

Service Instructions

Syntron®
F-450-C Feeder



Syntron®

F-450-C Electromagnetic Vibratory Feeder

■ SPRING REPLACEMENT ■ COIL AND/OR CORE REPLACEMENT ■ OPERATION ■ PARTS LIST

Thank you for buying your equipment from SMH. This manual will help you to understand how your equipment operates and what is required to maintain peak performance. Please read it thoroughly and keep it on file for reference.

Your satisfaction is important to us, so please direct any comments to our Marketing Communications department.

Date Purchased: _____


Serial No: _____


Factory Order No: _____

TABLE OF CONTENTS

Safety Warnings	1
Spring Replacement	1
Torque Specifications	2
Operating Specifications	2
Coil/Core Replacement	3
The Air Gap	4
Resetting the Air Gap	4
Checking Feeder Current	5
The Stroke Gauge	5
Parts List	7

SAFETY WARNINGS:

 **WARNING:** Disconnect the electrical supply at the safety disconnect switch before performing any maintenance.

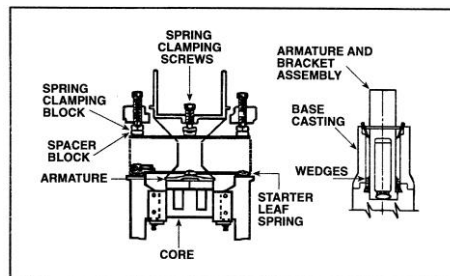
 **CAUTION:** If the trough must be removed to gain access to the spring clamping screws, first provide a means of support for the trough and drive unit. The trough can be removed by removing the mounting bolts (N) located on the side of the wingplates

SPRING REPLACEMENT

Refer to the parts illustration diagram,

1. Remove the side covers (DD) and the magnet cover assembly (AA). If the springs are replaced without separating drive unit from the trough, slit the diaphragm (H) to gain access to install hardwood wedges.

SPRING REPLACEMENT (cont'd)



page 6.

the

2. Hold the armature bracket in alignment with the base casting by driving hardwood wedges between the armature bracket (G) and the base casting (Z). This will ensure correct alignment of the springs on the spring alignment bar (V).
3. Loosen the spring clamping screws (M,P) enough to permit removal of the clamping blocks (Q,R). If necessary, use penetrating oil.
4. With the clamping blocks (Q,R) removed, the leaf springs (S,U) can be removed examined.
5. When installing new springs, the starter spring with spacers on both sides (U) must be placed in the spring cavity first; the other springs (S) have a spacer on only one side. Insert these springs (S) so that the plain side contacts the spacer on the previously placed spring.
6. With all springs installed and resting on the alignment bar (V), check the alignment of the armature bracket (G). The armature bracket should not be twisted within the base casting (Z). The core (B) and armature (G) pole faces should be parallel to each other.
7. Replace the center clamp block (Q) and the center spring clamping screw (M).
8. Replace the end clamp blocks (R) and tighten the end clamp screws (P) enough to hold the spring stack in position.
9. Torque the spring clamping screws (M,P) alternately to equalize pressure across the springs. Refer to the torque specifications below.
10. Remove the wooden wedges and replace the trough, if it was removed.
11. Adjust the air gap to .085 inches (2.16 mm). Refer to the Air Gap Adjustment procedure on page 4.
12. Replace the covers (DD) and (AA). Reconnect the power supply. After the unit has been operating for several hours, retorque the clamping screws (M,P) if necessary.

⚠ CAUTION: Never oil the spring assembly. If the spring stacks are repainted, ensure that paint is not applied to the area between the spring clamping assemblies.

