, see below, by pressing any **+** or **–** key in the corresponding display area.

ENTERING THE SPECIAL FUNCTIONS MODE

Press the Main key pad (for approx. 10 secs) until the display no longer illuminates.



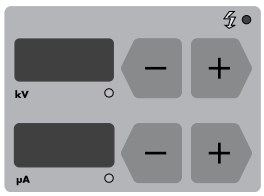
All the green Diagnostic LEDs should illuminate.
If not, see "Description of Functions - Fault Diagnostic LEDs"

EXITING SPECIAL FUNCTIONS MODE

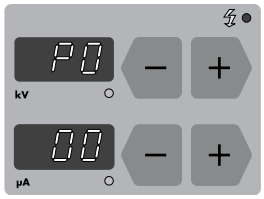
The Special Functions mode can be exited by pressing the **Main Key pad**. The switch-on counter will automatically reset to 30 when exiting the Special functions mode, irrespective of the number of times the control unit was switched on previously. The next time the control unit is switched on an automatic throttle motor referencing will take place.

SYSTEM PARAMETER SELECTION

1. Press the **Main Key pad** (for approx. 10 secs) until the display no longer illuminates.

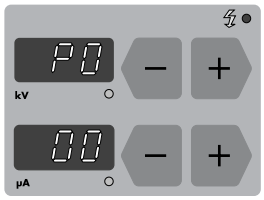


2. The System Parameter mode is entered by pressing any **+** or **–** key in the **kV** or **µA** display area.



3. Select the system parameter (**P00-P08/PE/PL**) with the **+** or **–** key.
4. Change the system parameter value with the **+** or **–** key. (see System Parameter Table).
   After the System parameters are reset, the throttle motors are also referenced when exiting the Special Functions mode.
5. The Special Functions mode can be exited by pressing the **Main Key pad**.

SYSTEM PARAMETER TABLE



Parameter (**P00-P08/PE/PL)**

Value

Abbreviations used on these pages:
EL = Electrode rinsing air
FL = Conveying air
GL = Total air
PA% = Powder output (in percent)
ZL = Supplementary air

Parameter number	Description	Values (The **bold** numbers [**0** or **1** etc.] in this column are default values)	Remarks
P0:	Option: FlowControl	**0:** ***Basic setting***	
P1:	Gun type	**0:** Gun type - OptiGun 2 / PG 1: Gun type - EasySelect - OptiGun 1 2: Tribo Gun type	Select gun type. - Control unit does not react to incorrect setting input. - No kV value displayed in normal mode
P2:	Swirl air	***0: Basic setting***	
P3:	Injector type	(Nozzle ø in mm) FL ZL **0:** PI 3 = 1.6 1.4 1: PI 3 = 1.8 1.4 2: PI 3 = 2.0 2.0 3: EasyFlow = 1.6 1.4	Select injector type, e.g.: - ø 1.6 mm - with notch. - ø 1.8 mm - without notch. Match the injector nozzle (FL), and throttle (ZL) with the corresponding injector.
P4:	Gun deselection (OptiTronic Key)	***0: Basic setting***	
P5:	System Signal	**0:** Automatic equipment, External system signal in manual and remote operation necessary 1: Internal System release No external signal necessary (Demo Unit only) 2-4: ***Not used***	
P6:	Communication	***0: Basic setting***	(continued)

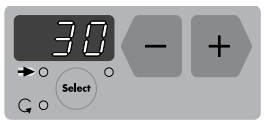
SYSTEM PARAMETER TABLE (CONTINUED)

Parameter number	Description	Values (The **bold** numbers [**0** or **1** etc.] in this column are default values)	Remarks
P7:	Display variant	**0:** = PA%, = GL m³/h 1: = FL m³/h, =GLm³/h	Standard display. Display of individual air volumes FL and GL for checking purposes
P8:	***Not used***	**0:** ***Basic setting***	
P9:	***Not used***	**5:** ***Basic setting***	
PE:	***Not used***	**3:** ***Basic setting***	
PL:	***Not used***	**1:** ***Basic setting***	

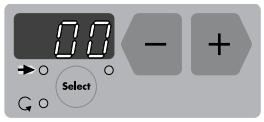
RESETTING THE THROTTLE MOTORS

The throttle motor reset is made at the first Start-up, after servicing or after application problems

1. Enter the Special function mode by pressing the **Main Key pad** (for approx. 10 secs) until the display no longer illuminates.



2. The throttle motors can be reset (Zero setting for conveying air [**FL**], supplementary air [**ZL**], electrode rinsing air [**EL**]). The throttle motor reset is initiated by pressing the **+** key or **–** key of the ➔ display window.



3. Pressing a key once shows the number of times the main power supply has been switched on since the last throttle motor reset. The diode on the lower right, below the display window blinks. The throttle motor reset is activated by pressing the **+** or **–** key a second time. There should be three fairly loud noises, one for each motor, one after the other. The display returns to *00*.

   Switch-on counter

   If the control unit is switched on 30 times and throttle motor referencing has not been done within this number of times, a throttle motor referencing will take place automatically.
   The counter will reset to zero.

4. The Special Functions mode can be exited by pressing the **Main Key pad**.

THROTTLE MOTORS - CONVEYING AIR, SUPPLEMENTARY AIR, RINSING AIR

⚠ IMPORTANT

The throttle motors must be calibrated after every manual change. (see Resetting the throttle motors, and Electrical Block diagram).

