CONAIR
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USERGUIDE

Micro Feeder Instructions

⚠ **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This manual is out-of-date and is provided only for its technical information, data and capacities.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containing warnings, information, precautions, and procedures that may be more adequate than those contained in this out-of-date manual.

Voltage: 115 Volts 60 Hz

Auger Sizes:	O.D.	Pitch	Sleeve I.D.
	3/8"	3/8"	5/8"
	1/2"	1/2"	3/4"
	3/4"	3/4"	1-1/8"
	1/2"	1/4"	3/4"
	3/4"	3/8"	1-1/8"

RPM Range .3 to 6.5 RPM Max.

Approximate Rates: * .6 gr/min thru 32 gr/min

External Controls:
- Inj: A. N.O. limit switch;
  B. 115 volts (requires simple internal modification);
  C. other voltages (requires alternative relay that matches voltage).
- Extr: A. N.O. limit switch (simple ON/OFF operation);
  B. 0-9 VDC (for slaving to extruder speed).

* Varies depending on material and application.

Installation - Single additive units

1. Separate the micro-feeder from its mounting plate. The blind mounting plate may be drilled to match your machine, drawer magnet, or Conair intermixer. In some cases, an additional adaptor plate may be required to fit between your machine and the micro-feeder mounting plate.

2. Install the micro-feeder on the mounting plate. Orient as desired placing controls, cables, and the calibration end plate in the best position possible. A locking set screw is provided.

3. Before filling either hopper, double check that both hoppers are clean, and empty of instructions, packing materials, etc. Check that the proper auger and sleeve are in place, and that the calibration diverter end plate is properly secured. (See Figure 2, page 3). Close both slide gates located at the base of the supply hoppers.

4. Your micro-feeder may be equipped to receive a hopper loader on the larger, main material supply hopper, for automatic filling. Orient the loader, bolt in place, and load the hopper.

Hand loading can be done by simply opening the larger portion of the lid, filling, and closing.

5. Color concentrate or any pelletized additive may be hand loaded through the smaller, hinged lid section.

Installation - Dual additive units

Dual additive units provide the main material supply with the introduction of two additives, from two distinct feeders. The concentrate hoppers are located at right angles to each other; one coupled to the main material

