

MOVACOLOR

COLORING THE WORLD

MC18-Micro



MANUAL

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MOVACOLOR LEADING INNOVATOR IN DOSING TECHNOLOGY

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1 Introduction

Thank you for purchasing a Movacolor metering device. This manual is addressed to operators and **qualified technicians** taking care of the metering of dry additives to ensure correct use of the Movacolor dosing unit.

① **Important note:** this manual must be read before installing the dosing unit. Keep this manual in a place accessible for all operators.

1.1 Symbols

① Important note



Attention; safety regulations for the operator

1.2 Terms

Operator:	A person charged to operate, adjust, maintain and clean the machine.
Qualified Technician:	A specialized, suitable trained person authorized to execute the installation, non-routine maintenance, or repairs requiring special knowledge of the machine and how it operates.

1.3 Transport

To protect the Movacolor unit against damage during transport, the unit is packed in a cardboard box filled with polyurethane foam. Delivery terms are Ex-Works Sneek, The Netherlands. Buyer is responsible for the transport. Movacolor cannot be held liable for any damage during transport.

1.4 Receipt

Check the unit thoroughly upon receipt. Pass any remarks to the local agent or Movacolor within 8 days upon receipt of goods.

1.5 Disclaimer

Movacolor does not warrant that the hardware or software will work properly in all environments and applications, and makes no warranty and representation, either implied or expressed, with respect to the quality, performance, merchantability or fitness for a particular purpose.

Movacolor has made every effort to ensure that this user's manual is accurate; Movacolor disclaims liability for any inaccuracies or omissions that may have occurred.

Information in this user's manual is subject to change without notice and does not represent a commitment on the part of Movacolor. Movacolor assumes no responsibility for any inaccuracies that may be contained in this user's manual. Movacolor makes no commitment to update or keep the current information in this user's manual, and reserves the right to make improvements to this user's manual and/or to the products described in this user's manual, at any time without notice.

If you find information in this manual that is incorrect, misleading or incomplete, we would appreciate your comments and suggestions.

2 General information

2.1 Safety



The equipment is only designed and may only be used for the dosing of dry additives. Any use that is not in conformity with the instructions is considered improper and as such frees the manufacturer from any liability regarding damage to things and/or persons.



Before switching on the unit for the first time, ensure that the mains power voltage applied is between 80 and 260VAC.



Always switch off the Movacolor control cabinet and disconnect the mains power plug from electrical power before performing maintenance.



Ensure that all parts are securely fixed to the extruder or injection molding machine.



Dangerous voltages are present inside the control cabinet for up to 2 minutes after it has been switched off.



Always disconnect the main compressed air connection before performing maintenance.

2.2 Certification

The Movacolor dosing unit is designed and produced in conformity with the following European regulations:

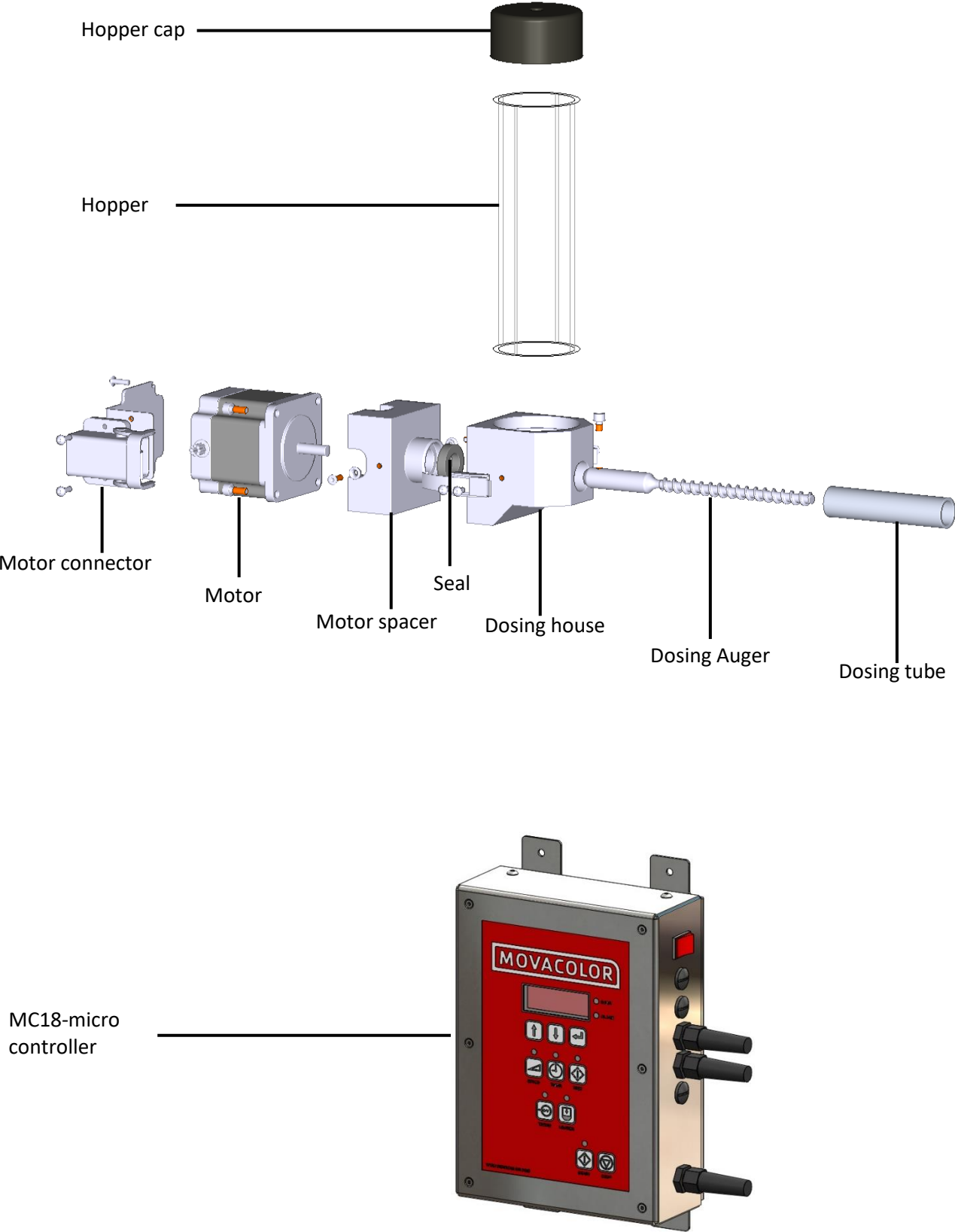
1. CE standards for machinery (health, safety, environment)
2. EMC (electromagnetic compatibility)
3. 2006/42/EG

