



EQUIPMENT SALES | PARTS | MANUFACTURING

# USER'S OPERATION MANUAL

CUSTOMER: \_\_\_\_\_

S/O#: \_\_\_\_\_

SERIAL #: \_\_\_\_\_

MODEL: **SMNW1-AS**

CONTROLLER: **JEM-BAT-120**

ELECTRICAL (CONTROL): \_\_\_\_\_

ELECTRICAL (VIBRATOR): \_\_\_\_\_

AIR PSI: **60 PSI**

SPECIAL FEATURES: ***ALL STAINLESS CONTRUCTION, SURGE HOPPER WITH OPERATOR PLATFORM AND HOPPER LID. STRAIGHT SPOUT SURROUNDED BY DUST TIGHT ENCLOSURE.***

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## SET UP OF RINSTRUM CONTROLER AND GRAVITY/VIBRATOR FEEDER

### \*FALCON MODEL SCALE

The idea of this write up is to explain in detail the steps required to get the best accuracy and production rates from your JEM International bagging scale. At first we want to establish accuracy and then we will address speed of production.

**NOTE:** The idea is to get the flow gate of Bulk or Fast fill mechanically adjusted so that it will work on all of your various products. This may or may not be possible depending on the variations in your products bulk density, size, and flow characteristics. Slow fill achieved from the vibrator is easily adjusted through the controller.

**STANDARD VERSION:** Set up the Rinstrum controller per the set up sheet supplied in the manual. Start by entering your Target weight. Enter your slow fill value equal to  $\frac{3}{4}$  the target weight. Set the Fast Fill percentage to 50% and Slow Fill percentage to 25%. The flight value will auto adjust for you. The vibrator will run during both the Fast and Slow fill cycles at the set run percentages per each % entry value. Start with the fast feed flow gate position adjusted to approximately  $\frac{1}{2}$  open. (Fast feed adjustment is the  $\frac{5}{16}$ " screw located on inner-side of the pant diverter above the bulk gate.). There is a visual 'POINTER' indicator located on the side of the pant leg housing for reference.

Press the START button on the controller. Both feeders will run during the start of the filling cycle. The gravity gate will close when Slow fill value is reached. Observe the flow rate incrementation of the readout while it is in SLOW feed. You know that it is in slow feed by the lighting of the CYCLE light. You are looking for a nice steady increase of the numbers while in SLOW feed. A fluctuation in the increase shows an inconsistent flow rate and readjustment to the Slow Fill percentage rate will be necessary. Most likely you will need to increase the Slow Fill percentage entry. Make only small adjustments until you observe a steady flow rate in slow feed. Run several bags and observe the bag weight variations between them. They should all be within the  $\pm 2$ oz range. This has established accuracy. Now we need to adjust for speed. We get speed by not only the flow rate during FAST feed but by the amount of Fast feed set in to the controller set up parameters. Fast feed equals the TARGET minus the SLOW fill parameter values. In other words by example if TARGET= 5.00 lbs. and SLOW fill = 2.00 lbs. then FAST feed equals 3.00 lbs. Begin by either increasing the Fast Feed percentage up to 75% on the vibrator and reducing the SLOW fill weight value. Or increase the bulk gate flow. Do not make two adjustments at the same time. Either change the bulk gate opening or change the vibrator %. Edit these values until the CYCLE light comes on for approximately .5 – 1.0 second. This means that the scale is in slow fill long enough to maintain accuracy. If the CYCLE light does not come on then you are filling with too much FAST feed and weight accuracy will be reduced. Fast feed should equal approximately  $\frac{2}{3}$  of the targeted weight. You can play between the set parameter values (Fast Fill % and Slow Fill %) and the mechanical positioning of the fast feed screw adjustment. Just remember that YOU MUST MAINTAIN A CYCLE LIGHT. The complete filling cycle should take approximately 3-6 seconds dependent upon the products bulk density and flow characteristics.

## **FALCON NET WEIGH BAGGING SCALE**

### **INSTRUCTION MANUAL**

The Falcon is a net weigh bag filling device, meaning the product is weighed in the hopper contained with the unit. The scale is designed to handle between ½ lb. to 11 lbs. (200 grams to 5 kg) at a rate of 10 to 15 bags per minute (depending on bag weight) at plus or minus 1/2 ounce (15 grams) accuracy or better which is rated at 2 Sigma (95%)

### **DESCRIPTION OF SECTIONS**

The scale has 4 different sections.

1. The main scale assembly and feeder assembly.
2. The weigh hopper.
3. The spout and transition.
4. Digital control panel.

Each section has a variation of options and any combination can be used together.

**Section 1:** The feeder section can be gravity/vibratory, single vibratory, dual vibratory or auger.

**Section 2:** The weigh hopper can be sized for .4 cubic foot, .8 cubic foot or 1.0 cubic foot capacity. The hopper has a single bracket attached to it and is shipped separate from the main scale assembly. The hopper is designed to be attached to the load cell by 4 ¼ inch Allen head screws provided. It is extremely important that the weigh hopper be securely tightened to the load cell after the scale has been installed.

**Section 3:** The spout or discharge section can vary from straight funnel design (non-dust tight bag holder) or a dust tight bag holder sized to accommodate the proper bag to a transition to connect to an automatic bag placer. The dust tight spouts are measured in circumference and are referred to as SPOUT AO-25 for 25" in circumference.

**Section 4:** The digital control panel is shipped separate from the main scale assembly unless it is part of a product supply hopper assembly. This controller will need to be connected to a clean grounded 110 volt service or a 220 volt single phase power. The controller can handle either supply voltage. The service needs to be 10 amp capacity.

The digital control panel indicator needs to be connected to the load cell through the summing cable that is provided. Terminate these wires per the wiring schematic.

The digital control panel must be situated in an area where the operator working the scale can visually see the weights and make necessary changes.

## INSTALLATION

All SMNW scales have been fully tested at the factory prior to shipment.

A. If provided with support framework:

1. Set framework in proper position. Transition and spout should already be attached in shipment from factory.
2. Bolt framework solidly to floor to prevent any movement.
3. Install main scale assembly on top of framework utilizing bolts provided. This can be put on 180 degrees from being correct so make sure that the position of the weigh hopper sets inside the transition.
4. Connect the weigh hopper which was shipped loose to the single point load cell. The weigh hopper has a bracket and 4 5/16<sup>th</sup> bolts provided. These bolts are to be connected securely to the load cell.
5. Connect air lines to the air cylinder on the weigh hopper. These have been cut to size and generally cannot be installed incorrectly. The airlines and air fittings have color coded zip ties identifying there location. These are the push pull type fittings. Should an air leak occur here during testing, recheck that the lines have been securely placed into the fittings.
6. Install digital control panel in an area convenient for the operator.
7. Provide 110 volt or 220 volt single phase power to the control panel.
8. Conduit or cables have been provided between the digital control panel and the

9. Provide air to F.R. unit. Typically 50 PSI air pressure is adequate for SMNW scales. The weigh hopper doors should not slam closed or they may cause damage to the load cell. Make sure that the speed control valve controlling the pneumatics to the weigh hopper air cylinder does not allow for slamming and that pressure is set at no more than 50 PSI.
12. Connect inlet of feeder section to surge hopper above. Check general prints for best alternative.
13. Re mount the hand/ wand switch to the spout. Mounting bolts are located on the spout from the factory for this switch. Or if supplied with form, fill and seal or other automatic devices be sure to follow schematics as an O.K. to discharge signal must be provided for scale to operate.

B. If the Falcon is not provided with leg support:

1. The main scale assembly must be connected to supports by yourself or two overhead supports by others. In these instances be sure that the scale is securely fastened and not in an area where plant vibration can be transmitted to the scale.
2. Also, be sure that in the installation the height of the spout has been accounted for. Typically 48" (1.2 meters) from floor is ideal height for workers. This height is measured from the bottom of the spout to the floor.
3. The same connections and concerns must be addressed as discussed in the previous installation instructions, steps 4-13.

C. Falcon is supplied with a surge hopper:

1. Raise the surge hopper via a fork lift or by other means high enough to accommodate the legs.
2. Note which of the four legs has a painted stripe on it which is located on the mounting flange. Match that leg with the surge hopper mounting flange aligning the paint stripe. (This leg has mounting bolts for the control panel). Secure all the legs with the supplied fasteners. Bolt the surge hopper support legs solidly to the floor.

3. Mount the control panel to the leg. All control wiring is already ran between the scale and the panel.
4. Re-mount the weigh hopper to the load cell utilizing the four 5/16" fasteners supplied. (Fasteners are screwed in to the load cell for shipping). Reconnect the hopper air cylinder airlines to the cylinder. Airlines and fittings are color coded with colored zip ties.
5. Re-mount the transition and spout
4. Connect power supply to the panel. (Make certain that power supply is properly grounded)

### FILTER REGULATOR

The water trap bowl should be monitored on a daily basis and emptied using the petcock on the bottle.

If the water trap bowl is continued to have excessive amounts of water, it should be noted that your air system is too wet and a desiccant dryer or refrigerant type dryer should be added to your air system to prevent future problems.

## VALVES, LIGHTS AND PROBLEMS

All JEM valves are assembled as follows:

- Base with quick connect airline fittings.
- Speed control-screw driver adjust.
- Valves with LED indicator lights (re-buildable type).

This system allows you to see if the valves are electrically energized by the light system. Opening and closing of all air cylinders has been pre adjusted by the factory. They can be adjusted at this point on the speed control section and in the event of a valve problem, the valve can be removed through two bolts without the need to disassemble any airline fittings.

Problems can be broken down into 4 areas.

### 1) Mechanical Problems

Mechanical problems are binds or misalignment of parts. If the load cell is not connected securely to its base or to the weigh hopper assembly, inaccurate weights will occur. If the weigh hopper is touching anything or if the feeding systems are not securely attached, these can also cause inaccuracies. These are all referred to as mechanical problems.

Typically if a weigh hopper contains product and is pulled down to a higher weight and released, the weight should repeat to the initial starting point. If not, this is generally a mechanical problem. Mechanical problems are easier to find than any other problems and should be looked for initially before pursuing electrical or pneumatic problems.

### 2) Electrical Problems

Electrical problems can be blown fuses where no power is provided to the unit to faulty indicators, where the output is not being sent by the digital controllers, to relays not providing electrical signals to the valves. Electrical signals also can be not provided by the O.K. to discharge equipment. For this reason JEM equipment provides lights on all valves. If the valve is lit, then it is receiving an electrical signal. If the light on the valve is not lit, then it is either not receiving an electrical signal or the bulb is out.



