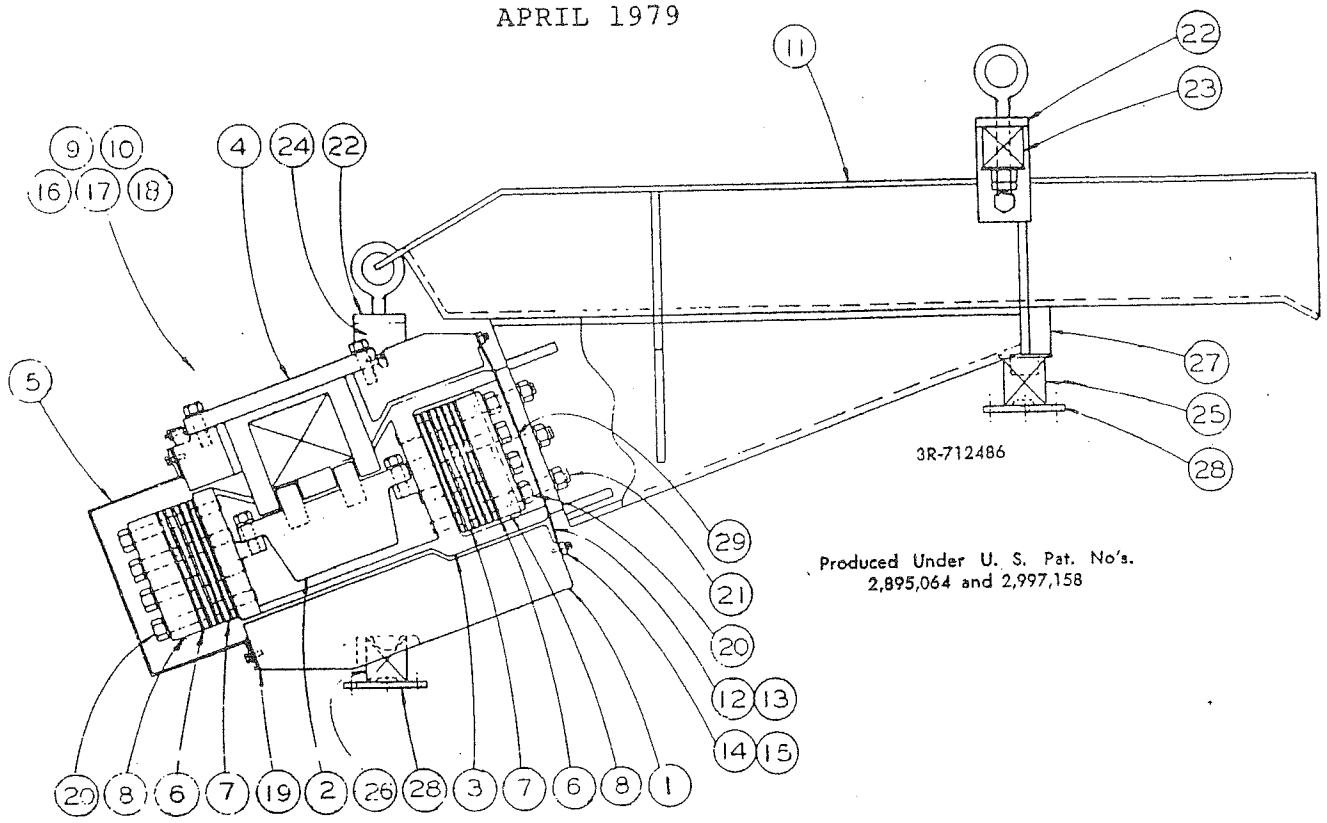
MODEL 80B VIBRATORY FEEDER
PARTS LIST

VT-3884

STANDARD TEMPERATURE

APRIL 1979



Produced Under U. S. Pat. No's. 2,895,064 and 2,997,158

Part No.		Name	Quantity
3N-611201		Body Casting	1
3N-710090	2	Armature Assembly	1
3N-621092	3	Piston Casting	1
3N-713840	4	Electrical Assembly (Specify 50 or 60 Cy. and 230, 460, or 575 V.	1
3N-601168	5	Rear Cover	1
1N-710036	6	Spring Spacer	As Req'd.
	7	Springs (Specify)	
2N-703507		(a) 5/16" Thick	As Req'd.
		(b) 1/4" Thick	As Req'd.
		(c) 3/16" Thick	As Req'd.
		(d) 1/8" Thick	As Req'd.
1N-611219	8	Spring Clamp	6
1N-58851	9	Inspection Port Gasket	2
1N-611214	10	Spring Port Gasket	2
	11	Tray, Standard Steel (Specify)	
3N-702825		(a) 24" x 72" Flat	1
3N-702826		(b) 30" x 60" Flat	1
3N-702827		(c) 36" x 48" Flat	1

