

TrueFeed™

Gravimetric Feeder

⚠ WARNING - Reliance on this Manual Could Result in Severe Bodily Injury or Death!

This manual is out-of-date and is provided only for its technical information, data and capacities. Portions of this manual detailing procedures or precautions in the operation, inspection, maintenance and repair of the product forming the subject matter of this manual may be inadequate, inaccurate, and/or incomplete and cannot be used, followed, or relied upon. Contact Conair at info@conairgroup.com or 1-800-654-6661 for more current information, warnings, and materials about more recent product manuals containing warnings, information, precautions, and procedures that may be more adequate than those contained in this out-of-date manual.



INTRODUCTION • Symbols • Terms • **GENERAL INFORMATION** • Safety • Certification • Operating environmental conditions • **OVERVIEW FEEDER** • TrueFeed Component overview • Weighing frame • Motor and feeding system • **MEETERING PRINCIPLE** • **FEEDER/CAPACITIES** • **INSTALLATION** • Transport • Receipt • Mechanical Installation • Changing from dispensing cylinders to Feed screw • Electrical installation • **OPERATION** • Navigation • Start up & Login • Keyboard lock • Configuration • Loadcell calibration • Material Pre-calibration • Production • Auto/Manual regulation mode & Save data function • Production JOB • Filling the hopper • Alarms • Files • Event LOG • **SYSTEM PERFORMANCE** • Reset regulation • **TROUBLESHOOTING**

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1. Introduction

Thank you for purchasing a Conair TrueFeed. This manual is addressed to operators and **qualified technicians** taking care of the feeding of dry additives to ensure correct use of the Conair feeder.

① **IMPORTANT:** THIS MANUAL MUST BE READ BEFORE INSTALLING THE FEEDER. KEEP THIS MANUAL IN A PLACE ACCESSIBLE FOR ALL OPERATORS.

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: _____
Manual Number: <u>UGB014-0806</u>
Serial Number(s): _____
Model Number(s): _____
Software Version: _____

Disclaimer: The Conair Group, Inc. shall not be liable for errors contained in this User Guide or for incidental, consequential damages in connection with the furnishing, performance or use of this information, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose.

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 feeding 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 main power voltage applied is between 80 and 260 Vac.



Always switch off the Conair control cabinet and disconnect the main 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.

2.2 Certification

The Conair TrueFeed is designed and produced in conformity with the following European regulations:

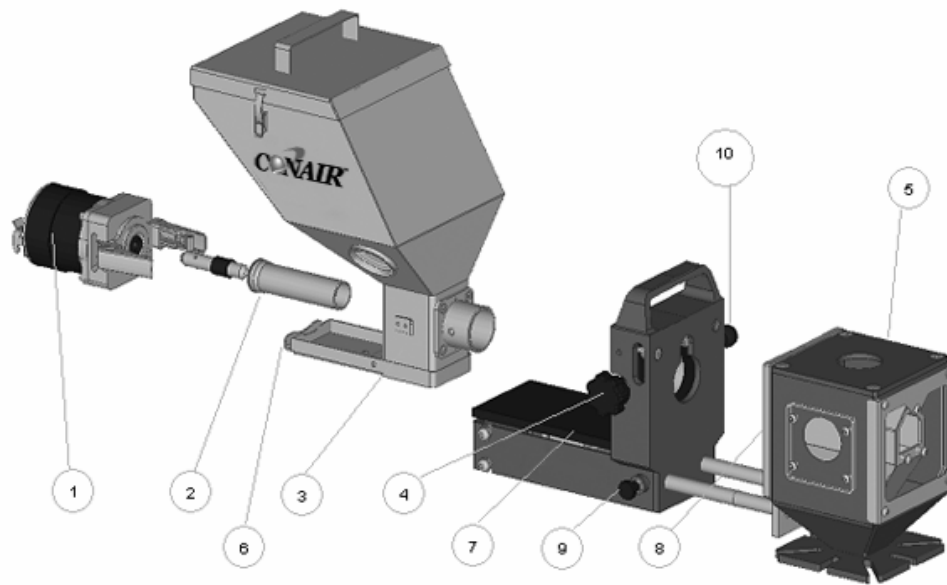
- C€ Standards for machinery (health, safety, environment)
- EMC (electromagnetic compatibility)
- VEM (safety electric material)
- 98/37/EC, Annex 1

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

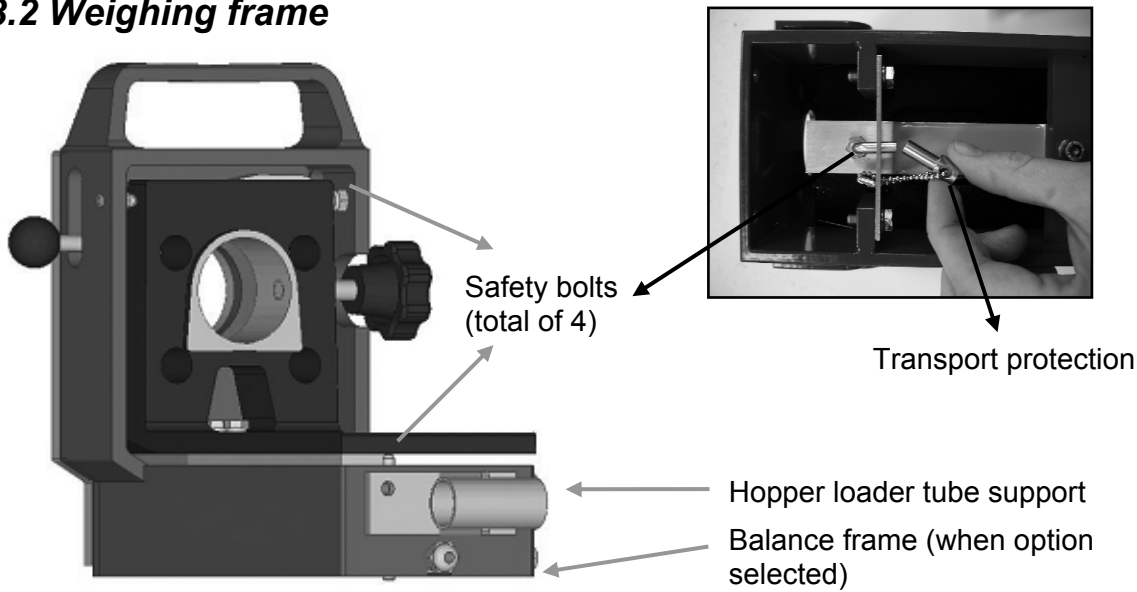
3. Overview Feeder

3.1 TrueFeed Component overview



- 1 Stepper motor
- 2 Dispensing cylinder
- 3 Hopper 0.2 ft³ {6 liter}
- 4 Curled knob M10x40
- 5 Standard NST40 Throat adaptor
- 6 Material discharge slide (in closed position)
- 7 TrueFeed Load frame
- 8 *OPTIONAL Slide frame*
- 9 Slide locking bolt
(locking the slide-out position)
Only supplied together with the optional slide mechanism
- 10 Slide locking bar
(locking the slide-in position)
Only supplied together with the optional slide mechanism

3.2 Weighing frame



The black part is the weighing frame.

Do not touch the weighing frame (and dispensing unit) while feeding.

It will have influence on the feeding.

Do not touch the safety bolts under the weighing platform. These are for overload protection.

There must be some space between the safety bolts and the frame.

3.3 Motor and feeding system

There are mainly two feeding systems, the dispensing cylinder and the feed screw.

(for more information see chapter 5)

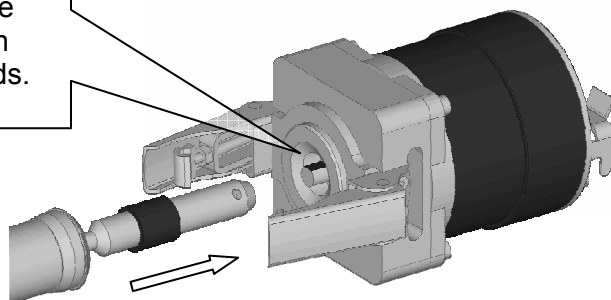
The serial number of the motor can be found on the backside of the motor.



Motor shaft:

The motor shaft is equipped with one flat side which fits precisely in the shaft of the dispensing cylinder.

To connect the dispensing cylinder just put it on the motor shaft while turning it to find the flat side, than press the dispensing cylinder completely backwards.



4. Metering principle

The Dispensing cylinder® of Conair TrueFeed is combined with a very precise adjustable stepper motor ensuring that the additive output is accurate and regular. The throat adapter (a mixing chamber) is designed to blend the main material and the additive homogeneously. Conair has on stock a large range of machine throat adaptors that usually make a perfect fit to the injection molding machine or extruder. The most common mounting of the throat adaptor is between the production machine and the machine hopper. In the figure below a section cut of the NST40 throat adaptor can be seen.

Standard throat adaptor

During operation, the virgin material runs from the machine hopper through the throat adaptor into the machine. Inside the throat adaptor the Virgin material flow is divided into two streams by the cover plate. In the space below the cover plate, the rotating cylinder is feeding additive.

Additive is added directly into the center of the virgin material flow, just before it enters the production machine. 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.

