Service Instructions

Syntron® MF-600-D
Electromechanical Vibratory Feeder
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Syntron® Electromechanical
Vibratory Feeder Model: MF-600-D

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⚠️ Safety Instructions: Product safety labels must remain highly visible on the equipment. Establish a regular schedule to check visibility. Should safety labels require replacement contact SMH, Material Handling Equipment Operation for an additional supply free of charge.

INTRODUCTION

Syntron® Model “MF” Electromechanical Vibratory Feeders are designed to provide an effective method of conveying and controlling the flow of bulk material.

These feeders consist of a trough assembly spring coupled to a vibratory drive (rotary exciter). The rotary exciter utilizes an induction motor to drive a set of unbalanced weights through a v-belt pulley. The vibratory forces developed by the unbalanced weights are magnified through the compressed polymer springs to provide vibration on the trough assembly.

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

⚠️ CAUTION: Never make any alterations to the feeder without first contacting our Engineering Department. SMH will not assume any responsibility for feeder performance as the result of any unauthorized alterations to the equipment.
THEORY OF OPERATION

The principle of “MF” Feeder operation is to produce a constant vibrating stroke of the feeder by driving the trough down and back, then up and forward. This action projects the material into flight and when the material falls to the trough surface, it lands at a new location further along toward the discharge end. The drive motion then drives the trough up and forward, carrying the material still further along the trough.

This action, constantly repeated at high speed, sends the material smoothly along the surface of the trough.

Flow capacities are varied by: changing the depth of material discharging from the hopper, changing the stroke of trough vibration through a manual adjustment of the unbalanced weights or during normal operation by means of the control rheostat, varying the input power to the motor.

LONG TERM STORAGE

When received, the equipment should be carefully uncrated. If the feeder assembly is shipped mounted on skids the skids should remain on the feeder until installation.

Give the equipment a thorough visual inspection to reveal any damage that may have occurred during shipment. If damage is found, notify the shipping carrier and SMH promptly.

If the feeder must be stored for an extended period, it is advisable to store it indoors.

The drive springs, V-belts and cable assembly must be protected from extreme heat, sunlight, oil, grease, or chemicals, which deteriorate rubber compounds. If the feeder is stored outdoors, remove motor and controller to an inside storage area. Place feeder on sufficient cribbing to protect from water.

⚠️ Caution: Do not support the weight of the unit by the exciter assembly. This will distort and damage the springs by placing undue strain on them.

Using the lubrication recommended on page 6, fill the bearing cavities to capacity *, this will prevent damage to the bearing and bearing adapters caused by condensation. Apply oil or rust preventative to hardware and completely cover the unit with waterproof covering.

*At initial start-up, the excessive amount of lubricant will cause the bearing to run hot, there will be some lubricant escaping from around the seals. This condition will last until the quantity of grease in the bearing cavity reaches an acceptable level, it will not cause damage to the unit. After this condition subsides do not refill the bearing cavity to capacity. The lubrication instructions on page 6 must be strictly adhered to.

When storing the controller, plug all opening in the controller box to prevent dirt, rodents and insects from entering. SMH advises placing a corrosion preventative inside the control box. Cover the controller and motor and place in an area protected from extreme heat. Do not drop the controller or motor, the force of the impact may damage the components.

HOPPER DESIGN

Refer to Figure 1.

The “Recommended” hopper with a T/H ratio of .5 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.
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 of .5 to 1.0 is generally acceptable. However, when the T/H ratio exceeds this range, the material flow patterns distort drastically and will significantly reduce feed rates.

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”).

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 or slightly larger than H/2. 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 ½ times the largest particle; for near size particles, “D” is 5 times largest particle.

