

USER GUIDE  
UGB021-1212



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# TrueFeed Liquid Feeder

Model TF-LQ



Please record your equipment's model and serial number(s) and the date you received it in the spaces provided.

It's a good idea to record the model and serial number(s) of your equipment and the date you received it in the User Guide. Our service department uses this information, along with the manual number, to provide help for the specific equipment you installed.

Please keep this User Guide and all manuals, engineering prints and parts lists together for documentation of your equipment.

Date:

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Manual Number: UGB021-1212

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Serial Number(s):

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Model Number(s):

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# 1. Introduction

Thank you for purchasing a Conair metering device. This manual is addressed to operators and **qualified technicians** taking care of the metering of liquids to ensure correct use of the Conair 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.

## 2. General information

### 2.1 Safety



The equipment is only designed and may only be used for the dosing of liquids. 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 main power voltage applied is between 80 and 260Vac.



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



Ensure that 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.

### 2.2 Certification

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

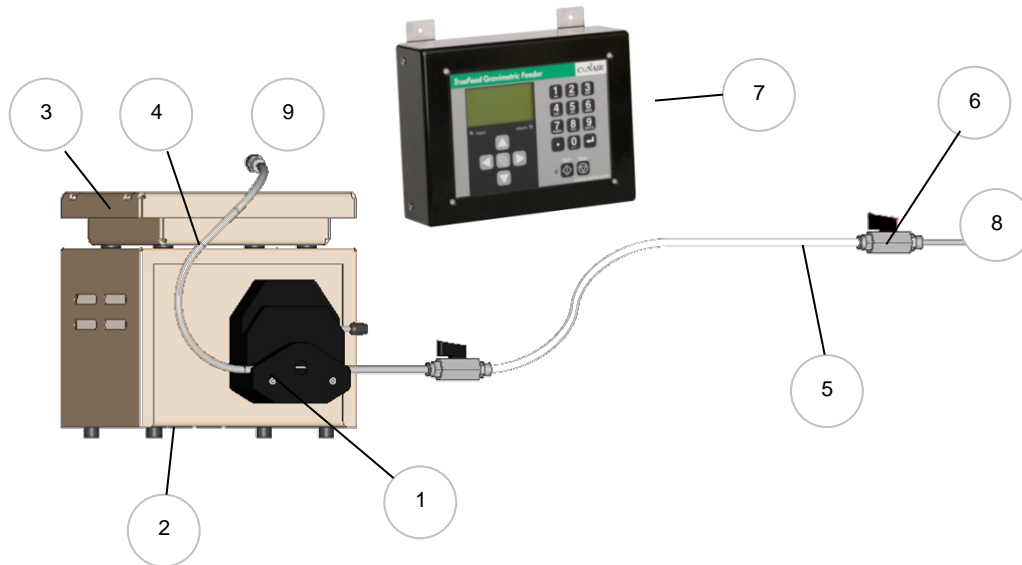
- CE standards for machinery (health, safety, environment)
- EMC (electromagnetic compatibility)
- VEM (safety electric material)
- 98/37/EC, Annex 1 (See the declaration of conformity, Appendix E)

### 2.3 Operating environmental conditions

- The unit must be protected against weather conditions
- Operating temperature -4 to 158°F {-20 to +70°C}.
- Protection class: IP-50

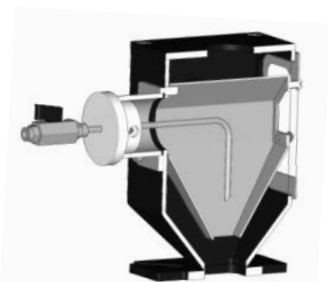
## 3. Overview - dosing unit

### 3.1 TF-LQ Component overview



- 1 Peristaltic Pump head
- 2 Pump drive
- 3 Weighing platform
- 4 Pump hose including Ball valve
- 5 Transport hose 8x6 mm total length 33 ft {10 m}
- 6 Nozzle st-style for general use
- 7 Control
- 8 *Optional several neckpieces and mixers available*
- 9 *Optional Packaging / Holder (Customer specific)*

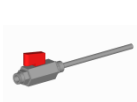
### 3.2 Neckpieces and mixers



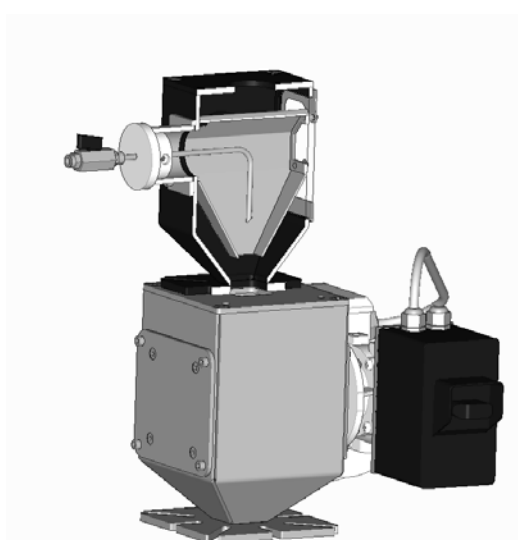
Neckpiece NSt40 + Nozzle Nz-Mova



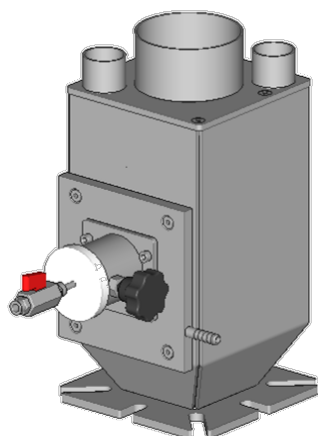
Nozzle Nz-Mova



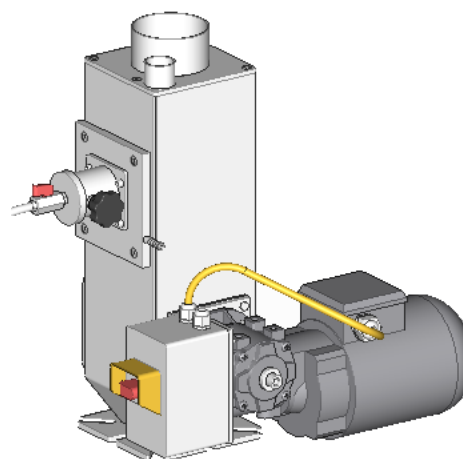
Nozzle St



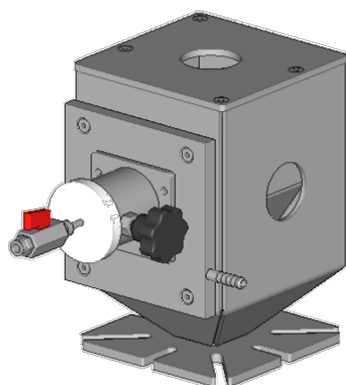
Mixer MIX50 + Neckpiece NSt40 + Nozzle Nz-Mova



Neckpiece NPHA + Nozzle Nz-Mova  
For PET production



Mixer MIXPHA + Nozzle Nz-Mova  
For PET production



Neckpiece NBH + Nozzle Nz-Mova  
For PET production

### 3.3 Packaging and Packaging holders



Example 5 gallon {20 liters} drum placed with 10° angle offset.

### 3.4 Liquid trolley

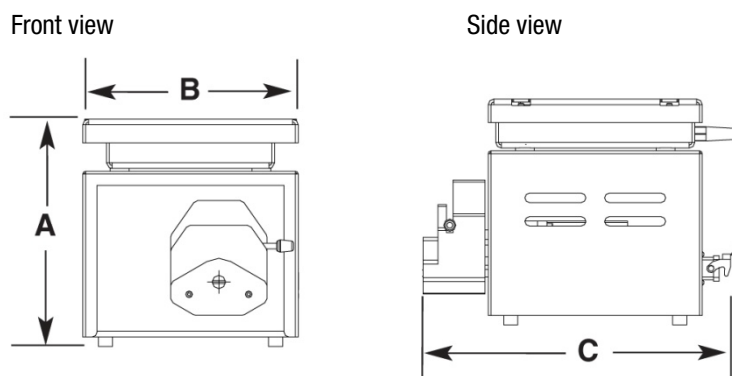


Trolley



## 4. Pump head / capacities

Depending on the application and required flow rate different pump tubing and pump head might be needed. The TF-LQ is can be supplied with different pump heads; low rate and high rate are part of the standard Conair product program. Use the following table to determine the best pump head for your application. The belonging 3 hoses will be supplied with the TF-LQ. For more detailed information please contact a Conair representative.



Model	TF-LQ	
Pump type	Low rate	High rate
<b>Performance characteristics</b>		
<b>Flow rate*</b>		
Minimum	0.22 ml/min	1.7 ml/min
Maximum	60 ml/min=1.0 ml/sec	792 ml/min=13.2 ml/sec
<b>Dimensions</b> inches {mm}		
<b>Weigh platform</b>		
A. Height	9.45 {240}	9.45 {240}
B. Width	8.98 {228}	8.98 {228}
C. Depth (with pump)	12.90 {327.60}	12.90 {327.60}
<b>Throat adaptor</b> inches {mm} square		
<b>Large</b>		
Outside dimensions	7.09 {180}	7.09 {180}
Throat opening	3.54 {90}	3.54 {90}
<b>Small</b>		
Outside dimensions	5.9 {150}	5.9 {150}
Throat opening	1.77 {45}	1.77 {45}
<b>Weight</b> lb {kg}		
Weigh platform	15 {68}	15 {68}
<b>Voltage</b> total watts		
80-260 VAC, 50/60 Hz	80	80

### Specification notes

\* Flow rate is measured using water 71.6°F {22°C} with Norprene and Tygon tubing. Multiple hoses are supplied for optimizing feeding rate.

Input signals: Potential free (24 VDC) or extruder tachometer (0-30 VDC) start input.

Communications: TCP/IP, Modbus, CANbus.

Control languages include English, German, Spanish, French, Polish and Italian.

Specifications may change without notice. Check with a Conair representative for the most current information.

Pump Head specifications	
Number of rollers	4
Maximum motor (pump) speed [rpm]	200
Operating temperature	32°F to 104°F {0°C to 40°C}
Storage Temperature	-49°F to 149°F {-45°C to 65°C}

## 5. Pump head setup

### 5.1 Pump head introduction and description



#### WARNINGS:

Turn drive off before removing or installing tubing. Fingers or loose clothing could be caught in the rollers.