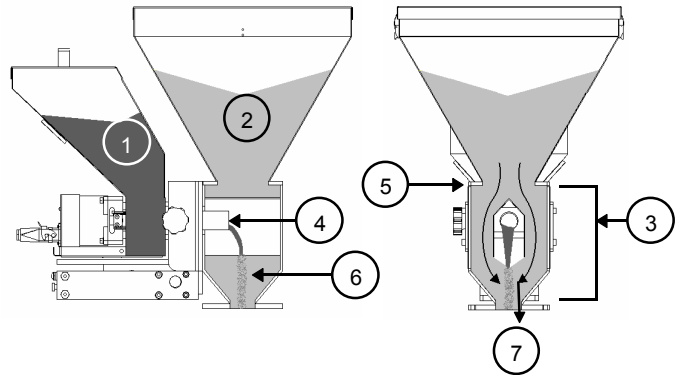


Fig. 3

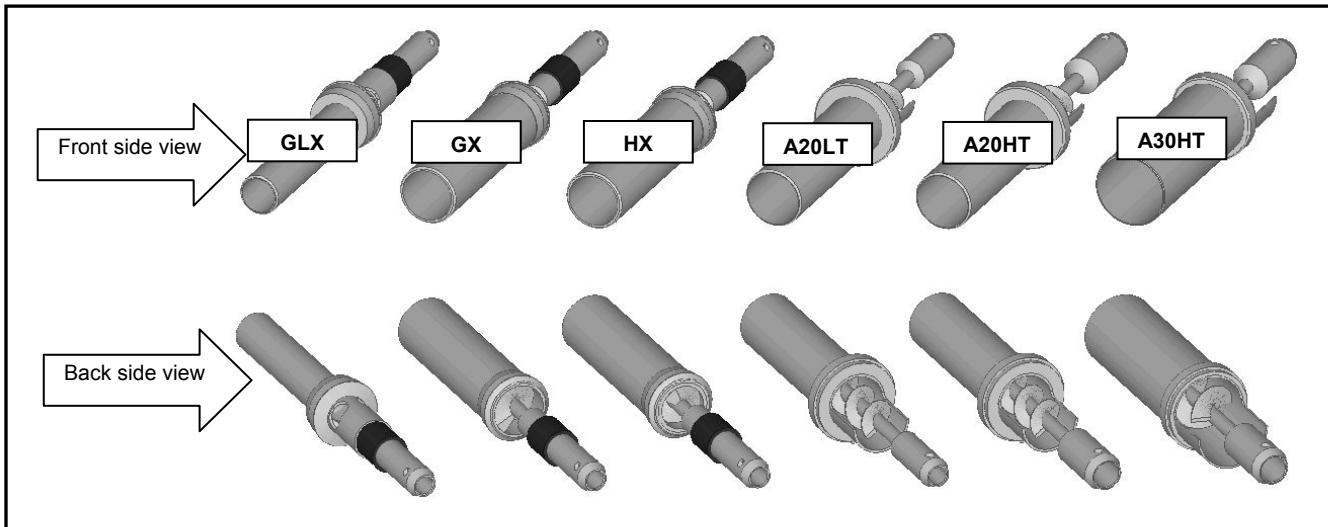
1. Color 2. Virgin material 3. Throat Adaptor 4. Dispensing cylinder
5. Cover plate 6. Mixing zone 7. To production machine

5. Feeding systems / Capacities

Depending on the application a different feeding system might be needed. Use the following table to determine roughly the best system for the application. For more detailed information please contact your agent or Conair.

Feeding system	Granular materials	Powder Materials	Accuracy	Feeding capacity Gram/sec.	Feeding capacity Kg/hour
GLX	YES	YES	++	0.02 to 1.6*	0.07 to 5.8*
GX	YES	YES	+	0.2 to 5.0*	0.72 to 18.0*
HX	NO	YES	++	0.01 to 0.5**	0.04 to 1.8**
A-20 Feed screw	YES	YES	+/-	0.5 to 20*	1.8 to 72*
A-30 Feed screw ***	YES	YES	+/-	2 to 50*	7.2 to 180*

- Note * measured with normal granular masterbatch 50lb/ft³ {0.8 kg/dm³}.
- Note ** measured with free flowing powder 41 lb/ft³ {0.65 kg/dm³}.
- Note *** only available with high torque (4.5 Amp) stepper motor

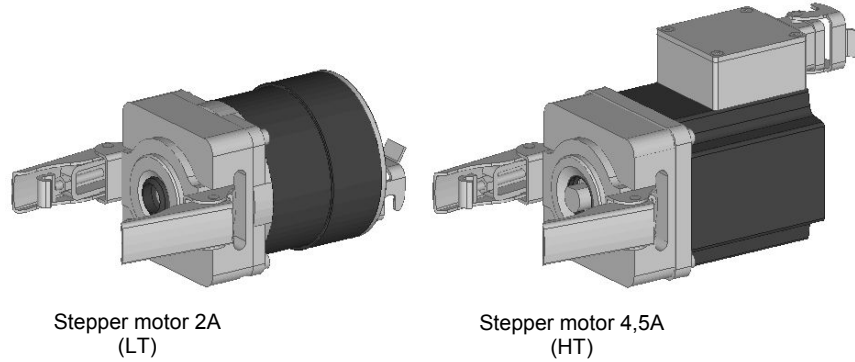


Which type of feeding system do I need with which throat adaptor?

The last 3 numbers are related to the length of the feeding system.

TYPE	CODE FOR STANDARD THROAT ADAPTOR	CODE FOR WATER-COOLED THROAT ADAPTOR
GLX	GLX	GLXC
GX	GX	GXC
HX	HX	HXC
A20LT	A20	A20C
A20HT	A20HT	A20HTC
A30HT	A30	A30C

All Conair TrueFeed feeders are standard equipped with the stepper motor 2A (LT), in case of using a feed auger A30 the stepper motor 4.5A (HT) will be supplied. Also an auger A20 can be connected to the HT motor.

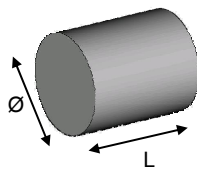


Ⓛ Do not select the HT setting in the control if LT motor is connected. This will damage the motor. If LT motor is selected and HT motor is connected there will be less motor torque and this can influence the feeding.

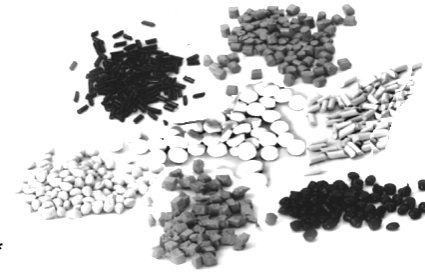
The controller of the feeder makes a distinction between two groups of materials, normal granules and micro granules. To determine the kind of material in your application use the description below.

Material types

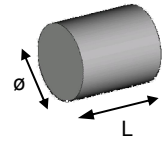
**Normal Granules:
(NG)**




$\varnothing < 4 \text{ mm}$ $L < 4 \text{ mm}^*$



**Micro / Mini Granules:
(MG)**



The term Micro/Mini Granules also includes free flowing powder. $\varnothing < \varnothing 2.5 \text{ mm}$ $L < 3 \text{ mm}^*$



* For other sizes contact Conair.

The actual capacity of the feeding system depends on:

- The volume weight of the material (*bulk density*)
- The specific weight of the material (*specific density*)
- The granular shape of the material
- The granule size
- The surface structure of the material

Granular material can be normal or micro. The granular material and powder material has to be free flowing, non-static and not sticky.

6. Installation

6.1 Transport

To protect the Conair Truefeed gravimetric feeder against damage during transport, the unit is packed in a cardboard box filled with polyurethane foam. Delivery terms are FOB Franklin, PA. Buyer is responsible for the transport. Conair cannot be held liable for any damage during transport.

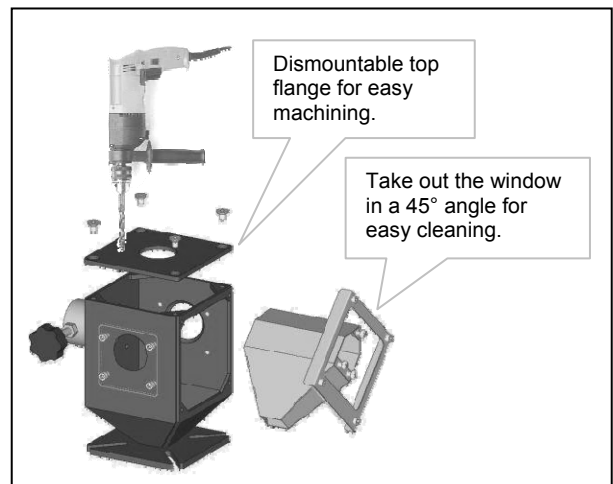
6.2 Receipt

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

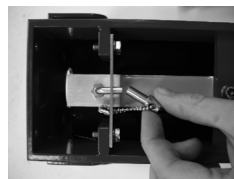
6.3 Mechanical Installation

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

1. When installing a main material hopper (not included with feeder purchase) on top of the throat adaptor, the **top flange** of the NST40 throat adaptor needs to be drilled to match. The lid of the throat adaptor can be removed for easy machining.
2. -Install the throat adaptor directly on top of the entrance of the production machine.
-Install the throat adaptor in a **90-degree** angle to the machine barrel. This will optimize the feeding accuracy in relation to vibration of the production machine.
-Make sure that the complete unit is mounted **horizontally level** and fixed securely.
-Assure proper grounding to control cabinet, throat adaptor and feeder



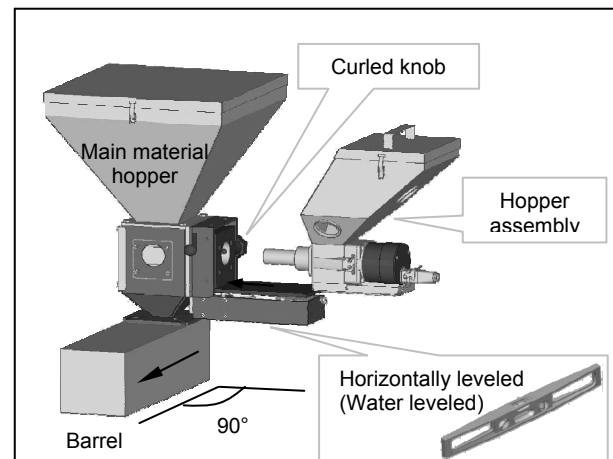
3. Remove the transport protection (at the bottom of the loadcell frame) before placing the **hopper assembly**.



Transport protection

This is just the pin on the flexible chain, do not dismount the stainless steel plate!

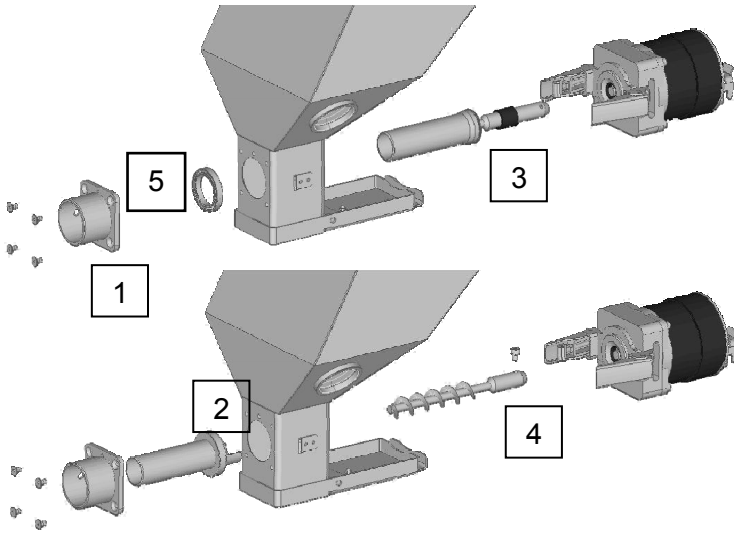
4. Connect the **hopper assembly** to the throat adaptor by turning the **curled knob** clockwise. Make sure that the curled knob is tightened firmly.
5. Mount the controller in a vibration free area and away from high temperatures.