Part No.	Name	Quantity	
12	Standard Diaphragm	1	3N-601167
13	Series M Diaphragm	1	3N-631067
14	Standard Diaphragm Clamp	1	2N-601171
15	Series M Diaphragm Clamp	1	3N-631068
16	Inspection Port Cover (Nameplate)	1	
17	Inspection Port Cover (Blank)	1	1N-601180
18	Spring Port Cover	2	1N-611214
19	Rear Cover Gasket	1	2N-601176
*20	Hex Head Bolt (Specify)		
	(a) 3/4"—10 x 5"	As Req'd.	
	(b) 3/4"—10 x 5½"	As Req'd.	
21	Tray Mounting Stud	6	1N-62843
22	Suspension Mtg. Bracket Assy.	4	2N-58697
23	Suspension Mtg. Spring (Front)	2	
24	Suspension Mtg. Spring (Rear)	2	2N-60932
25	Floor Mounting Spring (Front)	1	
26	Floor Mounting Spring (Rear)	2	
27	Tray Support	1	2N-61148
28	Mounting Base	3	1N-59628
29	Tray Clamp Pad	6	1N-611215
30	Feeler Gauge	1	1N-62764
	Eye Bolt		1N-61781
	Sprg. seat washer		

* Indicates high-strength steel bolts which may be purchased from Eriez or from any industrial supply house. Allen type socket head screws may be substituted if preferred. All other parts listed above must be secured from Eriez Manufacturing Co. When ordering parts be sure to specify Feeder Model and Style, Part Number and Quantity.

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World Authority in Advanced Technology for Magnetic, Vibratory and Metal Detection Applications

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MODEL 80B AND 85B VIBRATORY FEEDERS

Installation, Operating & Maintenance Instructions

(WITH REFERENCES TO PARTS LIST DRAWING)

BEFORE STARTING YOUR VIBRATORY FEEDER

MOUNTING

These Eriez heavy duty suspended type Feeders may be mounted in any of the following ways:

A. SUSPENSION MOUNTING (Fig. 1)

Suspend front and rear of Feeder from cables or rods attached to the suspension bracket eyebolts. Such cables or rods should be equal in strength to ½" dia. standard wire rope. In some applications, the suspension brackets can be omitted and the unit suspended by means of wire rope slings attached to the suspension bolts.

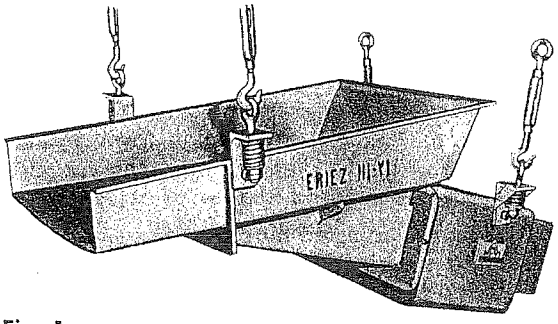


Fig. 1

B. FLOOR MOUNTING (Fig. 2)

Mount front and rear of Feeder on the floor mounting accessories provided as an alternate to the suspension accessories. The front and rear mounting bases **(Part #28)** should be bolted to the floor or other mounting surface, and the unit, with the floor mounting springs **(Parts #25 & #26)**, simply placed on the bases. (No fastening necessary).

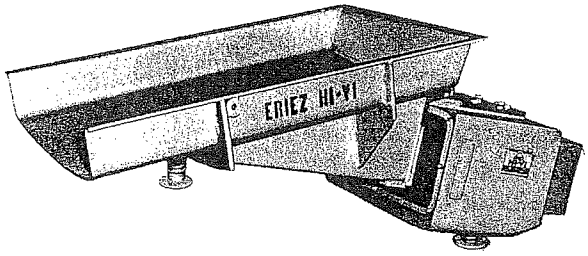


Fig. 2

C. COMBINED SUSPENSION AND FLOOR MOUNTING

Any combination of suspension and floor mounting means may be utilized. The details of any such combination will, of course, be dictated by the particular application. The instructions given in (A) and (B) above should be followed.

ELECTRICAL CONNECTIONS (Fig. 3)

1. Check the specifications of the power line to be certain that they are the same as those shown on the nameplate of the Feeder and Control.
2. Connect the black and the white wires in the Feeder power cord to the terminals in the control box marked "Output".
3. Connect the green wire (ground) to the lug provided in the box.
4. Connect the power line to the terminals in the control box marked "Line".
5. Connect the lug in the control box to a good earth ground (a cold water line is excellent). If a **well-grounded** metallic conduit system is used, the latter connection may be dispensed with.