“H” should be between 1.2 to 1.5 times “d” where “d” is determined by:

\[ d = \frac{\text{Capacity} \times 4800}{W \times \text{Flow Rate} \times \text{Density}} \]

Capacity = \[ \frac{w \times \text{Flow Rate} \times \text{Density} \times \text{“}d\text{”}}{4800} \]

Capacity = Tons/Hr
W = Feeder width in inches
Flow Rate = Ft/min
Density = lbs/ft³
D = Material depth of flow in inches

FEEDER INSTALLATION

⚠️ WARNING: Do not handle the feeder unit by the eyebolts located on the exciter assembly. Use the mounting assemblies for handling the feeder.

⚠️ CAUTION: Never make any alterations to the feeder without first contacting our Engineering
Department. SMH will not assume any responsibility for feeder performance as the result of any unauthorized alterations to the equipment!

Hanger assemblies are provided on the feeder for suspending the unit from an overhead mounting support with the use of flexible steel cables.

SMH recommends the use of extra flexible wire ropes. The MF-600 requires a minimum diameter of 1/2" for the front suspension assemblies and 5/8" diameter for the rear suspension assemblies.

The suspension cables must be as near vertical as possible, installation must be in accordance with the arrangement drawing.

The feeder must be kept level transversely, but may slope down longitudinally toward the discharge end by as much as 15° (a 10° downslope is standard).

The feeder must never come in contact with any rigid object or adjacent surface that could hamper its vibration action.

SAFETY CABLE INSTALLATION

WARNING: Suspension mounted feeders must be equipped with safety cables.

Safety cables will prevent the feeder from falling into the work area below in the event a hanger or suspension cable should break. The size and type of the safety cable should be equal to the size of the wire rope used on the rear suspension.

SMH provides lugs for attaching the safety cables. The safety cable and wire rope clips are supplied by others. For safety cables, SMH recommends 6 x 19 Classification, Yellow Strand, 6 x 25 IWRC, Preformed Wire Rope.

Safety cables must not interfere with the vibrating action of the feeder. Add 6" to the required length of safety cable to provide slack.

The following procedure is for installing safety cables.

1. Attach the safety cables to the lugs provided (2) inlet and (2) discharge. Install wire rope clips as shown on general arrangement drawing.
2. Torque all safety cables fasteners to the specifications on general arrangement drawing.
3. Secure safety cables to support structure.

It is important that safety cables are installed as a safety precaution. Do not use safety cables to support the feeder during normal operation.

CONTROLLER INSTALLATION

WARNING: Electrical power supply connection to the SMH supplied controller must be made through a customer supplied safety disconnect switch which must be located next to the controller.

When uncrated give the controller a thorough visual inspection to reveal any damage that may have occurred during shipment.
CAUTION: For multiple feeder installations each controller is designated for a particular feeder. It is very important that the proper controller is wired to its matching feeder. Unless the proper controller is wired to its matching feeder, the required performance will not be obtained. Consult SMH if controllers and feeders are mismatched at installation.

The controllers are marked with a number on the inside panel and the feeder is marked with a corresponding number adjacent to the nameplate on the feeder wing plate.

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

CAUTION: The conductor between the feeder and controller must be of a size sufficient to carry the current and voltage as stamped on the equipment nameplate. The voltage drop through a conductor of insufficient size for the required distance could result in a lack of feeder stroke during operation. See wiring diagram included with the controller.

INSTALLATION CHECKS

WARNING: The power supply voltage and frequency must correspond to nameplate ratings and the unit must be properly grounded.

1. Do the leads for the motor correspond to the numbers marked on the output side of the terminal block at the controller?

2. With multiple feeder installations, is each controller wired to its matching feeder?

3. Are the wiring connections between feeder, controller and power supply, securely made and in strict accordance with the wiring diagram supplied?

After feeder controller installation has been completed, momentarily energize the equipment and observe the direction of the motor rotation. The motor must be rotating in the direction as indicated by the arrow located on the sheave cover guard. Refer to Fig. 2. To reverse the direction of the motor, reverse any two of the motor leads T1, T2 or T3.

With the feeder and controller properly installed and the wiring complete, the equipment is now ready for operation.

NOTE: For operating procedure, refer to the separate instructions supplied for the specific model controller.