Stop the drive when changing tubing or its position in the rotor mechanism (the rotor is partially exposed when the LOADING LEVER is in the open position).

The supplied pump head is designed to provide a simple, easy-to-use peristaltic pump system. The pump head accepts several different tubing sizes for a wide range of flow rates. The unique over-center can design and automatic tubing retention allows quick tubing changes and greatly reduced maintenance time.

The pump head is mounted with two screws M4x90, (figure 1).

A flat-bladed screwdriver or Phillips is required to de-install the pump head.

#### Tube loading

- 1.) Be sure the pump drive is turned off.
- 2.) Rotate the lever to the left to open the pump
- 3.) Load the correct size tubing. Center the tubing between the retainers (figure 2).
- 4.) Rotate the lever to the right to close (figure 3).

**Note:** For optimum tubing life, keep tubing straight where it enters and exits the pump.

Figure #1. Setup

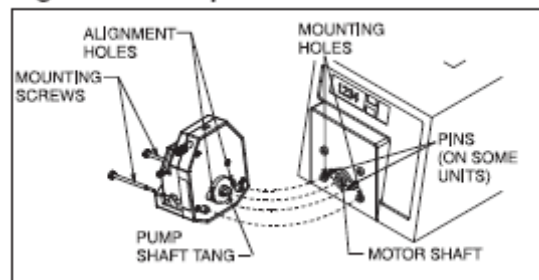


Figure #2. Open and Load

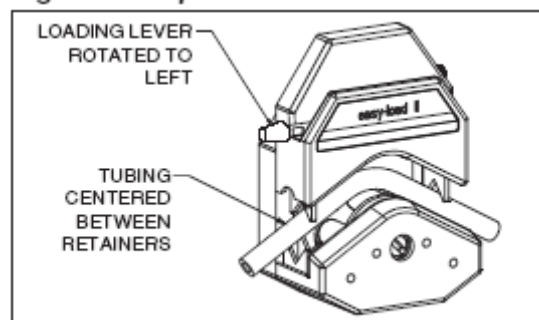
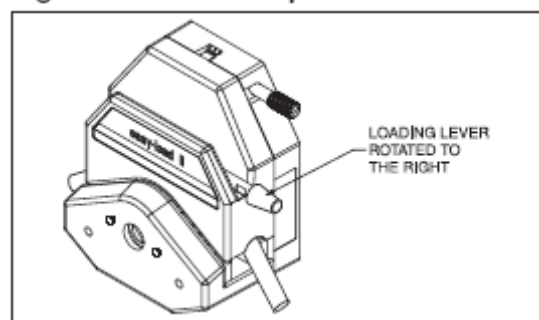
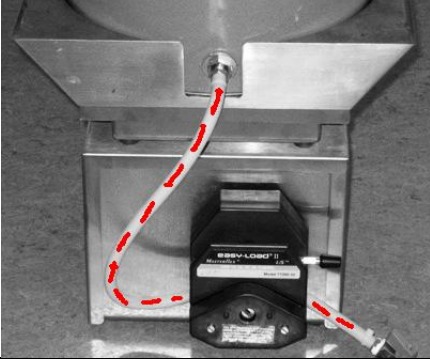
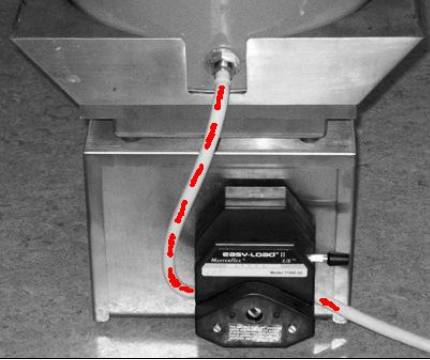




Figure #3. Close Pump



## Tube positioning

To assure that the gravimetric system is working properly the tubing running from packaging to pump head must be positioned carefully. When the tubing is connected to tight it will influence the weighing.

	
 <b>OK</b>	 <b>Not OK</b>
No tension on tubing. No influence on weighing.	Tension on tubing. Tubing is "pulling" on the scale and will influence weighing.

## 5.2 Maintenance and cleaning

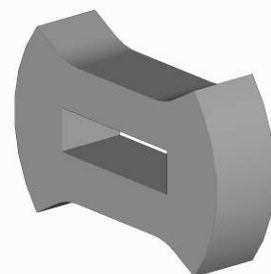
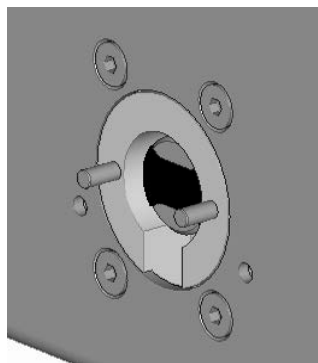
### Pump head

No lubrication is required for the pump head. Use a mild detergent solution to clean the pump head. Do not immerse nor use excessive fluid.

### Drive unit and coupling

The liquids are designed maintenance free as much as possible. However the coupling should be checked. The second paragraph discusses cleaning of the liquid system.

Periodically, the rubber coupling should be checked. The rubber coupling is situated directly behind the pump-head, see figure. It can be reached by removing the two screws of the pump-head and sliding the pump-head off its locating pins. Make certain that the coupling doesn't fall, since it is locked in place by the pump-head shaft tang. Remove the rubber-coupling and check the coupling for obvious wear and cracks. When the rubber coupling has obvious wear, or cracks and when the pump-head vibrates too much replacement is required. Spare rubber couplings are available. Only use couplings supplied by Conair, otherwise Conair will not be liable for damage and warranty will be lost.



Rubber coupling (right) is situated directly behind the pump-head (left)

## 6. Installation

### 6.1 Transport

To protect the TF-LQ against damage during transport, the unit is packed in a cardboard box filled with polyurethane foam.

### 6.2 Unpacking the boxes

Upon receiving the shipment, always perform a thorough inspection of the contents and compare it the enclosed packing list. Make sure all parts listed are present and that no visible damage exists.

Inspect all of the equipment in the presence of the freight carrier's representative for damage during shipment. Note any damage on the delivery receipt before signing it. If damage is evident, file a claim immediately against the carrier as it is their responsibility to pay for any damage incurred during shipping. Make sure to include a detailed report of the damage along with photos.

The TF-LQ consists of:

- a control monitor
- a pump with weigh platform
- a pump hose with ball valve
- a nozzle for general use
- a transport hose
- If ordered, any optional equipment.

Packaging for the TF-LQ can be varied depending upon what has been ordered, so carefully inventory all items.

### 6.3 Mechanical installation

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

- Install the neckpiece directly on top of the entrance of the production machine.
- Assure proper grounding to control cabinet, neckpiece and dosing unit
- When the liquid trolley is not supplied install the pump drive on a vibration free frame. Be sure that the pump drive is horizontally (water) leveled.
- For transport of the liquid from the pump hose to the production machine use the transport hose which is delivered with the unit.

## 6.4 Electrical installation

The TF-LQ controller is standard equipped with 3 connections:

- Main power cable
  - ① **Before switching on the unit for the first time, ensure the main power voltage being applied is between 80 and 260 VAC.**
- Input cable
- Motor cable

① **Be aware that the cables will not be influenced by external circumstances as electromagnetic fields**

① **Mount the controller on a place which is vibration free and not hot.**

Optional are:

- Alarm flash light, complete with cable

### **APPENDIX A SHOWS THE PRINT VIEW WHICH WILL BE EXPLAINED BELOW**

#### **1) PROCESSOR BOARD**

The processor board is the heart of the controller.

This board must be fixed securely on the mainboard.

There's also a label on it with the Mac-address. This is the ID of the network card.

This address can also be seen in the startup screen.

#### **2) EXTERNAL TERMINAL CONNECTION**

This connector will be used when using an external terminal (Shielded cable max. 10 meter)

#### **3) CONNECTION TO PC OR NETWORK**

This connection (Ethernet) will be used when using a PC or network.

Maximum length of the UTP network cable (CAT. 5) is 328 ft {100 m} between 2 network points.



#### **4) INPUTS**

##### **Start input**

The TF-LQ needs an input signal from the production machine in order to operate.

Three different input signals can be used to control the TF-LQ:

- Potential free start input.
- Potential (18-30Vdc) start input
- Tacho (0-30Vdc) start input

#### **5) OUTPUTS**

The TF-LQ has following outputs available:

- Warning output (Solid state 24VDC/0.5 A)
- Potential free relay (normally open) output for alarm level (max. 230VAC/30VDC, 5A)
- Potential free relay (normally open) output for running contact (max. 230VAC/30VDC, 5A)  
This contact will be closed simultaneously when the motor of the dosing unit is running.

The maximum total output power may be 12 Watt (Valve output + alarm output)

(See wiring diagram appendix B for electrical connections)

#### **6) POWER SUPPLY**

The TF-LQ will operate with a voltage from 80 VAC to 260 VAC, 50 and 60 Hz by an integrated automatic voltage selector.

(See wiring diagram appendix B for electrical connections.)

# 7. Operation

## 7.1 Navigation





## 7.2 Start-up & Login

Directly after switching on the main power of the TF-LQ, the software versions will be displayed. In the first screen the software version of the terminal will be shown.

```
Conair Terminal
Version x.xx
Date: January 2012
```

After a few seconds the second screen appears for 10 seconds.

### Conair TrueFeed

Color in Control

Liquid Vx.x

DE-Vx.x  
MENU to continue

BL Vx.x  
Mac-00:12:EC:xx:xx:xx

Vx.x = user software version Vx.x

DE-Vx.x = Language version Vx.x

Standard language is English

DE means that the additional language is DEUTSCH (German).

BL Vx.x = bootloader software (firmware) Vx.x

Mac address = ID address of the network card

The TF-LQ controller has three user levels:

1. Operator
2. Tooling
3. Supervisor

The functions which are accessible per user level are shown in the table below.

The operator level is the lowest level, only the important settings for production can be done. The rest of the settings / menus are invisible or locked.

For changing to another user level, enter the LOGIN menu and enter the password (4 numerals) and confirm. The passwords for the Tooling and Supervisor user levels can be defined by the supervisor in the CONFIGURATION <menu>.