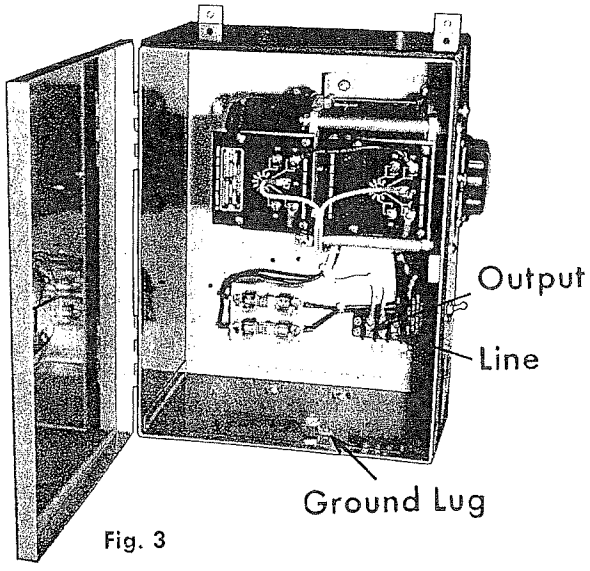


Fig. 3

NOTE: The Eriez Vibratory Feeder cannot be operated from a DC source

YOU ARE NOW READY TO START YOUR VIBRATORY FEEDER

OPERATION AND MAINTENANCE

To start the Vibratory Feeder after all connections have been made, turn the switch on the control to the "ON" position and adjust the feed rate by rotating the control knob. **Do not operate the unit with any associated equipment touching any part of the unit.**

No routine maintenance or lubrication is required, except that any accumulation of foreign matter should be periodically removed from between the tray and the body to prevent restriction of movement of the vibratory elements.

SPECIAL TRAYS AND ATTACHMENTS

Eriez engineering service should always be consulted before undertaking the design or construction of special trays. Neither standard nor special trays as furnished by Eriez Magnetics should be modified or attachments made without first consulting us. **(See Eriez Standard Tray Specifications).**

ADUSTMENTS (Tuning)

The adjusting means is solely for producing optimum performance of the unit where a specific material of low (under 40 lb/cu ft) or high (over 125 lb/cu ft) density is to be handled continuously . . . also where off-standard sizes and shapes of trays are required.

The unit is adjusted by changing the stiffness of the springing system. Spring stiffness adjustment consists of varying the number of springs **(Part #7)** at the back of the unit or the thickness of individual springs. Access to the rear springs is gained by removing the cover **(Part #5)** at the back of the unit (See Fig. 5). In tuning, the front springs need not be disturbed. In NORMAL OPERATION at full voltage the total displacement of the tray, measured at the back of the tray or the tray mounting brace, is .055". **It is recommended that the displacement be limited to .065" with the machine fully warmed up.** Greater displacement may result in noisy operation or striking and may, if continued, cause damage to components.

NEVER OPERATE THE UNIT IN A STRIKING CONDITION!

A. ADJUSTMENT (tuning) GUIDE

The following general rules should be borne in mind when making adjustments:

1. To **increase** the tray displacement, **decrease** the stiffness of the spring system.
2. To **decrease** the tray displacement, **increase** the stiffness of the spring system.

The above rules are true where the unit is operating on the normal side of its tuning curve. If increasing or decreasing the spring stiffness has an effect opposite to that noted in (1) or (2) above, it means that the mass of the tray and/or load has been great enough to throw the operating point to the reverse side of the curve, which is undesirable. In this event, the stiffness should be increased (or the tray-load mass reduced) until the behavior is in accordance with rules (1) and (2) above. The unit can then be properly tuned.

Normally spring thicknesses of 5/16", 1/4", 3/16" and 1/8" are used. To serve as a guide in tuning, the following spring stiffness figures should be used: a 1/4" thick spring is approximately 53% as stiff as a 5/16" thick spring; a 3/16" thick spring is approximately 44% as stiff as a 1/4" thick spring; and a 1/8" thick spring is approximately 30% as stiff as a 3/16" thick spring.

Example: To slightly increase the deflection of a unit a 1/4" thick spring could be removed and replaced with two 3/16" thick springs. Or, to slightly decrease the deflection of a unit a 5/16" thick spring could be removed and replaced with two 1/4" thick springs.

These combinations must be determined by the existing springs on the rear spring stack.

