MAGNUM SYSTEMS

SMOOT TAYLOR PRODUCTS

Bulk Bag Unloader
Model IBC2000

Operation and Maintenance Manual

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Machine Serial Number: _____

Sales Order Number: _____

Important Information

Conventions

Safety Alert Symbols

The ⚠ symbol indicates that important personal safety information follows. Carefully read this text for the warnings information it contains. The signal word next to each safety alert symbol is defined as:

	***WARNING***	*Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.*
	**CAUTION**	Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury, or damage to the equipment. This single word may also be used to identify unsafe practices.
	**LOCKOUT**	This symbol will be used anytime that a procedure requires an electrical lockout.

Static Sensitive Symbols for Equipment Handling Instructions

The  and  symbols indicate important handling guidelines for proper handling of electronic equipment modules and sensitive components for the prevention of potential damage that could be caused by ESD (electrostatic discharge) during routine maintenance, handling and transportation.

	**ESD NOTICE**	To protect against ESD damage to electronic equipment, follow the Standard ESD Prevention Procedures. Failure to use protective measures could result in permanent equipment damage, either immediate or latent, when handling modules.
	**ESD NOTICE**	To protect against ESD damage to electronic equipment containing components, follow the Standard ESD Prevention Procedures. Failure to use recommended protective measures could result in permanent equipment damage, either immediate or latent, when handling components.

Standard Electro-static Discharge (ESD) Prevention Procedures

The Model IBC-2000 Bulk Bag Unloader utilizes many electronic components that are susceptible to damage from Electro Static Discharge. Anytime electronic components are serviced, the following precautions should be followed:

1. Wear a commercial grounding wrist strap.
2. Remove power from the machine.
3. Leave all static sensitive components in their protective packaging until it is time to install the component
4. Always hold static sensitive components by their metal mounting tabs, and/or by their edges

Important/Notable Information

While all of the information in this manual is important, there are some pieces of information where special attention needs to be paid to avoid equipment damage, or specific information needs to be emphasized. This information will be handled as follows:

> ***Important:*** *Indicates an operating procedure, practice, or condition that, if not strictly followed, may cause equipment damage.*
>
> ***Note:*** *Indicates additional information or emphasizes a topic related to the subject being discussed.*

Personal Safety Instructions

Only qualified personnel should work on or around this equipment. To ensure the highest degree of personal safety, all who use this equipment are required to become thoroughly familiar with all safety instructions contained in this document. Successful and safe operation of this equipment depends upon proper handling, operation, maintenance, and application of associated equipment. Refer to Appendix A of this manual for all safety instructions. Safety instructions are also provided where they apply within the body of this manual.

WARNING

No information in this manual supersedes or replaces your employer's operating rules. If there is a difference in instructions between this manual and the employer's operating rules, follow the most restrictive instruction.

Deliberate misuse or abuse of electronic components may cause personal injury or death.

Warranty Information

Seller warrants that the Products will operate substantially in conformance with Seller's published specifications, when subjected to normal, proper and intended usage by properly trained personnel, for a period of one (1) year from the date of shipment to Buyer (the "Warranty Period"). Seller agrees during the Warranty Period, provided it is promptly notified in writing upon the discovery of any defect and further provided that all costs of returning the defective Products to Seller are pre-paid by Buyer, to repair or replace, at Seller's option, defective Products so as to cause the same to operate in substantial conformance with said specifications. Replacement parts may be new or refurbished, at the election of Seller. All replaced parts shall become the property of Seller. Replacement Parts will be billed at list price, unless they are approved as warranty replacement item(s) by the service technician and the technical services manager.

Lamps, fuses, bulbs and other expendable items are expressly excluded from the warranty. Seller's sole liability with respect to equipment, materials, parts or software furnished to Seller by third party suppliers shall be limited to the assignment by Seller to Buyer of any such third party supplier's warranty, to the extent the same is assignable. In no event shall Seller have any obligation to make repairs, replacements or corrections required, in whole or in part, as the result of (i) normal wear and tear, (ii) accident, disaster or event of force majeure, (iii) misuse, fault or negligence of or by Buyer, (iv) use of the Products in a manner for which they were not designed, (v) causes external to the Products such as, but not limited to, power failure or electrical power surges, (vi) improper storage of the Products or (vii) use of the Products in combination with equipment or software not supplied by Seller. If Seller determines that Products for which Buyer has requested warranty services are not covered by the warranty hereunder, Buyer shall pay or reimburse Seller for all costs of investigating and responding to such request at Seller's then prevailing time and materials rates. If Seller provides repair services or replacement parts that are not covered by the warranty, the Buyer shall pay Seller therefore at Seller's then prevailing time and materials rates. ANY INSTALLATION, MAINTENANCE, REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL, OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER, SHALL IMMEDIATELY VOID AND CANCEL ALL WARRANTIES WITH RESPECT TO THE AFFECTED PRODUCTS.

Field Service

Magnum Systems can provide field service for start-up assistance, training, maintenance, and replacement/spare parts for new and existing equipment. Contact Magnum Systems at (888) 882-9567.

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Model IBC-2000

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Chapter 1
Product Description

1.1 General Description
This chapter provides a high-level product description of the IBC-2000 Bulk Bag Unloader.

1.2 Introduction
The Magnum Systems Model IBC-2000 is a bulk bag unloader that is capable dispensing product from bulk bags up to 4000 lbs. Typical IBC-2000 machines can accommodate bags with rounded out sides that are up to 48 inches wide and 60 inches long, with bag straps that are 10 inches long. For dispensing operations with different bag size requirements, contact Magnum Systems at (888) 882-9567. The IBC-2000 can be ordered with or without an electronic weighment system.

The base IBC-2000 consists of the framework, a receiver pan mounted on solid rubber insulators, a discharge assembly, and a fork style universal pickup device (UPD). This base unit does not come equipped with electronic or pneumatic controls. The IBC-2000 has many available options, allowing it to function with many different types of product.

All contact parts on standard IBC-2000 units are 304 stainless steel with satin finish. Models can be fitted with optional bag thumpers or massagers for especially difficult products. Vibrators, live bottom agitators, gravity flow spouts and screw feeders are also available.

1.3 Manual Scope
This manual provides information on equipment description, installation, operation, preventive maintenance, troubleshooting, and repair of the Model IBC-2000.

The appendices include safety information, a spare parts list, engineering drawings, and information on any custom features.

1.4 Electrical Requirements
The base version of the IBC-2000 does not come equipped with electronic controls. When optional features are added, the electrical requirements of the IBC-2000 will change. Always refer to the factory engineering drawings for specific information.

1.5 Pneumatic Requirements
The base version of the IBC-2000 does not come equipped with pneumatic controls. When optional features are added, the pneumatic requirements of the IBC-2000 will change. Always refer to the factory engineering drawings for specific information. When electronic components are added, Magnum Systems recommends that the air supply line be equipped with a refrigerated air dryer, or at the very least a water separator.

1.5.1 Pneumatic Lubrication Requirements

When equipped with pneumatic components, those components will require lubrication to ensure their proper operation and to extend their useful life. The lubricator should be filled with 10 weight, non-detergent oil. The oil flow control knob, located on top of the lubricator, should be set so that the lubricator is delivering 1 drop of oil for every 50 dispense cycles.

1.6 Major Systems and Components

When working with the Model IBC-2000, it is important to understand the major systems and components of the unit. The major components of the system are:

- Framework
- Load cells (optional)
- Discharge assembly
- Receiver pan
- Bottom thumpers (optional)
- Flow control device (optional)
- Side squeezers (optional)
- Roller squeezers (optional)
- Air mount isolators (optional)
- Filter/Regulator/Lubricator (FRL) (optional)
- Universal Pickup Device (UPD)
- Electronic and pneumatic controls (optional)

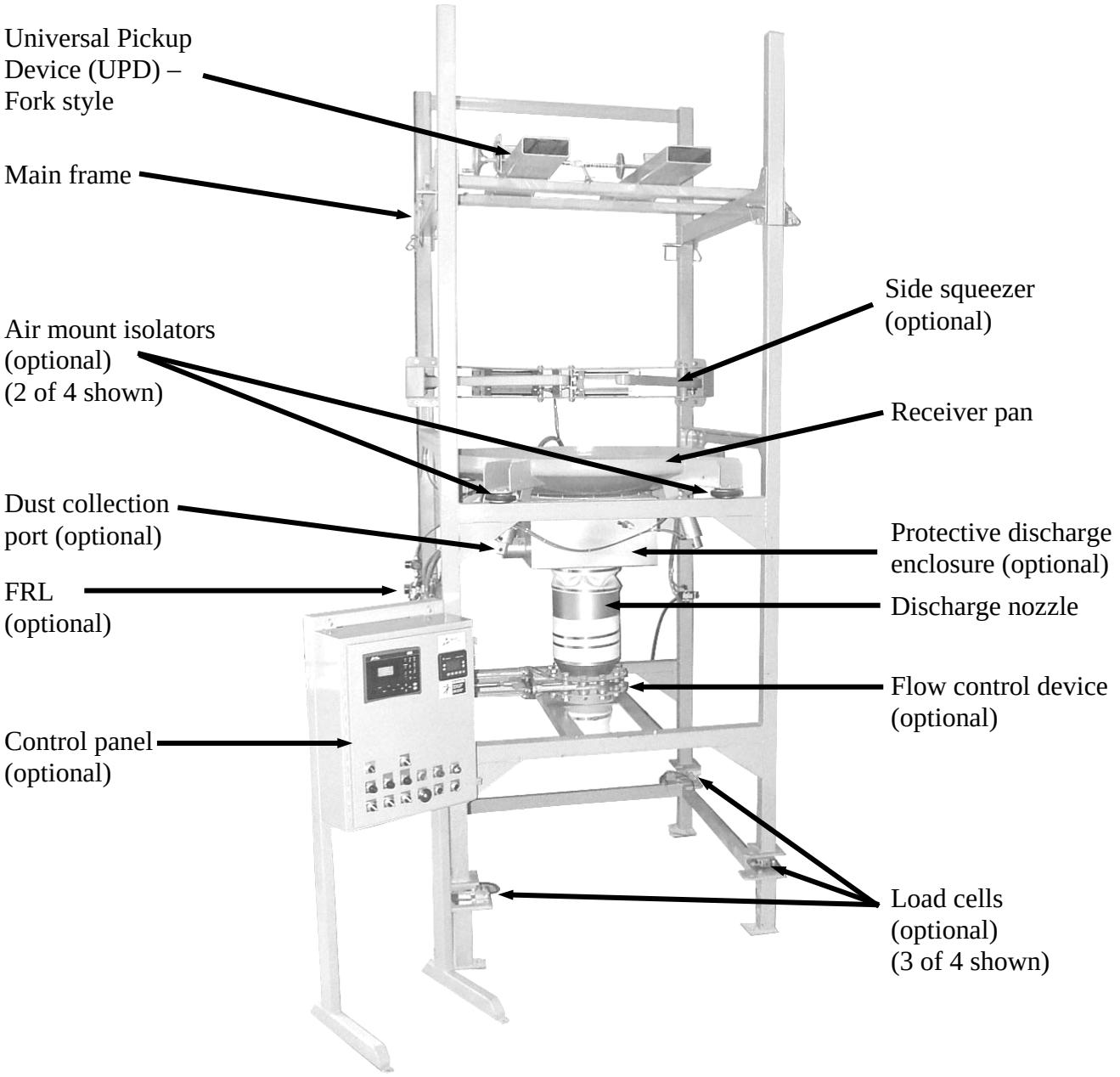


Figure 1-1. IBC-2000 Components (only main components called out)

1.6.1 Main Frame

The main frame is the backbone of the IBC-2000. It is constructed of heavy gauge tube steel. The main frame provides the mounting points for all of the other components that make up the IBC-2000. Typical base frames are a single weldment. Units equipped with the electric hoist/trolley option will have at least two sections that are bolted together. Hoist/trolley units will also utilize some heavy gauge I-beam steel for part of the structure.

1.6.2 Load Cells

For IBC-2000 machines that are equipped with a weighing mechanism, four load cells will be used. In these applications, the entire base frame sits on top of the four load cells, which are mounted on top of the corner posts of a load cell frame assembly. As product is emptied from the bulk container, the reduction in weight causes the voltage output from each load cell to decrease. The output from the load cells is supplied to the control enclosure. On analog controlled machines, the load cell cables are connected to the main PC board. On T3000 controlled machines, the load cell cables connect directly to the back of the T3000. In both cases, the four load cell inputs are balanced to create one reading for the product weight.

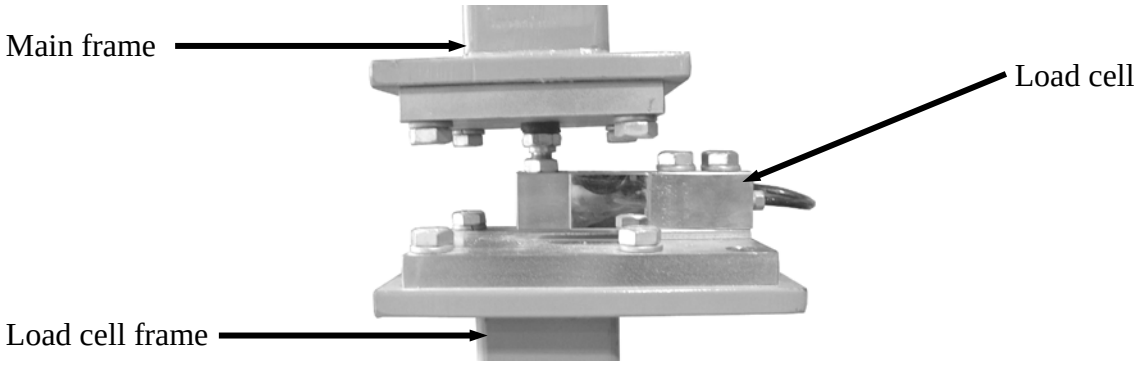


Figure 1-2. Load Cell (1 of 4 shown)

CAUTION A sudden jerk or shock, such as being struck by a tool or hitting the main frame etc., can cause load cell damage. The load cell is NOT covered by the Magnum Systems warranty.

1.6.3 Optional Pneumatic Actuator Switch

Depending on the configuration of the IBC-2000, a pneumatic actuator switch may be used to tighten the drawstrings around the discharge spout of the bag. Typically it is mounted under the protective discharge enclosure. After positioning the bulk bag in the receiver pan and positioning the bag spout over the discharge nozzle, the operator will tap one of the two actuator switch paddles to start the dispensing cycle.

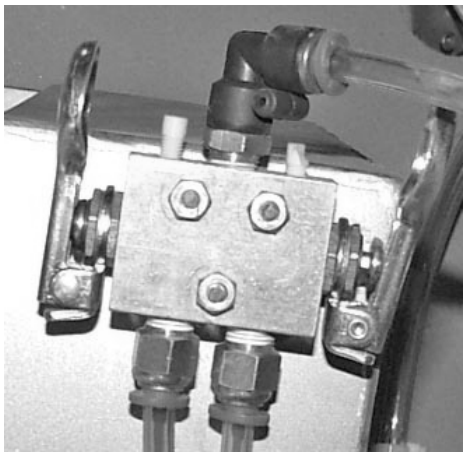


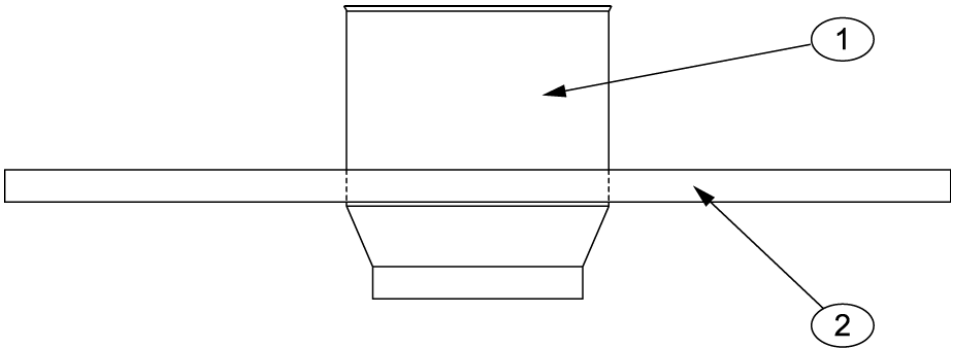
Figure 1-3. Pneumatic Actuator Switch

1.6.4 Discharge Types

The IBC-2000 is available with four different types of discharges. They are referred to as Type A, Type B, Type C, and Type D. Each type of discharge is described below.

