CONAIR
www.conairnet.com

USERGUIDE
IMA-015-H2
10/94

Feeder / Additive Metering Unit

Models BF0 and BF6

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This manual is out-of-date and is provided only for its technical information, data and capacities.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containing warnings, information, precautions, and procedures that may be more adequate than those contained in this out-of-date manual.

TABLE OF CONTENTS

Safety Precautions 3

Specifications

Model BF0 Feeder 4
Model BF6 Feeder 5

Installation 6

Control Overview

Injection Molding Controls 7
Extrusion Controls 7
Low Level Alarm (Optional) 7
Sensor Adjustment

Feeder Operation

Injection Molding Operation 9
Calibration
Extrusion Operation 11
Calibration
Useful Conversion Formulas 13
Motors (Model BF0 Only) 14
Approximate Feed Rates 14
Model BF0
Model BF6
Auger Removal (Model BF0 Only) 15
Emptying Supply Hopper 16
Accessories 17

Appendix

Isolator Board Setup 19
Model BF0 Assembly BF0
Model BF6 Assembly BF6
Injection Molding Control Assembly 107-437
Injection Molding Schematic (115 VAC) 107-439-01
Injection Molding Schamatic (230 VAC) 107-439-02
Extrusion Control Assembly 107-438
Extrusion Control Schematic (115 VAC) 107-440-01
Extrusion Control Schematic (230 VAC) 107-440-02
Low Level Alarm Assembly 107-451
Low Level Alarm Schematic (115/230 VAC) 107-452

SAFETY PRECAUTIONS:

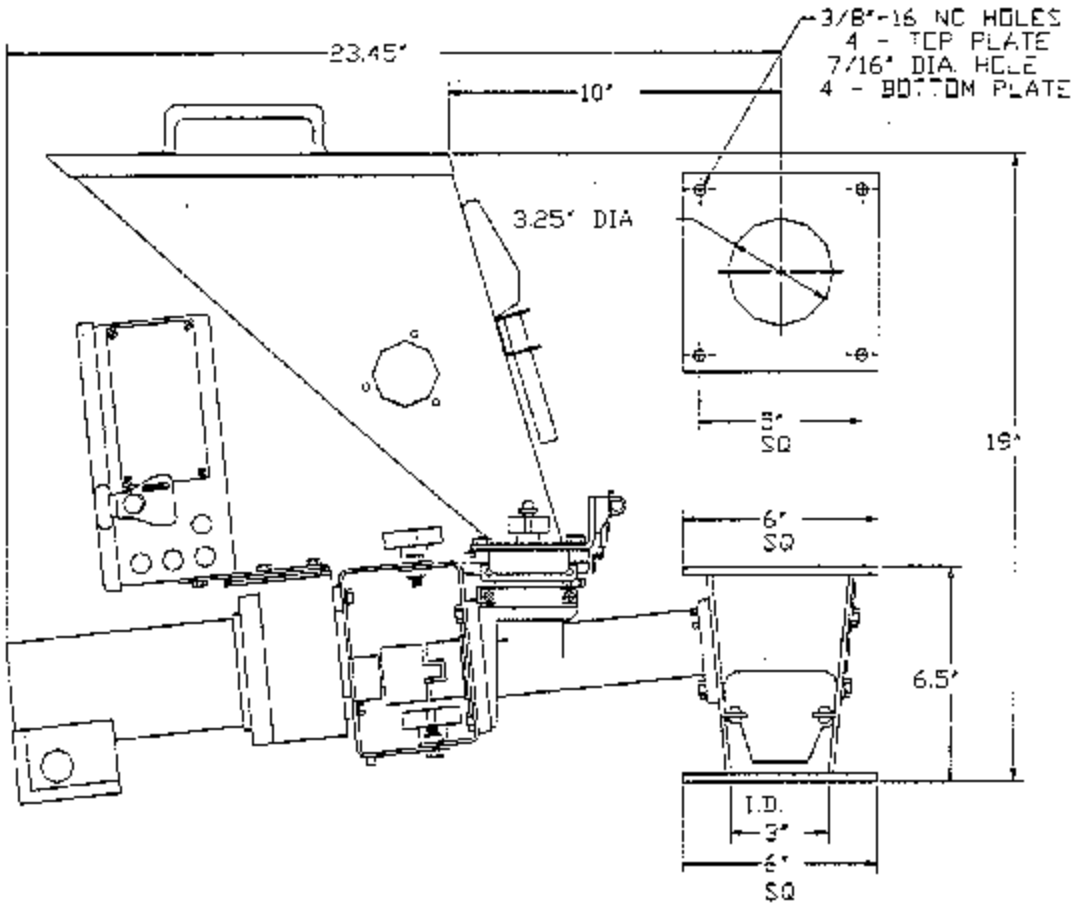
Although this product is designed with operator safety in mind, it is imperative that certain precautions be adhered to;

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.

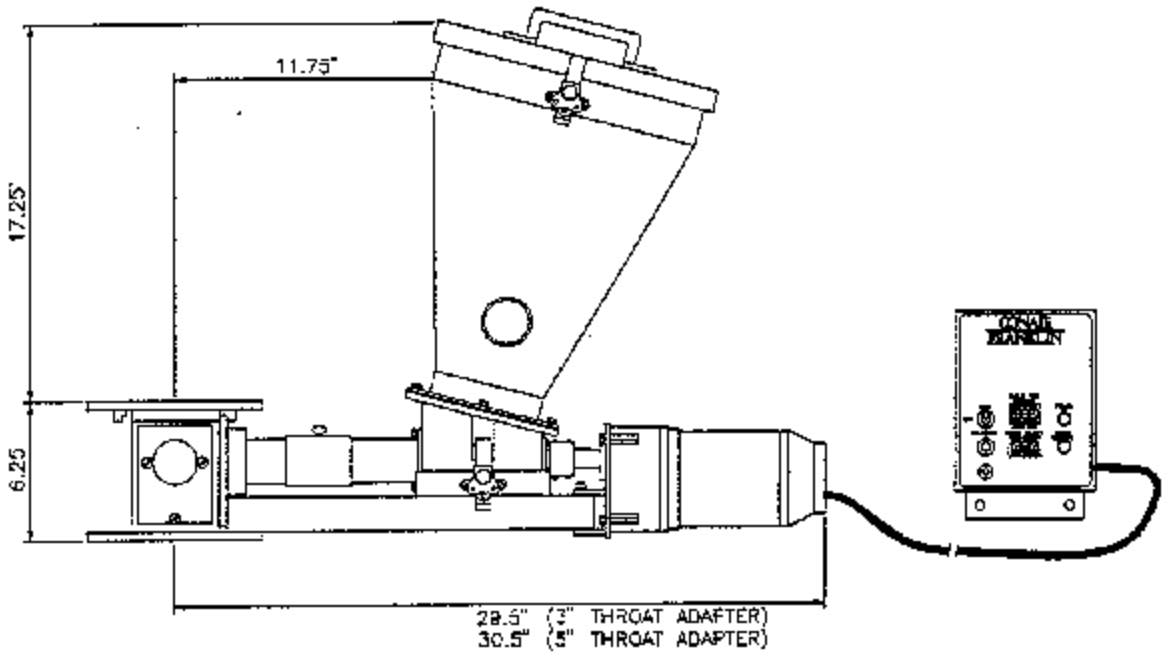
Observing these two simple rules might prevent serious or fatal injury.

SPECIFICATIONS - MODEL BF0



Power Supply	--3 A @ 115VAC or 5 A @ 230VAC - 1 Ph - 50/60 Hz
Motor	--1/8 and 1/27 hp - 90 VDC PM Gearmotor (2) 1/8 hp speeds available - 30 RPM (standard), and 64 RPM (1) 1/27 hp speed available - 8.7 RPM
Auger	--1" diameter (standard), 1/2" and 3/4" also available.
Trigger Signal	--(injection applications) External N.O. limit switch or an external 115 VAC source. For other than 115 volt sources "PR" must be replaced with a relay of matching voltage.
External Speed Control	--(extrusion applications) 0 - 550 VDC

SPECIFICATIONS - MODEL BF6



Power Supply	--5 AMPS at 115VAC - 1 Ph - 50/60 Hz --3 AMPS at 230VAC - 1 Ph - 50/60 Hz
Motor	--1/4 hp - 130 VDC PM Gearmotor - 62.5 RPM 1/4 hp - 130 VDC PM Gearmotor - 42 RPM
Auger	--1" diameter (standard), 1/2", 3/4", 1-1/2" and 2" also available in both Pellet and Powder Clearances.
Trigger Signal	--(injection applications) External N.O. limit switch or an external 115 VAC source. For other than 115 volt sources "PR" must be replaced with a relay of matching voltage.
External Speed Control	--(extrusion applications) 0 - 550 VDC

INSTALLATION:

1. The BF0 and BF6 Feeder throat adapters are factory drilled with a 5" sq. bolt pattern on top and bottom. The top plate is provided with (4) 3/8" - 16 UNC tapped holes to accommodate the Conair HandyHopper.

   The bottom plate is provided with (4) clearance holes for 3/8" - 16 UNC bolt for mounting to machine. It may be necessary to fabricate an interface plate to fit between your machine and the feeder adapter.

2. The BF0 Feeder can mount to the adapter in two positions by reinstalling the three mounting bolts through the flanged portion of the auger casting.

   The BF6 Feeder can mount in any of the four positions as follows:
   1. Tilt 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 "Control Functions and Hookups").

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" pushbuttons, then moving the "Main Switch" to the CALIBRATE position and pressing the "Calibrate" pushbutton. Auger should turn freely and speed should adjust easily with "Speed Adjust" pushbuttons.

   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" pushbutton. Auger should turn freely and speed should adjust easily with "Speed Adjust" pushbuttons while the "Calibrate" pushbutton is depressed.

