

■ INSTALLATION

The feeder support structure must be rigid. Use caution so that the bowl does not come into contact with any rigid objects. Drill the support structure to receive the mounting studs, located in the feet, as shown in Figure 1. It is not necessary to bolt the unit into place.

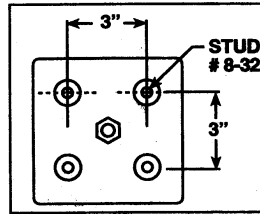


FIGURE 1: MOUNTING STUDS

If a built-in control is part of the feeder, the feeder must be wired in strict accordance with the wiring diagram supplied with the unit.



Power supply voltage and frequency must be that which is stamped on the equipment nameplate. The equipment must be properly grounded.

■ CONTROL INSTALLATION

Separate controls are designed for remote wall mounting and should be located as close to the feeder as possible, in a clean, dry, vibration-free and well-ventilated location. Ambient temperature should not exceed 40°C (104°F).

The control is designed to operate from a single-phase line source. It must be wired in strict accordance with the wiring diagram supplied inside the control box. Control illustration, wiring schematics, and parts lists are supplied on page 6.



Power supply voltage and frequency must be that which is stamped on the equipment nameplate. The equipment must be properly grounded.



The electrical power supply connection to the control must be made through a customer-supplied safety disconnect switch which must be mounted next to the control.

■ OPERATION PROCEDURE

Syntron Parts Feeders are loaded simply by dumping the parts into the bowl, manually or from a hopper. Overloading the bowl may cause interference with the feed rate or orientation of the parts. One layer of parts in the bowl is sufficient.

Adjust the control knob to “ZERO” and energize the equipment. Adjust the rate of feed by rotating the control knob clockwise for increased feed rate and counterclockwise for decreased feed rate.



CAUTION: If the unit makes a loud striking noise while operating, immediately de-energize.

Striking can cause serious damage to the feeder. If striking occurs, an adjustment of the air gap is required. Refer to the air gap adjustment instructions on page 5.

If the feeder is purchased with an oriented bowl, the feeder and its control have been factory adjusted and tested to give the ordered output capacity. Therefore, it should not require any adjustment. If any adjustment is necessary, contact Homer City Automation for assistance.

⚠ WARNING: Any unauthorized adjustment may void the warranty on both the feeder and its control.

When the feeder is purchased without a bowl, it is necessary to tune the unit after the bowl has been installed, to obtain proper performance. For the proper tuning procedure, refer to the tuning instructions on pages 3 and 4.

■ PARTS FEEDER STROKE

Feeder stroke is the distance the bowl surface travels in one complete cycle of vibration. This is measured from the forward, upward limit of the vibrating stroke to the downward, backward limit of the stroke. The operating stroke of EB-00 Parts Feeders ranges between .015 inches and .060 inches, depending on the size of the bowl and the operating frequency.

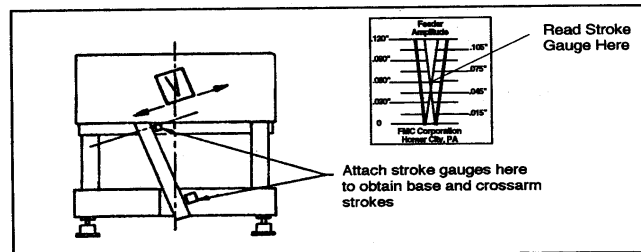


FIGURE 2: LOCATIONS OF STROKE GAUGES

Bowl stroke can be read from a stroke gauge placed on the side of the bowl (see Figure 2). The stroke gauge should be applied to the bowl so that the graduated lines are parallel to the motion line of the bowl. If the stroke gauge is placed at the same distance from the center of the drive as the outer edge of a spring stack, the graduated lines should be perpendicular to the springs. As the distance from the drive center increases relative to the springs, the angle of the motion line proportionately decreases, and the graduated lines should be placed in a more horizontal plane. As the gauge is placed closer to the drive center, the angle of the motion line proportionately increases.

Under vibration, the two black lines on the stroke gauge “V” widen. As the stroke increases, the lines widen, until the black lines appear as a double “V”. The two black lines at the inner edge form an inner “V”. Position and quality of the individual stroke gauge may cause a variance of as much as .010 inches (0.25 mm), but this is generally an acceptable reading.

⚠ CAUTION: It is important that stroke gauge results are correctly interpreted for critical parts orientation and feed rate applications, or when maximum safe strokes are being approached.