Install the throat adaptor in a 90-degree angle to the machine barrel. As shown in the picture.

6.4 Changing from Dispensing cylinder to Feed screw

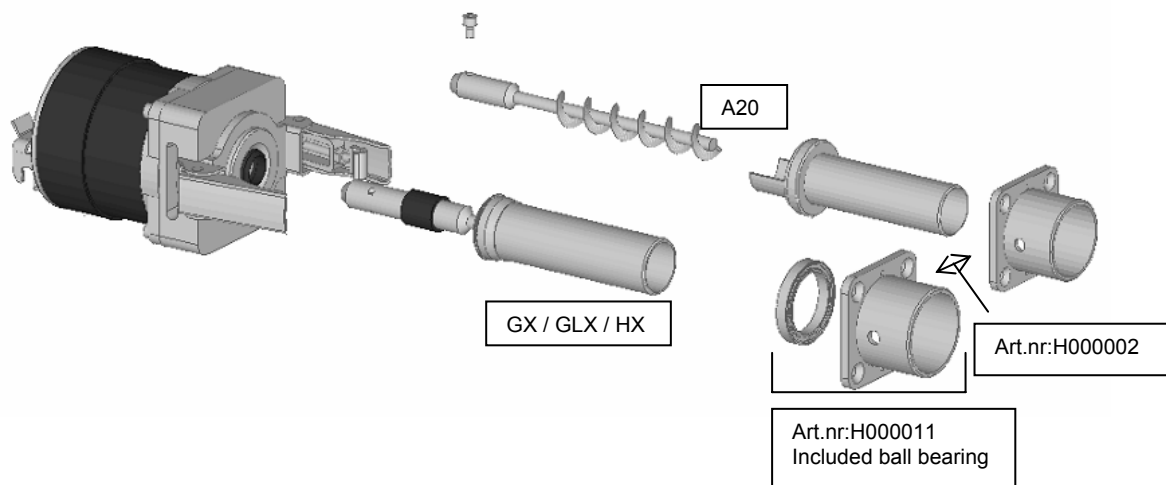
In relation to the maximum capacity of the dispensing cylinder it might be necessary to change from the selected dispensing cylinder to a feed auger. As distinction from the dispensing cylinder, the feed screw system consists of a rotating auger in a **non**-rotating tube.



To install the feed auger perform the following steps:

1. Detach the motor quick release clamps and take out the motor from the hopper.
2. Dismount the throat adaptor connection flange (1) by removing 4 socket-head screws.
3. For use with a dispensing cylinder the throat adaptor connection flange (1) is equipped with a ball bearing (5). When using an auger screw system the ball bearing must be removed. The metal ring (2) which is fixed on the feed screw tube fits directly on the throat adaptor connection flange.
4. Dismount the dispensing cylinder (3) and mount the screw (4) with the M5 bolt.
5. Place back the motor + auger by closing the motor quick release clamps.
For cleaning, the motor + auger can be easily be removed.

POSSIBLE COMBINATIONS



① For cleaning of the ball bearing use a dry piece of textile or a smooth dry toothbrush to remove the dust or moisture and foreign particles that stick.

6.5 Electrical installation

The TrueFeed controller is standard equipped with 3 connections:

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

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

Optional are:

- Alarm flash light, complete with cable
- Compressed air solenoid valve complete with cable (for automatic hopper loader)

APPENDIX B 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 networkcard.

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, type RJ45 (Cat. 5) is 100 meter between 2 network points.



4. INPUTS

Start input

The TrueFeed needs an input signal from the production machine in order to operate.

Three different input signals can be used to control the TrueFeed:

- Potential free start input. (dry contact)
- Potential (24 Vdc) start input
- Tachometer (0-30 Vdc) start input

5. MOTOR

The TrueFeed can control 2 motor types:

- LT (low torque) standard motor for normal feeding
- HT (high torque) motor for high output feeding

(See chapter 5 for more details and wiring diagram for electrical connections, appendix C)

6. OUTPUTS

The TrueFeed has following outputs available:

- [clamp 24-25] Valve output for hopper loader, (Solid state 24VDC/0.5 A)
- [clamp 22-23] Warning output (Solid state 24VDC/0.5 A)
- [clamp 26-27] Potential free relay (normally open) output for Alarm (max. 230Vac/30Vdc, 5A)
- [clamp 28-29] Potential free relay (normally open) output for Running contact (max. 230Vac/30Vdc, 5A). This contact will be used to show that the motor is running.
The maximum total output power may be 12 Watt (Valve output + alarm output together max. 0,5A)
(See wiring diagram appendix C for electrical connections)

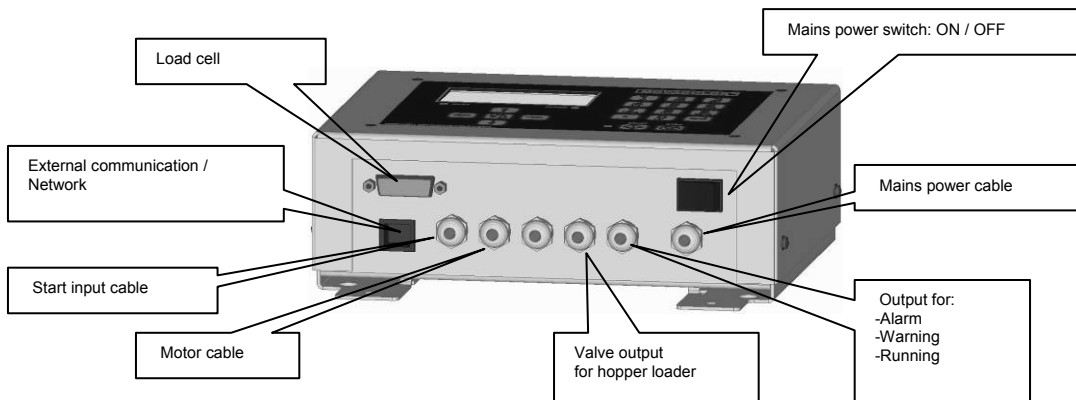
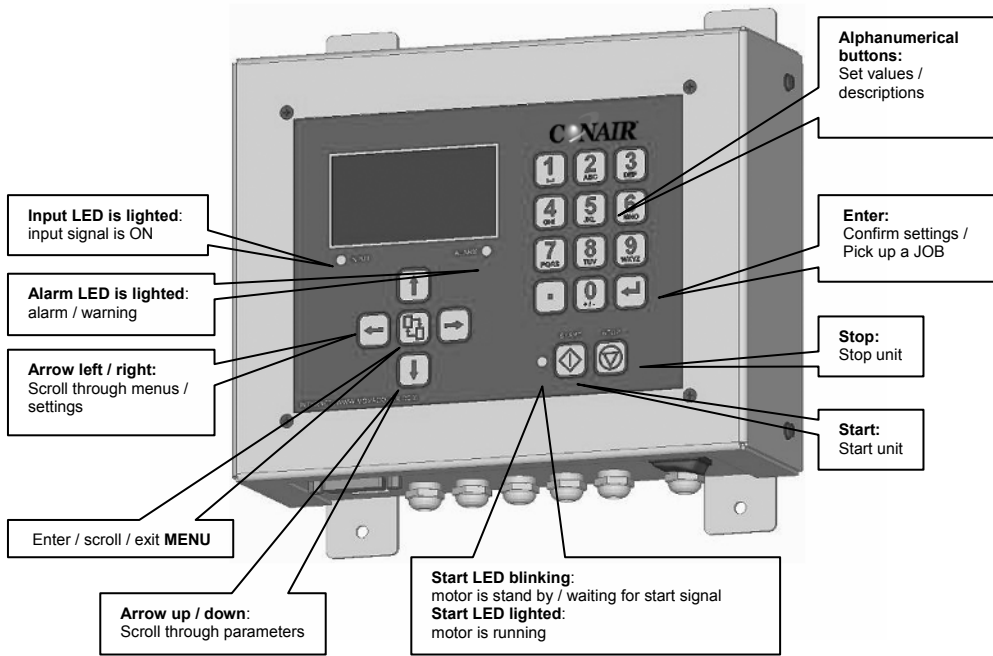
7. POWER SUPPLY

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

(See wiring diagram appendix C for electrical connections)

7. Operation

7.1 Navigation



7.2 Start up & Login

Directly after switching on the mains power of the TrueFeed, 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 2005
```

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

```
Conair TrueFeed
Color in Control
  Vx.x
SP-Vx.x
MENU to continue

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

Vx.x = user software version Vx.x
 SP-Vx.x = Language version Vx.x
 Standard language is English
 SP means that the additional language is Spanish.
 BL Vx.x = bootloader software (firmware) Vx.x
 Mac address = ID address of the network card

The TrueFeed controller has three user levels:

1. Operator
2. Tooling (Supervisor – level 1)
3. Supervisor (level 2 – service)

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 / menu's 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 feeding 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]	To do the hopper loader settings, only visible when a 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 hopper or object weight.	YES	YES	NO
[CONSUMPTION]	View of the total quantity of material dosed by the TrueFeed.	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

① Recommended to note the passwords

Forgot your supervisor password, contact Conair Service 1-800-458-1960.

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

MESSAGE
-----
Keyboard locked !

To unlock enter
supervisor code.