1.6.4.1 Style A Discharge

The Style A discharge is the base discharge for the IBC-2000. This style consists of a discharge tube mounted to the base frame. The bag discharge slips inside the discharge tube to dispense the product.

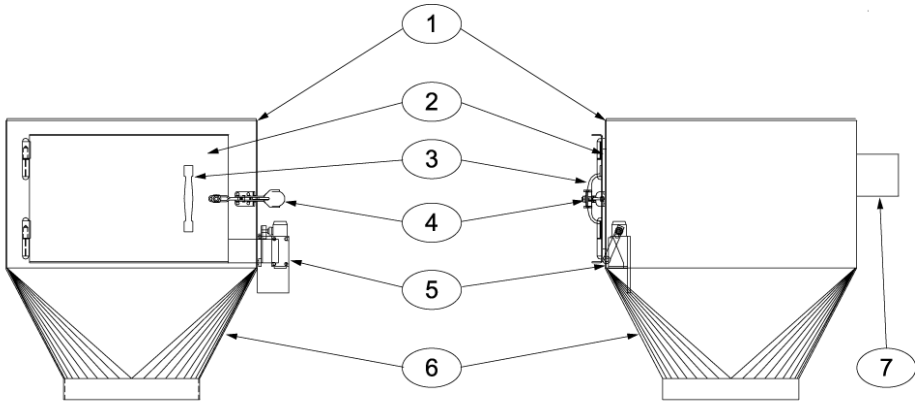


Item #	Description	Item #	Description
1	Discharge nozzle	2	Base frame cross supports

Figure 1-4. Style A Discharge

1.6.4.2 Style B Discharge

The optional style B discharge is a dust enclosure with a cone discharge. The enclosure is attached to the bottom of the receiver pan. The dust enclosure is equipped with an access door. An optional safety switch is available to interrupt the operation of the machine in the event that the door is open. The rear of the enclosure is equipped with a dust collection port that can be connected to a customer supplied dust collection system.



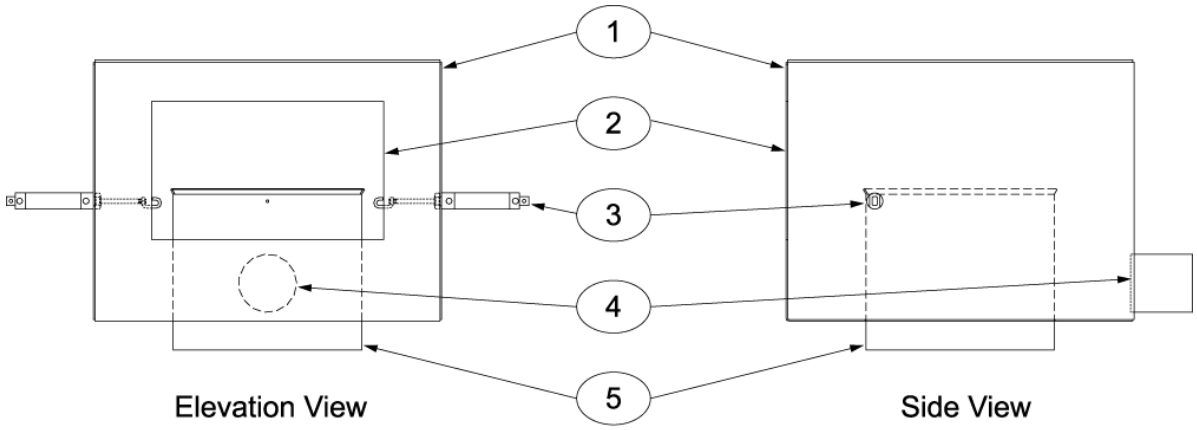
Elevation View Side View

Item #	Description	Item #	Description
1	Discharge enclosure	5	Door safety switch (optional)
2	Discharge nozzle access door	6	Cone style discharge spout
3	Door handle	7	Dust collection port
4	Door latch		

Figure 1-5. Style B Discharge

1.6.4.3 Style C Discharge

The optional style C discharge consists of a discharge enclosure, a discharge nozzle, a pair of drawstrings, and a pair of drawstring cylinders. The purpose of the discharge enclosure is to help contain any dust that may occur during the dispensing process. The discharge nozzle is centered in the enclosure. The nozzle is flanged at the top to help retain the bulk bag.



Item #	Description	Item #	Description
1	Discharge enclosure	4	Dust collection port
2	Discharge nozzle access	5	Discharge nozzle
3	Drawstring cylinder		

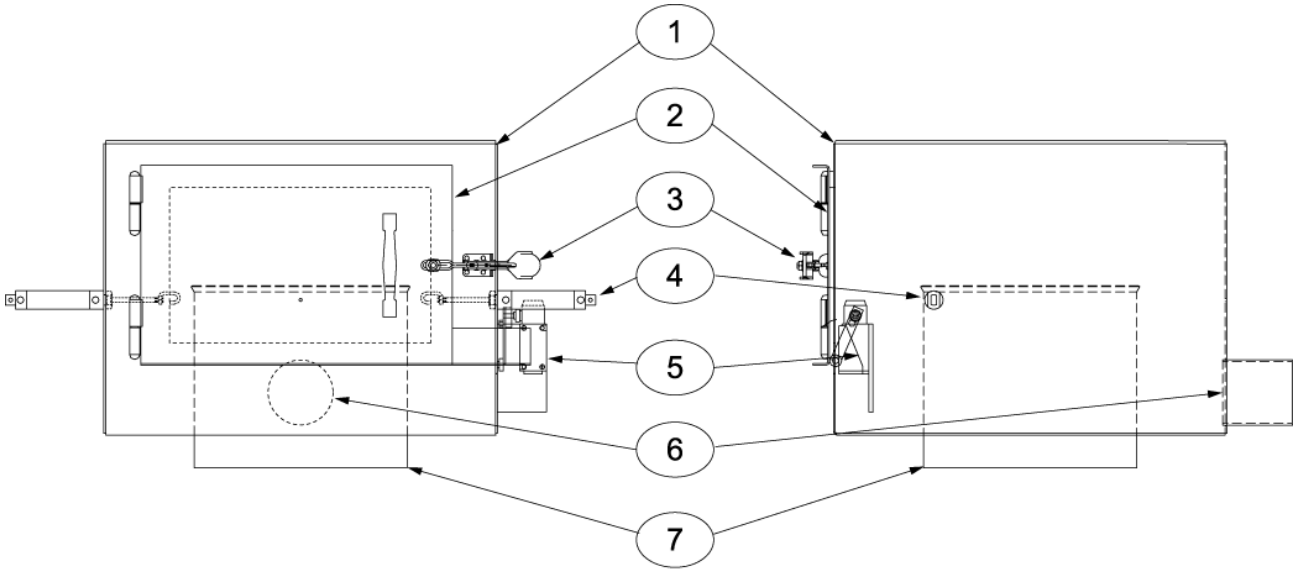
Figure 1-6. Style C Discharge

The drawstring is used to secure the bulk bag discharge on the discharge nozzle. This prevents the bag discharge nozzle from slipping off of the metal discharge nozzle in the enclosure, which would result in product spillage. One end of the drawstring is secured to the hook on one drawstring cylinder rod. The drawstring is then routed around the discharge nozzle and connected to the hook on the other drawstring cylinder. The drawstring cylinders are actuated simultaneously. When actuated, the cylinders retract the rods to pull the drawstring tight around the bulk bag discharge nozzle.

Figure 1-7. Drawstring and Drawstring Cylinder Hooks

1.6.4.4 Style D Discharge

The optional style D discharge enclosure is identical to style C, except that a door has been installed on the enclosure to seal the discharge nozzle access opening. An optional access door safety switch is also available. This optional switch will prevent the machine from running if the door is not closed properly.



Item #	Description	Item #	Description
1	Discharge enclosure	5	Door switch (optional)
2	Discharge nozzle access door	6	Dust collection port (optional)
3	Door latch mechanism	7	Discharge nozzle
4	Drawstring cylinder		

Figure 1-8. Style D Discharge

1.6.5 Spout Assembly

Under the discharge assembly is the spout. The spout is the transition between discharge assembly and the customer-supplied product conveying system, or container being filled. Products may be discharged into several different types of containers or conveying systems. Examples of conveying systems include, but are not limited to the following:

- Rotary screw feeders
- Pneumatic conveying systems
- Elevators
- Augers
- Batch hoppers

1.6.6 Receiver Pan

The IBC-2000 utilizes a large metal receiver pan to support the bottom of the bulk bag and to guide the product out of the bag to the discharge spout. The receiver pan is mounted approximately halfway up the IBC-2000. The receiver pan secures and safely supports bulk bags of up to 4,000 lbs. The receiver pan has four mounting points. On base model IBC-2000 machines, the four mounting points ride of four rubber vibration isolators.

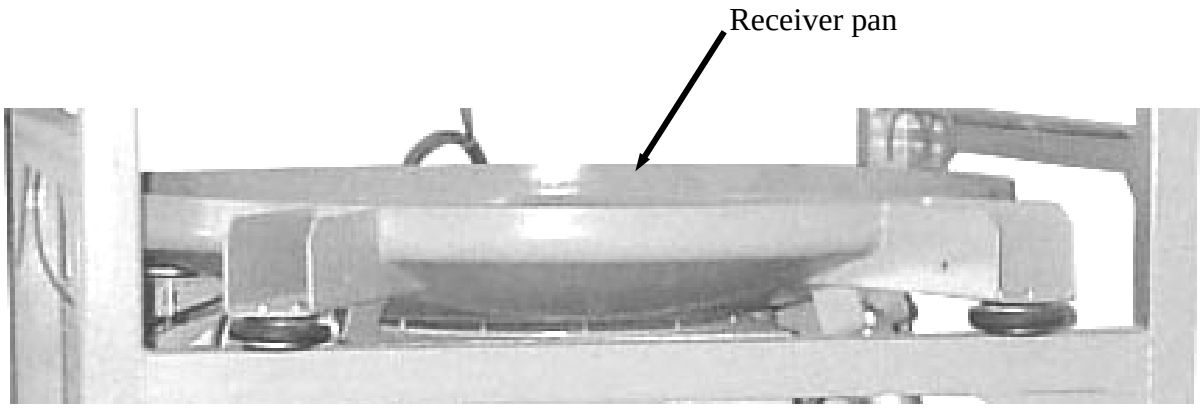


Figure 1-9. Receiver Pan

1.6.7 Optional Air Mount Isolator Pads

An optional feature on the IBC-2000 is a set of four air mount isolator pads. When this option is ordered, the air mount isolator pads will replace the four standard rubber vibration isolators. The purpose of the air isolator pads is to isolate the main frame from the vibration coming from the electric or pneumatic vibrator and/or the bottom thumpers on the receiver pan. When the unit is turned on, compressed air is directed to the four air mount isolators, causing them to expand. Once inflated, this cushion of air supports the entire weight of the receiver pan and bulk bag.

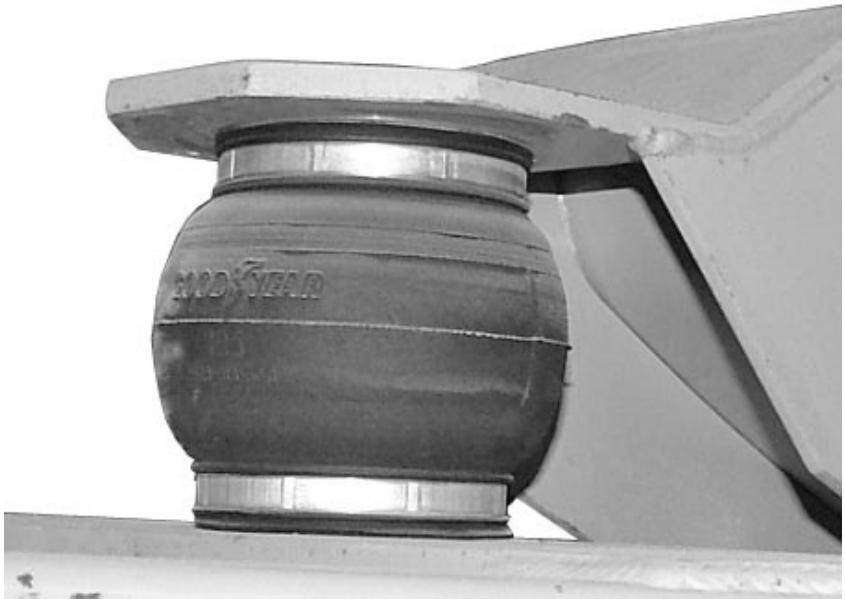


Figure 1-10. Optional Air Mount Isolator Pad (1 of 4 Shown)

1.6.8 Vibrator

The IBC-2000 may be equipped with an electric or pneumatic vibrator to help product flow out of the bulk bag to the discharge nozzle. The vibrator will be mounted on the bottom side of the receiver pan, on the rear side of the machine. The vibrator can be turned on and off, using a switch on the control panel, while the machine is operating. When an electronic vibrator is used, the switch will control power flow to the vibrator control module. When a pneumatic vibrator is used, the switch will control power flow to a MAC valve that controls the flow of compressed air to the vibrator.

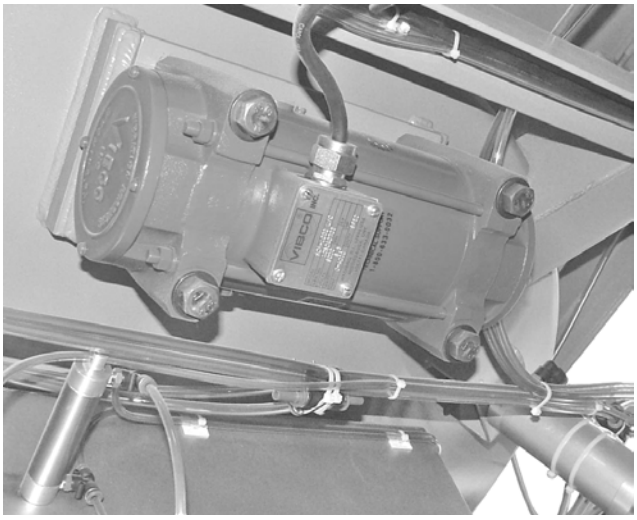


Figure 1-11. Vibrator Location (Electronic Vibrator Shown)

On units equipped with an electronic vibrator, the operator can control the rate of vibration via a control knob on the control panel. The control knob has a label around it that provides set points for the vibrator. Turning the knob to the left will reduce the rate of vibration, while turning the knob to the right will increase the rate of vibration.

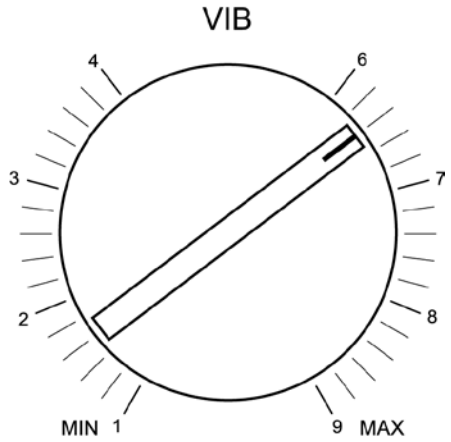


Figure 1-12. Electronic Vibrator Control Knob

On units that are equipped with a pneumatic vibrator, the rate of vibration is controlled via a pneumatic flow control valve that is mounted in the supply line to the vibrator.

1.6.9 Bottom Thumpers

An optional feature on the IBC-2000 is a set of four bottom thumpers. When this option is selected, the receiver pan will be equipped with four bottom thumpers in the bottom of the pan. These pads move up and down against the bottom of the bag in the receiver pan to help the product flow out of the bag. Each pad is mounted on the end of a pneumatic cylinder that is mounted on the bottom side of the receiver pan. The pads are threaded onto the end of the cylinder rod and are secured to the rod cylinder using a cotter pin and jam nut. The control system will toggle the cylinders between fully extended and fully retracted. This rapid motion is dispersed across the surface of the bottom thumper pad, resulting in vibration being imparted on the product in the bulk bag. The cylinders are set up in diagonal pairs. When one cylinder is extended, the cylinder at the opposite corner will be extended as well. At the same time, the two other cylinders will be retracted.