TORQUE SPECIFICATIONS

TORQUE VALUE – ft lb (Nm)		
ITEM	DRY	LUBRICATED
C	730 (1017)	540 (732.1)
E	35 (47.5)	-
M,P	-	2000 (2711.6)
N	375 (508.4)	281 (381)

OPERATING SPECIFICATIONS

Nominal trough weight lb (340.2 kg)	750
Trough stroke range "-.058" (1.4-1.5 mm)	.055

COIL AND/OR CORE REPLACEMENT

1. Remove the magnet cover assembly (AA) and the bottom cover (X); then loosen the hex nuts on the set (jack) screws (A) and remove them.
2. Disconnect the coil and cable assembly (E) from the power supply and the ground wire from the base casting (Z). Loosen the cable grip (W) and pull the cable through the cable grip into the base casting.
3. Remove four core clamping screws (C) from the core assembly (B). Carefully remove the core and the coil and cable assembly as a single unit.



Warning: The core and the coil and cable assembly weighs approximately 250 pounds (113.4 kg). Use a lifting device. Lifting lugs are provided to safely remove the core.

4. Observe the size and location of the washers used to attach the coil and cable assembly (E) and the core (B) and to connect the ground wire.
5. Remove the coil and cable assembly (E) from the core (B).
6. With the core (B) upright and the coil washer (D) and fish paper insulation in their original locations, lower the replacement coil and cable assembly onto the core.
7. If there is a space between the washer(s) and either coil mounting lug, shim with additional washers to close the space.
8. Attach the coil and cable assembly (E) to the core (B) using existing screws, washers, and hex nuts.
9. Connect the green ground lead to the core (B) at its original location. Be sure to locate the shake-proof lock washer between the terminal and the core.
10. Replace the core (B) and the coil and cable assembly (E) into the base casting (Z). Ensure that the ground connection between the core and base casting is securely connected.
11. Replace the core clamping screws (C) and the core clamping bars (C).
12. Close the air gap so that the pole faces of the core (B) and the armature (G) are in contact. Snug down the clamping screws (C) to hold the core in place to offer some resistance when turning in the set screws to adjust the air gap. Check both the top and the bottom to be sure that the core and armature faces are parallel.
13. Insert the cable through the cable grip, tighten the cable grip (W), and connect the cable leads to the coil. Ensure that the ground connection between the core (B) and base casting (Z) is securely connected.
14. Adjust the air gap to .085 inches (2.16 mm). Refer to the Air Gap Adjustment procedure on page 4 or in the general service manual, SM0571.
15. Torque the core clamping screws (C). Refer to the torque specifications on page 2.
16. Replace the covers (AA,DD) and reconnect the power supply.

17. Check the trough stroke. The maximum allowable stroke is .055 to .058 inches (1.4 to 1.6 mm). If there are problems in obtaining the proper trough stroke, refer to the general service manual, SM0571.

The feeder is now ready for further operation. After the feeder has been running for several hours, it may be necessary to retorque the screws that hold the coil and cable assembly in place.

THE AIR GAP

The air gap is the spacing that exists between the armature and the core. See Figure 1. Proper adjustment of the air gap is extremely important for good feeder operation.

⚠ CAUTION: if the unit makes a loud striking noise while operating, immediately shut off power to the unit.

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

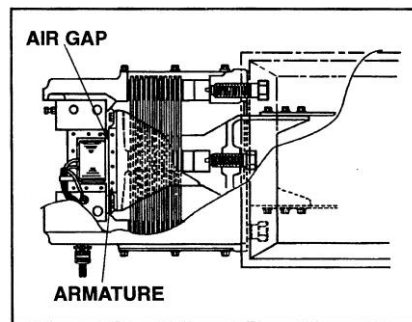


FIGURE 1: AIR GAP

striking noise
power to the

and core are too
each other
striking. A
mechanical
base, cracked

⚠ 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.

If the air gap is adjusted so that the armature and core 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 .085 inches (2.16 mm) for best performance without exceeding the current rating on the nameplate. It is important that the maximum trough stroke of .058 inches (1.6 mm) is not exceeded when final adjustment is made to the air gap.