		USER LEVEL Can be changed in LOGIN menu.		
MENU TITLE:	FUNCTION:	SUPERVISOR Default code 2222	TOOLING Default code 1111	OPERATOR Default code 0000
[LOGIN]	To enter the different user levels.	YES	YES	YES
[CONFIGURATION]	To configure the dosing system.	YES	NO	NO
[PRODUCTION]	To do the production settings. *In OPERATOR level jobs and materials are read only.	YES	YES	YES*
[FILES]	To look for, rename or delete jobs and curves	YES	NO	NO
[HOPPER LOADER]	For future filling system Only visible when hopper loader is selected	YES	YES	YES
[CALIBRATION]	To make material calibrations, only visible when control mode is set to GRAVI (Gravimetric).	YES	YES	NO
[LOAD CELL]	To calibrate the load cell.	YES	NO	NO
[WEIGHT CHECK]	To check the drum or object weight.	YES	YES	NO
[ALARMS]	View of the alarm history *In TOOLING level the alarm configuration is invisible.	YES	YES*	NO
[EVENT LOG]	The history of events or settings will be logged in this menu.	YES	NO	NO
[TARE SYSTEM]	To zero a empty drum	YES	YES	YES

① Recommended to note the passwords!

Forgot your supervisor password, enter the overall supervisor password **1689**.

When entering a wrong password the user level will be set automatically to operator level.

## 7.3 Keyboard lock

The keyboard lock function...

- is accessible in the [ LOGIN ] menu.
  - can only be activated and deactivated with the SUPERVISOR login code.
  - is only full functional in OPERATOR and TOOLING user level.
- For example: if the “Start user” setting is configured to “Supervisor”, the keyboard lock is deactivated as soon as the controller is switched OFF and ON.

The following screen will appear when the [LOGIN] menu is entered:

```
USER  LEVEL
-----
Enter the password to set
the user level.
Level   : SUPERVISOR
Key lock: Unlocked/Locked
```

Press → or ← to select *Locked* or *Unlocked* and press Enter to confirm. When *Locked* selected the unit will automatic be set to OPERATOR level.

```
MESSAGE
-----
Keyboard locked !

To unlock enter supervisor
code.

MENU to continue
```

This screen will appear when a user is trying to change settings while the keyboard is locked. To unlock the supervisor code needs to be entered in the LOGIN menu.

With the keyboard lock ON it is still possible to...

- Shift between the LOGIN, PRODUCTION and TARE SYSTEM menu.
- To START and STOP the dosing unit.

For further information check the Start-up & LOGIN paragraph (refer to 7.2).



## 7.4 Configuration

For initial setup the TF-LQ controller needs to be configured in the CONFIGURATION menu once. Depending on the configuration, settings that are not relevant will be invisible.

① Highlighted Parameters are factory settings.

Language	: ENG / GER
Hose type	: 1.6MM / 3.1MM / 4.8MM / 6.4MM / 7.9MM
Cal dev.	: 5.0 %
Control mode	: GRAVI / RPM
Prod. Mode	: INJ / EXT
Input mode	: Timer / Relay / Tacho
Fill. System	: NO / YES
└ Filling start	: 2000 gr.
Colorant empty	: 1500 gr.
Deviation alarm	: 25 %
Jobs enabled	: NO / YES
Auto start	: NO / YES
Master reset	: NONE / ALARM / MATER / JOBS / ALL
IP	: xxx . xxx . xxx . xxx (For example: 192.168.001.001)
Name	: xxxxxxxxxxxxxxxx
Start user	: Operator / Tooling / Supervisor
Tooling passw.	: xxxx 1111
Supervisor passw.	: xxxx 2222
Conversion	: METRIC / IMPERIAL / kg/h
Full scale	: xx.xx lbs
Modbus unit	: 1
Date	: (dd / mm / yy)
Time	: (hh / mm / ss)



### Configuration: Language

Standard language is English. On request other languages are available, including: German, Spanish, French, Polish and Italian.

### Configuration: Hose type

Type of pump hose (see chapter 5 for more information)

### Configuration: Cal dev.

The maximum allowed deviation from the calibration setpoint can be set with this Parameter. (For more information see chapter 7.6)

### Configuration: Control mode

(GRAVI) Gravimetric mode or (RPM) Rotating mode

- Gravimetric mode is set as default and operates on the base of loss-in-weight principle. The output is measured and regulated continuously by controlling the motor speed.
- Volumetric mode (RPM) can be used if no automatic feedback of the weight is required. The weighing will not function in this mode.

### Configuration: Production mode

Production mode

Selection of the machine on which the TrueFeed control is placed.  
(EXT) extruder or (INJ) injection molding

### Configuration: Input mode

Type of input signal: Relay, Timer or Tacho

Timer mode is the standard setting for Injection molding.

	EXT		INJ	
timer			x	x
relay	x	x	x	
tacho	x	x		
	GRAVI	RPM	GRAVI	RPM

① Input mode is not visible in RPM prod. Mode. (Timer is used automatically)

- ① For INJ in timer mode the start pulse should be min. 0.2 seconds.  
For INJ in relay mode the start signal should be as long as the dosing time

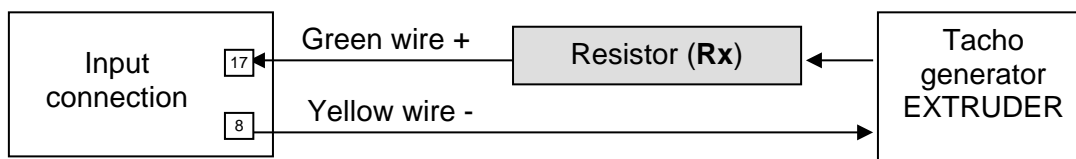
If INJ-Relay is selected the dosing machine will follow the machine relay time.  
The controller will filter small changes out so that the regulation is not being influenced.  
Big changes will be followed.  
The screen shows the real machine relay time.

### Input (start) signal

The TF-LQ needs an input signal from the production machine in order to operate.  
Three different input signals can be used to control the TF-LQ.

- 1.) *A potential free relay contact.*  
Use the white and brown wire for the potential free contact.
- 2.) *A relay signal 24 Volt DC\*.*  
In case of a powered relay signal connect the white wire to +24 VDC and the yellow wire to the 0 VDC.  
\* Note potential contact  
Guaranteed OFF: 0-8VDC  
Guaranteed ON: 18-30VDC
- 3.) *A tacho signal up to 30 Volt DC.*  
This is used when the TF-LQ needs to be connected to an extruder that has a tacho generator that produces a voltage linear to the extruder speed. When using a tacho generator signal, make a connection between the white and brown wire. It will function as a start signal. Connect green to + VDC and yellow to the - side of the generator.

The maximum voltage that can be applied to the TF-LQ 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.



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

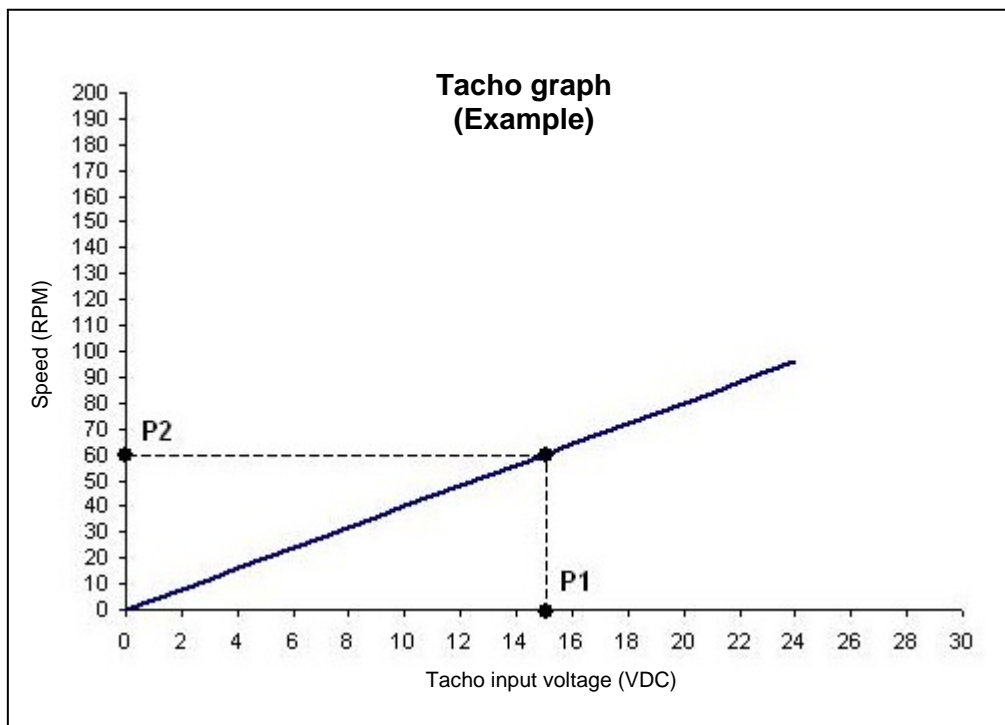
If the extruder stops when connected to the metering unit, an isolated signal converter is needed.  
Contact a Conair representative for more information.

### Tacho function

The tacho function is only available in extrusion mode.

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 linked 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.



The tacho function can be set in the PRODUCTION screen.

Tacho can be set automatically and manually:

Max tacho: 0.0V

Set tacho: **NO** / YES

① Highlighted Parameters are factory settings.

#### Manual:

Fill in the voltage the tacho produced by the tacho generator at maximum extruder speed.

#### Automatic:

Let the extruder run and select Set tacho: **YES**.

The tacho voltage P1 will be taken over automatically and is linked to the set motor speed P2 (in RPM mode) or calculated motor speed (in GRAVI mode).

During production, the motor speed P2 can be changed. The new speed is linked 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 (manually or automatically) as shown above. The new voltage is linked to the previous stored speed and the graph will change accordingly.

-The maximum voltage that can be applied to the TF-LQ is 30 VDC.

-The tacho signal must be a clear signal. Any failure in the voltage signal will be followed by dosing variations.

### **Configuration: Filling System**

Filling system, NO (None), YES (Future filling system)

### **Configuration: Filling start**

Function: When it is detected that the hopper is running empty the filling system will switch on. The filling system will start loading when the weight in the drum is 2000 grams (default) or less. The default value can be changed manual if necessary.

① Only visible when a filling system is selected.