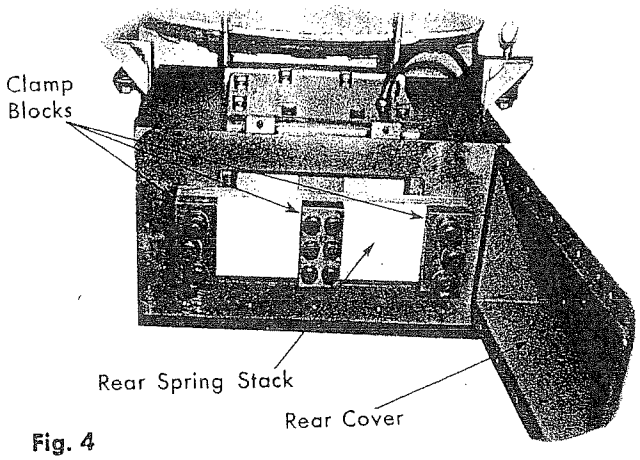


Fig. 4

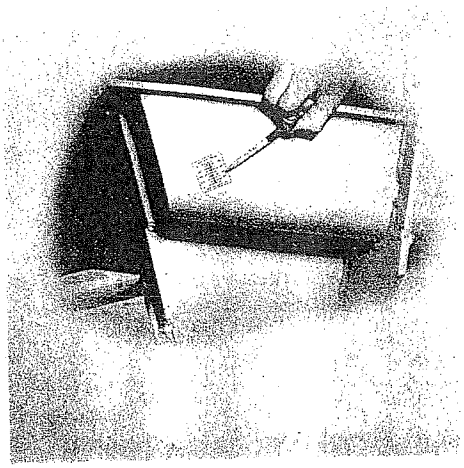


Fig 5

HOW TO MEASURE DISPLACEMENT

With unit operating observe where the fine gray lines on the displacement sticker meet. This point will be higher or lower as the displacement changes. Opposite the point where they meet, read amount of displacement.

B. ADJUSTMENT FOR NON-STANDARD TRAYS

In the adjustment of the unit, the following steps should be followed:

1. Attach the tray **(Part #11)** and draw all **bolts tight.** Check air gap (See Items 8 and 9 under Coil Replacement).
2. Energize the unit at the voltage and frequency shown on nameplate.
3. If a control box is used, turn control slowly to the full "ON" spot and observe the unit in operation.

   (a) If a striking or hammering noise is in evidence, the tray displacement is excessive. To produce normal quiet operation, increase the stiffness of the rear spring stack by substituting

a spring of greater thickness for one or more of the rear springs, or by adding additional springs until the displacement is approximately .055". Additional springs may be purchased from Eriez Magnetics. (See Parts List **Part #7).** Under normal operating conditions, the unit may be turned "ON" or "OFF" quickly without any momentary or prolonged striking noise.

(b) If the displacement so measured is considerably less than .055", decrease the spring stiffness by substituting springs of lesser thickness. If the displacement is much more than .055", increase the spring stiffness by substituting springs of greater thickness.

In changing tuning springs, put the clamp blocks **(Part #8)** back on the same way they came off (See Fig. 4) to insure smooth clamping surfaces against the springs. All clamping bolts **(Part #20)** shall have a thread engagement of not less than one and one-half times the bolt diameter and should be drawn very tight (see Bolt Torque information below). If "bottoming" of bolts should occur, washers of sufficient thickness to prevent such "bottoming" should be used under the bolts heads.

SPRING BOLT TORQUE

When tighetning Spring Bolts:
The ¾"—10 Bolts should be tightened to a Torque of 300 lb.-Ft. The tapped threads in the castings should be cleaned and lightly coated with a good molybdenum disulfide anti-seize compound (such as "Molykote" by Alpha-Molykote Corp.) to insure proper clamping pressure.
KEEP COMPOUND AWAY FROM SPRING CLAMPING SURFACES.

C. ADJUSTING OR TUNING FOR VARIOUS DENSITIES OF MATERIALS

The unit may be adjusted to provide optimum performance for a specific density of material in the same manner as described for non-standard trays. When units are adjusted with the tray empty to a displacement of .055" (all standard tray units are so adjusted at factory), they are set for optimum performance on a material with a density of 100 lb/cu ft. For very light materials, optimum performance occurs with displacements above this value (up to .065"). For denser materials optimum performance occurs with displacement less than .055".

The characteristics of these units are such that the volume output is virtually constant for materials from 40 lb/cu ft to 125 lb/cu ft when units are equipped with standard trays. When non-standard trays are used (particularly large trays), a tuning change is often necessary to provide optimum performance for a specific material.