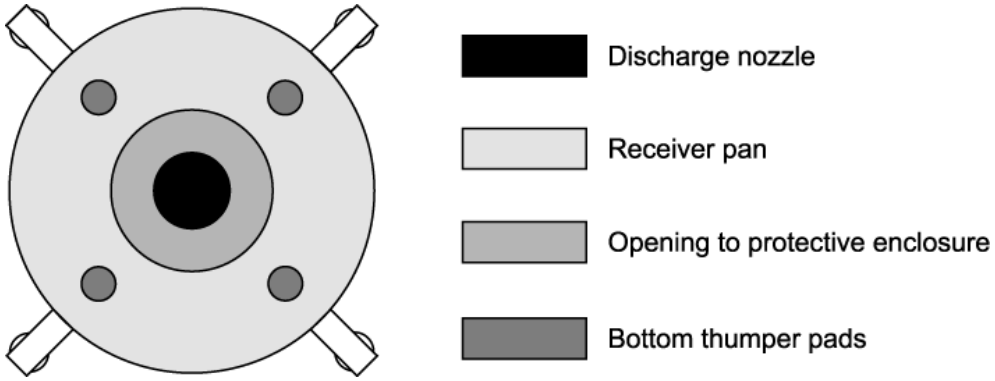


Figure 1-13. Bottom Thumper Layout On Receiver Pan

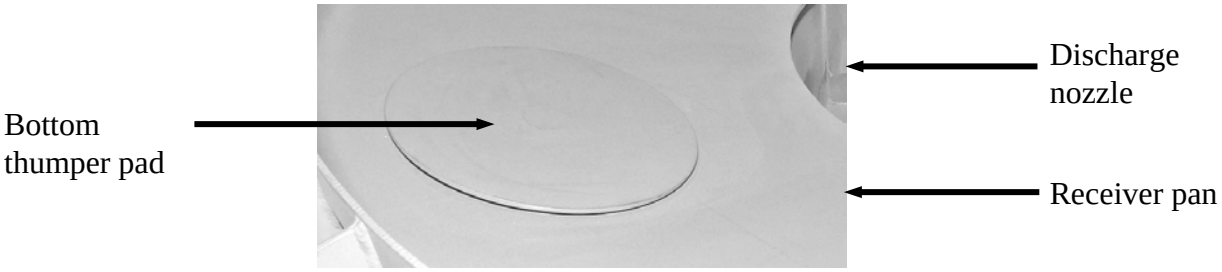


Figure 1-14. Bottom Thumper Pad (1 Of 4 Shown)

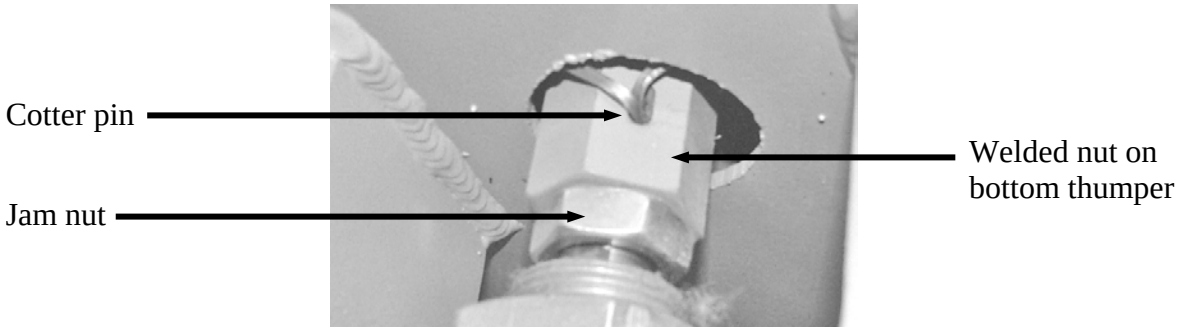


Figure 1-15. Bottom Thumper Pad Welded Nut, Jam Nut, and Cotter Pin

Each massager pad has a nut that is welded on the back of it. This nut is threaded onto the end of a pneumatic cylinder rod. The nut and rod are both drilled to facilitate the use of a cotter pin. This cotter pin is used to prevent the pad from coming loose during operation.

1.6.10 Flow Control Devices

The base IBC-2000 does not come equipped with a method of controlling the flow of product from the bulk bag, other than untying the discharge nozzle on the bag itself. However, there are several options for flow control that are available.

1.6.10.1 Manual Knife Gate

The first of the optional flow control devices is a 10-inch, manually operated knife gate. Knife gates use a circular housing with a sliding gate. When the gate is pushed inward, the opening in the center of the housing is completely closed. As the gate is pulled outward, the opening in the center of the housing opens. The manual knife gate has a handle that is connected to the knife gate by a rod. The operator can fully close the gate, fully open the gate, or position it at any point in between.

1.6.10.2 Pneumatic Knife Gate

Units that are equipped to de-weigh will control their knife gates via a large pneumatic cylinder. Pneumatically controlled knife gates are available as 6-inch, 8-inch, or 10-inch units. The knife gate blade is pulled open by a pneumatic cylinder. This action allows product to flow through the discharge nozzle. The pneumatic cylinder is also used to push the knife gate blade closed, which stops the flow of product. On dual set point (DSP) de-weighing units, prior to the end of the dispensing cycle, the knife gate will close partially to slow the rate of product flow. Once the desired weight is achieved, the knife gate is closed completely.

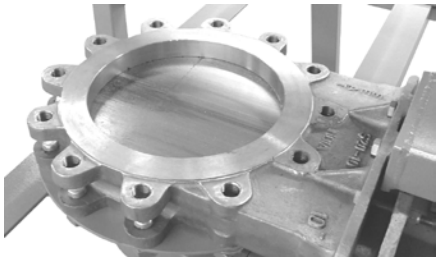


Figure 1-16. Knife Gate

These knife gates will have a large pneumatic cylinder mounted on the same side of the IBC-2000 as the FRL and MAC valves. The cylinder rod is connected to the knife gate via a clevis.

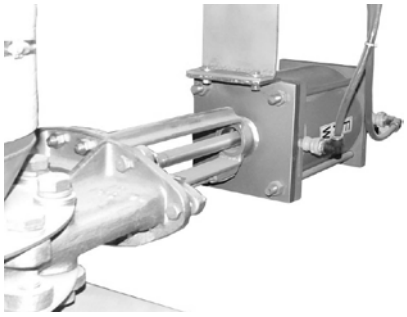


Figure 1-17. Pneumatic Knife Gate Cylinder

1.6.10.3 Iris Style Bag Cutoff

An optional iris style bag cutoff mechanism can be used in situations where it may be necessary to remove a bulk bag that has only been partially emptied. Unlike a knife gate, the iris does not actually come into contact with the product itself. Rather the iris style bag cutoff is positioned so that the bag discharge is fed through it and the bag tie off will be below the iris. When the iris is closed, it stops the flow of the product through the bag discharge. The operator can then re-tie the bag tie off. Once it is tied off, the iris can be opened and the bulk bag can be lifted off of the receiver pan. The iris is opened and closed using a pneumatic cylinder.

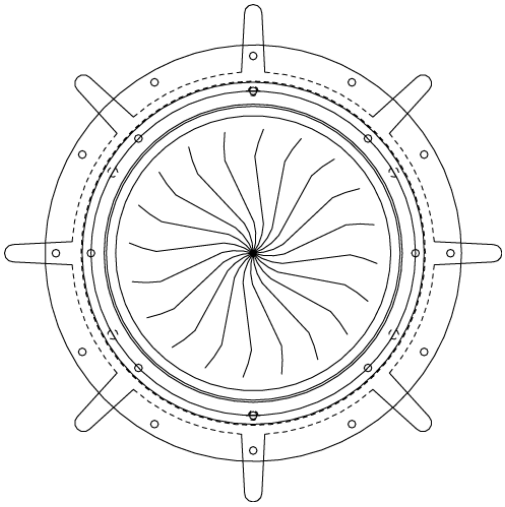


Figure 1-18. Iris Style Bag Cutoff (Top View)

1.6.10.4 CCOG Style Bag Cutoff

The CCOG style cutoff is similar to the iris style cutoff discussed previously. It is used in situations where it may be necessary to remove a bulk bag that has only been partially emptied. The CCOG bag cutoff is positioned so that the bag discharge is fed through it and the bag tie off will be below the CCOG. When the CCOG is closed, it stops the flow of the product through the bag discharge. The operator can then re-tie the bag tie off. Once it is tied off, the CCOG can be opened and the bulk bag can be lifted off of the receiver pan.

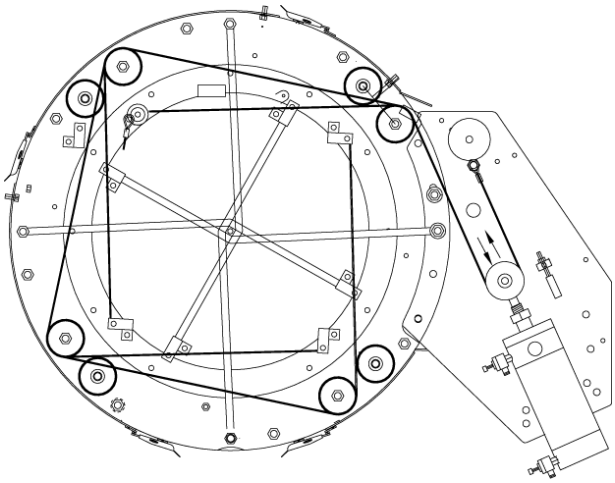
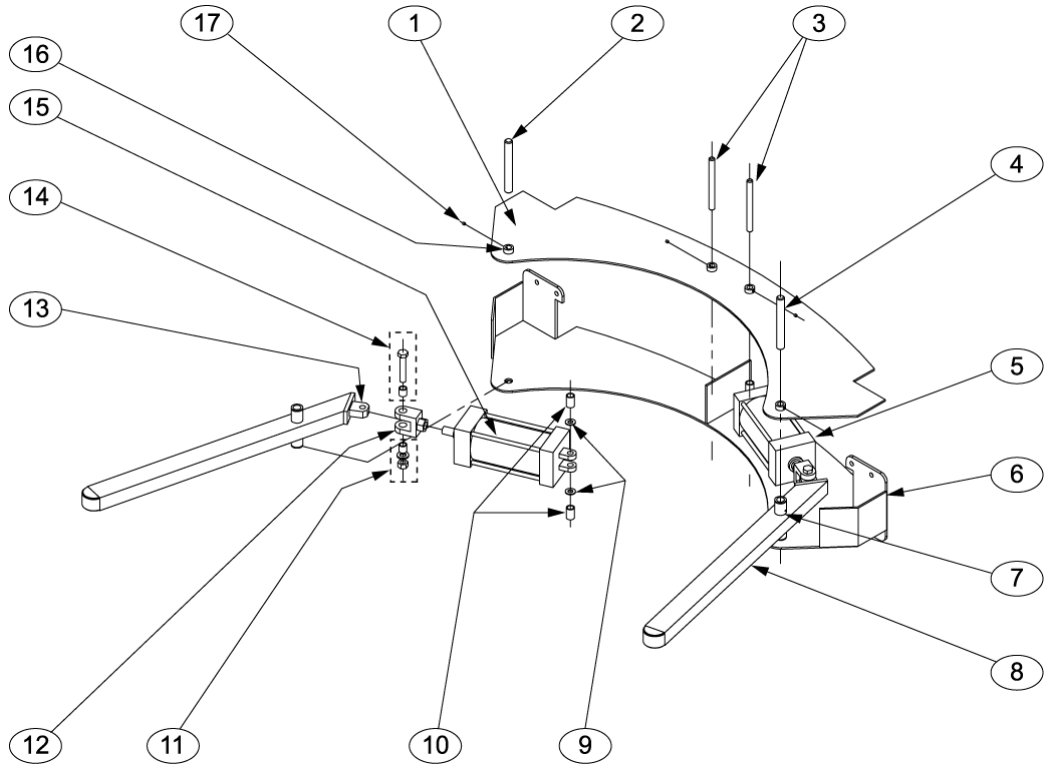


Figure 1-19. CCOG (Top View)

1.6.11 Side Squeezers

Some products may clump when places in bulk bag containers. This condition can severely reduce the flow rate of the product. To combat this condition, side squeezers may be employed. This option employs two large pneumatic cylinders and two large arms that are mounted above the receiver pan. The arms are mounted on vertical shafts at the rear of the base frame. The bulk bag is positioned inside the arms. As the dispensing cycle runs, the cylinders will extend and retract several times, causing the arms to squeeze and release. This pressure provided by the arms breaks up the clumps of product. It is possible to equip an IBC-2000 with one or two sets of side squeezers.

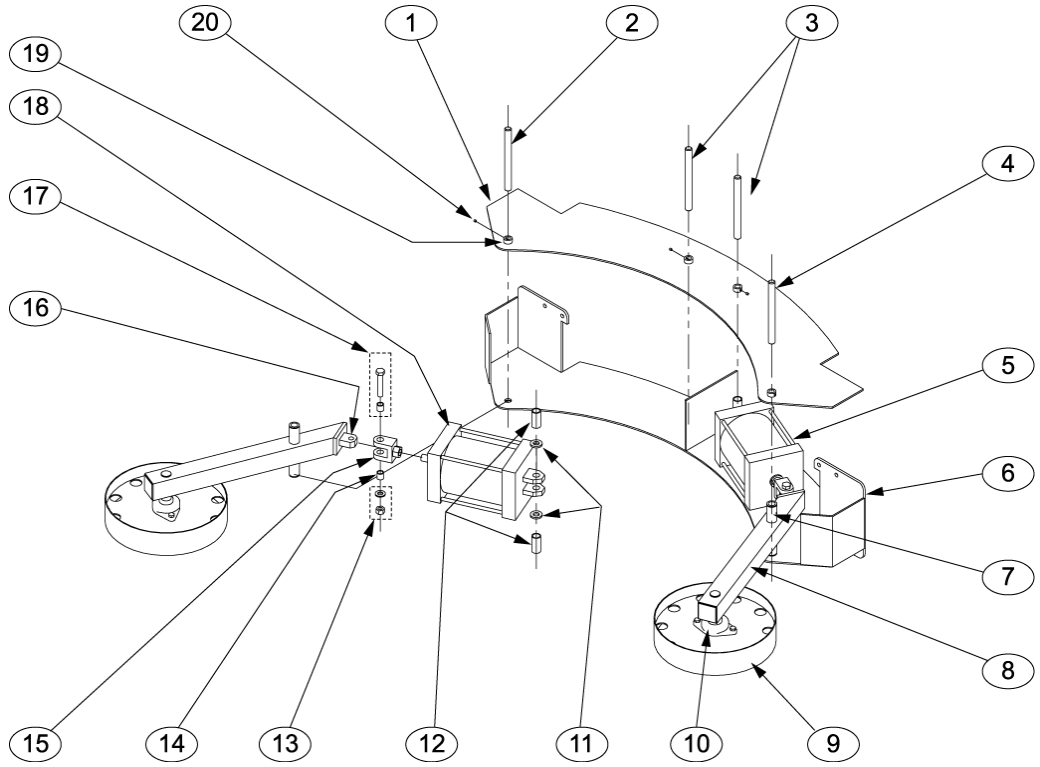


Item #	Description	Item #	Description
1	Top plate	10	Bushings
2	Squeezer arm pivot pin	11	Bushing, washer, nut
3	Pneumatic cylinder pivot pins	12	Clevis
4	Squeezer arm pivot pin	13	Clevis mounting tab on squeezer arm
5	Pneumatic cylinder	14	Clevis bolt and upper bushing
6	Squeezer arm base	15	Pneumatic cylinder
7	Squeezer arm pivot	16	Pivot pin collar
8	Squeezer arm	17	Pivot pin setscrew
9	Washers		

Figure 1-20. Side Squeezers

1.6.12 Roller Squeezers

As mentioned when discussing side squeezers, some products may clump when places in bulk bag containers. Certain products are known to clump in a manner where the use of side squeezers would result in the bulk bag being torn. For these tougher products, a roller squeezer is used. While the roller squeezer is similar to a side squeezer, there are significant differences. The roller squeezer uses a set of large rollers, one installed on the end of each squeezer arm. The rollers are equipped with a set of bearings and are installed on vertical shafts that run through the squeezer arm. This allows the end of the arm to roll along the side of the bulk bag, rather than sliding along the bulk bag and tearing it. The roller squeezer also uses a set of larger pneumatic cylinders.