CONAIR MICRO-FEEDER INSTRUCTIONS

Specifications: -

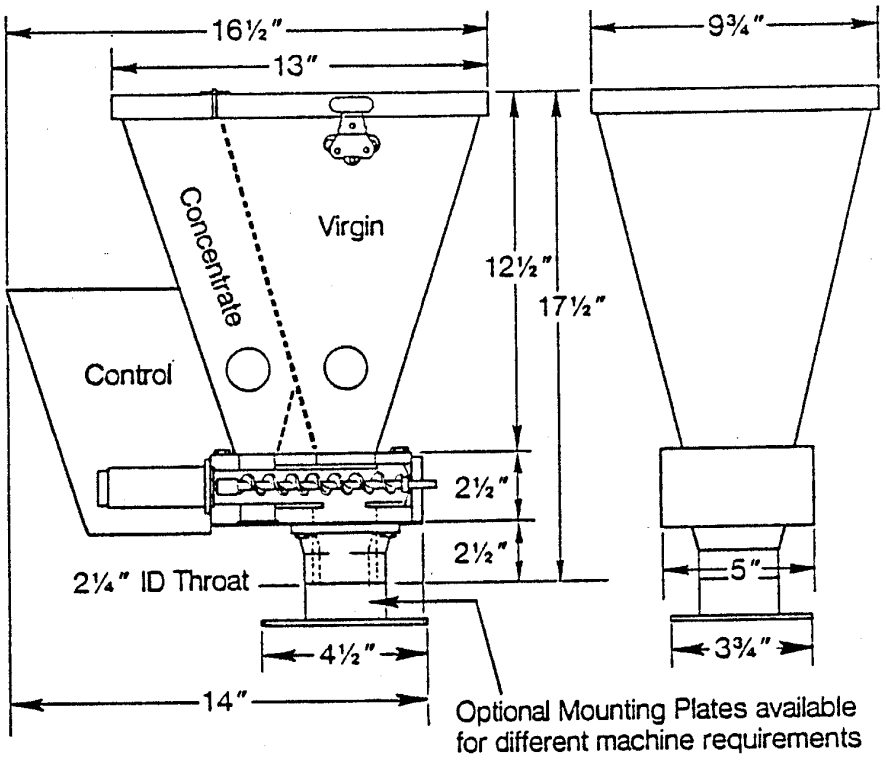


Figure 1

supply hopper, identical to the single additive unit, and the other hopper adjacent to it, with its own control. The actual feeder units are bolted together, one on top of the other, providing independent feeding into the main material flow. When installing the dual unit, provide access to both sets of controls, the lids of the concentrate hoppers, and the calibration end plates.

Electrical Hook-Up - (See wiring diagram)

All micro-feeders require 115 VAC for operation. A power cord is provided for this supply.

The control of the micro-feeder is equipped to operate in four distinct modes.

- Injection with external contacts
- Injection with external voltage
- Extrusion with external contacts
- Extrusion with slaved speed control

The micro-feeder is equipped with a twist-lock cord set tied into the control that can be used for these external connections. This three-pin plug/socket should be connected to your processing machine by a competant electrician, observing conventional color coding:

Center Pin = ground or green
Silver Blade = neutral (where applicable) or white
Copper Blade = hot (where applicable) or black

Refer to the wiring diagram packed with these instructions for proper connections within the micro-feeder.

1. Injection Operation - external contacts - This mode employs a normally open set of contacts within the Injection Molding Machine to turn the Micro-feeder on during the screw retraction phase of operation. The N.O. set of contacts should close during retraction only.

2. Injection with External Voltage - This mode employs a voltage source within the molding machine to trigger a relay, which starts the micro-feeder. The micro-feeder is equipped with a relay for 110 volts AC. If other voltages are to be used, the internal relay ("PR" on the wiring diagram) must be changed to match this voltage.

Note the wiring changes required on the wiring diagram for this mode of operation. In addition, the plug/socket set used to connect the feeder to your machine should be re-wired to place the female socket on the molding machine portion of the cable set. This will prevent the possibility of electrical shock, or short circuit when the feeder is unplugged from the molding machine. The feeder end of this cord set should be equipped with the male plug, and wired to terminals 5 and 6 within the micro-feeder control.

3. Extrusion with External Contacts - This mode employs a set of normally open contacts within the extruder to insure that when the extruder stops, the micro-feeder stops. In this mode, the contacts should be closed during normal operation of the extruder.

4. Extrusion with slaved speed control - In this mode the feeder meters material at a rate directly proportional to the extruder speed, using a 0 to 9 volts DC signal from the extruder. This linear voltage signal feeds the DC motor control of the micro-feeder. This mode utilizes an optional control package equipped with an LCD readout for voltage, a bypass switch and all the components of the standard control. In this application, the speed control of the control only scales the speed range of the feeder.

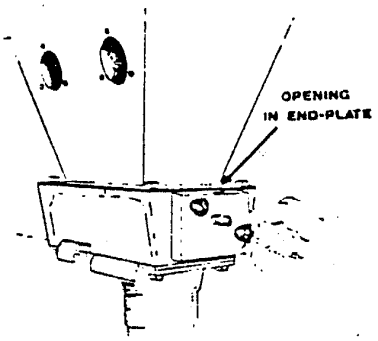
Operation:

The micro-feeder operates in two ways:
- Normal (usually with a signal from the processing machine) and
- Calibration (for obtaining timed samples)

In normal operation the micro-feeder starts and stops with screw retraction on injection molding machines, or runs continuously on extruders. Speed may be adjusted with the ten turn potentiometer on the control. The power switch provides power to the control and the calibration switch provides an "on" condition for calibration - regardless of the external input signals. This switch should be "off" for normal operation. Be sure to open the slide gate for the main material flow directly above the discharge outlet. Do not open the concentrate cleanout slide gate.