If the cable connections of the throttle motors are disconnected, care must be take to see that the cables are marked for the correct reconnection on the Main board (see also "Electrical diagrams)

- X11 Conveying air
- X12 Supplementary air
- X13 Rinsing air

POWDER OUTPUT CORRECTION MODE

The OptiTronic control unit makes possible the accommodation of the differing powder outputs in the plant caused by differing powder hose lengths and geometry to the individual guns. The minimum powder output (**FL_min**) and the maximum powder output (**SKW%**) can be accommodated for with two parameters.

(continued)

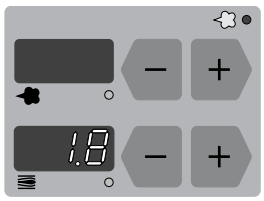
ABBREVIATIONS:

EL	Electrode rinsing air	**FL_min**	Minimum powder output
FL	Conveying air	**SKW%**	Powder output correction value
		ZL	Supplementary air

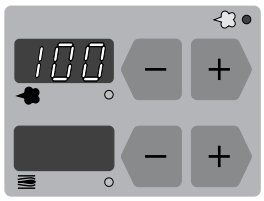
POWDER OUTPUT CORRECTION MODE (CONTINUED)

Powder output correction is made at the first Start-up, after servicing, after application problems or when hoses with a different diameter to that used previously.

To enter the Powder Output Correction mode, press the **Main Key pad** (for approx. 10 secs) until the display no longer illuminates.



1. The value for minimum powder output (**FL_min**) is set with the **+** or **–** keys in the display window.



2. The Output correction value for the maximum powder output (**SKW%**) is set with the **+** or **–** keys in the display window.

3. The Special Functions mode can be exited by pressing the **Main Key pad**.

CARRYING OUT A POWDER OUTPUT CORRECTION

The settings in the following example are carried out on each gun individually.
Powder output correction is made at the first Start-up, after servicing, after application problems or when hoses with a different diameter to that used previously.

Create a table with an entry for each powder gun similar to that illustrated in section "Example of a table for powder output correction" The table will be useful after a System Reset.

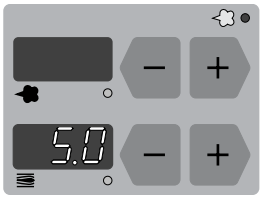
The following table contains values which can be used for setting up the OptiTronic Powder Control Unit

Total air volume (Nm³/h)	5
Correction value	
FL_ min	1.8
SKW%	100

ABBREVIATIONS:
FL Conveying air
SKW% Powder output correction value

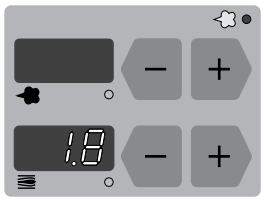
STARTING POSITION

1. Select program number **001** in the Program display window.

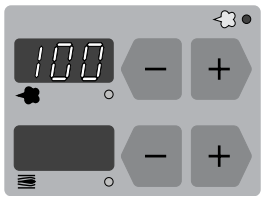


2. Set the total air volume to **5.0 Nm³/h** in the ≋ display window, if not already set to this value.
   Set the powder output to **00** (**%**) in the ✿ display window.

3. Switch to the Special Functions mode by pressing the **Main Key pad** (for approximately 10 seconds) until the display no longer illuminates.



4. Set the powder output value (**FL_min**) for minimum powder output **1.8** (**Nm³/h**) in the ≋ display window.

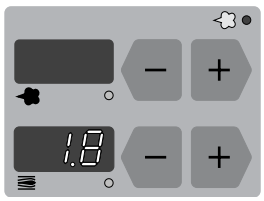


5. Set the Powder output correction value (**SKW%**) for a maximum powder output to **100 %** in the ✿ display window.

Exit the Special Function mode by pressing the **Main Key pad**.

For the next steps a measuring bag is necessary for weighing the powder output. If possible, one bag should be used for each gun. Note the weight of the individual measuring bag.

6. Place the neck of the empty measuring bag tightly over the powder gun nozzle so that it does not slide off during the measuring and switch on the powder gun for *60 seconds*.
7. After the time has elapsed, switch off the gun and remove and weigh the bag. The weight of the powder should be between 10-15 g.



8. If no powder is expelled from the gun, return to the Special Functions mode and increase the powder output to between **1.8-2.4** (**Nm³/h**) for a minimum powder output.
9. Repeat Steps 6 and 7 until the weight of the powder output is within 10-15 g. Note the minimum powder output value **FL_min** in the table.

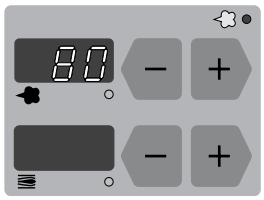
(continued)

ABBREVIATIONS:

FL	Conveying air
SKW%	Powder output correction value

STARTING POSITION (CONTINUED)

10. Exit the Special Functions mode by pressing the **Main Key pad**.



11. Now set the powder output to **80** (**%**) in the display window.
12. Place the empty measuring bag tightly over the powder gun nozzle and switch on the powder gun for *60 seconds*.
13. Switch off the gun after 60 seconds. Weigh the bag.
14. Enter the value of the maximum powder output (**g/min**) in the table.

Calculate the powder output correction according to the formula:

$$\textbf{SKW\%} = \frac{\textbf{smallest powder output}}{\textbf{measured powder output}} \textbf{ x 100}$$

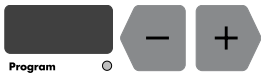
15. Fill in the calculated value in the table and then repeat the step 3 for setting the corresponding **SKW%** value in the display window on the control unit.