Item #	Description	Item #	Description
1	Top plate	11	Washers
2	Squeezer arm pivot pin	12	Bushings
3	Pneumatic cylinder pivot pins	13	Clevis washer and nut
4	Squeezer arm pivot pin	14	Lower clevis bushing
5	Pneumatic cylinder	15	Clevis
6	Squeezer arm base	16	Clevis mounting tab on squeezer arm
7	Squeezer arm pivot	17	Clevis bolt and upper bushing
8	Squeezer arm	18	Pneumatic cylinder
9	Roller	19	Pivot pin collar
10	Roller bearing	20	Pivot pin setscrew

Figure 1-21. Roller Squeezer – Exploded View

1.6.12 MAC Valves

The IBC-2000 uses a series of MAC valves to control the flow of air to the different pneumatic components. The MAC valves are pneumatic valves that are controlled by electric solenoids. When power is applied to the solenoid, it causes the valve to change states. The MAC valves control the flow of compressed air to the knife gate cylinder, bag massagers, pneumatic vibrator (if equipped), side squeezers, etc.

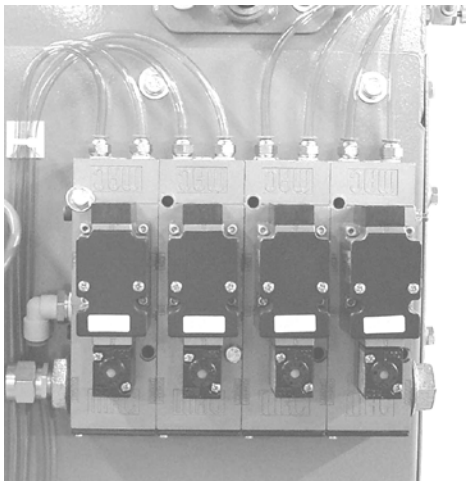


Figure 1-22. MAC Valve Arrangement

1.6.12 Filter/Regulator/Lubricator (FRL) Assembly

The IBC-2000 is equipped with a filter/regulator/lubricator (FRL) assembly. This component is critical to the proper operation of the IBC-2000. The filter portion of the assembly takes the incoming compressed air and removes any moisture and debris. This is done to minimize wear and corrosion. The regulator portion allows the operator to control the operating pressure of the compressed air. Too much or too little air pressure will adversely affect the operation of the IBC-2000. The lubricator portion is used to add some pneumatic oil to the compressed air supply. This oil provides lubrication for the pneumatic components. The lubricator includes an adjustment knob so the operator can dial in the correct amount of oil. Too much or too little oil will adversely affect the operation of the IBC-2000.

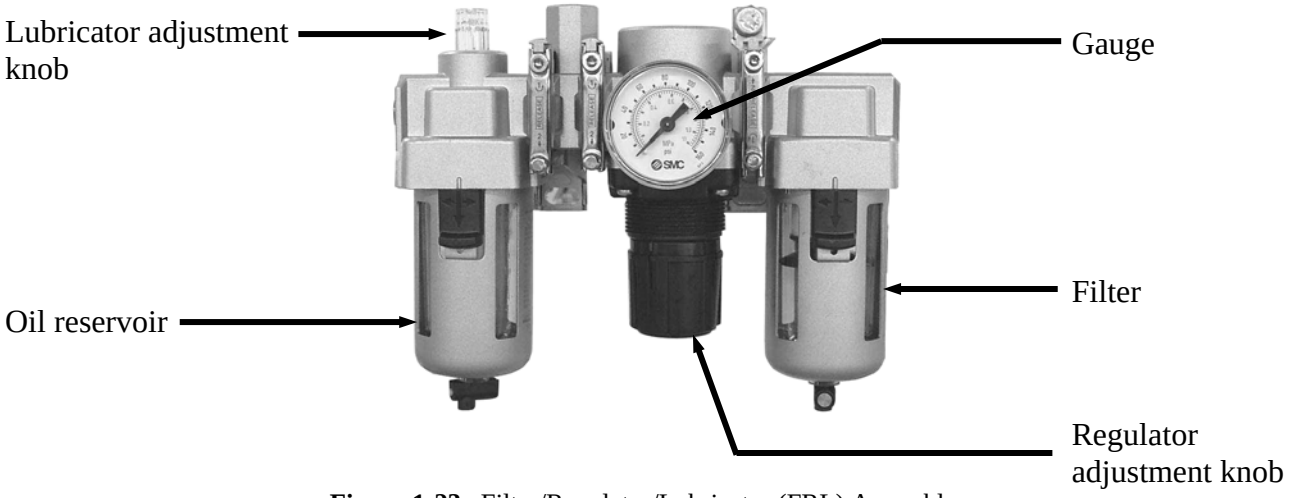


Figure 1-23. Filter/Regulator/Lubricator (FRL) Assembly

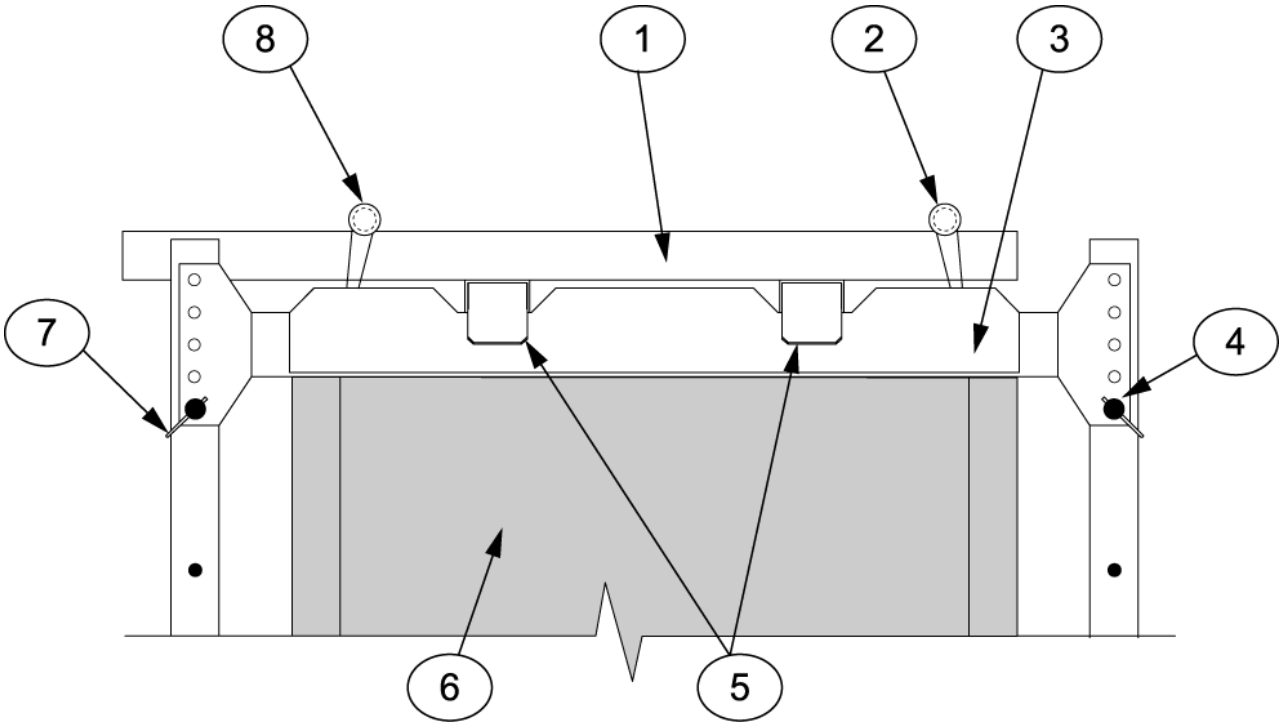
1.6.13 Bulk Bag Lifting and Placing

To facilitate the lifting and placing the bulk bag for dispensing, there are two options:

- Universal Pickup Device (UPD) – Fork Style
- Universal Pickup Device (UPD) – Hoist/Trolley Style

1.6.13.1 Universal Pickup Device (UPD) – Fork Style

The IBC-2000 comes standard with a fork style UPD. This setup allows the UPD to be removed using a forklift. The UPD can be lowered and positioned above a full bulk bag. The straps can be positioned over the bag straphangers. The forklift will then lift the UPD back to the top of the IBC-2000. The UPD is placed in the cradle of the adjustable support arm, with the bulk bag above the receiver pan.



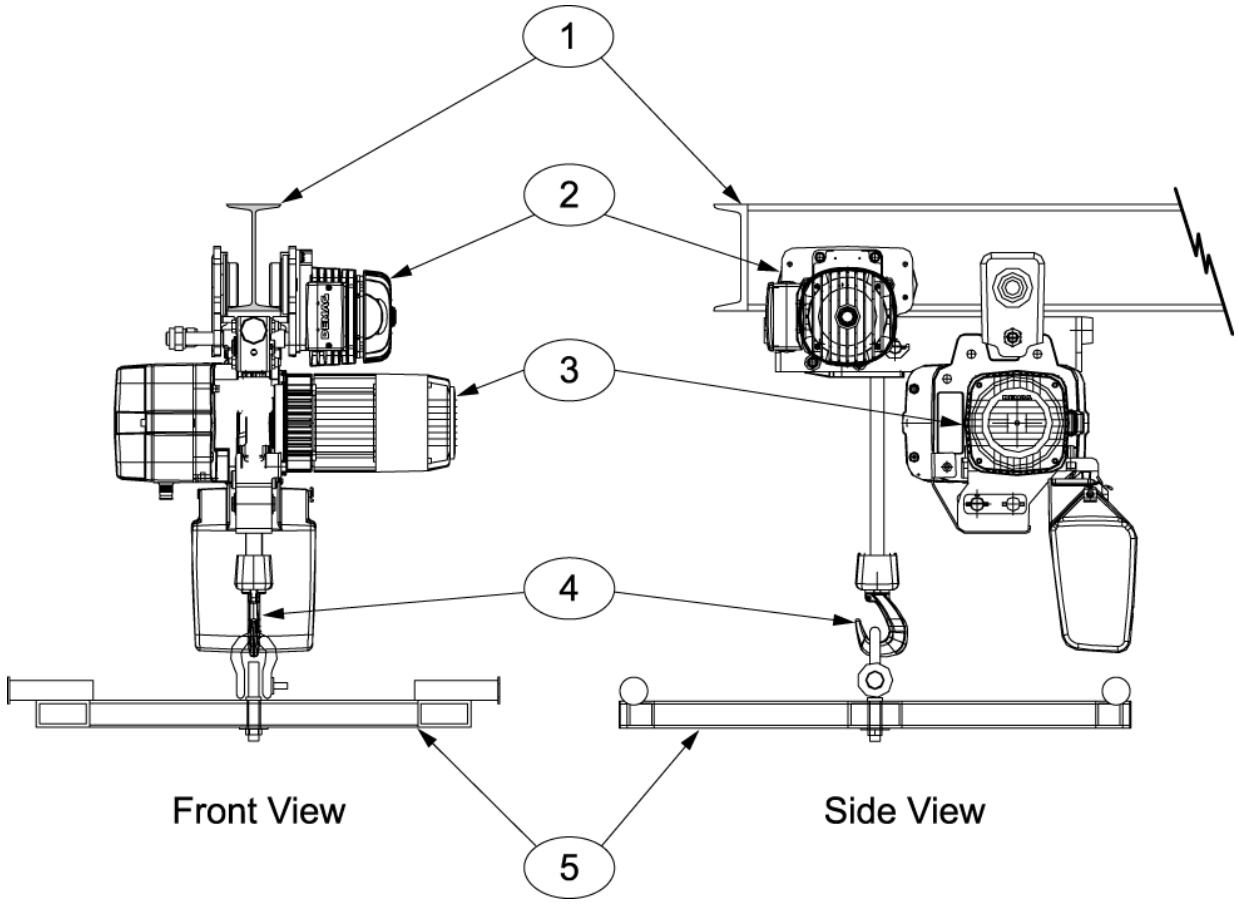
Item #	Description	Item #	Description
1	UPD	5	Cradle for UPD
2	Rear bag hanger	6	Bulk bag
3	Adjustable support arm	7	Bale on safety snap pin
4	Safety snap pin	8	Front bag hanger

Figure 1-24. Universal Pickup Device (UPD) – Fork Style

1.6.13.2 Universal Pickup Device (UPD) – Hoist/Trolley Style

An optional feature on the IBC-2000 is a UPD with an electric hoist/trolley assembly. The integral trolley rides on an 8-inch I-beam that is centered over the frame. The trolley is an electric unit that allows the operator to move the bulk bag from in front of the IBC-2000 frame to a position above the receiver pan. The trolley also allows the operator to move the empty bulk back from above the receiver pan to in front of the IBC-2000 frame.

Electric hoists can be ordered with either a 1-ton or 2-ton capacity, depending on the size of bulk bags being used. The hoist allows the operator to lift the full bulk bags to a height above the receiver pan, so the trolley can position the bulk bag above and lower it safely onto the receiver pan. This setup allows a single operator to lift, position, and discharge a bulk bag safely, with easy access to all controls and the discharge enclosure.

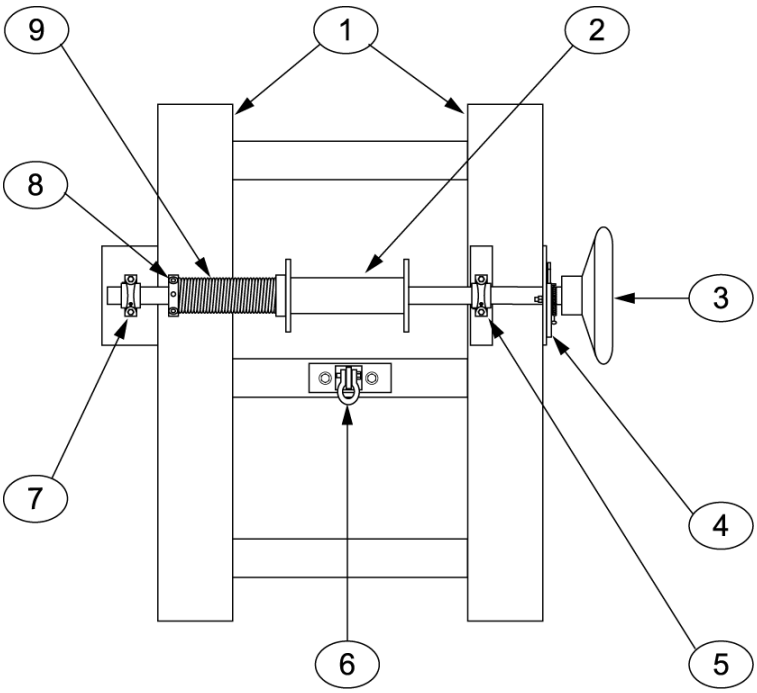


Item #	Description	Item #	Description
1	I-Beam	4	Hoist Hook
2	Electric Trolley Motor	5	UPD
3	Electric 2-Ton Hoist Motor		

Figure 1-25. Optional 1-Ton or 2-Ton Hoist and Trolley System

1.6.13.3 Bag Liner Tensioner

The purpose of the bag liner tensioner is to prevent the liner of the bulk bag from being pulled out of the bulk bag by the product as the bulk bag empties. The bag liner tensioner is mounted on top of the UPD. The bag liner tensioner is mounted on a shaft that rides on two bearings. There is a reel that is centered on the shaft. The reel has a cable or cord attached to it. This cord is equipped with a snap hook on the end that is used to connect the cable to the bulk bag liner. On one end of the bag liner tensioner is the locking mechanism and the tension adjustment. The operator connects the snap hook to the bulk bag liner. The operator will then turn the crank wheel to set the tension on the cable. As the bulk bag empties and becomes lighter, the spring tension causes the reel to wind the cable in, pulling the liner up.