### **Configuration: Colorant empty**

The system will give a “Colorant empty” message if there is less than 1500 (default) grams of material in the Drum. For this system to work correctly it is necessary that the load cell calibration is done with an empty drum. This system will always be active.

The default value can be changed manual if necessary (depending on the material properties).

### **Configuration: Deviation alarm**

Setting for the “Maximum deviation exceeded” message.

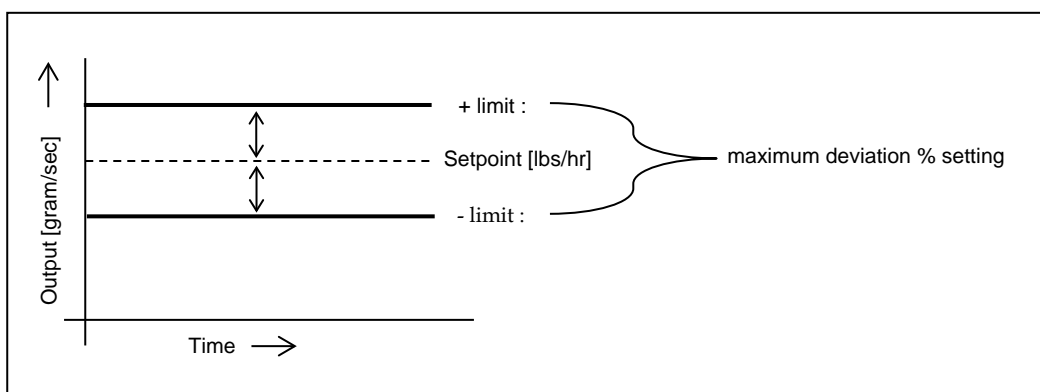
The TF-LQ automatically adjusts his motor speed to the desired setpoint. The controller is able to detect and alarm when the setpoint is not reached within a set percentage. If after the normal performed speed adjustments the setpoint is consistently not reached, the controller will give an alarm signal and message in the display.

If the setpoint it not reached within the set percentage this can be caused by:

- Partial or complete blockage of the material in the tubing
- Disturbance of the weight signal, for example if something is touching the TF-LQ weighing part.

The Maximum deviation setting can be set in the CONFIGURATION menu:

Deviation alarm:      xx%    (1-99%)



#### Example:

The Deviation alarm setting in the configuration menu is default set to 25%

The setpoint (color set) is set to : 1.000 lbs/hr

-the MAXIMUM limit value will be : 1.250 lbs/hr

-the MINIMUM limit value will be : 0.750 lbs/hr

When the maximum deviation message appears in the display of the controller it shows the measured deviation in percentage of the setpoint.

**Configuration: Jobs enabled**

Enable / disable production job functionality (see chapter 7.9)

**Configuration: Auto start**

Enable / disable auto startup after Voltage dip or main power has been switched OFF.  
When enabled the unit will continue dosing automatically after a Voltage dip or mains power has been switched OFF.

**Configuration: Master reset**

Reset alarm history (ALARMS). All alarm/warning messages saved in the alarm history will be removed.

Reset material calibrations (MATER.) All material calibrations will be removed.

Reset production jobs (JOBS). All Jobs will be removed.

Reset these three together (ALL). Alarm history, material curves and jobs will be removed.

**Configuration: IP**

IP-address for use in a network environment (TCP/IP protocol). (For example 192.168.001.001)  
When a TrueFeed control is part of a network, the control must have an IP-address for identification.

① This IP-address has to correspond with the IP-address of your computer. Ask your network administrator for a unique address.

**Configuration: Name**

Give a name or figures for individual identification (for use in network).

For example the name of the machine the dosing unit is mounted on.

**Configuration: Start user**

User level to start up with, when switching on the controller's main power.

Operator, Tooling or Supervisor.

**Configuration: Tooling password.**

Password for Tooling user level, 4 numerals, default 1111

**Configuration: Supervisor password.**

Password for Supervisor user level 4 numerals default 2222

**Configuration: Conversion**

Selection of Units: Imperial = US [lbs/hr]

Metric = European [gr/s]

Kg/h = In extrusion mode the capacity will be shown in kg/h instead of gr/s

**Configuration: Full scale**

Selected loadcell will be shown (read only)

**Configuration: Modbus unit**

If the controller is used in a Modbus network, the unique identity can be filled in here (1-231)

**Configuration: Date**

Actual date (dd / mm / yy)

**Configuration: Time**

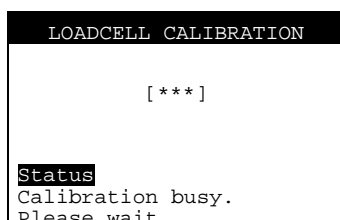
Actual time (hh / mm / ss)

① Date and Time will be stored for minimal 1500 hours with controller switched OFF.

## 7.5 Loadcell calibration

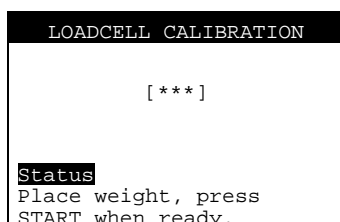
When using a TrueFeed control for the first time do an initial **load cell calibration** as follows:

- The unit must be mounted horizontally (water leveled)
- Avoid vibrations during the load cell calibration. This will influence the calibration.
- Do not touch the unit during load cell calibration.
- Be sure that the TF-LQ load cell is connected to the controller
- Go to the LOAD CELL <menu>
- In this menu it is possible to calibrate the load cell of TF-LQ (500gr. Calibration weight required)
- Select YES to start the load cell calibration



[\*\*\*] = Progress

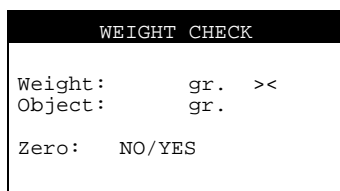
- After a few minutes the following screen appears:



Place calibration weight (500 grams) on the weighing platform and press the START button



- After approx. 1 minute the load cell calibration is ready, press the MENU button to continue.
- To check if the load cell calibration was OK, go to the WEIGHT CHECK <menu>



><: Standstill sign. When the vibrations are too big, this sign disappears!  
Weight: Actual weight on the weighing scale (gram)  
Object: Object weight (gram)  
Zero: Zero YES / NO. Reset the object weight.

- Zero the object weight
- Place 500 gr. calibration weight on the drum scale
- If the object weight is not corresponding with the real weight, perform a load cell calibration.

## 7.6 Material Pre-calibration

The TF-LQ mainly can be started in two ways:

- 1) Start the unit **without pre-calibration** of material.

After pressing the START button the unit starts dosing on a speed that is based on default curves which are pre-programmed in the controller. After start up, the unit continues with self-calibrating to the setpoint.

- 2) Start the unit **with pre-calibration** of material (OFF-LINE).

After pressing the START button, the unit starts dosing on a speed that is based on material calibrations made by the user which are stored in the controller. After start up, the unit continues with fine tuning to the setpoint.

### What is the function of a material Pre-calibration ?

With a pre-calibration it is possible to calibrate the unit before production is started, in this way the time needed to come in spec. can be reduced. The TF-LQ is a gravimetric / loss in weight dosing unit. When starting up the dosing unit for a new production run there is no direct information available about the loss in weight. Of course you want the dosing unit to reach his setpoint with the matching speed of the motor (RPM) as quick as possible. Starting the unit with a speed that is already most near to the set point will achieve quick regulation. The correct RPM at the start of the dosing unit can be determined automatically with a pre-calibration.

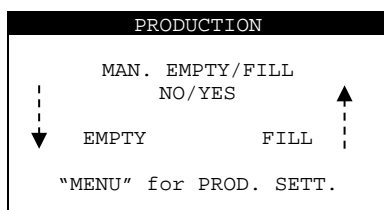
- It is important that during calibration the dosing unit horizontally (water) leveled and also vibration free.
- Before starting a material calibration be sure the drum is filled with sufficient material.
- Be sure that the loadcell cable is connected to the TF-LQ controller.

Following parameters will be stored with a Material calibration, depending on the configuration:

- CONFIGURATION parameters: Hose type : type of dosing hose
- PRODUCTION parameters: Shotwth. : Shot weight  
color% : Color amount (%)  
dos.time : Dosing time (sec)  
Ext. cap. : Extruder capacity (kg/h)
- CALIBRATION parameters: Material name: Name of calibrated material

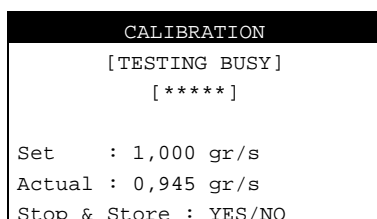
### How to make a material calibration?

- Go to the CALIBRATION menu.



With the manual empty/fill function the hose can be filled for production or emptied after production

- Enter Material name and your production parameters.
- Start calibrating. The following screen appears:

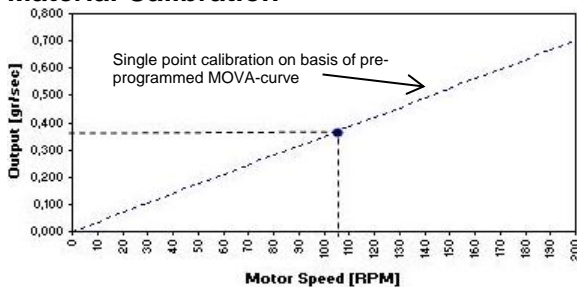


- The calibration will take minimal about 3 minutes but can take more time depending on the used material and production parameters.  
It is possible to stop ⑨ during the calibration (for example to exchange or to refill the drum). To continue select YES and confirm. To stop, select NO and confirm.
- The calibration will automatically be finished and saved after the Setpoint is reached within the set calibration deviation (Cal dev: default = 5%) set in configurations menu. (see chapter 7.4)
- After saving you will automatically go to the PRODUCTION menu and stored calibration is automatically selected.

① Stored material curves have a \* after the filename.

During the calibration the unit is regulating to the setpoint. When this point is reached, the calibration will be saved automatically. On the basis of this point a complete curve is made on bases of default pre-programmed curves.

### Material Calibration



It is also possible to save the actual material calibration during a running production process. This function is called the **“Save data Function”**, for more information see chapter 7.8

### How can I select a calibrated material?

When one or more material calibrations are made, one of these can be selected as follows:

- Go to PRODUCTION <menu>
- Use the cursor to go to Material.
- Press 2 seconds on the <enter> button  
A list will appear with stored material calibrations
- Select one with arrow buttons and confirm

If the material calibration made is not in the list fill in the first letter(s) and confirm. Now a filtered list appears. To go back to the main list fill in spaces and confirm.

