



OPERATION AND MAINTENANCE

INSTRUCTIONS

MODEL 530 VIBRATORY LOSS-IN-WEIGHT FEEDER

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PROPRIETARY NOTE

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SAFETY

PLEASE READ AND FAMILIARIZE YOURSELF WITH ALL SECTIONS OF THIS MANUAL BEFORE PROCEEDING WITH INSTALLATION, OPERATION OR MAINTENANCE OF THE EQUIPMENT DESCRIBED HEREIN. THE MERRICK MODEL 530 LOSS-IN-WEIGHT FEEDER/BATCHER IS AN EXTREMELY SENSITIVE AND PRECISE WEIGHING DEVICE THAT CAN EASILY BE DAMAGED BY IMPROPER HANDLING OR OPERATION.

MERRICK manufactures units in a range of sizes. The following precautions are basic to all machinery and the principles apply to all MERRICK equipment, although the sizes differ.

No unusual hazards are associated with MERRICK equipment and controls. However, all machinery with electric drives and controls and moving parts requires the observance of basic precautions. Some of these principles bear repeating.

AS A GENERAL RULE:

1. OBSERVE ALL STANDARD PRECAUTIONS WHICH PERTAIN TO MOVING MACHINERY.
2. OBSERVE ALL STANDARD PRECAUTIONS WHICH PERTAIN TO ELECTRIC DRIVES AND ELECTRICAL CONTROLS.
3. PAY PARTICULAR ATTENTION TO THE SPECIAL "CAUTIONS" AND "NOTES" WHICH OCCUR THROUGHOUT THIS MANUAL.

MECHANICAL PRECAUTIONS:

1. When working on MERRICK equipment (whether for installation, cleaning, maintenance or lubrication) take positive steps to close off all infeeds and discharges. This is to prevent material from falling on personnel.
2. Use canvas tarpaulins to protect openings and to keep tools and loose parts from falling into machinery.
3. Take positive steps to prevent machinery from being started while personnel are at work. Main Disconnect Switches should be opened. MERRICK recommends that the boxes be padlocked by maintenance personnel who keep the keys in their possession while at work. Or remove fuses in the Main Disconnect Box and hang signs which indicate personnel are at work.
4. Do not attempt to remove chain guards and other protective elements of the equipment while machinery is being operated.
5. When work must be performed on machinery in motion, caution personnel to remove all loose clothing and jewelry such as rings, identification bracelets, etc.
6. Whenever possible do not allow personnel to work alone. There should be other people available to stop a machine in the event of a mishap and to summon help.
7. Always stop machinery before opening doors or inspection ports.
8. Heavy components such as pulleys and motors must be cribbed or braced from below, or lashed from above to prevent them from falling. When dismantling equipment, use good rigging procedures.

9. Stop machinery immediately in the event of unusual vibration, erratic operation, or runaway and uncontrollable motor speed.
10. Personnel working on machines should wear safety goggles, hard hats, steel-toe shoes and heavy gloves.

ELECTRICAL PRECAUTIONS:

1. Before undertaking work on the electrical control or drive systems, open Main Disconnect Switches and lock boxes. Or remove the fuses in the Main Disconnect and attach a sign to the box indicating that work is in progress.
2. Verify that all necessary grounds called for in the wiring diagrams are in place and are solid. Do not disable or disconnect grounding.
3. When working in live areas (high voltage) always keep one hand clear of the machine, cabinet and other conductors to avoid the possibility of shock from one arm across the chest to the other.
4. Never impair the function of a fuse.
5. Never undertake electrical work when the floor is wet or flooded.

IF PERSONNEL ARE IN DOUBT ABOUT A PROCEDURE, CALL OUR MERRICK INDUSTRIES, INC. SERVICE DEPARTMENT.

STORAGE

(NOTE SEPARATE INSTRUCTIONS FOR MECHANICAL AND ELECTRICAL)

- I. MECHANICAL EQUIPMENT - STORED ON RECEIPT FROM FACTORY:
 - A. Keep all equipment dry and store well above the ground. A warehouse is preferred.
 - B. Lock platrom in position using red shipping bolts provided.
 - C. Install adequate amounts of desiccant in Feeders. A minimum of five pounds is recommended. The more, the better.