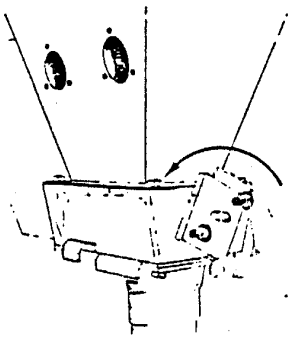
Calibration - (See Figures 2, 3, 4)

Since different materials feed at different rates, it is necessary to calibrate the unit and make a small chart or graph for each material. A "calibration end-plate" is provided on the micro-feeder for this purpose. The end plate may be rotated to obtain metering samples from the installed auger/sleeve combination. When rotated, the end plate rotates the auger sleeve, shutting off material feed to the feeder discharge and directing it to the end plate, equipped with a small channel for the material to flow through, into a container. To setup the micro-feeder for sampling, hold in on the calibration end plate while unscrewing the two thumbscrews. The thumbscrews are spring-loaded, yet captive, so they cannot be lost. Once the screws are loosened, gently rotate the endplate 180° to position the open channel down, adjacent to the exposed opening in the feeder's cast body. Screw in the thumbscrews to secure the end plate and the unit is ready for timed sampling.



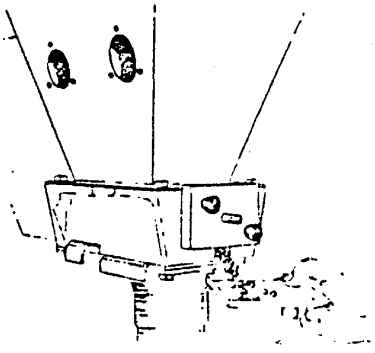
NORMAL OPERATION POSITION

FIG. 2



CHANGING END-PLATE POSITION

FIG. 3

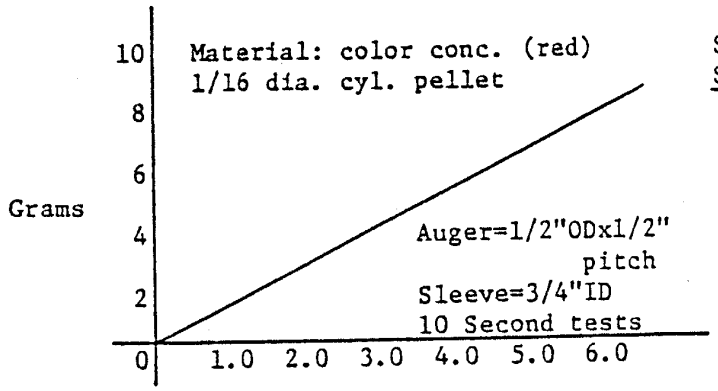


CALIBRATION POSITION

FIG. 4

NOTE: In the event that the calibration end plate should slip from its flush position against the micro-feeder body, pellets may become trapped within the auger cavity, preventing correct re-installation of the assembly. Drain the concentrate hopper, clean out the auger cavity, and re-install firmly before attempting normal operation or calibration.

Once the micro-feeder is properly setup for sampling, run the unit with the calibration switch for ten seconds at a time at various speed settings and establish a chart or graph as shown below. Be sure to keep a record of the calibrated material, auger, and sleeve.



Speed Setting	Grams
1.0	2
2.0	4
3.0	5
4.0	6
5.0	7
6.0	9

The retrieved weight of the material divided by 10 will give the resultant grams/sec. at any speed tested. Once a feed rate is established, simple mathematics will determine proper settings.

Example: (Injection)
Inj. Time - 3 sec.
Shot size - 6 oz.
Let Down - 5 percent

6 oz. x 28.35 = 170.0 grams (shot size in grams)
x .05 (5% let down)
8.5 grams (conc. quan. to be spread over 3 sec.)

8.5 g ÷ 3 = 2.8 grams/sec.

Looking at the graph, 2.8 grams/sec. can be obtained at a speed setting of about 2.1 on the dial.