MENU to continue
```

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

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 HOPPERLOADER menu.
- To START and STOP the feeder.

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

7.4 Configuration

For initial setup the TrueFeed controller needs to be configured in the CONFIGURATION menu once. Depending on the configuration, some settings will be invisible in case they are not relevant.

① Highlighted Parameters are factory settings.

Language	: ENG / SP
Motor type	: LT / HT
Cylinder type	: G / GL / H / A20 / A30 / GX / GLX
Material type	: NORMAL / MICRO
Cal dev.	: 5.0 %
Control mode	: GRAVI / RPM
Prod. Mode	: INJ / EXT
Input mode	: Timer / Relay / Tachometer
└ Input filter	: (1-32)
Fill. System	: NO / ME / MV
└ Filling start	: 800 gr.
Hopper empty	: 700 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
Date	: (dd / mm / yy)
Time	: (hh / mm / ss)



Configuration: Language

Standard language is English. On request also different languages are available.

Configuration: Motor type

LT is Low Torque motor and HT is High Torque motor (see chapter 5 for more information)

① Do not select HT motor if LT motor is connected.

Configuration: Cylinder type

Type of dispensing cylinder / feed auger (see chapter 5 for more information)

Configuration: Material type

Type of material: normal granules (NORMAL) and micro granules (MICRO).
(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 and also the automatic hopper loader function will not work.

Configuration: Prod. mode

Production mode

Selection of the processing machine on which the TrueFeed is placed.

(EXT) extruder or (INJ) injection molding

Configuration: Input mode

Type of input signal. Relay, Timer or Tachometer

Timer mode is the standard setting for Injection molding.

	EXT		INJ	
timer			x	x
relay	x	x	x	
tachometer	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 feeding time.

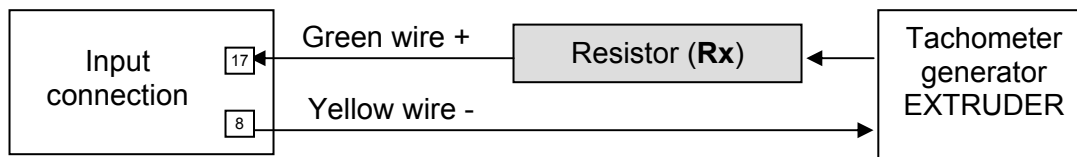
Input (start) signal

The TrueFeed needs an input signal from the production machine in order to operate.

Three different input signals can be used to control the TrueFeed.

- 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 tachometer signal up to 30 Volt DC.*
- 4.) This is used when the TrueFeed needs to be connected to an extruder that has a tachometer generator that produces a voltage linear to the extruder speed. When using a tachometer generator signal, make a connection between the white and brown wire, connect green to + VDC and yellow to the - side of the generator.

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



$$R_x \text{ (kilo-Ohm)} = 3.7 \times (\text{Max. tachometer output VDC} - 2.5) - 80.6$$

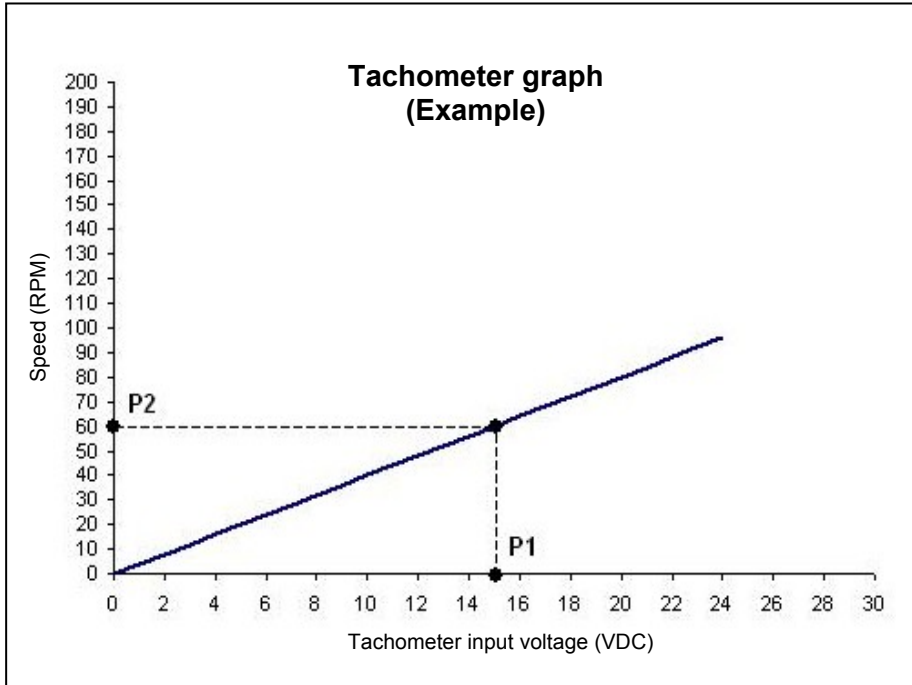
If the extruder stops when connected to the metering unit, an isolated signal converter is needed. Contact your agent or Conair for more information.

Tachometer function

The tachometer function is only available in extrusion mode.

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

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



The tachometer function can be set in the PRODUCTION screen.

Tachometer can be set automatically and manually:

Max tachometer: 0.0V

Set tachometer: **NO** / YES

① Highlighted Parameters are factory settings.

Manual:

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

Automatic:

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

The tachometer 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 tachometer 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 TrueFeed is 30 VDC.

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

Configuration: Input filter

The setting “input filter” becomes visible when relay input mode is selected in INJ mode. In the relay input mode the length of the feeding time is measured automatically from the incoming input signal. The Input filter calculates the average feeding time of the set number of shots (3-32). The calculated average time is used as steady feeding time. Default the input filter is set to 3.

① If during production a production setting will be changed or when Stop/Start button will be pressed, the feeding time will be measured again.

Configuration: Fill. System

Filling system, NO (None), ME or MV (see chapter 7.10)

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 hopper is 800 grams (default) or less. The default value can be changed manually if necessary (depending on the material properties).

① Only visible when a filling system is selected.

Configuration: Hopper empty

The system will give a “Low hopper level” message if there is less then 700 (default) grams of material in the hopper. For this system to work correctly it is necessary that the load cell calibration is done with an empty hopper and the hopper lid in place. This system will always be active.

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

Configuration: Deviation alarm

Setting for the “Maximum deviation exceeded” message.

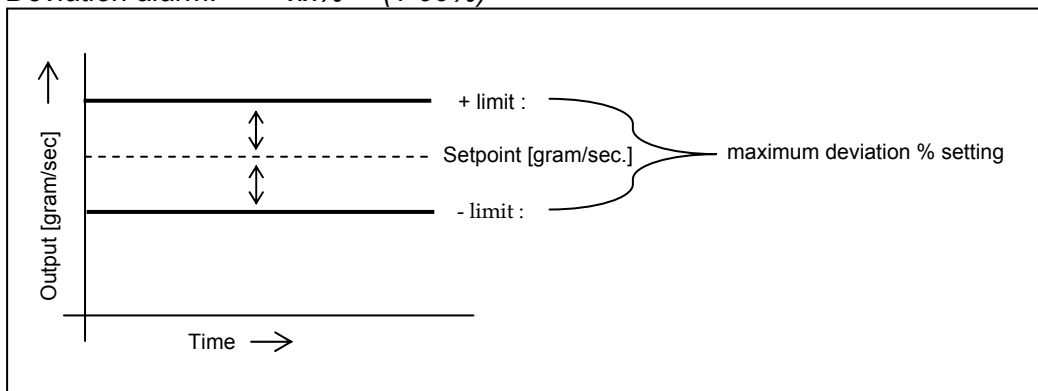
The TrueFeed automatically adjusts its motor speed to the desired setpoint. The controller is able to detect and alarm when the setpoint is not reached within a set percentage. If after the normal performed speed adjustments the setpoint is consistently not reached, the controller will give an alarm 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 by sticky or hard flowing material.
- Inaccurate feeding because material is not uniform in size.
- Disturbance of the weight signal, for example by mechanical blocking of the TrueFeed loadframe.

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 set point (color set) is set to : 1,000 gr/sec

-the MAXIMUM limit value will be : 1,250 gr/sec

-the MINIMUM limit value will be : 0,750 gr/sec

When the maximum deviation message (Error 01, page 33) 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 mains power has been switched OFF.

When enabled the unit will continue feeding 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 is part of a network, the controller 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 feeder is mounted on.

Configuration: Start user (Sign-in)

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

Operator, Tooling or Supervisor.

Configuration: Tooling passw.

Password for Tooling user level, 4 numerals, default 1111

Configuration: Supervisor passw.

Password for Supervisor user level 4 numerals default 2222

Configuration: Date

Actual date (dd / mm / yy)

Configuration: Time

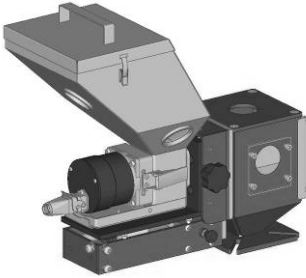
Actual time (hh / mm / ss)

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

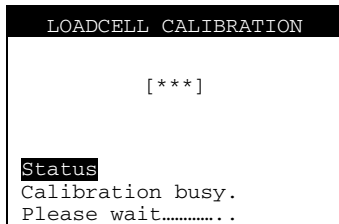
7.5 Loadcell calibration

When using a TrueFeed 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.
- When using a slide the whole unit has to be slid in against the throat adaptor and fixed.

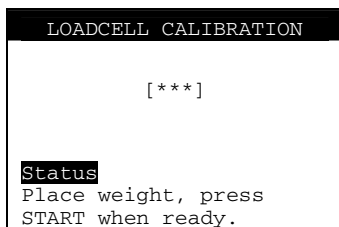


- Be sure that the Balance load cell is connected to the controller
- Go to the LOAD CELL <menu>
- In this menu it is possible to calibrate the load cell of TrueFeed (500gr. Calibration weight required)
- Select YES to start the load cell calibration



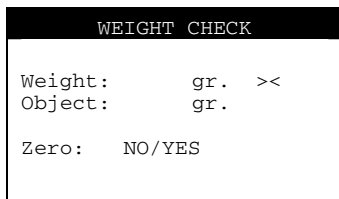
[***] = Progress

- After a few minutes the following screen appears:



Place calibration weight (500 gr.) on the hopper 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 Hopper
- If the object weight is not corresponding with the real weight, perform a load cell calibration.

7.6 Material Pre-calibration

The TrueFeed mainly can be started in two ways:

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

After pressing the START button the unit starts feeding 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 feeding 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 TrueFeed is a gravimetric / loss in weight feeder. When starting up the feeder for a new production run there is no direct information available about the loss in weight. Of course you want the feeder to reach its 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 feeder can be determined automatically with a pre-calibration.

The pre-calibration can be done in two ways (see below)



1) Unit with option slide frame:

Slide the frame with unit backwards till the "click"

2) Unit without optional slide mechanism:

Take out the feeder and put it on the frame like shown

- It is important that during calibration the feeder is mounted fixed and horizontally and also vibration free.
- Before starting a material calibration be sure the hopper is filled with material sufficient.
- Be sure that the loadcell cable is connected to the TrueFeed controller.

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

- CONFIGURATION parameters: Cylinder type : type of dispensing cylinder or feed screw
Material Type : Normal or micro-granules
- PRODUCTION parameters: Shotwth. : Shot weight
color% : Color amount (%)
dos. time : *Feeding time (sec)
Ext. cap. : Extruder capacity (kg/h)
- CALIBRATION parameters: Material name: Name of calibrated material

* this is the screw recovery time for injection molding.

How to make a material calibration?

- Go to the CALIBRATION menu.
- Enter Material name and your production parameters.
- Start calibrating. The following screen appears:

```
CALIBRATION
[TESTING BUSY]
[*****]


Set      : 1,000 gr/s
Actual  : 0,945 gr/s
Stop & Store : YES/NO
```

- 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  during the calibration (for example to refill the hopper).

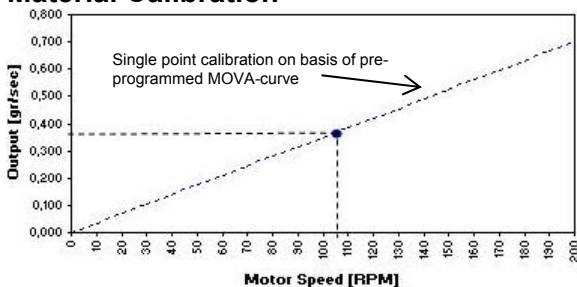
To continue select YES and confirm. To stop select NO and confirm.

- 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.

 Stored material curves have a * after the filename.

During the calibration the unit is regulating to its 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 7.13.

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

7.7 Production

① The rotation direction of the feeding at the front view must be to the right  (Clockwise)

Production (Motor On/Off)

Press the  start button to start feeding, the question appears: Fill cylinder? YES/NO.

YES means that the dispensing cylinder will be filled before production.

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

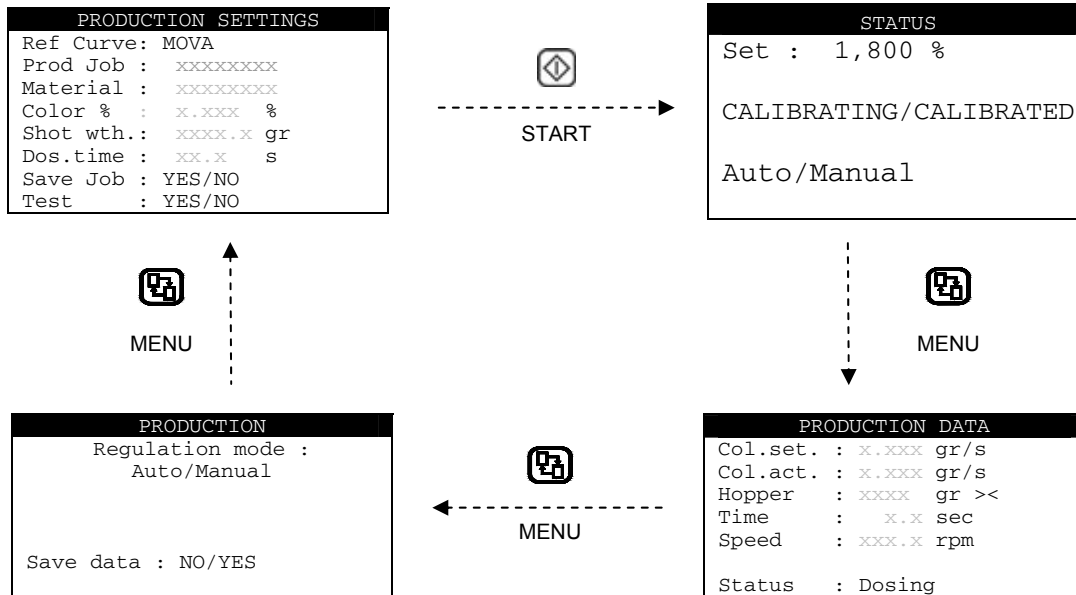
The unit is feeding if the Start LED lights continuously.

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 feeding(s) are not sufficient, because of the cylinder filling with material. It takes some time to stabilize.

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



This screen is not available in
OPERATOR use level.


[For more information see chapter 7.8]


Test function

With the test function the unit will dose material with the set feeding 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	
Ref.Curve:	MOVA/USER
Prod Job :	xxxxxxxx
Material :	xxxxxxxx
Color % :	x.xxx %
Shot wth.:	xxxx.x gr
Dos.time :	xx.x s
Save job :	NO/YES
Test :	NO/YES

Ref.Curve: Type reference curve, MOVA pre-programmed curve, or USER defined curve.
 Prod Job : Name of the production Job
 Material : Name of material calibration
 Color % : Color amount (%)
 Shot wth : Shot weight (gr.)
 Dos. time : Feeding time (sec.) **① Feeding time only visible in Timer mode**
 Save job : Save actual production settings into a job
 Test: : Initial production test with set speed and time

Actual production data

PRODUCTION DATA	
Col.Set. :	x.xxx gr/s
Col.Act. :	x.xxx gr/s
Hopper :	xxxx gr ><
Time :	xx.x sec
Speed :	xxx.x rpm
Status :	Feeding

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 hopper
 >< : Standstill sign. When the vibrations are too big, this sign disappears!
 Time : -count down of the actual feeding time (sec), when working TIMER input mode.
 -average feeding time (sec), when working in RELAY input mode.
 Speed : Actual motor speed (RPM)
 Status : Status of the feeding, Standby / Feeding / Filling

Injection molding / RPM mode

Production Settings

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

Prod Job : Name of the production Job
 Set speed : Set motor speed (RPM)
 Dos.time : Actual feed 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 :	xxx.x rpm
Time :	xx.x sec
Status :	Feeding

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

① RPM mode always needs a set feeding time, relay function is not functional.

EXTRUSION

Extrusion / Gravimetric mode

Production Settings

PRODUCTION SETTINGS	
Ref Curve :	MOVA/USER
Prod Job :	xxxxxxxx
Material :	xxxxxxxx
Color % :	x.xxx %
Ext.cap :	xxxxx.x kg/h
Max tachometer:	xxx,x v
Set tachometer:	NO/YES
Save job :	NO/YES
Test :	NO/YES

Ref.Curve: Type reference curve, MOVA pre-programmed curve, or USER defined curve.
 Prod Job : Name of the production Job
 Material : Name of material calibration
 Color % : Color amount (%)
 Ext.cap : Maximum extruder capacity (kg/h)
 Max tachometer : Maximum tachometer voltage (v) **① Only visible in Tachometer mode**
 Set tachometer : Autom. voltage take over from tachometer generator **① Only visible in Tachometer mode**
 Save job : Save production settings into a job
 Test: : Initial production test with set speed for 30 seconds.

Actual production data

PRODUCTION DATA	
Ext.act. :	xxxxx.x kg/h
Act tachometer :	xxx,x v
Col. Set. :	x.xxx gr/s
Col. Act. :	x,xxx gr/s
Hopper :	xxxx gr ><
Speed :	rpm
Status :	Feeding

Ext. act : Actual extruder capacity (kg/h)
① Only visible in Tachometer mode
 Act tachometer : Actual voltage of the tachometer generator (v)
① Only visible in Tachometer mode
 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 hopper
 >< : Standstill sign. When the vibrations are too big, this sign disappears!
 Speed : Actual motor speed (RPM)
 Status : Status of the feeding, Standby / Feeding / Filling

Extrusion / RPM mode

Production Settings

PRODUCTION SETTINGS	
Prod Job :	xxxxxxxx
Set speed :	xxx.x rpm
Max tachometer:	xxx.x v
Set tachometer:	NO/YES
Save job :	NO/YES
Test :	NO/YES

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

Actual production data

PRODUCTION DATA	
Act tachometer :	xxx.x v
Speed :	xxx.x rpm
Status :	Feeding

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

7.8 Auto/Manual regulation mode & Save data function

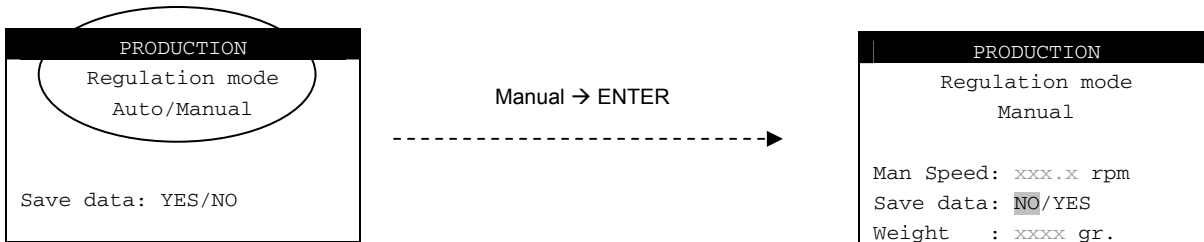
Two functions are available in one screen:

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

① 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).



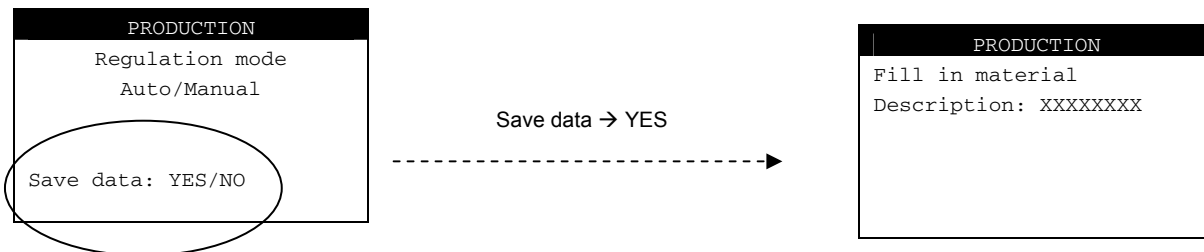
In this screen the rpm can be changed.

- 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 the actual data once the feeder 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 / tachometer
PRODUCTION settings:	Job description:	Name of the job
	Shot wth.:	weight of the part
	color% :	color amount (%)
	feed time:	feeding time (sec.)
	Ext. cap.:	Extruder capacity (kg/h)
	Max. tachometer:	Maximum tachometer 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 7.13

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

7.10 Filling the hopper.

MANUAL FILLING

The controller automatically detects when the hopper is manually filled.

In the period that the hopper is being filled, the TrueFeed is feeding with a fixed RPM, this means the unit runs temporarily volumetric. As soon as the hopper filling is complete, the TrueFeed immediately continues to work gravimetric.

AUTOMATIC FILLING (optional)