- II. MECHANICAL EQUIPMENT - STORAGE FOLLOWING USE:
(Observe all of the instructions for storage prior to use plus these additional instructions):
 - A. Empty the machine completely of conveyed material.
 - B. Neutralize units. Flush all surfaces with clean water and dry thoroughly. Use caution around the Load Cell and vibratory drive unit; do not spray directly.
 - C. Remove rust as necessary. Touch-up all painted surfaces where necessary to cover all bare metal surfaces.

- III. MECHANICAL OPERATION AFTER STORAGE:
 - A. Remove shipping bolts after final placement of machine.
 - B. Remove desiccant.

- IV. ELECTRICAL EQUIPMENT - STORED ON RECEIPT FROM FACTORY:
 - A. Storage up to 6 Months: Keep all equipment dry and well above the ground. A warehouse is preferred. If the equipment has been in transit for two months or longer, replace the factory-supplied desiccant before storing. The use of Evaporative Corrosion-Inhibitors is recommended but not required.
 - B. Storage Longer Than 6 Months:
 1. In a heated warehouse with temperatures ABOVE FREEZING.
 - A. All equipment must be kept dry. Vaporizing Corrosion-Inhibitors MUST be used inside all electrical enclosures and panels.
 - B. Replace all desiccants in the spring and fall, when the humidity is low.
 - C. Operate all electrical and electronic equipment at least once a year for a minimum of two to three hours, preferably during a low humidity season. Operate all switches at least ten times. Operate transformers and motors at least once a year and allow them to rise 20 degrees C (36 degrees F) above the ambient temperature. It is preferable to do this in the low humidity season.

2. In a warehouse with temperatures BELOW FREEZING.
 - A. Prior to storage, remove all pen and ink elements from Recording Instruments, and thoroughly clean all inking mechanisms.
 - B. Operate all electrical and electronic equipment for a minimum of two to three hours, preferably during a low humidity season. Operate all switches at least ten times.

Operate transformers and motors at least once a year and allow them to rise 20 degrees C (36 degrees F) above ambient temperature. It is preferable to do this during a low humidity season.
3. Outside Storage IS NOT RECOMMENDED. If it is unavoidable, then damage from dampness must be prevented. The use of Vaporizing Corrosion Inhibitors and Desiccants affords some protection. Equipment must be operated periodically as above.

V. ELECTRICAL EQUIPMENT - STORAGE FOLLOWING USE:

- A. Clean all equipment and enclosures thoroughly inside and out.
- B. Remove rust as necessary. Touch up all painted surfaces as necessary to cover all bare metal surfaces.
- C. Observe instructions for storage and care of electrical equipment prior to use.
- D. Keep panels dry with anti-condensation heaters if possible.

VI. ELECTRICAL EQUIPMENT - OPERATION AFTER STORAGE:

General Instructions:

- A. When equipment has been stored at either high humidity and/or low temperatures, DO NOT APPLY POWER until the equipment has been allowed to stand at ambient conditions for a minimum of three hours.
- B. Remove all packing and protective materials.
- C. Remove all desiccants. Vaporizing Corrosion-Inhibitors may be left in the equipment only if this is permitted by local fire regulations.

INSTALLATION

THE MERRICK MODEL 530 LOSS-IN-WEIGHT FEEDER/BATCHER IS AN EXTREMELY SENSITIVE AND PRECISE WEIGHING DEVICE THAT CAN BE EASILY DAMAGED BY IMPROPER HANDLING OR OPERATION. PLEASE FOLLOW ALL INSTRUCTIONS CONTAINED IN THIS MANUAL CAREFULLY. IF YOU HAVE ANY QUESTIONS PLEASE CONSULT THE MERRICK SERVICE DEPARTMENT AT (904) 265-3611.

I. MECHANICAL INSTALLATION

Study the customer assembly drawings that have been provided in the rear of this manual before starting installation. Basic principles for installation of machinery must be observed.

