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USER GUIDE

UGB010-0714

BFS and BFH Feeder

Additive Metering Unit

Corporate Office: 724.584.5500 | Instant Access 24/7 (Parts and Service): 800.458.1960 | Parts and Service: 814.437.6861

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:

Manual Number: UGB010-0714

Serial Number(s):

Model Number(s):

DISCLAIMER: Conair 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. Conair makes no warranty of any kind with regard to this information, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose.

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SECTION 1

Introduction

Purpose of the User Guide

This User Guide describes the Feeder Model BFS and BFH. It explains step-by-step how to install, operate, maintain and repair this equipment.

Before installing this product, please take a few moments to read the User Guide and review the diagrams and safety information in the instruction packet. You also should review manuals covering associated equipment in your system. This review won't take long, and it could save you valuable installation and operating time later.

How the Guide is Organized

Symbols have been used to help organize the User Guide and call your attention to important information regarding safe installation and operation.

Symbols within triangles warn of conditions that could be hazardous to users or could damage equipment. Read and take precautions before proceeding.

1

Numbers indicate tasks or steps to be performed by the user.

◆

A diamond indicates the equipment's response to an action performed by the user.

❒

An open box marks items in a checklist.

•

A circle marks items in a list.

Indicates a tip. A tip is used to provide you with a suggestion that will help you with the maintenance and operation of this equipment.

Indicates a note. A note is used to provide additional information about the steps you are following throughout this manual.

Your Responsibility as a User

You must be familiar with all safety procedures concerning installation, operation and maintenance of this equipment. Responsible safety procedures include:

- Thorough review of this User Guide, paying particular attention to hazard warnings, appendices and related diagrams.
- Thorough review of the equipment itself, with careful attention to voltage sources, intended use and warning labels.
- Thorough review of instruction manuals for associated equipment.
- Step-by-step adherence to instructions outlined in this User Guide.

ATTENTION:
Read this so no one gets hurt

We design equipment with the user's safety in mind. You can avoid the potential hazards identified on this machine by following the procedures outlined below and elsewhere in the User Guide.

⚠ WARNING: Improper installation, operation or servicing may result in equipment damage or personal injury.

This equipment should be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation and potential hazards of this type of machine.

All wiring, disconnects and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the the machine serial tag and data plate.

⚠ WARNING: Voltage hazard

This equipment is powered by single-phase alternating current, as specified on the machine serial tag and data plate.

A properly sized conductive ground wire from the incoming power supply must be connected to the chassis ground terminal inside the electrical enclosure. Improper grounding can result in severe personal injury and erratic machine operation.

Always disconnect and lock out the incoming main power source before opening the electrical enclosure or performing non-standard operating procedures, such as routine maintenance. Only qualified personnel should perform troubleshooting procedures that require access to the electrical enclosure while power is on.

SAFETY PRECAUTIONS

Although this product is designed with operator safety in mind, it is imperative that certain precautions be adhered to:

1. Keep fingers away from the auger! The auger is driven by a high torque gearmotor and is not easily stalled. Never place fingers or objects into the drainport (at the base of the hopper), the drive coupling area, or the throat adapter without first disconnecting the Feeder from the power source. Remove the auger for cleaning (see auger removal).

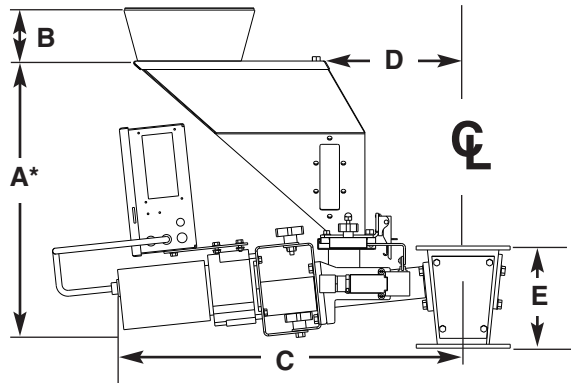
2. Disconnect all power when servicing control panel, including processing machine hookups.

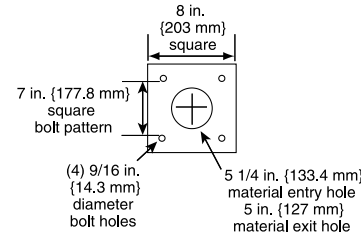
Observing these two simple rules might prevent serious or fatal injury.