It is also possible to fill in the material description immediately in the PRODUCTION <menu> and confirm. The message **“Material not found, select new material”** appears when a false material is filled in. To clear the material description, fill in spaces or select an empty material calibration out of the list.


### How can I delete or rename a calibrated material?

To delete one or more material see chapter 7.12.


To delete all materials select master reset MATERIAL in the CONFIGURATIONS <menu> and confirm.




## 7.7 Production

① The rotation direction of the motor at the front view must be to the right 

### Production (Motor On/Off)

Press the  start button to start dosing, the question appears: Fill hose? YES/NO.

YES means that the pump hose and transport hose will be filled before production.

The filling procedure must be stopped when the liquid reaches the insert. This is done by pressing stop .

The start LED blinks when the unit is waiting for an input signal.

The unit is dosing if the Start LED lights continuously.

When the unit is started the actual production data will be shown.

Press the  stop button to stop production.

① Please notice that it is possible that the first dosing(s) are not sufficient, because of the hoses filling with material. It takes some time to stabilize.

5 levels of production screens:  
The unit will switch automatically to the STATUS screen.

PRODUCTION	
MAN. EMPTY/FILL NO/YES	
↓ EMPTY	↑ FILL
"MENU" for PROD. SETT.	

With the manual empty/fill function the hose can be filled for production or emptied after production



MENU

In INJ mode, the remaining number of shots will be shown  
In EXT mode, the remaining production minutes will be shown  
calculated with the actual hopper weight and hopper empty weight

PRODUCTION SETTINGS	
Ref Curve:	
Prod Job :	xxxxxxxx
Material :	xxxxxxxx
Color % :	x.xxx %
Shot wth.:	xxxx.x gr
Dos.time :	xx.x s
Save Job :	YES/NO
Test :	YES/NO



START

STATUS	
SET: X.XXX %	
CALIBRATING/CALIBRATED	
MIN or SHOTS	



MENU



MENU

PRODUCTION	
Regulation mode : Auto/Manual	
Save data : NO/YES	



MENU

PRODUCTION DATA	
Col.set. :	x.xxx gr/s
Col.act. :	x.xxx gr/s
Hopper :	xxxx gr ><
Time :	x.x sec
Speed :	xxx.x rpm
Status :	Dosing

This screen is not available in  
OPERATOR user level.


[For more information see chapter 7.8]


## Test function

With the test function the unit will dose material with the set dosing time and set / calculated speed.

① In Extrusion mode the unit will dose 30 seconds.

Do a test as follows:

- Go to PRODUCTION <menu>
- Fill in the production settings
- Use the arrow buttons to go to Test
- Select YES and confirm .
- The unit will run with the set parameters.

It is possible to stop the test with the  stop button.

## INJECTION MOLDING

The following parameters can be seen in the production screen, depending on operation or settings (made in supervisor mode):

### Injection molding / Gravimetric mode

#### Production Settings

PRODUCTION SETTINGS	
Prod Job :	
Material :	
Color % :	%
Shot wth.:	gr
Dos.time :	s
Save job :	NO/YES
Test :	NO/YES

Prod Job:	Name of the production job
Material:	Name of material calibration
Color %:	Color amount (%)
Shot wth:	Shot weight (gr.)
Dos. time:	Dosing time (sec.) ① <b>Dosing time only visible in timer mode</b>
Save job:	Save production settings into a job
Test:	Initial production test with set speed and time

#### Actual production data

PRODUCTION DATA	
Dos.time :	s
Col.set. :	gr/s
Col.act. :	gr/s
Hopper :	gr ><
Time :	sec
Speed :	rpm
Status :	

Dos.time:	Actual dosing time (sec), measured from relay ① <b>actual dosing time only visible in Relay mode</b>
Col.set.:	Calculated output (gr/sec)
Col. act.:	Actual color output (gr/sec) ① <b>actual color output is only visible after the first automatic RPM adjustment.</b>
Hopper:	Material weight in the drum
>< :	Standstill sign. When the vibrations are too big, this sign disappears!
Time:	Count down of the actual dosing time (sec) ① <b>actual dosing time only visible in Timer mode</b>
Speed:	Actual motor speed (RPM)
Status:	Status of the dosing, Standby / dosing / filling

### Injection molding / RPM mode

#### Production Settings

PRODUCTION SETTINGS	
Prod Job :	
Set speed:	rpm
Dos.time :	s
Save job :	NO/YES
Test :	NO/YES

Prod Job:	Name of the production job
Set speed:	Set motor speed (RPM)
Dos.time:	Actual dosing time (sec), measured from relay
Save job:	Save production settings into a job
Test:	Initial production test with set speed and time

#### Actual production data

PRODUCTION DATA	
Speed :	rpm
Time :	sec
Status :	

Speed:	Actual motor speed (RPM)
Time:	Count down of the actual dosing time (sec)
Status:	Status of the dosing, Standby / dosing / filling

## EXTRUSION

### Extrusion / Gravimetric mode

#### Production Settings

PRODUCTION SETTINGS	
Prod Job :	
Material :	
Color % :	%
Ext.cap :	kg/h
Max tacho:	v
Set tacho:	NO/YES
Save job :	NO/YES
Test :	NO/YES

Test: Initial production test with set speed and time

Prod Job: Name of the production job  
Material: Name of material calibration  
Color %: Color amount (%)  
Ext.cap: Maximum extruder capacity (kg/h)  
Max tacho: Maximum tacho voltage (v) **① Only visible in Tacho mode**  
Set tacho: Autom. voltage take over from tacho generator  
**① Only visible in Tacho mode**  
Save job: Save production settings into a job

#### Actual production data

PRODUCTION DATA	
Ext.act. :	kg/h
Act tacho :	v
Col. Set. :	gr/s
Speed :	rpm
Status :	

Col. Set: Calculated output (gr/sec)  
Col. act.: Actual color output (gr/sec)  
**① actual color output is only visible after the first automatic RPM adjustment.**  
Hopper: Material weight in the drum  
><: Standstill sign. When the vibrations are too big, this sign disappears.  
Speed: Actual motor speed (RPM)  
Ext. act: Actual extruder capacity (kg/h) **① Only visible in Tacho mode**  
Act tacho: Actual voltage of the tacho generator (v) **① Only visible in Tacho mode**  
Status: Status of the dosing, Standby / dosing / filling

### Extrusion / RPM mode

#### Production Settings

PRODUCTION SETTINGS	
Prod Job :	
Set speed:	rpm
Max tacho:	v
Set tacho:	NO/YES
Save job :	NO/YES
Test :	NO/YES

Prod Job: Name of the production job  
Set speed: Set motor speed (RPM)  
Max tacho: Maximum tacho voltage (v)  
**① Only visible in Tacho mode**  
Set tacho: Autom. voltage take over from tacho generator  
**① Only visible in Tacho mode**  
Save job: Save production settings into a job  
Test: Initial production test with set speed and time

#### Actual production data

PRODUCTION DATA	
Act tacho :	v
Speed :	rpm
Status :	

Act tacho: Actual voltage of the tacho generator (v) **① Only visible in Tacho mode**  
Speed: Actual motor speed (RPM)  
Status: Status of the dosing, Standby / dosing / filling

## 7.8 Auto/Manual Regulation mode & Save data function

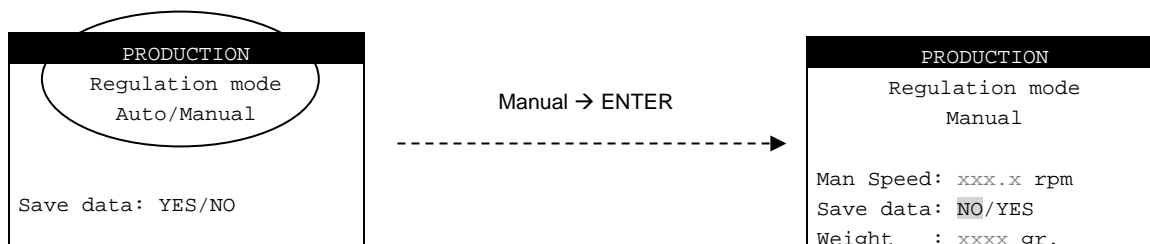
Two functions are available in one screen:

- Regulation mode: Auto/Manual
- Save data function.

❗ These two functions are not available in OPERATOR user level.

### Regulation mode: Auto/Manual

This function allows to switch during production from automatic control (gravimetric) to manual control (RPM). [Only accessible in Motor ON status, not in operator user level]



In this screen the rpm can be changed.

-When changing back to Auto mode without saving data, the unit will direct go back to his "old" rpm and will continue self calibrating.

-When changing back to Auto mode after saving data (manual entered speed), the unit will first keep the manual set speed but will self-calibrate to the entered setpoint.

### Save data Function

This function allows storing of the actual data once the dosing unit shows an actual value (color actual). A material description needs to be entered to save this data. A full material curve on basis of the stored point will be saved in the memory of the controller under the entered name.

Starting a new production run with a previous stored material calibration/speed is now possible,



## 7.9 Production Job

### What is a production job?

In a production job the relevant production data will be stored.

Following data will be stored in a JOB, depending on the configuration:

CONFIGURATION settings:	Control mode :	GRAVI / RPM
	Prod. Mode:	INJ / EXT
	Input mode:	Timer / relay / tacho
PRODUCTION settings:	Job description:	Name of the job
	Shot with.:	weight of the part
	color% :	color amount (%)
	dos.time:	dosing time (sec.)
	Ext. cap.:	Extruder capacity (kg/h)
	Max. tacho:	Maximum tacho voltage (v)
	RPM:	motor speed (RPM)
CALIBRATION:	Material calibration:	stored material calibration

### How can I use a production job?

① Production Job is only visible if enabled in CONFIGURATION <menu>

First enable the Job functionality in CONFIGURATIONS <menu>

A production Job can be made in the PRODUCTION <menu>

- Fill in the production settings
- Go to save Job
- Select YES
- Give the Job a description (max 8 characters)
- Save YES
- Confirm with <enter>

All the settings as described above will be stored.

The Job will be selected in the PRODUCTION settings screen immediately.