Item #	Description	Item #	Description
1	Rear of UPD	6	Hook for hoist
2	Cable reel	7	Bag liner tensioner shaft bearing
3	Crank wheel	8	Tension adjuster
4	Locking mechanism	9	Spring
5	Bag liner tensioner shaft bearing		

Figure 1-26. Bag Liner Tensioner – Viewed From Above

1.6.14 Machine Controls

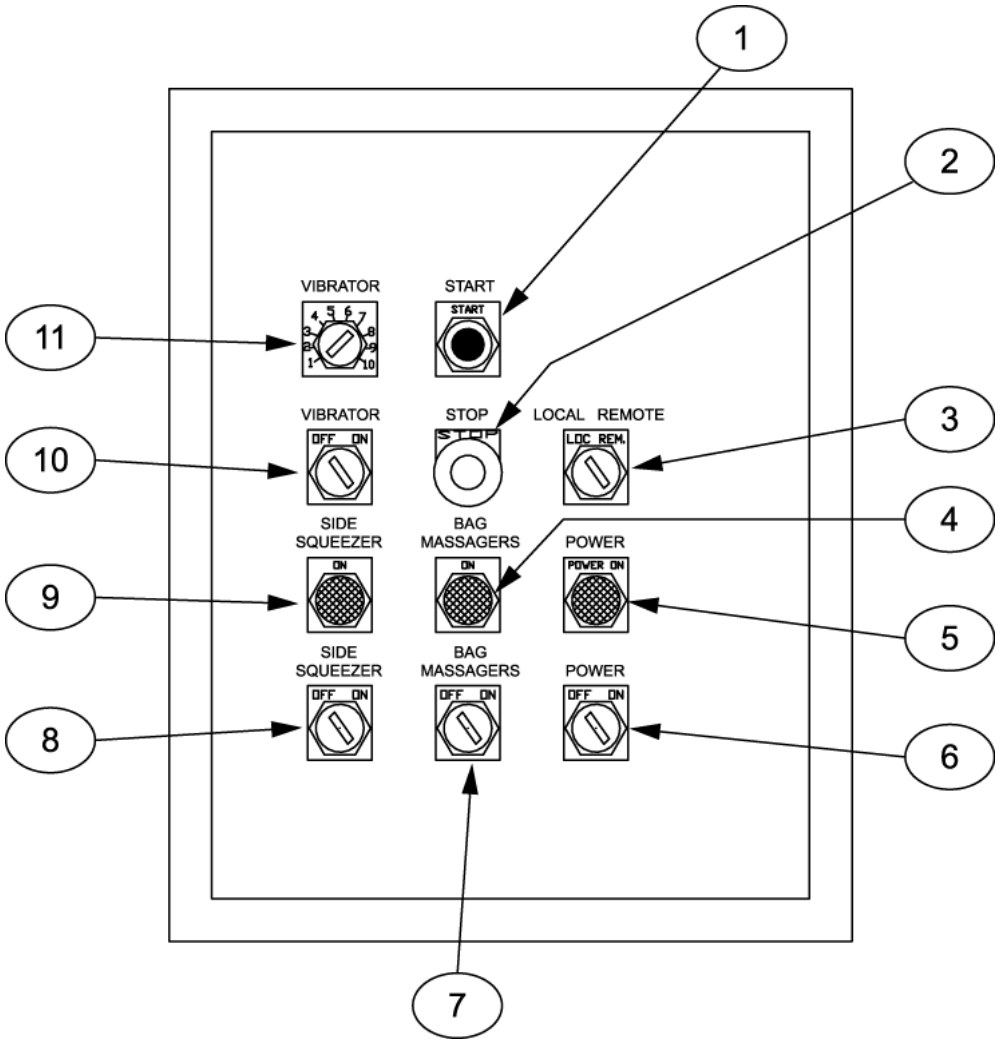
The machine controls for the IBC-2000 can be classified as follows:

- Non-weighing without controls
- Non-weighing with analog controls
- Weighing analog controls
- Weighing T3000 controls

1.6.14.1 Non-Weighing Analog Controls

The standard control system is an analog control panel. The base control unit is set up for a non-weighing machine. The controls that the operator will use to start, stop, and adjust machine functions are located on the front side of the control box. The descriptions below are for items that may be found on the analog control panel. Some items are standard, while other items are optional. Optional items will be noted.

- **START button** – This button is used to initialize the machine. Once the power is turned on, and the start button has been pressed, the operator initiates the dispensing cycle by pushing this button.
- **STOP button/indicator** – Pressing this button will immediately stop the machine. When pressed in, the button will illuminate red. The machine cannot resume operation until the button is pulled out.
- **LOCAL / REMOTE switch (optional)** – Multiple IBC-2000 machines can be connected together. When two or more machines are connected together, this switch controls determines which control box will be in control of the machines. When in local mode, this control box controlling the machine. When in remote mode, the machine has been connected to another machine and is being controlled by that machine's control panel.
- **POWER switch** – This switch controls the power to all IBC-2000 components.
- **POWER indicator** – When the power switch is turned on, this indicator will illuminate.
- **BAG MASSAGERS switch (optional)** – Used to turn the bag massager function on and off.
- **BAG MASSAGERS indicator (optional)** – This indicator will illuminate when the bag massagers are turned on.
- **SIDE SQUEEZER switch (optional)** – When equipped with this option, this switch turns the side squeezer function on and off.
- **SIDE SQUEEZER indicator (optional)** – This option, this indicator will illuminate when the side squeezer function is turned on.
- **ROLLER SQUEEZER switch (optional)** – When equipped with this option, this switch turns the side squeezer function on and off.
- **ROLLER SQUEEZER indicator (optional)** – This indicator will illuminate when the roller squeezer function is turned on.
- **VIBRATOR switch (optional)** – This switch turns the vibrator function on and off.
- **VIBRATOR control knob (optional)** – When equipped with an electronic vibrator, this control knob controls the speed, or intensity, of the vibration. Pneumatic vibrators are controlled via a pneumatic adjustment valve that will be mounted on the IBC-2000 itself.

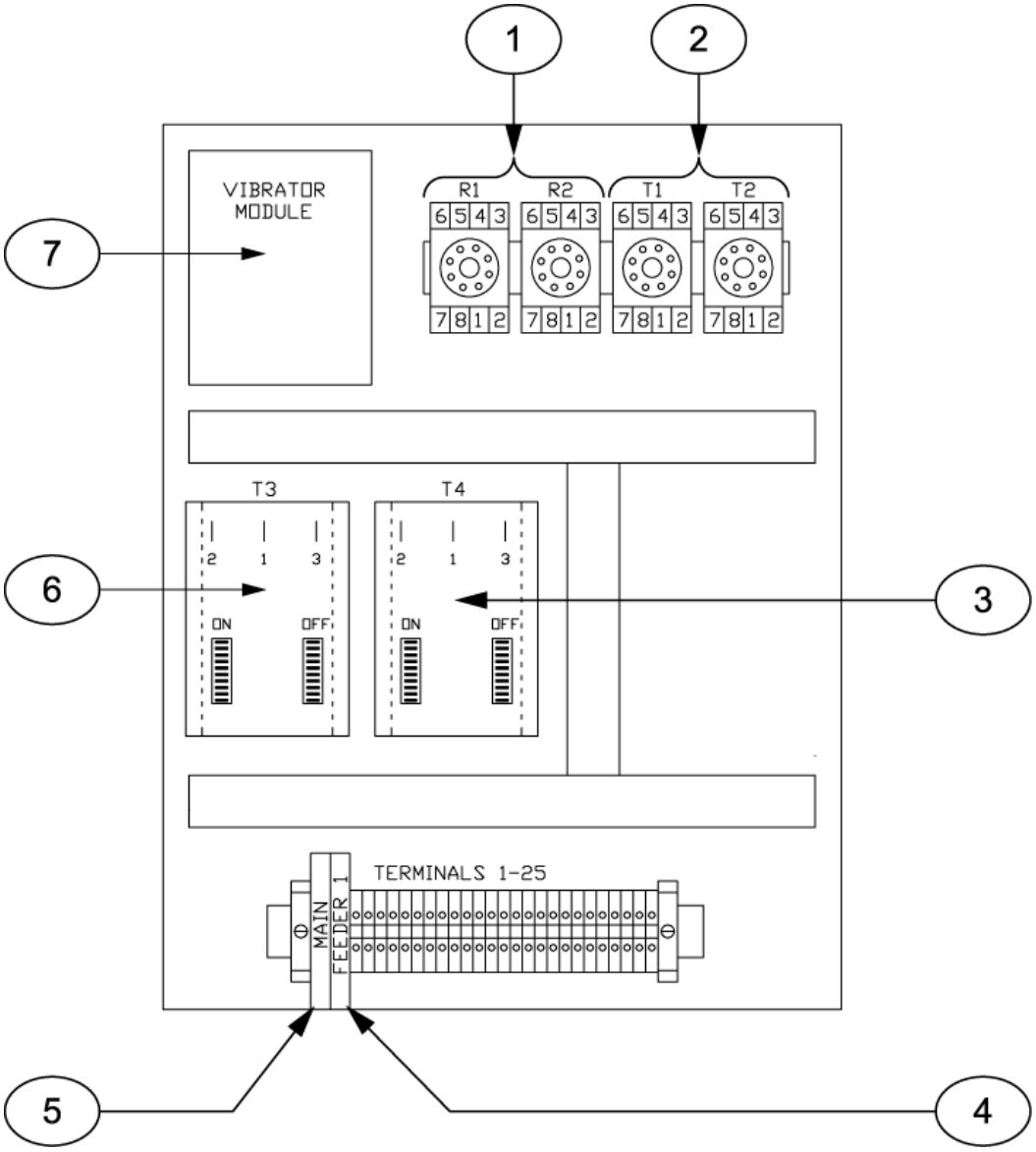


Item #	Description	Item #	Description
1	START button	7	BAG MASSAGERS switch
2	STOP button	8	SIDE SQUEEZER switch
3	LOCAL / REMOTE button	9	SIDE SQUEEZER indicator
4	BAG MASSAGERS indicator	10	VIBRATOR switch
5	POWER indicator	11	VIBRATOR control knob
6	POWER switch		

Figure 1-27. Non-Weighing Analog Controls

Inside the control box are the components that actually perform the control functions for the machine. These components include the following components:

- **Relay boards** – Mounting points for relays.
- **Fuse holders, fuses, and terminals** – Circuit protection for the IBC-2000.



Item #	Description	Item #	Description
1	Relay bases	5	Main fuse
2	Timer bases	6	Timer
3	Timer	7	Vibrator module
4	Feeder fuse		

Figure 1-28. Non-Weighing Control Panel, Internal Components

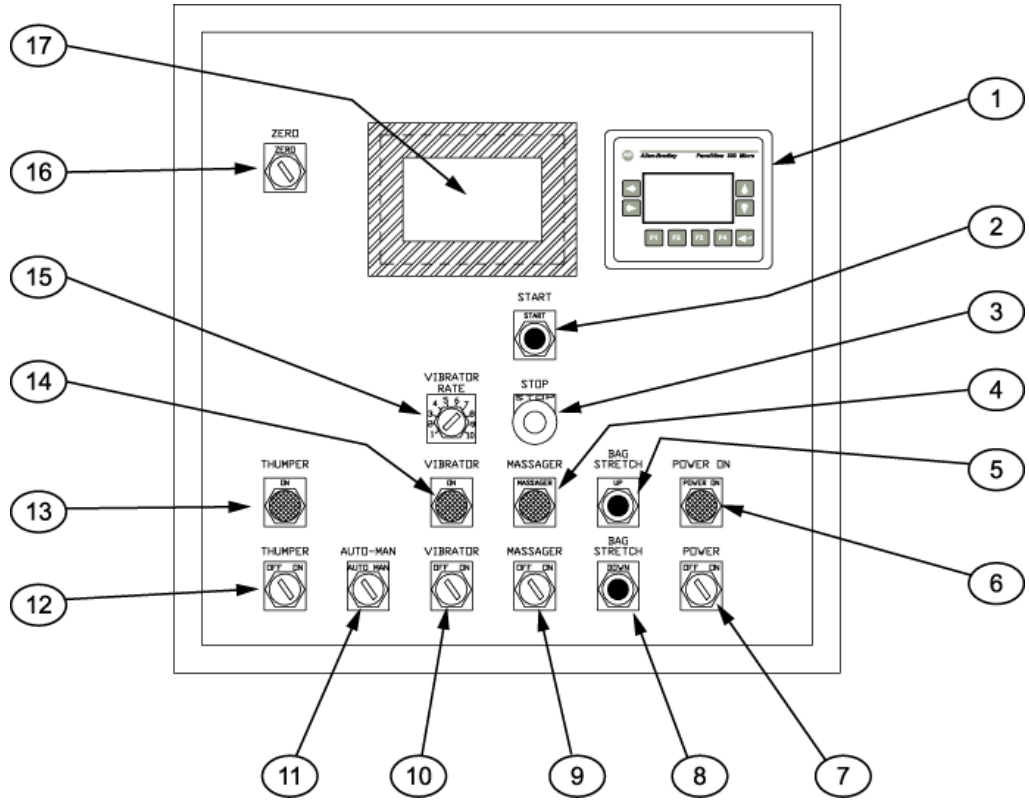
1.6.14.2 Weighing Analog Controls

The controls that the operator will use to start, stop, and adjust machine functions are located on the front side of the control box. A standard IBC-2000 uses analog controls. The standard analog control unit is equipped with a 3-½ digit display weigh meter. An optional 4-½ digit display weight meter is available for use with the analog control set. The descriptions below are for items that may be found on the analog control panel. Some items are standard, while other items are optional. Optional items will be noted.

- **Weight display** – The weigh meter is used to display the weight of the bulk bag and to display setpoints during machine setup. The standard weigh display is a 3-½ digit unit. An optional 4-½ digit unit is available.
- **PV300 control panel (optional)** – The PV300 is the operator interface to the PLC. The operator uses the PV300 to monitor and adjust system timer and counter settings.
- **DISPLAY SELECT switch (optional)** – The DISPLAY SELECT switch is used in conjunction with the SP-1 and SP-2 knobs to set the dribble and cutoff weights.
- **SP-1 knob (optional)** – The SP-1 knob is used to set the dribble weight.
- **SP-1 indicator (optional)** –The SP-1 indicator will illuminate when the dribble weight has been achieved.
- **SP-2 knob (optional)** – The SP-2 knob is used to set the cutoff weight.
- **SP-2 indicator (optional)** – This indicator will illuminate when the cutoff weight has been achieved.
- **ZERO knob (optional)** – The ZERO knob allows the operator to set the weigh meter to zero (0.00) when there is no weight on the weighing mechanism.
- **ZERO RESET button (optional)** – The ZERO RESET button is used to reset the zero on the weight display in the event that the unit cannot be zeroed using the ZERO knob.
- **FIRST RATE knob (optional)** – The FIRST RATE knob. The operator will use this knob to adjust the bulk dispense rate.
- **SECOND RATE knob (optional)** – The SECOND RATE knob is used to set the dribble dispense rate.
- **CHECKWEIGH button (optional)** –The operator would press the CHECKWEIGH button to check the current package weight at the end of the dispense cycle. This is done to compare the final package weight to the target package weight.
- **SIDE SQUEEZER switch (optional)** – When equipped with this option, this switch turns the side squeezer function on and off.
- **SIDE SQUEEZER indicator (optional)** – This option, this indicator will illuminate when the side squeezer function is turned on.
- **ROLLER SQUEEZER switch (optional)** – When equipped with this option, this switch turns the side squeezer function on and off.
- **ROLLER SQUEEZER indicator (optional)** – This indicator will illuminate when the roller squeezer function is turned on.
- **POWER ON indicator** – The POWER indicator will illuminate if the POWER switch is turned to the ON position. This function is dependent on the machine being connected to its power source and that power source being in working condition.
- **POWER switch** – Located just right of center on the bottom of the control panel door, this switch is used to turn the power to the machine on and off.

- **STOP button/indicator** – The STOP button/indicator will immediately stop the machine when it is pushed in. When pushed, this button will illuminate red to indicate that the button is pushed and that machine function has been interrupted. The machine cannot be restarted until the STOP button is pulled out.