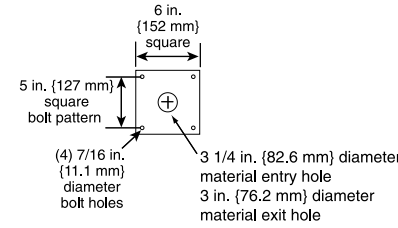
SECTION

2

Specifications and Model Description







MODEL		BFS				
Auger sizes	inches	3/8 X 1/4	3/8 X 3/8	1/2 X 1/2	3/4 X 3/4	1 X 1
	mm	{9.53 X 6.35}	{9.53 X 9.53}	{12.70 X 12.70}	{19.05 X 19.05}	{25.40 X 25.40}
Performance Characteristics - pellets only						
Throughput@9 rpm, Injection†	grams/sec	0.005 to 0.05	0.006 to 0.06	0.015 to 0.15	0.051 to 0.51	0.108 to 1.08
Throughput@9 rpm, Extrusion†	lb/hour	0.042 to 0.42	0.051 to 0.51	0.12 to 1.2	0.42 to 4.2	0.87 to 8.7
Throughput@30 rpm, Injection†	grams/sec	0.016 to 0.16	0.02 to 0.2	0.05 to 0.5	0.17 to 1.7	0.36 to 3.6
Throughput@30 rpm, Extrusion†	lb/hour	0.14 to 1.4	0.17 to 1.7	0.40 to 4.0	1.4 to 14.0	2.9 to 29.0
Throughput@64 rpm, Injection†	grams/sec	0.034 to 0.34	0.043 to 0.43	0.107 to 1.07	0.363 to 3.63	0.77 to 7.68
Throughput@64 rpm, Extrusion†	lb/hour	0.297 to 2.97	0.363 to 3.63	0.85 to 8.53	2.98 to 29.8	6.19 to 61.86
Throughput@95 rpm, Injection†	grams/sec	0.05 to 0.51	0.063 to 0.63	0.158 to 1.58	0.538 to 5.38	1.14 to 11.40
Throughput@95 rpm, Extrusion†	lb/hour	0.44 to 4.43	0.538 to 5.38	1.27 to 12.67	4.43 to 44.34	9.18 to 91.84
Throughput@170 rpm, Injection†	grams/sec	0.09 to 0.91	0.113 to 1.13	0.283 to 2.83	0.963 to 9.63	2.04 to 20.4
Throughput@170 rpm, Extrusion†	lb/hour	0.79 to 7.93	0.96 to 9.63	2.27 to 22.67	7.93 to 79.34	16.43 to 164.34
Hopper capacity	ft^3 {liter}	0.68 {19.2}	0.68 {19.2}	0.68 {19.2}	0.68 {19.2}	0.68 {19.2}
Motor power	Hp {kW}	1/8 {0.093}	1/8 {0.093}	1/8 {0.093}	1/8 {0.093}	1/8 {0.093}
Gear motor output	rpm	0 - 9, 0 - 30, 0 - 60, 0 - 95, 0 - 170				
Dimensions inches {mm}						
Top/bottom throat adapter plate		6 X 6 {152 X 152}		8 X 8 {203 X 203}		
A - Overall height - with removable hopper		21.6875 {550.9}		21.6875 {550.9}		
A - Overall height - with standard hopper		21.3125 {541.3}		21.3125 {541.3}		
B - Loader lid adapter height‡ (optional)		3.375 {85.7}		3.375 {85.7}		
C - Length to centerline throat plate		22.5 {571.5}		23.5 {596.9}		
D - Hopper to centerline throat plate		8.875 {225.4}		9.875 {250.8}		
E - Throat adapter height		6.5 {165.1}		7 {177.8}		
Weight lb {kg}						
Installed		61 {27.7}				
Shipping		110 {49.9}				
Voltage Total running amps						
120/1 phase/60 Hz		4				
240/1 phase/50-60 Hz		2				

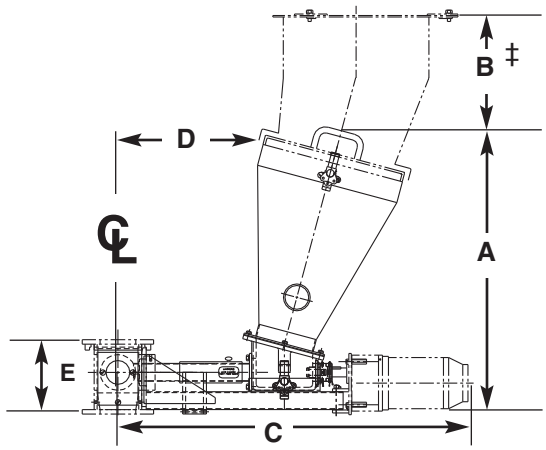
SPECIFICATION NOTES

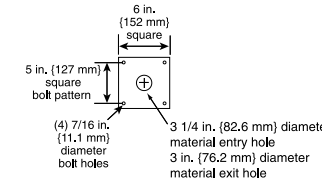
* Overall height is different with the optional removable hopper. See the specification table.

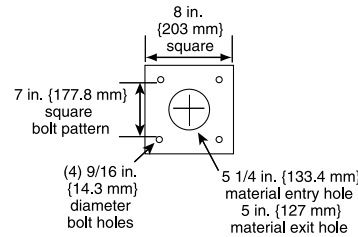
† Throughput is dependent upon the combination of auger and motor rpm selected.

‡ Optional loader adapter lid is shown for use with 8 inch and TLM tube loader, standard is supplied with a handfill lid.