### How can I select a production job?

When one or more jobs are made, one of these can be selected as follows:

- Go to PRODUCTION <menu>
- Use the cursor to go to Prod job.
- Press 2 seconds on the <enter> button
- A list will appear with stored Job files
- Select one with arrow buttons and confirm

① When using a production job, the set configuration will be overwritten.

If the job made is not in the list fill in the first letter (s) and confirm. Now a filtered list appears.

To go back to the main list fill in spaces and confirm.

It is also possible to fill in the job description immediately in the PRODUCTION <menu> and confirm. The message “**Job not found, select other job**” appears when a false job is filled in. To clear the job description, fill in spaces or select an empty job out of the job list.

### How can I delete or rename a production job?

To delete or rename one or more jobs see chapter 7.12

To delete all jobs select master reset JOBS in the CONFIGURATIONS <menu> and confirm.

## 7.10 Refilling

### MANUAL FILLING

The controller automatically detects when the hopper is manual filled.

In the period that the hopper is being filled, the TF-LQ is dosing with a frozen RPM, this means the unit runs temporarily volumetric. As soon as the filling is ready, the TF-LQ immediately continues to work gravimetric.

### AUTOMATIC FILLING

If Hopper loader parameter is selected to YES in Configuration menu. The Hopper loader menu appears (see below). This can be used for future automatic filling system.

FILLING SYSTEM		
System :	OFF/ON	System: Switch ON / OFF the filling system
Fill time :	30 sec	Fill time: Fill time [sec.]
Alarm time :	31 sec	Alarm time: Fill Alarm [sec.], if the drum weight is not above the Filling start weight within this time, the alarm starts. The alarm time can not set lower than the fill time.
Alarm mode :	OFF/ON	Alarm mode: Fill system is ON / OFF during fill alarm.
Manual fill:	NO/YES	ON = Filling system stays activated during a filling alarm. OFF = Filling system will be deactivated during a filling alarm.
		Manual fill:  Yes = starting filling immediately;  No = stop filling immediately Only visible with controller in STOP mode. The Manual filling function can be used for example to fill the hopper before start of production.

## 7.11 Alarms

### GENERAL

To reset an alarm / warning press Stop or the menu button.

When an error occurs using the TrueFeed control, the display will indicate an error code and description.

Together with the displayed error an output contact will be switched.

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

We distinguish Warning and Alarm

**Warning:** Warning output is ON, but the dosing unit continues running (24VDC contact, pin 22-23 of the main board will be active, for example to activate the flash light,)

**Alarm:** Alarm output is ON and the **dosing unit stops running** (Potential free contact, pin 26-27 of the main board will be active, for example to stop the Injection molding machine or extruder)



Free programmable errors can be configured to an **Alarm** or **Warning**.

For setting the free programmable outputs into alarm or warning, enter the ALARMS menu.

First the alarm history will be shown. The alarms and warnings will be stored in here.

When you press the menu button again you will enter the alarm configuration menu.

Here you can set the alarm- or warning output with and confirm.

### ALARM HISTORY

All alarms and warnings will be stored in the alarm history.

- Go to the ALARMS <menu>
- Press to scroll to the stored alarms (maximum 50).

The alarm history can be reset by the supervisor in CONFIGURATION <menu> by

- **Master reset: Alarm**

We have the following Errors:

#### **Error**

#### **Code Warnings**

00	Low drum level	Material is below the drum empty weight
01	Maximum deviation exceeded	The deviation of the material output is too high
03	Maximum RPM exceeded, change dosing tool for higher capacity	Calculated motor speed is too high
05	Calibration, no weight change	No weight change while calibrating
07	Minimum motor speed < 0,1 RPM	Calculated motor speed is too low



#### **Alarms**

08	Motor connection failure	Motor not connected / Motor or connection damaged
09	Parameters damaged	Check configuration parameters
10	Parameters set to factory defaults	Check all parameter settings
11	Load cell calibration set to factory defaults	Recalibrate the load cell
12	Job and curve database initialized	Jobs and materials are reset
13	Load cell connection failure	Load cell connection is not correct

### **WARNINGS**

All **warnings** are self-eliminating, except Error code 05.

It is possible to cancel a warning, but when the error remains, the warning will return after 60 seconds. This gives the operator the time to solve the problem without having the alarm on.

<b>Error 00</b>	<b>“Low drum level”</b> <span style="float: right;"><b>[free programmable]</b></span> If this warning appears the material in the drum is below the hopper empty weight (1500 gr.) In CONFIGURATION <menu> this setting can be changed. - Check if there's enough material in the drum. - Check the hopper empty setting in CONFIGURATION <menu>
<b>Error 01</b>	<b>“Maximum deviation exceeded”</b> <span style="float: right;"><b>[free programmable]</b></span> If this warning appears the dosing output (grams/sec) is consistently not within set percentage. See page 17 for more information.
<b>Error 03</b>	<b>“Maximum RPM exceeded, change dosing tool for higher capacity”</b> Calculated motor speed is higher than the maximum of 200 RPM - Check the material output on 200 RPM. - Check the production settings. - Increase the dosing time (if possible) - Take another dosing hose with higher output.
<b>Error 05</b>	<b>“Calibration, no weight change”</b> No weight change while calibrating (see chapter 7.6) - Check if there's enough material in the drum. - Check if the material is stuck in the hoses - Check if the load cell is connected correctly. - Check the weight data by doing a weight check (see chapter 7.5) - Check if there are no vibrations that may have influence. - Check the rotation direction of the motor. Front view to the right 
<b>Error 07</b>	<b>“Minimum motor speed &lt; 0.1 RPM”</b> Calculated motor speed is lower than the minimum of 0.1 RPM - Check if there's enough material in the drum. - Check the production settings. - Decrease the dosing time (if possible) - Take another dosing type with lower output. - Check the rotation direction of the motor. Front view to the right 



## ALARMS

<b>Error 08</b>	<b>“Motor connection failure”</b> Motor connection is not correct. - Make sure the motor is connected. - Check cable and connectors for damage.
<b>Error 09</b>	<b>“Parameters damaged”</b> Some configuration parameters are incorrect. - Check the configuration parameters.
<b>Error 10</b>	<b>“Parameters set to factory defaults”</b> All parameter settings are reset to factory defaults. - Check all parameter settings.
<b>Error 11</b>	<b>“Load cell calibration set to factory defaults”</b> Load cell calibration is incorrect and reset to factory defaults. - Recalibrate the load cell!
<b>Error 12</b>	<b>“Jobs and curve database initialized”</b> All jobs and materials are reset - Make new material calibrations and Jobs.
<b>Error 13</b>	<b>“Load cell connection failure”</b> -Load cell connection is not correct. -Load cell connector is not connected to the controller.

## 7.12 Files

In this “File manager” menu, files (jobs and material curves) can be searched, renamed and deleted.

When entering the file manager menu, two file types can be selected:


Material (material calibrations) or Jobs (production jobs).


After confirming, the file list will be shown. Now you can search for files, rename or delete them.


If the job or material curve you search for is not in the list fill in the first letter(s) or complete name and confirm. Now a filtered list appears.

To go back to the main list fill in spaces and confirm.

It is also possible to fill in the job or material description immediately in the file manager and confirm. To clear the description, fill in spaces or select an empty job out of the list.

Search:  = Scroll through the files.

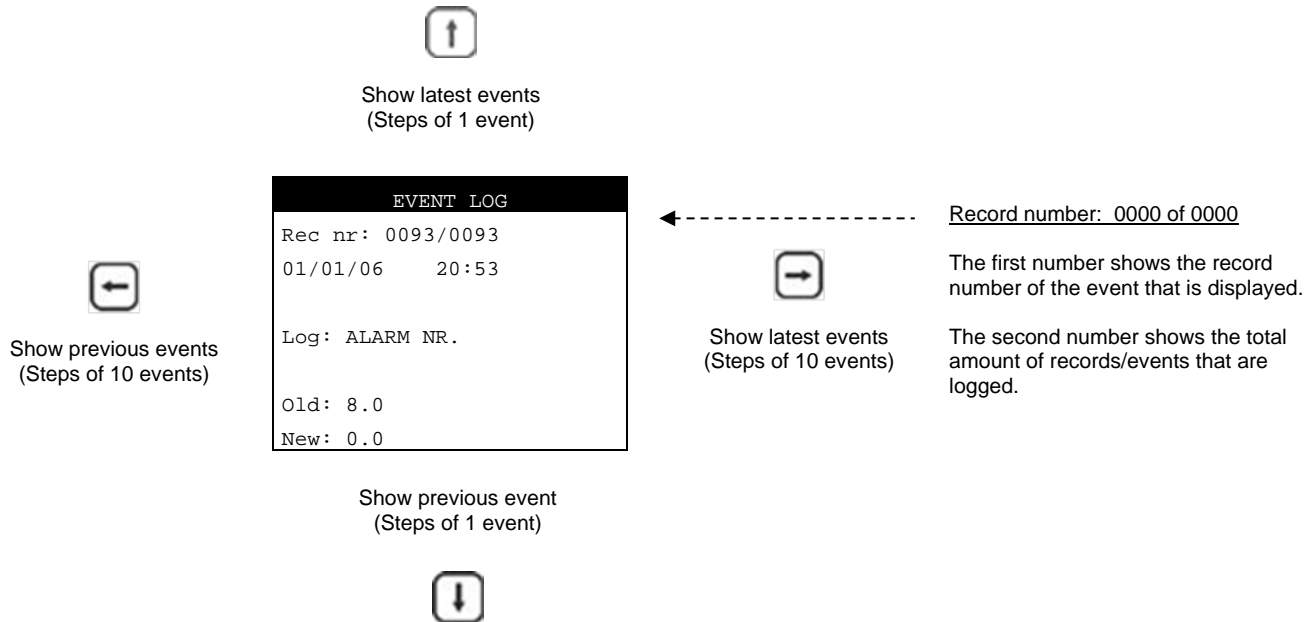
Delete:  = Delete a file, press enter to confirm.

Rename:  = Rename a file, press enter to confirm.

## 7.13 Event LOG

Setting changes made with the controller are stored in the Event Log.  
Each event is filed with record number, date and time.

Approximately 7000 events will be stored in the memory of the controller, if the memory gets full the latest event will be logged and the oldest event will be deleted (first in / first out shift register).  
It is possible to store these events to a PC.