FEEDER MAINTENANCE

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

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

1. Initial lubrication of the equipment was performed at the factory. The drive motor and the bearings of the exciter will require lubrication!! It is very important the equipment is properly lubricated.
SMH recommends using Shell Alvania EP-2 Grease, or Pure Oil Co., POCO #2 Hi-Temp Grease: or a
grease of equal quality. 1.5 OUNCES OF GREASE IS RECOMMENDED EVERY 400 HOURS OF
OPERATION UNDER NORMAL CONDITIONS.

In applications where dusty, heavily contaminated conditions occur or when the equipment is used
continuously weekly lubrication is suggested.

If the grease used is changed to another type or brand, the bearing must be thoroughly flushed
beforehand.

A regular lubrication schedule of the motor must be adhered to following the instructions of the motor
manufacturer.

2. Some materials tend to adhere to and build up on the trough surface, this must be removed as a daily
practice.

All details of the feeder must be kept clean. A clean, dry compressed air supply is recommended for
general cleaning of these units. The use of water is not recommended.

3. On a monthly basis:
   (a) Check feeder and exciter stroke, they must not exceed the design limits of the feeder unit.
       Refer to Feeder Stroke section.
   (b) Check the spring assemblies for any signs of wear or cracking.
   (c) Check the isolator springs and eyebolts (if suspension mounted) for any signs of wear. No
       chattering or impact noises should be heard.
   (d) Check controller for any visible signs of component wear, particularly relay contactors.

4. If it is necessary to replace the motor, the replacement must be of the same specification as the original
motor. Refer to the motor nameplate and contact SMH for further information.

5. The drive belts are an important consideration in obtaining the required performance of the feeder.
All belts must be replaced at the same time using a matched set of belts of the same specifications as the
original belts.

To remove the belts, remove the sheave guard, remove the four high strength bolts in the motor mounting
plate and remove spacers from each side of the mounting plate. Loosen the four set screws in the motor
mounting plate so the tension of the drive belts is lessened sufficiently to remove the belts from the
sheaves.

Prior to installing new belts clean the sheaves, removing oil, grease, rust or burrs from grooves. Install new
belts and tighten the four set screws in the mounting plate until the proper belt tension is obtained. Insert
an equal stack of spacers between each side of the motor mounting plate. Insert the four high strength
bolts through the motor mounting plate and spacers into the spring mounting plates. Remove the four set
screws in the motor mounting plate. Torque the four high strength bolts as specified on the arrangement
drawing. Reinstall the four set screws in the motor mounting plate and snug, DO NOT TORQUE. Install
sheave guard.

⚠️ CAUTION: Never support the motor mounting plate with set screws during feeder operation.
STROKE

Trough stroke is the distance the trough surface travels on complete cycle of vibration.

Total stroke is the combined sum of the trough stroke and stroke.

For the MF-600 the total stroke should not exceed 0.6” (15.2 mm). [Example: 0.29” (7.3 mm) on the exciter and 0.31” (7.9 mm) on the trough].

Normally, capacities will be attained at a lesser total stroke.

Stroke gauges are located on the side of the wing plate on the right side of the feeder and on the top of the exciter housing opposite the sheave side. See Figure 3.

Under vibration a double “V” will appear on the gauge. The stroke of the unit can be read at the point where the side of one “V” intersects the other.

THRUST ADJUSTMENT

The thrust of the rotary exciter drive unit is varied by rotating the center weight relative to the fixed outer weights.

To adjust, follow this procedure:

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

1. Remove the bottom plate on the exciter housing and loosen the locking cap screw on the center adjustable weight.

Note: The weight can be adjusted to any position between 0° and 180° rotation, relative to the fixed weights. Zero degrees provides the maximum resultant force; 180° provides 33 1/3% resultant force. The outside edge of the center weight is marked giving the percent of total thrust.

2. Rotate the center weight to a position that gives the desired resultant force. Securely tighten the locking cap screw on the adjustable weight.