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







MODEL		BFH				
Auger sizes	inches {mm}	1/2 X 1/2 {12.7 X 12.7}	3/4 X 3/4 {19.05 X 19.05}	1 X 1 {25.4 X 25.4}	1 1/2 X 1 1/2 {38.1 X 38.1}	2 X 2 {50.8 X 50.8}
Performance Characteristics (pellets and free flowing powder*)						
Throughput@9 rpm, Injection†	grams/sec	0.015 to 0.15	0.036 to 0.36	0.087 to 0.87	0.280 to 2.90	0.581 to 5.81
Throughput@9 rpm, Extrusion†	lb/hour	0.102 to 1.02	0.280 to 2.90	0.730 to 7.30	2.180 to 21.80	4.360 to 43.60
Throughput@30 rpm, Injection†	grams/sec	0.048 to 0.48	0.120 to 1.20	0.290 to 2.90	0.968 to 9.68	1.936 to 19.36
Throughput@30 rpm, Extrusion†	lb/hour	0.339 to 3.39	0.968 to 9.68	2.419 to 24.19	7.260 to 72.60	14.57 to 145.20
Throughput@64 rpm, Injection†	grams/sec	0.100 to 1.00	0.250 to 2.50	0.600 to 6.00	2.000 to 20.00	4.000 to 40.00
Throughput@64 rpm, Extrusion†	lb/hour	0.700 to 7.00	2.000 to 20.00	5.000 to 50.00	15.00 to 150.00	30.00 to 300.00
Throughput@95 rpm, Injection†	grams/sec	0.153 to 1.53	0.383 to 3.83	0.919 to 9.19	3.065 to 30.65	6.129 to 61.29
Throughput@95 rpm, Extrusion†	lb/hour	1.072 to 10.72	3.065 to 30.65	7.660 to 76.60	22.98 to 229.8	45.97 to 459.7
Throughput@170 rpm, Injection†	grams/sec	0.266 to 2.66	0.685 to 6.85	1.650 to 16.50	5.484 to 54.84	10.968 to 109.68
Throughput@170 rpm, Extrusion†	lb/hour	1.919 to 19.19	5.480 to 54.80	13.71 to 137.10	41.13 to 411.3	82.26 to 822.6
Hopper capacity	ft^3 {liter}	0.62 {17.5}	0.62 {17.5}	0.62 {17.2}	0.62 {17.2}	0.62 {17.2}
Motor power	Hp {kW}	1/8 {0.19}	1/8 {0.19}	1/8 {0.19}	1/8 {0.19}	1/8 {0.19}
Gear motor output	rpm	0 - 9, 0 - 30, 0 - 60, 0 - 95, 0 - 170				
Dimensions inches {mm}						
Top/bottom throat adapter plate		6 X 6 {152 X 152}		8 X 8 {203 X 203}		
A - Overall height		23.5 {596.9}		23.5 {596.9}		
B - Loader lid adapter height‡ (optional)		10 {254.0}		10 {254.0}		
C - Length to centerline throat plate		29.25 {743.0}		30.25 {768.4}		
D - Hopper to centerline throat plate		12.4 {315.0}		13.4 {340.4}		
E - Throat adapter height		6.25 {158.8}		6.25 {158.8}		
Weight lb {kg}						
Installed		61 {27.7}				
Shipping		110 {49.9}				
Voltage Total running amps						
120/1 phase/60 Hz		4				
240/1 phase/50-60 Hz		2				

SPECIFICATION NOTES

* Powder requires a different auger.

† Throughput is dependent upon the combination of auger and motor rpm selected.

‡ Standard handfill loading is shown in measurement “A”. Optional adapter also shown in measurement “B” available for 8-inch, TLM tube loader and 12-inch loaders.

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

SECTION

3

Installation

Installation

The BFS and BFH feeder throat adapters with a 3" Dia. outlet are factory drilled with a 5" sq. bolt pattern on top and bottom of a 6 x 6 plate. The top plate is provided with (4) 3/8" - 16 UNC tapped holes (on a 5" square pattern) to accommodate the Conair HandyHopper or other Conair equipment.

The bottom plate is provided with (4) clearance holes for 3/8" - 16 UNC bolts (on a 5" square pattern) for mounting to machine. It may be necessary to fabricate an interface plate to fit between your machine and the feeder adapter. There is also a throat adapter with a 5" dia. outlet with 8" x 8" top and bottom plates and 7" x 7" bolt patterns.

The BFS feeder can mount to the adapter in two positions by reinstalling the three mounting bolts through the flanged portion of the auger casting.

The BFH feeder can mount in any of the four positions as follows:

1. Tilt the feeder canister mount slightly upward until front plate slides under holding bar. When canister mount is pushed to a horizontal position, it is then locked in place. Align hole in canister mount with hole in adapter housing by moving side to side as needed.
2. Slide bushing toward base of auger housing and set canister in place. Hole in aluminum base must fit over pin in canister mount. Slide bushing into place and tighten thumb screw. Fasten clamps securing canister base.

3. Mount Conair HandyHopper or machine hopper on feeder adapter if included.

4. Wire signal input(s) into the Feeder control (*See section 4, Control Functions and Setup*).

5. Plug unit into a 115 VAC outlet and test operation.

For Injection Molding Models, test by setting the "cycle time" to a desired test interval, selecting a rate with the "speed adjust" push buttons, then moving the "main switch" to the CALIBRATE position and pressing the "calibrate" push button. Auger should turn freely and speed should adjust easily with "speed adjust" push buttons.

For Extruder Tracking Models, test by selecting a rate with the "speed adjust" pushbuttons and moving the "main switch" to the CALIBRATE position, then pressing and holding the "calibrate" push button. Auger should turn freely and speed should adjust easily with "speed adjust" push buttons while the "calibrate" push button is depressed.

SECTION

4

Control Overview

Control Functions and Setup

Two controls are offered: The injection molding and extruder tracking models, both shown on the following page. Their basic functions can be summarized as follows:

INJECTION MOLDING CONTROLS
These controls run intermittently based on a customer supplied start signal and timed interval, or customer supplied start and stop signals. Adjustments include timer and speed settings on the control front panel. Calibration can be accomplished through the on-board timer.

See appendix for wiring instructions contained in the following prints:

Control Assembly 614-223
Wiring Diagram (115 VAC) 614-229-01-01
Wring Diagram (230 VAC). 614-229-01-02

EXTRUDER TRACKING CONTROLS
These controls run continuously and normally follow a customer supplied analog input signal from the extruder. Adjustments include the speed setting on control front panel and isolator board inside the control. NOTE: See Appendix for Isolator Board Adjustment

In some cases, customers may elect not to slave the feeder to the extruder. In those situations, the feeder will operate at the preset speed (rate) as long as the extruder interlock contact is closed.