For example, if the weigh hopper does not discharge the possibilities are the electrical signal to the valve is not happening or the valve is stuck. If the valve controlling the air to the weigh hopper air cylinders is lit, then we have eliminated the electrical problem and can now concentrate on a pneumatic problem.

### 3) Pneumatic Problems

Pneumatic problems can be either the valves or the air cylinders. If the valves fail to shuttle then the air will not be sent to the air cylinders correctly. Valves can become stuck through dirt or water entering the system. You can simply remove the air lines from the valve and check if air is, in fact, reaching the valve or if air is leaving the valve. If the valve is energized by the electrical relays and air is not passing through the valve in the correct direction, then it is in need of replacement or cleaning.

If the valve does shuttle the air correctly and the air cylinder still does not operate, the problem is possibly in the air cylinder. Again, the air can be checked at each port of the air cylinder to see if, in fact, we are receiving air and why the cylinder is not operating.

If we are receiving air to one port of the air cylinder and the cylinder is not activating, it could be frozen shut. This can easily be checked by removing the air to the entire SMNW system and trying to operate the cylinder by hand. It is possible that a piston seal has folded causing the cylinder to “Lock up”. The cylinders are not rebuildable type and need to be replaced.

### 4) Load Cell Problems

The load cell is a sensing device which transmits a signal to the digital indicator. If the load cell is faulty, generally the digital controller will not be stable. The quickest way to check this is to leave the weigh hopper full of product, record the weight and then return to the scale in 5 or 10 minutes and see if the weight has varied. If the weight has varied in this period of time, typically the load cell is weak or faulty.

## TROUBLE SHOOTING SMNW

### Power Present-Scale will not start to fill

1. If power is good then press the 'START' key on the controller.

### Scale On-Fast feed light on scale will not fill

1. Valve to gate not operating correctly.
2. Air supply to gate valve obstructed
3. Motor Over-load or VFD it tripped or faulted.
3. Blockage in supply pant leg.

### Scale On-No lights

1. Check control voltage
2. Check fuse
3. Error message on controller display, contact factory 913-441-4788
4. If display reads 'ILOCK' then reset the emergency stop push button. Then turn the OFF/ON switch to Off and then On again.

### Weight erratic

1. Flow rate too fast
2. Prelim not adjusted correctly (not enough slow fill) Observe the 'CYCLE' light. It should come on for approximately 1 second.

### Scale at weight complete won't discharge

1. Check signal from hand switch or foot pedal.

## INITIAL SEQUENCE OF OPERATION

The following is a simple sequence of operation and will be more detailed later in the manual.

Connect air to the F.R. system. When connected check for leaks and verify that the weigh hopper door and bulk gate are closed.

Electricity should be provided to the panel. The digital indicator when turned 'ON' will go through a series of initial checks and once completed show 'IDLE'. With nothing in the weigh hopper, the weight should be equal to zero.

Set digital indicator per instructions. Simply, the "target weight" is the desired weight. Slofill is just that. For example, if target weight equals 5, Slofill 1, then fast fill equals 4.

Flight or Free fall is a value that will automatically adjust once product has been run. Free fall is the amount of overage that must be adjusted for. For example, if target weight equals 5, actual weight is 5.12 then free fall is .12 or the final cutoff will be at 4.88. The controller's operational program will perform this function automatically within several weighments and continue to do so throughout the production run.

Turn scale from "Off" to "On" position. The feeder should run fast until the first preset value is reached. At which time the scale should automatically go from fast fill to slow fill. When the second preset value is activated, the scale will go from slow fill to weight complete. The product will be held in the weigh hopper until an O.K. to discharge signal is provided from either the hand switch or the foot pedal or through other automatic devices. Once this signal is made then the clamps on the spout will activate or close and the product will discharge. The bag remains clamped on the spout until the 'bag delay' timer times out.

Once the O.K. to discharge signal is provided, the weigh hopper doors will automatically open for the duration of the discharge time value, then close. Once closed the filling cycle will begin again.

## OPTIMIZING SPEED AND ACCURACY

All scales are designed to obtain an optimum speed and accuracy for each product. It is extremely important to remember that each product has different flow characteristics and the settings for one product will not necessarily match the settings for another product. For this reason the FALCON scale is designed with limitless recipe storage so that each product has its own set of values saved under its own recipe.

Understanding the values. First you must obtain accuracy before we address speed. The easiest way to find ideal accuracy is to run the scale in slow fill mode. Therefore, target weight and slow fill should be set nearly identical. For example, a target weight of 5 and a slow fill of 4 will have all slow filling. The slow fill will either be with a vibrator or the low speed of an auger if provided. These feeders have variable speed frequency drives. Adjust the slow fill % until an ideal slow feed is obtained. The indicator readout should increment steadily. Run several weighments and take note of the final weights. Look for accurate and consistent weighments.

After you have obtained accuracy then proceed for a higher rate of speed.

Begin by lowering the slow fill setting incrementally until the 'CYCLE' light comes on for .25 seconds to no more than 1.0 seconds. Note: The CYCLE light must come on every filling cycle.

At this point you will have obtained optimum speed and accuracy for one individual product.

These values will be maintained in memory through the recipe's storage provided. There is no limit to how many recipes can be stored.

Too long a cycle light will not affect the accuracy but will affect the speed of the operation. Too short of a cycle light will cause inaccuracy.

## WELDING

The SMNW load cell and digital control panel utilize low voltage. Welding causes more problems to load cells than all other problems combined. Make sure that if welding is being done on the scale or in an area where the voltage could be transmitted to the scale through hoppers, support bins, or other structures, the load cell needs to be disconnected. Simply pull off the summing cable connector block from the back side of the controller. When welding in the scale area, place the grounding clamp of the welder as close as possible to the weld being done to avoid damage.

## **FEEDERS**

### **GRAVITY GATE/VIBRATORY FEEDER**

The gravity gate feeder (fast feed) is used for free flowing products and is air operated. The gravity system works on a single radial gate controlled by an air cylinder. Product flow rate can be manually adjusted by turning the 5/16" thumb screw located above the gate on the inner side of the pant leg diverter. The vibrator is adjusted through % entries on the controller.

#### **Maintenance**

1. Periodically check the hinge points of the bulk feed gate. Replace the bushings if worn.

### **DUAL VIBRATORY FEEDER**

The dual vibrator feeder is used for semi free flowing products. With the Unit in fast feed, both vibrators will run. When the unit goes into slow feed, the fast feed vibrator stops, the slow speed vibrator continues to run. When the scale reaches weigh complete, the vibrator stops.

#### **Maintenance**

1. See instruction on vibrator assembly.

### **SINGLE VIBRATORY FEEDER (2 SPEED)**

The single vibrator feeder is used for semi free flowing products. With the unit in fast feed, the vibrator will run fast. When the unit goes into slow feed, the vibrator slows down to a dribble. When the scale reaches weigh complete, the vibrator stops.

#### **Maintenance**

- 1 See instruction on vibrator assembly.

### **DUAL SPEED AUGER FEEDER**

The two speed auger is used most generally on powders that a vibrator cannot move in a consistent manner. In most instances, the auger speeds are controlled by use of a variable speed drive.

In initial installations on auger feeders it is imperative that the direction of the auger be checked before product is provided. The auger must run to the discharge end. If the auger is running in reverse and product is provided it can cause severe damage to the equipment.

Be certain to check the rotation of the auger prior to providing product.

### Maintenance

- 1 Lubricate bearings periodically.
- 2 Check gear box for proper lubrication level.  
Change annually with 80-90 wt. gear oil.

## BAG CLAMP SAFETY

### Bag clamps (spouts)

The most ergonomically correct height for the spout is 48 inches (1.2 meters) to the floor. Exception to this rule is that the bag closing conveyor should not be lower than 12 inches (305 mm) to the floor. If the bag is taller than 36 to 37 inches (914 to 940 mm) then height will have to be adjusted upward to ensure a gap to allow the bag to fall and clear the spout.

Bags are placed on the spouts manually by operators. The clamps are operated by a foot pedal, hand wand switch or special order push buttons. Normally in plants where fertilizer, salt or other corrosive products are handled, foot pedals are not recommended. But foot pedals seem to be the most operator friendly device.

Hanging the bags safely is critical to a successful operation.

Bags manufactured of paper or laminated poly propylene have excellent rigidity and are the easiest to work with. Poly woven, cloth and low density poly ethylene bags have the least rigidity and are more difficult for the operator to hang.

Bags with rigidity are generally placed by the operator in the following manner.

1. Grab the bag with right hand approximately 12" (304 mm) from the top.
2. Slide the bag over the right end of the spout, allowing the shape of the spout to open the bag.
3. When bag is approximately 4" (101 mm) on the spout, activate the clamping assembly.
4. Operator's right hand will now be approximately 8" (203 mm) below the clamps.

On bags with less rigidity the operator's hand or hands will need to be closer to the top of bag. Subsequently, closer to the bag clamps and more care needs to be taken by the operator.

On cloth and low density poly propylene bags two hands may be required to hang the bag. The operator needs to make sure his/her hands are clear of the spout assembly before activating the clamp switch/foot pedal.

To control dust the spout assembly and brackets that hold the bag must be of very close tolerance.

Close tolerance also means pinch point. All dust tight spouts are designed with spring loaded brackets that hold the belting material. This minimizes the risk to the operator's hand but the dust tight design is more cumbersome to most operators than the center grip spout.

This fits the industry standard rule that spout circumferences need to be at



least 5" (127 mm) smaller than the circumference of the smallest bag being used. If the circumference of the spout and the circumference of the bag are 5" (127 mm) or less it is cumbersome for the operator to place the bag on the spout assembly.

The dust tight spouts (-C) and center grip spouts (-B) are available in a variety of sizes so these are basically customized to the bags being used in normal operations. The normal shape is pecan or US football shaped. This helps in opening the bag during placement and does not misshape the bag during the filling operation. It is important that the bag not be misshaped to ensure an easier motion of the operator to close the bag after it has been filled and discharged.