EXAMPLE OF A POWDER OUTPUT CORRECTION TABLE.

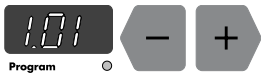
Gun	**Powder output correction**		**Powder output w/o correction**
No.	FL_min (Nm^3/h)	SKW (%)	Powder output at 80 %
1	**1.7**	**100 %**	200 g/min.
2	**1.8**	(200/250) · 100 = **80 %**	250 g/min.
3	**2.6**	(200/280) · 100 = **71 %**	280 g/min.
Gun n			

SOFTWARE VERSION

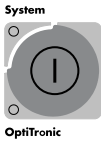
1. To determine the Software Version, press the **Main Key pad** (for approx. 10 secs) until the display no longer illuminates.



2. The software version is called up by pressing the **+** or **–** keys of the ***Program*** display.



3. The software version number of the OptiTronic operating program is displayed.



4. The Special Functions mode can be exited by pressing the **Main Key pad**.

ABBREVIATIONS:

FL_min Minimum powder output air
SKW% Powder output correction value

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SYSTEM RESET

A System Reset is initiated at the first Start-up, and at function fault.

⚠ CAUTION

A System Reset over-writes all 255 programs with default values and the system parameters are returned to their original factory settings.

1. Switched off the OptiTronic control unit with the ***Main power switch*** on the control cabinet. Do not switch off the booth etc.
2. Hold the ***Main Key pad*** pressed and switch on the ***Main power switch***. After approximately 15 seconds the actual program numbers 001-255 appear in the ***Program*** display window and the programs are individually reset to the factory default values. The ***Main Key pad*** only has to be pressed until the program numbers start to run through in rapid succession in display window.
   Fault diagnostic LED 4 is OFF during a Reset
   After a ***System Reset*** the system parameters must be checked that they are correct.

ABBREVIATIONS:

FL_min Minimum powder output air
SKW% Powder output correction value

FAULT MESSAGE TABLE

Fault code No.

When a fault is present in the system the cause must be eliminated before further operation is possible.
When the fault has been eliminated, this is acknowledged by pressing the **+** or **–** key of the Program display

Air Supply	**Fault description**
H01	Check system parameter P0 and set P0 = 0 on the basis control without FlowControl
H02 *(only when FlowControl is fitted)*	Check system parameter P0 and set P0 = 0 on the basis control without FlowControl
H03 *(only when FlowControl is fitted)*	Check system parameter P0 and set P0 = 0 on the basis control
H04	EL 1 Solenoid valve error, set System parameter P5 = 0 for Automatic equipment. P5 = 1 for Demo equipment.
H05	The desired Total Air is too little. Increase the programmed value for the Total Air or make the FL_min of the powder output correction smaller
H06	Main solenoid valve fault. Connection cable from the main solenoid valve to the basic electronics missing. Check the main solenoid valve.
H07	The desired supplementary air volume is too large (ZL_max.). Decrease the programmed value for the total air volume and/or increase the programmed value for the powder output volume.
H08	The desired conveying air volume is too large (FL_max.). Decrease the programmed value for the total air volume and/or decrease the programmed value for the powder output volume.
H09	The Daily Correction Value multiplied with the desired value of the powder output is greater than 100 %. (Acknowledge error and decrease the Daily Correction Value via the PLC)
High-voltage	
H10	Cascade produces a too high voltage. Check the basic electronics and gun
H11	Check the system parameter P1 (Gun type) Check the gun cable for breaks. Replace gun.

(continued)

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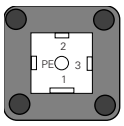
FAULT MESSAGE CODE (CONTINUED)

Air Supply	Fault description
General Faults	
H19	EL 2 Solenoid valve error (not used).
H20	Check the 24 V DC internal Power supply. The 24 V DC voltage is higher than the nominal voltage - 24 V DC +10 %
H21	Check the 24 V internal DC Power supply. The 24 V DC voltage is lower than the nominal voltage - 24 V DC -10 %
H22	Fault in the 15 V DC power supply to basic electronics. Contact an ITW Gema Service Centre.
H23	EEPROM fault. Contact an ITW Gema Service Centre.
H24	EEPROM writes Timeout. Contact an ITW Gema Service Centre.

SYSTEM RELEASE AND POWDER COATING



Mains connection

2.1

For technical safety reasons the OptiTronic control unit should only be released after fulfilling all the required safety conditions (e.g. Fire protection etc.). The release is activated through the „2.1 Mains connection„ input.

Connection No. 3:	System release - LED "System" illuminates green.
Input voltage:	90-264 VAC

The OptiTronic is ready for powder coating when:

a) The equipment is selected:	LED "OptiTronic" illuminates (green)
b) Control voltage for System Release is present:	LED "System" illuminates (green)
c) - Automatic gun connected:	Powder output
- Manual gun connected:	Trigger pulled - Powder

DEMO UNIT

The control unit can be used as a "stand alone" unit for coating individual parts or small series. So that the equipment receives a system release in this function (compare above), the parameter mode of "P5" is set to "1". Because of this, the Demo unit does not have to have an external control voltage present for system release.

⚠ CAUTION

The System parameter P5 must **never** be set to "1" in a complete powder coating plant, otherwise the powder guns will be switched on unintentionally!

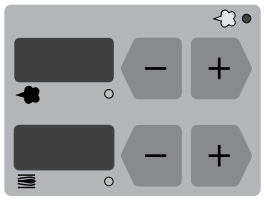
GUIDE VALUES - APPLICATION

All values in these tables are guide values. Different ambient conditions, wear, and different types of powder can alter the values in the tables.