  Important: *The following graphic illustrates a typical configuration of an analog control panel. Some units may be different. Always refer to the engineering drawings for the specific machine being worked on to ensure that the most accurate information is used.*



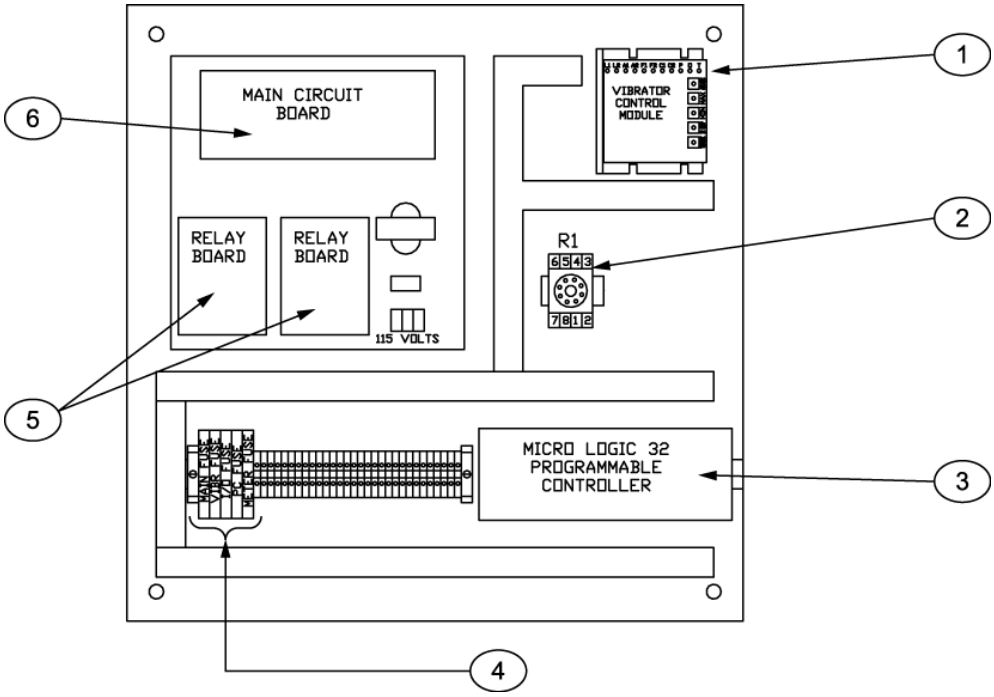
Item #	Description	Item #	Description
1	PV300 control panel	10	VIBRATOR switch
2	START button	11	AUTO / MANUAL switch
3	STOP button/indicator	12	THUMPER switch
4	MASSAGER indicator	13	THUMPER indicator
5	BAG STRETCH indicator	14	VIBRATOR indicator
6	POWER ON indicator	15	VIBRATOR RATE knob
7	POWER switch	16	ZERO knob
8	BAG STRETCH button	17	Weigh meter
9	MASSAGER switch		

Figure 1-29. Analog Control Panel

1.6.11.2 Standard Electronic Control Components

Inside the control box are the components that actually perform the control functions for the machine. These components include the following components:

- **Main PC board** – The load cells and weigh meter are connected to the main PC board. The main PC board processes the inputs from the load cells and sends an output to the weigh meter.
- **Power supply** – The 24VDC power supply converts the incoming 115VAC power to 24VDC, which is required by the PLC.
- **Allen-Bradley MicroLogix 32 PLC** – Provides multiple timer and counter functions.
- **Relay boards** – Mounting points for relays.
- **Fuse holders, fuses, and terminals** – Circuit protection for the IBC-2000.



Item #	Description	Item #	Description
1	Vibrator Control Module	4	Fuses
2	Relay base	5	Relay boards
3	MicroLogic 32 PLC	6	Main circuit board

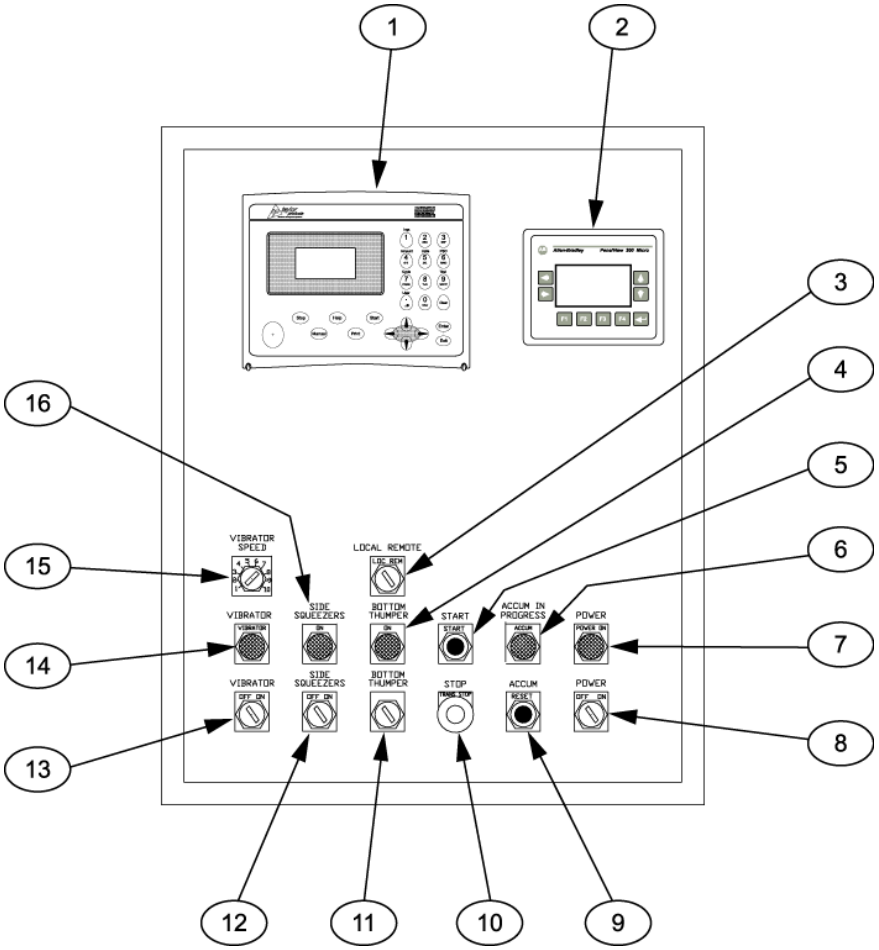
Figure 1-30. Standard Analog Electronic Control Components

1.6.11.3 Optional T3000 Operator Control Box

An optional control system utilizes a Magnum Systems/Hardy Instruments T3000 control panel. The T3000 is a computer, and is mounted in the door of the control enclosure. The internal program and circuitry allow the operator to weigh the package, to control the feed rates, and to control the bag clamp system. The front of the T3000 is equipped with the weigh meter and control keys. When updating product settings, the weigh meter is used to display the different menus and the settings.

The controls that the operator will use to start, stop, and adjust machine functions are located on the front side of the control box. The operator controls consist of the following items:

- **T3000 control panel** – Located in the upper portion of the control panel door. The T3000 has the connections for the weigh meter and the load cells. The internal processor in the T3000 balances the inputs from the load cells and combines them into a total weight that will be displayed on the weigh meter.
- **PV300 control panel** – Located to the right of the T3000 control panel. This panel is the user interface to the PLC. The operator will use it to adjust system timer and counter settings.
- **POWER indicator** – Located directly above the POWER switch. When connected to power and the POWER switch is turned to the ON, the indicator will illuminate green.
- **POWER switch** – This switch is used to turn the power to the machine on and off.
- **STOP button/indicator** –The STOP button/indicator will immediately stop the machine when it is pushed in. When pushed, this button will illuminate red to indicate that the button is pushed and that machine function has been interrupted.
- **START button** – Pressing the START button will start the dispensing cycle.
- **VIB switch (optional)** – This switch allows the operator to turn the vibrator on and off.
- **VIB indicator (optional)** – When the vibrator is turned on, this indicator will illuminate to show that the vibrator is on.
- **VIB knob (optional)** – This knob is used to control the rate of vibration from the vibrator. Turning the knob to the right will increase the speed, while turning the knob to the left will decrease the speed. There is a label around the top half of the knob showing the available settings.
- **SIDE SQUEEZER switch (optional)** – When equipped with this option, this switch turns the side squeezer function on and off.
- **SIDE SQUEEZER indicator (optional)** – This option, this indicator will illuminate when the side squeezer function is turned on.
- **ROLLER SQUEEZER switch (optional)** – When equipped with this option, this switch turns the side squeezer function on and off.
- **ROLLER SQUEEZER indicator (optional)** – This indicator will illuminate when the roller squeezer function is turned on.
- **ACCUM RESET button (optional)** – This button is pressed if the operator needs to reset the current accumulated dispensing cycle.
- **ACCUM indicator (optional)** – This indicator will illuminate when the desired accumulated dispensed weight is achieved.
- **LOCAL / REMOTE switch (optional)** – This switch is used to transfer control from the local control panel to the control panel of another machine. This function allows several machines to be linked together so a single person can operate them.

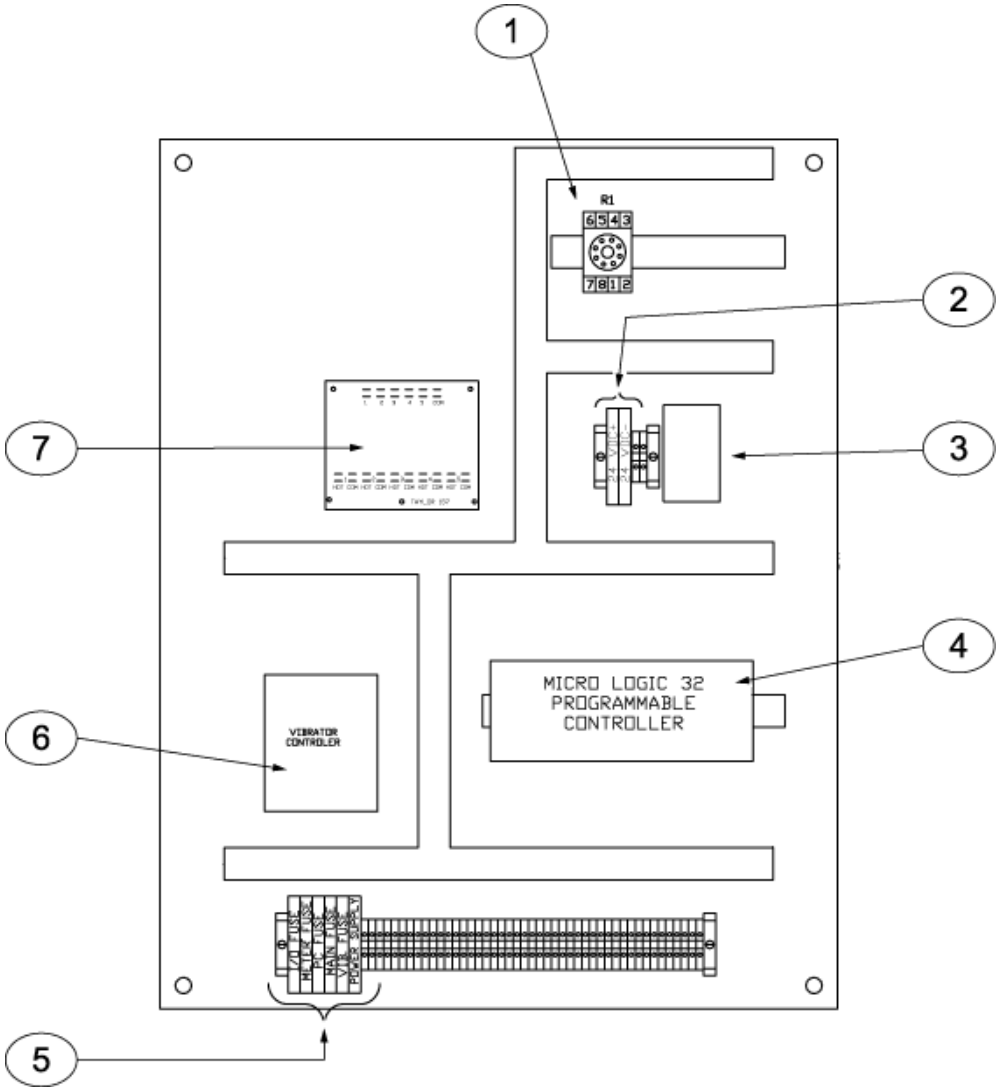


Item #	Description	Item #	Description
1	T3000 control panel	9	ACCUM RESET button
2	PV300 control panel	10	STOP button
3	LOCAL / REMOTE switch	11	BOTTOM THUMPER switch
4	BOTTOM THUMPER indicator	12	SIDE SQUEEZERS switch
5	START button	13	VIBRATOR switch
6	ACCUM IN PROGRESS indicator	14	VIBRATOR indicator
7	POWER indicator	15	VIBRATOR SPEED control knob
8	POWER switch	16	SIDE SQUEEZERS indicator

Figure 1-31. T3000 Control Panel

Inside the control box are the components that actually perform the control functions for the machine. These components include the following components:

- **T3000 interface board** – The load cells and weigh meter are connected to the main PC board. The main PC board processes the inputs from the load cells and sends an output to the weigh meter.
- **Power supply** – The 24VDC power supply converts the incoming 115VAC power to 24VDC, which is required by the PLC.
- **Relay base** – Mounting points for relays.
- **Allen-Bradley MicroLogix 32 PLC** – Provides multiple timer and counter functions.
- **Fuse holders, fuses, and terminals** – Circuit protection for the IBC-2000.



Item #	Description	Item #	Description
1	Relay base	5	Fuses
2	Fuses	6	Vibrator control module
3	Power supply for PV300 control panel	7	T3000 interface card.
4	Programmable Logic Controller (PLC)		

Figure 1-32. Optional T3000 Electronic Control Components

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Chapter 2
Receiving Equipment

2.1 General Description

The IBC-2000 and all of its components are thoroughly inspected before shipment. Upon receipt of the equipment, it is important that the machine be carefully inspected for shipping damage. In the event that damage is found, contact the shipping company and follow their process for reporting shipping damage.

2.2 Uncrating the Equipment

Follow the procedure below to unpack the equipment and prepare it for installation.

The IBC-2000 is shipped on its side, in a shell crate to protect it during shipment. Follow the procedure below to unpack the equipment and prepare it for installation.

1. Prepare an area that is approximately 30’ x 20’ in size. Complete any nearby construction before installing the IBC-2000.
2. Inspect the shell crate for damage. Inspect for damaged or missing parts, and damage to the machine. If damage is found, notify the shipper immediately.
3. Remove the shell crate.
4. Carefully cut the plastic shrink-wrap that is wrapped around the IBC-2000 away and remove it. Use care when unpacking the IBC-2000 to avoid damaging the machine or control components.
5. Locate any items that were shipped loose and set them aside.
6. Remove lag bolts from mainframe at pallet.
7. The IBC-2000 is now ready to be removed from the pallet.

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Chapter 3
Setup/Installation

3.1 General Description

Only persons who have been properly trained and hold the appropriate qualifications should attempt to install, operate, or maintain this equipment.

WARNING	*Before installing, adjusting, or servicing any electrical component, be sure to become familiar with the electrical schematics for the machine.*

WARNING	*Before installing, adjusting, or servicing any pneumatic component, be sure to become familiar with the pneumatic schematics for the machine.*

3.2 Mechanical Setup

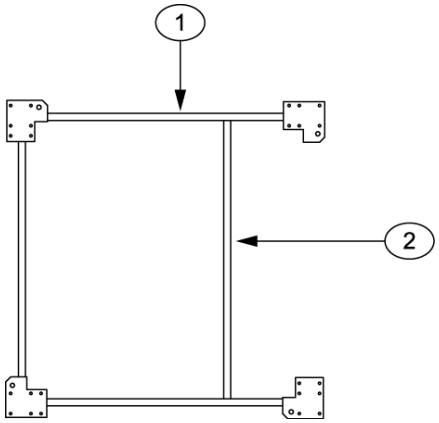
After the IBC-2000 has been placed in its operating location, use the following procedures to assemble any components that were shipped loose and prepare the IBC-2000 for operation.