See appendix for wiring instructions contained in the following prints:

Control Assembly 614-224
Wiring Diagram (115 VAC) 614-229-02-01
Wiring Diagram (230 VAC) 614-229-02-02

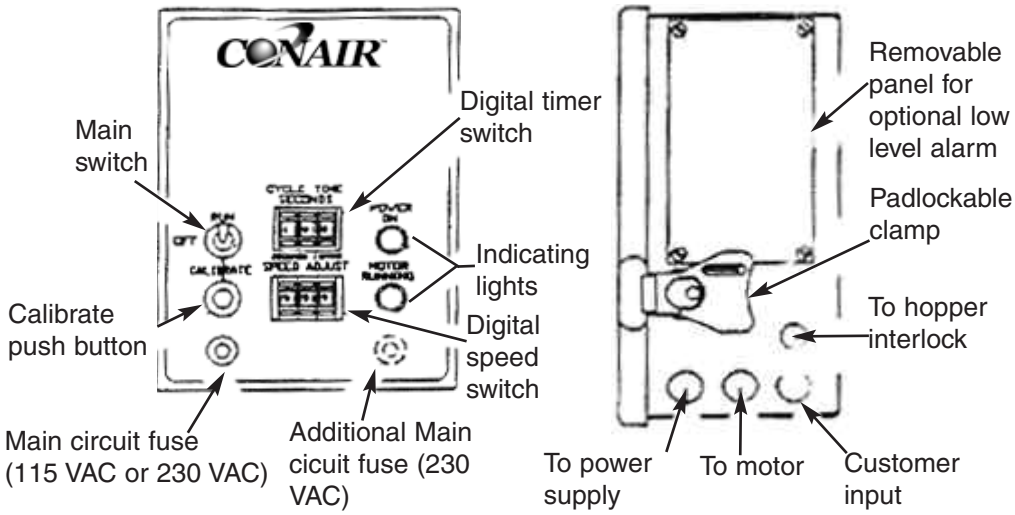
LOW LEVEL ALARM OPTION
Available from factory or as a retrofit for 614-223 and 614-224 controls. Provides audio and visual alarms indicating material is low in feeder hopper.

Adjusting sensor sensitivity - Turn the trimpot clockwise until the LED energizes. Slowly turn the trimpot counter-clockwise until the LED de-energizes. Turn the trimpot an additional 1/4 turn counterclockwise. Check adjustment by holding your hand approximately 1/4" from the sensor tip and the LED should energize.

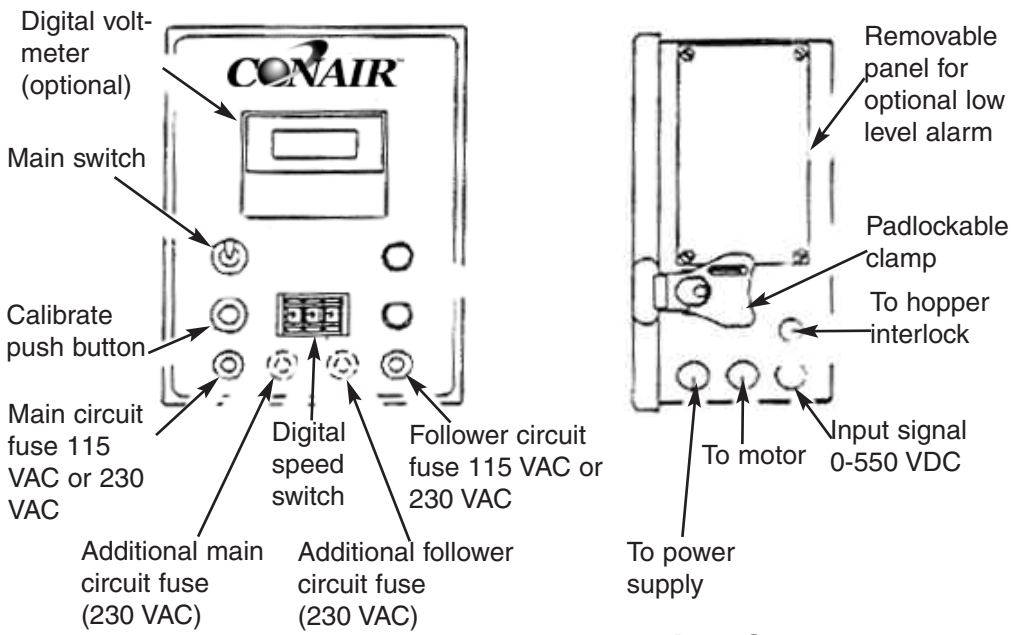
See appendix for wiring instructions contained in the following prints:

Alarm Assembly 107-451
Alarm wiring diagram 107-452

Control Overview



Layout Injection Control



Layout Extruder Tracking Control

SECTION

5

Feeder Operations

Injection Molding Operation and Calibration

The Injection molding feeder control starts and stops with a signal from the molding machine. This signal can either be a N.O. limit switch mounted on the machine, a set of relay contacts in the machine control, ("LS" on the wiring diagram) or a voltage signal from the injection machine control which is connected to relay coil "PR" in the feeder control.

Once you select which of these methods to be used, refer to the wiring diagram # 614-229-01-01 (120 VAC) or # 614-229-01-02 (220 VAC) to properly setup the jumpers (Ø) on the vertical terminal strip. The feeder is shipped in the (-01) configuration which initiates the digital timer to the screw recovery time (set by customer) from "one" of the above mentioned methods. The (-02) configuration varies from above in that it both initiates the feeder operation and continues its operation until the contact or limit switch (LS) is opened. This mode of operation energizes the timer. The feeder operates the duration of screw recovery time. Note if this time varies, for example when operating from a voltage signal as mentioned above, the amount of color/additive will also vary.