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	107-437
Wiring Diagram (115 VAC)	107-439-01
Wiring Diagram (230 VAC)	107-439-02

EXTRUDER TRACKING CONTROLS

These controls run continuously and follow a customer supplied 0-550 V DC 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**

See appendix for wiring instructions contained in the following prints:

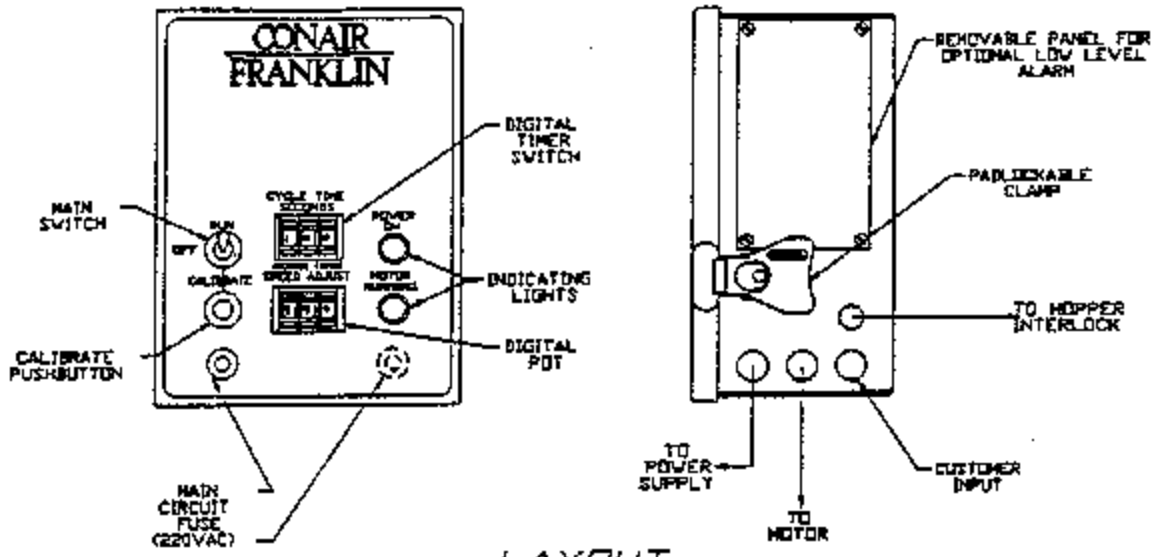
Control Assembly	107-438
Wiring Diagram (115 VAC)	107-440-01
Wiring Diagram (230 VAC)	107-440-02

LOW LEVEL ALARM OPTION

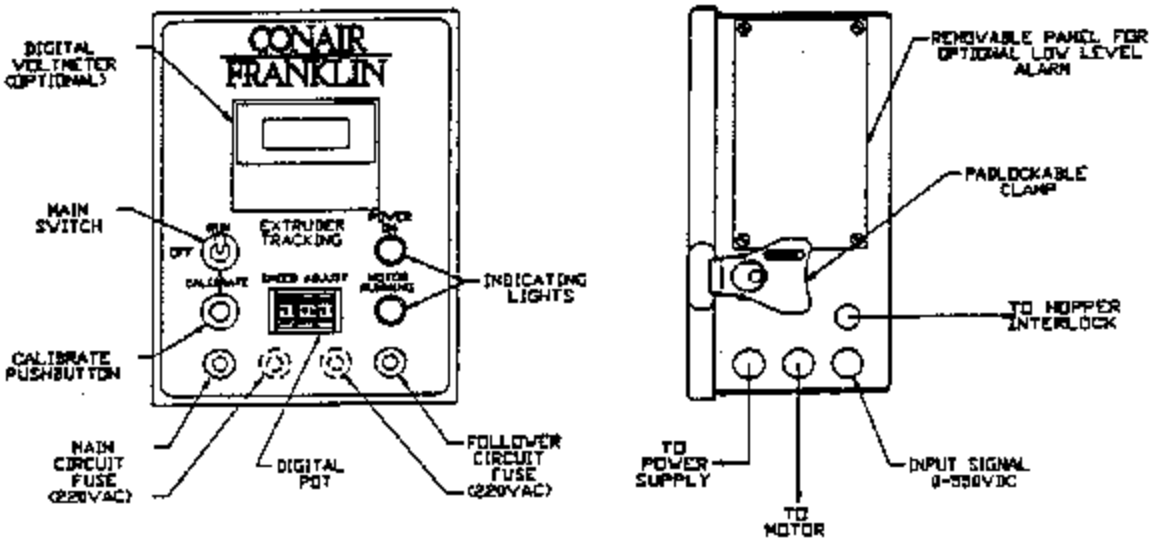
Available from factory or as a retrofit for 107-437 and 107-438 controls. Provides audio and visual alarms indicating material is low in Feeder Hopper.
Adjusting Sensor Sensitivity - Turn the trimpot clockwise until the LED energizes. Slowly turn the trimpot counter-clockwise until the LED de-energizes. Turn the trimpot an additional 1/2 turn counterclockwise. Check adjustment by holding your hand approximately 1/2" 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



LAYOUT
INJECTION
CONTROL



LAYOUT
EXTRUDER TRACKING
CONTROL

INJECTION MOLDING OPERATION

The Feeder 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 "FR" in the feeder control.

After the Feeder control is wired to the desired mode of operation, set the Cycle Time pushbuttons on the control front panel to the desired time interval, then set the Speed Adjust pushbuttons 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 and make a small chart or graph for each material. This calibration should be set up in grams/ sec.

1. Prepare to collect material samples:

   Model BF0 - 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 BF6 - 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.

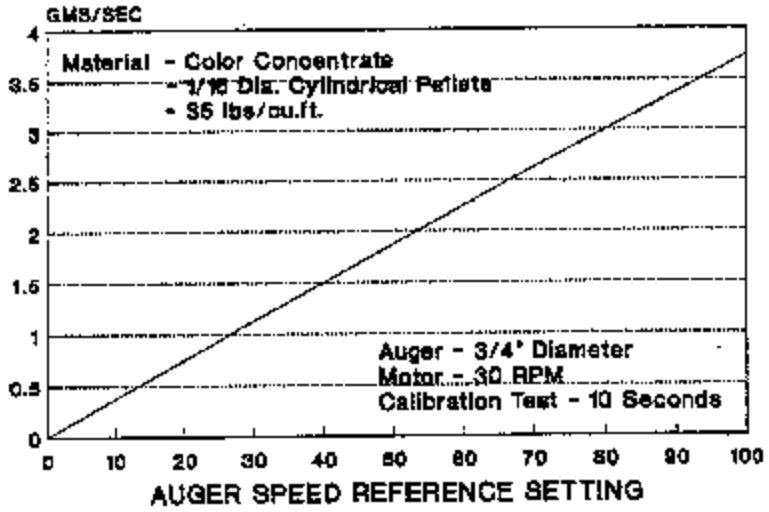
2. Fill the Feeder hopper with material.

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 desired rate (ie: 500).
   2. Set Cycle Time to desired interval (ie: 2-10 sec).
   3. Move Main Switch to the CALIBRATE position.
   4. Press the Calibrate pushbutton.

4. Retrieve the Feeder output for ten seconds at the desired rate (ie: Speed Adjust = 10, Cycle Time = 10 sec).

5. Weigh the material. This weight divided by ten (10) will provide the feed rate in grams per second at the given speed setting.

6. Collect and weigh material samples at various speed settings and prepare a chart or graph which might look like this:



Once a feed rate is established, simple mathematics will determine proper settings.

Example:

Injection time	-	5 sec.
Shot size	-	8 oz.
Let down	-	5 percent

8 oz x 28.35 gms/ oz	=	226.8 gms.	(shot size in grams)
		x .05	(5% let down)
		11.34 gms.	(required to be spread over 5 sec.)
		÷ 5 sec.	(injection time)
		2.27 gms/ sec.	

Looking on the chart, a feed rate of 2.25 gms/ sec is obtained at a speed setting of 60.

EXTRUSION OPERATION:

In an extrusion setup, the auger runs continuously following a signal from the extruder (See Control Setup and Functions).

Once the extruder signal has been wired to the feeder and the isolator board adjusted, set the Speed Adjust pushbuttons to the desired rate setting (See Calibration below). Move the Main Toggle Switch to RUN mode and the Feeder operates automatically based on the extruder input signal.

CALIBRATION:

Since different materials feed at different rates, it is necessary to calibrate the unit and make a small chart or graph for each material. This calibration should be set up in pounds/ hour.

1. Prepare to collect material samples:

   Model BF0 - 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 BF6 - 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.

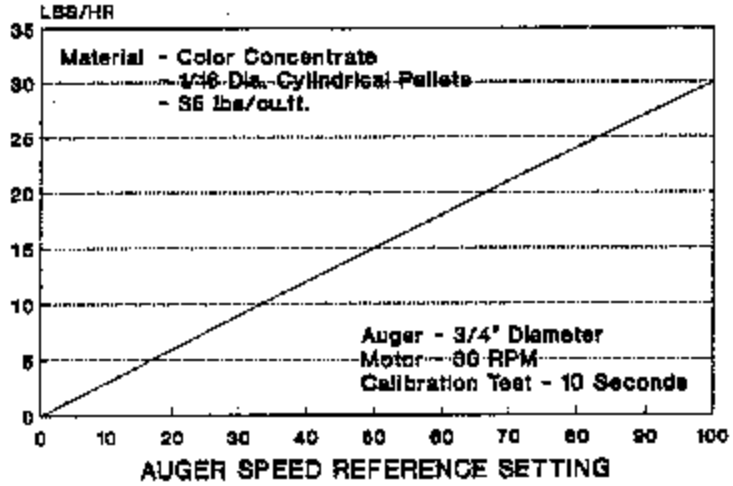
2. Fill the Feeder hopper with material.

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 desired rate (ie: 500).
   2. Move Main Switch to the CALIBRATE position.
   3. Press and hold the Calibrate pushbutton. The Feeder auger will turn while the button is depressed - When material falls freely from the auger, release the Calibrate pushbutton.

4. Retrieve the Feeder output for ten seconds at the desired rate (ie: Speed Adjust = 10, hold Calibrate pushbutton for 10 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 10 sec samples, this weight multiplied by 360 will provide the feed rate in pounds/ hour at the given speed setting.

6. Collect and weigh material samples at various speed settings and prepare a chart or graph which might look like this:



Once a feed rate is established, simple mathematics will determine proper settings.

Example:

Extruder throughput - 420 lbs/ hour

Let down - 5%

420 x .05 = 21 lbs/ hour

A setting of 70 will provide 21 lbs/ hr or 5% of the 420 lbs/ hr throughput. If a higher rate is needed than is shown on the chart, a larger auger should be used.

NOTE: It is not necessary to make graphs as shown above; charts similar to the following page will suffice.

SPEED SETTING	RATE LBS/ HR
20	6
40	12
60	18
80	24
100	30

In-between settings can be interpolated from this chart. Record and keep this information, so that a given material and auger combination need only be calibrated once.

NOTE: If more accurate, 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.

USEFUL CONVERSION FORMULAS:

CONVERSION FORMULAS

Oz x 28.35	= Grams
Grams x .035	= Oz
Grams x .0022	= Lbs
Lbs x 454	= Grams
Gms/ Min x .132	= Lbs/ Hr
Lbs/ Hr x 7.57	= Gms/ Min

MOTORS : MODEL BF0

Three motors are available for the Conair Feeder: 8.7 RPM, 30 RPM, and 64 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 .6 RPM. At slower settings the motor speed becomes erratic. The 8.7 RPM motor can be used for slower requirements. The 64 RPM motor can be used when the throughput requirements are greater than can be achieved with the 30 RPM motor - 1" 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.

MODEL BF0 FEEDER

AUGER SELECTION		TYPICAL THROUGHPUT	
Diam.	Pitch	Injection gms/sec.	Extrusion lbs/hr
3/8"	1/4"	.01 - .16	.08 - 1.4
3/8"	3/8"	.02 - .20	.10 - 1.7
1/2"	1/2"	.05 - .50	.20 - 4.0
3/4"	3/4"	.17 - 1.7	.70 - 14
1"	1"	.36 - 3.6	1.5 - 29

To determine approximate rates with optional drive motors, simply interpolate from the charts by dividing rates by 1/3 for the 8.7 RPM motor; or multiplying by 2 for the 64 RPM motor.

APPROXIMATE FEED RATES:

MODEL BF6 FEEDER

AUGER SELECTION		TYPICAL THROUGHPUT	
Diam.	Pitch	Injection gms/sec.	Extrusion lbs/hr
1/2"	1/2"	.09 - .9	.4 - 7.0
3/4"	3/4"	.20 - 2.6	1 - 20
1"	1"	.60 - 6.0	3 - 50
1-1/2"	1-1/2"	1.0 - 19	7 - 150
2"	2"	2.0 - 40	15 - 300

AUGER REMOVAL: MODEL BF0

NOTE: Augers are not interchangeable on the Model BF6 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 BF0

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.