GENERAL CONDITIONS FOR PI 3 / EASYFLOW INJECTORS

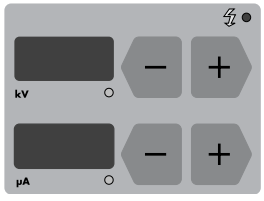
Powder type:		**Epoxy/Polyester**
Powder output	[**m**]	10
Powder hose ø	[**mm**]	11
Input pressure	[**bar**]	5.0
Conveying air nozzle ø - PI 3 / EasyFlow	[**mm**]	1.6
Supplementary air nozzle ø - PI 3 / EasyFlow	[**mm**]	1.4

GUIDE VALUES FOR OPTITRONIC WITH PI 3 / EASYFLOW INJECTORS



Total air		4 Nm³/h	5 Nm³/h	6 Nm³/h
		Powder output [**g/min**]		
Powder output [**%**]	**10**	30	35	45
	20	60	75	90
	30	85	100	120
	40	110	130	150
	50	130	160	175
	60	150	180	210
	70	175	200	235
	80	200	240	270
	90	215	260	
	100	235	290	

SPRAY CURRENT LIMITING GUIDE VALUES



Spraying current limiting enables:
- achievement of greater stability in the coating process.
- greater reproducibility, where only the High-voltage varies.
- constant current values.

µA window for display and setting of the Spray current output with the **+** or **–** keys (Setting range: 0-100 µA).

High-voltage	with SuperCorona		without SuperCorona	
100 kV	*Flat parts:*	50 µA (± 20)	*Flat parts:*	15 µA (± 10)
100 kV	*Profiles:*	60 µA (± 10)	*Profiles:*	25 µA (± 5)
100 kV	*Spray-over:*	20 µA (± 10)	*Spray-over:*	5 µA (± 5)

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MANUAL COATING WITH EASYSELECT

REMOTE CONTROL FROM THE GUN

Various functions are remotely controlled with the aid of the **+** and **-** keys on the rear of the gun:

Select the application settings - Programs 001 to 003

1. Press the **+** and **-** keys on the gun **simultaneously**.

Press 1x = Prog. no. 1	LED: red
Press 2x = Prog. no. 2	LED: green
Press 3x = Prog. no. 3	LED: red/green blinking (approx. 1 Hz)
Set with OptiTronic control: Program no. 4-255	LED: red/green blinking (approx. 2 Hz)

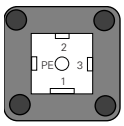
Check by observing the LED display on the gun.

Remote control locked due to:
Error display,
Local operation or
Remote OptiTronic operation: LED: red and green

2. Change the powder output.
   Press the **+** or **-** key on the gun. The powder output will be correspondingly increased or decreased.

PIN ALLOCATION

MAIN POWER SUPPLY CABLE SOCKET 2.1



Mains connection

2.1

Pin	Function
1	Neutral conductor (Power supply)
2	Line (Power supply)
3	System ON /OFF (Gun release) (90-264 VAC)
PE	Ground PE

SOCKET 2.2 - GUN 2 (EASYSELECT / OPTIGUN 1 POWDER GUN PLUG)

Pin	Function
1	+ 15 V DC power supply Gun electronics
2	Oscillator control 0-10 V DC
3	GND / Trigger connection 1
4	Trigger connection 2
5	Remote control
6	Ground PE
Housing	Screen

SOCKET 2.3 - GUN 1 (GA02 OPTIGUN 2 / PG 1 / PG 1-A / PG 2-A POWDER GUN PLUG)

Pin	Function
1	GND Oscillator signal
2	- - - - -
3	Trigger connection 1
4	Trigger connection 2
5	Tribo electrode
6	Signal Oscillator
7	Ground PE