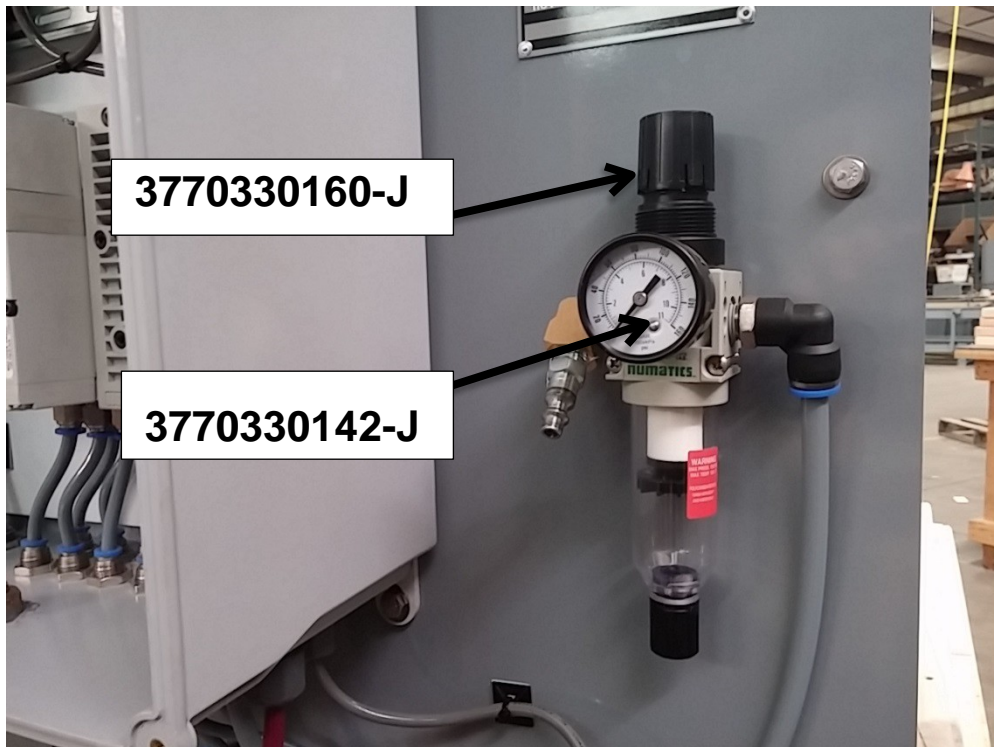
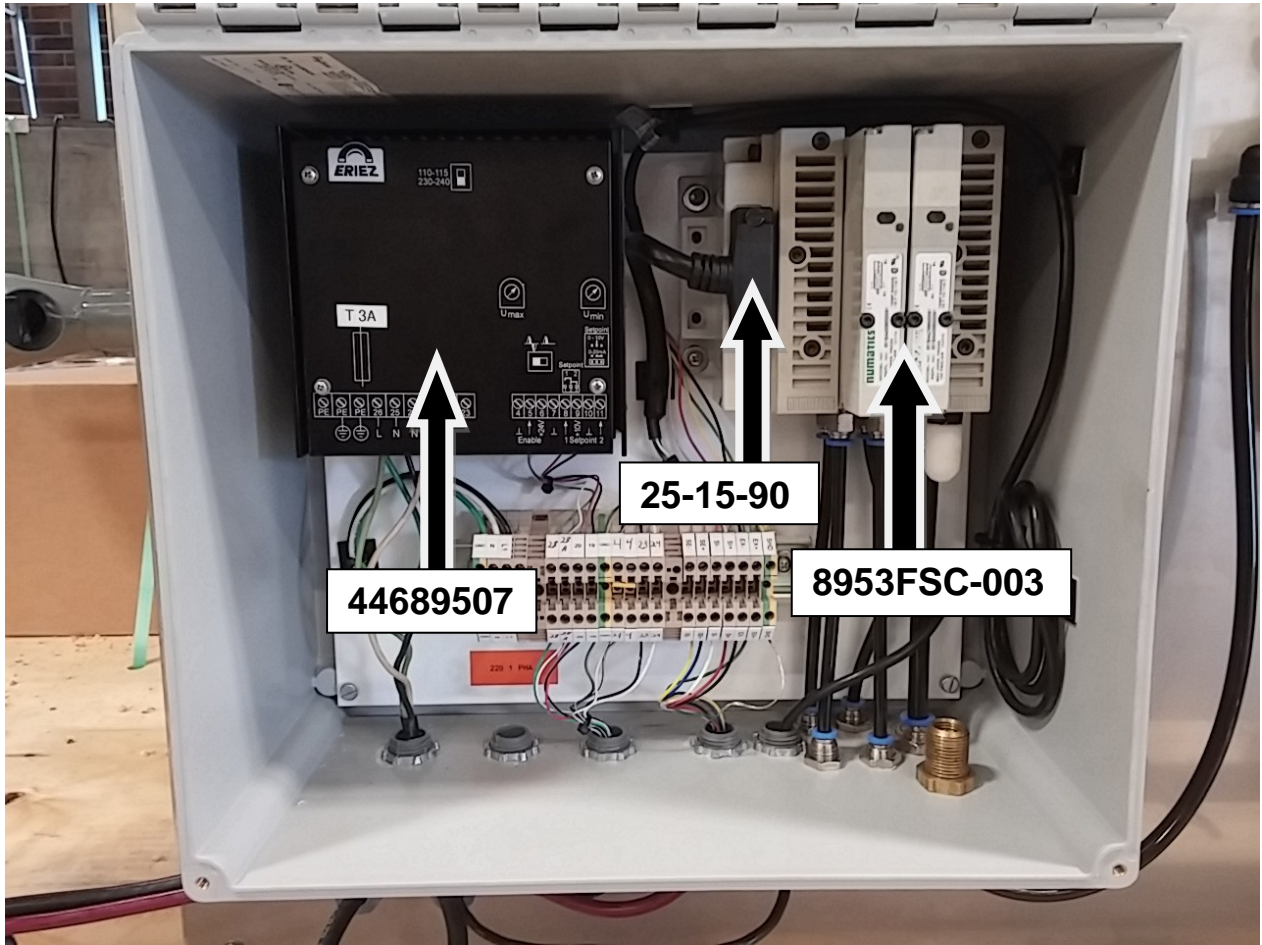
Not all spouts are identical in size or shape. Some products pass through round spouts more easily. Round spouts, however are generally harder for operators to use than pecan shaped spouts.

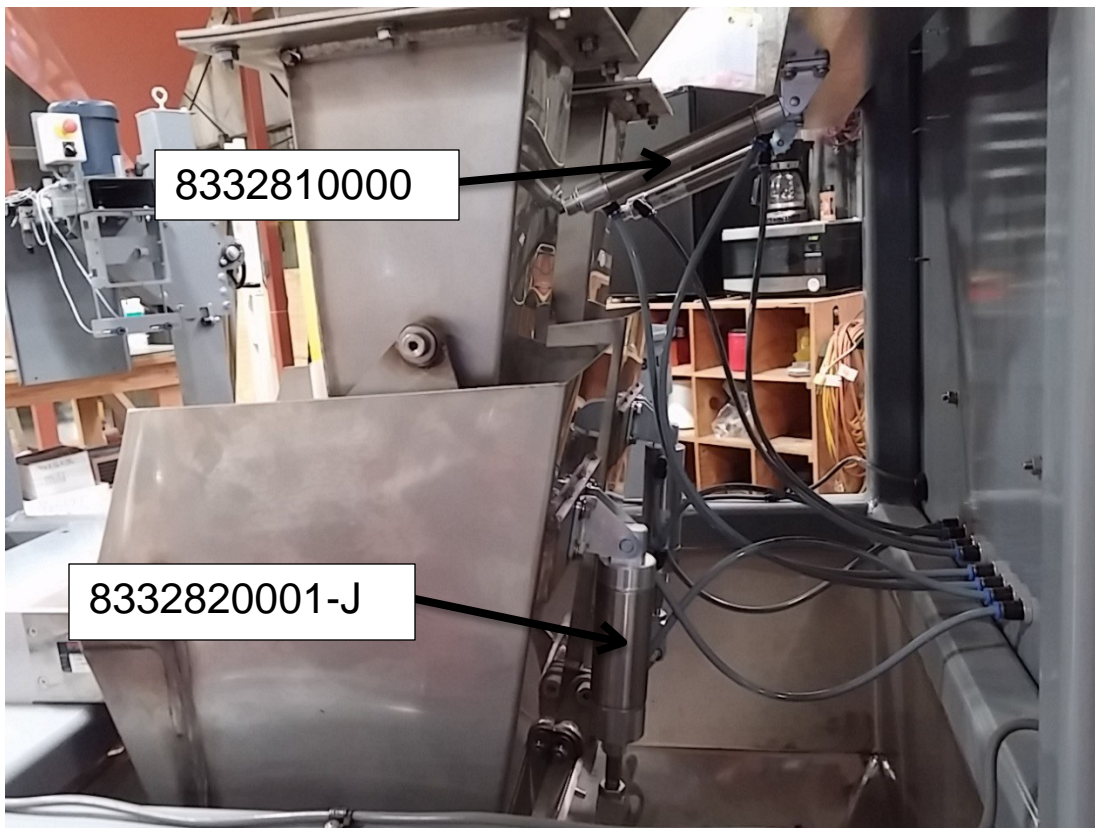
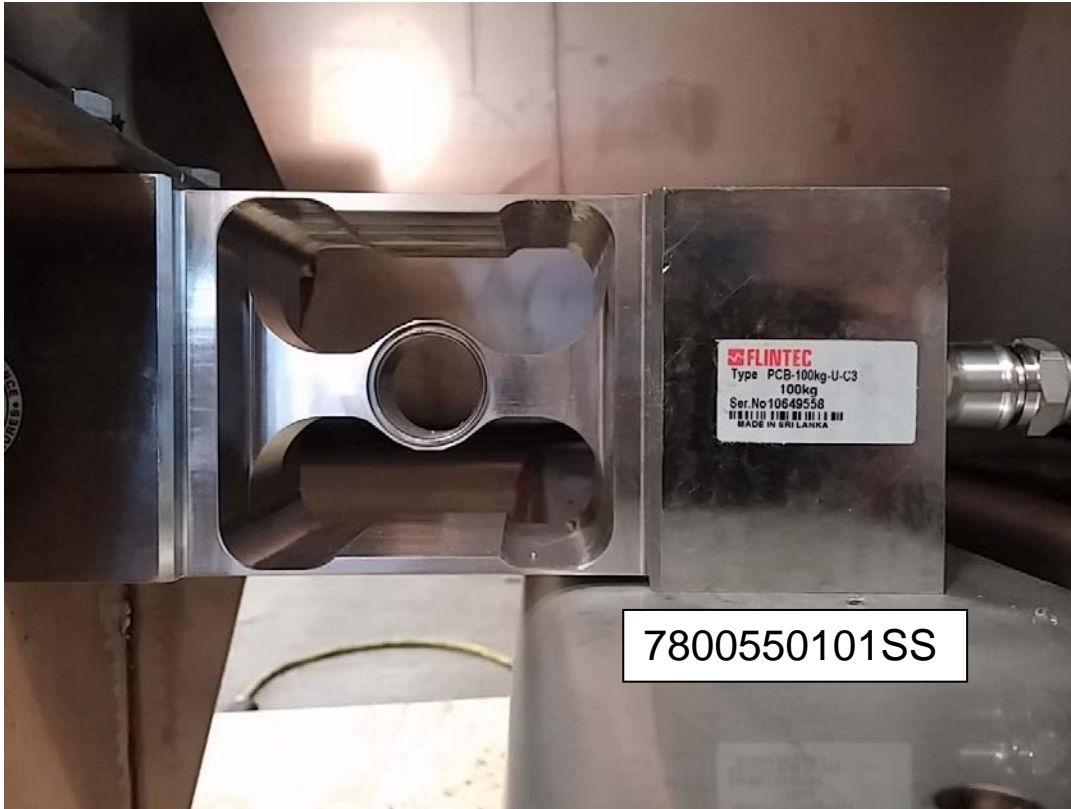
A separate air regulator is provided for all bag clamps. Each pneumatic system valve cylinder includes speed control. The amount of air pressure required is trial and error. The amount of air used should only be enough to firmly hold the heaviest bag without any slippage.