Introduction

Conair Truefeed feeders are capable of handling a variety of dry materials. Two different filling systems are available depending on the material properties.

- The Conair Ejector (ME) system for dust-free or nearly dust-free materials
- The Conair Vacuum (MV) system for materials that are NOT entirely dust free.

The ME and MV systems are both driven by low-pressure compressed air and mounted directly on top of the hopper lid of the Conair feeder. The TrueFeed controls the operation of the ME or MV systems.

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 except for the pneumatic operated closing valve of the MV system.

How the ME works

The ME system blows the material from the bag, drum or into the hopper of the feeder. The hopper lid of the housing has a easy-to-clean dust filter to keep any dust particles in the hopper. The system is triggered by the filling start weight (CONFIGURATIONS <menu>). This parameter also generates a alarm if the hopper is empty.

How the MV works

The MV system uses a 3-stage vacuum generator driven by compressed air to create a vacuum that draws material into a chamber that closes. Once the chamber is filled with material, the that closes the chamber will open and the material will be discharged into the hopper.

The system is equipped with a superior filter to ensure that the particles (> 5 micron) stay in the system and are not released into atmosphere. This makes the MV system the most practical and friendly system for both powders and granules.

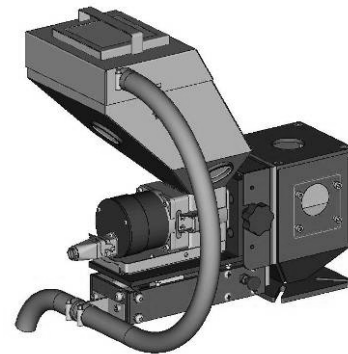
General

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

① Emergency stop.

To stop the hopper loader during production go to the HOPPER LOADER <menu> and switch the ME or MV system to **OFF**.

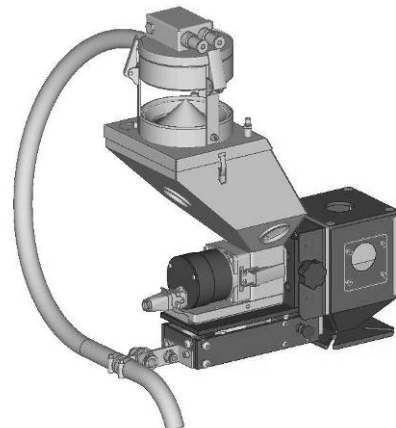
ME hopper loader



container
simple and

low-level

MV hopper loader



cone

finest
the
user-

Hopper loader settings

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

There are three ways to fill the hoppers:

1. Manual
2. Automatic with ME hopper loader
3. Automatic with MV hopper loader

Manual

Open the hopper lid and fill the hopper by hand. (filling will be detected automatically)

The message "Low hopper level" appears when the hopper is empty.

(default 700 gr. In CONFIGURATIONS <menu>)

ME hopper loader (Conair hopper loader operated by compressed air)

ME FILLING SYSTEM	
ME system :	OFF/ON
Fill time :	30 sec
Alarm time :	31 sec
Alarm mode :	OFF/ON
Manual fill:	NO/YES

ME system: Switch ON / OFF the ME hopper loader system

Fill time: Fill time [sec.], during this time the system blows material into the hopper of the dosing unit.

Alarm time: Fill Alarm [sec.], if the hopper weight is not above the 800gr. within this time, the alarm starts. The alarm time can not set lower than the fill time.

Alarm mode: ME hopper loader is ON / OFF during fill alarm.
ON = ME Hopper loader stays activated during a filling alarm.
OFF = ME Hopper loader 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.

 Highlighted Parameters are factory settings.

MV hopper loader (Conair hopper loader operated by vacuum)

MV FILLING SYSTEM	
MV system :	OFF/ON
Fill time :	20 sec
Empty time :	05 sec
Fill cycles :	3 x
Alarm cycles:	10 x
Alarm mode :	OFF/ON
Manual fill:	NO/YES

MV system: Switch ON / OFF the MV hopper loader system

Fill time: Fill time [sec.], during this time the MV system sucks material into the vacuum chamber.

Empty time: Empty time [sec.], during this time the cone that closes the chamber will open and material falls down into the hopper of the dosing unit.

Fill cycles: Number of extra fill cycles after the hopper weight is above the 800gr. again

Alarm cycles: Number of idle fill cycles before fill alarm. The number of alarm cycles needs to be more than the number of Fill. cycles.

Alarm mode: MV hopper loader is ON / OFF during fill alarm.
ON = MV Hopper loader stays activated during a filling alarm.
OFF = MV Hopper loader 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.

 Highlighted Parameters are factory settings.

Output signals

During fill time there will be a 24VDC signal between connection 24 and 25 on the main board to activate the pneumatic solenoid valve.

When the Fill Alarm is activated there will be a 24VDC signal between connection 22 and 23 on the main board to activate the alarm light. The controller itself gives a beeping signal and the alarm LED will light up.

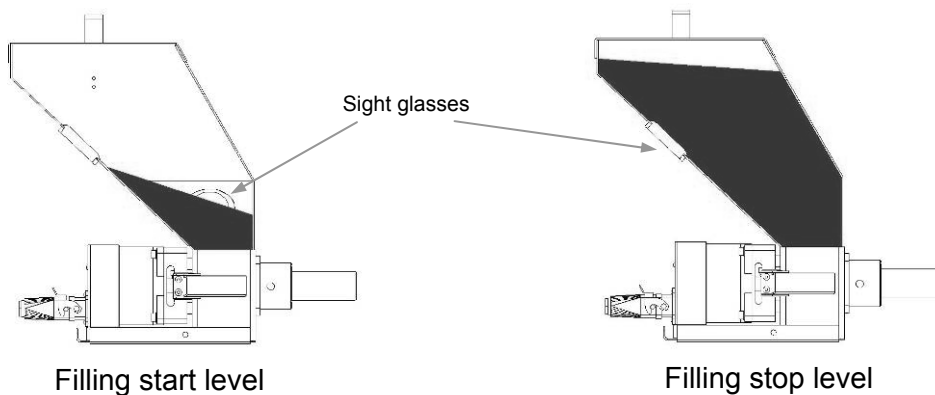
GENERAL RECOMMENDATIONS FOR OPTIMAL HOPPER FILLING

To guarantee the optimal working of the gravimetric TrueFeed feeder it is important to use the correct rate of hopper filling. The higher the output of the feeder (kg/h), the more important becomes the rate of hopper filling.

During hopper filling, the electronics of the TrueFeed controller recognize automatically that the hopper is being filled. This automatic filling detection is working for manual filling of the hopper and filling with an automatic hopper loader.

In the period that the hopper is being filled, the TrueFeed is feeding with a fixed RPM. This means the unit runs temporarily volumetric. As soon as the hopper filling is complete, the TrueFeed immediately continues to work gravimetric.

Because the TrueFeed is working volumetric during a hopper filling it is recommended to reduce the amount of filling cycles. Or in other words, to have the maximum time between a filling cycle and the next filling cycle. This can be performed when using the correct settings of the "Filling start level" and the "Filling stop level". When the unit is started with the autostart function enabled and the unit is switched OFF and ON again the filling will start automatically if the hopper weight is too low.



The moment when the automatic filling starts depends on the entered start level:

Filling start : xxx gr. (configuration menu)

Filling stop level is depending on the entered fill time for the ME-system:

Fill time : xxx sec

For the MV-system:

Fill time : xxx sec

Empty time : xx sec

Fill cycles : x