2.3 Operating environmental conditions

1. The unit must be protected against weather conditions
2. Operating temperature -20 to +70 degrees Celsius
3. Protection class: IP-50

3 Overview Dosing unit

3.1 MC18-Micro Components overview.

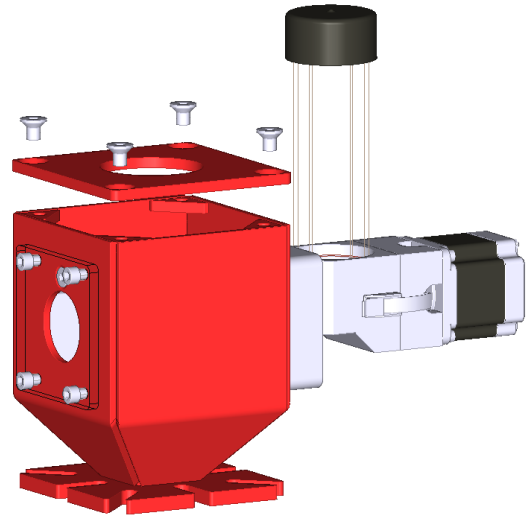


4 Installation

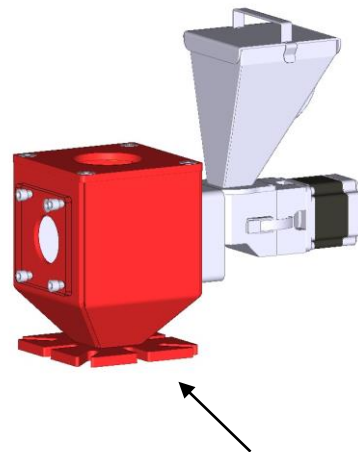
4.1 Mechanical Installation

Most mechanical parts are pre-assembled, making installation quick and simple.

1. When installing a foreign main material hopper on top of a neckpiece, the top flange of the neckpiece needs to be adapted. The lid of the neckpiece can be dismantled for easy machining.
2.
 - Install the neckpiece directly on top of the entrance of the production machine;
 - Install the neckpiece in a **90-degree** angle to the machine barrel. This will optimize the dosing accuracy in relation to vibrations of the production machine;
 - Make sure that the complete unit is mounted;
 - **horizontally levelled** and fixed securely;
 - Assure proper grounding to control cabinet, neckpiece and dosing unit.
3. Connect the unit to the neckpiece by closing curled knob clockwise.



Mount the unit in a 90-degree angle to the machine barrel, as shown in the picture.



Horizontally leveled (MCMicro with 500ml hopper).

4.2 Electrical Installation

The MC18-Micro controller is standard equipped with 3 connections:

1. Mains power cable.
2. Input cable.
3. Motor cable.

① Before switching on the unit for the first time, ensure the mains power voltage being applied is between 80 and 260Vac.

Optional are:

4. Sensor, complete with cable.
5. Alarm flash light, complete with cable.
6. Compressed air solenoid valve complete with cable (for automatic hopper loader).

For more information, please have a look at [APPENDIX B: MC18-Micro Wiring Diagram](#).

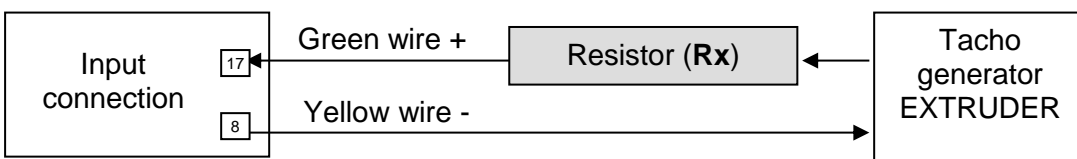
4.3 Input (start) signal

The MC18-Micro needs an input signal from the production machine in order to operate.

Three different input signals can be used to control the MC18-Micro.

- 1.) A potential free relay contact: Use the white and brown wire for the potential free contact.
- 2.) A relay signal up to 30 Volt DC: Relay signals can be used for an extruder that has no tacho signal. In case of a powered relay signal connect the white wire to +24 VDC and the yellow wire to - side. To detect a start signal the MC18-Micro needs a minimum voltage of 18VDC.
- 3.) A tacho signal up to 30 Volt DC: This is used when the MC18-Micro needs to be connected to an extruder that has a generator that produces a voltage linear to the extruder speed. When using a tacho generator signal, connect the white and brown wire, connect green to + VDC and yellow to - side of the generator. See Paragraph 7.6 for information about the configuration of the tacho parameters.

The maximum voltage that can be applied to the MC18-Micro is 30 VDC. The tacho voltage has to be reduced to 30 VDC if the tacho generator has a higher voltage output than 30 VDC at the maximum extruder output capacity. See the diagram below.



$$R_x \text{ (kilo-Ohm)} = (2,684 \times (\text{Max. tacho output VDC} - 5)) - 66$$

If the extruder stops when connected to the metering unit, an isolated signal converter is needed. Contact your agent or Movacolor for more information.

5 Metering principle

The dosing auger of the MC18-Micro combined with a very precise adjustable stepping motor ensures that the additive output is accurate and regular. For every particular application Movacolor provides different neckpieces but the most common mounting of the neckpiece is between the production machine and the hopper. In the figure below a cut through of the NST40 neckpiece can be seen.