REPAIRS

Coil or Armature Replacement

The electrical assembly **(Part #5)** in a vibratory feeder may require replacement due to operation at overvoltage, or normal aging of the unit. Re-assembly will require checking and possible re-centering of the air gap between the E-Frame and the permanent magnet elements. The air gap is directly accessible from the outside of the unit as described below.

The following procedure should be followed in removing and replacing the electrical assembly (See Fig. 6 and 7):

1. Remove the bolts securing the electrical assembly plate to the body casting.
2. Back off the adjusting screws that position the electrical assembly plate.
3. Lift the electrical assembly from the body casting, using a sling passed thru eye bolts threaded into the electrical assembly plate. (See Fig. 7).
4. (a) Replace defective electrical assembly (order from Eriez Parts List), or
   (b) Remove and replace defective armature.
5. In replacing the electrical assembly, insert it into its original position in the body casting. DO NOT FORCE THE ASSEMBLY INTO PLACE. When properly aligned, the assembly will go in easily, although there will be a distinct pull exerted by the permanent magnets in the armature. To overcome this

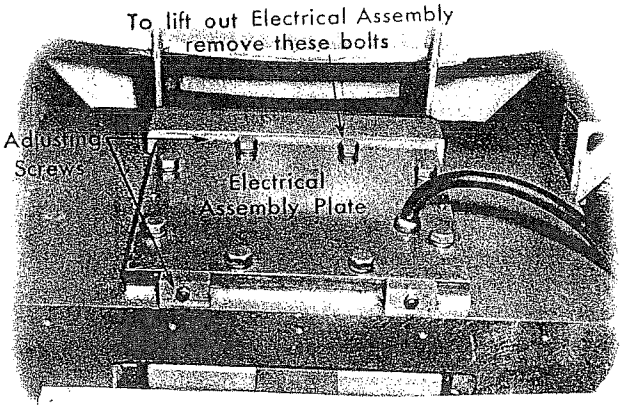


Fig. 6

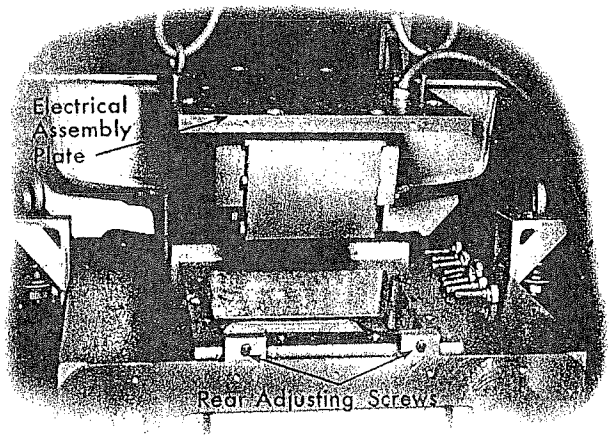


Fig. 7

pull, it may be necessary to guide the plate with a heavy screwdriver, meanwhile applying pressure to the top of the plate.

6. Start the electrical assembly plate bolts into the body casting, but do not tighten completely.
7. Tighten the adjusting screws that position the electrical assembly plate.
8. Remove the nameplate from the side of the body casting to gain access to airgap. (See Fig. 8).
9. Working through the port in the side of the body casting (Fig. 8) and using a non-magnetic feeler gauge approximately .072" thick (furnished with each unit), check the air gaps between the E-Frame legs and the armature pole pieces. These gaps should be uniform in width and parallel and as nearly alike as possible; if they are not, they should be adjusted by shifting the electrical assembly plate with the front or rear adjustment screws. In checking the gaps, the internal parts will be easier to see if the rear cover and the opposite port covers are removed.
10. Tighten the electrical assembly plate bolts and replace the covers.

HOW TO CHECK AIR GAP

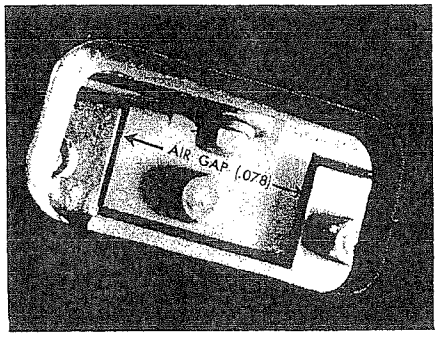


Fig. 8

SPRING CHANGE OR REPLACEMENT

Although the metallic leaf springs have outstanding life characteristics, failure may eventually occur, especially if the displacement is greater than normal. The symptoms of such failure are: (1) **erratic behavior of the unit**, (2) **greatly reduced displacement, and** (3) **greatly increased and perhaps uncontrollable displacement.** If spring failure is suspected, the front and rear spring stacks should be removed, checked, and **replaced one stack at a time.** Replace broken or cracked springs with springs of equal thickness.