RESETTING THE AIR GAP

For resetting the air gap, use the following procedure:

1. Remove the magnet cover assembly (AA) on the feeder drive to expose the core, the coil and cable assembly, and the armature.
2. Loosen the screws securing the core to the feeder drive (C). Loosen the hex nuts and rotate the set (jack) screws (A) several turns counterclockwise.
3. Close the air gap so that the pole faces of the core (B) and armature (G) are in contact. Snug down the clamping screws (C) to hold the core in place to offer some resistance when turning in the set screws to adjust the air gap. Check from both the top and the bottom to be sure that the core and armature faces are parallel. Eliminate any gaps by using shims between the core and the mounting lugs on the base casting.

4. Use the set screws (A) to reset the air gap to approximately .085 inches (1.6 mm). If necessary, adjust the control output voltage. Refer to the service instructions provided with the control.
5. Operate the feeder to check the trough stroke. Stroke must not exceed .058 inches (1.6 mm). If necessary, adjust the control output voltage. Refer to the service instructions provided with the control.

After the air gap is satisfactorily adjusted, tighten the core clamping screws (C) to the proper torque and replace the cover.

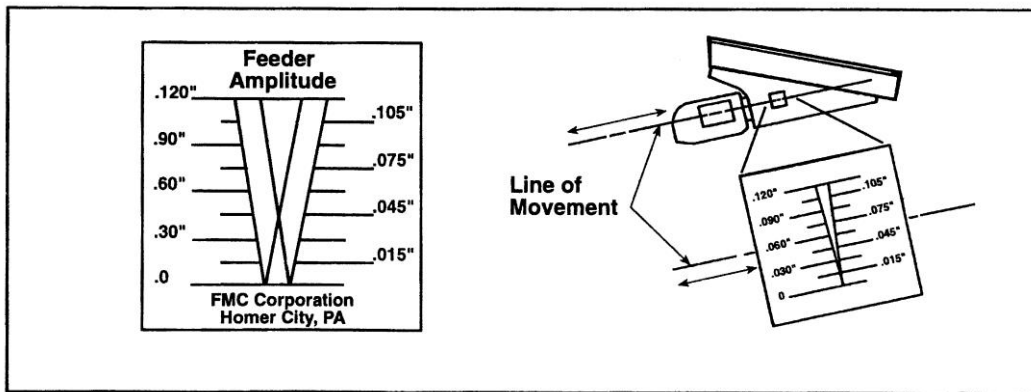
CHECKING THE FEEDER CURRENT WITH A TONG METER

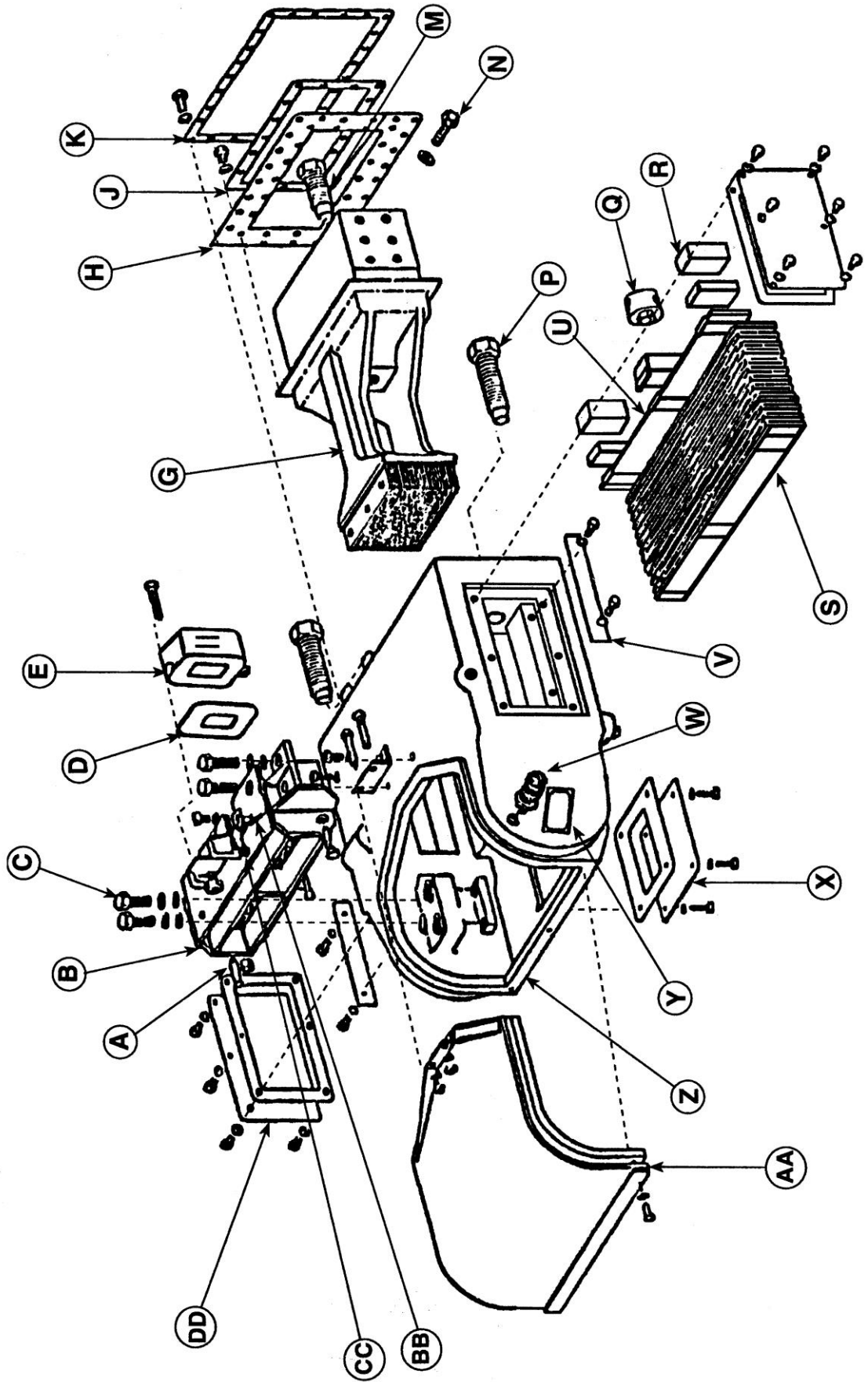
When using a tong meter to read the current of the unit, the meter reading must always be multiplied by a value of 1.7. Due to the wave form characteristics of the feeder during operation, a tong meter does not reveal the same current that is stamped on the equipment nameplate. Therefore, the 1.7 multiplier must be used. When using a true RMS meter, the current is as indicated. 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. The F-450-C Feeder operates at a maximum stroke of .058 inches (1.6 mm) at the maximum control setting.

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 the black V. The lines should appear solid black.