If the lines do not remain sharp during operation, or if they appear fuzzy, the stroke gauge is improperly positioned. When the gauge is properly positioned, the image width and the apex of the inner lines will be at the maximum conditions observed if various positions have been tried. For extremely critical stroke applications, Homer City Automation recommends using an electronic stroke-measuring device.

■ TUNING THE PARTS FEEDER

When tuning the parts feeder, both the natural vibrating frequency of the unit and the applied power frequency by which the unit is operating must be considered. Natural frequency is the frequency of vibration observed after the unit has been de-energized. For general applications, Homer City Automation recommends **undertuning** the EB-00 Parts Feeders at 59 cycles per minute (maximum for RC units), and 118 cycles per minute (maximum for AC units).

To determine the tuning condition of a feeder, perform the following steps:

1. Apply a stroke gauge to the feeder bowl as outlined above.
2. Remove the base cover to gain access to the springs.
NOTE: Because mechanical weight is an important factor of natural frequency, temporary counterweights [equal to the weight (inertia) of the covers] should be added to the feeder base to compensate for the weight (inertia) of the removed covers.
3. Check the air gap; it should not be less than .020 inches or more than .035 inches for this test.
4. Set the control knob at 100 dial setting.
5. Energize the parts feeder, and observe and record the stroke gauge reading.
6. While observing the reading of the stroke gauge, slightly loosen one of the spring clamp bolts on a spring rack. Note the change of stroke on the gauge as the bolt is loosened.

If the stroke decreases, the unit is undertuned. If the stroke increases, the unit is overtuned. If a tuning correction is required, follow the directions given below.

■ INCREASING BOWL STROKE FOR UNDERTUNED UNITS

1. Before altering the spring systems, try to reduce the magnet air gap. (Refer to Air Gap Adjustment, page 5) If an air gap adjustment does not produce sufficient stroke, or if striking occurs, the unit must be retuned.
2. To retune the unit, add one or more springs, retorque the spring mounting bolts, and check the stroke. Always start with the thinnest springs available in order to avoid drastic tuning changes which could result in tuning at, or too close to, resonance (natural frequency equals the exciting frequency). Tuning the unit too close to resonance can result in sensitive, unstable feeder operation and damage to the unit due to striking. The final stroke reading should be taken with the counterweights (if used) removed and the covers in place.

■ REDUCING BOWL STROKE FOR UNDERTUNED UNITS

1. Increase the air gap. (Refer to Air Gap Adjustment.) If the stroke decreases but the operating current is too high, reduce the air gap and retune the unit
2. To retune the unit, remove one spring at a time, retorque the spring mounting bolts, and re-assemble the covers. Repeat this procedure until the desired stroke is obtained.

After each alteration to the spring arrangement, check the air gap and re-adjust, if required. Check the feeder current to ensure that the nameplate rating is not exceeding.

When changing springs, a symmetrical pattern is recommended, but may not always be practical or necessary. In some cases, thinner springs must replace thicker springs and vice versa.

■ UNDERTUNED UNITS

For most applications, undertuning provides satisfactory operation. If handling a heavy load in the bowl, a loss of bowl stroke and feed rate may occur. As the feeder is emptying, the bowl stroke will gradually increase. If these conditions are not acceptable, overtuning may be necessary.

■ OVERTUNED UNITS

To overtune a unit, add a sufficient number of springs to cause a severe loss of bowl stroke when the rheostat is set at 100 percent. The unit is now overtuned a considerable number of cycles above the operating frequency. At this point, remove one spring, retorque the bolts, re-install the covers, and observe the gain in bowl stroke. Repeat this procedure until the desired stroke is obtained with the covers installed.

If a slight stroke increase is required, reduce the feeder air gap, making certain that striking does not occur, especially when the unit is operating intermittently, since feeders are more prone to striking at startup.

To obtain stable feeder operation, the feeder's natural frequency should not be below 64 cycles per minute for RC operation and 128 cycles per minute for AC operation.

■ **AIR GAP ADJUSTMENT**

The air gap should be set wide enough to prevent striking of the armature and core faces under normal operation. At the same time, the air gap should be set close enough so that the feeder will not exceed the current limitations stamped on the nameplate.

To adjust the air gap, slightly turn the hex nut under the base counterclockwise to open the air gap.

⚠ CAUTION: Never open the air gap more than necessary. An excessive air gap draws more current and reduces the power of the electromagnet, resulting in poor performance.

■ **CURRENT RATINGS**

MODEL	115V AC	115V RC	230V AC	230V RC
All models	0.8 Amps	0.6 Amps	0.45 Amps	0.22 Amps

■ **SPRING REPLACEMENT**

In order to obtain original operating characteristics, replacement springs should be of the same quantity and thickness as the springs that are removed.

When reassembling new springs, the clamping hardware (spacers and clamp blocks) should be positioned exactly as the old springs. Tighten the spring clamp bolts to a torque of 150 in lb (16.95 Nm).

Before replacing the springs, check to be certain that they are relatively straight, since badly distorted springs can result in a significantly different natural frequency when assembled and torqued.

NOTE: If the spring stacks are painted, make certain that no paint is applied to the area between the spring clamping faces.

■ **TROUBLESHOOTING**

PROBLEM	CAUSE	CORRECTION
Unit does not operate	Broken Wing Shorten Wing Blown Fuse Burned-out coil	Repair Repair Replace* Replace* Check for excessive current draw
Feeder operating below capacity	Broken springs Dirt buildup in bowl Loose hardware Bowl in contact with rigid object Bowl orientation features out of adjustment Air gap too large	Replace* Clean Repair Isolate Repair Reduce air gap

* Replace parts only with those supplied by or recommended by Homer City Automation.

■ MAINTENANCE

The Parts Feeder and its control should be kept clean, particularly the bowl orientation features and the air gap.

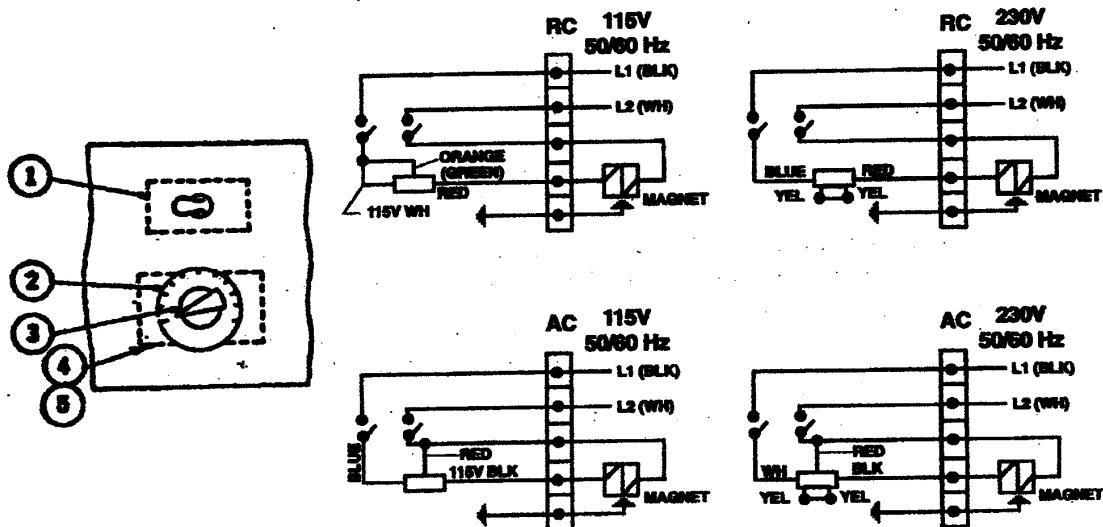


WARNING: Do not use a damp cloth or any liquid for cleaning the drive. A clean, dry compressed air supply is recommended for cleaning purposes.

Soap and water or light solvents may be used to clean the part contact areas of the bowl.

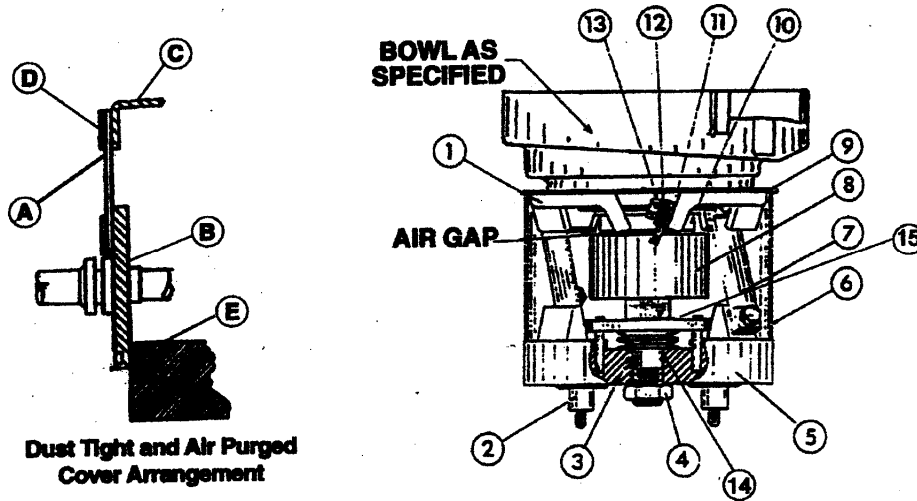
Periodically check the hardware to be certain that it is tight. All leaf spring clamp bolts should be tightened to a torque of 150 in lb (16.95 Nm). This is very important.

■ BUILT-IN CONTROL



BUILT-IN CONTROL – RC (RECTIFIED)			BUILT-IN CONTROL – AC (NON-RECTIFIED)		
ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1	0051X186	Line Switch	1	0051X186	Line Switch
2	A-87522	Grad. Dial	2	A-87522	Grad. Dial
3	0118X010	Control Knob	3	0118X010	Control Knob
4	C-179502-A C-221016-C	SCR Control (115V) SCR Control (230V)	4	C-179504-A C-221035-C	TRC Control (115V) TRC Control (230V)
5	A-125694	Warning Label	5	A-125694	Warning Label

EB-00-C, EB-00-D, EB-00-E PARTS FEEDERS



PARTS LIST – EB-00-C, EB-00-D, EB-00-E PARTS FEEDERS

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	C-75488-A	Bowl Mounting Plate (Counterclockwise)
	C-75488-B	Bowl Mounting Plate (Clockwise)
2	0207X019	Rubber Feet
3	0013X115	Schnorr Disk Spring
4	H0105004	Hex Jam Nut, 5/8 – 18
5	C-103607-A	Base (Counterclockwise)
	C-103607-B	Base (Clockwise)
	B-126350-A	* Base (Counterclockwise)
	B-126350-B	* Base (Clockwise)
6	B-76293-B	Cover (Separate Control Units Only)
	B-119584	Cover (Built-in Control Units Only), 115V RC, 50/60 Cy
	B-119584-A	Cover (Built-in Control Units Only), 230V RC, 50/60 Cy
	B-119705	Cover (Built-in Control Units Only), 115V AC, 50/60 Cy
	B-119705-A	Cover (Built-in Control Units Only), 230V AC, 50/60 Cy
	A-126352	* Cover (A)
	A-126353	* Air Purged Side (B)
	A-83252	* Top Cover (C)
	0285X004	* Clamp (D)
	A-140009-B	* O-Ring (E)
	0285X005	* Fastener
	■ A-196328-A	* Warning Label
	■ A-125694	Warning Label
7	A-76286-A	Leaf Springs (1/16" Tk), 5" and 7" Dia. Bowls
	A-76286-B	Leaf Springs (1/32" Tk), 5" and 7" Dia. Bowls
	A-76286-D	Leaf Springs (3/32" Tk), 10" Dia. Bowls

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PARTS LIST – EB-00-C, EB-00-D, EB-00-E PARTS FEEDERS

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
8	B-127445-C	Magnet and Mtg. Plate Assembly 115/60 RC
	B-127445-D	Magnet and Mtg. Plate Assembly 230/60 RC
	B-127445-A	Magnet and Mtg. Plate Assembly 115/60 AC
	B-127445-B	Magnet and Mtg. Plate Assembly 230/60 AC, 115/50 RC
	B-127445-G	Magnet and Mtg. Plate Assembly 230/50 RC
	B-127445-E	Magnet and Mtg. Plate Assembly 115/50 AC
	B-127445-F	Magnet and Mtg. Plate Assembly 230/50 AC
	B-127310-A	* Magnet Assembly 115/60 AC
	B-127310-E	* Magnet Assembly 230/60 AC, 115/50 RC
	B-127310-D	* Magnet Assembly 115/60 RC
	B-127310-L	* Magnet Assembly 230/60 RC
	B-127310-B	* Magnet Assembly 115/50 AC
	B-127310-J	* Magnet Assembly 230/50 AC
B-127310-M	* Magnet Assembly 230/50 RC	
9	A-76320	Cover Disk
10	A-76283	Armature Assembly
11	A-76285	Spring Spacer
12	A-76284	Spring Clamp
13	H0306801	Cap Screw, Hex Hd (5/16" – 18 x 3/4")
14	0149X049	* O-Ring
15	A-103603	Core (Magnet) Mtg Plate
	A-110369	* Core (Magnet) Mtg Plate

- Used for dust tight and air purged units only.
- Do not remove or paint over safety labels. If safety labels need replacement, contact Homer City Automation for an additional supply free of charge.

When ordering parts, please provide complete nameplate information.

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