Access to the rear spring stack is gained by removing the rear cover of the unit, while the front stack can be reached by first removing the flexible diaphragm and the tray, after which the springs can be removed, one leaf at a time, through the spring ports. (See Fig. 9). Before either spring stack is removed the piston casting at that end of the unit should be blocked up (Fig. 10) to hold its position relative to the body casting, and the blocks left in place until the spring stack is replaced.

When assembling and installing spring stacks, keep the metal spacers and the clamping surfaces **absolutely dry and free from grease, oil or any other material which may act as a lubricant.** (Such lubrication can cause internal heating which could seriously damage the springs.) **Clamp Blocks should be put back on the same way they came off,** to insure smooth clamping surfaces and maximum clamping area.

To hold the front springs and spacers in alignment while installing the springs through the side port it is recommended that ¾-10 x 3" long socket set screws (or slotted head) be used as shown in Fig. 10. After all springs and spacers are in place the clamp blocks can be installed over the studs. These set screws can be removed after fasteners are inserted in the remaining holes.

To hold the rear springs and spacers in alignment either the ¾-10 x 3" socket set screws or approximately 6" long studs are recommended, using the same installation procedure as for the front springs. Tighten all spring bolts to the specified bolt torque as shown in the bolt torque chart.

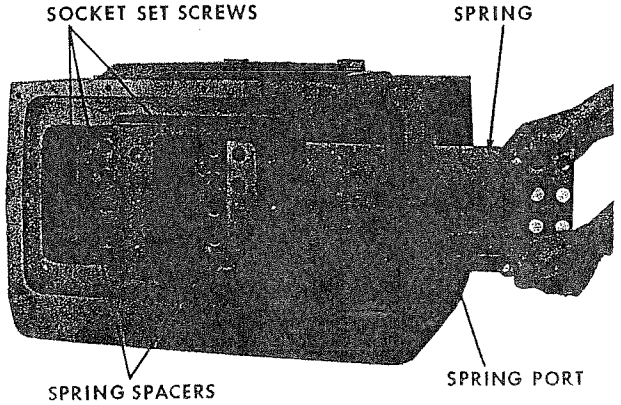


Fig. 9

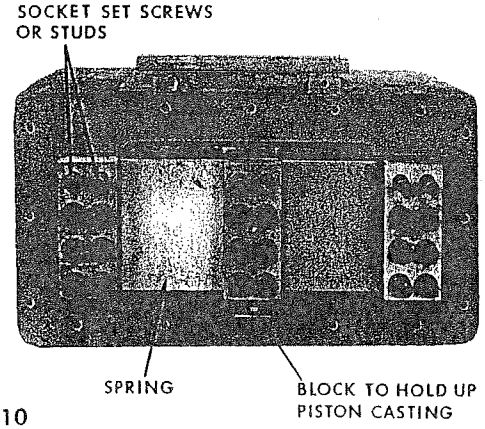