MODEL BF6

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.

ACCESSORIES: (See following page for diagram)

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

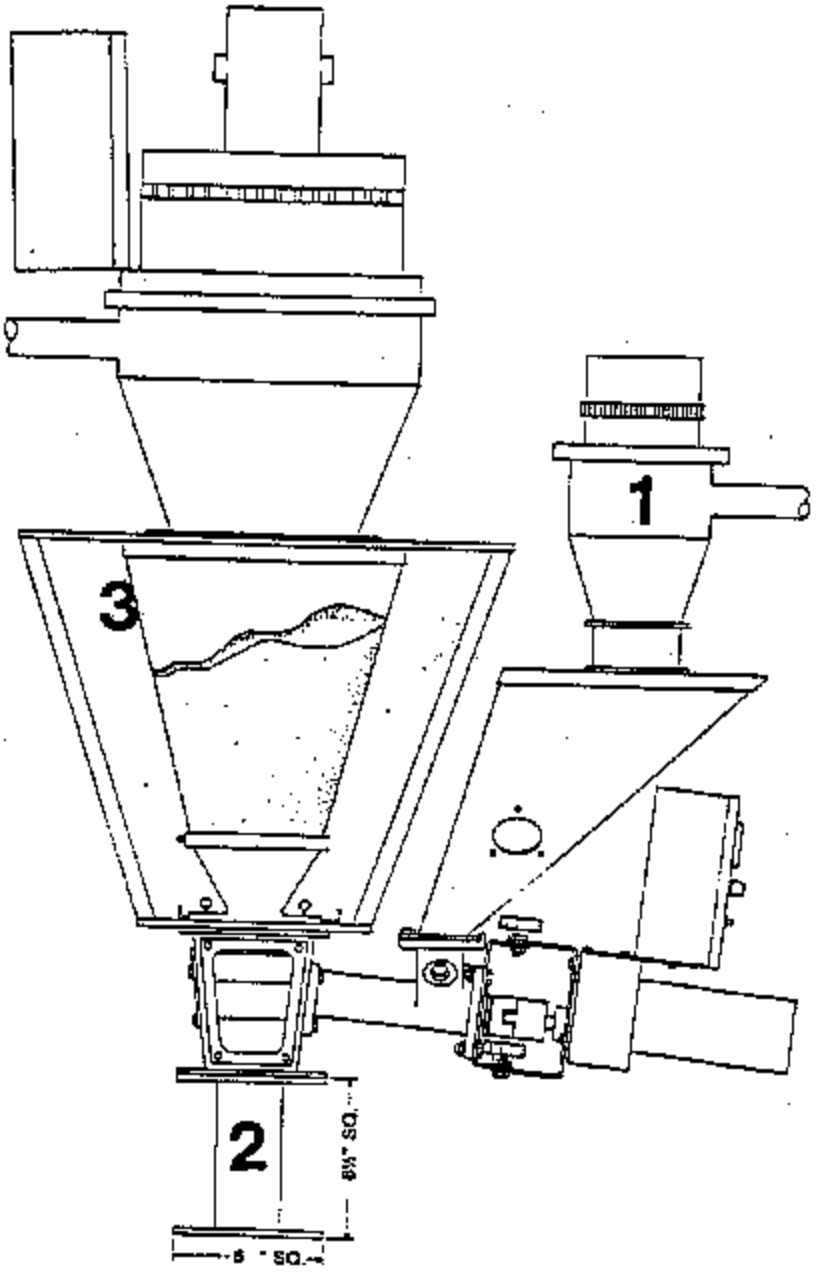
2. Spacers are available to raise the Feeder, or equipment mounted above it to provide clearance between the Feeder and associated equipment. The spacers can be used above or below the Feeder throat adapter.

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 BF0 only - Not shown)

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

PART NUMBER	DESCRIPTION
102-592-01	Spacer - drilled one end
102-592-02	Spacer - drilled both ends
140-032	HandyHopper
140-032-01	HandyHopper with magnet
611-084-F-006-09	Spare Feeder hopper with slide gate (Model BF0 only)
107-451-01	Low Level Alarm Kit (115 VAC)
107-451-02	Low Level Alarm Kit (230 VAC)



FEEDER ACCESSORIES

APPENDIX

Feeder Board Calibration Procedure
Model BF6 Assembly
Model BF8 Assembly
Injection Molding Control Assembly
Injection Molding Schematic
Injection Molding Schematic
Extrusion Control Assembly
Extrusion Control Schematic
Extrusion Control Schematic
Low Level Alarm Assembly
Low Level Alarm Schematic

APPENDIX

Feeder Board Calibration Procedure - This page contains the detailed steps on how to properly calibrate your feeder.

PRE-SETUP

1. Disconnect all power to control box.
2. Follower drive board:
    a. Move the *115-230 switch* to the 115 side.
    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 *torque trimmer pot* as follows according to the horsepower of the motor.
        1/27 hp - set to the 9 O'Clock position
        1/8 hp - set to the 11 O'Clock position
        1/4 hp - set to the 12 O'Clock position
    h. Set the *IR comp trimmer pot* as follows according to the horsepower of the motor.
        1/27 hp - set it to the 12 O'Clock position
        1/8 hp - set it to the 9 O'Clock position
        1/4 hp - set it to the 8 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.

CALIBRATION

1. Follower drive board.
    a. Turn the power on.
    b. Set the thumbwheel to "999".
    c. Move the *run/cal switch* to the cal side.
    d. Press and hold the cal button. The auger should turn.
    e. Adjust the *max speed pot* until you read 90VDC on terminals 11 and 12.
    f. Set the thumbwheel to "000".
    g. Adjust the *min speed pot* until the motor just stops.
    h. Set the thumbwheel to "999". Readjust the 90 VDC.
    i. Set the thumbwheel to "000". Readjust the min speed pot.
    j. Set the thumbwheel to "999". Check to see that the 90VDC is OK.
2. Isolator Board (used on extruder tracking controls only).
    a. Turn the power on. Put control in "run".
    b. Set the extruder to max. Set the thumbwheel to "999".
    c. Adjust the *input trimmer pot* until the motor is getting 90VDC (terminals 11 and 12).
    d. Set extruder to idle.
    e. Adjust the *min output pot* carefully until the motor just stops turning.
    f. Set extruder to max.
    g. Adjust the *max output pot* until you read 90VDC on terminals 11 and 12
    h. Set extruder to idle. Adjust the *min output pot* until the motor just stops
    i. Set extruder to max. Adjust the *max output pot* until motor is getting 90VDC.
    j. Set extruder to idle. Check to see that the motor stops.

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.

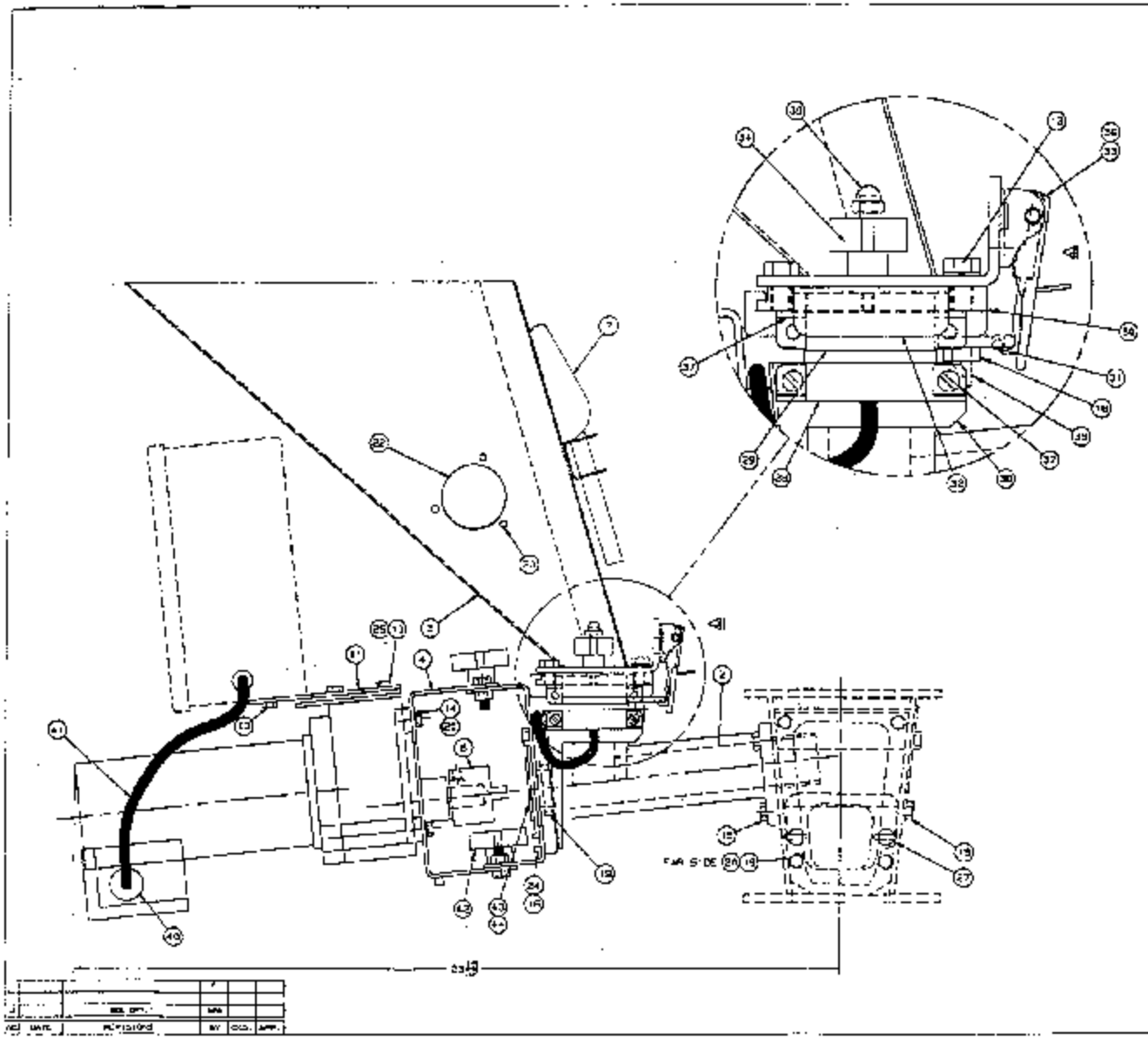
Should performance not meet warranted levels, Conair at its discretion will exercise one of the following options:

- 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.