ELECTRICAL DIAGRAMS

BLOCK DIAGRAM: OPTITRONIC CONTROL UNIT

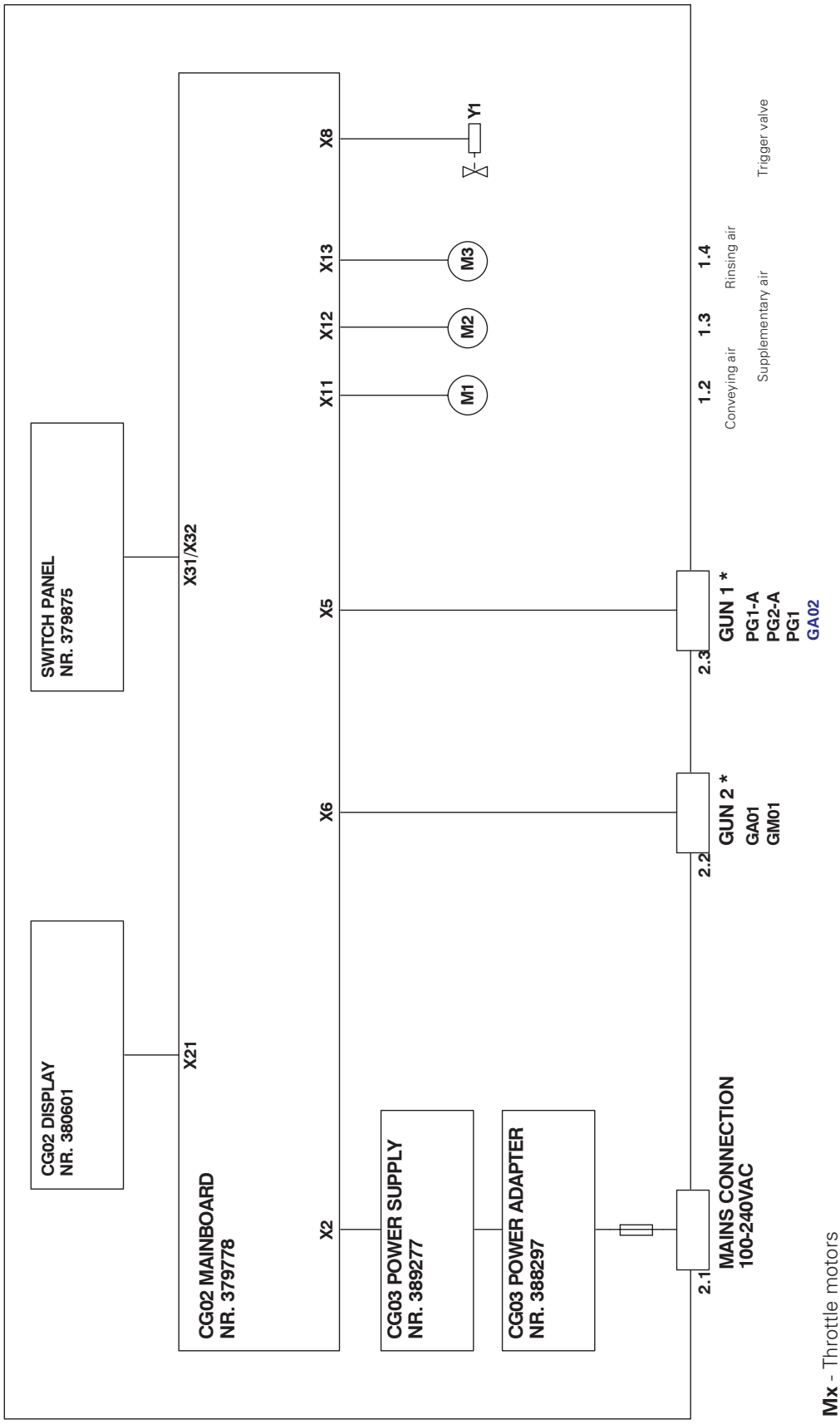


Figure 2

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BLOCK DIAGRAM: CONNECTIONS TO MAIN BOARD (1) - OPTITRONIC CONTROL UNIT

See next page (from here)