During operation, the virgin material runs from the machine hopper through the neckpiece (1) into the machine. Inside the neckpiece the virgin material flow (4) is divided into two streams by the cover plate(3). In the space below the cover plate, the rotating cylinder (2) is dosing additive.

Additive is added directly into the center of the virgin material flow, just before it enters the production machine (5). This is a great advantage over metering devices that use batch pre-mixing because pre-mixing can actually cause material separation. Separation of materials results in an irregular additive flow into the production machine.

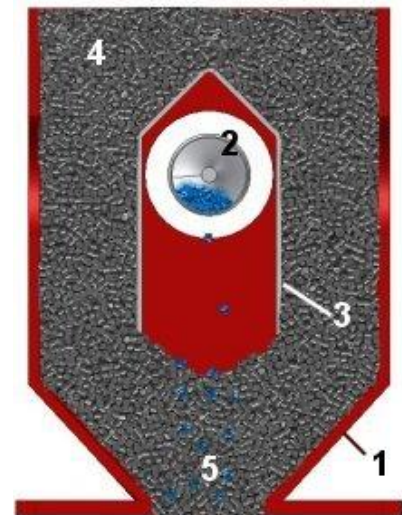


Fig. 3

- 1. Neckpiece
- 2. Dosing cylinder
- 3. Cover plate
- 4. Virgin material
- 5. To production machine

6 Installation of the hopper loader (optional)

6.1 Mechanical installation

The Hopper loader lid fits directly on the hopper of the dosing unit.
To fix the ME hopper lid the quick release clamps on the dosing hopper are used.

6.2 Compressed air installation

The ME-loader uses compressed air to move material. The inlet for your compressed air supply line is on the solenoid valve. The air connection diagram can be found on the valve's body.

1. Connect the compressed air to the $\varnothing 8 \times 6$ compressed air connection on the solenoid valve
The compressed air source must deliver a maximum of 4-8 bar of clean, dry (non-lubricated), air pressure.
2. Make connections from the solenoid and the ejector pipe with the provided compressed air tubing. Quick disconnect fittings are provided for these connections. The tubing should be cut to length for maximum efficiency of the system. Use straight cuts to assure a good square tubing end. Confirm a good connection.



Be sure to provide hazard-free routing of the tubing, to keep it away from hot or moving surfaces and out of the way of personnel.

6.3 Connecting material line

The flexible hose need to be attached over the inlet pipe of the ME-hopper lid and ejector pipe.
Secure the hose with a hose clamp.

Reduce flex hose down to the shortest possible length, to avoid wasting compressed air energy.



- ① The material line should be as straight as possible. Avoid loops and S-curves in flexible hose This can hurt conveying performance.

6.4 Adjusting compressed air flow

Adjusting compressed air flow

It is advised to use a flow regulator for the compressed air (not included).

The air flow will determine how much material will be transferred and how fast the dosing unit will be replenished with material, with each loading sequence.

The best is to adjust the air setting to its lowest possible level in order to conserve compressed air energy. Parameters such as distance, material line bends, the flow characteristics of the material and vertical rises in the flex hose all play a part in finding the proper setting. Ultimately, trial and error settings over several loading sequences will work best to determine the right air level. Too low of a setting may not move material effectively enough to satisfy demands cycle after cycle. Too much air will waste energy and cause the filter on the lid to prematurely blind in an attempt to evacuate excess air.

6.5 Sensor adjustments

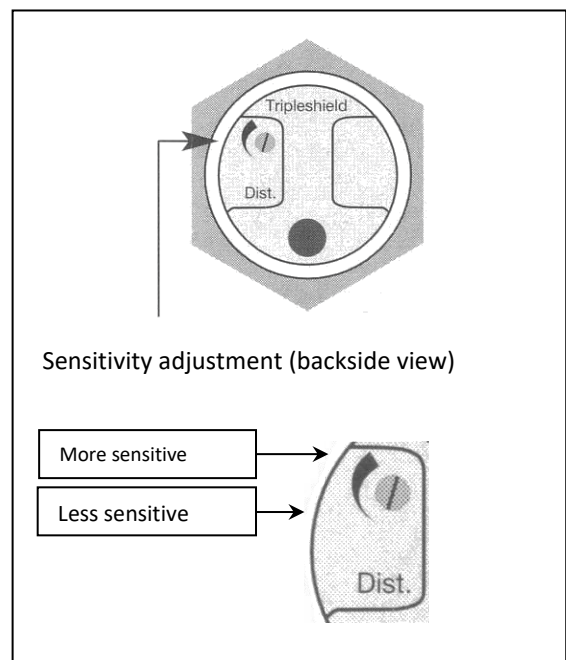
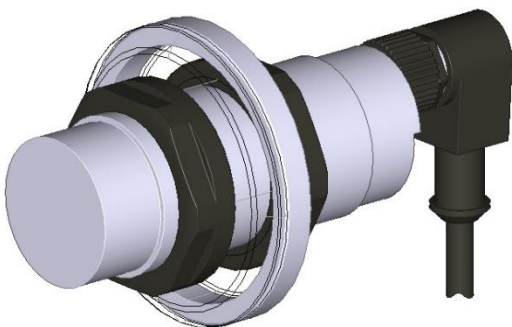
Sensor

Depending on the material you may need to adjust the sensitivity of the sensor which is delivered with the hopper loader. At the back of the sensor is a small screw that can be used to adjust its sensitivity. To adjust, fill the hopper with material until the sensor is just covered and turn the screw until the light on the sensor goes on.

Because the sensor is in direct contact with the material, it is recommended that the sensor will be initially adjusted for sensitivity and then re-adjusted, once the sensor becomes coated with typical material fines, common to plastics conveying.