If a finger would get caught in the spout assembly, don't panic. We are not aware of any broken bones in 30+ years of manufacturing these products.

Most damage is done by pulling out. The clamps require 50 to 80 lbs. of air pressure normally to hold a standard 50 lb. bag. Operators normally cannot pull out of this clamp assembly with said pressure. By pulling out the skin can be torn or a fingernail can be lost, depending on the position of the hand when clamped. Generally it is far better for the operator not to panic and wait for the release of air pressure.

Safety is everyone's concern. New operators should manually hang bags without product until they feel secure. Do not operate if you feel your personal skill levels do not allow you to operate this spout safely.









**JEM INTERNATIONAL, INC.****PHONE: 913-441-4788****FAX: 913-441-1711**

ITEM #	DESCRIPTION	
3770330160-J	Filter/Regulator Assembly 22 Series	Rec
3770330142-J	Pressure Gauge	Rec
8953FSC-24	Replacement Valve W/ Speed Control	Rec
8953FSC-003	2 Station Manifold Assembly	
82STR-2MP-4T	Fitting, 1/8 NPT x 1/4 Tube, Straight	
82ELB-6MP-6T	Fitting, 3/8 NPT x 3/8 Tube, Male Elbow	
25-15-90	Interface Cable, 90 DEG, 25 Pin, Sub-D, Female 15"	
2795900010	Non-metallic wand switch	
3770880001	Bushing for Hopper	Rec
3770900000	Bushing for Gate	Rec
44689507	Eriez Vibrator Control	
5000010001	Gate Chute SS GV	
5000030001	Top Chute SS GV	
5000060003	Diverter SS GV	
5000080001	Door Hopper SS GV	
5000260035	Housing side frame GV	
5000260005	End panel GV	
7061400000	Rod end 1/4 RH	
7800550051	Load Cell single point GV	
82TIUB07GR1-305	Airline 1/4"	
82TIUB11GR1-153	Airline 3/8"	
8332810003	Clevis Rear Gate GV	Rec
8332810000	Gate Cylinder GV	Rec
8332820002	Clevis Front hopper GV	Rec
8332830003	Clevis Rear Hopper GV	Rec
8332820001-J	Hopper Cylinder	Rec
82E2MN	1/4" NPT Polyethylene Muffler	
GV-S-GW8X14	VIB ERIEZ HS26, 8X14, 115V	



**Rinstrum**  
**JEM-BAT-120**  
**Digital Controller Manual**  
**For Net Weigh Scales**















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## R400 SERIES

### ZERO/SPAN CALIBRATION PROCEDURE

With the indicator powered on and in normal weighing mode, perform the following functions to calibrate the R400 series indicators.

*(Please note that some variation may exist between firmware versions.)*

1. Press and hold the  +  <POWER> + <F3> keys together for a few seconds until "**Full Setup**" is displayed and then let go.
  - a. The display should now read "**GEN.OPT**"
2. Press the  <ZERO> key a few times until "**SCALE**" is displayed.
3. Press the  <TARE> key a few times until "**CAL**" is displayed.
4. Press the  <RECIPE> key one time to display "**ZERO**" "**CAL ?**".
5. Press the  <OK> key one time. The current live weight will be displayed, along with "**CONT. ?**"
6. Remove all weight from the scale spout, and press the  <OK> key to proceed
  - a. "**Z in P**" (Zero in Process) will be displayed briefly followed by the newly captured zero reference point and "**DONE**"
7. Press the  <OK> key one time to return to "**ZERO**" "**CAL ?**".
8. Press the  <RECIPE> key one time to display "**SPAN**" "**CAL ?**".
9. Press the  <OK> key one time. The current live weight will be displayed, along with "**CONT. ?**"
10. Add your desired span calibration weight to the scale spout.
11. Press the  <OK> key one time. "**WEIGHT**" will be displayed, along with a field to enter the span weight value.
12. Enter the desired span weight value with the keypad, and then press the  <OK> key.
  - a. "**S in P**" (Span in Process) will be displayed briefly followed by the newly captured span reference point and "**DONE**"
13. Press the  <OK> key one time to accept the value and return to "**SPAN**" "**CAL ?**".
14. Press the  <POWER> key one time to save the changes and exit full setup.



## **Recipe Data Base Usage**



### **ADDING A NEW RECIPE**

The recipe data base function saves the following information in the database for switching between products.

Target weight  
Slow fill amount  
Flight  
Feeder fast percentage  
Feeder slow percentage  
Fill delay timer  
Check delay timer (spike time)  
Bag Delay timer

The best method would be add the name of the recipe first then enter the parameters.

To enter a new recipe name complete the following:

1. Press and hold the UP Arrow key.
2. NAME will appear on the top of the indicator. The current recipe will be on the bottom.
3. USE the alpha-numeric keypad to enter the name of the product you wish to use. You may enter as long of a name as you wish. (Just write over the current recipe name that appears)
4. Press the OK key.
5. The indicator will show you the current recipe you just created as well as its recipe code.

This is now the active recipe in the indicator. You can now change whatever parameter you so desire and they will be saved to that recipe when you switch to another.

### **SWITCHING BETWEEN RECIPES**

To switch between recipes complete the following.

1. Press the SELECT key.
2. Code will appear on the screen.
  - a. Each recipe when entered is assigned a user defined name, ie the name you type in, and a code.
3. You may press OK and enter the code number if you know it or press the arrow key until NAME displays on the screen.
4. When name appears on the screen press OK.
5. Use the arrow keys to cycle threew the names of the recipes until you find the one you would like to select and press OK.
6. This is now the active recipe.

### **DELETING A RECIPE**

1. Press and hold the down arrow key with the recipe you wish to delete as the current recipe.
2. The screen will display REMOVE CODE XX. With XX being the code number of the current recipe.
3. Press the OK key.
4. The recipe is now deleted.

## Updating the Rinstrum LUA Module Remotely

To remotely update the LUA module in the Rinstrum you will need the following hardware items:

1. A windows based laptop
2. A WIFI internet connection at the scale. This can be the companies WIFI connection or a hot spot WIFI connection. Most smart phones can be used as a hot spot.
3. An Ethernet patch cable to connect from the computer to the LUA module.
  - a. A hard wired Ethernet connection can also be made from the LUA module to the local network. If this is done we will change the DCHP setting in the indicator and will need the computer to be on the same network as the one the scale is hard wired to.

To remotely update the LUA module in the Rinstrum you will need the following software items installed on the windows based laptop.

1. Team Viewer – <http://www.iembaggingsscales.com/contact-us.php>

The following software can be downloaded and installed from the following link:

[https://www.dropbox.com/sh/7ifiaojvb284vjm/AAD\\_UJJKXz\\_MwCdxHVXrKyJa?dl=0](https://www.dropbox.com/sh/7ifiaojvb284vjm/AAD_UJJKXz_MwCdxHVXrKyJa?dl=0)

2. LUA development environment (recommended)
3. USB-Serial Driver (recommended)
4. View 400 (recommended)

Software items 2-4 are recommended but not required. However, if they are not installed prior us, JEM International, accessing your computer to update the LUA module we will have to install them once we are on your computer.

**JEM International**

**Service or Technical Support: 913-441-4788**

**Email: [info@jemscales.com](mailto:info@jemscales.com)**

## **Explanation of the 'CHK.DLY' (CHECK DELAY) timer and its function:**

The CHK.DLY timer is a timer within the operational program that does not allow the weight to be observed for that given amount of time. The idea is to prevent premature shut off of the filling cycle when it is in that given fill cycle. i.e.. Fast feed/Slow feed.

If you imagine standing in front of a floor scale and you weigh 200.00lbs. and you were to jump on to that scale, it would spike above your 200.00lbs. and then level off at 200.00lbs. The same thing happens when product first reaches the weigh hopper during fast feed and then again when it switches from fast to slow feed. If this time value was not set high enough then the scale would prematurely switch over to slow feed which in return will increase its filling time. On the other hand, it would 'SPIKE' when it switched over to slow feed and prematurely observe the final cut off point of the feeder and the result will be under weight.

This timer value is dependent upon what model scale, the size of the weigh hopper, and the bulk density of the product being ran.

The following are typical time values for the different types of scale models supplied by JEM International:

Eagle Net weigh - .80 seconds to 1.25 seconds

Falcon Net weigh - .5 seconds to 1.0 second

Wildcat Gross weigh - .6 seconds to 1.25 seconds

# FALCON CALIBRATION PROCEDURE

This picture shows the correct placement of the calibration weight. Follow the recalibration steps in this manual and place this weight as shown when asked to enter the known calibration weight mass. Enter the value labeled on the weight and then press the “OK” key. Complete the rest of the calibration steps.