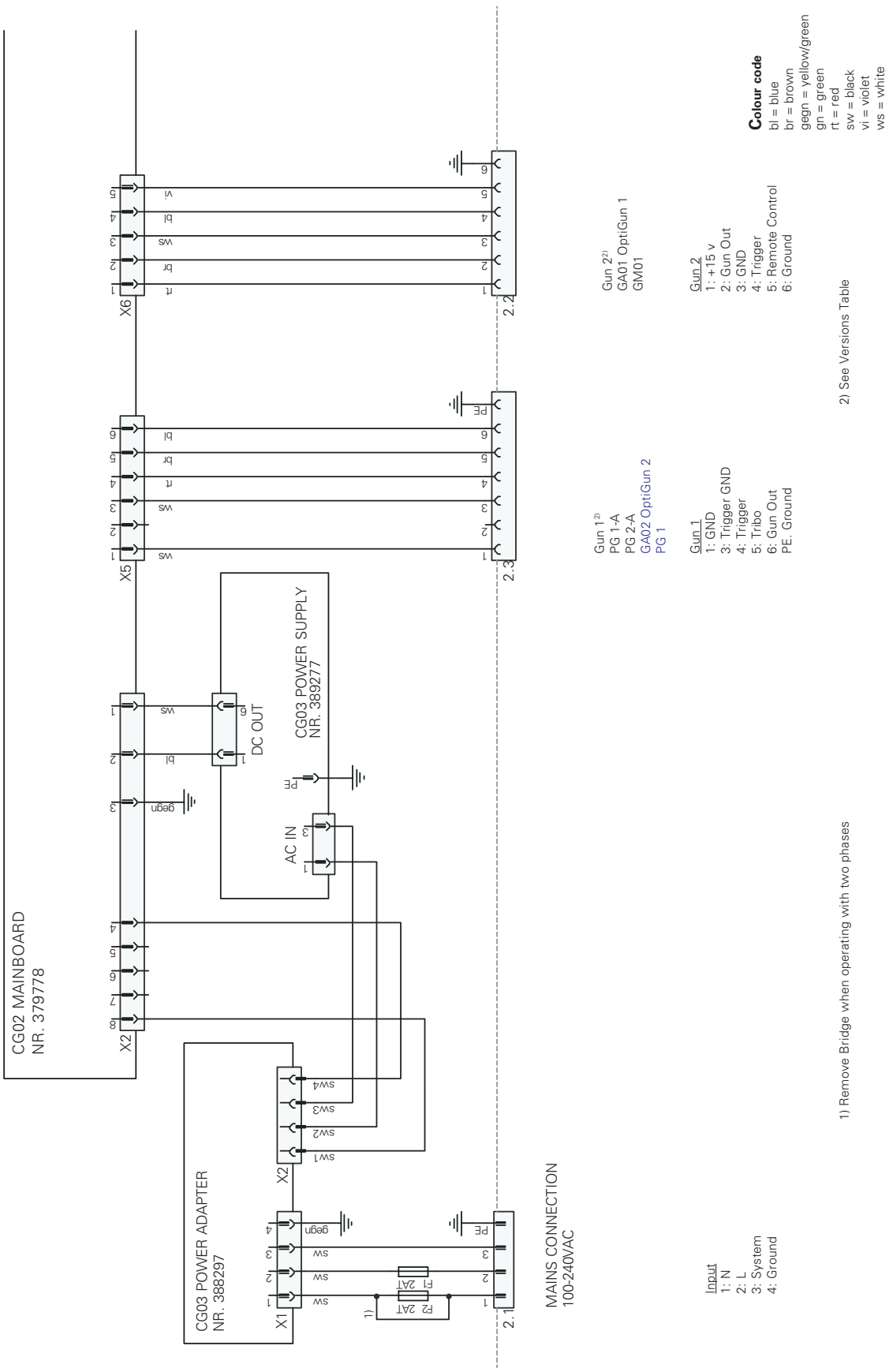
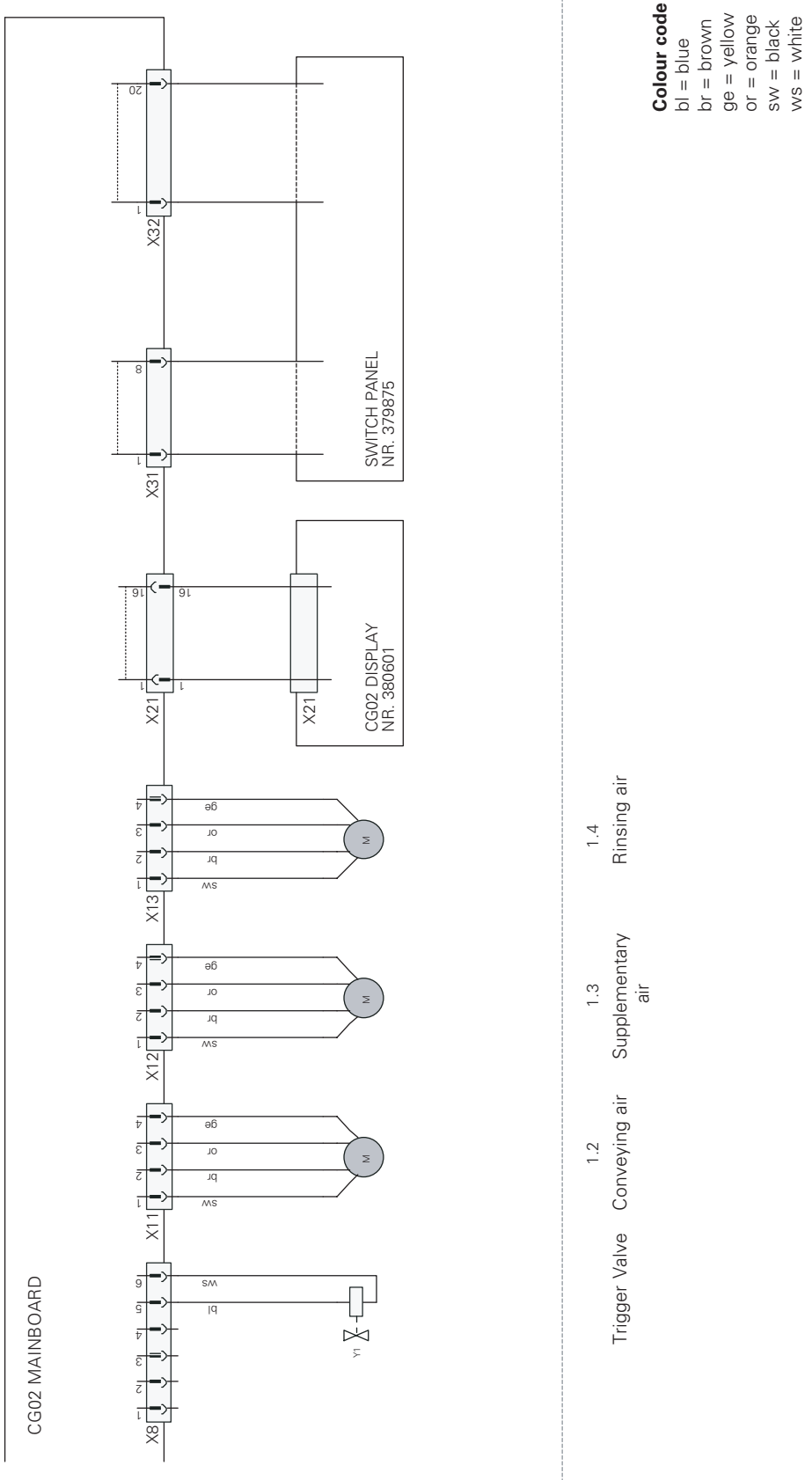


Figure 3

BLOCK DIAGRAM: CONNECTIONS TO MAIN BOARD (2) - OPTITRONIC CONTROL UNIT



See previous page (from here)