3.2.1 Installing the Load Cell Frame Assembly (De-Weigh Machines)

IBC-2000 machines that are equipped to de-weigh, will typically come with a load cell frame assembly. For these machines, the load cell frame assembly will need to be mounted first. Some locations may have height restrictions that prevent the use of a load cell frame assembly. In these instances, it is acceptable to mount the load cells directly to the floor.

1. Make sure the mounting area is clear and all electrical and pneumatic service is available.
2. Position the load cell frame where it will be installed.

   Important: *The load cell frame assembly is constructed with one of the cross members inset. This is done to allow the operator to access the discharge without having to step over the cross member.*



Item #	Description	Item #	Description
1	Load cell frame assembly	2	Inset cross member

Figure 3-1. Load Cell Frame

3. Mark the position of the mounting holes on the floor.
4. Using the proper bit, drill holes in the floor for the anchors. This may require moving the frame out of the way.

WARNING

It is critical that the machine be properly anchored to the floor. Failure to do so could result in the machine tipping over and striking the operator or other workers, resulting in serious injury or death.

For hoist/trolley-equipped machines, the minimum anchor specification is 3/4"-diameter with 6 5/8" embedment. The anchor must be able to resist a pullout force of 3,710 lbs., and a shear force of 345 lbs., per column. Magnum Systems recommends the Hilti HIT HY-150.

Fork style machines do not have a minimum specification, however, these machines still must be lagged to the floor.

5. Install the anchors. Follow the instructions of the anchor manufacturer for correct installation.
6. Lift the load cell frame and position it above the anchor bolts. Line up the bolt holes in the load cell frame with the anchor bolts and lower the frame. The anchor bolts should now be protruding through the bolts holes in the load cell frame.
7. Install the washers and nuts on the anchors and tighten the nuts. Follow the instructions of the anchor manufacturer for correct installation.

3.2.2 Installing The Load Cells

For machines that are equipped to de-weigh, there are four load cells that need to be installed prior to erecting the main frame.

CAUTION

A sudden jerk or shock, such as being struck by a tool or hitting the load cell while positioning the main frame, etc., can cause load cell damage. The load cell is NOT covered by the Magnum Systems warranty.

1. Open the box of a load cell and carefully remove the load cell.
2. Position the load cell on the mounting pad on one of the corners of the load cell frame.
3. Line the holes in the load cell up with the holes in the mounting pad.
4. Install a lock washer on each of the load cell mounting bolts.
5. Install the load cell to load cell frame mounting bolts from the bottom. Only hand tighten the bolts at this time.
6. Once all of the installed carefully tighten the mounting bolts using a wrench. It is recommended to tighten each bolt a little at a time until all bolts are tight.
7. Repeat steps 1 through 6 until all four load cells are installed on the load cell frame.

3.2.3 Installing The Main Frame – Non-Weighing Units

1. Make sure the mounting area is clear and all electrical and pneumatic service is available.
2. Position the main frame where it will be installed.
3. Mark the position of the mounting holes on the floor.
4. Using the proper bit, drill holes in the floor for the anchors. This may require moving the frame out of the way.

WARNING

It is critical that the machine be properly anchored to the floor. Failure to do so could result in the machine tipping over and striking the operator or other workers, resulting in serious injury or death.

For hoist/trolley-equipped machines, the minimum anchor specification is 3/4"-diameter with 6 5/8" embedment. The anchor must be able to resist a pullout force of 3,710 lbs., and a shear force of 345 lbs., per column. Magnum Systems recommends the Hilti HIT HY-150.

Fork style machines do not have a minimum specification, however, these machines still must be lagged to the floor.

5. Install the anchors. Follow the instructions of the anchor manufacturer for correct installation.
6. Lift the main frame and position it above the anchor bolts. Line up the bolt holes in the main frame with the anchor bolts and lower the frame. The anchor bolts should now be protruding through the bolts holes in the main frame.
7. Install the washers and nuts on the anchors and tighten the nuts. Follow the instructions of the anchor manufacturer for correct installation.

3.2.4 Installing The Main Frame – Weighing Units

1. Adjacent to each load cell, there is a hole in each mounting pad. Install a nut on each piece of Allthread that came with the machine. With the nut installed, approximately one to two inches of Allthread should extend past the nut.
2. Insert the Allthread through the bolthole in the load cell mounting pad so that the one to two inches of exposed Allthread is pointed downward through the bolthole.
3. Install a nut on the Allthread on the bottom side of the load cell mounting pad.
4. Check the overall height of the Allthread. It should extend a couple of inches above the top of the load cell.
5. Install a nut on the Allthread from the top. The Allthread should protrude through the nut an inch or more. The top surface of the nut should still be above the top surface of the load cell by at least 1/4-inch.
6. Lift the upper frame into a vertical position.
7. Lift the upper frame and position it directly above the lower frame.
8. Position one person at each corner of the machine.
9. Slowly lower the main frame until it is suspended just above the top of the Allthread on each corner of the lower frame.
10. Line the holes in the main frame mounting pads up with the Allthread.
11. Slowly lower the main frame down onto the upper nuts on the Allthread. Once the four mounting pads are resting on the nuts on the Allthread, slowly release the lifting mechanism so that the entire weight of the main frame is supported by the nuts on the Allthread. DO NOT disconnect the lifting device from the main frame at this time.

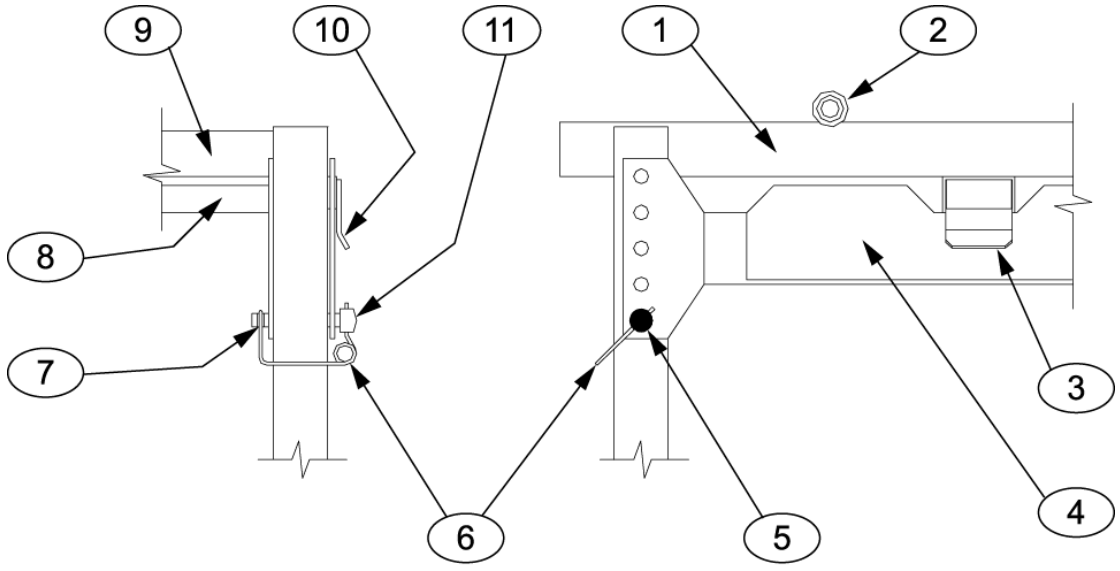
WARNING *Keep hands clear when lowering the upper frame onto the Allthread. Failure to do so may cause serious injury.*

12. Using a wrench, turn the upper nut on the Allthread on each corner of the load cell frame to lower each corner of the main frame. Continue this pattern until the mounting pad on each corner has been lowered onto the top of its respective load cell.
13. Install the washers on the upper load cell bolts.
14. Install the bolts into the mounting holes and hand tighten them. Once all four mounting bolts are hand tight, carefully tighten the bolts in sequence around the base of the load cell a little at a time until each bolt is tight. Repeat this step on the three remaining load cells.
15. Disconnect the lifting device from the main frame.

3.2.5 Setting Bag Height – Fork Style Units

The fork style IBC-2000 allows approximately 36 inches of adjustment for bag height. The adjustments are made mechanically on the frame itself. This procedure requires two people.

1. Remove the UPD.
2. Setup a ladder at the front and rear of the legs, on the same side of the machine. Follow all local safety procedures.



Front View Side View

Item #	Description	Item #	Description
1	UPD	7	Bale sitting in notch on safety snap pin
2	Bag hanger	8	UPD
3	Front UPD tab - left side view	9	Rear frame cross member
4	Adjustable support arm	10	Front UPD tab - front view
5	Safety snap pin	11	Safety snap pin
6	Bale on safety snap pin		

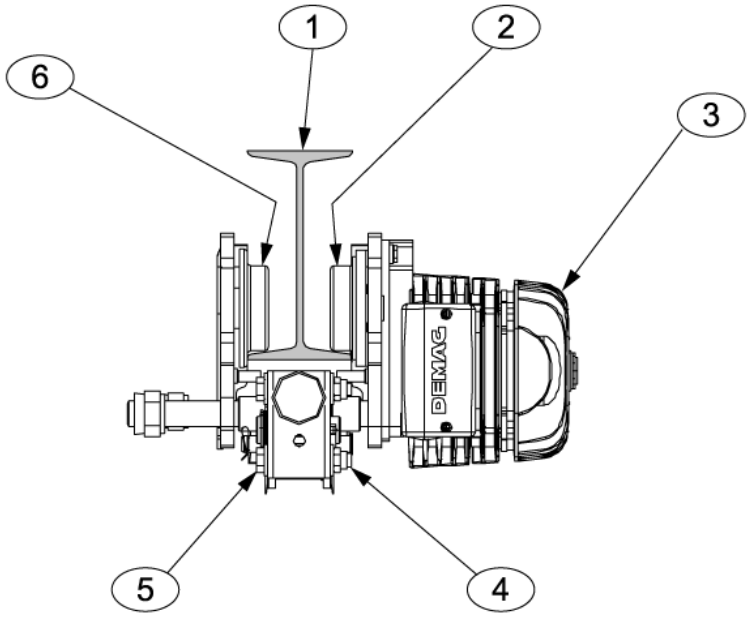
Figure 3-2. Bag Height Adjustments

3. Release the safety bale from the safety snap pin.
4. While supporting the adjustable support arm, remove the two safety snap pins.
5. Raise or lower the adjustable support arm to the desired height.
6. Align the holes in the adjustable support arm with the hole in the main frame.
7. Insert the two safety snap pins.
8. Check the adjustable support arm to make sure it is level.
9. Repeat steps 1 through 8 on the opposite side of the machine.

3.2.6 Installing the Trolley and Hoist

Machines that are ordered with an optional 1-ton or 2-ton hoist must have hoist installed prior to operating.

1. Position the trolley on a workbench and make sure that the two halves are bolted securely together.



Item #	Description	Item #	Description
1	I-beam	4	Bolt
2	Front roller - motor side	5	Nut
3	Motor	6	Front roller - non-motor side

Figure 3-3. Trolley (Front View)

WARNING

Proper spacing of the trolley wheels is critical to the safe operation and performance of the trolley.

Spacing the wheels too far apart may result in the trolley slipping off of the I-beam. This could result in serious injury or death, if the falling hoist/trolley assembly or a filled bulk bag strikes someone.

Spacing the wheels too close together will result in the trolley binding.

2. Measure the base of the I-beam.

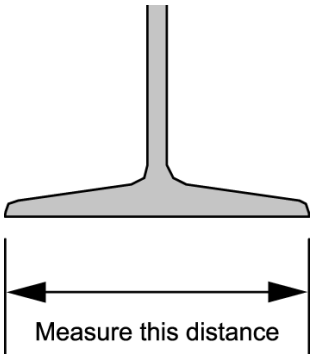


Figure 1-4. Measuring the I-Beam

3. Measure the distance between the two plates that the trolley rollers are mounted on.

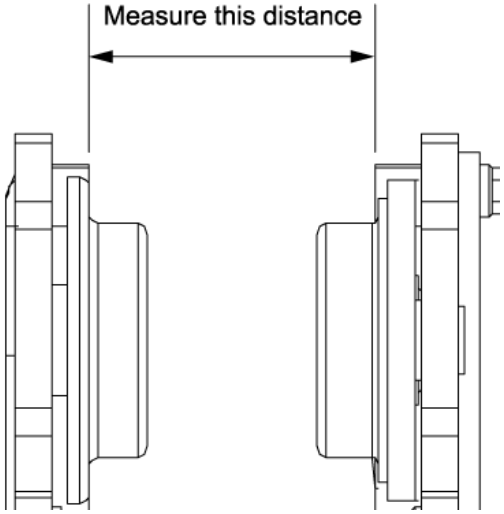


Figure 3-5. Measuring The Distance Between The Trolley Wheel Mounting Plates

4. The measurement in step 3 should be ¼" larger than the measurement in step 2. If the measurement in step 3 is smaller than the step 2 measurement, shims must be added on the bolts between the two trolley mounting plates. If the measurement in step 3 is more than ¼" larger than the measurement in step 1, shims must be removed from the bolts between the two mounting plates.
5. Loosen and remove the nuts from the bolts that are used to secure each half of the trolley frame together. Separate the two halves, leaving the bolts in the boltholes.
6. Install or remove the necessary number of shims (washers) on the bolts to achieve the desired spacing between the rollers. The shims will be positioned between the two mounting plates.
7. Reassemble the two halves of the trolley. Repeat steps 3 and 4. If the measurements are within the specification noted in step 4, continue to step 8. If they are not within specification, repeat steps 5, 6, and 7 until the measurements are within specification.
8. Loosen the nuts on the bolts that are used to secure each half of the trolley together. Back them off just enough to allow the wheels on the trolley to spread wide enough to slip over the outer edges of the bottom of the I-beam.
9. Lift the trolley to position and spread each of the halves apart.

10. Tilt the trolley so that the rollers on one side of the trolley assembly are able to clear the lip on the I-beam. Once the rollers have cleared the lip, slide the rollers on that side toward the center of the I-beam. This will allow the rollers to rest on the lip.
11. Once the rollers on one side are resting on the lip, tilt the trolley in the opposite direction to rotate the rollers on the opposite side up so they clear the lip on the I-beam.
12. Once the rollers on both sides of the I-beam have cleared the lip, squeeze the two halves of the trolley together.
13. Have a helper tighten the nuts on the bolts that secure each half of the trolley together. Tighten them enough to prevent the rollers from slipping off of the lip on the I-beam.
14. Use a wrench to tighten the nuts on the bolts that secure each half of the trolley together.
15. Slide the trolley backward and forward on the I-beam. Check for too much, or too little clearance.
16. Use a fork truck to lift the hoist and position it under the trolley.
17. Line up the mounting holes in the hoist with the mounting holes in the trolley.
18. Install the bolts through the mounting holes.
19. Install the washers and nuts on the bolts and hand-tighten them.
20. Use a wrench to tighten the nuts on the bolts.
21. Route the power cords along the frame to the junction box located on the rear of the frame. Be careful to route it so that it will not be damaged by the movement of other components, or interfere with other components.
22. Connect the trolley and hoist cables to the appropriate connections. Refer to the electrical schematics for that specific machines.
23. If not already installed, route the control cable along the frame, be careful to route it so that it will not be damaged by the movement of other components, or interfere with operation.
24. Test the trolley and hoist for proper operation.

3.3 Making Electrical Connections

Before connecting the Model IBC-2000 to the electrical supply, it is vital that the unit be properly grounded. The recommended method is to plug the power cord into an earth grounded receptacle.

The IBC-2000 is available with many options. The electrical requirements of the IBC-2000 will depend on the options that were selected. Refer to the electrical diagrams that accompany the machine to determine the requirements for that specific machine. The power receptacles should be placed within 6 feet of the IBC-2000.

> ***Important:*** *Refer to the electrical diagrams for the specific machine being worked on for proper line and breaker sizing. If the drawings are not available, or if questions persist, contact Magnum Systems.*

3.4 Making Pneumatic Connections

The Model IBC-2000 requires a compressed air supply line that is capable of delivering adequate pressure and volume. The pressure and volume requirements will vary, based on the options that have been ordered. Always refer to the engineering drawings that accompany the machine to determine the requirements for that specific machine.