Extrusion Calibrations:

In extrusion applications, the auger runs continuously, so it is just a matter of selecting the proper speed setting. Proceed as described above, but instead of working with shot sizes in ounces, you will calculate micro-feeder settings based on lbs/hr throughputs.

Example: (Extrusion) Throughput: 75 lbs/hr
Let Down: 5%

75 x 454 =	34,050	grams/hr (throughput in grams)
	x .05	(let down)
	1702.5	(grams/hr concentrate)
	÷ 360	(hrs. to sec conversion)
	4.73	(grams/sec of concentrate)

Looking at the previous chart, 4.73 grams/sec can be obtained with a setting of 3.8 on the dial.

NOTE: If more accurate, longer calibration tests are preferred, the micro-feeder can be removed from the process machine and operated on a bench. The output from the sampling port can then be recovered over longer periods of time, increasing your testing accuracy.

Useful 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

Auger Removal/Clean-Out

Full cleanout of the micro-feeder should be performed whenever materials are changed, and concentrate cleanout must be performed before changing out the auger/sleeve assembly. First, empty out the concentrate using the slide gate at the base of the concentrate hopper.

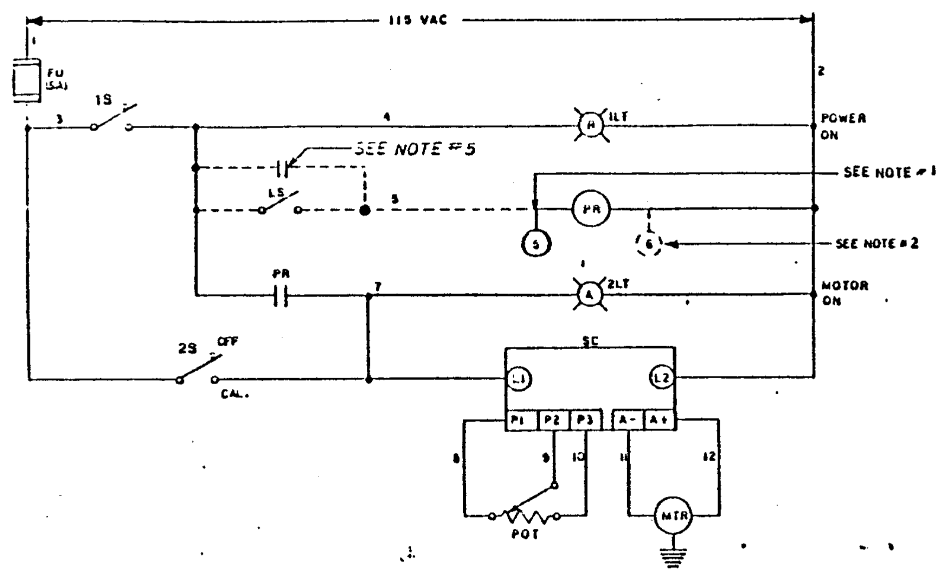
The auger/sleeve assembly is accessible through the calibration end-plate. Release the two thumbscrews and remove the end-plate. The auger may be removed at the same time by holding on to the knurled shaft end, protruding through the end-plate. The auger sleeve is keyed to move with the end-plate, and may come out with it. If not, it is easily accessible just inside the auger cavity.

Auger Replacement

After a thorough cleaning, (especially the auger cavity) the auger/sleeve assembly may be re-installed. Pay close attention to re-insertion of the sleeve: It has two openings along its length, one in the middle, and one on the end. The opening on the end should face out of the auger cavity and be positioned directly adjacent to the channel cut into the calibration end-plate. Two locating pins on the end plate will facilitate re-installation. Insert the knurled end of the auger into the sleeve and end plate, then slip the three piece assembly into the auger cavity. Rotate the protruding knurled end of the auger to lock it into place on the metering motor drive pin. Secure the screws on the end-plate in either normal operation or calibration positions.