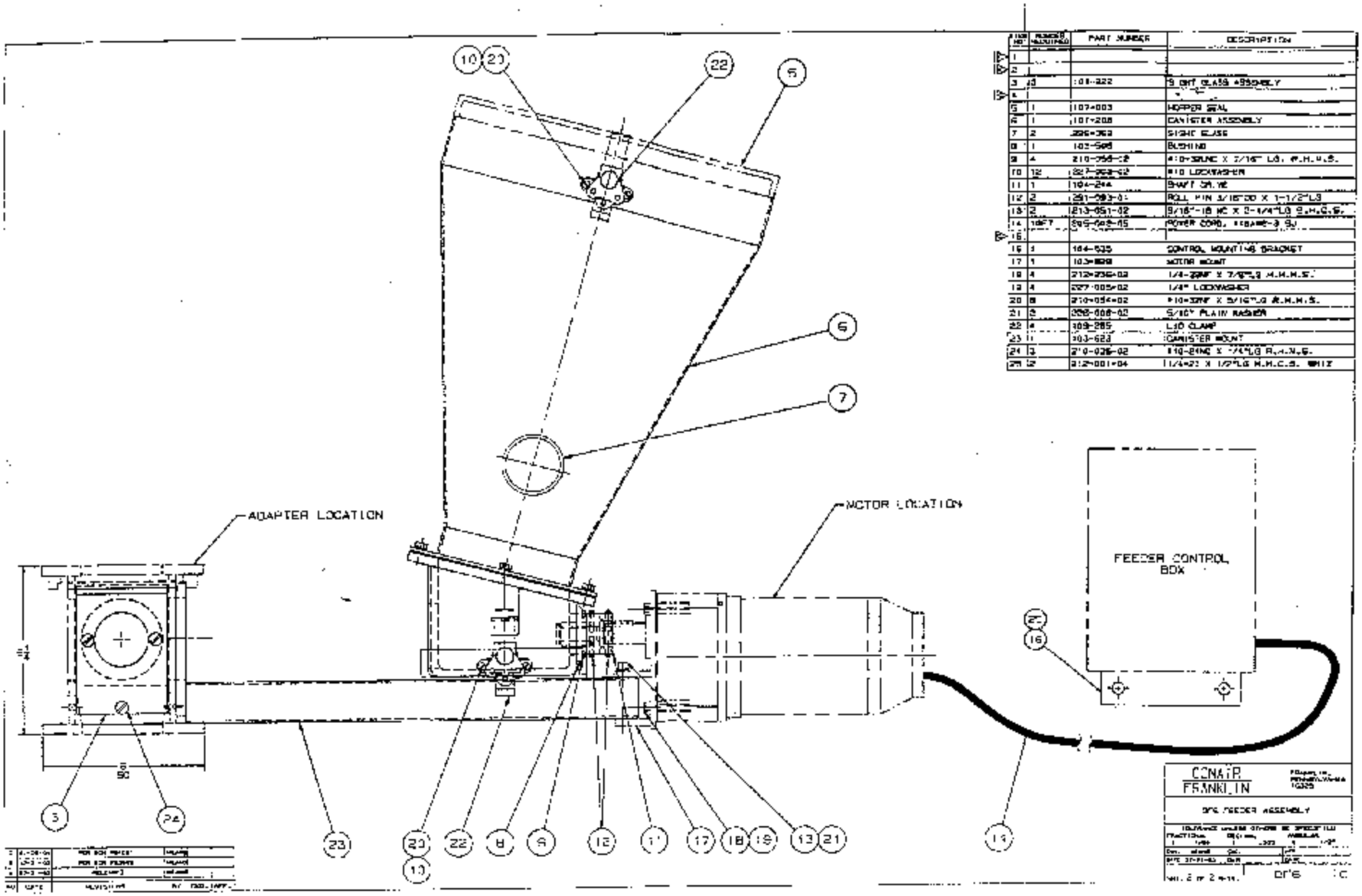
ITEM NO.	QUANTITY REQUIRED	PART NUMBER	DESCRIPTION
1			
2	1	104-369	AUGER HOUSING
3	1	102-668	HOPPER ASSEMBLY
4	1	104A433	MOTOR MOUNT ASSEMBLY
5			
6	1	104-414-02	MOTOR DRIVE COUPLING
7	1	250-234	SAMPLE SCOOP
8			
9			
10			
11	1	104-288	MTG.BRACKET(CONTROL)
12			
13	10	212-001-04	1/4-20X1/2"LG.HX.HD.CAP SC.
14	4	212-032-04	1/4-20X1/2"LG.SOCKET CAP SC.
15	6	212-002-04	5/16-18X3/4"LG.HX.HD.CAP SC.
16	6	222-008-54	5/16" SHLDR NUT
17			
18	1	251-025-01	3/32"Dia x 1/2"LG ROLL PIN
19	4	212-302-04	1/4-20X5/8"LG.SOCKET HD.CAP SC.
20	8	227-103-04	1/4"LOCK WASHER
21			
22	2	104-384	S.S.F. SLIDE
23	8	212-208-02	10-32X3/8"LG.HX.HD.MACH.SC.
24	4	212-025-04	5/16-18X1"LG.HX.HD.CAP SC.
25	4	223-008-04	1/4-20 SHLD.(CA) NUT
26			
27	2	1216-001-02	T-LINE SCREW 1/4-20 X 1/2"LG
28	1	202-111-03	MAGNETIC SWITCH
29	1	204-111-03	MAGNETIC SWITCH ACTUATOR
30	1	106-177-52	SLIDE GATE
31	1	SEE 242-01	LATCH KEEPER DETAIL
32	1	105-177-01	SLIDE GATE
33	1	221-436-01	LOCKING CLAMP HANDLE
34	1	221-256-06	PLASTIC KNOB F/#30
35	2	217-202-08	5/16-18X1-1/4"SLT-SCREW, HALF DOG
36	1	216-716-02	#6-32 x 1/2" R.H.M.S.
37	4	216-428-02	#8-32 x 3/8" R.H.M.S.
38	1	105-176-01	SWITCH MOUNTING BRACKET
39	1	222-102-05-02	ACORN NUT, 1/4-20UNC
40	1	203-001-03	CORD GRIP
41	.5FT	205-002-01	CORD, 4 BARE LEADS
42	2	221-206-04	PLASTIC KNOB
44	1	221-206-10	PLASTIC KNOB
44	1	104-414-01	RETAINER RING

NO.	DATE	REVISIONS	BY	CHK.	APP.
J		SEE SHT.	MA		

CONAIR FRANKLIN

SFD FEEDER ASSEMBLY

SHT. 1 OF 2 SHTS. SFD J



ITEM NO.	NUMBER REQUIRED	PART NUMBER	DESCRIPTION
1			
2			
3	1	101-222	SIGHT GLASS ASSEMBLY
4			
5	1	107-003	HOPPER SEAL
6	1	107-208	CANISTER ASSEMBLY
7	2	226-263	SIGHT GLASS
8	1	102-598	BUSHING
9	4	210-058-02	#10-32UNC X 3/16" LG. P.H.M.S.
10	12	227-003-02	#10 LOCKWASHER
11	1	104-244	SHAFT DRIVE
12	2	251-293-01	ROLL PIN 3/16"DD X 1-1/2"LG
13	2	1213-051-02	5/16"-18 NC X 2-1/4"LG S.H.C.S.
14	10FT	505-003-05	POWER CORD, 18GAWG-3 SJ
15			
16	1	104-535	CONTROL MOUNTING BRACKET
17	1	103-809	MOTOR MOUNT
18	4	212-036-03	1/4-20NF X 3/8"LG H.H.M.S.
19	4	227-005-02	1/4" LOCKWASHER
20	8	210-054-02	#10-32NF X 5/16"LG P.H.M.S.
21	8	208-008-02	5/16" PLAIN WASHER
22	4	109-285	LID CLAMP
23	1	103-623	CANISTER MOUNT
24	3	210-036-02	#10-24NC X 3/4"LG P.H.M.S.
25	12	212-001-04	1/4-20 X 1/2"LG H.H.C.S. GR.2

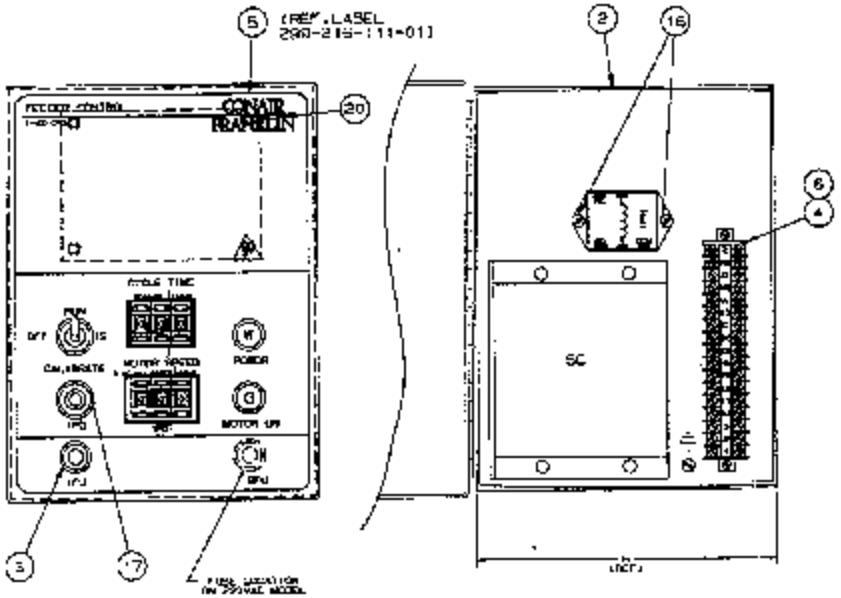
CONAIR FRANKLIN

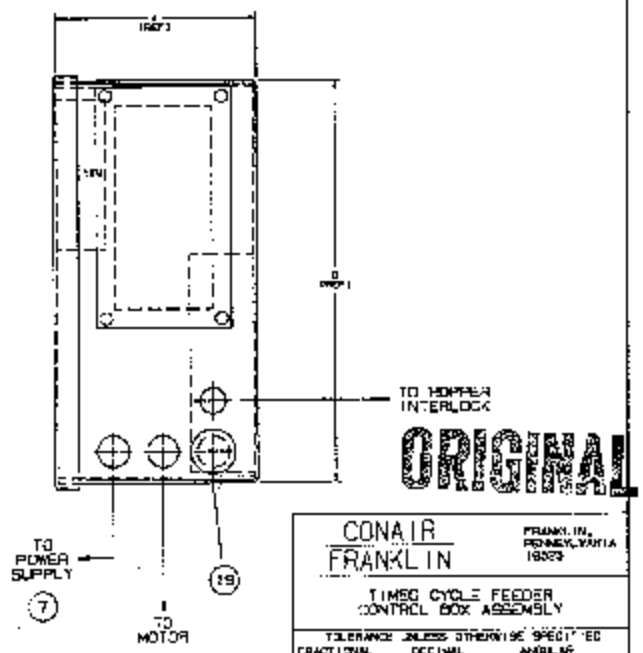
SPS FEEDER ASSEMBLY

DR'S C

ITEM NO	NUMBER REQUIRED	PART NUMBER	DESCRIPTION
15	2	210-006-02	#6-32 X 3/8"LG. R.H.M.S.
17	2	209-034-01	DECORATIVE NUT
18	CHART	CHART	PLUG, 15AMP-240VAC
19	1	208-010-09	HOLE PLUG
20	1	200-009-09	STRAIN RELIEF