NOTE: During shipment the Load Cell is protected by red shipping bolts that support the Weigh Hopper and relieve the load and/or impact. These shipping bolts must be left in place during installation and removed only when the machine is ready to be started up and the machine placed in operation.

The Loss-In-Weight machine must be properly supported and positioned plumb and on level flooring or on a platform free from significant movement or vibration. The standard Model 530 is typically equipped with vibration isolation mounting pads at the four corners of the base. These vibration isolators are adjustable to allow for compensation for minor irregularities in the floor support.

Any loads such as Storage Hoppers or Bins must not be imposed on the machine or its supports. Connections to the machine should be made in such a way that no torque or twist is imposed.

CAUTION: Never weld on the loss-in-weight machine without taking proper precautions as severe damage to the load cell and/or electronics could result. Contact the merrick service department prior to any such activity.

II. INSTALLATION

Study the customer connection drawing that has been provided in the rear of this manual. Proper precautions and principles of electrical installation must be followed to ensure a safe and reliable operating piece of equipment.

Follow instructions on the connection drawings for wire size and type. Improper wiring could cause un-reliable operation due to electrical noise, ground-loops, etc.

For information regarding The Micro-Processor Controller please see Section 5 of this manual.

GENERAL MECHANICAL

MODEL 530 LOSS-IN-WEIGHT FEEDER

The Merrick Model 530 Loss-In-Weight Feeder is a precision gravimetric weighing device designed to accurately and dependably meter dry material into a process or other end use in a continuous but variable manner. A Merrick Loss-In-Weight Feeder is capable of very high rate accuracy and is available in a variety of sizes to cover a wide range of feedrates from very low to moderately high.

To begin normal operation, the weigh hopper is first filled with a sufficient amount of material for several minutes of continuous feeding. Note that this amount of material and the capacity of the weigh hopper is predetermined by the factory and it is dependent on the required accuracy at the desired minimum feedrate.

As the Feeder begins to deliver material, the microprocessor controller keeps track of the weight in the hopper as it decreases, and constantly compares it to the theoretical weight at the desired feedrate at a given instant of time. If the actual weight is too great as compared to the target weight the discharge device is caused to speed up and conversely, to slow down if the actual weight is too small. In this way, the Merrick Model 530 Loss-In-Weight Feeder is capable of maintaining the desired gravimetric feedrate regardless of changes in material bulk density, changes in the volumetric efficiency of the discharge device, or slight drifting of the speed control device.

As the material is fed from the weigh hopper, eventually it will reach a point where it should be re-filled (this is called the "Heel" point). At this time the microprocessor sends an output, either to your automatic refilling device, or in the case of manual re-filling, to a signal light to indicate to an operator that it is time to put more material into the weigh hopper. This output is held on until the microprocessor senses (by weight) that enough material has been put into the hopper to continue with weighing. While the filling process is going on, and until the hopper is filled back to the appropriate level (called the "Fill" point) and the weight is stabilized, the microprocessor causes the discharge device to run at the speed at which it was last feeding while under gravimetric control. In this way the process may continue during the few seconds normally necessary for refilling. This process of refilling the hopper frequently with a relatively small amount of material each time ensures the maximum overall accuracy in your application.

REMEMBER: All Merrick Loss-In-Weight Feeders and Batchers are highly precision and therefore very sensitive weighing devices. Particular care in the installation and operation of the equipment is essential to obtaining good service and optimal accuracy.

WEIGH SUSPENSION

MODEL 530

The Model 530 Feeder utilizes a direct load bearing weigh suspension design wherein the entire gross load (weigh hopper, drive, net hopper contents, etc.) is supported by the load cell. A single special strain gauge load cell is used to maximize sensitivity and minimize inaccuracies due to off-center loading. The simplicity of this design ensures maximum reliability and accuracy at moderate to high feedrate requirements.

CAUTION: The load cell is protected during shipment by means of red shipping bolts that relieve the load on the load cell and prevent damage from jarring or slight impact. Do not remove the red bolts until the machine installation is complete and the unit is ready for startup. Retain the red bolts for later use.