## **CALIBRATION PROCEDEURES** **for JEM International Gross Weigh and Net Weigh Bagging Scales**

1. Calibrating Brackets/ Strap have been supplied to support the calibration weights. It is important to remember that the weights must be used to counter balance themselves. We cannot have two weights on one side of the unit and no weights on the opposite side. It is extremely important to remember the manner in which the scale is used; all weight will be centered on the scale.
2. The calibration brackets/ straps have their actual weight marked on them and the weights are also clearly marked.
3. Gross Weigh Scale – Hang calibration strap centered on front and rear of the spout with the hooks hanging on the center grip or dust tight  $\frac{3}{4}$ " rod. For a gross weigh scale without a center grip or dust tight spout a different calibration set is provided.
4. Net Weigh Scale - Hang two brackets on the weigh hopper halo, or mount to brackets from load cells.
5. Once the brackets/ straps have been hung on the scale, you will add two known weight to the calibration bracket/ straps. We recommend using certified calibration weights for this process. You can calibrate now to the final weight – being the weight of the two known weights plus the weight of the brackets or strap. Another option is to zero out the weight of the brackets or straps and simply calibrate to the weight of the known certified calibration weights.

For example: If you have two 30 pound weights and two brackets weighing 2 pounds each, you have 64 pounds of known weight that can be calibrated.

Once this calibration is complete, you have certified that your scale is correct to either 60 or 64 pounds of weight.

6. You can add a bag onto the spout or add product into the weigh hopper that will weigh less than this amount. Since you have calibrated to 60 or 64 pounds with known weights, then the scale is accurate up to this point with an unknown weight.

For example: If you add 50 pounds to the weigh hopper or to the bag, you are now reading 50 pounds on the digital controller and this is a weight that has been certified.

At this point, you can now add two 30 pound weights and the final weight should be 60 pounds more than the weight you put into the weigh hopper or into the bag.

If you added exactly 50 pounds of product into the weigh hopper or into the bag, you should read 110 pounds when you add the 60 pounds of known weights. This is a build-up test and now the scale has been certified up to 110 pounds.

7. Store the weights and the brackets in an area where they will not fall and chip or be damaged in any way.

**Application Name:**

JEM-423-BAT-120 Net Weigh

**Application Overview:**

This application is for a simplex net weigh controller that allows for single scale operation and 1 - 4-20mA analog reference for variable feeder control.

**Operation Sequence:**

1. With the scale in "IDLE" the operator will select a recipe and/or edit the target and timer values accordingly. More details found in the Operator Configuration section.
2. To start weighing product the operator will press the "START" button on the indicator. The emergency stop must be pulled out to operate the scale.
3. Once started the scale will fill to its target weight.
4. Once the scale has reached its target value it will display "DUMP"... in the lower right corner, waiting for the operator to activate the dump enable switch.
5. The operator will hold a bag on the spout and activate the dump switch.
  - a. The dump switch triggers the bag clamp to close, and commands the scale to discharge the contents of the hopper into the bag.
  - b. After the first filling cycle the dump switch can be activated at any time to clamp a new bag, and does not have to wait for the scale to be done filling.
6. After the product has discharged into the bag, the scale will automatically refill and be ready for the next discharge cycle.
  - a. After discharging, the cycle counter will increase, and the data for that bag will be stored in the indicator. See DataStore section for details on data collection.
    - i. The bag clamp will then open to drop the bag after the BAG.DLY timer has expired.

**Operator Configuration:**

*(The functionality below highlights what is required to operate this system as it is designed to operate. For additional info on additional key operation please see the indicator operator and reference manuals)*

**Data Entry:**

*(Data is entered with the alpha-numerical keypad on the right side of the unit. Remember, after making changes to data you must press the OK key to accept it and again to return to weighing mode.)*

**Up / Down Arrow keys:**

These keys are used to scroll through options in the operator menus outlined above.

**Cancel (C) and OK keys:**

These keys are used respectively to clear data from and entry field and to accept changes to the data.

Numpad keys:

- **Short Press:** to enter alphanumeric data in the current field.
- **Long Press:** Allows access to the menus outlined in Operator Configuration.

SELECT key:

- **Short Press:** Allows the operator to establish the final fill target.
- **Long Press:** Allows access to Operator Configuration menu containing all TARGETS, FLIGHT, and TIMERS.

CLOCK key:

Press and hold the CLOCK (1) key to view and edit the current time and date settings for the indicator.

HOLD key:

Press and hold the HOLD (2) key to toggle HOLD MODE operation on or off.

- **DISABLED:** This is the normal operation mode, and allows the dump gate to automatically operate after the operator presses the foot switch.
- **ENABLED:** When hold mode is enable the operator may press the foot switch to clamp a bag, but the dump gate will not automatically activate to dispense product into the bag.

COUNT key:

Press and hold the COUNT (3) key to view, edit, and clear the available bag and cycle counters.

- **BAG.CNT:** is the number of bags that have been run for the currently selected recipe.
- **CLEAR:** allows the operator to clear the selected counter and return it to 0 by pressing the (OK) key. Press the CANCEL (C) key to not clear the counter.

TOTAL key:

Press and hold the TOTAL (4) key to view and clear the totals for the currently selected recipe, and grand totals for all recipes.

- **CLEAR TOTALS:** While in the totals menu, press and hold the DEL (DOWN ARROW) key to be prompted to clear all totals. Clear totals by pressing the (OK) key. Press the CANCEL (C) key to not clear the totals.

TIMER key:

Press and hold the TIMER (6) key to view and edit the available timers.

- **FILL.DLY:** is the amount of time after the bag clamp is released, that the unit waits before refilling the hopper.
- **CHK.DLY:** is a timer that prevents the scale from looking at the current weight after the fast fill or slow fill outputs change from on to off. This is used to prevent ending the fill cycle prematurely if there is a spike in the weight from product rushing into the bag or hopper.
- **DMP.TIM:** is the amount of time that the dump gate will stay open during the discharge cycle. Set this to the minimum amount of time required to fully evacuate the hopper.
- **BAG.DLY:** is the amount of time after the discharge is complete, that the unit waits to turn off the bag clamp output.

TARGET key:

Press and hold the TARGET (7) key to view and edit the available targets and variable feeder speeds. Variable feeders may include a vibratory feeder, auger feeder, belt feeder, or etc...

- **TARGET:** This is the final fill target.
- **SLO.FIL:** This is the amount of product filled in slow fill.
- **FD.FST:** This value is entered as a percentage (%) from 0% to 100% and determines how fast the variable speed feeder will operate during fast fill.
- **FD.SLO:** This value is entered as a percentage (%) from 0% to 100% and determines how fast the variable speed feeder will operate during slow fill.

#### FLIGHT key:

Pressing and holding the FLIGHT (8) key allows the operator to view and edit the current FLIGHT value. Flight is the amount of material in the air after both fast and slow fill feeders have cut off.

*(eg: 50.00lb final target with SLO.FIL set to 10.00lb and Flight set to 0.50lb. The unit will fast fill to 40.00lb, then slow fill to 49.50lb and turn off, then reach its target of 50.00lb when the remaining product in the air falls into the bag.)*

#### DUMP key:

Press and hold the DUMP (9) key to manually dump the weigh hopper.

- *The manual dump sequence will close the bag clamp, discharge the hopper, and then open the bag clamp automatically.*

#### INFO key:

Press and hold the INFO (+/-) key to view the application name and version information.

#### ACC key:

Press and hold the ACC (0) key to view the accessories menu.

- *This menu holds diagnostic information for the indicator and all installed accessory modules.*

#### H.WARE key:

Press and hold the H.WARE ( . ) key to view the hardware menu.

- **MVV:** *select this option to view the millivolt per volt (mV/V) value sensed by the indicator.*

#### Function keys:

F1 – Start Batch  
 F2 – Pause Batch  
 F3 – Abort Batc

#### Cycle Light:

The cycle light illuminates to identify the portion of the slow fill that is outside of the DLY.CHK(Spike Time). This is used as a troubleshooting tool to insure that the unit is in slow fill long enough for accurate bag weights.

#### On – Off Switch:

The On – Off switch is used to turn the scale controller on or off.

#### Emergency Stop:

*(This switch has 2 positions, pulled out is the normal operating position, and pushed in, in case of emergencies. The functionality is defined as follows.)*

- a. When the Emergency Stop is pulled out the scale will operate normally.



- b. When the Emergency Stop is pushed in the, power is removed from the relay rack, solenoid valves, and feeders. This will also retract the bag clamp to its open position.
  - a. *The scale controller will be placed in a pause condition. Once the Emergency Stop has been returned to the pulled out position the operator may resume normal operation by triggering a start with the F1 key.*

### **Supervisor Configuration**

Press and hold the POWER and START (F1) keys together to enter the Supervisor Configuration menu. (*This menu is protected with a passcode to be supplied upon request to JEM International.*)

- **SCALE** menu: This menu has options that will affect the scale operation.
  - **FILTER:** *Used to adjust the amount of filtering applied to the load signal. Filtering should be set to the minimum amount required. The default value is 0.20s and is recommended for most applications.*
  - **COR.TYP:** *Allows the supervisor to alter the fill correction type. Available options are AUT.FLT, MAN.FLT, AUT.JOG, and JOG. These are defined in the Correction Type section. The default is AUT.FLT and is recommended for most applications.*
- **CALIBRATE** menu: Allows the supervisor to scroll through the options to calibrate the scale.
  - **ZERO:** *When “CAL ZERO” is displayed, remove all weight from the scale and press the (OK) key to calibrate the scale zero point.*
    - *“Z in P” (Zero in Process) will be displayed while the unit is calibrating, followed by “ZERO OK” when complete.*
  - **SPAN:** *When “CAL SPAN” is displayed, add test weigh to the scale and press the (OK) key.*
    - *“SPAN” will be shown on the top display and a weight on the lower display. Used the keypad to enter the value of the applied test weight, and press the (OK) key to calibrate the scale span point.*
      - *“S in P” (Span in Process) will be displayed while the unit is calibrating, followed by “SPAN OK” when complete.*

### **Correction Type:**

- **AUTO FLIGHT (AUT.FLT)**
  - *The unit will attempt to calculate and optimize the Flight value automatically as it is being used. This allows the unit to maintain accuracy and consistency throughout the filling process.*
- **MANUAL FLIGHT (MAN.FLT)**
  - *The unit will use the operator entered Flight value for every fill cycle, no automatic correction is performed*
- **AUTO JOG (AUT.JOG)**
  - *The unit will utilize automatic flight correction, add a jog sequence to the end of the fill cycle. Additional settings will be added to the FLIGHT menu to control the jogging sequence.*
- **MANUAL JOG (JOG)**
  - *The unit will utilize manual flight correction, add a jog sequence to the end of the fill cycle. Additional settings will be added to the FLIGHT menu to control the jogging sequence.*
- **Jog settings:**
  - *These settings are added to the FLIGHT menu if AUT.JOG or JOG correction type is chosen.*

- **JOG.ON:** is the amount of time the slow fill output will be activated during the jog sequence
- **JOG.OFF:** is the amount of time to delay between JOG.ON pulses.
- **JOG.NUM:** is the maximum number of times the unit will attempt to jog before the target value is reached. Setting JOG.NUM to 0 will force the unit to continue jogging until the target value is reached. The default value is 0.