ITEM NO	NUMBER REQUIRED	PART NUMBER	DESCRIPTION
1	1	SEE CHART	ELECTRICAL PARTS
2	1	614-230-01	FEEDER/AUGER PANEL COMMON PARTS
3	CHART	208-022-14	FUSE HOLDER
4	1	209-007-17	TERMINAL STRIP, 17 POINT
5	1	299-216-159-01	LABEL
6	1	SEE CHART	TERMINAL STRIP LABEL
7	CHART	CHART	LINE CORD, #18-3 SJ.
8	30FT.	205-007-18	WIRE, #18 AWG-PVC
9	6	209-080-01	SOLDERLESS TERMINAL
10	3	209-080-02	SOLDERLESS TERMINAL
11	14	209-080-04	QUICK-DISCONNECT TERMINAL
12	7	209-080-06	QUICK-DISCONNECT TERMINAL
13	2	209-080-07	QUICK-DISCONNECT TERMINAL
14	12	209-080-48	QUICK DISCONNECT TERMINAL
15	4	221-001-02	HEX NUT, #6-32





ORIGINAL

CONAIR FRANKLIN
FRANKLIN, PENNSYLVANIA 19323

TIMED CYCLE FEEDER CONTROL BOX ASSEMBLY

TOLERANCE UNLESS OTHERWISE SPECIFIED
FRACTIONAL ± DECIMAL ± ANGULAR ±

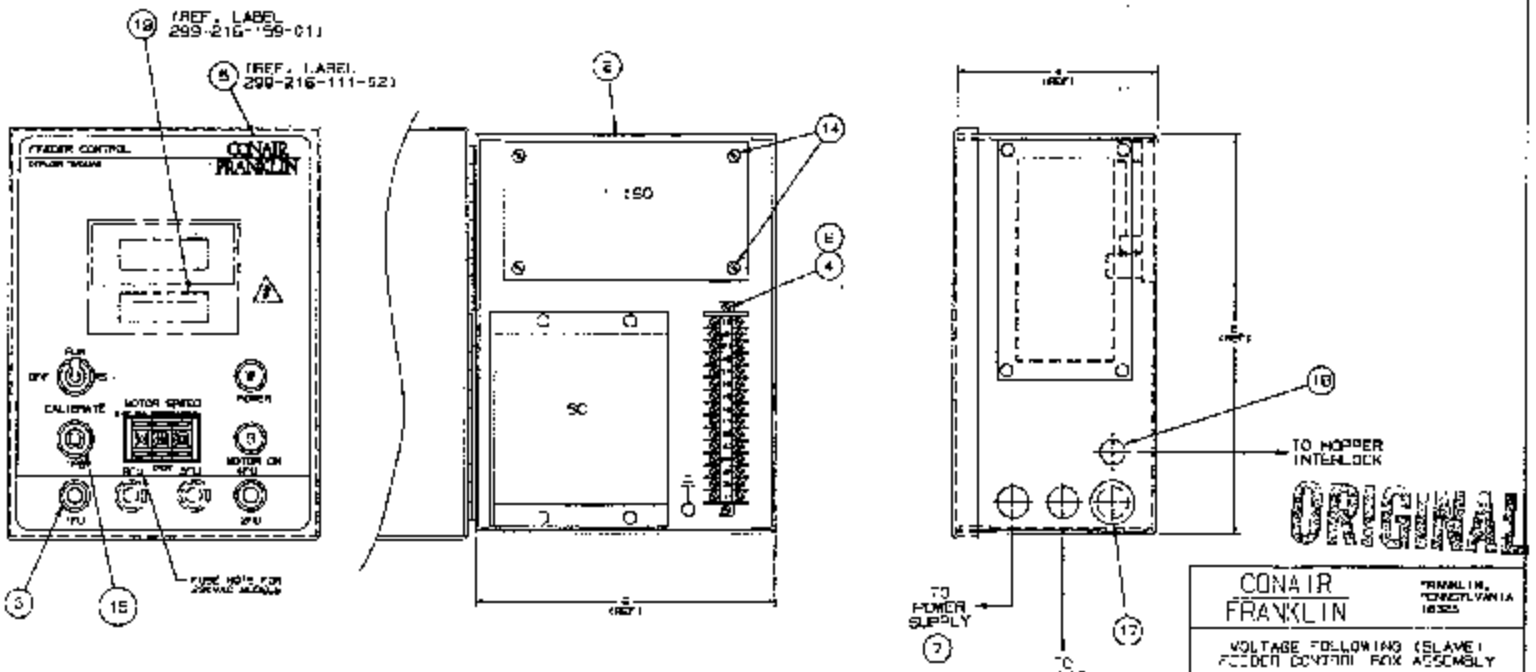
NO	DATE	REVISIONS	BY	CHK.	APP.
A	4-4-96	RELEASED	MAJ		

PART NO.	ITEM 2 PART NO.	QTY	ITEM 16 P.N.	QTY	ITEM 17 P.N.	QTY	ITEM 18 P.N.	APPLICATION	INPUT VOLTS
614-223-01	614-230-01-01	1	299-216-106-01	1	235-006-04	1		INJECTOR	110-120VAC
614-223-02	614-230-01-01	1	299-216-106-02	1	235-006-04	1		INJECTOR	220-240VAC

DWG. NO.	SIZE	DATE
614-223	A	

ITEM NO	NUMBER REQUIRED	PART NUMBER	DESCRIPTION
15	2	203-034-01	DECORATIVE NUT
16	CHART	CHART	PLUG, 15AMP-240VAC
17	1	209-010-09	HOLE PLUG
18	1	209-009-09	STRAIN RELIEF
19	CHART	CHART	METER

ITEM NO	NUMBER REQUIRED	PART NUMBER	DESCRIPTION
1	1	SEE CHART	ELECTRICAL PARTS
2	1	614-230-01	AUGER/FEEDER PANEL COMMON PARTS
3	CHART	200-022-14	FUSE HOLDER
4	1	209-007-15	TERMINAL STRIP, 15 POINT
5	1	299-216-111-01	LABEL
6	1	299-216-107	TERMINAL STRIP LABEL
7	CHART	CHART	LINE CORD, #18-3 SJ
8	30FT.	205-007-18	WIRE, #18 AWG-PVC
9	5	209-060-01	SOLDERLESS TERMINAL
10	3	209-061-02	SOLDERLESS TERMINAL
11	14	209-060-04	QUICK-DISCONNECT TERMINAL
12	2	209-060-06	QUICK-DISCONNECT TERMINAL
13	2	209-060-07	QUICK-DISCONNECT TERMINAL
14	4	210-007-02	#6-32 X 1/2"LG. R.H.M.S.



NO	DATE	REVISIONS	BY	CHK.	APP.
A	4-4-96	RELEASED	MAJ		

PART NO.	TYPE OF CHART NO.	QTY PER ASSY	QTY PER UNIT	QTY PER P.N.	QTY PER P.N.	QTY REQ PER	QTY REQ PER	QTY PER P.N.	APPLICATION	INPUT VOLTS
614-XXX-XXX	XX-XX-XX-01	2	1	XXX-XXX-XX	-	-0-	-0-	-	EXTRUDER	120VAC
614-XXX-XXX	XX-XXX-XX	+	10 FT	205-002-32	-	-0-	1	200-042-30	EXTRUDER	240VAC
614-224-XXX	XX-XXX-XX	2	1	205-005-34	XXX-XXX-01	1	-0-	-	EXTRUDER	120VAC
614-224-X04	XX-XXX-XX	+	10 FT	205-002-32	205-010-02	1	1	XXX-XXX-35	EXTRUDER	240VAC

TOLERANCE UNLESS OTHERWISE SPECIFIED		
FRACTIONAL	DECIMAL	ANGULAR
±	±	±

CONAIR FRANKLIN — FRANKLIN, PENNSYLVANIA 18323

VOLTAGE FOLLOWING (SLAVE) FEEDER CONTROL BOX ASSEMBLY

DRN. MAJ | CHK. | APP. | MFR.

DATE 04-04-96 | DATE | DATE

SHT. 1 OF 1 SHTS. 614-7224 A

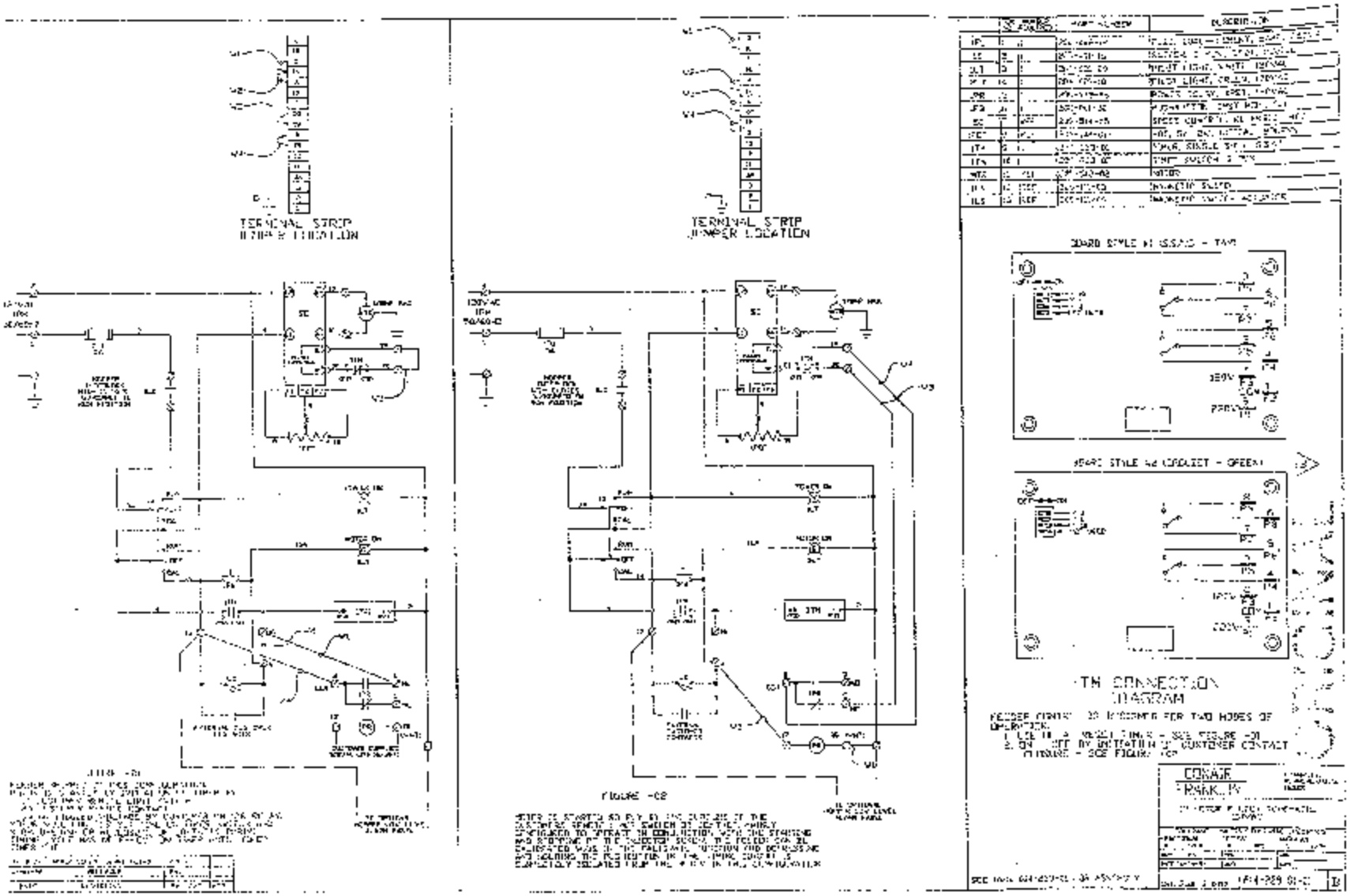
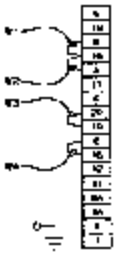