3. Replace the bottom cover on the drive unit. The rotary exciter is ready for operation.
TROUBLE SHOOTING

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Cause</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Feed Rate</td>
<td>Loose V-belt</td>
<td>Tighten</td>
</tr>
<tr>
<td></td>
<td>Defective belt</td>
<td>*Replace</td>
</tr>
<tr>
<td></td>
<td>Defective or worn drive springs</td>
<td>*Replace</td>
</tr>
<tr>
<td></td>
<td>Isolator springs defective or worn</td>
<td>*Replace</td>
</tr>
<tr>
<td></td>
<td>Feeder in contact with rigid object</td>
<td>Insolate feeder</td>
</tr>
<tr>
<td></td>
<td>Excessive material build up</td>
<td>Clean</td>
</tr>
<tr>
<td></td>
<td>Reduction in motor voltage</td>
<td>Repair (see control instruction manual) Tighten</td>
</tr>
<tr>
<td></td>
<td>Loose spring clamping hardware</td>
<td></td>
</tr>
<tr>
<td>Excessive noise</td>
<td>Defective or worn bearings</td>
<td>*Replace</td>
</tr>
<tr>
<td></td>
<td>Defective bearings due to lack of lubrication</td>
<td>*Replace bearings and lubricate regularly</td>
</tr>
</tbody>
</table>

*Replace parts only with those supplied, or recommended by SMH.

REMOVING EXCITER

To perform any internal work on the rotary exciter unit, it must first be removed from the feeder. Follow the procedure below while referring to the parts list and illustration in the back of this manual. (The letters in parenthesis refer to the item in the parts list and illustration.)

⚠️ WARNING: Do not attempt to manually handle the exciter. The exciter assembly is heavy and difficult to handle.

While performing work on the exciter be careful that all cables, supports, and hoists, etc., are of sufficient strength.

For ease of removal, SMH recommends removing the exciter from the bottom of the feeder. If there is not sufficient clearance to permit removal from the bottom, the rear compression plate may be removed and the exciter removed from the rear of the feeder.

To remove exciter from bottom of feeder:

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

⚠️ WARNING: The exciter is heavy, all personnel must be kept clear of this area.
1. De-energize and lockout the power supply. Remove cover from junction box; mark and disconnect each lead.
   If exciter is equipped with a speed control device, remove speed control cover (X or AA) and disconnect cables (EE) from magnet assembly (CC).

2. Mark the sheave side of the exciter and the wing plate of the same side of the feeder. This will be important when replacing the exciter assembly.

3. Remove sheave guard (J). Remove the 4 high strength bolts and spacers from the motor mounting plate (C), and back off set screws to relieve belt tension. Remove belts (H). Remove motor (A), sheave (B), and motor mounting plate (C) from the exciter assembly. Items A, B, and C, should be handled as a single unit.

4. To facilitate removal of exciter, attach cable of sufficient strength [exciter weight approximately 3200 pounds] to the lifting slots (2" x 3 1/2") located in the four corners of the spring plates (top side). Refer to Figure 4. Hold all cables secure be using a hoist or similar equipment.

   WARNING: These cables will be supporting the entire weight of the unit while removing the exciter.

   Note: For ease of removal and replacement it is advisable to insert four 1"-8 x 2 1/2"eyebolts in the corners of the spring plate assemblies on the bottom side. To these eyebolts, secure a guide chain or cable from the exciter unit to the trough support member near the discharge end of the trough. Refer to Figure 4. This will help in keeping the exciter at an approximate 30 degree angle and will hold the exciter in place until all the bolts are removed.

5. While support cables are tight, carefully remove the cap screws which secure the front and rear drive spring assemblies to the exciter unit only.

6. Back off the rear drive spring mounting bracket by loosening the cap screws which secure the spring bracket to the feeder wing plate.

   CAUTION: Loosen but do not remove or run the end of their threads!

7. With approximately ¼" clearance between the drive spring assemblies slowly lower the its position.

   WARNING: The exciter is heavy, all be kept clear of this area.