Figure 4

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PNEUMATIC DIAGRAM

OPTITRONIC CONTROL UNIT

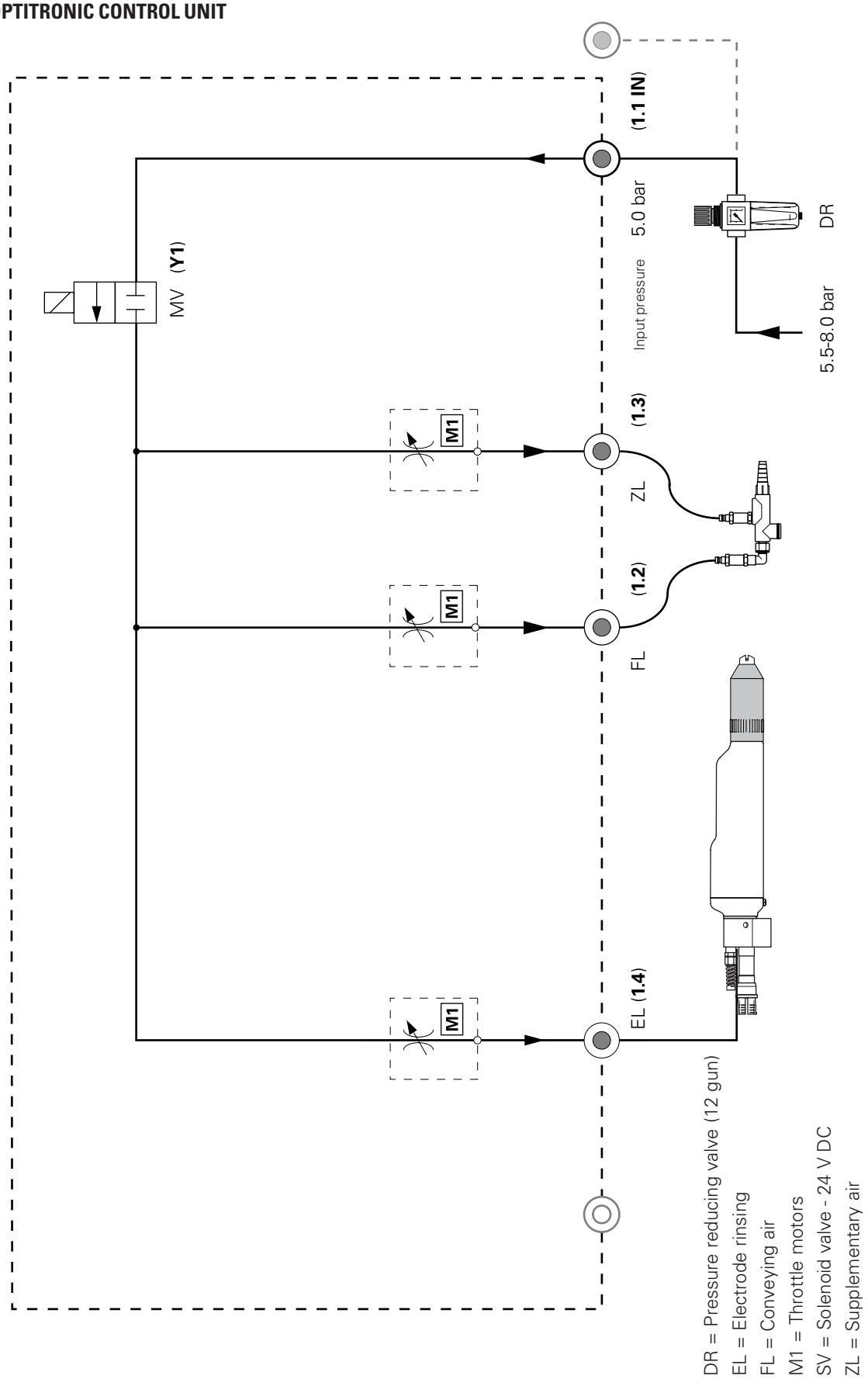

Figure 5

SPARE PARTS LIST

ORDERING SPARE PARTS

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

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

Example:

1. **Type** OptiTronic, **Serial No**.: XXX XXX
2. **Order No.**: 221 873, 5 pieces, 2 AT fuse

When ordering cable and hose material the length required must be given.

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

Wear parts are always marked with a **#**.

All dimensions for plastic powder hoses are given as external diameter (o/d) and internal diameter (i/d):

e. g.

ø 8 / 6 mm, 8 mm outside diameter / 6 mm inside diameter (i/d).

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OPTITRONIC CONTROL UNIT

Version 1 - GA or GM Gun	384 640
Version 2 - PG Guns	386 162

Example: CG 03 OptiTronic Powder Gun Control unit, Version 2
Rear plate with connections
(see also "OptiTronic Version Table", and "Conversion Table")

ABBREVIATIONS:

PG GA02 OptiGun 2 / PG 1 / PG 1-A / PG 2-A = **G1** = Gun 1
GA / GM GA01 OptiGun 1 / GM 01 EasySelect = **G2** = Gun 2