TERMINAL STRIP
JUMPER LOCATION
TERMINAL STRIP
JUMPER LOCATION
BOARD STYLE #1 (GRAY) - TAN
BOARD STYLE #2 (CRAFT) - GREEN
TM CONNECTION
DIAGRAM

FIGURE-A
START SIGNAL -
TIMED INTERVAL



TERMINAL STRIP
JUMPER LOCATION

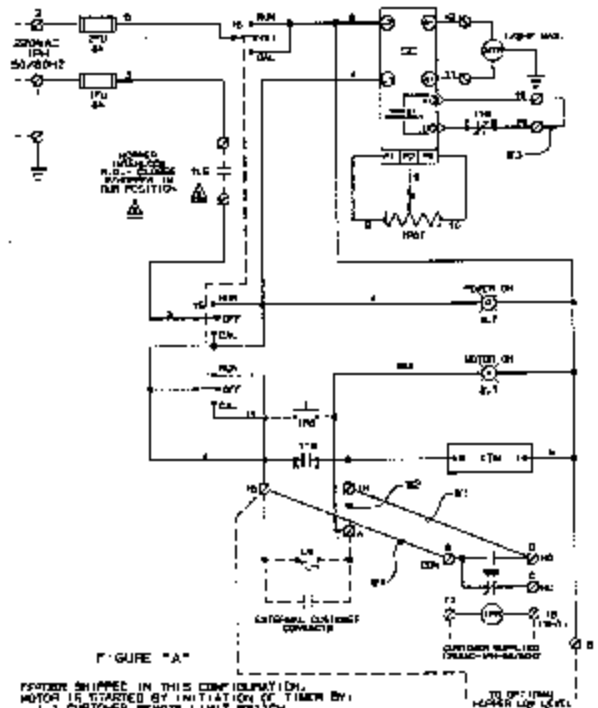
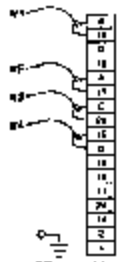


FIGURE "A"

FEEDER SHIPPED IN THIS CONFIGURATION.
MOTOR IS STARTED BY INITIATION OF TIMER BY:
1.1 CUSTOMER REMOTE LIMIT SWITCH
2.1 CUSTOMER REMOTE CONTACT
3.1 AN IMPOSED VOLTAGE BY CUSTOMER ON 1PE RELAY.
MOTOR WILL RUN FOR SET TIME ON TIMER SWITCH AND "STOP" OPENINGS OR REMOVAL OF CONTACTS DURING TIMING CYCLE HAS NO EFFECT ON TIMER UNTIL TIMER TIMES OUT.

REV	DATE	REVISIONS	BY	CHKD.	APP'D.
A	04-30-98	PER ECN 116298	MM		
B	04-28-08	PER ECR 8	MM		

FIGURE 5
START-STOP
SIGNAL



TERMINAL STRIP
JUMPER LOCATION

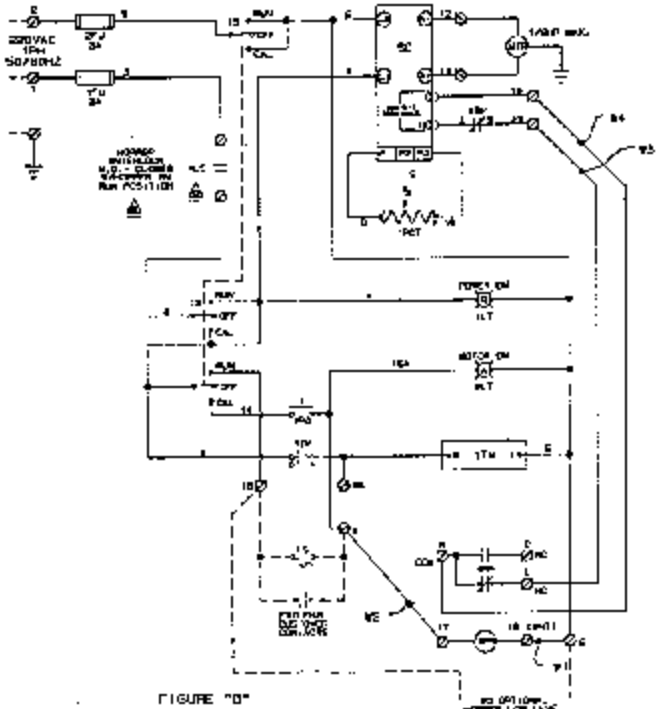
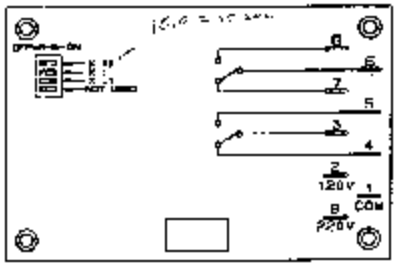


FIGURE "B"

MOTOR IS STARTED SOLELY BY THE CLOSURE OF THE CUSTOMERS REMOTE LIMIT SWITCH OR CONTACT. MAINLY CONFIGURED TO OPERATE IN CONJUNCTION WITH THE STARTING AND STOPPING OF THE INJECTION SCREW. THE FEEDER CAN BE CALIBRATED WITH IN THE CALIBRATE POSITION AND DEPRESSING AND HOLDING THE PUSHBUTTON IN THE TIMING CIRCUIT IS COMPLETELY ISOLATED FROM THE MOTOR IN THIS CONFIGURATION.

ITEM NO.	NUMBER REQUIRED	PART NUMBER	DESCRIPTION
1FU1, 2	2	208-088-03	FUSE, DUAL-ELEMENT, 3AMP, 250VAC
1S	1	203-001-21	SWITCH, 3 POS., 3PDT
ILT	1	204-021-03	PILOT LIGHT, RED, 250VAC
RL1	1	204-021-04	PILOT LIGHT, AMBER, 250VAC
1AR	1	208-032-09	POWER RELAY, DPDT, 20AMP
1PB	1	202-001-02	PUSHBUTTON, DPST MOM., C.M.
1R	1	203-514-05	SPEED CONTROL, KB PRO-E 2400
1POT	1	206-102-01	POT, 5K, 2W, DIGITAL, BOURNS
1TM	1	208-629-01	TIMER, SINGLE SHOT, S.S.A.C.
1TN	1	208-625-02	TIMER SWITCH, 3 POS.
MTR	1	209-513-02	MOTOR
ILS	1	209-111-05	MAGNETIC SWITCH
ILS	1	208-111-06	MAGNETIC SWITCH ACTUATOR



1TM CONNECTION
DIAGRAM

FEEDER CONTROL IS DESIGNED FOR TWO MODES OF OPERATION.
1. USE OF A PRESET TIMER - SEE FIGURE "A"
2. ON - OFF BY INITIATION OF CUSTOMER CONTACT CLOSURE - SEE FIGURE "B"

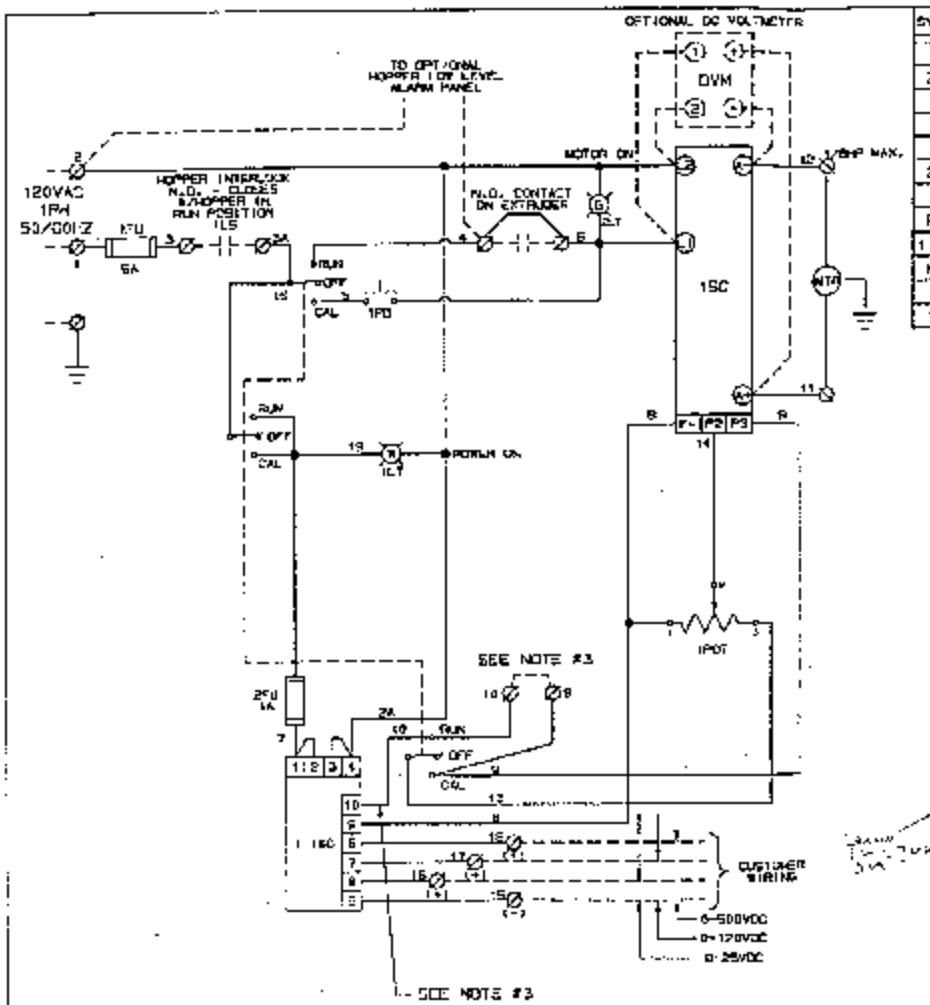
SEE DWG. 107-457-03 FOR ASSEMBLY

CONAIR FRANKLIN
FRANKLIN, PENNSYLVANIA 16323

INJECTION FEEDER SCHEMATIC

DWN. BRIAN | CHK. | APP.
DATE 09-20-01 | SCALE | SHEET 1 OF 1 SHEETS

107-439-02 B



SYMBOL	ITEM NO.	NUMBER REQUIRED	PART NUMBER	DESCRIPTION
1FU	1	1	206-066-04	FUSE 6AMP
2FU	2	1	206-056-01	FUSE 1AMP
1S	3	1	203-001-21	SWITCH, 3 POSITION, 3PDT
1PB	4	1	202-001-02	PUSHBUTTON, N.O.
1LT	5		204-021-09	PILOTLIGHT, WHITE
2LT	6	1	204-021-10	PILOTLIGHT, GREEN
SC	7	REF	209-514-05	SPEED CONTROL KB #KBIC-2400
POT	8	REF	203-102-01	POT, 5K, 2W, DIGITAL, 20TURNS
1 ISO	9	1	107-203-01	ISOLATION BOARD KB #KBSI-2400
MTR	10	REF	203-813-02	MOTOR
1LS	11	REF	203-111-05	MAGNETIC SWITCH
1LS	12	REF	203-111-06	MAGNETIC SWITCH ACTUATOR

TERMINAL STRIP

NOTES:

1. FOR CALIBRATION OF FEEDER, TURN 1S TO THE CALIBRATE POSITION AND PUSH 1PB. HOLD 1PB IN THE CLOSED POSITION FOR THE TIME REQUIRED FOR CALIBRATION.
2. IF A N.O. CONTACT ON THE EXTRUDER IS USED TO START FEEDER, REMOVE WIRE JUMPER BETWEEN TERMINALS #4 AND #5, AND WIRE CONTACT TO TERMINALS #4 AND #6.
3. TO OPERATE FEEDER IN CONJUNCTION WITH EXTRUDER N.O. CONTACT AND WITH FEEDER NOT BEING SLAVED TO EXTRUDER MOTOR, ADD JUMPER BETWEEN TERMINALS #8 AND #10 AND DISCONNECT WIRE #10 FROM 1 ISO BOARD. IF THERE ARE 12I #10 WIRES ON 1 ISO BOARD SPLICE TOGETHER AND INSULATE.
4. ALL WIRING TO BE IN ACCORDANCE WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES AND PERFORMED BY A QUALIFIED ELECTRICIAN.