Service (Disconnect Power for ANY servicing)

The only service required on the micro-feeder, not covered by periodic cleaning, would be fuse replacement. There are three fuses in the micro-feeder control. The main fuse is easily visible on the control face and may need replacement if problems occur regarding supply power or incorrect hook-up to the processing machine. The two other fuses may be reached by removing the control box from the feeder assembly and exposing the printed circuit board located at the rear of the control enclosure. One of these fuses may open in the event of motor overload or very rapid on/off cycles in either the normal operation or calibration modes. To remove the control, remove the two hex head bolts that secure the lower mounting flange of the control box to the face of the feeder's cast body. Pull the control straight off, carefully unwinding the wires connected to the metering motor, located in the lower portion of the control enclosure. Two fuses are located here, one above the other. The top fuse provides line voltage protection similar to the function of the outside, panel mounted fuse. The lower fuse, as described above, protects the motor speed control circuitry. Replace it with only 2 amp Slo Blo fuses. Be sure to replace the fuses with identical sizes and ratings.



ITEM NO	SYM	NO REQD	PART NO	DESCRIPTION
1	FU	1	108-145-05	FUSE (5A) LITTELFUSE 314005 OR BUSS MDC-5
2	1,2S	2	203-001-02	SWITCH (SPST) CH # 7500K13
3	1LT	1	204-021-01	PILOT LIGHT (RED) JEMCO XL SERIES
4	2LT	1	204-021-02	PILOT LIGHT (AMBER) JEMCO XL SERIES
5	PR	1	200-032-04	POWER RELAY AROMAT # JA1A-TM-AC115V
6	MTR	REF.	107-188	MOTOR ASSEMBLY - THW NO. 319A140-25
7	SC	1	209-514-02	SPEED CONTROL KB ELECTRONICS # KB.C-14
8	POT	1	206-005-46	POTENTIOMETER (5K-10TURN-2W) (SPECTROL # 534)
9				
10				

NOTES.

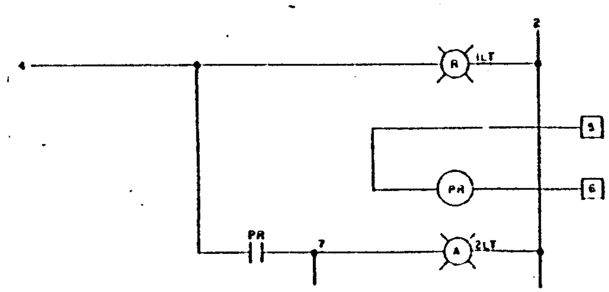
1. TO OPERATE UNIT, CONNECT COMMON OF MACHINE LIMIT SWITCH TO LINE 4, & NORMALLY OPEN TO LINE 5. FOR INJECTION ONLY.

2. TO OPERATE FEEDER WITH EXTERNAL VOLTAGE DISCONNECT PR COIL FROM LINE 2 AND CONNECT TO TERMINAL 6 EXTERNAL VOLTAGE CAN THEN BE CONNECTED TO 5 AND 6. PR MUST BE REPLACED IF VOLTAGE IS OTHER THAN 115VAC

3. REFER TO SPEED CONTROL INSTRUCTION MANUAL FOR ADJUSTMENT OF SC

4. 2S MUST BE TURNED TO CALIBRATE AND TIMED FOR METERING CHECKS. MUST BE OFF FOR AUTOMATIC OPERATION.

5. *TO OPERATE UNIT CONTINUALLY FOR EXTRUDER OPERATION, CONNECT N.O. RELAY CONTACTS FROM EXTRUDER TO 4+5,*



TERMINAL STRIP

1	2	4	5	6	—

LTR	DATE	REVISIONS	BY	CHD	APP
A	1/7/?	RELEASED			

conair FRANKLIN PENNSYLVANIA 16323

WIRING DIAGRAM FOR MICROFEEDER CONTROL

TOLERANCE UNLESS OTHERWISE SPECIFIED FRACTIONAL ± DECIMAL ± .005 ANGULAR ± DIMENSIONS SHOWN IN [ ] ARE IN MILLIMETERS

DWN RS | DATE 10-3-84 | SCALE NONE

SHT 1 OF 1 SHTS | 107-187 | A

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 loading control 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.

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

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.