The rotary exciter assembly is now ready for disassembly.

To remove exciter from rear of feeder:

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

1. De-energize and lock out the power supply. Remove cover from junction box; mark and disconnect each lead.
If exciter is equipped with a speed control device, remove speed control cover (X or AA) and disconnect cables (EE) from magnet assembly (CC).

2. Mark the sheave side of the exciter and the wing plate of the same side of the feeder. This will be important when replacing the exciter assembly.

3. Remove sheave guard (J). Remove the 4 high-strength bolts and spacers from the mounting plate (C), and back off set screws to relieve belt tension. Remove belts (H). Remove motor (A), sheave (B) and motor mounting plate (C) from the exciter assembly. Items A, B, and C, can be handled as a single unit.

4. To facilitate removal of exciter, attach cable of sufficient strength [exciter weight approximately 3200 pounds] to the lifting slots (2” x 3 1/2”) located in the four corners of the spring plates (top side). Refer to Figure 4. Hold all cables secure by using a hoist or similar equipment.

WARNING: These cables will be supporting the entire weight of the unit while removing the exciter.

Note: For ease of removal and replacement it is advisable to insert four 1”-8 x 2 1/2” eyebolts in the four corners of the spring plate assembly on the bottom side. To these eyebolts, secure a guide chain or cable from the exciter unit to the trough support member near the discharge end of the trough. Refer to Figure 4. This will help in keeping the exciter at an approximate 30 degree angle and will hold the exciter in place till all the bolts are removed.

5. While support cables are tight, carefully remove the cap screws, which secure the front spring assemblies to the exciter.

6. Using support guide cables described in Step 4, hold exciter in place till all cap screws are removed from drive spring bracket. Remove rear drive spring bracket, rear drive springs, and rotary exciter as a single unit by removing the cap screws which hold the drive springs bracket to the feeder wing plate.

7. Carefully let the exciter and spring assembly attain a vertical hanging position. Lower the assembly to the floor and remove the drive spring assembly from the exciter.

The exciter is now ready for disassembly.

DISASSEMBLY OF EXCITER

While following this procedure refer to the parts list and illustration in the back of this manual.

If the exciter is equipped with a speed control device, it is necessary to first remove the magnet assembly (CC) by removing the hex nuts (BB).

1. On sheave side of exciter remove three cap screws from the taper lock bushing. Remove the bushing and sheave (G).
2. Set exciter unit with bottom cover in up position and from sheave side remove the outside bearing cap and oil seal (F) as a single unit.

3. On opposite side of exciter remove outside bearing cap and oil seal (F) as a single unit.

4. Remove locknut and lockwasher (T).

5. Remove bottom cover (P). Mark the position of the fixed weights (M) in relation to the center adjustable weight (N). Remove cap screws from the weights and insert an eyebolt (3/4 – 10 x 3") into each weight. Suspend weights from a hoist so that they are not resting on the shaft.

6. Disconnect hose assembly (V). Remove shaft (D) from the sheave side of the exciter and remove weights and shaft spacer (S). Remove the inside bearing caps (Q) from the exciter housing.

7. Remove bearings (E) from exciter housing.

**REASSEMBLY OF EXCITER**

While following this procedure refer to the illustration and parts list in the back of this manual.

1. Install the two inside bearing caps (Q) and oil seals onto the housing (R).

   **CAUTION:** The oil seals must be installed with the lip toward the bearing. Refer to Figure 5.

2. On side of the exciter opposite the sheave install the bearing (E) to the exciter housing (R).

3. Align the three weights (M & N) and shaft spacer (S) inside the exciter housing.

4. Insert shaft (D) starting from the sheave side of the exciter, through the weights, shaft spacer and bearing.

5. Remove eyebolts from the weights and insert cap screws. Position each weight and tighten cap screw. The position of the weights were marked in step 5 of the disassembly procedure. The position of the fixed weights (M) must be in exact alignment.