ORIGINAL

A	04-04-96	RELEASED	MAL
DATE		REVISIONS	BY CHKD APP'D

SEE DWG. 614-224-01 FOR ASSEMBLY
DRAWING REQUIRED

CONAIR FRANKLIN

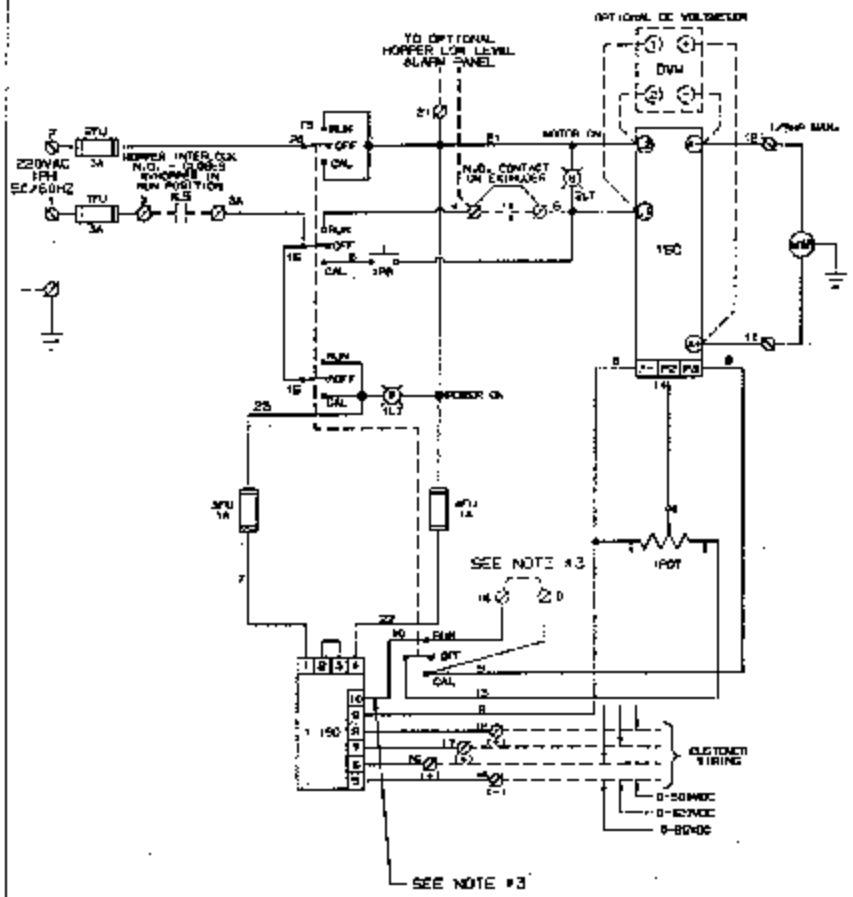
FRANKLIN, PENNSYLVANIA 16323

FEEDER SCHEMATIC
120VAC

TOLERANCE UNLESS OTHERWISE SPECIFIED
FRACTIONAL ± DECIMAL ± ANGULAR ±

DRN MAL CHKD APP'D
DATE 04-04-96 WGT DATE

SHT 1 OF 1 SHTS 614-229-02-01 A



SYMBOL	ITEM NO	NUMBER REQUIRED	PART NUMBER	DESCRIPTION
1-2FU	1	2	208-086-03	FUSE 3AMP
3-4FU	2	2	208-066-01	FUSE 1AMP
1S	3	1	203-001-22	SWITCH, 3 POSITION, 4PDT
1PB	4	1	202-001-02	PUSHBUTTON, N.O.
1LT	5	1	204-021-11	PILOTLIGHT, WHITE, 220VAC
2LT	6	1	204-021-12	PILOTLIGHT, GREEN, 220VAC
SC	7	REF	209-514-05	SPEED CONTROL KB #KBIC-2400
POT	8	REF	205-102-01	POT, 5K, 2W, DIGITAL, BOURNS
1 ISO	9	1	107-273-01	ISOLATION BOARD KB #KBSJ-2400
MTR	10	REF	209-513-02	MOTOR
1LS	11	REF	209-111-05	MAGNETIC SWITCH
1LS	12	REF	209-111-06	MAGNETIC SWITCH ACTUATOR

NOTES:

1. FOR CALIBRATION OF FEEDER, TURN 1S TO THE CALIBRATE POSITION AND PUSH 1PB. HOLD 1PB IN THE CLOSED POSITION FOR THE TIME REQUIRED FOR CALIBRATION.
2. IF A N.O. CONTACT ON THE EXTRUDER IS USED TO START FEEDER, REMOVE WIRE JUMPER BETWEEN TERMINALS #4 AND #6, AND WIRE CONTACT TO TERMINALS #4 AND #6.
3. TO OPERATE FEEDER IN CONJUNCTION WITH EXTRUDER N.O. CONTACT AND WITH FEEDER NOT BEING SLAVED TO EXTRUDER MOTOR, ADD JUMPER BETWEEN TERMINALS #9 AND #10 AND DISCONNECT WIRE #10 FROM 1 ISO BOARD. IF THERE ARE (2) #10 WIRES ON 1 ISO BOARD SPLICE TOGETHER AND INSULATE.
4. ALL WIRING TO BE IN ACCORDANCE WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES AND PERFORMED BY A QUALIFIED ELECTRICIAN.

NO	DATE	REVISIONS	BY	CKD.	APP.
A	04-04-08	RELEASED	MAJ		

SEE DWG. G14-229-02-03 FOR ASSEMBLY
DRAWING REF. 107-440-02

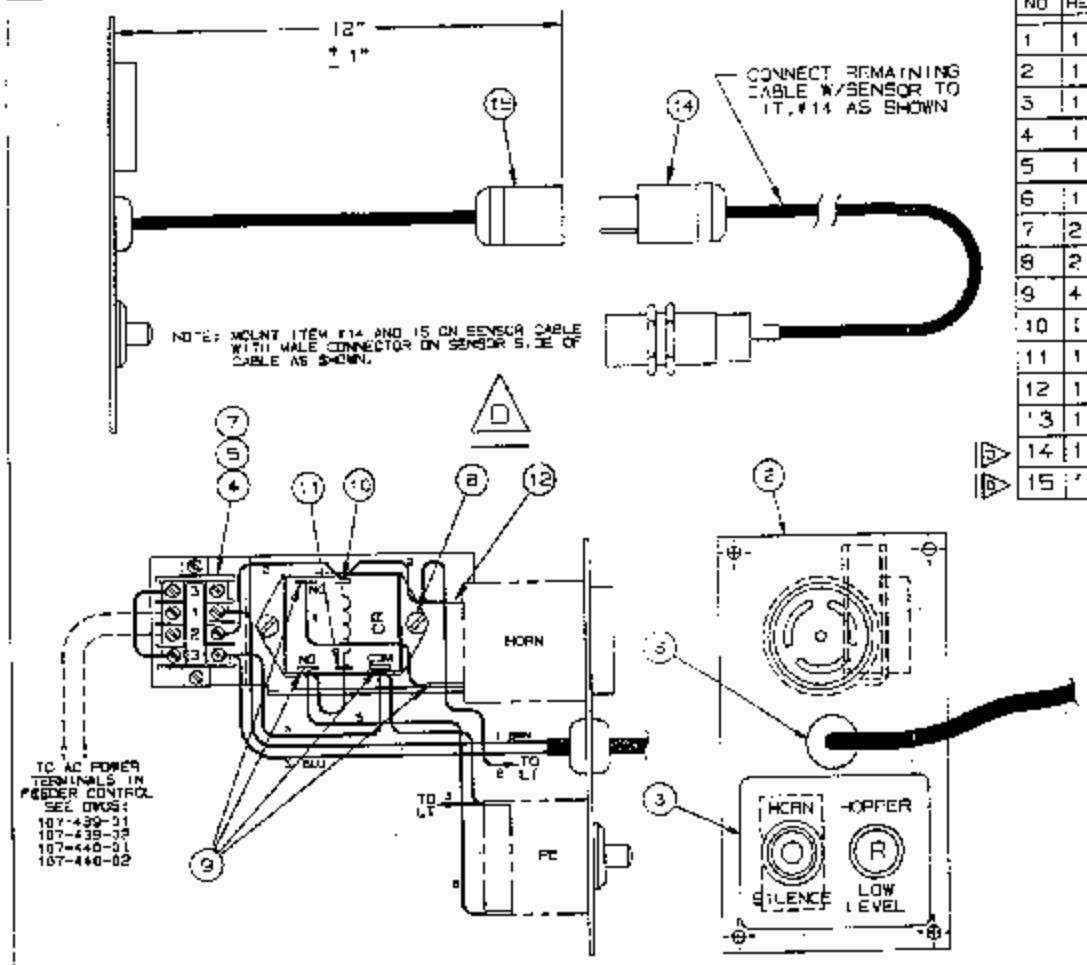
CONAIR FRANKLIN
FRANKLIN, PENNSYLVANIA 16323

FEEDER SCHEMATIC 220VAC

TOLERANCE UNLESS OTHERWISE SPECIFIED
FRACTIONAL ± | DECIMAL ± | ANGULAR ±

DRN. MAJ	CHK.	APP.
DATE 04-04-08	DATE	DATE

SHT. 1 OF 1 SHTS. | G14-229-02-02 | A



ITEM NO	NUMBER REQU.RED	PART NUMBER	DESCRIPTION
1	1	CHART	ELECTRICAL PARTS
2	1	102-877	PANEL WELDMENT
3	1	107-453-01	LABEL
4	1	107-453-02	TERMINAL STRIP LABEL
5	1	209-007-04	TERMINAL STRIP, 4 POS.
6	1	209-009-09	BUSHING
7	2	210-148-02	#4-40 X 1/4"LG. R.H.M.S.
8	2	210-003-02	#6-32 X 1/4"LG. R.H.M.S.
9	4	209-060-51	Q.C. TERM., 90DEG., #18-22AWG
10	1	209-060-59	Q.C. TERM., 90DEG., #18-22AWG
11	1	209-060-05	Q.D. TERM., #14-16AWG
12	1	209-060-52	Q.D. TERM., 90DEG., #14-16AWG
13	1	105-195	SENSOR MOUNT SIGHT GLASS
14	1	208-008-07	CONNECTOR, TWIST LOCK, MALE
15	1	208-008-08	CONNECTOR, TWIST LOCK, FEMALE