After the feeder control is wired in the desired mode of operation, set the cycle time (same as screw recovery time) push buttons on the control front panel to the desired time interval, then set the speed adjust push buttons to the desired rate setting. (*See Calibration below*) Move the main toggle switch to RUN mode and the feeder operates automatically based on the molding machine input signal.

CALIBRATION

Since different materials feed at different rates, it is necessary to calibrate the unit for each material.

1. Prepare to collect material samples:

Model BFS - Remove the plexiglass cover plate from the adapter to provide access to the output of the auger using the attached scoop or small tray.

✎ **NOTE:** Larger material samples will require mounting Feeder on test stand or table top for access to adapter housing bottom outlet.

Model BFH - Remove the feeder from the adapter housing and place on a level test stand or table top. Material can be collected from the end of the auger as its metered.

✎ **NOTE:** To access the calibration port, locate the sleeve on the auger housing, then loosen the thumbscrew and slide the sleeve back to expose the calibration port. This calibration port should only be used for verifying consistency of shot sizes during process, not for determining rates. The rates at the calibration port will be approximately 5 % higher than at the end of the auger.

2. Fill the feeder hopper with material.

3. Flood the feeder auger with material by running the feeder manually until material starts to fall freely from the auger outlet. Run the feeder as follows:

1. Set speed adjust to 99.9 (ie: 100%).
2. Set cycle time to desired interval (Screw recovery time).
3. Move main switch to the CALIBRATE position.
4. Press the calibrate push button.

4. Retrieve the samples, weigh and average to determine max feed rate for this material and feeder setup.

5. Divide the desired gram weight by the max gram weight (from step 4). Multiply by 100 to equal percentage speed setting.

6. Set the speed rate %, then repeat step 4 to check if the samples equal the correct amount of color (minimal adjustments may be required).

Example:

Screw recovery time	- 5 sec.	
Shot size	- 200 grams	
Let down rate	- 50 : 1	
% additive	- 2% (1 / 50)	
	200 grams	(shot size in grams)
	x 0.02	(2% let down)
Desired gram weight of color	= 4 gms	(required to be spread over 5 sec. cycle time of feeder on screw recovery time)

Desired gram weight = 4 grams.
Calculate % speed setting if maximum speed setting for 5 seconds generates 8.5 grams (maximum gram weight). % speed setting = 4g/ 8.5 g x 100 = 47.1%. Enter this value as speed seating 471.

7. To determine or confirm auger selection, you can take the 4 grams (desired weight of color additive) divided by the 5 sec. (screw recovery time) = 4g / 5 sec. = 0.8 g/sec and refer to the auger rate. (*See section 5, Approximate Feed Rates*.) In this example of 0.8 grams per sec. with a BFS feeder, the correct auger selection is 1/2" auger with a 64 RPM motor which has a max rate of 1.7 g/sec. Selection of this auger/motor combination gives adjustability and places the desired feed rate in the center of the operating range.

Extrusion Operation and Calibration

In an extrusion setup, the auger runs continuously following a signal from the extruder (*See section 4, Control Function and Set up*).

Once the extruder signal has been wired to the proper feeder, adjust the isolator board to have the max extruder speed signal run the feeder at max speed with the speed switch set at 99.9. This adjustment must be done prior to calibration and must be linear. Move the main toggle switch to RUN mode and the feeder operates automatically based on the extruder input signal.

Pre-Setup

✎ **NOTE:** Steps 1 and 2 have been set at the factory and are not needed unless the speed control board has been damaged.

1. Disconnect all power to control box.
2. Drive Board:
   a. Move the *115-230 switch* to the 115 side. (For 115-120 VAC operation).
   b. Move the *90-180 switch* to the 90 side.
   c. Turn the *accel trimmer pot* to the full counter-clockwise position.
   d. Turn the *decel trimmer pot* to the full counter-clockwise position.
   e. Turn the *max spd trimmer* pot to the midrange position.
   f. Turn the *min spd trimmer* pot to the midrange position.
   g. Set the torques trimmer pot as follows according to the horsepower of the motor.
      1/27 hp - set it to the 9 O'Clock position.
      1/8 hp - set it to the 11 O'Clock position.
      1/4 hp - set it to the 12 O'Clock position.
3. Isolator Board (used on extruder tracking controls only):
   a. Move the current/voltage switch to the voltage side.
   b. Set the input trimmer pot to midrange.
   c. Set the minimum output pot to midrange.
   d. Set the maximum output pot to midrange.

DRIVE CALIBRATION:

1. Drive Board
   a. Turn Power on.
   b. Set the thumbwheel to "99.9".
   c. Move the *run/cal switch* to the calibration side.
   d. Press and hold the cal button. The auger should turn.

✎ **Note:** Rather than holding the calibration pushbutton, temporarily add Jumper between wire 5 and 6 on back side of pushbutton. The feeder will now run when the toggle switch is in the calibrate position. Remove this jumper before sustained operation.

e. Adjust the *max speed pot* until you read 90 VDC on terminals 11 and 12.
f. Set the thumbwheel to "10.0".
g. Adjust the *min speed pot* until you read 9 VDC on terminals 11 and 12.
h. Set the thumbwheel to "99.9". Readjust the 90 VDC.
i. Set the thumbwheel to "10.0". Readjust the min speed pot to be 9 VDC.
j. Set the thumbwheel to "99.9". Check to see that the 90 VDC is ok.