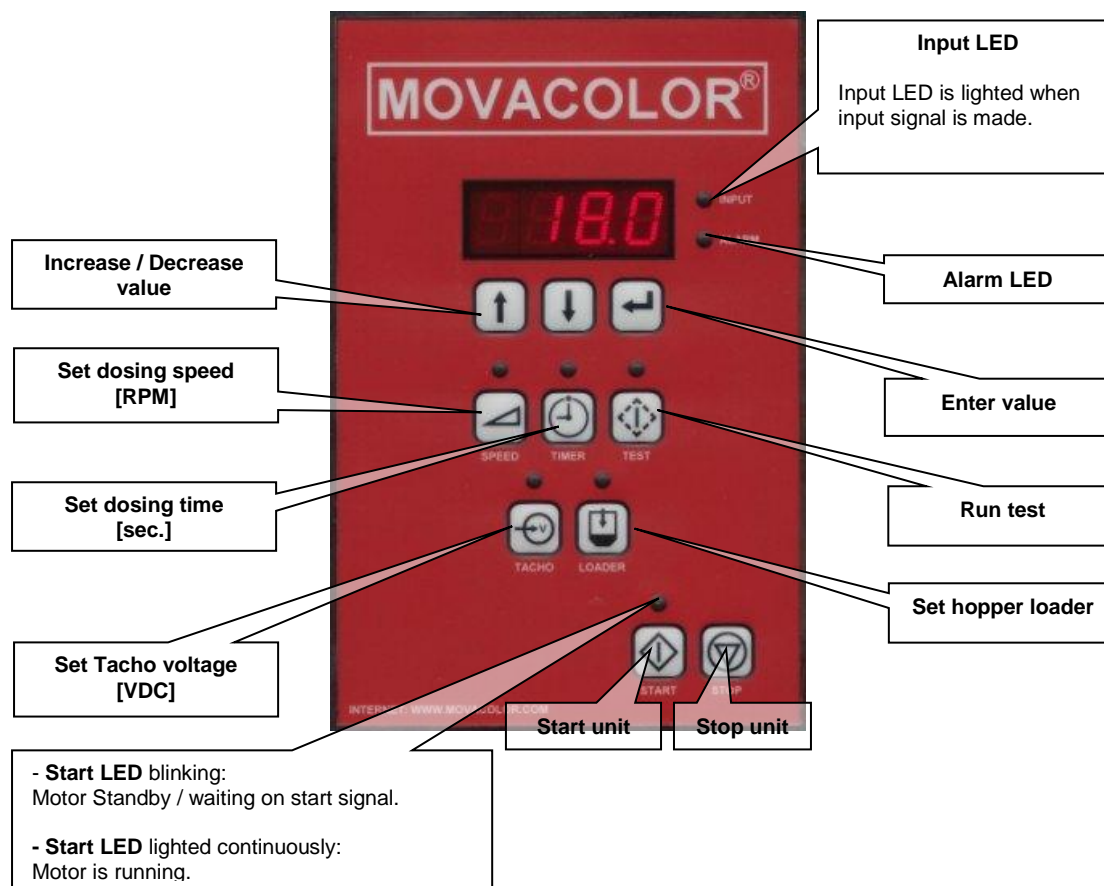
6.6 Capacitive Sensor Adjustment

- The LED is ON
when material is detected by the sensor.
- The LED is OFF
when no material is detected by the sensor.



7 Operation

7.1 The Interface



7.2 General


- Connect motor before switching on the controller
- All changes have to be entered to acknowledge.
- A blinking value means the changed data is not entered.
- To cancel a changed value, press the specific function button (or) again.
- Most functions have a designated key and a LED on the interface. When a function is activated the LED of that key/function will light up.
- All functions except the test function can be activated when the unit is started. (depending on the chosen configuration.)
- Only one of the following functions , can be active at the same time. This means no other function can be activated before the active function is deactivated

❗ The unit can be set to different configurations, see paragraph 7.3 and 7.4

7.3 Start up



The MC18-Micro software version is displayed shortly when the unit is switched on, followed by the selected motor type Lo=Low Torque and HI=High Torque motor. After that the configuration mode (CON) will be shown.




Configuration	Type of Production	Input signal	Hopper loader
1	Injection Molding	Timer	none or ME (when connected)
3	Extrusion	Relay	none or ME (when connected)
4	Extrusion	Tacho	none or ME (when connected)

When the MC18-Micro is set to configuration 3 to 6, the time function key  is deactivated.
When a deactivated key is pushed the unit will give a beeping signal.
For changing the unit configuration see paragraph 7.4.

7.4 Configuration

For changing the unit configuration,

keep speed  and enter  pressed while switching on the main power.

The configuration number will be displayed, press   to switch between the possible configurations and press  to acknowledge. The software version will be displayed.
Configuration data is normally entered once and it remains the same for subsequent operation. The data entered during configuration is saved in memory and remains in the memory even when the unit is shut off or unplugged.



Timer

Timer mode is used for injection molding with a relay input signal. When the relay contact is made, the unit will start dosing according the number of seconds that has been set with the time function.


Relay


A relay signal can be used when working in extruder mode. With the relay input the unit will start dosing when the relay contact is made and will stop when the relay contact is interrupted.








Speed and Timer

Speed and dosing time can be altered (time only in case of injection molding)

Speed  = rotation of dosing system in RPM, (0,1 to 200 RPM)

Timer  = time dosing system will rotate after start impulse, at input cable (0,1 to 999,9 sec)

Activate by pressing  or  , set the desired speed or time using   press enter  to acknowledge.