### DataStore:

To collect the data from the scale indicator the operator may perform the following procedure.

1. Stop the filling / batching sequence by pressing the “**ABORT**” key. The indicator will display “**IDLE**” on the lower portion of the display.
2. Insert a **BLANK** USB flash drive into the USB port found on the M4223 module that is located on the back of the indicator.
  - a. The Indicator will analyse the flash drive, and then open the USB menu automatically.
3. The indicator will display “USB” on the upper portion of the display, and a prompt in the lower right corner to “USE ARROWS OR REMOVE USB”
4. The operator may choose from the following 3 options by using the arrow keys to scroll through the options and then pressing the “OK” key to accept the option.
  - a. “**TO USB**” – is used to download the data files from the indicator.
    - *The data files that are downloaded will contain the Datastore\_XXXXXXX.csv file, where XXXXXXX is the serial number of the indicator. This Datastore\_XXXXXXX.csv file can be opened in a pc software like Excel to view the captured data from each filling cycle.*
  - b. “**FROM USB**” – is used to upload new data files to the indicator if an update to the indicator software is required.
    - *This option should not be chosen unless asked to do so by JEM International personnel.*
  - c. “**EJECT USB**” – This option can be chosen to safely remove the USB flash drive from the indicator.
    - *“USB REMOVE” will be displayed when it is safe to remove the usb drive.*
    - *Once removed the indicator will return to “IDLE” and be ready for use. If a software update was loaded the indicator will automatically reboot to apply the update.*



NATIONAL TYPE EVALUATION PROGRAM

# Certificate of Conformance

for Weighing and Measuring Devices

**For:**

Indicating Element  
Digital Electronic  
Models: R420 and R423  
 $n_{max}$ : 10 000  
Accuracy Class: III / III L

**Submitted By:**

Rinstrum, Inc.  
1349 Piedmont Drive  
Troy, Michigan 48083  
Tel: 248-680-0320  
Fax: 248-499-1331  
Contact: John Lawn  
Email: [john.lawn@rinstrum.com](mailto:john.lawn@rinstrum.com)  
Web site: [www.rinstrum.com](http://www.rinstrum.com)

**Standard Features and Options**

- Semi-Automatic (push button) Zero Setting Mechanism (SAZSM)
- Automatic Zero Tracking (AZT)
- Initial Zero Setting Mechanism (IZSM)
- Semi-Automatic (push button) Tare
- Keyboard Tare
- Multiple Tare Memories
- Gross/Net/Tare Display
- Alphanumeric Display
- Operator Prompted Display
- Units Selection (lb, kg, oz, g, t)
- Gross/Net Accumulation
- Multi-Point Linearity Calibration
- Liquid Crystal Display (LCD)
- AC or DC Power
- ABS Plastic Enclosure (R420)
- Stainless Steel Enclosure (R423)
- Category II Audit Trail
- Silicon Rubber Keypad (R420)
- Membrane Keypad (R423)
- Configurable Function Keys
- Password Protection
- Vehicle Weighing (Inbound / Outbound)
- Configurable Set Points
- Database Memory
- RS-232/485 Communications Port
- User Programmable for Non-metrological Functions
- Multiple Programmable Print Formats
- Rinstrum Viewer Configuration Software (PC)

Temperature Range: -10 °C to 40 °C (14 °F to 104 °F)

This device was evaluated under the National Type Evaluation Program and was found to comply with the applicable technical requirements of "NIST Handbook 44: Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.

John Gaccione  
Chairman, NCWM, Inc.

Stephen Benjamin  
Committee Chair, National Type Evaluation Program Committee  
Issued: June 3, 2014

1135 M Street, Suite 110 / Lincoln, Nebraska 68508

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**Rinstrum, Inc.**  
Indicating Element / R420 and R423

**Application:** General-purpose indicator for use with certified and compatible weighing/load receiving elements.

**Identification:** An adhesive identification badge containing all required information is located on the front of the device. This badge repeats the word “VOID” when removed.

**Sealing:** These devices are equipped with non-resettable counters that increment every time the unit is calibrated or configured. To view the counters:

1. Press and hold the power key for 3 seconds to turn off the indicator.
2. Press the power key to turn the indicator back on.
3. The event counters will be displayed during the power up sequence for approximately two seconds.
  - a. The calibration counter will be identified by C.xxxxx (example: C.00005).
  - b. The setup configuration counter will be identified by F.xxxxx (example: F.00005).

The device’s setup mode may be accessed via front panel keys protected with a 6-digit PIN code, by default. Alternatively setup mode can be accessed via a button marked "setup" located on the rear of the indicator which can be protected using traditional physical seals in addition to the PIN code. Enable the rear "setup" button as follows:

The setup button is located on the rear of the unit, above the load cell connector on both the R420 and R423.

1. Press and release the setup button to access the setup mode and make changes or calibrate.
2. Press and release the [ZERO] key multiple times until “SCALE” is displayed.
3. Press and release the [TARE] key multiple times until “OPTION” is displayed.
4. Press and release the [SELECT] key multiple times until “R.ENTRY” is displayed.
5. Press and release the [UP ARROW] key one time until “R.ENTRY” is set to “ON”.
6. Press and release the [OK] key one time to accept the change.
7. Press and release the [POWER] key one time to save the changes and exit setup mode.
8. The setup mode cannot be accessed again without pressing the rear "setup" button, and is sealed by the following methods:
  - a. Standard ABS and Stainless Steel housed units are sealed by a physical seal in the form of a wire security seal placed through 2 of the drilled head screws holding the rear cover onto the main housing, or by placing a destructible label on the unit extending from the main housing onto the properly installed rear cover.
  - b. For panel mount applications place the physical seal plastic cover over the load cell connector and setup button and secure into position with the drilled head screws. Thread wire security seal through both drill head screws, or install destructible label from security cover to indicator housing, as required.

**Test Conditions:** The emphasis of the evaluation was on the device design, operation, marking requirements, performance, and compliance with influence factors. Models R420 and R423 were submitted for evaluation and interfaced with a load cell simulator. Several increasing/decreasing load tests, and warm up tests were performed. The device was tested over a temperature range of -10 °C to 40 °C (14 °F to 104 °F). Tests were also conducted using 90 VAC to 260 VAC, and 12 VDC to 24 VDC. The indicating element was also interfaced with a weighing/load receiving element to verify compliance with zero, zone of uncertainty, motion detection, and printer format requirements.

**Evaluated By:** T. Buck (OH)

**Type Evaluation Criteria Used:** *NIST Handbook 44 Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*, 2014 Edition. *NCWM Publication 14 Weighing Devices*, 2014 Edition.

**Conclusion:** The results of the evaluation and information provided by the manufacturer indicate the device complies with applicable requirements.

**Information Reviewed By:** J. Truex (NCWM)



**Rinstrum, Inc.**  
Indicating Element / R420 and R423

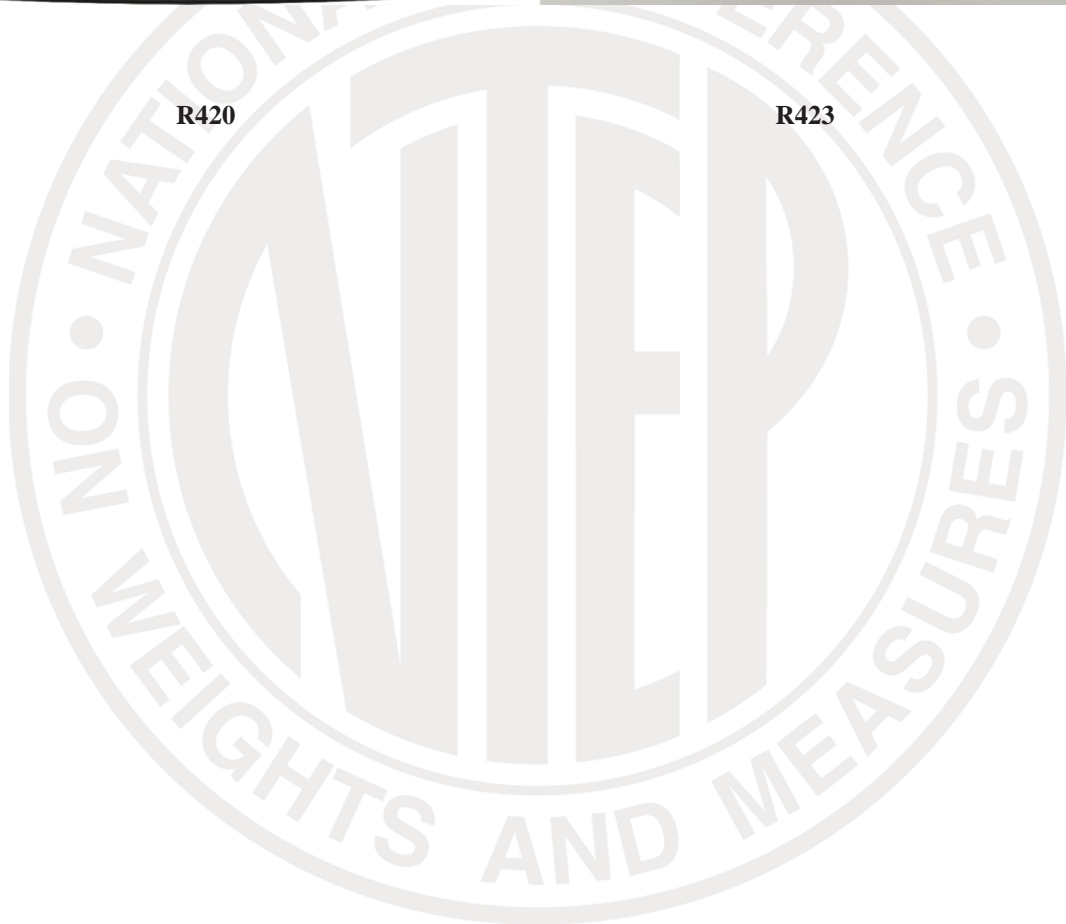
**Examples of Device:**



R420



R423



# Installation, Operation and Maintenance Instructions



## **VIBRATORY FEEDERS MODELS - 58B, 62B, 65B, 68B, 70B & 75B**

**ERIEZ MAGNETICS** HEADQUARTERS: 2200 ASBURY ROAD, P.O. BOX 10608, ERIE, PA 16514-0608 U.S.A.  
WORLD AUTHORITY IN ADVANCED TECHNOLOGY FOR MAGNETIC, VIBRATORY and INSPECTION APPLICATIONS

# Introduction

This manual details the proper steps for installing, operating and maintaining the Eriez Vibratory Feeder.