2. Isolator Board Calibration (this procedure does need to be followed if slaving the speed control board.

a. Turn the power on. Put control in "run".
b. Set the extruder to max. Set the thumbwheel to "99.9".
c. Adjust the *input trimmer pot* until the motor is getting 90 VDC (terminals 11 and 12 on the vertical terminal strip to the right of the speed control board).
d. Set the extruder to 10% speed.
e. Adjust the *min output pot* carefully until the motor is getting 9 VDC (termi nals 11and 12.)
f. Set the control speed to 100%.
g. Adjust the *max output pot* until you read 90 VDC on terminals 11 and 12.
h. Set the extruder to 10% speed. Adjust the *min output pot* until you read 9 VDC on terminals 11 and 12.
i. Set the extruder to max. Adjust the *max output pot* until the motor is getting 90 VDC.
j. Set the extruder to idle. Check to see that the motor just stops.

MATERIAL CALIBRATION:
Since different materials feed at different rates, it is necessary to calibrate the unit with material to be run.

1. Prepare to collect material samples:

Model BFS - Remove the plexiglass cover plate from the adapter to provide access to the output of the auger using the attached scoop or small tray.

Model BFH - Remove the feeder from the adapter housing and place on a level test stand or table top. Material can be collected from the end of the auger as its metered.

✎ **NOTE:** To access the calibration port, locate the sleeve on the auger housing, then loosen the thumbscrew and slide the sleeve back to expose the calibration port. This calibration port should only be used far verifying consistency of shot sizes during process, not for determining rates.

✎ **NOTE:** Larger material samples will require mounting feeder on test stand or table top for access to adapter housing bottom outlet.

2. Fill the feeder hopper with material.

3. Flood the feeder auger with material by running the feeder until material starts to fall freely from the auger outlet. Run the feeder as follows:

1. Set speed adjust to max rate (ie: 99.9).
2. Move main switch to the CALIBRATE position.
3. Press and hold the calibrate push button. The feeder auger will turn while the button is depressed - When material falls freely from the auger, release the calibrate push button.

4. Determine the feeder output for 36 seconds at the max rate (ie: Speed Adjust = 99.9, hold calibrate push button for 36 sec).

✎ **NOTE:** In extrusion applications, longer calibration intervals will provide better accuracy when determining the feeder rates for a given material.

5. Weigh the material. For 36 sec samples, this weight multiplied by 100 will provide the feed rate in pounds/hour (kg/hr) at the max speed setting.

6. Next we determine the speed setting required by dividing the target pounds per hour desired by the pounds per hour at max speed (step 5).

Example:

Extruder max throughput = 420 lbs/hour
Additive % = 5 percent
Calculate additive amount:
420 x .05= 21 lbs /hour

If in step (4) 0.31 pounds were metered in 36 seconds x 100 (step 5) = 31 pounds per hour at max speed.

$$\text{Speed setting} = \frac{\text{target rate per hour}}{\text{maximum rate per hour}} \times 100\%$$

The desired pounds per hour is 21 PPH; 21 /31 = .677 x 100 = 67.8 % Speed. (This is the value that should be entered at speed setting)

A setting of 67.8 % will provide 21 lbs/hr or 5% of the 420 lbs/hr throughput. As the extruder speed is reduced (from maximum) the feeder speed will also decrease if the control is adjusted to be linear, the 5% additive ratio will be maintained throughout the extruder speed range.

USEFUL CONVERSION FORMULAS:

CONVERSION FORMULAS

oz x 28.35 = grams
grams x .035 = oz
grams x .0022 = lbs
lbs x 454 = grams
grams/min x .132 = lbs/ hr
lbs/hr x 7.57 = grams/ min

✎ **NOTE:** If more accurate is desired, longer calibration tests are preferred, the feeder assembly can be unbolted and removed from the throat adapter for testing off the machine on a test stand or table top. With open access to the output of the auger, calibration tests of several minutes can be made and weighed.

MOTORS: MODEL BFS/BFH

Five motors are available for the Conair feeder: 8.7 RPM, 30 RPM, 64 RPM, 95 RPM and 170 RPM. The speed control used with this system has a speed range of 50:1. This means that the standard 30 RPM motor will perform as low as 0.6 RPM. At slower settings the motor speed becomes erratic. The 8.7 RPM motor can be used for slower requirements. The 64 RPM, 95 RPM and 170 RPM motors can be used when the throughput requirements are greater than can be achieved with the 30 RPM motor - largest auger combination.

APPROXIMATE FEED RATES:

Use the following charts to determine approximate feed rates in grams/sec for injection applications or pounds/ hr for extrusion.

✎ **NOTE:** The rates shown in these charts are approximate and were determined utilizing free flowing, round pellets. Rates with other materials may vary. Test as described under "Calibration" to be sure.

Approximate Feed Rates:

BFS Injection {gr/sec}

Auger DIMS (in.)				Auger	Auger Rates (gr/sec)	
OD	Pitch	ID	Thk	RPM	MIN	MAX
3/8	1/4	1/4	0.063	9.0	0.005	0.048
				30.0	0.016	0.160
				64.0	0.034	0.341
				95.0	*0.051	*0.507
				170.0	*0.091	*0.907
3/8	3/8	1/4	0.125	9.0	0.006	0.060
				30.0	0.020	0.200
				64.0	0.043	0.427
				95.0	0.063	0.633
				170.0	*0.113	*1.133
1/2	1/2	1/4	0.125	9.0	*0.015	*0.150
				30.0	*0.050	*0.500
				64.0	0.107	1.067
				95.0	0.158	1.584
				170.0	*0.283	*2.834
3/4	3/4	5/16	0.125	9.0	*0.051	*0.510
				30.0	0.170	1.700
				64.0	0.363	3.627
				95.0	0.538	5.384
				170.0	*0.963	*9.634
1	1	3/8	0.125	9.0	*0.108	*1.080
				30.0	*0.360	*3.600
				64.0	0.768	7.679
				95.0	1.140	11.401
				170.0	2.040	20.401

* Do not use the motor/auger combinations marked * unless the customer application has unique demands.