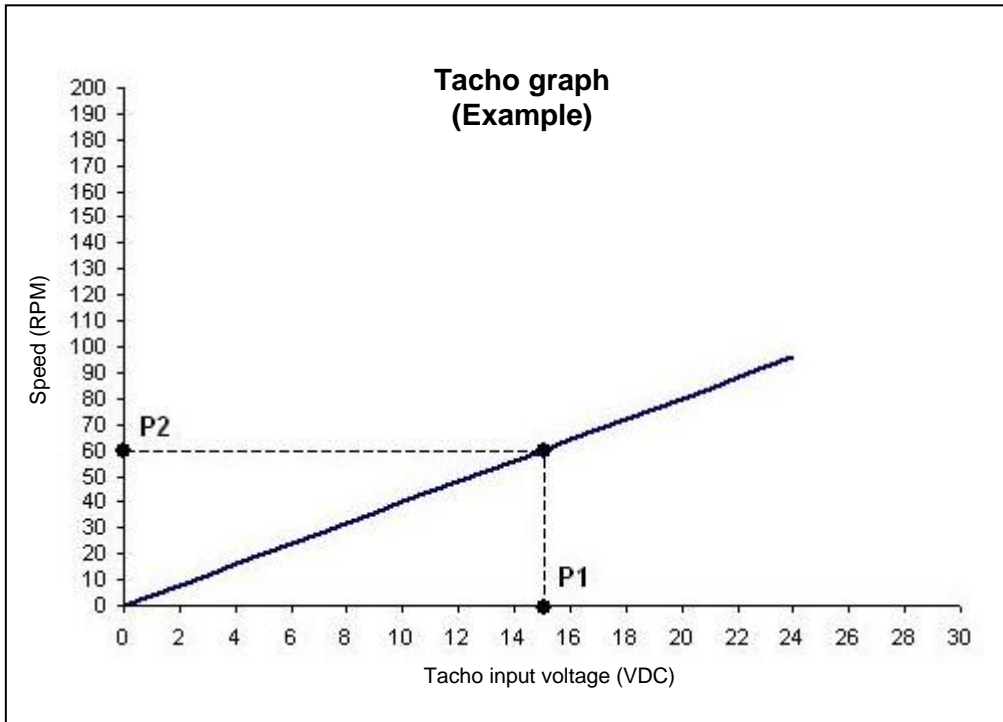
7.5 Tacho function



The tacho function is available in configuration 4 & 6.

This function can be used with extrusion when it is necessary that the dosing rate is automatically adjusted to the extruder speed. In tacho mode an input voltage is coupled to a dosing speed setting. If the extruder speed changes, the tacho input voltage and speed of the dosing unit will change accordingly.

A linear correlation between extruder speed (tacho input signal) and the needed dosing speed is assumed. See graph.



Method 1, with a running extruder:



Press to make the tacho function active. The display will show a numerical value that represents the current voltage of the tacho input signal. When is pressed the current voltage (P1 in the graph) is coupled to the set speed (P2 in the graph).

Method 2, no running extruder (recommended to disconnect the tacho signal)





Press to make the tacho function active. The display will show a numerical value that represents the current voltage setting of the tacho function. Use to set the required voltage. When is pressed the set value is stored (P1 in the graph).



Press to enter the speed related to the previous set tacho voltage. The display will show the last entered set speed (P2 in the graph). Use to set the required speed.


When is pressed the set value is stored (P2 in the graph).

During production, the speed (P2) can be changed. The new speed is coupled to the previous stored voltage and the graph will change accordingly.


During production, the voltage (P1) can be adjusted to the current tacho input voltage by pressing  followed by . The new voltage is coupled to the previous stored speed and the graph will change accordingly.


The maximum voltage that can be applied to the MC18-Micro is 30 VDC. See paragraph 6.4 for information about the correct electrical connections of the tacho signal and information about connecting a higher than 30 Volt DC input signal.

Production (Motor On/Off)

Press  to start production. The start LED will start blinking when the unit is waiting for an input signal. The unit is dosing if the start LED is lighted continuously.

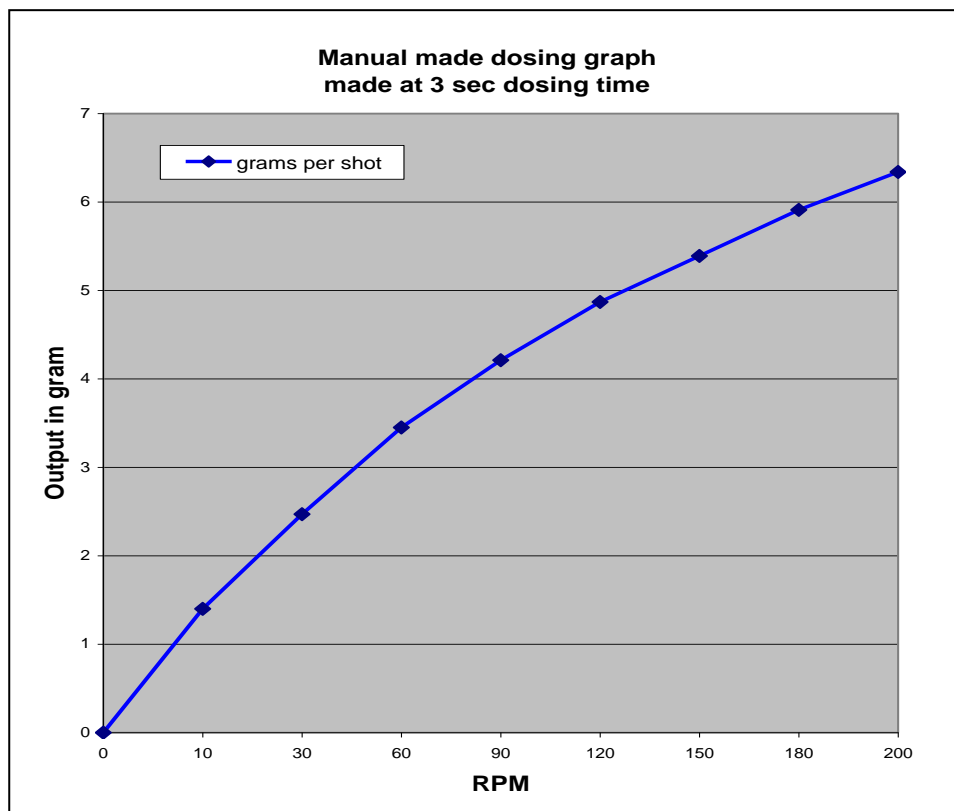
7.6 Test (Material output)

 The test function is used to calibrate the MCMicro



The test function can only be used when the motor is stopped .