Careful attention to these requirements will assure the most efficient and dependable performance of this equipment.

If there are any questions or comments about the manual, please call Eriez at 814/835-6000 for Vibratory Feeder assistance.



## **CAUTION**

**Safety labels must be affixed to this product. Should the safety label(s) be damaged, dislodged or removed, contact Eriez for replacement.**

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# Installation

## MOUNTING

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

### SUSPENSION MOUNTING

Suspend front and rear of Feeder from cables attached to the suspension bracket eyebolts. Such cables should be minimum 1/2" (12 mm) dia. standard wire ropes for 68B, 70B & 75B models and 3/8" (10 mm) dia. standard wire rope for 58B, 62B & 65B models.

**⚠ WARNING:** Suspension mounting inherently involves risk of property damage or personal injury to equipment or personnel located under or near the machine, should a mounting cable fail. Suspension component specifications given in this manual are suggestions only, and *final selection of suspension method is entirely the responsibility of the user.* Select and use suspension cables with rated capacities (including reduction factors for clamps, etc.) that provide adequate safety factors when the weight of the equipment and all possible loading conditions and upsets are taken into account. Consult Eriez at 814-835-6000 if additional Eriez equipment information is needed to make this selection. As with all suspended equipment, access to the area under the machine should be restricted.

NOTE: Do not suspend from eyebolts threaded horizontally into the tray or drive housing. Eyebolts loaded at right angles to their shanks may fail unexpectedly causing damage to equipment or personal injury.

## FLOOR MOUNTING (See Figure 1)

Mount front and rear of Feeder on the floor mounting accessories provided as an alternate to the suspension accessories. The mounting bases (Part #27 or #28) should be bolted to the floor or other mounting surface, and the unit, with the floor mounting springs (Part #24, 25, or 26), simply placed on the bases (no fastening necessary).

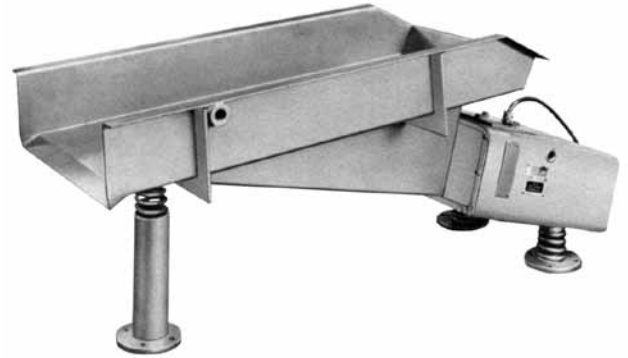


FIGURE 1

## 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 above should be followed.

## IMPORTANT NOTE:

### 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.) **Unauthorized alterations void Eriez' warranty.**

# Installation (cont.)

## ELECTRICAL CONNECTIONS

NOTE: The Eriez Vibratory Feeder is designed to be operated from an AC source. It cannot be operated from a DC source.

All wiring should conform to all applicable electrical codes.

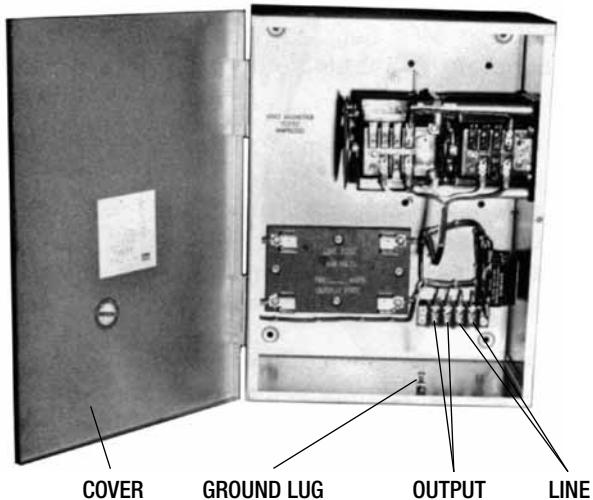


FIGURE 2

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 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.

6. On multiple-drive feeders (two or more drives on one tray) all drives should be wired electrically in phase. The black wires from each power cord should be connected together and the white wires connected together. The black wires should be connected to the positive side of the single-phase input voltage and the white wires should be connected to the negative side.

YOU ARE NOW READY TO START YOUR VIBRATORY FEEDER.

**⚠ CAUTION:** Operation from portable engine driven power plants.

Varying and unstable line frequency has an adverse effect on vibratory feeders because they are tuned mechanical devices, designed around either 50 or 60 cycle operating frequency. Shifts in the operating point due to changes in frequency (+or-1 cycle) cause higher than normal spring stress, striking and high line currents which can cause drive and tray failure. When operating from portable engine-driven power plants, be certain that the engine is up to speed and all other loads are started and at running speed before starting the feeder.

The feeder should always be stopped first when the engine-driven power plant is shut down.

# Operation

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.

## ADJUSTMENT (TUNING)

The adjusting means is solely for producing optimum performance of the unit where a specific material of low (under 40 lb/cu ft [.65 g/cc]) or high (over 125 lb/cu ft [2 g/cc]) density is to be handled continuously... also where offstandard sizes and shapes of trays are required.

This unit is adjusted by changing the stiffness of the springing system. Spring stiffness adjustment consists of varying the number of springs (Part 8) at the back of the unit or the thickness of individual springs. Access to the rear springs is gained by removing the cover (Part 6) at the back of the unit (see Figure 3). In tuning, the front springs need never be disturbed. In NORMAL OPERATION at full voltage with the unit fully warmed up, the displacement of the tray, measured at the back of the tray or the tray mounting brace, is .055" (1.4 mm). Displacements in excess of .065" (1.7 mm) will result in noisy operation of the unit and may, if continued, cause damage to components.

**⚠ CAUTION (Please Read Carefully): Only those feeder trays approved by Eriez are acceptable under the limits of our warranty. Any modifications, alterations, or changes of any degree must be approved by the Eriez Manufacturing Co.**

**This is a tuned device and the correct tray must be applied to the motor drive for which it is tuned.**

**NEVER OPERATE THE UNIT IN A STRIKING CONDITION!**

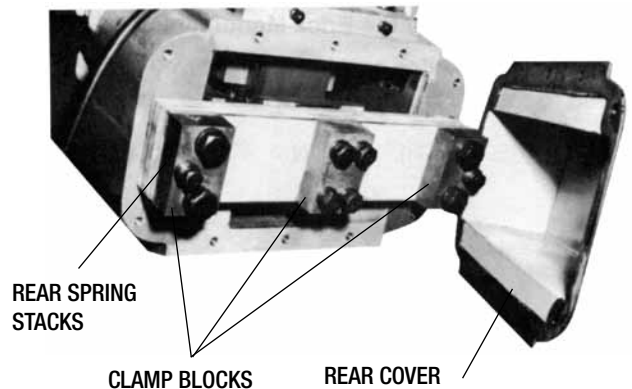


FIGURE 3

## ADJUSTMENT (TUNING) GUIDE

The following general rules should be kept 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.

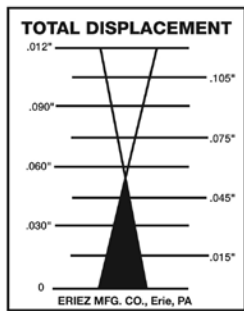
Normally spring thicknesses of 5/16", 1/4", 3/16" and 1/8" (7.9, 6.4, 4.8, and 3.2 mm) are used. To serve as a guide in tuning, the following spring stiffness figures should be used: 1/4" (6.4 mm) thick spring is approximately 53% as stiff as a 5/16" (7.9 mm) thick spring; 3/16" (4.8 mm) thick spring is approximately 44% as stiff as a 1/4" (6.4 mm) thick spring; and a 1/8" (3.2 mm) thick spring is approximately 30% as stiff as a 3/16" (4.8 mm) thick spring.

# Operation (cont.)

Example: to slightly increase the deflection of a unit a 1/4" (6.4 mm) thick spring could be removed and replaced with two 3/16" (4.8 mm) thick springs. Or, to slightly decrease the deflection of a unit, a 5/16" (7.4 mm) thick spring could be removed and replaced with two 1/4" (6.4 mm) thick springs. These combinations must be determined by the existing springs on the rear spring stack.

## HOW TO MEASURE DISPLACEMENT

With the 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.



Stroke gauge under vibration (shown at .055" displacement)

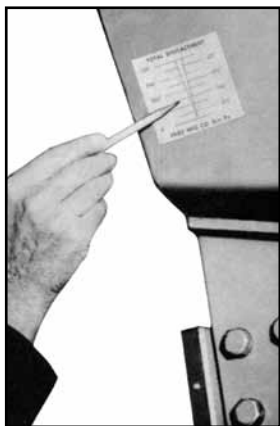


FIGURE 4

## ADJUSTMENT FOR NON-STANDARD TRAYS

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

1. Attach the tray (Part 12) and draw all **bolts tight**. Tray mounting studs - the nuts are torqued to 55 ft. lbs. on the Model 58B and 120 ft. lbs. for Models 62, 65, 68, 70, and 75B. 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 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" (1.4 mm). Additional springs may be purchased from Eriez (see Parts List Part 9). 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" (1.4 mm), decrease the spring stiffness by substituting springs of lesser thickness. If the displacement is much more than .055" (1.4 mm), increase the spring stiffness by substituting springs of greater thickness.

In changing tuning springs, put the clamp blocks (Parts 9 & 10) back on the same way they came off (see Figure 3) to ensure smooth clamping surfaces against the springs. All clamping bolts (Part 19) should 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 bolt heads.

TABLE 1. SPRING BOLT TORQUE

BOLT SIZE in	QUANTITY	TORQUE	
		English/lb-ft	Metric/Nm
1/2	13	55	75
5/8	18	110	150
5/8	11	150	200
3/4	10	245	338
7/8	9	340	460
1	14	365	490

To insure proper clamping pressure, threads should be lightly coated with a good molybdenum disulfide anti-seize compound.