### Event LOG of Alarms

The error code of an alarm or warning will be logged when an alarm or warning occurs.  
The error codes can be found in paragraph 7.11

EVENT LOG	
Rec nr: 0078/0078	
01/01/06	20:53
Log: COLOR PCT	
Old: 2.0%	
New: 1.8%	

To effectively use the Event Log be aware that the correct data and time must be set in the CONFIGURATION menu.

## 8. System performance

System performance can be characterized by the time it takes the unit to reach the desired set point, the accuracy of the set point and the regularity of the material output.

The algorithm is self-adjusting to the conditions and because the conditions vary, it cannot be predicted how long it will take the unit to adjust itself and reach a set point with certain accuracy.

The following variables influence system performance:

Material properties, for example viscosity.

Extreme vibrations and shocks influence system performance noticeably. Normally the system will be able to compensate for vibrations and shocks.

The TF-LQ algorithm needs a certain time to weigh material loss and adjust the RPM accordingly. This time depends largely on the set point and the above mentioned two variables. The system constantly adjusts itself to reach the best possible accuracy for current conditions. Over time it can reach an accuracy within  $\pm 1\%$ .

Under “normal” circumstances the unit will be more accurate than 10% after the first adjustment of the RPM.

Before the unit makes its first RPM adjustment it might be running already very close to the desired set point because it uses a hose reference system to determine the first RPM setting. This accuracy however cannot be guaranteed because material properties can vary substantially from material to material.

With injection molding the shot to shot accuracy depends, besides the variables mentioned so far, on the shot time.

An unstable relay or tachometer signal has a negative effect on the accuracy, repeatability and speed of the system because it will adjust to these parameter changes.

A long cycle time combined with low dosage per shot can result in a slow system.

### 8.1 Reset regulation

- Changing one parameter during production will cause the TF-LQ to adjust to the changes but it will not reset the regulation totally.
- Changing more production parameters during production within 10 seconds after each other will cause the TF-LQ regulation to reset. This is necessary for the system to adjust quickly to these big changes in the settings.
- Switching the power OFF and ON again will also cause the regulation to reset.
- Motor OFF and ON again will only cause the regulation to pause. The startup RPM will be the same as the last RPM before the stop.
- Changing one parameter with motor OFF causes total reset of the regulation.
- With auto start = ON (CONFIGURATION <menu>) the motor follows the last status (motor Standby or motor Stop status) and causes total reset of the regulation.

## 9. Trouble shooting

*Problem:* The TF-LQ does not come into specification or a maximum deviation alarm occurred.

*Possible causes:*

1. Check if all cables are connected correctly.
2. Check if the peristaltic pump is closed.
3. Check if there is no tension on the cables connected to the weighing platform.
4. Use the weight check function with the reference weight to determine the correct function of the weighing system.
5. If the weight check gives the correct result, check if the material flow into the hose has been blocked.
6. In case of a water-cooled neckpiece, check if there is material build up around the nozzle and the water cooled pipe.
7. Check if the input signal is stable.
8. If none of the above seems to be the problem, recalibrate the system and try the weight check again.

*Problem:* The TF-LQ does come into specification but seems to be slow.

*Possible causes:*

1. Extreme vibrations and shocks to the system.
2. Extreme low set point. See Chapter 8: SYSTEM PERFORMANCE.

*Problem:* The input/start-signal is connected but the unit does not recognize this start signal.

*Possible causes:*

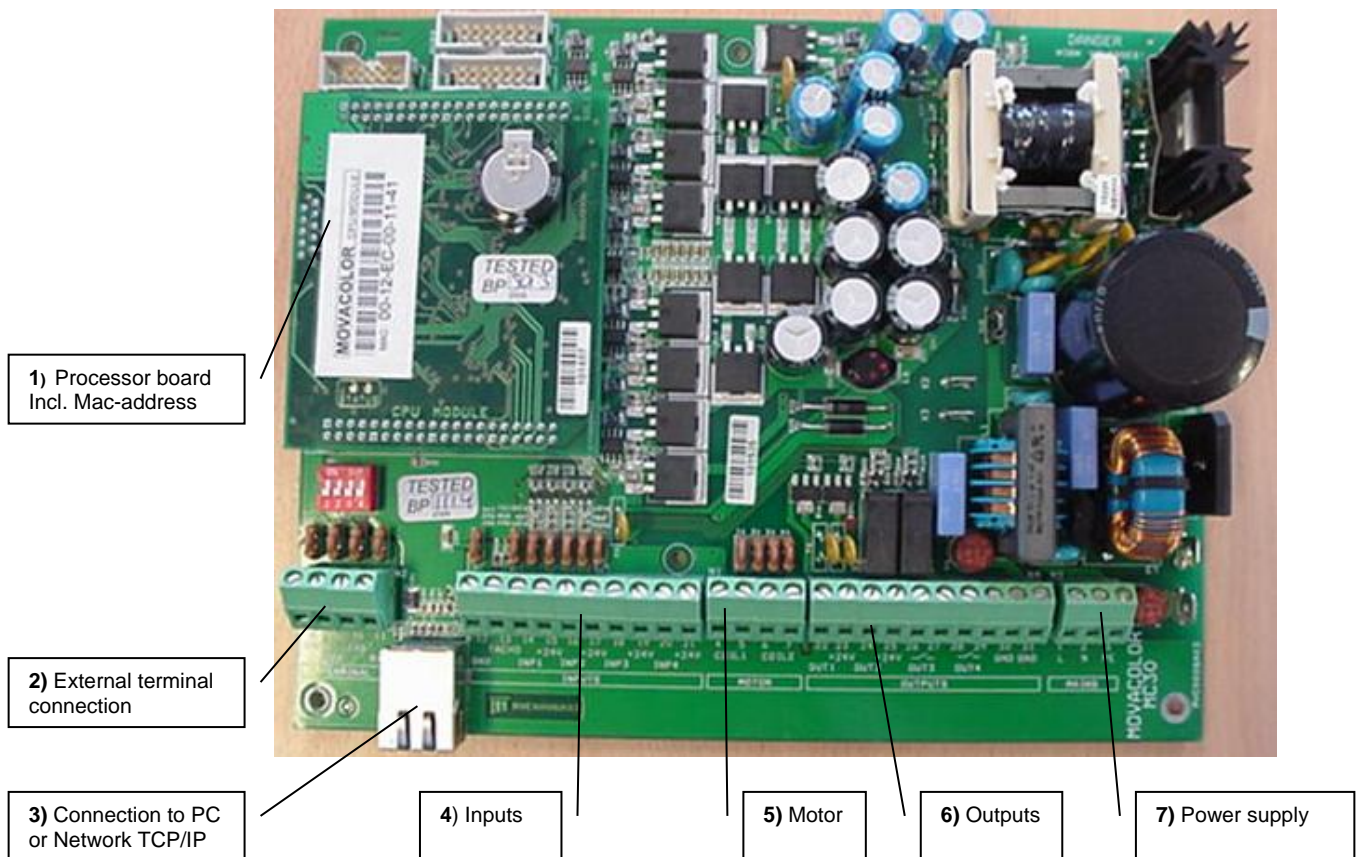
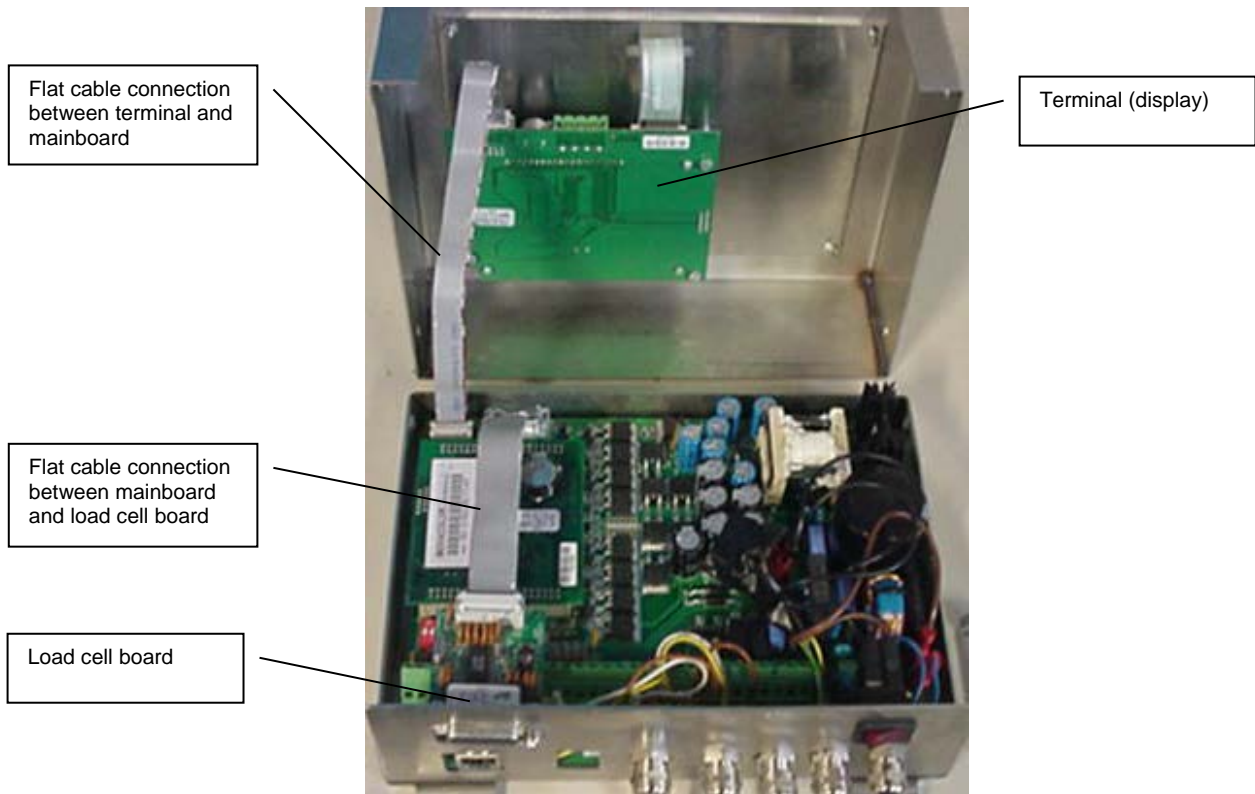
1. Check if the correct wires are connected for potential free contact, potential contact or tacho.  
Also check if the + and – side are connected correctly.  
[See chapter 6.4, 7.4 and the Wiring diagram in Appendix B.]
2. Automatic fuse is activated. This can, for example, happen when there is a short-circuit at the input connection. To deactivate the automatic fuse the controller needs to be switched OFF for a while and ON again, but first check and repair the short-circuit.