Figure 6

OPTITRONIC CONTROL UNIT - COMPLETE

2	CG Front plate - complete	379 794
4	EPROM 27C512-70 - Software version 2.XX*	387 037

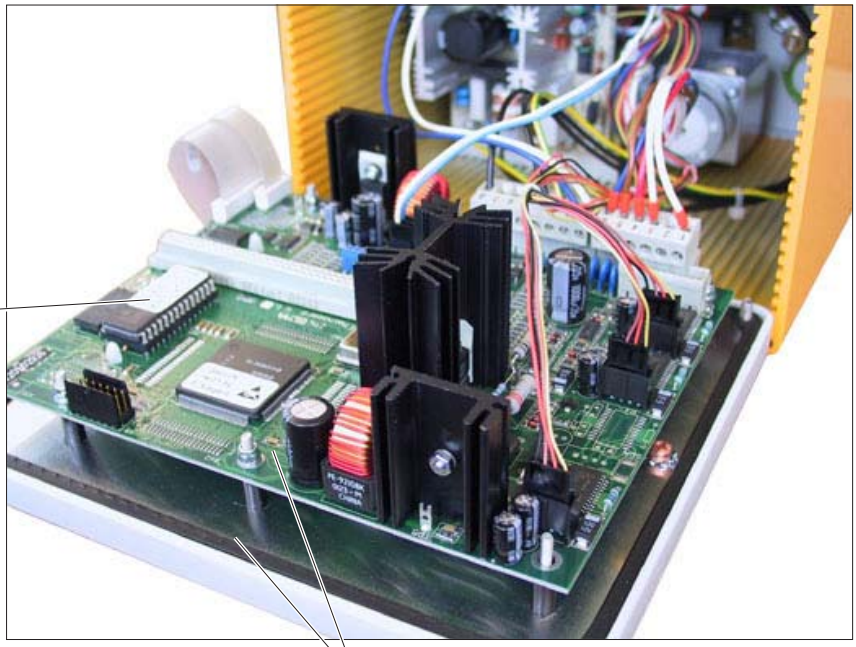

Figure 7

PNEUMATICS

1	Throttle motor - FL or ZL - complete	380 555
2	Throttle motor - EL - complete	380 563
3	Main solenoid valve - 24 V DC - complete	262 455
4	Power adapter	388 297
	Fuse - 2 AT	221 872

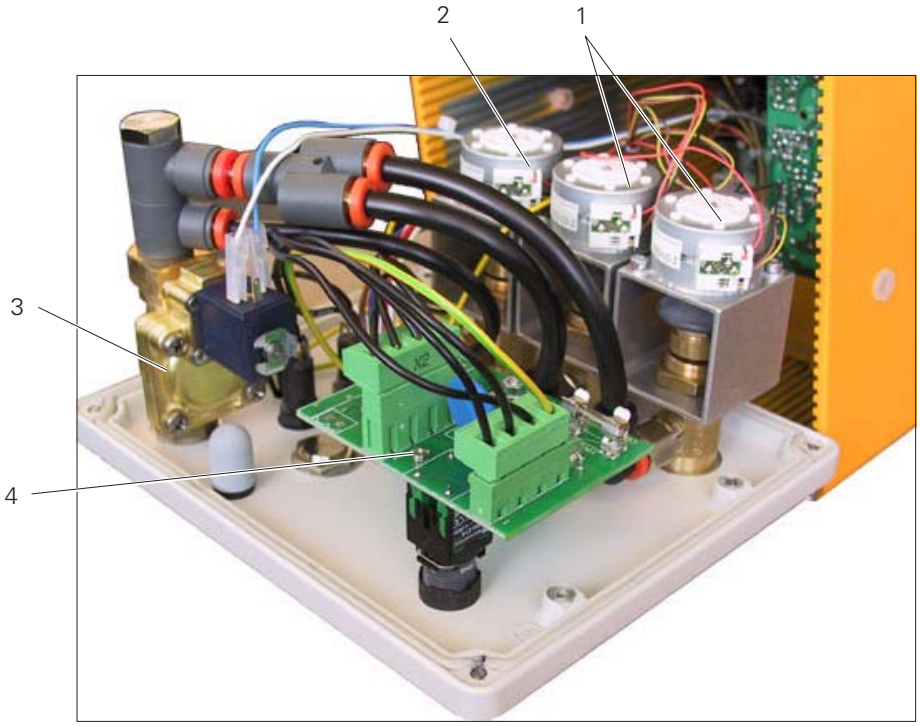

Figure 8

POWER SUPPLY

1	CG 03 Power supply	389 277
	Fuse - 4 AF - 250 V	262 897

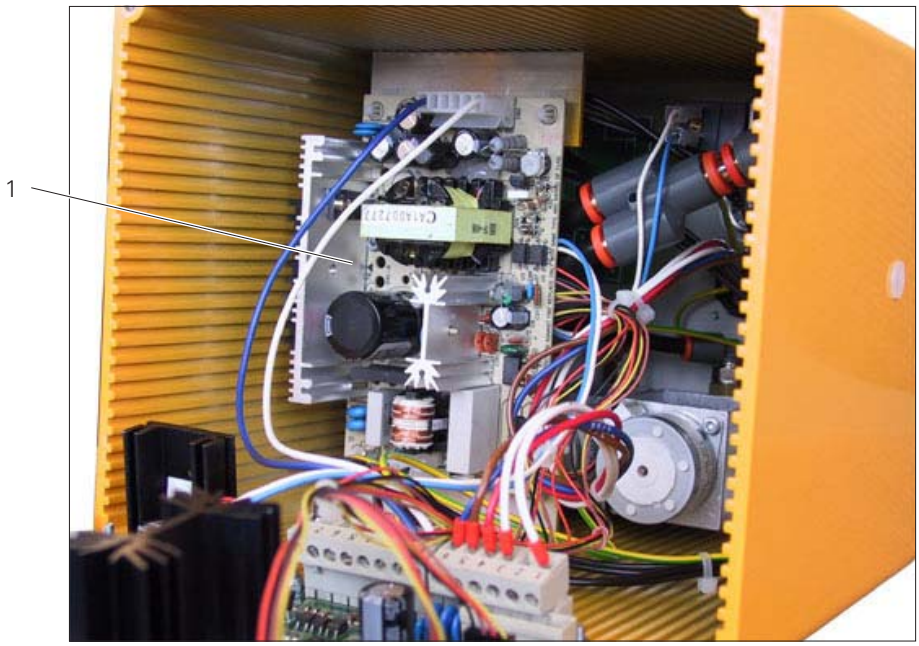

Figure 9

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