(hopper loader menu)

Recommended settings for ME hopper loader:

- For the filling start weight use a level like shown in the filling start figure above, when using a too high weight level the amount of filling cycles will increase.
- Use a fill time so that the material covers at least the sight glass in the back of the hopper. Overfilling of the hopper should be avoided

Recommended settings for MV hopper loader

- For the filling start weight use a level as shown in the filling start figure above. A weight that is at too high of a level will cause the amount of fill cycles to increase.
- Use a fill time so that the vacuum chamber of the MV-Loader is filled almost completely. Overfilling of the vacuum chamber should be avoided.
- The empty time is critical. Set for approximately 2 seconds longer than actual (observed) empty time. An empty time that is too short can cause a decrease in the capacity of the MV-hopper loader.
- For the amount of filling cycles use an amount so that the material covers at least the sight glass in the back of the hopper. Overfilling of the hopper should be avoided.

7.11 Consumption



The consumption menu will be visible when the ME or MV filling system is enabled in the CONFIGURATION <menu>. Without use of the optional ME or MV filling system, accurate working of the consumption registration is not supported.

With the Consumption function it is possible to view the total quantity of material weighed by the TrueFeed. The consumption is saved in the memory and remains in the memory even when the unit is shut off or unplugged.

To reset the consumption go to reset and select YES and confirm.

7.12 Alarms

GENERAL

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

When an error occurs using the TrueFeed, 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 feeder 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 **feeder 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 (max.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 hopper level	Material is below the hopper empty weight
01	Maximum deviation exceeded	The deviation of the material output is too high
02	Filling system unable to load material	Fill system is not working correct
03	Maximum RPM exceeded, change dispensing cylinder 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
 <u>Alarms</u>		
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.

Error 00	<p>“Low hopper level” [free programmable]</p> <p>If this warning appears the material in the hopper is below the hopper empty weight (700 gr.)</p> <p>In CONFIGURATION <menu> this setting can be changed.</p> <ul style="list-style-type: none"> - Check if there’s enough material in the hopper. - Check the hopper empty setting in CONFIGURATION <menu> - Check if the hopper loader is working right.
Error 01	<p>“Maximum deviation exceeded” [free programmable]</p> <p>If this warning appears the feeding output (grams/sec) is consistently not within set percentage. See page 18 for more information.</p>
Error 02	<p>“Filling system unable to load material”</p> <p>If this warning appears the alarm time (ME hopper loader) or alarm cycles (MV hopper loader) are exceeded.</p> <ul style="list-style-type: none"> - Check if there is enough material. - Check if the material is stuck somewhere. - Check the operation of the hopper loader. - Check the hopper loader settings.
Error 03	<p>“Maximum RPM exceeded, change feeding tool for higher capacity”</p> <p>Calculated motor speed is higher than the maximum of 200 RPM</p> <ul style="list-style-type: none"> - Check the material output on 200 RPM. - Check the production settings. - Increase the feeding time (if possible) - Try another dispensing cylinder with higher output, for example a feed screw A20
Error 05	<p>“Calibration, no weight change”</p> <p>No weight change while calibrating (see chapter 7.6)</p> <ul style="list-style-type: none"> - Check if there’s enough material in the hopper. - Check if the material is stuck in the dispensing cylinder. - 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 dispensing cylinder. Front view to the right  <p>(Clockwise)</p>
Error 07	<p>“Minimum motor speed < 0,1 RPM”</p> <p>Calculated motor speed is lower than the minimum of 0,5 RPM</p> <ul style="list-style-type: none"> - Check if there’s enough material in the hopper. - Check the production settings. - Decrease the feeding time (if possible) - Try another dispensing with lower output, for example a GL-cylinder - Check the rotation direction of the dispensing cylinder. Front view to the right  <p>(Clockwise)</p>

ALARMS

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

7.13 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.

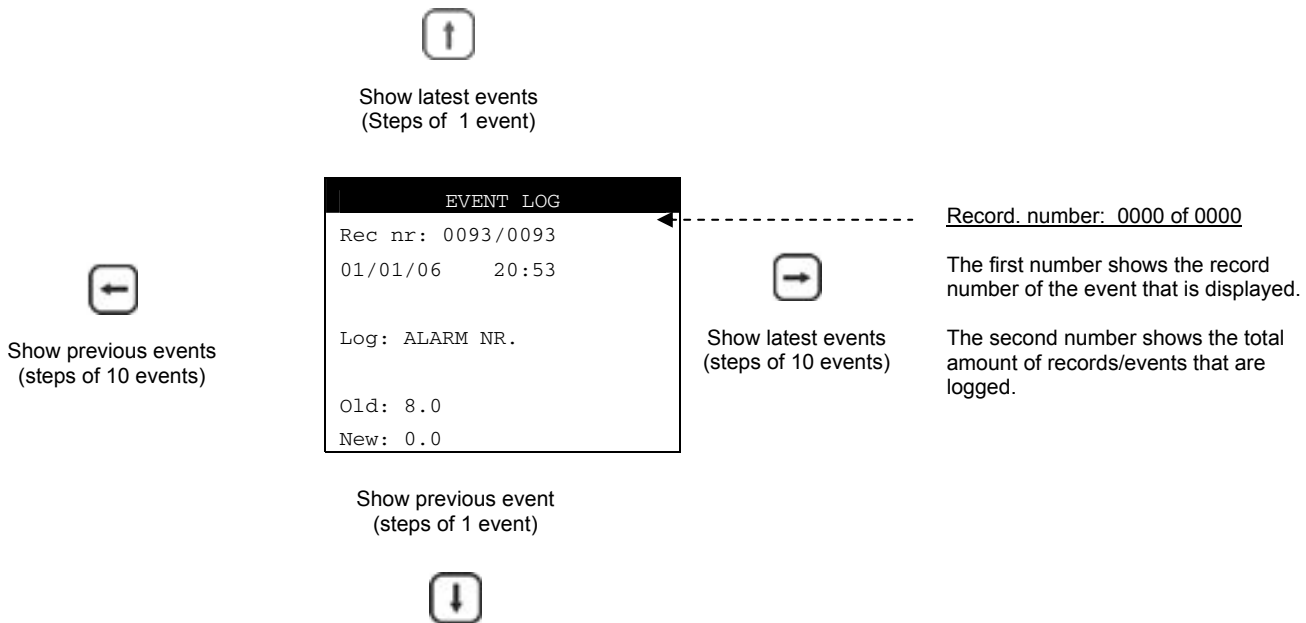
Delete:  = Delete a file, press enter to confirm.

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

7.14 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 7.12

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. Easy flowing, non-sticky and non-static material that comes in the form of small granules or powder can be dosed very accurate and regular. The accuracy and regularity of material output drops with increased granule size. However this is only a problem with extreme low outputs.

Periodical cleaning of the dispensing cylinder and seals is necessary for proper operation.

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

The TrueFeed 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 cylinder and material 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. If big and heavy granules have to be dosed in a very short time this will influence the shot accuracy and repeatability because one granule can make a difference of a few percent to the shot weight.

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 balance 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 Balance 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 start up 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. Troubleshooting

Problem : The feeder 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 transport protection is removed from the load cell safety bolt.