PARTS LIST – VIBRATORY FEEDER MODEL: F-450-C

ITEM	DESCRIPTION	QTY	PART NO.
A	Set Screw, Sq. Hd. , Cup Pt. (3/4"-10 x 3")	2	H0404000
	Hex Nut (3/4"-10)	2	H0105401
B	Core Assembly	1	B-122790
C	Cap Screw, Hex. Hd. Gr. 5 (1"-14 x 5 1/2")	4	H0326001
	Plain Washer H.S.(1")	4	H0117962
	Lock washer (1")	4	H0114409
	Core Clamping Bar	2	A-52563
D	Coil Insulating Washer	1	A-123021
E	Coil and Cable Assembly (230V)	(1	B-192458-G
	Coil and Cable Assembly (460V)	Only)	B-192458-D
	Coil and Cable Assembly (575V)		B-192458-F
	Cap Screw, Hex Hd. (1/2"-13 x 2")	2	H0315801
	Lock washer (1/2")	2	H0117301
	Fish Paper Insulation (Not Shown)	1	B-33309-ED
	Locknut (1/2"-13)	2	H0104001
F	Top Bracket (Magnet Cover)	1	A-73726
	Lock washer (1/2")	4	H0113601
	Cap Screw, Hex Hd. (1/2"-13 x 1")	2	H0315001
	Hex Nut (1/2"-13)	2	H0104001
	Cap Screw, Hex Hd. (1/2"-13 x 4 1/2")	2	H0316801
G	▲Armature Assembly	Only	B-124664-A
H	▲Diaphragm	1	B-26536
J	▲Clamping Strip Assembly (Armature & Bracket)	1	A-29160
	▲Cap Screw, Hex Hd. (5/16"-18 x 1")	18	H0307201
	Lock washer (5/16")	18	H0113001
K	▲Clamping Strip Assembly (Base Casting)	1	A-29159
	▲Cap Screw, Hex Hd. (3/8"-16 x 1")	26	H0310201
	Lock washer, Ext. Tooth (3/8")	26	H0113204
M	Center Clamping Screw	1	A17809
N	Structural Bolt Hvy Hex (3/4"-10 x 1 3/4")	12	H0524101
	High Strength Washer (3/4")	12	H0117762
P	End Clamping Screw	2	A-27851
Q	Center Clamp Block	1	A-34790-C
	Center Spacer Block (1" Thick)	1	A-19090-A
	Center Spacer Block (2" Thick)	Only	A-19090-B
R	End Clamp Block	2	A-18841-C
	End Spacer Block (2" Tk)		A-74575-
	End Spacer Block (1 1/2" Tk)	2	A-74575-B
S	Leaf spring (Spacer, 1 side) 5/8"	9	069882
U	Leaf Spring (Spacer, Both Sides) 5/8" Tk.	1	A-70067
	Leaf Spring 1/2" Tk.	If Req'd.	A-72634
V	Spring Alignment Plate	2	B218286-001
	Cap Screw, Hex Hd. (3/8"-16 x 1")	4	H0310201
	Lock washer, Ext. Tooth (3/8")	4	H0113204
W	Cable Grip (230 V)	1	0102X004

ITEM	DESCRIPTION	QTY	PART NO
X	Cable Grip (460/575 V)	Only	0102X012
	▲ Bottom Cover	1	A-79566
	▲ Bottom Cover Gasket	1	A-79568
	Lock washer (1/2")	4	H0113609
Y	▲ Cap Screw, Hex Hd. (1/2"-13 x 1")	4	H0315001
	■ Name Plate	1	A-97298
Z	Drive Screw, P.K. Ty U (#2 x 1/4")	4	H0425100
AA	▲ Base Casting	Only	C-89301-A
	Magnet Cover Assembly	1	B-91538
	Magnet Cover Gasket (99 1/2" Lg.)	1	0237X021
	Lock washer (1/2")	3	H0113609
BB	Cap Screw, Hex Hd. (1/2"-13 x 1 1/2")	3	H0315401
	Ground Jumper	1	B-192419-E
	Wire Ties	2	0038X354
	Lock washer, Ext Tooth (1/4")	3	H0114904
CC	Mach. Screw, Rd. Hd., Br. (1/4"-20 x 1/2")	3	H0300802
	Cable Clamp (230V)	1	0198X003
	Cable Clamp (460/575V)	Only	0198X036
	Cable Clamp		0198X024
	Cap screw, Hex Hd, (5/16"-18 x 1/2")	1	H0306401
	Lock washer (5/16")	1	H0113001
	Lockwasher Ext. Tooth (1/4")	1	H0114904
DD	Cap Screw, Hex (1/4"-20x 1/2")	1	H0300801
	▲ Side Cover	2	A-75040
	▲ Side Cover Gasket	2	A-95696
	▲ Cap Screw, Hex Hd. (3/8"-16 x 1")	2	H0310201
	Lock washer, Ext. Tooth (3/8")	2	H0113204
	■ Bilingual Instruction Manual	1	195774
■ Safety Label	2	125255	
	■ Warning Label	1	125254

▲ Used on Dust-Tight Units Only.

- Do not remove or paint over safety labels. Should safety labels require replacement, contact SMH Corporation, Material handling Equipment Division, Homer City, PA. 15748 (724) 479-8011 for an additional supply free of charge.

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