How it works



Determine the dosing unit RPM entirely manual. This can be done by drawing up the dosing characteristic manually, or by recording the relation of the RPM versus the system output in a chart. With this multipoint chart, it is possible to determine the rpm that corresponds to the dose amount. This must be repeated for every dosing setting because the dosing conditions and the used materials are usually very different.





Test procedure to determine output of dosing system:
Place dosing unit horizontally leveled (water level surface).


- Set the speed (and or) time
- Press  for Test
- Weigh the material dosed during test
- Adjust speed or time and repeat  Test if necessary.

Note:

(Configuration 1 & 2 / Injection Molding): The unit will dose at the set speed  and time .

(Configuration 3 to 6 / Extrusion): The unit will dose for 30 seconds at the set speed .

 Emergency stop.

If the test is activated press stop  to cancel a test.

7.7 Automatic hopper loaders (optional)

Introduction

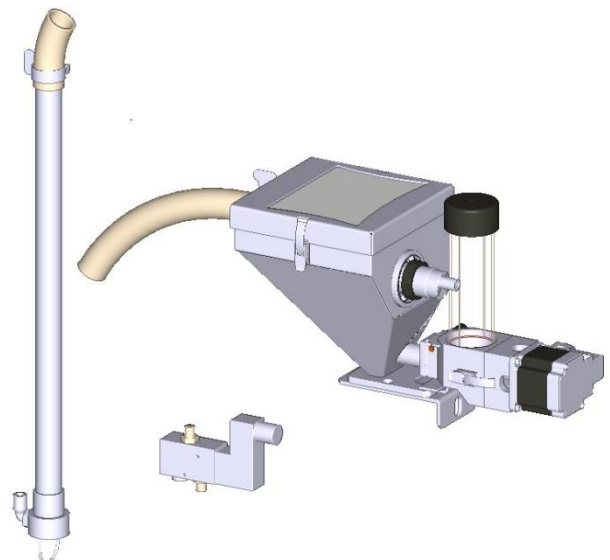
Movacolor dosing units are capable of handling a variety of dry materials. The loader that can be connected to – and controlled by the MC18-Micro is the Movacolor Ejector (ME) system for dust-free or nearly dust-free materials.

The ME hopper loader is driven by low-pressure compressed air and mounted directly on top of the hopper lid of the Movacolor dosing unit. The MC18-Micro controls the operation of the ME system.

All parts are aluminum or stainless steel and are virtually maintenance-free. Only the filter needs to be cleaned periodically. To increase reliability and safety, there are no moving parts in the hopper loader construction.

7.8 How the ME works

The ME system blows the material from the bag, drum or container into the hopper of the dosing unit. The hopper lid of the housing has a simple and easy-to-clean dust filter to keep any dust particles in the hopper. The system is triggered by a low-level sensor mounted in the hopper of the dosing unit. The sensor also generates a low-level alarm.




MCMicro with ME-Micro Hopper loader

7.9 Hopper loader settings

This part of the manual describes how to make the hopper loader settings. For further technical information about the hopper loader consult the specific hopper loader manual.

General

① The hopper loader is only activated when the motor is On .

① Emergency stop.

To stop the hopper loader during production press , select "Off" by pressing  or  and press  to acknowledge.

Input signal (sensor)

Depending on the material you may need to adjust the sensitivity of the sensor which is delivered with the hopper loader. At the back of the sensor is a small screw that can be used to adjust its sensitivity. To adjust, fill the hopper with material and turn the screw until the light on the sensor goes on.

Output signals

During fill time [FILt] there will be a 24VDC signal between connection 20 and 21 on the main board to activate the pneumatic solenoid valve (See appendix A)


The hopper loader LED on the front of the controller indicates the status of the valve output.










When the Fill Alarm [FILA] is active there will be a 24VDC signal between connection 18 and 19 on the main board to activate the flash light. (See appendix A).

The controller itself gives a beeping signal and the alarm LED will lighten up.

7.10 ME settings

Configuration 1, 3 and 4 (see paragraph 7.3 & 7.4)

Press  to change ME hopper loader settings, the display will show in following order:

On / Off:	Press   to switch the ME-hopper loader On or Off and press  to acknowledge.
FILt:	Fill time [sec.], during this time the system blows material into the hopper of the dosing unit. Press   to change the time and press  to acknowledge. Recommended basic setting: 15 sec
FILA:	Fill Alarm [sec.], if sensor is NOT covered within this time, the alarm starts. Press   to change the time and press  to acknowledge. Recommended basic setting: 30 sec


7.11 Keyboard lock

 +  +  = Lock / Unlock,

Display shows : L.ON / L.OFF

8 Alarms

8.1 General

To cancel an alarm press enter .

When an alarm is active there will be a 24VDC signal between connection 18 and 19 on the main board to activate the flash light. (See appendix A).

The controller itself gives a beeping signal and the alarm LED will lighten up.

8.2 Filling alarm

The MC18-Micro is able to give an alarm when there is not sufficient material inside the hopper.

Alarm settings when using an automatic hopper loader.

See paragraph 7.9

Alarm settings manual hopper filling (without automatic hopper loader)


In case of manual filling of the hopper, the hopper loader control of the MC18-Micro is used to generate the filling alarm. A sensor and an alarm output is needed.


Use the settings below.

ME: ME hopper loader = ON

FILt = 0,1

FILA= 0,2

 The Filling alarm is self-eliminating, this means that the alarm will stop automatically when the sensor is covered with material.

If an alarm is canceled by pressing enter  the next alarm will come (if the sensor is still not covered) with a delay of 60 seconds. This gives the operator the time to manual fill the hopper without having the alarm on.

8.3 Motor connection failure [Err0]

Err0 : Motor connection failure.

Make sure the motor is connected

Check cable and connectors for damage.

Press enter  to stop the alarm.

9 Maintenance

To keep the MC18-Micro functioning correctly, it is advised to perform regular maintenance.



Always switch off the control cabinet and disconnect the mains power plug from electrical power before performing maintenance.



Always disconnect the main compressed air connection before performing maintenance.