KEEP COMPOUND OFF OF CLAMPING SURFACES.

# Operation (cont.)

## 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" (1.4 mm) (all standard tray units are so adjusted at factory), they are set for optimum performance on a material with a density of 100 lbs/cu ft. (1.6 g/cc) For very light materials, optimum performance occurs with displacements

above this value (up to .065" (1.7 mm)). For denser materials, optimum performance occurs with displacements less than .055" (1.4 mm).

The basic characteristic of these units is such that the volume output is virtually constant for materials from 40 lbs/cu ft to 125 lbs/cu ft (.65 g/cc to 2 g/cc) 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 REPLACEMENT

The electrical assembly in a vibratory Feeder may require replacement due to operation at over-voltage, 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 Figures 5 & 6).

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. Pry and lift the electrical assembly from the body casting, using a sling or some other safe method of lifting. (See Figure 6).
4. Replace defective electrical assembly (order from Eriez Parts List).
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 pull, it may be necessary to guide

the plate with a heavy screwdriver, meanwhile applying pressure to the top of the plate.

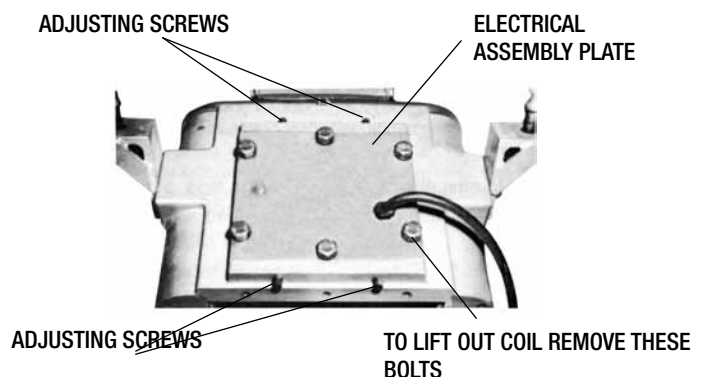


FIGURE 5

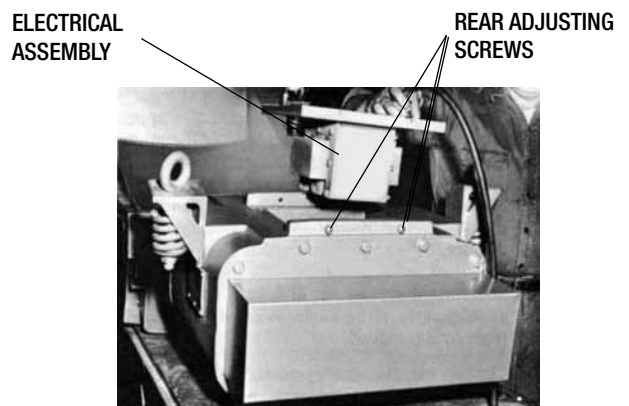
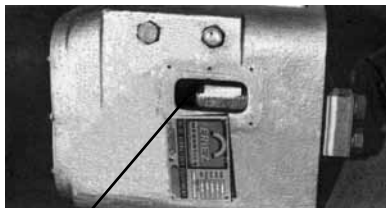


FIGURE 6

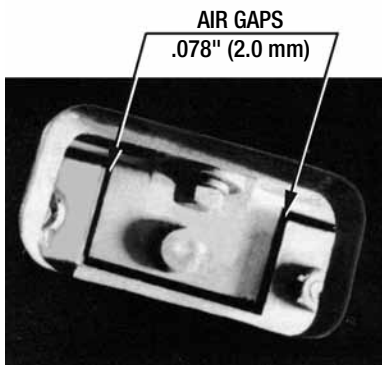
# Repairs (cont.)

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 air gap. (See Figure 7).
9. Working through the opening in the side of the body casting (Figure 7) and using a non-magnetic feeler gauge (furnished with each unit), approximately .072" (1.8 mm) thick (.090" (2.3 mm) thick for Model 58B) 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 (Part 6) is removed.
10. Tighten the electrical assembly plate bolts and replace the cover nameplate.



ACCESS PORT (FOR AIR GAP ADJUSTMENT)

**FIGURE 7**



**FIGURE 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.

NOTE: Fractures in springs are not always visible. Tapping springs to obtain distinctive ring ensures no fractures present. If sound is dull replace spring as it has fractures.

### 58B FEEDER

#### Replacement of front springs

Requires complete disassembly of the unit.

1. Remove coil assembly through top of unit. Six hex bolts hold coil mounting plate in place.
2. Remove rear sheetmetal cover and rear spring attaching bolts, spring clamps and spacers. Change rear springs if required.
3. Remove diaphragm clamp and rubber diaphragm from front of unit.

CAUTION: Tray mounting pads are special flat washers and must be reassembled at same stud locations as disassembled.

4. Remove outer spring bolts, spring clamps and spacers and remove armature, with spring stack attached, out through front of unit.
5. Remove center spring attaching bolts, spring clamps and spacers. Replace front springs and reassemble by reversing above procedure.
6. Torque all spring bolts to 55 ft. lbs.

# Repairs (cont.)

## Replacement of rear springs

Will not require complete disassembly of the unit.

1. Remove rear sheetmetal cover.
2. Remove rear spring attaching bolts, spring clamps, spacers and springs.
3. Replace springs and reassemble by reversing above procedure.
4. Torque all spring bolts to 55 ft. lbs.

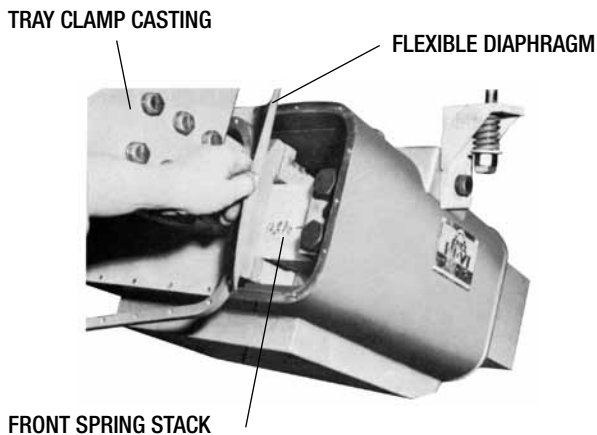


FIGURE 9

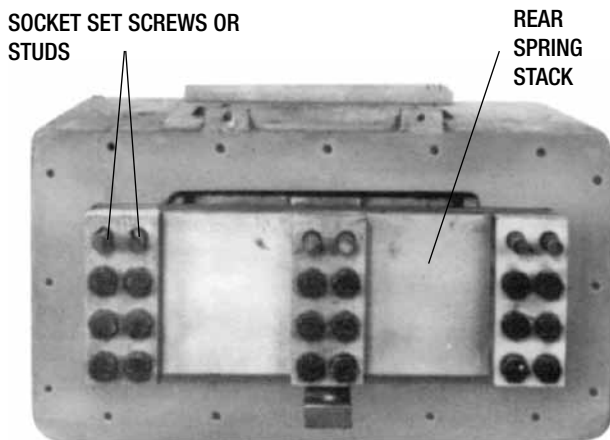


FIGURE 10

## 62B AND 65B FEEDERS

### Replacement of front springs

1. Remove diaphragm clamp and rubber diaphragm from front of unit.
2. Remove inner tray clamp attached to armature.

CAUTION: Tray mounting pads are special flat washers and must be reassembled at same stud locations as disassembled.

3. Remove spring bolts, spring clamps, spacers and springs.
4. Replace springs and reassemble unit by reversing above procedure.
5. Torque all spring bolts as follows: outer bolts - 340 ft. lbs., inner bolts - 150 ft. lbs.

### Replacement of rear springs

1. Remove rear sheetmetal cover.
2. Remove rear spring bolts, spring clamps, spacers and springs.
3. Replace springs and reassemble entire unit by reversing above procedure.
4. Torque all spring bolts as follows: outer bolts - 340 ft. lbs., inner bolts - 150 ft. lbs.

## 68B, 70B AND 75B FEEDERS

### Replacement of front springs

1. Remove diaphragm clamp and rubber diaphragm from front of unit.
2. Remove inner tray clamp attached to armature.

CAUTION: Tray mounting pads are special flat washers and must be reassembled at same stud locations as disassembled.

3. Remove top bolts from the three spring clamp locations.
4. Insert dowel pins (threaded on one end) into same three hole locations. Thread size for outer holes is 1-8 UNC and center hole is 3/4-10 UNC.
5. Remove remaining spring bolts, spring clamps, spacers and springs.

# Repairs (cont.)

6. Replace springs and reassemble unit by reversing above procedure.
7. Torque all spring bolts as follows: outer bolts - 365 ft. lbs., inner bolts - 265 ft. lbs.

## Replacement of rear springs

1. Remove rear sheetmetal cover.
2. Remove top bolts from the three spring clamp locations.

3. Insert dowel pins (threaded on one end) into same three hole locations. Thread size for outer holes is 1-8 UNC and center hole is 3/4-10 UNC.
4. Remove remaining spring bolts, spring clamps, spacers and springs.
5. Replace springs and reassemble entire unit by reversing above procedure.
6. Torque all spring bolts as follows: outer bolts - 365 ft. lbs., inner bolts - 265 ft. lbs.

# Troubleshooting

## 1. FEEDER NOT OPERATING

- a. Check fuses.
- b. Check input voltage.
- c. Check output voltage and current (amps).
- d. If voltage is going to feeder coil, check coil for open or ground.

## 2. SLOW OUTPUT OF FEEDER

- a. Check current on feeder at 100% voltage with the tray empty. If current is higher than nameplate reading, check for broken tuning springs.
- b. Check for broken tray mounting studs.
- c. Check for cracked welds and cracks in the tray.
- d. Check for worn tray or liner.
- e. If tray is enclosed, the booting to the inlet and

outlet must be flexible, as not to restrict tray movement.

- f. Check air gap.

## 3. FEEDER IS NOISY

(metal-to-metal striking sound)

- a. Check for broken isolation coil springs (suspended or floor mount).
- b. Is the tray rubbing on a hopper, chute work or anything else in the area.
- c. Check air gap per manual.
- d. Check current on feeder at 100% voltage with the tray empty. If the current is higher than the nameplate 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 build-up of product in the tray.
3. Check deflection.

4. Check current on feeder (should be within nameplate rating).
5. Check liners in tray for wear and loose bolts. If liner is to be replaced, use same thickness material.





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