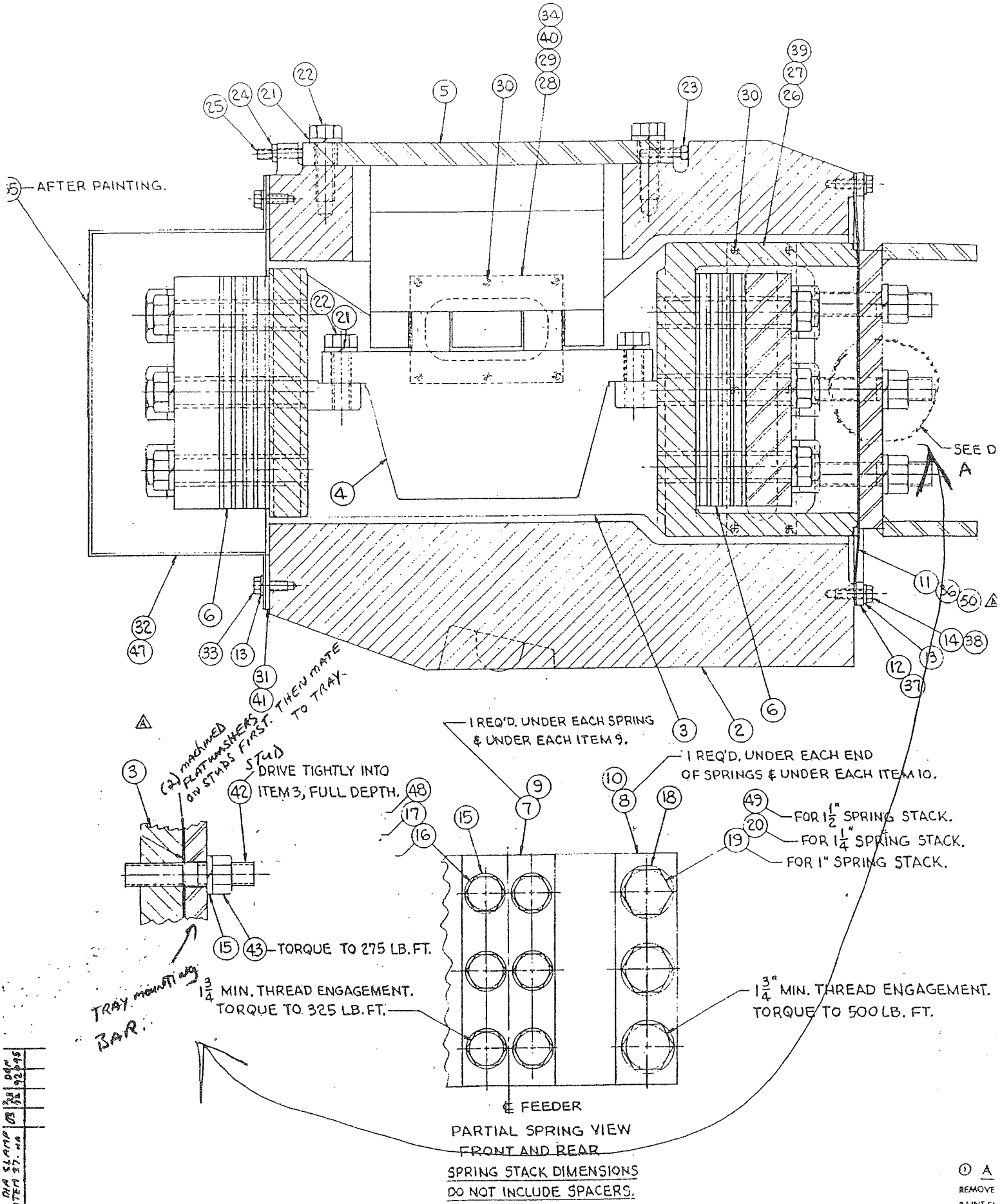


Fig. 10


5 AFTER PAINTING.
SEE D
A
(2) MACHINED FLAT WASHERS ON STUDS FIRST. THEN MATE TO TRAY.
STUD
42 DRIVE TIGHTLY INTO ITEM 3, FULL DEPTH.
1 REQ'D. UNDER EACH SPRING & UNDER EACH ITEM 9.
1 REQ'D. UNDER EACH END OF SPRINGS & UNDER EACH ITEM 10.
49 FOR 1 1/2" SPRING STACK.
20 FOR 1 1/4" SPRING STACK.
19 FOR 1" SPRING STACK.
15 43 TORQUE TO 275 LB. FT.
TRAY MOUNTING BAR.
1 3/4 MIN. THREAD ENGAGEMENT. TORQUE TO 325 LB. FT.
1 3/4" MIN. THREAD ENGAGEMENT. TORQUE TO 500 LB. FT.
℄ FEEDER
PARTIAL SPRING VIEW
FRONT AND REAR
SPRING STACK DIMENSIONS
DO NOT INCLUDE SPACERS.
1 A
REMOVE
PAINT E

58B to 105B FEEDER

TROUBLE SHOOTING GUIDE

1. Feeder not operating:
   - Check fuses
   - Check input voltage
   - Check output voltage and current (amps)
   - If voltage is going to feeder coil, check coil for open or ground

2. Slow output of feeder:
   - Check current on feeder at 100% voltage with the tray empty. If current is higher than name plate reading, check for broken tuning springs
   - Check for broken tray mounting studs
   - Check for cracked welds and cracks in the tray
   - Check for worn tray or liner
   - If tray is enclosed, the booting to the inlet and outlet is to be flexible as not to restrict tray movement
   - Check air gap

3. Feeder is noisy (metal to metal striking sound):
   - Check for broken isolation coil springs (suspended or floor mount)
   - Is the tray rubbing on a hopper, chute work, or anything else in the area
   - Check air gap, per manual
   - Check current on feeder at 100% voltage and the tray empty. If the current is higher than the name plate reading, then check for broken tuning springs