6. Install bearing (E) on the sheave side of the exciter.

7. Lubricate bearings with the recommended grease till a 50% pack is obtained.

8. Install lockwasher and locknut (T) on the side of exciter opposite sheave.

9. Install the outside bearing cap, oil sea (F) and hose (V) on sheave side of exciter. Torque cap screws to 35 ft. lbs.
10. Replace sheave (G), key and bushing.

11. On opposite side of exciter replace outside bearing cap oil seal (F) and hose assembly (V). Torque cap screws to 35 ft. lbs.

This completes the reassembly procedure for units without a speed control device. If the unit is equipped with a speed control device continue below.

12. Replace bearing cap (Z), oil seal and hose assembly (V).

13. Replace magnet assembly (CC). Electrical connections will be made after exciter is replaced in the feeder.

This completes the assembly of the exciter. It is now ready to be placed into the feeder.

REPLACING EXCITER

Before replacing the drive unit, SMH recommends the springs be inspected for defects, wear and possible replacement.

⚠️ WARNING: The exciter is heavy, all personnel must be kept clear of this area.

If the exciter was removed from the bottom of the unit, replace by the following method.

1. Using cables as explained in Step 4 of the removal procedure, align the drive unit against the front spring group. Make certain the unit is centered between the feeder wing plates and the marked side of the exciter is on the same side of the feeder as the marked wing plate. (This was noted in step 2 of the removal procedure).

2. Bolt the front drive spring group to the exciter.

3. Bolt the rear spring group to exciter and replace any shims that may have been between the spring mounting bracket and feeder wing plate.

⚠️ CAUTION: When replacing the rear compression plate hardware, replace one bolt at a time. Torque bolt uniformly to specification on the arrangement drawing, repeat this process for each bolt until all bolts are replaced. It is important to use new hardware for all replacements.

4. Remove the guide and support cables and eyebolts from the bottom of exciter.

Assemble motor mounting plate (A), motor (B) and sheave (C). Torque the 4 high strength motor hold down bolts as specified on arrangement drawing. Install the 4 set screws in the motor mounting plate and position above assembly on exciter with the set screws seated in the pilots provided on spring mounting plates.

Prior to installing new belts, clean the sheaves removing oil, grease, rust or burrs from the grooves. Install new belts and tighten the 4 set screws in the mounting plate until the proper belt tension is obtained. Insert an equal stack of spacers between each side of the motor mounting plate and the exciter housing. Insert the 4 high strength bolts through the motor mounting plate and spacers into the spring mounting plates. Remove the 4 set screws in the motor mounting plate. Torque the 4 high
strength bolts as specified on the arrangement drawing. Reinstall the 4 set screws in the motor mounting plate and snug, **DO NOT TORQUE**. Install sheave guard.

⚠️ **CAUTION:** Never support the motor mounting plate with the set screws during operation.

5. Connect motor leads and pack the junction box to prevent loosening of connections, replace the junction box cover.

   If the feeder is equipped with a speed control device, connect the speed control cable to the magnet assembly. Then replace the speed control cover.

6. Check the feeder stroke, that is, the sum total of the exciter and trough vibration stroke. If in excess of 0.6" an adjustment of the exciter thrust will be required.

For instructions concerning feeder stroke and thrust adjustment refer to page 7.

If the exciter was removed from the rear of the feeder, replace by the following method:

1. Replace rear spring group and compression plate to the exciter.

2. Using cables as explained in Step 4 of the removal procedure, align the drive unit against the front spring group. Make certain the unit is centered between the feeder wing plates and the marked side of the exciter is on the same side of the feeder as the marked wing plate. (This was noted in step 2 of the removal procedure.)

3. Bolt the rear spring compression plate to the feeder wing plates, do not tighten these bolts.

4. Bolt the front drive spring group to the exciter. Replace any shims that may have been between the rear spring compression plate and the feeder wing plates.