Approximate Feed Rates:

BFS Extrusion {lb/hr and gr/sec}

Auger DIMS (in.)				Auger	Auger Rates (lb/hr)		Auger Rates (kg/hr)	
OD	Pitch	ID	Thk	RPM	MIN	MAX	MIN	MAX
3/8	1/4	1/4	0.063	9.0	0.042	0.420	0.019	0.191
				30.0	0.140	1.400	0.064	0.635
				64.0	0.297	2.970	0.135	1.347
				95.0	*0.443	*4.430	*0.201	*2.009
				170.0	*0.793	*7.930	*0.360	*3.597
3/8	3/8	1/4	0.125	9.0	*0.051	*0.510	*0.023	*0.231
				30.0	*0.170	*1.700	*0.077	*0.771
				64.0	0.363	3.630	0.165	1.647
				95.0	0.538	5.380	0.244	2.440
				170.0	*0.963	*9.630	*0.437	*4.368
1/2	1/2	1/4	0.125	9.0	*0.120	*1.200	*0.054	*0.544
				30.0	*0.400	*4.000	*0.181	*1.814
				64.0	0.853	8.530	0.387	3.869
				95.0	1.267	12.670	0.575	5.747
				170.0	*2.267	*22.670	*1.028	*10.283
3/4	3/4	5/16	0.125	9.0	*0.420	*4.200	*0.191	*1.905
				30.0	*1.400	*14.000	*0.635	*6.350
				64.0	2.986	29.860	1.354	13.544
				95.0	4.434	44.340	2.011	20.112
				170.0	*7.934	*79.340	*3.599	*35.988
1	1	3/8	0.125	9.0	*0.870	*8.700	*0.395	*3.946
				30.0	*2.900	*29.000	*1.315	*13.154
				64.0	6.186	61.860	2.806	28.060
				95.0	9.184	91.840	4.166	41.659
				170.0	16.434	164.340	7.455	74.545

* Do not use the motor/auger combinations marked * unless the customer application has unique demands.

Approximate Feed Rates:

BFH Pellet Injection {gr/sec}

Auger DIMS (in.)				Auger	Auger Rates (gr/sec)	
OD	Pitch	ID	Thk	RPM	MIN	MAX
1/2	1/2	3/16	0.125	9.0	0.015	0.150
				30.0	0.048	0.480
				64.0	0.100	1.000
				95.0	0.153	1.530
				170.0	*0.266	*2.660
3/4	3/4	5/16	0.125	9.0	*0.036	*0.360
				30.0	*0.120	*1.200
				64.0	0.250	2.500
				95.0	0.383	3.830
				170.0	*0.685	*6.850
1	1	3/8	0.125	9.0	*0.087	*0.870
				30.0	*0.290	*2.900
				64.0	0.600	6.000
				95.0	0.919	9.190
				170.0	*1.650	*16.500
1 1/2	1 1/2	3/8	0.125	9.0	*0.290	*2.900
				30.0	*0.968	*9.680
				64.0	2.000	20.000
				95.0	3.065	30.650
				170.0	*5.484	*54.840
2	2	1/2	0.125	9.0	*0.581	*5.810
				30.0	*1.936	*19.360
				64.0	4.000	40.000
				95.0	6.129	61.280
				170.0	10.968	109.680

* Do not use the motor/auger combinations marked * unless the customer application has unique demands.

Approximate Feed Rates:

BFH Powder Injection {gr/sec}

Powder injection rates are the same as pellets; see last page.

Approximate Feed Rates:

BFH Pellet /Extrusion {lb/hr and kg/hr}

Auger DIMS (in.)				Auger	Auger Rates (lb/hr)		Auger Rates (kg/hr)	
OD	Pitch	ID	Thk	RPM	MIN	MAX	MIN	MAX
1/2	1/2	3/16	0.125	9.0	0.102	1.020	0.046	0.462
				30.0	0.339	3.390	0.154	1.538
				64.0	0.700	7.000	0.318	3.175
				95.0	1.072	10.720	0.486	4.863
				170.0	*1.919	*19.190	*0.870	*8.705
3/4	3/4	5/16	0.125	9.0	*0.290	*2.900	*0.132	*1.315
				30.0	*0.968	*9.680	*0.439	*4.391
				64.0	2.000	20.000	0.907	9.072
				95.0	3.065	30.650	1.390	13.902
				170.0	*5.480	*54.800	*2.486	*24.857
1	1	3/8	0.125	9.0	*0.730	*7.300	*0.331	*3.311
				30.0	*2.419	*24.190	*0.110	*10.972
				64.0	5.000	50.000	2.268	22.680
				95.0	7.660	76.600	3.475	34.746
				170.0	*13.710	*137.100	*6.219	*62.189
1 1/2	1 1/2	3/8	0.125	9.0	*2.180	*21.800	*0.988	*9.875
				30.0	*7.260	*72.600	*3.293	*32.931
				64.0	15.000	150.000	6.804	68.040
				95.0	22.980	229.800	10.424	104.237
				170.0	*41.130	*411.300	*18.657	*186.566
2	2	1/2	0.125	9.0	*4.360	*43.600	*1.978	*19.777
				30.0	*14.520	*145.200	*6.586	*65.863
				64.0	30.000	300.000	13.608	136.080
				95.0	45.970	459.700	20.852	208.520
				170.0	82.260	822.600	37.313	373.131

* Do not use the motor/auger combinations marked * unless the customer application has unique demands.