PREVENTIVE MAINTENANCE

1. Check suspension and keep feeder clear of hopper and all other objects
2. Check for buildup of product in the tray
3. Check deflection
4. Check current on feeder - should be within name plate rating
5. Check liners in tray for wear and loose bolts. If liner is to be replaced, use same thickness material

CRACKED TRAY

I. SYMPTOMS OF A CRACKED TRAY

a. Low deflection
b. Low product output
c. Material on tray moving in reverse direction or no travel at all
d. Noisy

II. CAUSE OF A CRACKED TRAY

a. Modification of a tray adding additional weight
b. Build-up of product in tray area adding a constant weight resulting in high displacement
c. Dampening of tray in operation due to interference with a feed hopper, rubbing on any chute work, etc.
d. Higher voltage going to drive causing high displacement; (ie: if unit is rated for 115 VAC and customer's line is spiking or maintaining 25 additional volts or better)

III. REPAIRING A CRACKED TRAY

a. Small "A" Feeders

- Cracks usually appear on the mounting channel of the tray in the bolt hole area. This area is made of light gauge material and just requires a small tack weld to repair. After welding, grind off any bleed through of weld on the inside of channel and smooth out the weld external so the mounting bolt or nut is somewhat flat.

- Another option would be to follow Step #1 and then add a reinforcement strip to the outside of the channel. This would entail transferring the bolt hole pattern onto the metal strip, clamping the strip onto the channel and tack welding.

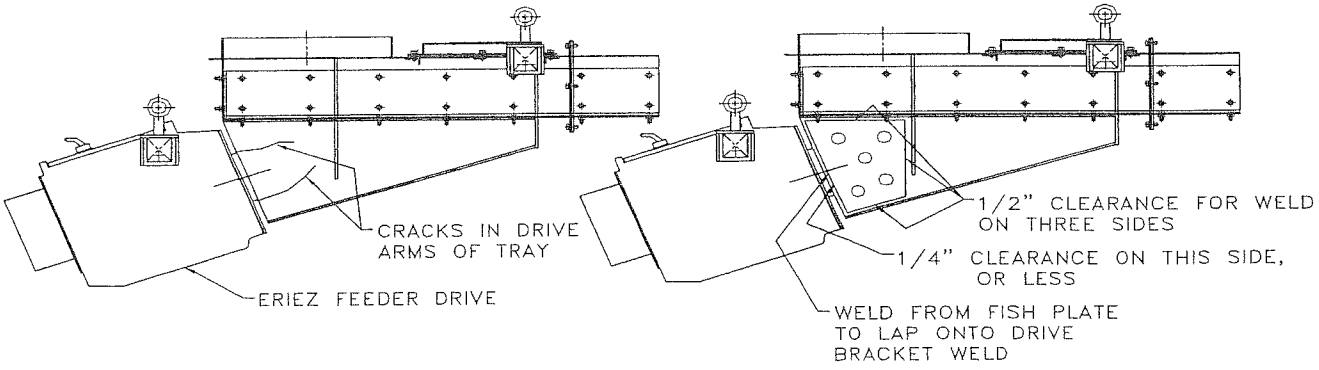
b. Large "A" and "B" Feeders

- Bevel or gauge existing cracks by at least half the thickness of the metal to be welded. (Outside area of drive arm.)

CRACKED TRAY cont'd

- Wherever the crack ends, drill a 3/8-inch stop hole.
- Tack weld the joint every 3 or 4-inches so that metal will not separate when welding solid.
- Plug weld the stop hole first then weld the inside of the drive arms. (This is the side not beveled.)
- Weld the sides that are beveled next. (solid weld)
- Grind flush the exterior welds. Do not grind the interior welds.
- Make a reinforcement plate (fish plate) ¼-inch thick. (Material to be the same as the tray.) Plate can have 4 or 5 holes drilled into it for plug welding. Holes can be 3/8-inch to ¾-inch depending on size of fish plate, then weld the outside perimeter of the fish plate solid.

CRACKED DRIVE ARMS IN TRAY



1. Wherever cracks end, drill a 3/8-inch stop hole.
2. Bevel or gauge existing cracks by at least half the thickness of the metal to be welded.
3. Tack weld area to be welded every 3 or 4 inches so metal will not separate when welding solid.
4. Plug weld the stop hole first. Then weld the opposite side of the drive arm plate first (this is the side not beveled).
5. Alternate the sides being welded so warping does not occur due to excessive heat.
6. Weld the sides that are beveled next - these are also to be welded solid.
7. Grind flush the exterior welds - interior welds do not touch.
8. Make a fish plate ¼-inch thick, as shown on above right picture, with four or five ¾-inch holes to plug weld center area of plate to the drive arms. Weld outside perimeter of fish plate solid.