Weekly

- Clean the dosing auger for proper operation;
- Check dosing tool auger for wear out;
- Check the dosing cylinder bearing for smooth rotating;
- Clean the dust filter of the ME loader system. This can be done by taking out the filter and clean it with compressed air.

Monthly

- Check the motor seal for abnormal wear out;
- Replace the filter of the ME system.

10 System performance

The following variables may influence the accuracy and repeatability of the system:

1. Material properties. Easy flowing, non-sticky and non-static material that comes in the form of small regular shaped granules or powder can be dosed very accurate and regular.
2. Periodical cleaning of the dosing cylinder and seals is necessary for proper operation.
3. Extreme vibrations and shocks can have negative influence on system performance.
4. An unstable relay signal has a negative influence on the repeatability.
5. With injection molding the shot to shot accuracy depends, besides the variables mentioned so far, on the shot time in combination with granule size and weight. If relatively big and heavy granules have to be dosed in a very short time, it will influence the shot accuracy and repeatability, because if only a few granules are dosed during the shot, one granule more or less makes a big difference on the total shot weight.
6. Vacuum or overpressure in the neckpiece caused by driers or hopper loaders.
7. Bridging or rat holing of the material inside the hopper can happen if the material is not free flowing.
8. Bridging or rat holing of the material inside the hopper can happen if the material is extremely static.
9. Extremely static material can contaminate the dosing cylinder.
10. In case of water cooled neckpiece, check if there is material build up around the dosing cylinder and the water cooled pipe. Check also the water supply to the neckpiece.



Always disconnect the loader from its main power source and compressed air course before servicing. This prevents the loader from starting during servicing, which could cause personal injury.

10.1 Conveying problems and solutions

Problem	Possible cause	Solution
Low or no material flow.	Does the filter need to be cleaned?	Check the filter, if it is clogged with dust or fines, clean the filter.
	Are there kinks in the flex hose?	Check the material flex hose line for loops and "S" curves. Remove any loops and "S" curves in the flex hose. Try to keep the hose as straight as possible. Check the material line for holes, cracks
	Are hose connections too loose?	Check the material line hose connections for leaks especially at the ejector pipe connection. Hose clamps should be used.
	Are compressed air adjustments correct?	Check the compressed air adjustment to make sure it is properly adjusted for optimum flow. Too much air will prematurely blind the filter; too little air will create clogs.
	Do you have enough material at the source?	Replace/refill the material container
	Has material plugged the flexible hose?	Check the material flex hose line for loops and "S" curves. Remove any loops and "S" curves in the flex hose. Try to keep the hose as straight as possible.
	Is the compressed air tubing connected?	Assure that the ejector pipe (s) are supplied with compressed air via the supplied tubing.
Loader will not cycle.	Are all electrical connections correct?	Check to make the sensor is connected to the control and the solenoid is connected to the control.
Filter clogs frequently.	Is there too much compressed air flow?	Adjust the air flow to minimum possible level to prevent excessive dusting and filter clogging.

APPENDIX A: MC18-Micro Technical Specifications

Controls:

Speed: Manual setting from 0,1 to 200 RPM max, in increments of 0,1 RPM.
Time: Manual settings from 0,1 to 999,9 sec in increments of 0,1 sec.
Voltage settings of tacho-voltage: auto-detect.
Integrated hopper loader controller.

Monitoring/System Information/External communication

Man/Machine interface: Keypad controller. 4-piece 7 segments LED at front display.
External Communication: None.
Alarm: LED Indication + Internal beeper, 1x external alarm output.

Specifications/Standards & Directives/ Technical data:

Power supply: Operating power from 80 VAC to 260 VAC, 50 and 60 Hz
by integrated automatic voltage selector.
Power consumption: 80 Watt maximum.
Stepper motor: (1,8degr/step) max 2 Amp at 40 Volt.
Operating Temperature: -20 to +70 degrees Celsius.

Input signal(s):

Injection molding: Start/Stop trigger input, potential free or 18-24VDC*
Input for level sensor.
Extrusion: Start/Stop trigger input, potential free or 18-24VDC*
Tacho input 0..30VDC
Input for level sensor.

* Note potential contact
Guaranteed OFF: 0-8VDC.
Guaranteed ON: 18-30VDC.

Output(s):

- Stepper motor max. output 2A (40VDC).
- Solid state 24VDC/0.5 A output for valve hopper loader.
- Solid state 24VDC/0.5 A output for external alarm.
- Maximum total output power: 12 Watt (Valve output + alarm output).

Standard Directives: Protection class: IP-50.

Safety

- In case of overload due to short-circuit or in correct connection, the power supply automatically shuts down;
- Opto-insulated start input for connection to production machine.

Machine connection flange:

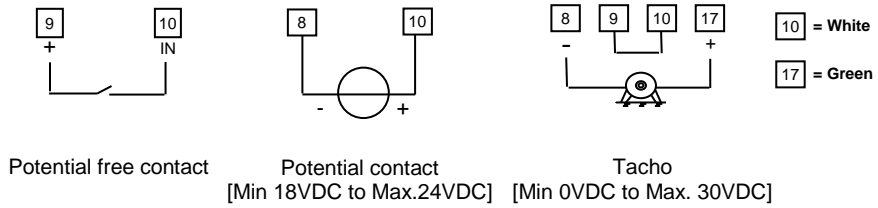
Standard flange MCBasic Neckpiece.

Optional parts

- Neckpiece type NST40 with cleaning opening and inlet/outlet Ø50mm/□45mm, steel epoxy coated;
- Neckpiece type NST90 with cleaning opening and inlet/outlet Ø50mm/□90mm, steel epoxy coated;
- Water-cooled flange BH(A) inlet/outlet 50mm/50mm stainless steel ANSI 304;
- Water-cooled flange PHA inlet/outlet 100mm/100mm;
- Hopper loader type ME-Micro;
- Mixers;
- Capacity sensor (Hopper empty detection / filling alarm);
- External Alarm Flash light;
- External Alarm Siren.