⚠️ **CAUTION:** When replacing the rear compression plate hardware, replace one bolt at a time. Torque bolt uniformly to specification on the general arrangement drawing, repeat this process for each bolt until all bolts are replaced. It is important to use new hardware for all replacements.

5. Remove the guide and support cables and eyebolts from bottom of exciter

   Assembly motor mounting plate (C), motor (A) and sheave (B). Torque the 4 high strength motor hold down bolts as specified on arrangement drawing. Install the four set screws in the motor mounting plate and position above assembly on exciter with the set screws seated in the pilots provided on spring mounting plates.

Prior to installing new belts, clean the sheaves removing oil, grease, rust or burrs from the grooves. Install new belts and tighten the four set screws in the mounting plate until the proper belt tension is obtained. Insert an equal stack of spacer between each side of the motor mounting plate and the exciter housing. Insert the four high strength bolts through the motor mounting plate and spacers into the spring mounting plate. Remove the four set screws in the motor mounting plate. Torque the four high strength bolts as specified on the arrangement drawing. Reinstall the four set screws in the motor mounting plate and snug, **DO NOT TORQUE**. Install sheave guard.
6. Connect motor leads and pack the junction box to prevent loosening of connections, replace the junction box cover.

If the feeder is equipped with a speed control device, connect the speed control cable to the magnet assembly. Then replace the speed control cover.

7. Check the feeder stroke, that is, the sum total of the exciter and trough vibration stroke. If in excess of 0.6” an adjustment of the exciter thrust will be required.

SPRING REPLACEMENT

If it is necessary to replace a spring it is recommended that all springs, rather than just one, be replaced. To replace springs:

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

1. To the eyebolts provided attach cables to support the exciter unit while the springs are being replaced.

2. With cables held tight, loosen but do not remove, the bolts which hold the rear spring mounting bracket to the feeder wing plates. Loosen these bolts only enough to relieve spring compression.

⚠️ CAUTION: Do not remove these bolts or run them to the end of their threads.

3. Replace only one spring assembly at a time. Place two hydraulic jacks (one on each side of the spring) between the exciter unit and the mounting bracket and increase the space between the drive unit and the mounting bracket until there is no compression on the rear spring stack.

4. Remove bolts holding the spring stacks to the exciter and rear mounting plate. Slide the spring stack up and out of the feeder. Replace the spring stack up and out of the feeder. Replace the springs with the new assembly in the same position as the old assembly.

⚠️ CAUTION: The spring groups are assembled with each rubber portion offset from the centerline. When replaced, the springs must be positioned as shown in Figure 6.

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**FIG. 6 - SPRING ARRANGEMENT**
5. Bolt springs into place and remove jacks. If shims are used between the rear spring plate and feeder wing plate be sure they are replaced before springs are bolted into place. Proceed to replace the front springs using the same procedure; except remove the spring stack form the bottom of the feeder.

6. After spring replacement is complete, check tightness of all spring mounting hardware and that the rear compression plate is tightened to the wing plate.

⚠️ CAUTION: When replacing the rear compression plate hardware, replace one bolt at a time. Torque bolt uniformly to specification on the general arrangement drawing, repeat this process for each bolt until all bolts are replaced. It is important to use new hardware for all replacements.

7. Remove all support cables.

Due to the action of new springs the stroke of the feeder may require adjustment, a change in exciter thrust may be required. Refer to page 7.

This completes the spring replacement procedure. The unit is now ready for further operation.
<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>QTY.</th>
<th>PART NO.</th>
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- Use with U.L. Explosion-Proof Motors.
- Use with Totally Enclosed Fan-Cooled Motors.
- Use with MSHA Explosion-Proof Motors.
- Do not remove or paint over safety labels. Should safety labels require replacement contact Syntron Material Handling, LLC. Saltillo, MS 38866 (662) 869-5711 for an additional supply free of charge.

Attach speed control cable at same location as the lube hose using the same cap screw (Item V).

Part numbers indicated---, may be identified on the arrangement drawing.
When ordering parts, please provide all information from the nameplate.