*Problem:* The hopper weight is not stable.

*Possible causes:*

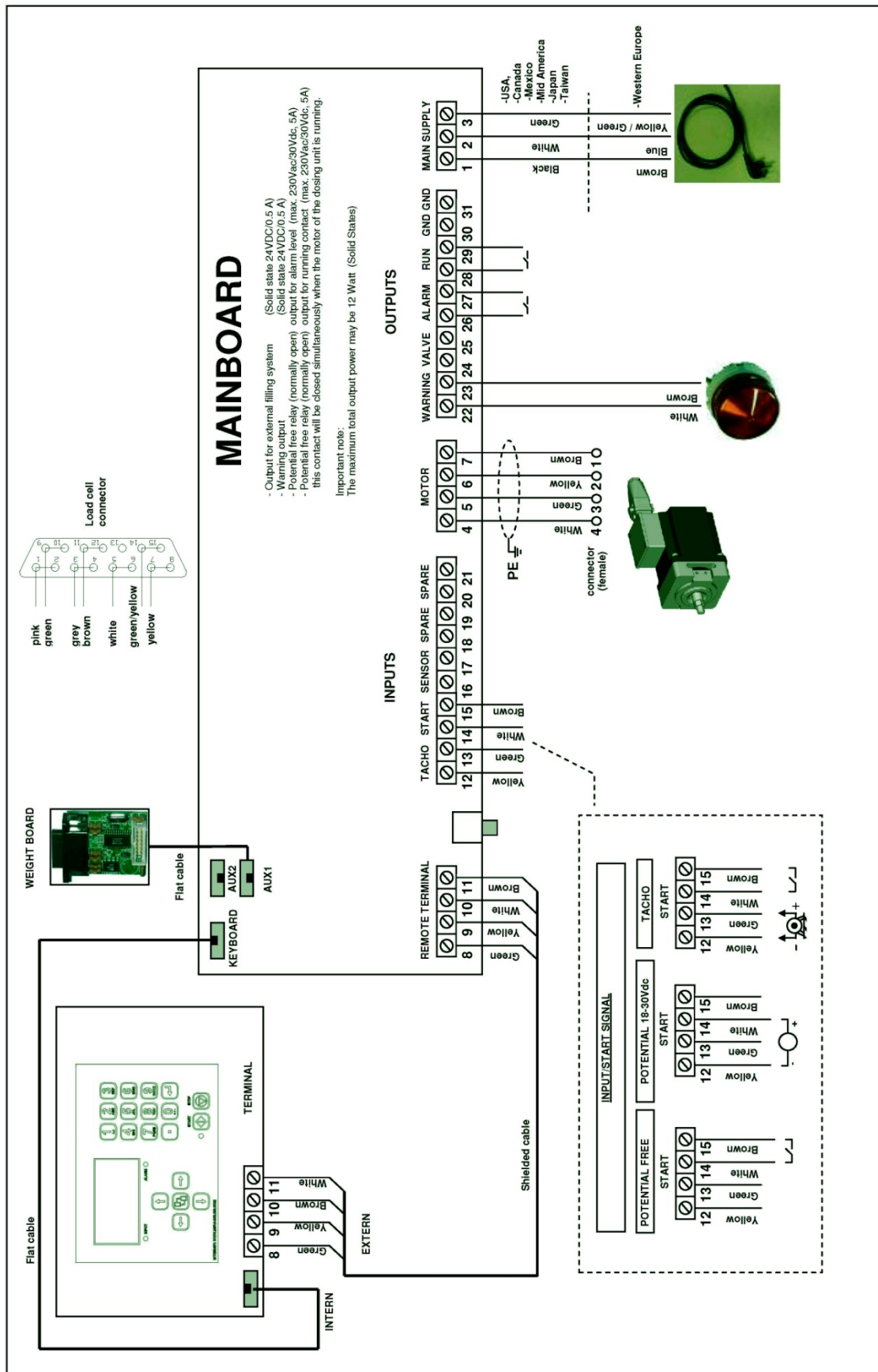
1. Check if the weighing signal is not influenced by external circumstances, for example that the load cell cable passes near to electromagnetic fields or electro motors.
2. Extreme vibrations and shocks to the system.
3. Check if there is no obstruction to the weighing frame.

# APPENDIX A: TF-LQ Print view





# APPENDIX B: TrueFeed Wiring Diagram



# APPENDIX C: TF-LQ Technical Specifications

## Controls:

Set and actual % setting for injection molding and extrusion  
Extrusion control by relay or tachometer  
Injection molding control  
Automatic metering time synchronization or by manual timer  
Manual speed and time setting  
Speed: Manual setting from 0.5 to 200 RPM max, in increments of 0.1 RPM.  
Time: Manual settings from 0.1 to 999 sec in increments of 0.1 sec.  
3 keyboard lock levels

## Monitoring/System Information/External communication

128 x 84 full graphic LCD front display with integrated backlight.  
Man/Machine interface: Using full language command structure  
External Communication: PC link using TCP/IP internet protocol; optional RS232 or 485 available  
Alarm: 2 user alarm levels

## 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: 4A at 40 Volt.  
Operating Temperature: -4 to 158°F {-20 to +70°C}  
Load cell and electronics: 20 bits A/D resolution with a full digital filtering

## Input signal(s):

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

\* Note potential contact

Guaranteed OFF: 0-8VDC  
Guaranteed ON: 18-30VDC

## Output(s):

-Stepper motor maximum output 4A (high output) at 40VDC  
-Solid state 24VDC/0.5 A output for external warning  
-Relay for alarm level (maximum 230Vac/30Vdc, 5A)  
-Relay for running contact (maximum 230Vac/30Vdc, 5A)  
-Maximum total output power: 12 Watt (Valve output + alarm output)

## Standard Directives:

Protection class: IP-50  
According to CE standards:  
EN50081-2 (HF radiation industry)  
EN50082-2 (HF immunity industry)

## Safety

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

## Dosing house:

- Loadcell: Nominal Load: 50 kg.  
Temp. compensated  
Temp. range: -4 to 140°F {-20 to +70°C}.  
Protection level: IP63 EN60529

## Optional parts

- Water-cooled neckpieces.
- Non water-cooled neckpieces.
- Mixers.
- External Alarm Flash light.
- External Alarm Siren.

# APPENDIX D: TF-LQ Declaration of Conformity

## DECLARATION OF CONFORMITY

(According to 98/37/EC, Annex 1)

**Manufacturer's name** : The Conair Group  
**Address** : 200 West Kensinger Dr.  
Cranberry Twp., PA 16066

**Declare under our sole responsibility that the product:**

**Name** : Conair  
**Model** : TF-LQ  
**Year** : 20.....  
**Serial number** : .....

- **Complies with the definition of the Machine Directive (98/37/EC), and complies with the national legislation to enforcement of this directive;**
- **complies with the requirements of:**
  - Low Voltage Directive (73/23/EEC)
  - EMC Directive (89/336/EEC)
- **complies with the following standards or other normative documents:**
  - NEN-EN 292-1/2 Safety of machinery part 1 + 2



## We're Here to Help

Conair has made the largest investment in customer support in the plastics industry. Our service experts are available to help with any problem you might have installing and operating your equipment. Your Conair sales representative also can help analyze the nature of your problem, assuring that it did not result from misapplication or improper use.

Additional manuals and prints for your Conair equipment may be ordered through the Customer Service or Parts Department for a nominal fee.

## How to Contact Customer Service

To contact Customer Service personnel, call:



**NOTE:** Normal operating hours are 8:00 am - 5:00 pm EST. After hours emergency service is available at the same phone number.

From outside the United States, call: 814-437-6861

You can commission Conair service personnel to provide on-site service by contacting the Customer Service Department. Standard rates include an on-site hourly rate, with a one-day minimum plus expenses.

## Before You Call...

**If you do have a problem, please complete the following checklist before calling Conair:**

- ☐ Make sure you have all model, control type from the serial tag, and parts list numbers for your particular equipment. Service personnel will need this information to assist you.
- ☐ Make sure power is supplied to the equipment.
- ☐ Make sure that all connectors and wires within and between control systems and related components have been installed correctly.
- ☐ Check the troubleshooting guide of this manual for a solution.
- ☐ Thoroughly examine the instruction manual(s) for associated equipment, especially controls. Each manual may have its own troubleshooting guide to help you.
- ☐ Check that the equipment has been operated as described in this manual.
- ☐ Check accompanying schematic drawings for information on special considerations.

## Equipment Guarantee

Conair guarantees the machinery and equipment on this order, for a period as defined in the quotation from date of shipment, against defects in material and workmanship under the normal use and service for which it was recommended (except for parts that are typically replaced after normal usage, such as filters, liner plates, etc.). Conair's guarantee is limited to replacing, at our option, the part or parts determined by us to be defective after examination. The customer assumes the cost of transportation of the part or parts to and from the factory.

## Performance Warranty

Conair warrants that this equipment will perform at or above the ratings stated in specific quotations covering the equipment or as detailed in engineering specifications, provided the equipment is applied, installed, operated and maintained in the recommended manner as outlined in our quotation or specifications.

Should performance not meet warranted levels, Conair at its discretion will exercise one of the following options:

- Inspect the equipment and perform alterations or adjustments to satisfy performance claims. (Charges for such inspections and corrections will be waived unless failure to meet warranty is due to misapplication, improper installation, poor maintenance practices or improper operation.)
- Replace the original equipment with other Conair equipment that will meet original performance claims at no extra cost to the customer.
- Refund the invoiced cost to the customer. Credit is subject to prior notice by the customer at which time a Return Goods Authorization Number (RGA) will be issued by Conair's Service Department. Returned equipment must be well crated and in proper operating condition, including all parts. Returns must be prepaid.

Purchaser must notify Conair in writing of any claim and provide a customer receipt and other evidence that a claim is being made.

## Warranty Limitations

**Except for the Equipment Guarantee and Performance Warranty stated above, Conair disclaims all other warranties with respect to the equipment, express or implied, arising by operation of law, course of dealing, usage of trade or otherwise, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.**