Approximate Feed Rates:

BFH Powder Extrusion {lb/hr}

Powder extrusion rates are the same as pellets; see last page.

AUGER REMOVAL: MODEL BFS

NOTE: Augers are not interchangeable on the Model BFO feeder.

1. Disconnect power to the control enclosure.

2. Loosen the two knobs that secure the motor/control assembly to the auger assembly. The motor can now be swung back out of the way.

3. Loosen and remove the two thumb screws that secure the retainer plate behind the auger drive coupling.

4. The auger (and housing if used) can now be pulled out of the cast aluminum feeder assembly.

5. To reinstall, reverse the above procedure.

EMPTYING SUPPLY HOPPER: MODEL BFS

The Feeder supply hopper can be removed for easy material changes and clean out.
Empty the supply hopper as follows:
1. Disconnect power.

NOTE: The feeder hopper with material slide gate is equipped with an electrical interlock to prevent the auger from turning when the hopper is removed. However, we recommend disconnecting power as an added precaution.

2. Turn off, or disconnect power to any hopper loading devices on the feeder.

3. To remove supply hopper, first close material slidegate at base of hopper and lock in place with threaded fastener. Support supply hopper with hand and loosen clamp at base of hopper, then carefully lift hopper away from auger housing.

4. For full clean out, remove the auger as detailed above and clean out cast aluminum housing.

EMPTYING SUPPLY HOPPER: MODEL BFH

The feeder hopper assembly and auger housing can be removed together for easy clean out and material changes. To remove, proceed as follows:
1. Disconnect power.

2. Turn off, or disconnect power to any hopper loading devices on the feeder.

3. Loosen thumbscrew and slide bushing along auger housing away from throat adapter housing.

4. Unfasten clamps at canister base.

5. Move canister base forward far enough to separate motor drive pin from auger drive coupling.

6. Lift hopper assembly and auger housing away from canister mount.

AUGER/SLEEVE CHANGE: MODEL BFH

1. Complete all steps described above under emptying supply hopper.

2. Unbolt (4) fasteners holding auger/sleeve housing from base casting of supply hopper.

3. Remove roll pin holding motor coupling to motor shaft.

4. Reverse steps 1-3 with replacement auger/sleeve assembly.

ACCESSORIES: (see following page for diagram)

1. For automatic filling of the feeder hopper consult Conair for applicable vacuum loaders and loader/lid adapters.

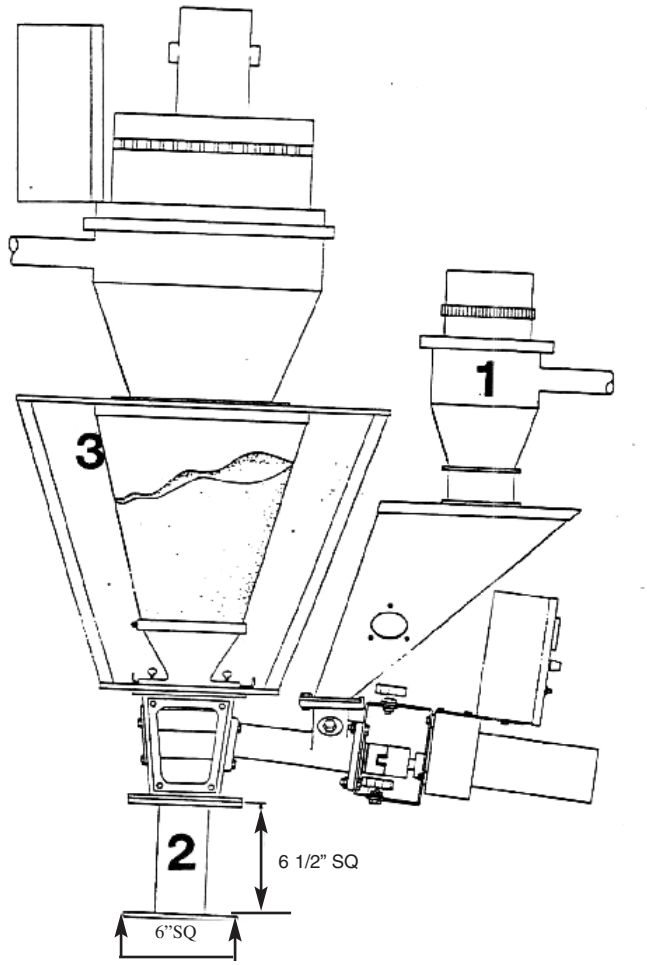
2. Spacers are available to raise the feeder, or equipment mounted above it to provide clearance between the feeder and associated equipment. The spacers can be used above or below the Feeder throat adapter.

3. Use of the Conair HandyHopper for base resin material supply is recommended. Capacity is 1-1/2 cu.ft. Conair manufactures a complete line of vacuum loaders to automatically fill supply hoppers. Consult your Conair representative for the proper model for your application.

4. For quick clean out, Conair offers a spare Feeder hopper assembly with material slide gate and electrical interlock. (model BFS only - not shown)

ACCESSORIES

5. A material Low Level Alarm Kit is available for retrofit into the Feeder control with sensor for supply hopper. (Not shown -See Control Operations)



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, 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.