3. Check if the hopper assembly is fixed tightly to the weighing platform and that the throat adaptor is fixed tightly to the production machine.
4. Check if the dispensing cylinder is tightly fixed to the motor shaft.
5. Excessive build up of material on the dispensing cylinder may have impact on proper feeding.
To avoid this, be sure that the seals and dispensing cylinder are clean.
6. Check to remove any tension on the cables connected to the weighing platform.
7. Use the weight check function with the reference weight to determine the correct function of the weighing system.
8. If the weight check gives the correct result, check if the material flow into the cylinder has been blocked.
9. Another cause may be an obstruction to the weighing system. Check if there is at least $\approx 1\text{mm}$ space between all the pointed screws and the load cell frame or platform and that there is no material or dirt blocking the movement.
10. In case of a water cooled throat adaptor, check if there is material build up around the dispensing cylinder and the water cooled pipe that can obstruct the free movement of the weighing system.
11. Check if the input signal is stable.
12. If none of the above causes the problem, recalibrate the system and try the weight check again.

Problem: The balance does come into specification but seems to be slow.

Possible causes:

1. Extreme vibrations and shocks to the system.
2. Extreme low Setpoint. See Chapter 8: SYSTEM PERFORMANCE
3. Check in case of use of an automatic hopper loader if the hoses are connected in the right way.

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

Possible causes:

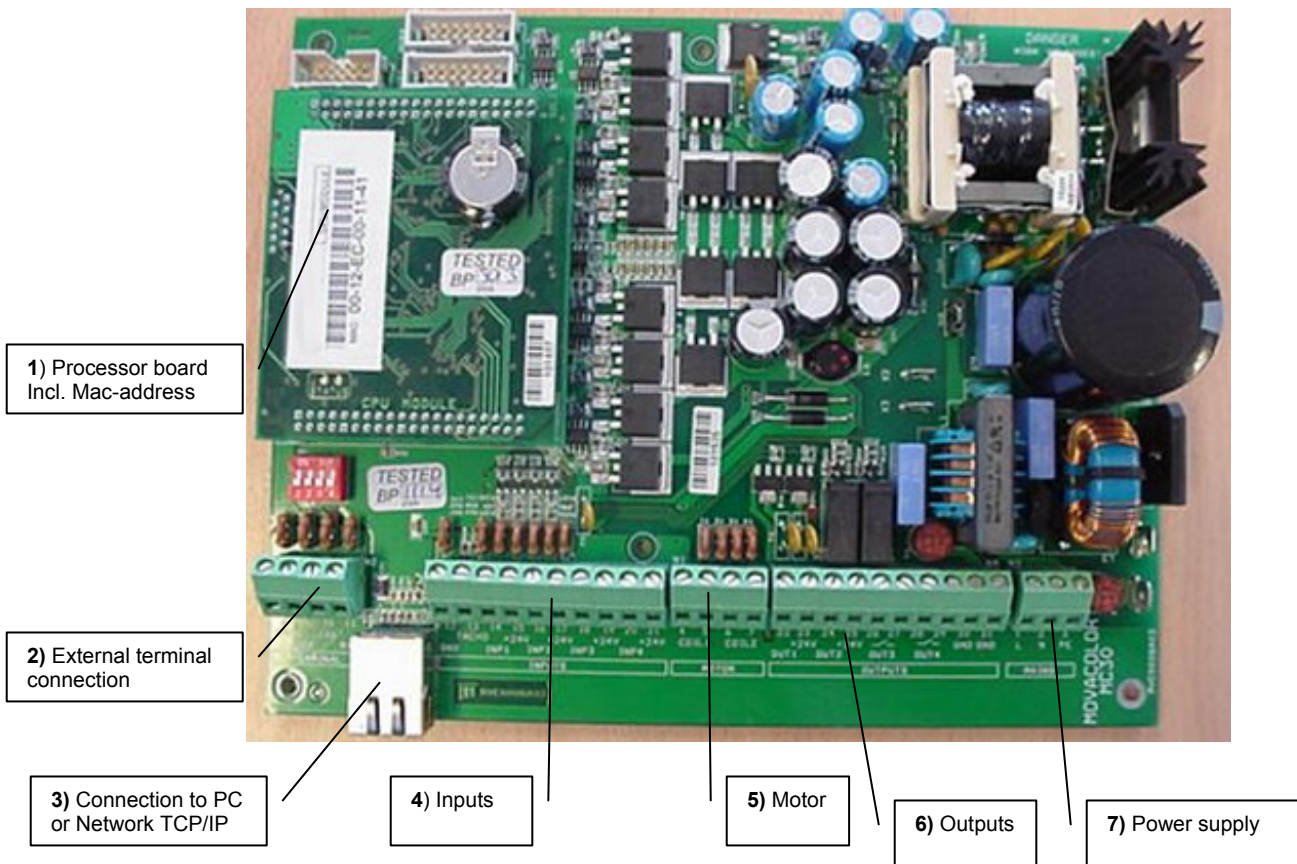
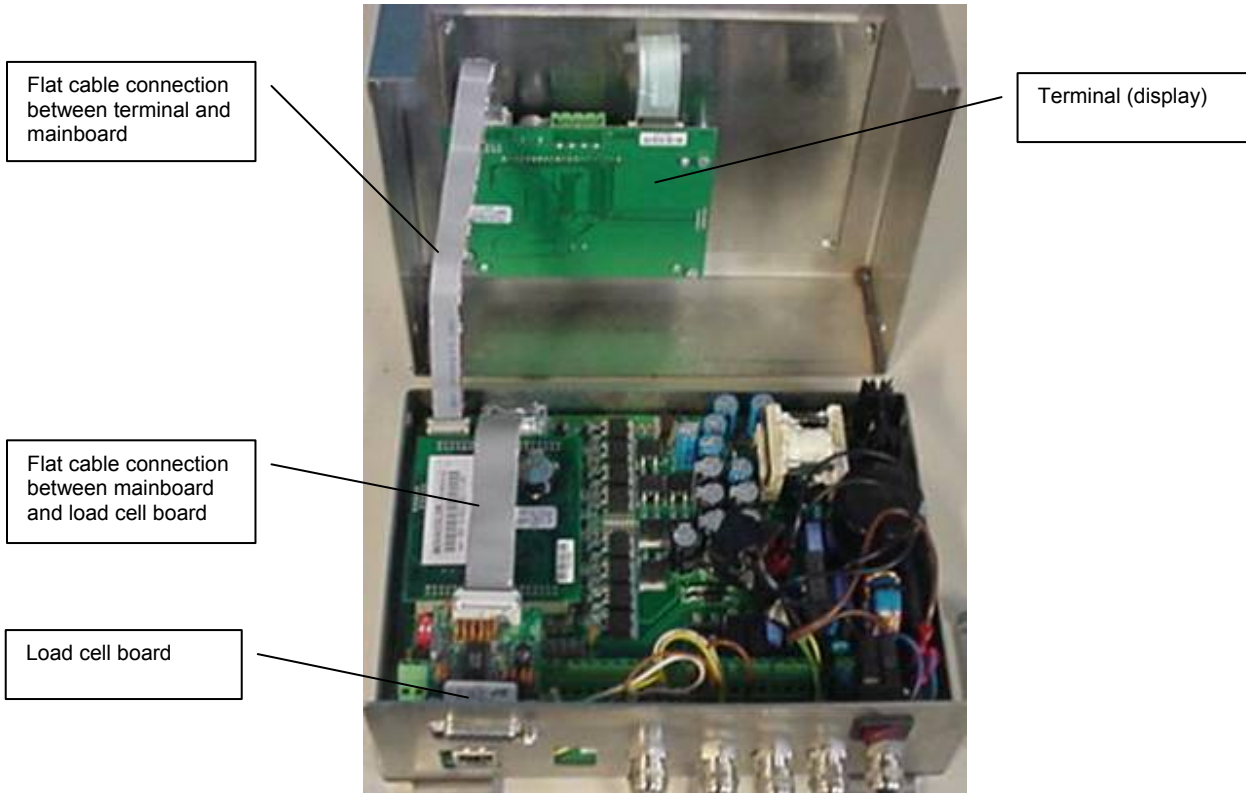
1. Check if the correct wires are connected for potential free contact, potential contact or tachometer. Also check if the + and – side are connected correctly.
[See chapter 6.5 , 7.4 and the Wiring diagram in Appendix C.]
2. The earlier series controller does need a different wiring diagram than printed in this manual. The wiring diagram for main boards with the code MVC000BA02 (this code is printed on the main board) can be send by Conair on request.
3. Automatic fuse is activated, this can for example happen when there was 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.

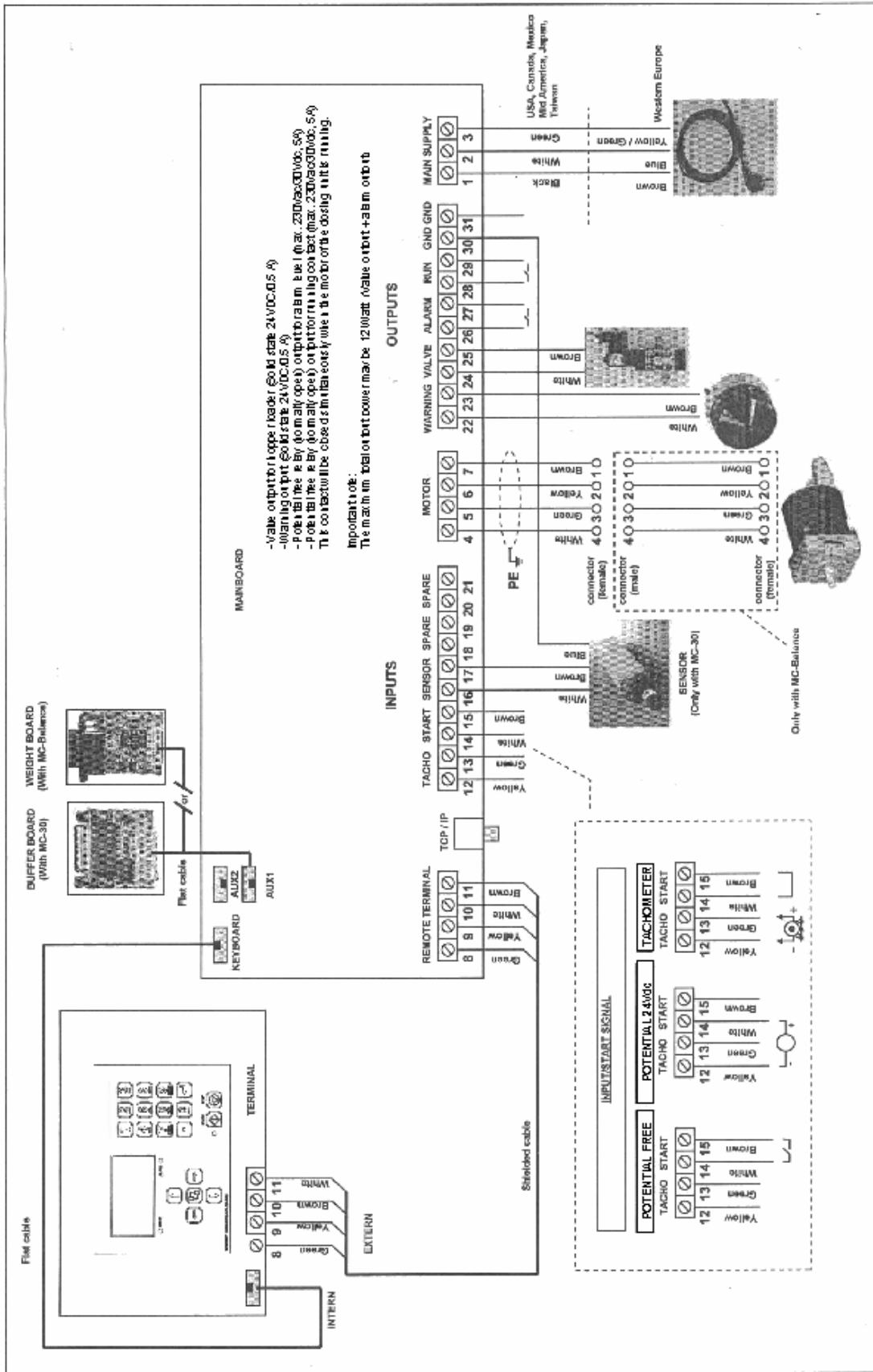
Possible causes:

1. Check if the weighing signal is not influenced by external circumstances, for example that the loadcell 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.
4. Check in case of use of an automatic hopper loader if the hoses are connected in the right way.

APPENDIX A: TrueFeed Print View



APPENDIX B: TrueFeed Wiring Diagram



APPENDIX C: TrueFeed 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 0.1 to 200 RPM max, in increments of 0.1 RPM.
Time: Manual settings from 0.1 to 99.9 sec in increments of 0.1 sec.
3 keyboard lock levels
Integrated hopper loader controller

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: (1,8degr/step) max 2A or 4A(high output) at 40 Volt.
Operating Temperature: -4 to +158 degr. F {-20 to +70 degr. 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 24VDC*
Extrusion: Start/Stop trigger input, potential free or 24VDC*
Tachometer input 0..30VDC

* Note potential contact

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

Output(s):

-Stepper motor max. output 2A or 4A (high output) at 40VDC
-Solid state 24VDC/0.5 A output for valve hopper loader
-Solid state 24VDC/0.5 A output for external warning
-Relay for alarm level (max. 230Vac/30Vdc, 5A)
-Relay for running contact (max. 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.

Machine connection flange:

Standard flange NST40-throat adaptor with cleaning opening.
Inlet/outlet \varnothing 50mm/ \square 40mm, steel epoxy coated RAL 3002

Loadframe:

- Balance frame: Steel, epoxy coated RAL 3002
- Weighing frame: Aluminum, epoxy coated RAL 9005
- Loadcell : Nominal Load: 20 kg.
Temp. compensated
Temp. range: -20...+60 gr. Celsius
Protection level: IP63 EN60529

Optional parts

- 12 liter hopper stainless steel.
- Flange type NST90 with cleaning opening and inlet/outlet \varnothing 50mm/ \square 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
- Hopper loader type MV
- Mixers
- External Alarm Flash light.
- External Alarm Siren.

APPENDIX D: TrueFeed Quality Checklist

Date of production :
Conair order number :
Controller serial number :
Software version :
Motor serial number :
Unique ID code :

Check original order with internal packing list

Order code :

Cylinder check

- Fill in the type of cylinder
- Fill in the cylinder lengthmm
- Check for cylinder wrench

Stepper motor check

- Direction motor rotation from rear view (motor number side)
- Check if cable and connector are fastened well.
- Check sealing.

Hopper check

- Check hopper edges for blurs
- Check lid for sharp edges
- Check slide valve
- Check sealing ring
- Check sight glasses

Throat adaptor check

- Check sight glass and the inside if everything is clean
- Check fitting of the feeding house
- Check curled knob length and fitting

Complete unit check / Functional test at least 4 hours

- Perform load cell calibration
- Perform a weight check with the 500gr reference weight
- Perform a Master Reset ALL [CONFIGURATION menu]
- Check internal File System by making a JOB [PRODUCTION menu]
- Perform functional test with motor (200 rpm)
- Check timer, tachometer and relay.
- Power cable /warning label
- Check input cable/ warning label
- Check appropriate users manual
- Check (optional) alarm flash light
- Check (optional) valve output

Automatic hopper loader check (Optional)

- No automatic hopper loader supplied.
- ME hopper loader.
- MV hopper loader.

APPENDIX E: 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.

How to Contact Customer Service

To contact Customer Service personnel, call:



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, serial 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.