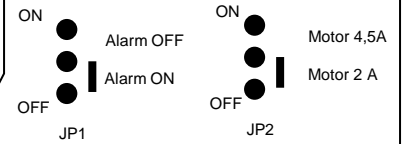
APPENDIX B: MC18-Micro Wiring Diagram

Input (start) signal

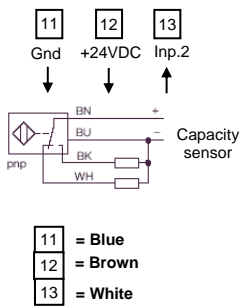


Jumper settings

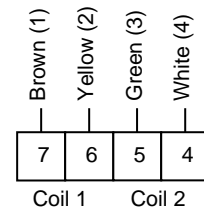
JP1 Motor alarm on/off
JP2 Motor type selection LT, HT



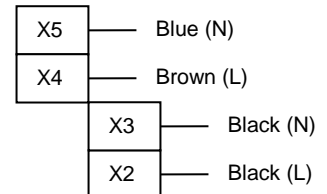
Sensor input (24VDC) INP2



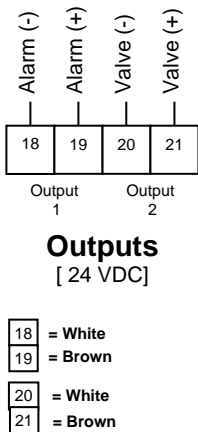
Motor



Internal wires main power switch



Outputs [24 VDC]

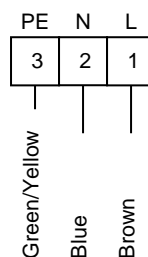


❗ To open the control cabinet use the 4 bolts on the top and bottom side, not the 6 bolts at the front side.

❗ **WARNING**
Do not make any changes to the main board/components ore warranty will lapse.

Power Supply

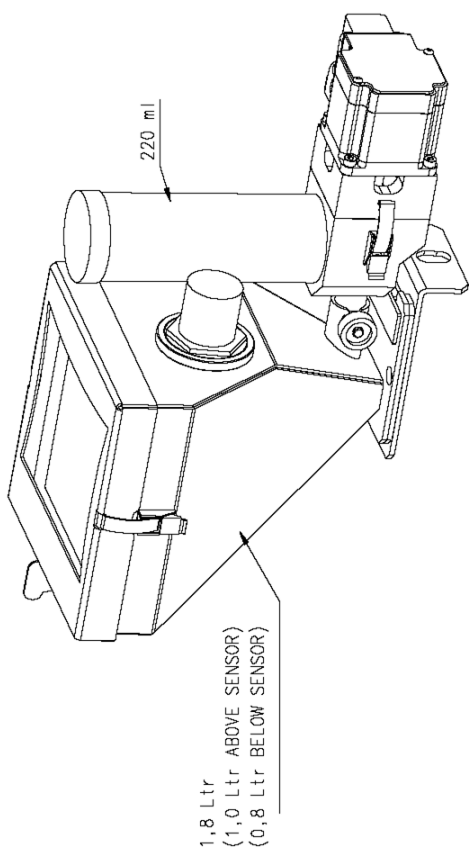
Western Europe



USA, Canada, Mexico,

Mid America, Japan, Taiwan

1 = Black
2 = White
3 = Green



Specification	Material	Finish	Weight
Quantity	Product number	Prod. Rev	Draw. Rev
00331-00315-570020	09-038-001	B	
00331-00315-570021			
00331-00315-570022			
00331-00315-570023			
00331-00315-570024			
00331-00315-570025			
00331-00315-570026			
00331-00315-570027			
00331-00315-570028			
00331-00315-570029			
00331-00315-570030			
00331-00315-570031			
00331-00315-570032			
00331-00315-570033			
00331-00315-570034			
00331-00315-570035			
00331-00315-570036			
00331-00315-570037			
00331-00315-570038			
00331-00315-570039			
00331-00315-570040			
00331-00315-570041			
00331-00315-570042			
00331-00315-570043			
00331-00315-570044			
00331-00315-570045			
00331-00315-570046			
00331-00315-570047			
00331-00315-570048			
00331-00315-570049			
00331-00315-570050			
00331-00315-570051			
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00331-00315-570053			
00331-00315-570054			
00331-00315-570055			
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00331-00315-570074			
00331-00315-570075			
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00331-00315-570078			
00331-00315-570079			
00331-00315-570080			
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00331-00315-570082			
00331-00315-570083			
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00331-00315-570085			
00331-00315-570086			
00331-00315-570087			
00331-00315-570088			
00331-00315-570089			
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00331-00315-570092			
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00331-00315-570096			
00331-00315-570097			
00331-00315-570098			
00331-00315-570099			
00331-00315-570100			
00331-00315-570101			
00331-00315-570102			
00331-00315-570103			
00331-00315-570104			
00331-00315-570105			
00331-00315-570106			

MOVACOLOR

Tel. 0031-(0)515-570020
Fax 0031-(0)515-570021

APPENDIX D: Declaration of Conformity

DECLARATION OF CONFORMITY

(According to 2006/42/EC)

Manufacturer's name: MOVACOLOR BV

Address: P.O. Box 3016
8600 DA Sneek
The Netherlands
www.movacolor.com

Declare under our sole responsibility that the products:

Product description: Dosing equipment

Product designation: MCBasic, MC12, MC18, MC30, MC12 Micro, MC18 Micro, MCLiquidV, MCLiquidG, MCHighOutputV, MCBalance.

Identification: From serial number 27500 onwards.

Year: 2017

- **The object of the declaration described above is in conformity with the relevant Union harmonization legislation;**
Machine Directive 2006/42/EC
EMC Directive 2014/30/EU
- **The following harmonized standards and technical specifications have been applied:**
EN 60204-1 Safety of machinery - Electrical equipment of machines.
Part 1: General requirements
- EN 61010-1:2010 Safety requirements for electrical equipment for measurement, control and laboratory use.
Part 1: General requirements

Name: Gerhard Dersjant **Place:** Sneek the Netherlands

Position: Managing Director **Date:** November 2016

Signature:

