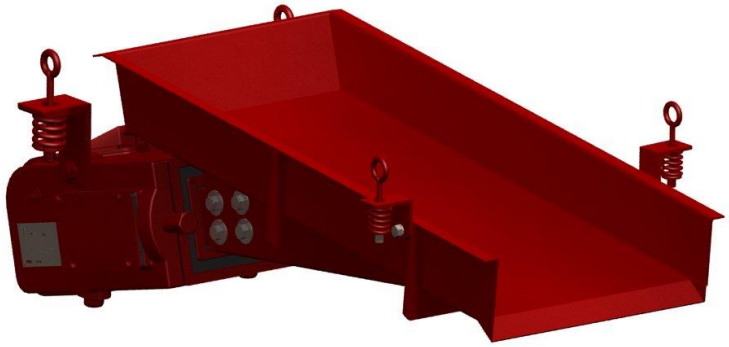
Syntron Material Handling

Service Instructions

Syntron®
Vibrating Feeders
Model: FH-24-C



www.syntronmh.com

SERVICE MANUAL

Syntron® Vibrating Feeders
MODEL: FH-24-C
High Performance Vibratory Feeders

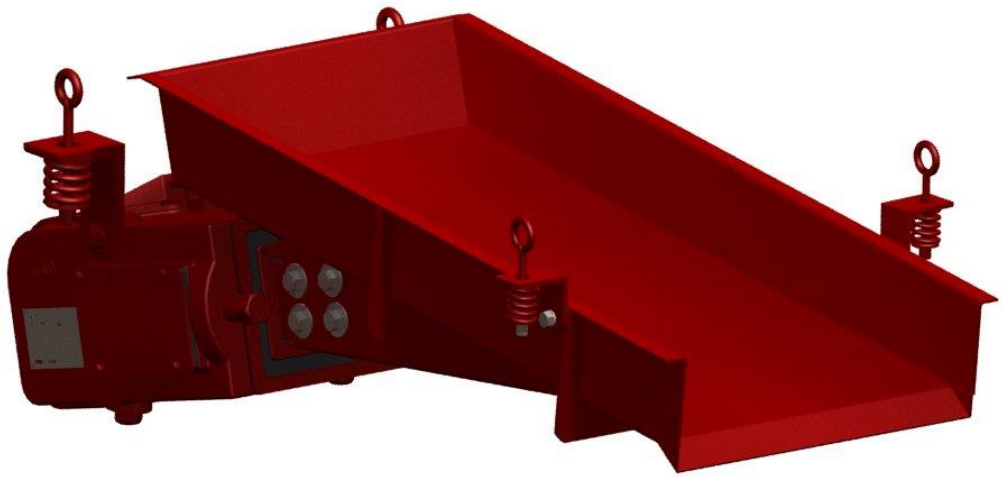


Table of Contents

General

Safety Instructions

The purpose of safety symbols is to attract your attention to possible danger. Safety symbols, and their explanations, deserve careful attention and understanding. The safety warnings do not by themselves eliminate any danger. The instructions or warnings they give are not substitutes for proper safety procedures.

SYMBOL	MEANING
	**Safety Alert Symbol**: Indicates **DANGER**, **WARNING**, or **CAUTION**. Attention is required in order to avoid serious personal injury. This symbol may also be used in conjunction with other symbols or pictographs.
NOTE:	Notes advise you of information or instructions vital to the operation or maintenance of the equipment.

IMPORTANT SAFETY INFORMATION

READ ALL INSTRUCTIONS BEFORE OPERATING

- Upon receipt, unpack and inspect the unit for damages that may have occurred during shipment. If damage is found, contact the shipping carrier and Syntron Material Handling immediately.
- Read instructions carefully. Be familiar with the controls and proper use of the unit.
- Do not operate the unit when tired, ill or under the influence of alcohol, drugs or medication.

Product safety labels must remain highly visible on the equipment. Establish a regular schedule to check visibility. If you need to replace safety labels, contact Syntron Material Handling, Material Handling Solutions Operation for an additional supply free of charge.

The instructions and data in this instruction manual are vital to the proper installation and operation of this equipment. In order to avoid delays due to faulty installation or operation, please see that these instructions are read by the person(s) who will install, operate and maintain this equipment.

NOTE: Supporting information, such as drawings, may be attached to the manual. The information contained therein takes precedence over corresponding information printed in this manual.

INTRODUCTION

The Syntron® FH-24-C Heavy-Duty Vibrating Feeder is used in heavy industrial applications including mines, aggregates, glass and food. It is an electromagnetic powered unit, with a dynamically balanced, two-mass vibrating system consisting of a trough assembly coupled to an electromagnetic drive by means of leaf springs. (See Figure 1)

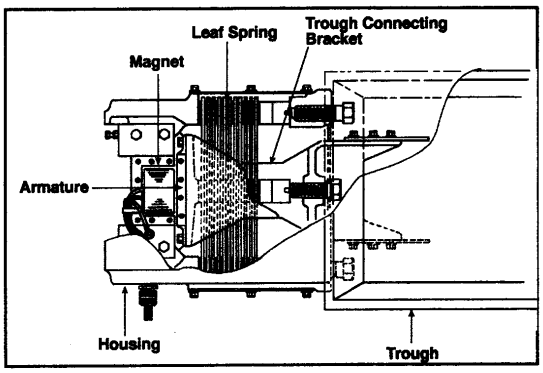


FIGURE 1: TYPICAL VIBRATING FEEDER ASSEMBLY

The drive assembly contains a coil and core assembly (magnet). This assembly is connected directly to the rear of the drive unit housing. The armature assembly, also part of the drive unit, is located opposite the coil and core, and is connected directly to the trough connecting bracket.

Spring assemblies are located inside the base casting. The spring assemblies form a stack which is clamped at both ends to the base casting and in the center to the armature bracket casting.

WARNING: Unauthorized alterations to this equipment will void the warranty.

THEORY OF OPERATION

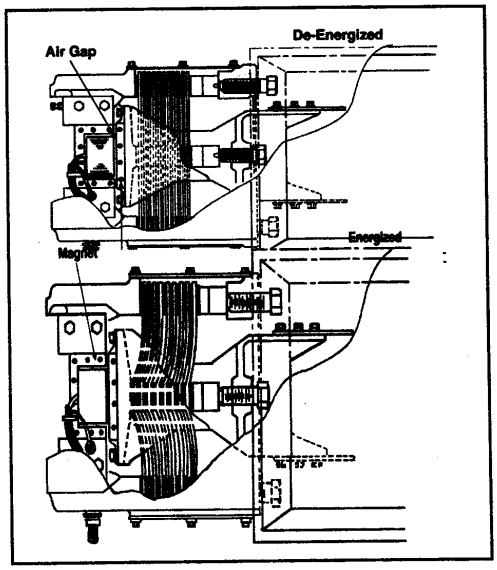


FIGURE 2: FEEDER DRIVE UNIT

In operation, power is supplied to the feeder magnet by means of a separate control.

The rectifier is used to convert alternating current into a pulsating half-wave current. It does this by blocking one-half of the AC cycle while permitting the other half-cycle to flow to the magnet.

Each power half cycle is followed by a half-cycle of blocked current flow. During this half-cycle, power is not available to the magnet coil and the coil becomes de-energized. The magnetic pull between core and armature is released, and the leaf spring is permitted to spring back to (and slightly through) its normal position. This pulls the trough, bracket and armature up and forward. (See Figure 2).

The unit is adjusted to limit travel of the armature so it does not strike against the magnet face. The space between the core and armature is called the air gap, and its setting is critical to good feeder operation. Refer to Adjusting the Air Gap for more information.

Material Flow

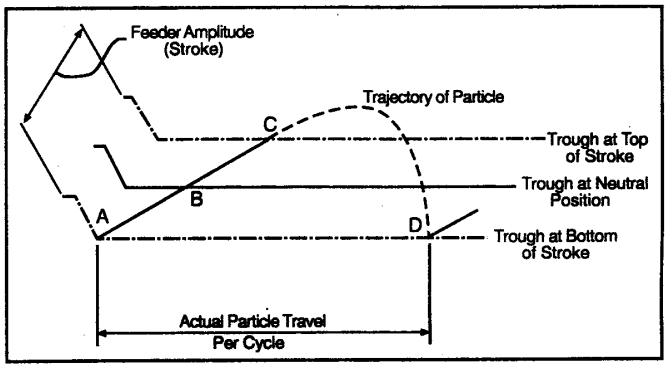


FIGURE 3: MATERIAL FLOW ON TROUGH

Figure 3 illustrates the action of a single particle of material moving along the trough surface. During a vibrating stroke, the trough surface travels between its lowest point (A) to its highest limit (C). The trough travels at its greatest velocity between (A) and (B). Although still traveling up and forward, the trough decelerates between (B) and (C). On the upward stroke, the particle of material is in contact with the trough from (A) to (C). At point (C), the velocity of the particle becomes greater than the trough, and the particle leaves the trough surface on a free flight trajectory from (C) to (D). The particle lands back on the trough surface at a position further forward (D). This completes one cycle. Each cycle imparts a forward and upward flight of material and it lands further along the trough toward the discharge.

With equipment operating from a 50-cycle power supply, the cycle of material flow is repeated 3000 times per minute. With equipment operating from a 60-cycle power supply, the cycle of material flow is repeated 3600 times per minute.

The rate of material flow is controlled by varying the stroke of the trough. The number of strokes remains constant, but the stroke length can be adjusted by turning the rheostat knob on the control to increase or decrease feed rate.

LONG-TERM STORAGE

Upon receipt, carefully uncrate the equipment. If the feeder assembly is mounted on skids, the skids should remained attached to the feeder until installation.

Give the equipment a thorough visual inspection to reveal damage that may have occurred during shipment. If damage is found, contact Syntron Material Handling and the shipping carrier immediately.

If the feeder must be stored for an extended period, it is advisable to store it indoors. If feeder is stored outdoors, move the control to an inside storage area. Place feeder on sufficient cribbing to protect from water. Apply oil or rust preventive to the hardware, an completely cover the unit with a waterproof covering.

CAUTION: Do not support the weight of the unit by the trough assembly. This will distort and damage the springs.

When storing the control, plug all openings to prevent dirt, rodents and insects from entering. Syntron Material Handling advises placing a corrosion preventive inside the control box. Cover the control and place in an area protected from extreme heat. Do not drop the control. The force of the impact may damage the components.

FEEDER INSTALLATION

CAUTION: Do not lift the unit by the trough. This will distort and damage the springs.

When received, the equipment should be carefully uncrated and inspected, as per the instructions in Shipping and Long-Term Storage. Remove all other packing bands, paper, etc. Check the control for protective shipping blocks, tapes, etc.

If the feeder is mounted on skids, remove the skids before installing the feeder. Prior to installing the feeder, review **Figure 4, Components of Feeder Assembly.**

Base-Mounted Feeders

Base mounting assemblies, furnished by Syntron Material Handling, consist of coil springs and a base frame. The base assembly must be firmly secured to the supporting structure using the hardware specified by Syntron Material Handling (hardware supplied by customer). The supporting structure must be level and capable of supporting the

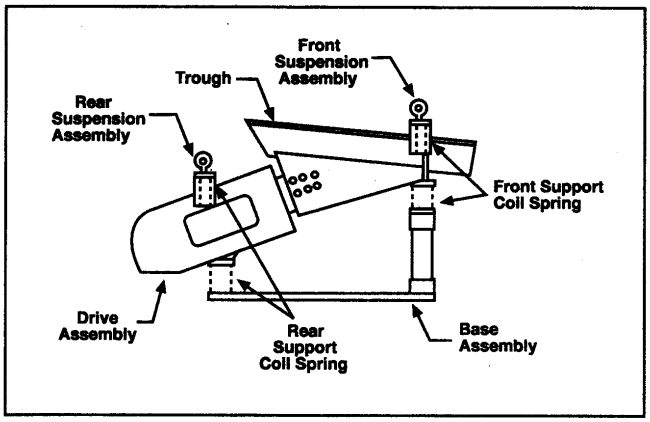


FIGURE 4: COMPONENTS OF FEEDER ASSEMBLY

entire weight of the unit under loaded operating conditions. The supporting structure must be sufficiently rigid so

that the vibrating action of the feeder is not transmitted to the support structure. On base-mounted installations, the support column must be vertical.

Suspension-Mounted Feeders

Suspension-mounted units are furnished with hanger assemblies to which suspension cables are attached (cables and fittings supplied by customer). Syntron Material Handling recommends using flexible steel cables. Mounting rods or Turnbuckles are not recommended. Table 1 indicates sizes of suspension cables required.

STANDARD CABLE – MILD STEEL 6 Strands With Hemp Center, 19 Wires Per Strand				
Feeder	Rear Suspension Cable Diameter	Max Safe Working Load (Tons)	Front Suspension Cable Diameter	Max Safe Work Load (Tons)
FH-24-C	3/8”	1 Ton	5/16”	3/4 Ton

The suspension cables must be as near vertical as possible. The feeder must be kept level transversely, but may slope down lengthwise toward the discharge end by as much as 15° (a 6° downslope is standard).

CAUTION: The feeder must never come in contact with any rigid object or adjacent surface that could hamper its vibrating action. Syntron Material Handling requires a minimum of 1-inch clearance to any point of contact. Any connections (such as dust seals) between the trough and adjacent objects must be flexible, preferably cloth or low durometer rubber (1/16-inch thick max).

Safety Slings

WARNING: Suspension-mounted units must be equipped with safety slings.

Safety slings (flexible cable) will prevent the feeder from falling into the work area below, in the event that a suspension hanger should break. The diameter of the cable used for the safety sling should be the same diameter used for the rear suspension cable. (Refer to Table 1)

The safety sling should be hung from a substantial support and must never touch any part of the feeder. Under load conditions, a 1-inch clearance between the slings and the feeder is usually sufficient. The slings should be positioned as in Figure 5.

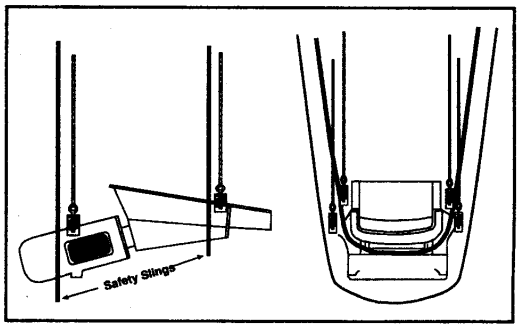
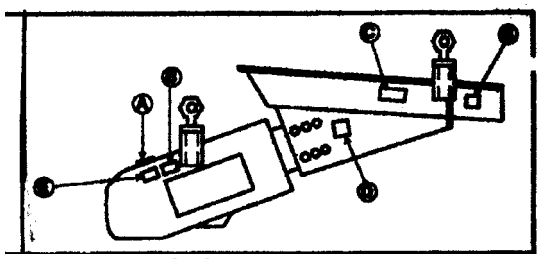


FIGURE 5: SAFETY SLINGS

It is important that safety slings are installed as a safety precaution. Do not use the safety slings to support the feeder during normal operation. Clearance must always be maintained between the slings and the feeder, even when the unit is loaded.

Safety Labels

Product safety labels are provided with the unit, as per Figure 6, and should be highly visible. Establish a regular schedule to check visibility; if labels need replaced, contact Syntron Material Handling for additional labels, free of charge.



Item	Description	Qty	Part No.
A	Disc Electric Label	1	A-125254
B	Safety Slings Label (N.S. & F.S.)	4	A-125255
C	Caution Label	1	A-102668
D	Stroke Gauge	1	A-212042
E	Gnd Conn Label	1	A-125694

FIGURE 6: SAFETY LABELS

HOPPER DESIGN

Hopper design is critical to feeder performance. Refer to Figure 7 for illustrations of RECOMMENDED and ACCEPTABLE hopper designs.

For more information, contact Syntron Material Handling to request a free copy of Working With Hoppers, available in book, video, or CD formats.

The Recommended hopper design, with a throat/gate height opening **(T/H)** ratio of 0.6, shows a uniform flow pattern to the feeder trough. Material at the front and rear of the hopper moves at nearly the same velocity, and the depth of material **(d)** is nearly equal to the hopper gate height. The Recommended hopper design allows the most economical feeder to be used with maximum efficiency from the feeder.

The Acceptable hopper design may require a slightly larger feeder than required for the Recommended design. This is due to the non-uniform flow pattern of material at the rear of the hopper. Material flow velocity is reduced material depth **(d)** is reduced, and a reduction in feeder capacity is realized. A **T/H** ratio of 0.5 to 1.0 is generally acceptable. However, when the **T/H** ratio exceeds this range, the material flow patterns will distort drastically and significantly reduce feed rates.

Following are some important considerations related to hopper design:

1. Rear wall angle **(A)** should be steep enough to permit material flow (60° or more).
2. Front wall angle **(B)** should be just enough to permit material flow (5° less than **A**).
   H should be between 1.2 to 1.5 times **D** where **D** is determined by:

$$\mathbf{D} = \frac{\text{Capacity} \times 4800}{W \times \text{Flow Rate} \times \text{Density}}$$

Capacity = $\frac{\text{W x Flow Rate x Density x "d"}}{4800}$

Capacity = Tons/Hr

W = Feeder width in inches – 4 inches for skirts.

Flow Rate = Ft/Min

Density = lbs/Ft

D = Materials depth of flow in inches

3. Gate opening (**H**) must be a minimum of 2 times the largest particle of material and should increase proportionally for the desired capacity. The most economical feeder is selected when the throat dimension **T** is equal to **0.6 x H**. If **T** is greater than **H**, the flow pattern of the material is disturbed, resulting in non-uniform flow.
4. The width of opening **D** for random size material should be 2-1/2 times the largest particle; for near size particles, **D** is 5 times the largest particle.

NOTE: The hopper opening must be adequate to provide the required capacity by gravity flow. The outlet must be large enough to prevent material from arching in the hopper, due to particle size or cohesiveness of the material. The diagonal of the opening must be large enough to prevent a "ratholing" condition from occurring above the opening.

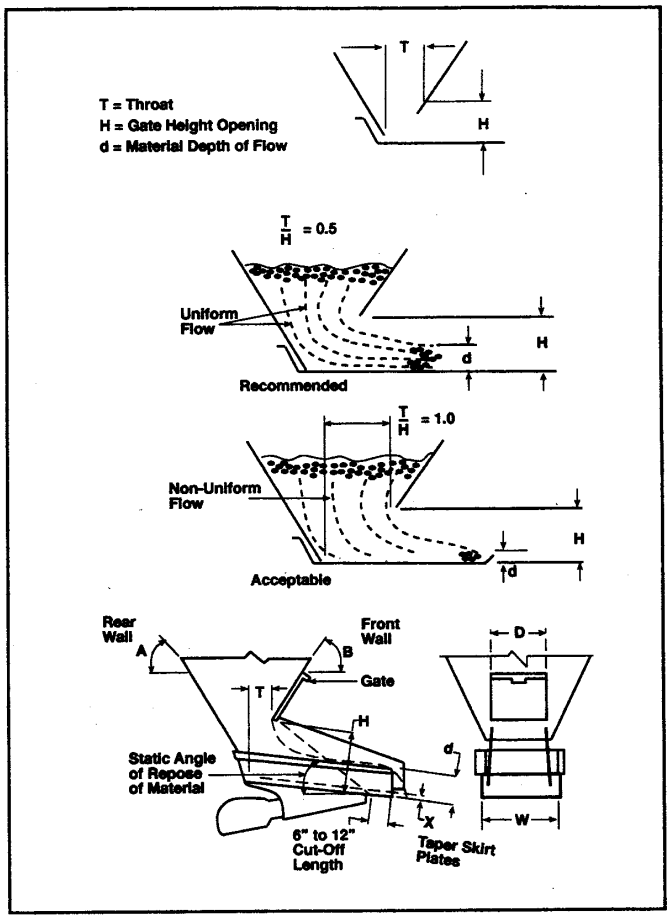


FIGURE 7: HOPPER DESIGN

INSTALLATION CHECKS

1. Adjust hanger cables or base-mounted spring seats so that the isolator springs are equally loaded on each side of the feeder.
2. Make sure that hanger mounting hardware is tight.
3. Make sure that coil springs are properly seated.
4. Flexible steel hanger cables are recommended.
5. Suspension hanger cables must not whip.
6. The feeder must be clear of any adjacent structure including hoppers, skirt boards, and safety slings. The vibrating action of the feeder must not be hampered in any way. Syntron Material Handling recommends a minimum of 1-inch clearance be maintained at all times during feeder operation.
7. The width between hopper skirt boards must be greater at the discharge end of the trough than at the hopper opening.
8. To prevent clogging, skirt boards must be closest to trough bottom at the hopper opening, rising toward the discharge end.
9. Any connections to the feeder (dust seals, electrical cables, air lines, etc.) must be flexible.
10. Do not alter or make any additions to the feeder.
11. The voltage and frequency of the power supply must be the same as that designated on the nameplate.

CONTROL INSTALLATION

WARNING: The electrical power supply connection to the Syntron Material Handling-supplied control must be made through a customer-supplied safety disconnect switch which must be mounted next to the control. Incorporation of an emergency stop may also be required, per local codes.

CAUTION: For multiple feeder installations, each control is factory adjusted for a given feeder. It is very important that the proper control is wired to its matching feeder.

Failure to match control and feeder can result in poor performance. Consult Syntron Material Handling if controls and feeders become mismatched.

The controls are marked with a number either on the door or on the inside panel, and the feeder is marked with a corresponding number adjacent to the nameplate.

In the event that a control subassembly is removed from a master control, ensure that control and feeder identity is retained.

When installing the control, refer to the wiring diagram shipped with the control.

CAUTION: The wire gauge between the feeder and control must be of a size sufficient to carry the current and voltage as stamped on the equipment nameplate.

A voltage drop through a conductor of insufficient size for the required distance could result in a lack of feeder stroke during operation.

NOTE: Please refer to Table 4, Wire Size Chart, to determine the proper wire gauge.

OPERATING PROCEDURE

WARNING: Before operating the feeder, make sure that the control is closed and secured.

With the feeder and control properly installed in their operating locations and all wiring completed, the equipment is ready for operation.

Before starting the equipment, rotate the control knob on the control to a low counterclockwise position. Energize the line switchgear, and the feeder will begin to operate at a low stroke. While the feeder is running at this reduced rate, check all external fasteners on the feeder assembly for tightness. Check the method of feeder support, making sure it is substantial and that the feeder is not touching any rigid objects or adjacent structure.

With the feeder operating satisfactorily, load the trough and adjust the control knob to the desired output. Turning the knob clockwise will decrease the feed rate. Material will move along the trough surface in a smooth, controlled manner toward the discharge end of the trough.

WARNING: While the equipment is in operation, personnel should keep clear of the discharge end of the unit.

MAINTENANCE


WARNING: Before performing any maintenance work, disconnect the electrical power supply at the safety disconnect switch.

Very little maintenance is required on the feeder and control. However, the following points should be given careful consideration:

1. Some materials tend to adhere and build-up on the trough surfaces. If permitted to accumulate, the additional weight will alter the tuning of the feeder and may result in damage to the unit.
2. The feeder magnet and control should be kept reasonably clean. A dry, compressed air supply is recommended for general cleaning of these units.

NOTE: Never oil the spring assembly. This destroys the clamping effect of the spring pads against one another.

ADJUSTING THE AIR GAP

NOTE: Parts referenced in the following instructions reference the Parts Diagram at the end of this manual.

The air gap is the spacing that exists between the armature and the magnet assembly (Refer to Figure 2). Proper adjustment of this air gap is extremely important for good feeder operation.

If the air gap is adjusted so that the armature and magnet are too close, the faces of these items will contact each other during feeder operation. This is called 'striking'. A striking condition will cause severe mechanical damage (broken springs, cracked trough or base, cracked armature or core).

If the air gap is adjusted so the armature and magnet are too far apart, the current draw will be excessive. A high current condition will result in coil burn-out, failure of control components, or reduced material feed.

The air gap is factory set at approximately 0.080-0.085 inches (specific value stamped on coil) for best performance of the FH-24-C feeder without exceeding the current rating designated on the nameplate of the feeder. Do not exceed the maximum trough stroke stamped on the stroke gauge when making final adjustments to the air gap.

1. Remove the top cover (Y) on the feeder drive to expose the coil and core assembly (B,F) and armature (H).
2. Loosen bolts, securing the coil and core assemblies to the feeder drive and the locking nuts, then rotate the jack screws (A) several turns counterclockwise.
3. Slide the coil and core assembly in until the pole faces of the magnet and armature are in contact. Snug down the clamping bolts (Cap Screws, C) to hold the core in place to offer some resistance when turning in the jack screws to adjust the air gap. Check from both top and bottom to be sure the core and armature faces are parallel. Eliminate any gaps by using shims between the core and assembly mounting lugs on the base casting (X).
4. Use the jack screws to reset the air gap to the tag stamped value, and then torque the coil and core assembly to hold down bolts. Tighten the locknuts on the jack screws. (Refer to Table 2, Torque Specifications)

5. Operate the feeder to check trough stroke. Stroke must not exceed the value stamped on the stroke gauge. Adjust control output voltage. Refer to the service instructions furnished with the control.
6. Recheck static and dynamic air gap to ensure that the unit does not strike.
7. Recheck the current and stroke to ensure proper operation.

After the air gap is satisfactorily adjusted, tighten the magnet hold-down bolts to the proper torque and replace the cover.

Checking the Feeder Current with a Clamp-On Amp Meter

When reading the current of the unit with a clamp-on amp meter, the meter reading must always be multiplied by a value of 1.7. The meter does not reveal the same current as stamped on the equipment nameplate, due to the wave form characteristics of the feeder during operation. Therefore, the 1.7 multiplier must be used. All current readings must be taken at the control.

THE STROKE GAUGE

Feeder stroke is the distance the trough travels on one complete cycle of vibration. This is measured from the forward, upward limit of the vibrating stroke to the downward, backward limit of the vibrating stroke. (Refer to Figure 3).

The Syntron FH-24-C Feeder will operate at a maximum stroke of 0.060 inches at the maximum control setting. Due to design restrictions, some units will operate at a slightly lower stroke – see the stroke gauge on the unit for specific stroke.

The stroke is read from a stroke gauge on the feeder wing plate.

Under vibration, a black “V” will appear on the gauge. The stroke of the unit can be read at the apex of this black “V”. The lines should appear solid black.

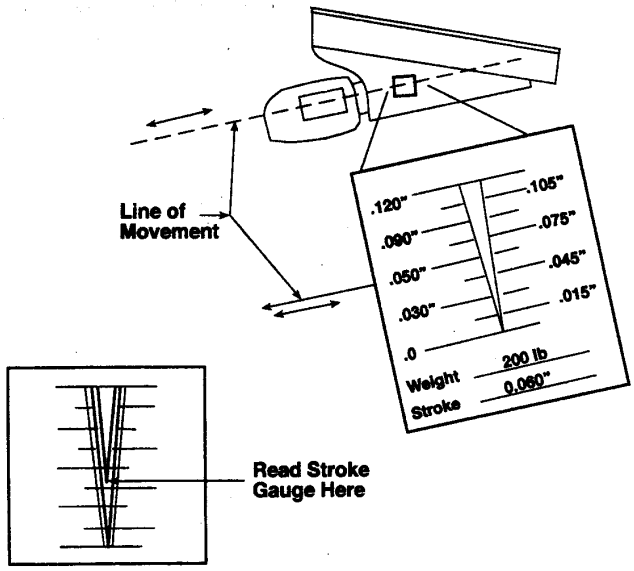


FIGURE 8: APPLICATION OF THE STROKE GAUGE

REPLACING THE SPRINGS IN DRIVE ASSEMBLY (WITHOUT TROUGH)

NOTE: When replacing the springs, do not remove the coil and core assembly.

NOTE: When replacing the springs, refer to Figure 9 and the Parts Diagram for help in locating the specific parts. When a spring needs replaced, Syntron Material Handling strongly recommends that the entire spring rack be replaced.

WARNING: Before performing any maintenance work, disconnect the electrical power supply at the safety disconnect switch and lock out equipment.

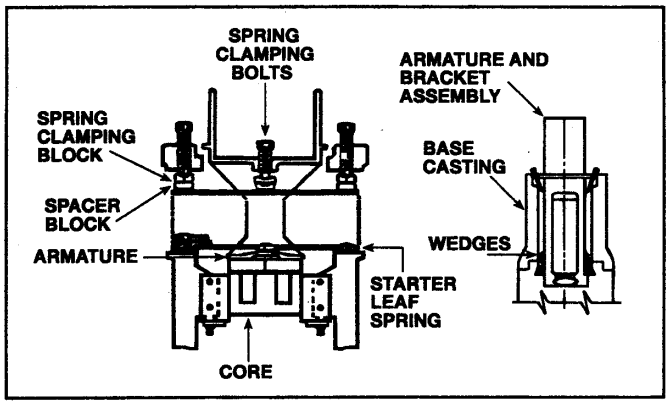


FIGURE 9: SPRING REPLACEMENT

1. Remove side covers (Z) and back cover (Y). Unclamp the diaphragm (K) to gain access to install hardwood edges.

2. Hold armature bracket in alignment with base casting by driving hardwood edges between the armature bracket (J) and base casting (X). This will ensure correct alignment of the replacement springs on the spring alignment bar (S).

3. Loosen the spring clamping bolts (Q) enough to permit removal of the clamping blocks (R). Document spring quantities and spacer block positions as installed in the original unit.

4. Once the clamping blocks are removed, remove the leaf springs (U and V).

5. Install new springs one at a time, starting with a single spacer spring (with the spacers toward the magnet). The springs will have an off-color stripe at one end; all springs should be installed with this stripe on the same side, and this is the side that should be aligned to the alignment bar. Continue to install the remaining springs in this manner. If the arrangement is a split-spring stack, place a double spring spacer before the spacer block and as the last spring before installing the clamping blocks. (Refer to Figure 9)

6. With all springs installed and resting on the alignment bars (S), check alignment of the armature bracket (J) and make certain all colored ends align on one side. The armature bracket should not be twisted within the base casting. The core and armature pole faces should be parallel to each other.

7. Replace the center clamp block (R) and hand tighten the center spring clamping bolt (Q).

8. Replace the end clamp blocks (R) and tighten the end clamp bolts enough to hold the spring stack in position.

9. Torque the center spring clamping bolt (Q) to ½ chart value. (Refer to Table 2, Torque Specifications)

10. Torque the end spring clamping bolts (Q) alternately to equalize the pressure across the springs to ½ the chart value. (Refer to Table 2, Torque Specifications)

11. Final torque the center bolt to specifications. Then final torque the end clamping bolts. (Refer to Table 2, Torque Specifications)

12. Remove the wooden wedges and replace the diaphragm (K).

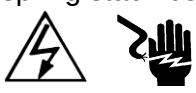
13. Adjust the air gap to gap indicated on the tag located on the core. (Refer to Adjusting the Air Gap for the proper adjustment procedure) Then replace the covers.

14. Reconnect the drive to the trough.

 **WARNING: Never oil the spring assembly!**

SPRING REPLACEMENT FOR INSTALLED UNITS

NOTE: When replacing the springs, refer to Figure 9 and the Parts Diagram for help in locating specific parts. When a spring needs replaced, Syntron Material Handling strongly recommends that the entire spring stack be replaced.



WARNING: Before performing any maintenance work, disconnect the electrical power supply at the safety disconnect switch and lock out equipment.

1. Weld straps to the hopper and trough to support the feeder and material in the hopper while the springs are being replaced. (Refer to Figure 10)

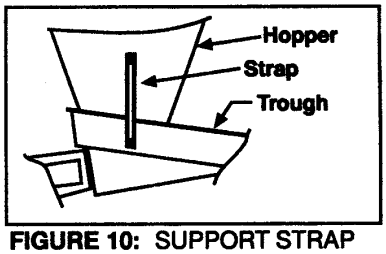


FIGURE 10: SUPPORT STRAP FOR INSTALLED ASSEMBLY

CAUTION: If the drive must be removed to gain access to the spring clamping bolts, provide a means of supporting the trough before removing the drive unit. Refer to Replacing Springs in a Drive Assembly (Without a Trough).

NOTE: When replacing springs, do not remove the coil and core assembly.

2. Hold the armature and bracket in alignment within the base casting by driving hardwood edges between the armature bracket (J) and base casting (X). (Refer to Figure 11)

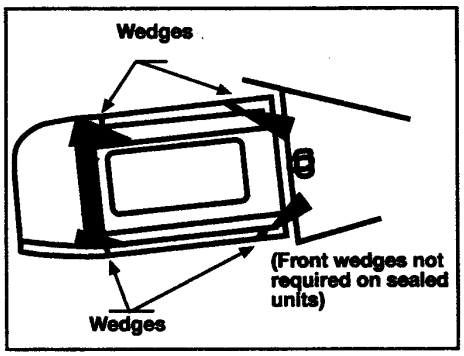


FIGURE 11: WEDGES

3. Loosen the spring clamping screws (Q) enough to permit removal of the clamping blocks (R). If necessary, use penetrating oil. Remove the old leaf springs (T).

4. Install new springs one at a time, starting with a single spacer spring with the spacers toward the magnet. The springs will have an off-color stripe on one end; all springs should be installed with this stripe on the same side, and this is the side that should be aligned to the alignment bar. Continue to install the remaining springs in this manner. If the arrangement is a split-spring stack, place a double spring spacer before the spacer block and as the last spring before installing the clamping blocks. (Refer to Figure 12)

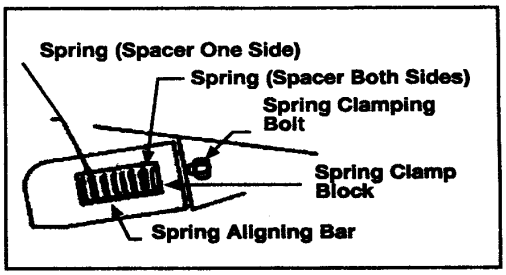


FIGURE 12: SPRING ARRANGEMENT

5. Replace the center clamp block (R), and tighten center spring clamping screw (Q). Be sure the end of the screw is in the pocket of the clamping block.

6. Replace the end clamp blocks (R), and snug the end clamp screws (Q) enough to hold the spring stack in position.

7. Tap the springs into alignment on one side using the alignment bar as a guide. Be sure the springs are resting on the alignment bar on both sides.

8. Torque the center spring clamping bolt (Q) to ½ chart value. (Refer to Table 2, Torque Specifications)

9. Torque the end spring clamping bolts (Q) alternately to equalize the pressure across the springs to ½ chart value. (Refer to Table 2, Torque Specifications)

10. Final torque the center bolt to specifications. Then final torque the end clamping bolts. (Refer to Table 2, Torque Specifications)

11. Remove the wooden wedges.

12. Adjust the air gap to gap indicated on the tag located on the core. (Refer to Adjusting the Air Gap for proper adjustment procedure). Then replace the covers.

13. Reconnect the power supply.

TROUBLESHOOTING

PROBLEM	CAUSE	CORRECTION
Feeder operates too slowly (below capacity).	Low line voltage at control or feeder.	Increase size of cable from power sources. Check rating at power supply. If consistently low (5% or more), change the coil.
	Air gap too wide.	Adjust to gap indicated on the tag on the core.
	Feeder in contact with rigid object or adjacent structure.	Provide a one-inch minimum clearance.
	Insufficient feeder downslope.	Increase feeder downslope (do not exceed 15%).
	Hopper opening too small.	Raise hopper gate or alter hopper design. Skirt boards may be required to handle additional material flow.
	Defective leaf springs.	* Replace all leaf springs.
	Spring stack packed with rust or dirt.	Remove and clean.
	Loose spring stack.	Tighten spring clamping hardware (see Torque Specifications).
	Cracked or worn-out trough liners.	* Replace trough or liner and adjust air gap.
Feeder operates too fast.	High operating voltage.	Check maximum voltage setting on control. Refer to service instructions provided with control.
	Build up of material.	Remove build up.
Weight added to trough.	Trough weight changed; additional weight added such as thicker liners, trough extensions, etc.	Remove additional weight; consult Syntron Material Handling for recommendations and service assistance.
Feeder hums, will not vibrate.	Rectifier failure (within control).	* Replace.
Feeder will not operate.	Coil failure.	Check power supply rating. Check air gap. Check for high current resulting from defective or packed springs.
	No power to control.	Determine cause, repair.

TROUBLESHOOTING (Cont'd)

PROBLEM	CAUSE	CORRECTION
Feeder will not operate (cont'd)	Short in wiring.	Locate and repair.
	Defective control.	Refer to the service instructions for the control.
	Blown fuse.	Replace fuse.
Feeder makes loud striking noise.	Air gap set too close.	Readjust the air gap.
	Trough weight changes; additional weight added such as thicker liners, trough extensions, etc.	Remove additional weight; consult Syntron Material Handling for recommendations and service assistance.
	Broken leaf springs.	Replace broken springs.
	Control incorrectly adjusted.	Readjust control voltage to feeder coil. Consult Syntron Material Handling for correct setting; also refer to the control.

* Replace with parts supplied, or recommended, by Syntron Material Handling.

SPECIFICATIONS

Table 2: Torque Specifications

TORQUE VALUE (ft lb)		
Item	**Dry**	**Lubricated**
C	180	130
H	30	23
P	150	---
Q	---	780

Table 3: Operating Specifications

Maximum Trough Weight	200 lb
Trough Stroke Range @ (Max trough weight)	0.060 inches
Minimum Natural Frequency	4000 vpm
Maximum Current Rating	14.0 Amps (230V/50Hz) 7.0 Amps (460V/60Hz)
Minimum Dynamic Air Gap	0.018 inches
Nominal Static Air Gap	0.085 inches

TABLE 4: WIRE SIZE CHART

AMPS

										Wire Size (AWG – B&S)
500	250	165	125	100	80	70	60	55	50	#0000
410	205	140	105	80	70	60	50	45	40	#000
310	155	100	75	60	50	45	40	35	30	#00
250	125	80	60	50	40	35	30	28	25	#0
200	100	70	50	40	35	30	26	24	20	#1
165	80	55	40	33	27	24	20	18	16	#2
125	62	40	30	25	20	18	15	14	12	#3
100	50	33	25	20	16	14	12	11	10	#4
80	40	28	20	16	14	12	10	9	8	#5
60	30	20	15	12	10	9	7.5	7	6	#6
50	25	17	12	10	8	7	6	5.5	5	#7
40	20	13	10	8	6.5	5.5	5	4.3	4	#8
30	16	10	7.5	6	5	4.5	4	3.5	3	#9
25	13	9.5	6	5	4	3.5	3	2.7	2.5	#10
20	10	6.5	5	4	3.3	2.8	2.5	2.2	2	#11
16	7.5	5	4	3	2.8	2.2	1.9	1.8	1.5	#12
13	6	4	3	2.5	2	1.8	1.5	1.4	1.2	#13
10	2	3	2.5	2	1.6	1.4	1.2	1		#14
7.5	3.8	2.7	2	1.6	1.3	1.1	1			#15
6.2	3	2	1.5	1.2	1					#16
100	**200**	**300**	**400**	**500**	**600**	**700**	**800**	**900**	**1000**	

DISTANCE IN FEET

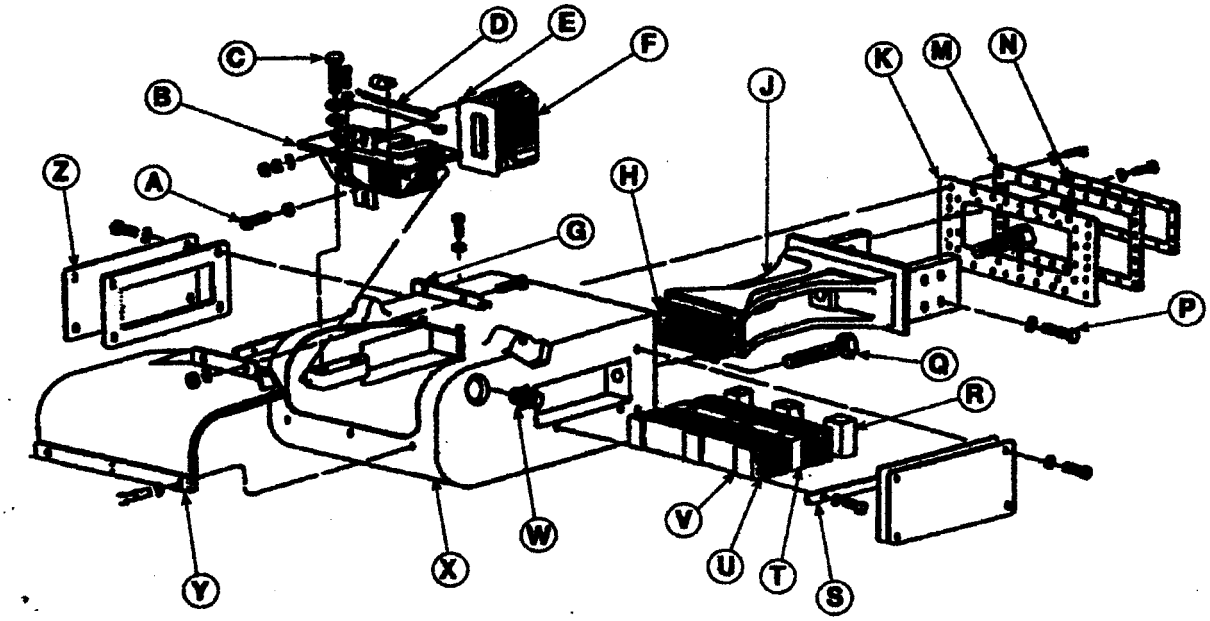
The chart shown above contains information concerning the proper wire size required to carry Syntron feeder current loads at distances up to and including 1000 feet.

The chart is designed for a typical two-wire arrangement, allowing a 5-volt drop at the specified distances.

Example: A feeder rated at 20 amps is located 800 feet from the power source or control. Under the 800-foot column, it can be seen that to carry a two-wire arrangement of 20 amps with a 5-volt drop, a #2 size wire is required.

The total distance of wire from the power source to the feeder magnet and back to the power source has been taken into consideration on this chart.

PARTS DIAGRAM – SYNTRON® FH-24-C ELECTROMAGNETIC FEEDER



PARTS LIST – SYNTRON® FH-24-C ELECTROMAGNETIC FEEDER

Item	Description	Quantity	Part No.
A	Jack Screw, Sq Hd, Cup Pt (3/8" – 16 x ½")	2	H0403200
	Hex Nut (3/8" – 16)	2	H0103001
B	Core Assembly	1	B-118657
C	Cap Screw, Hex Hd Gr 5 (5/8" – 18 x 1-3/4")	4	H0318701
	Clipped washer H.S. (5/8")	4	A-800097-2
	Core Aligning Shims	2	A-34981-A
D	Cable Assembly	1	A-17279-D
	Ground Wire Extension	1	B-192419-H
	Mach Screw, Rd Hd (1/4" – 20 x ½" Br)	2	H0204902
	Lockwasher, Ext Tooth (1/4")	2	H0114904
	Mach Screw, Rd Hd (1/4" – 20 x ½")	1	H0204901
E	Cable Clamp	1	0198X002
F	Coil Assembly (230V/60 Hz)]		B-229236-B
	Coil Assembly (380V/60 Hz)]	1	B-229236-M
	Coil Assembly (460V/60 Hz)]	only	B-229263-A
	Coil Assembly (575V/60 Hz)]		B-229263-C
	Paper Insulation	1	B-33309-CB
G	Cover Angle Bracket	1	A-74118
	Cap Screw, Hex Hd (3/8" – 16 x 1")	2	H0310201
	Lockwasher (3/8")	2	H0113209
	Cap Screw, Hex Hd	2	H0311401

PARTS LIST – SYNTRON® FH-24-C ELECTROMAGNETIC FEEDER (cont'd)

Item	Description	Quantity	Part No.
	(3/8" – 16 x 3")		
	Lockwasher (3/8")	2	H0113209
	Hex Nut (3/8" – 16)	2	H0103001
H	Armature Assembly	1	A-118652
	Cap Screw, Soc Hd	4	H0421900
	(3/8" – 16 x 1-1/4")		
J	Armature Bracket Casting	1	C-57803-A
K	Diaphragm	1	A-59132
M	Diaphragm Clamp (Base Casting)	1	A-28754
	Cap Screw, Hex Hd	14	H0301201
	(1/4" – 20 x ¾")		
	Lockwasher (1/4")	14	H0112809
N	Diaphragm Clamp		
	(Armature Bracket)	1	B-59130
	Cap Screw, Hex Hd	10	H0301201
	(1/4" – 20 x ¾")		
	Lockwasher (1/4")	10	H0112809
P	Cap Screw, Hex Hd	8	H0322610
	(5/8" – 11 x 1" GR 5)		
	Washer, H.S. (5/8")	8	H0117562
Q	Spring Clamp Screw	3	A-59131
R	Spring Clamp Block	3	A-129010-C
	(1" thick)		
S	Spring Aligning Bar	2	A-129014
	Cap Screw, Hex Hd	4	H0306601
	(5/16" – 18 x 5/8")		
	Lockwasher Extension Tooth (5/16")	4	H0113004
T	Spring Spacer Assembly	1	A-129015
U	Leaf Spring (Spacer One Side)	25	A-129025
V	Leaf Spring (Spacer Both Sides)	2	A-129026
W	Cable Grip	1	0102X008
	Cable Tie	1	0038X354
X	▲ Nameplate	1	A-97298
	Drive Screw P.K. Ty U	4	H0430500
	(#2 x 3/16")		
	Base Casting	1	D-228887-3
Y	Magnet Cover Assembly	1	B-126476
	Lockwasher (5/16")	3	H0113001
	Cap Screw, Hex Hd	3	H0307201
	(5/16" – 18 x 1")		
Z	Side Cover	2	A-75119
	Side Cover Gasket	2	B-204543-1
	Cap Screw, Hex Hd	8	H0307201
	(5/16" – 18 x 1")		
	Lockwasher (5/16")	8	H0113001

Note:

Syntron Material Handling reserves the right to alter at any time, without notice and without liability or other obligations on its part, materials, equipment specifications, and models. Syntron Material Handling also reserves the right to discontinue the manufacture of models, parts, and components thereof.

Your satisfaction is very important to us. Please direct any comments, questions, or concerns to our Marketing Communications Department.

Syntron Material Handling

Corporate Office
P.O. Box 1370
Tupelo, Mississippi 38802
Phone: 662.869.5711
Fax: 662.869.7449

Form No. SM0573_042616 Printed in U.S.A

Syntron®
Link-Belt®

Tupelo
2730 Hwy 145 South
Saltillo, Mississippi 38866
Phone: 662.869.5711
Fax: 662.869.7493
Toll Free: 800.356.4898
info@syntronmh.com

Changshu
#2 Road No. 1
Changshu Export Processing Zone
Changshu, Jiangsu, China 215513
Phone: +86 0512.52299002
Fax: +86 0512.52297228
info@syntronmh.com