NO	DATE	REVISIONS	BY	CKD.	APP.
D	09-09-93	PER ECN #93430	KEM		
C	08-03-93	PER ECN #93364	KEM		
B	06-11-93	PER ECN #93278	KEM		

PART NO.	IT.#1 PART NO.	APPLICATION
107-451-01	107-452-01	120VAC
107-451-02	107-452-02	220VAC

CONAIR FRANKLIN

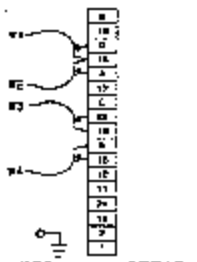
FRANKLIN, PENNSYLVANIA 16323

HOPPER LOW LEVEL ALARM PANEL ASSEMBLY

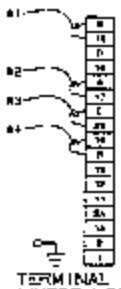
TOLERANCE UNLESS OTHERWISE SPECIFIED
FRACTIONAL ± DECIMAL ± ANGULAR ±

DWN. MEANS	CKD.	APP.
DATE 04-13-93	DATE	DATE

SHT. 1 OF 1 SHTS. | 107-451 | D



TERMINAL STRIP
JUMPER LOCATION



TERMINAL STRIP
JUMPER LOCATION

	QTY	ITEM NO	PART NUMBER	DESCRIPTION
1-2FU	1	2	206-000-00	FUSE, DUAL-ELEMENT, 3AMP, 25
-S	2	1	213-001-21	SWITCH, 3 POS., 3PDT
L.T	3	1	204-021-11	PILOT LIGHT, WHITE, 220VAC
2.T	4	1	204-021-12	PILOT LIGHT, GREEN, 220VAC
1PR	5	1	206-003-00	POWER RELAY, DPST, 220VAC
1PB	6	1	202-001-02	PUSHBUTTON, DPST MOM., C.H.
SC	7	REF	209-514-01	SPEED CONTROL, KB #KEC-2400
1POT	10	REF	202-102-01	POT, 5K, 2W., DIGITAL, SOLENO
1TM	12	1	204-023-01	TIMER, SINGLE SHOT, R.E.A.C.
1TM	12	1	206-023-02	TIMER SWITCH, 3 POS.
MTR	11	REF	6P0R-013-02	MOTOR
1LS	12	REF	209-111-05	MAGNETIC SWITCH
1LS	13	REF	209-111-06	MAGNETIC SWITCH ACTUATOR

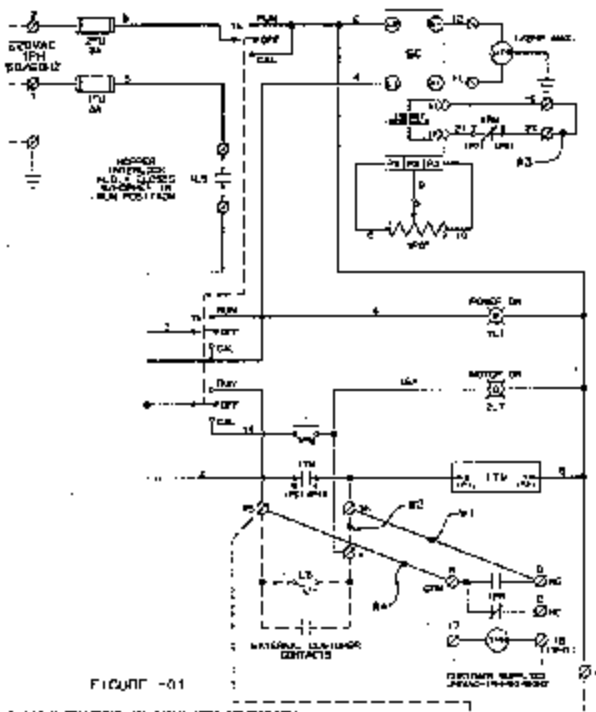


FIGURE -01

FEEDER WIRED IN THIS CONFIGURATION,
MOTOR IS STARTED BY INITIATION OF TIMER BY:
1. CUSTOMER REMOTE UNIT SWITCH
2. CUSTOMER REMOTE CONTACT
ALL INCORRECT VOLTAGE OF CUSTOMER ON 1PR RELAY.
1TM WILL RUN FOR SET TIME ON 3 WAY SWITCH AND
OR, OPENING OR RECLOSURE OF CONTACTS DURING
TIMING CYCLE HAS NO EFFECT ON TIMER UNTIL TIMER
HAS O.T.

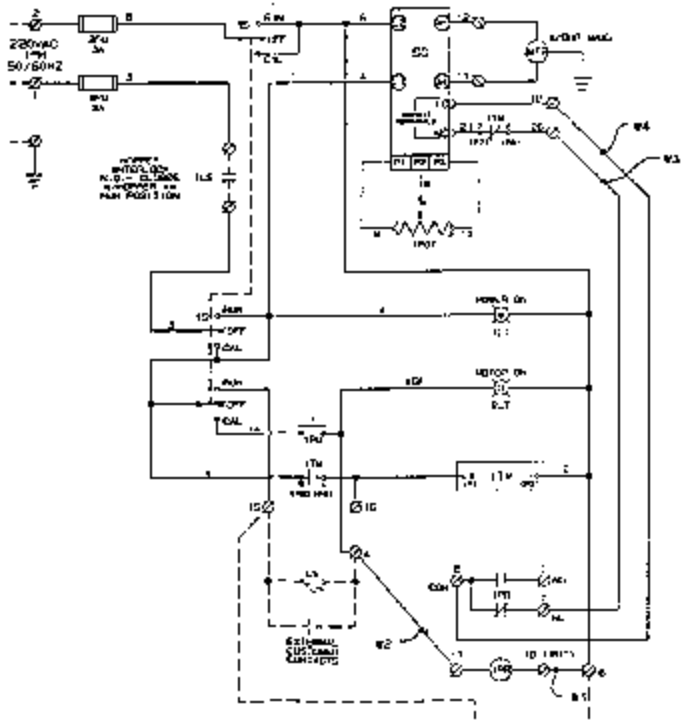
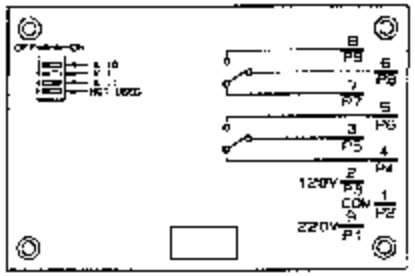


FIGURE -02

MOTOR IS STARTED SOLELY BY THE CLOSURE OF THE
CUSTOMERS REMOTE UNIT SWITCH OR CONTACT. MAKING
CONFIGURED TO OPERATE IN CONJUNCTION WITH THE START ING
AND STOPPING OF THE INJECTION SYSTEM. THE FEEDER MAY BE
CALIBRATED WHILE IN THE CALIBRATE POSITION AND OPERATING
AND HOLDING THE PUSH-BUTTON IN. THE TIMING CIRCUIT IS
COMPLETELY ISOLATED FROM THE MOTOR IN THIS CONFIGURATION.



1TM CONNECTION
DIAGRAM

FEEDER CONTROL IS DESIGNED FOR TWO MODES OF OPERATION,
1. USE OF A PRESET TIMER - SEE FIGURE -01
2. ON - OFF BY INITIATION OF CUSTOMER CONTACT CLOSURE - SEE FIGURE -02

ORIGINAL

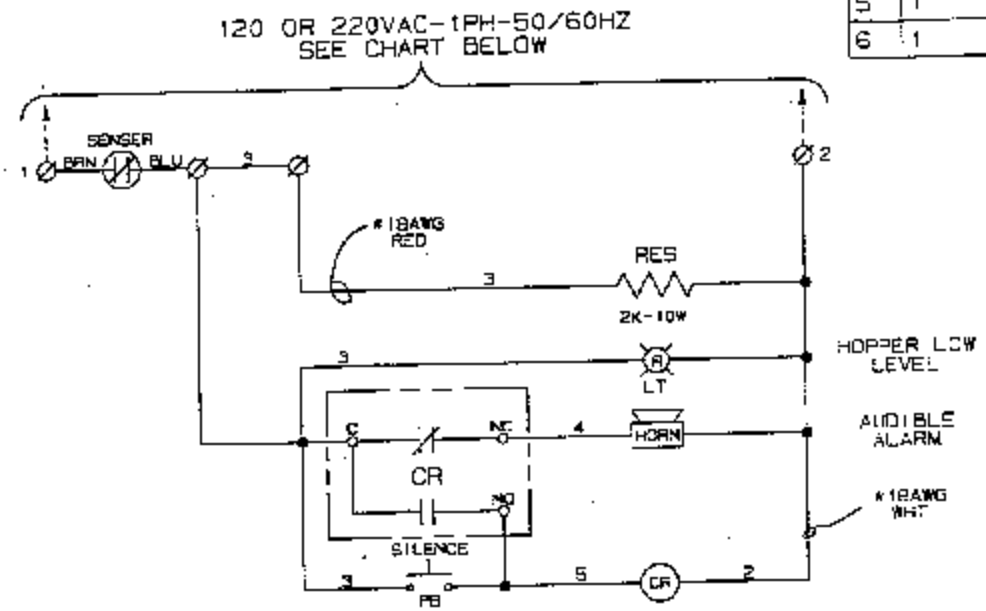
CONAIR FRANKLIN

INJECTOR FEEDER SCHEMATIC
220VAC

SEE DWG. 614-223-02 FOR ASSEMBLY

614-220-01-02

ITEM NO	NUMBER REQUIRED	PART NUMBER	DESCRIPTION
1	1	SEE CHART	AUD. ALARM HORN
2	1	209-309-01	SENSER, N.C.
3	1	SEE CHART	RELAY, SPDT
4	1	SEE CHART	PILOTLIGHT, RED
5	1	205-003-01-06-37	RESISTOR, 2K, 10W
6	1	202-001-02	PUSHBUTTON, N.O., MOMENTARY



DESCRIPTION	PART NO.	IT.#1 PART NO.	IT.#3 PART NO.	IT.#4 PART NO.
120VAC	107-452-01	209-089-03	200-032-36	204-021-01
220VAC	107-452-02	209-089-04	200-032-09	204-021-03

NO	DATE	REVISIONS	BY	CKD.	APP.
A	11-22-93	RELEASED	KEN		

CONAIR FRANKLIN

FRANKLIN, PENNSYLVANIA 16323

REMOTE ALARM PANEL
HOPPER LOW LEVEL
WIRING DIAGRAM

TOLERANCE UNLESS OTHERWISE SPECIFIED
FRACTIONAL ± DECIMAL ± ANGULAR ±

DWN. MEANS	CKD.	APP.
DATE 11-22-93	DATE	DATE

SHT. 1 OF 1 SHTS. 107-452 A