Magnum Systems recommends that the air supply line be equipped with a refrigerated air dryer, or at the very least a water separator. After making pneumatic connections, check all connectors for leaks using a soapy water mixture. Bubbles will appear at the site of any leaks. Eliminating or reducing air leaks will reduce wear on the air supply equipment.

3.4.1 Pneumatic Component Lubrication Requirements

The pneumatic cylinders require lubrication to ensure their proper operation and to extend their useful life. The lubricator should be filled with 10 weight, non-detergent oil.

The oil flow control knob, located on top of the lubricator, should be set so that the lubricator is delivering 1 drop of oil for every 30 bags that are dispensed.

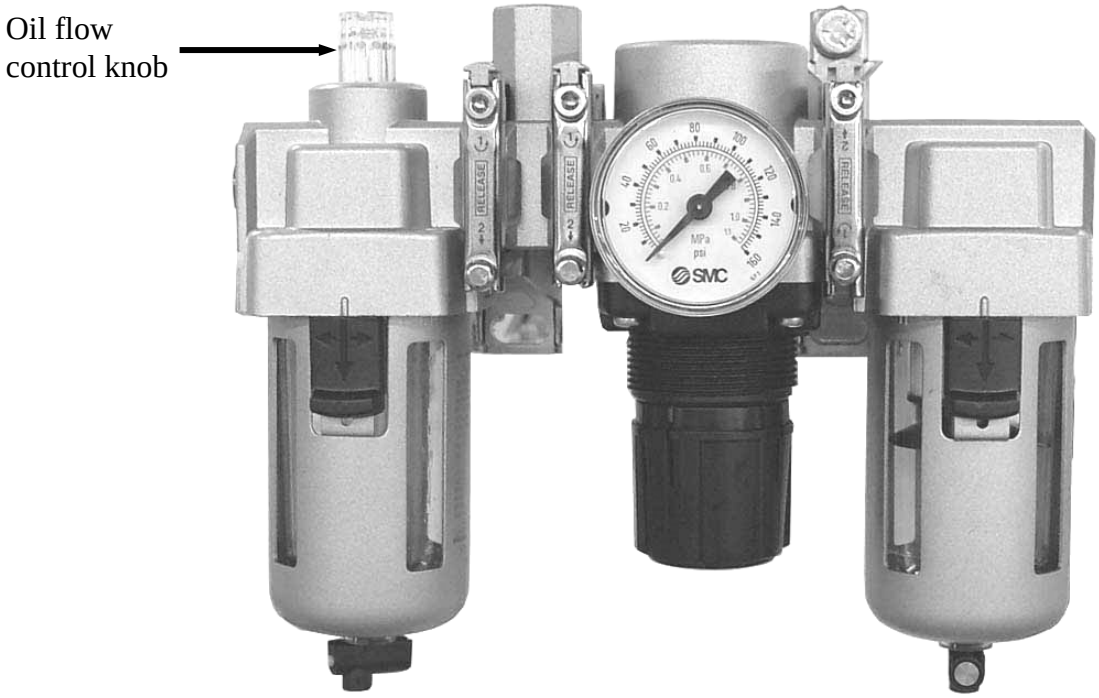


Figure 3-6. Lubricator – Oil Flow Control

Use caution when setting the flow control on top of the lubricator. While too little oil can cause operational problems, so can too much oil. If the oil control is set too high, it may result in gummed up solenoid valves and cylinders.

3.5 Making Network Connections

IBC-2000 units that are equipped with the optional T3000 control set have the ability for total monitoring and instrument control via the built in communication connectivity of the T3000. The T3000 has the following network capabilities:

- DeviceNet
- HardyLink Ethernet
- IR Port
- RS-232 Simplex Serial Port
- Remote I/O (RIO) (optional)
- ControlNet (optional)
- Profibus I/O (optional)
- Modbus over TCP/IP (optional)
- OLE Process Control (OPC) (optional)

3.6 Establishing Security Settings

On Model IBC-2000 machines that are equipped with the optional T3000 digital control set, the manager has the ability to control who does and who does not have the ability to change system and calibration settings. There are three levels of system security:

- Low – No password required
- Medium – A password is required to access some, but not all of the top level menus
- High – A password is required to access all top-level menus.

Additionally, the manager also has the ability to assign different levels of security to individual menus. The menus where this applies are:

- Adjust Ingredient
- Setup
- Calibration
- Options
- I/O Mapping

If a menu has a security setting of Medium or High, the users' access will be read-only, unless they enter the correct password.

3.6.1 Setting Security Settings Using the Control Panel

The typical method for setting security settings on the T3000 is via the control panel. Follow the steps below to set security.

1. Press the User shortcut key. Enter the User ID and high-level password.
2. From the Standby display, press the Setup button. The Configuration Menu will appear.
3. Use the up/down arrows to position the cursor in front of SECURITY. Press the Enter button.
4. The SECURITY MENU will appear. The cursor will be in front of SET SECURITY MENU selection. Press the Enter button.
5. The SET SECURITY MENU will appear. The Top-Level Menus will be listed with the security level set at the default LOW setting.
6. Press the up/down arrow buttons to position the cursor in front of the desired menu selection.
7. Press the left/right arrow buttons to change the security setting for that menu item.
8. Once the desired security level is displayed, press the Enter button to set the entry.
9. If other menus require an adjustment to its security setting, repeat steps 5 through 7.
10. When all security setting adjustments have been completed, press the Exit button to return to the Standby display.

3.7.2 Setting Security Settings Using the Browser

Security settings on the Model IBC-2000 can also be set via the T3000 Home Page.

1. Type in the address for the T3000 Home Page.
2. When the page appears, click on the Configuration link. The Configuration page will appear.
3. Click on the Security link. An Enter Password dialog box will appear.
4. Type the number 0 into the dialog box and click on OK.

   Note: *If this is not the first time that a password is being set, the manager will need to enter the existing password, instead of 0, and then click on OK.*

5. The Enter Network Password dialog box will appear.
6. Enter the User ID and Password. If the password is to be saved, make sure the check box is checked below the Password line. Click on OK.
7. When the Security screen appears, the settings will be at the default level.

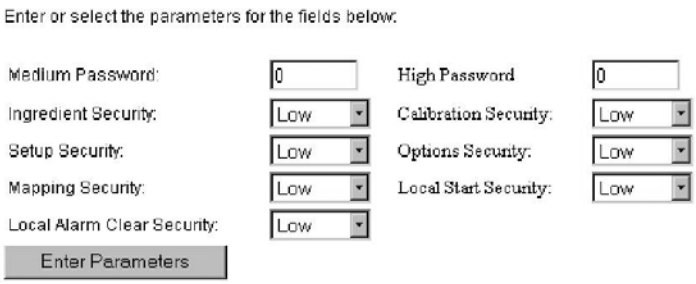


Figure 3-7. Screen for Setting Menu Security Level

8. The screen lists each menu with a drop down box, where the manager sets the security level for the menus. Also, this page contains two text boxes where the manager can enter the desired one to four-digit password for the Medium and High security levels. After making the selections, click on the Enter Parameters button to complete the setup procedure.

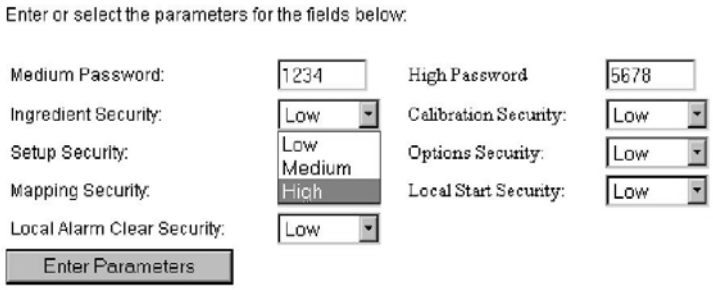


Figure 3-8. Making Security Settings

3.7 Dry Cycle

After the installation process for the IBC-2000 has been completed, the operator should run the machine without any product to check each component for proper operation. The procedure will vary, based on what options were ordered. Use the following procedure:

> ***Note:*** *The pneumatic components may be tested manually by pressing the test buttons on the MAC valves that control them.*

1. Make sure the LOCAL / REMOTE switch is in the LOCAL position.
2. Make sure that the air pressure on the FRL is set to specification.
3. If equipped with air mount isolator pads, they will inflate.
4. Press the STOP button in.
5. Turn the POWER switch to the ON position.
6. Trip the actuator switch.
7. Pull the STOP button out.
8. Press the START button.
9. If equipped with an automatic flow control device, that device will open.
10. If equipped with a vibrator, it will turn on.
11. If equipped with bottom thumpers, they will turn on.
12. If equipped with side or roller squeezers, they will actuate.
13. Push the STOP button in.
14. If equipped with an automatic flow control device, that device will close.
15. If equipped with a vibrator, it will turn off.
16. If equipped with bottom thumpers, they will turn off.
17. If equipped with side or roller squeezers, they will stop.
18. Turn the POWER switch to the OFF position.

3.8 Calibration

Each Model IBC-2000 that is equipped to de-weigh is calibrated prior to leaving the factory. However, the unit should be reassessed before first use of the unit. It is recommended that the calibration of the unit should be checked every week. A certified test weight must be used to check the calibration of the IBC-2000.

3.8.1 Base Analog Control Set

The calibration procedure for a base analog control set is a three-tier process.

3.8.1.1 Weight Display Setup

1. Turn the power switch ON and allow the unit to warm up for 30 minutes.
2. Open the control enclosure.
3. Locate the weight display board.
4. Observe the weight display and set the decimal point to the desired position.
    a. On 3-½ digit displays, use the dipswitches to adjust the position of the decimal point (refer to Figure 3-9). The dipswitch all the way to the left (#1), controls the 199.9 decimal point position. The second switch from the left controls 19.99 decimal point position. The third switch from the left controls the 1.999 decimal point position. The fourth switch from the left is not used.

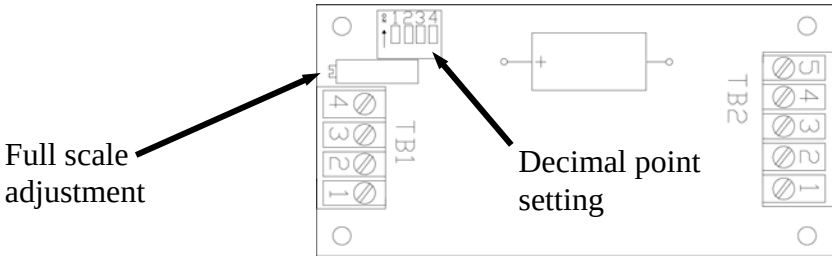


Figure 3-9. Decimal Point Setting and Full Scale Adjustment (3-½ Digit Display)

    b. On 4-½ digit displays, use the pin jumper to adjust the decimal point position (refer to Figure 3-10). Each pin position will translate into a different decimal placement. The pin all the way to the left (#1), controls the 1999.9 decimal point position. The second pin from the left controls 199.99 decimal point position. The third pin from the left controls the 19.999 decimal point position. The fourth pin from the left controls the 1.9999 decimal point position.

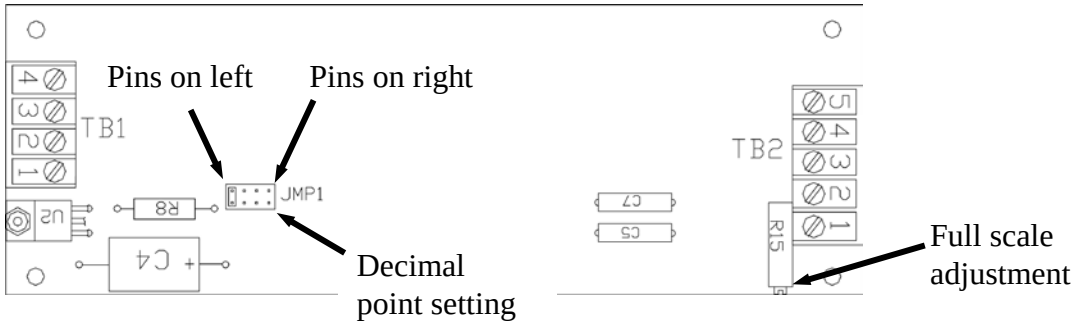


Figure 3-10. Decimal Point Setting and Full Scale Adjustment (4-½ Digit Display)

5. Turn either the SP-1 or SP-2 control knob (may appear as EARLY CUTOFF or CUTOFF) fully clockwise.
6. Turn and hold the DISPLAY SELECT switch to the corresponding position for the control knob that was turned fully clockwise in step 5.
7. Watch the weight display and turn the full-scale adjustment (refer to Figure 3-9, if using a 3-½ digit display, or Figure 3-10, if using a 4-½ digit display) until the number displayed is equal to the desired full-scale weight range multiplied by a factor of 1.24. For example, if the desired full-scale weight range is 10.00 lb., set the range to 12.40 lb. If a 50.00 lb. package is desired, set the range to 62.00 lb. For applications requiring measurements using metric units, a 4-½ digit display must be used. The same factor of 1.24 is used. For a desired full-scale weight range of 5 kg. set the display to 6.2 kg. For 25kg., set the display to 31 kg.

3.8.1.2 Offset and Zero Setup

1. Make sure no weight is being applied to the load cells.
2. Momentarily energize ZERO RESET if the unit is equipped with the Auto Zero feature.
3. Adjust the ZERO knob to the center of the span. Turn the knob either left or right to full range, then turn it back the opposite direction five full turns.
4. Locate the Coarse Zero Adjustment (SW-1) dipswitches on the main PC board (refer to Figure 3-11). The switches are used in combination to minimize weight offset. Switch 1 (SW1-1) causes the least amount of change, while Switch 5 (SW1-5) will cause the greatest amount of change. There are 32 possible combinations of switch settings, with all switches in the ON position providing the greatest amount offset. Choose the appropriate amount of offset so that the weight display is as close to zero as possible.

Table 3-1. Coarse Zero Adjustment Switch Settings

Step	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5
0	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF
5	ON	OFF	ON	OFF	OFF
6	OFF	ON	ON	OFF	OFF
7	ON	ON	ON	OFF	OFF
8	OFF	OFF	OFF	ON	OFF
9	ON	OFF	OFF	ON	OFF
10	OFF	ON	OFF	ON	OFF
11	ON	ON	OFF	ON	OFF
12	OFF	OFF	ON	ON	OFF
13	ON	OFF	ON	ON	OFF
14	OFF	ON	ON	ON	OFF
15	ON	ON	ON	ON	OFF
16	OFF	OFF	OFF	OFF	ON
17	ON	OFF	OFF	OFF	ON
18	OFF	ON	OFF	OFF	ON
19	ON	ON	OFF	OFF	ON
20	OFF	OFF	ON	OFF	ON
21	ON	OFF	ON	OFF	ON
22	OFF	ON	ON	OFF	ON

Step	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5
23	ON	ON	ON	OFF	ON
24	OFF	OFF	OFF	ON	ON
25	ON	OFF	OFF	ON	ON
26	OFF	ON	OFF	ON	ON
27	ON	ON	OFF	ON	ON
28	OFF	OFF	ON	ON	ON
29	ON	OFF	ON	ON	ON
30	OFF	ON	ON	ON	ON
31	ON	ON	ON	ON	ON

5. Use the ZERO knob on the front of the control panel to adjust the weight display to zero.

3.8.1.3 Calibration of Scale to Full-Scale Weight

1. Check the weight display to make sure that it is displaying zero. The ZERO knob should be adjusted so that the – (minus) has just disappeared from the display.
2. Place a certified test weight in the weigh bucket, or hang it from the weigh bucket. Position the weight so it is as close to the center of the weigh bucket as possible. The test weight should be as close to the desired maximum package weight as possible to help reduce linear deviation. Linear deviation can occur when a lighter test weight is used to set the scale gain.
3. Locate the Coarse Gain Adjustment (SW-2) dipswitches on the main PC board (refer to Figure 3-11). The SW-2 switches are used in combination to set the gain (calibrate the unit). Switch 1 (SW2-1) causes the least amount of change, and Switch 5 (SW2-5) causes the greatest amount of change. There are 32 possible combinations of switch settings, with all switches in the ON position giving the highest amount of gain.
4. Locate the Fine Gain Adjustment potentiometer on the main PC board. This control serves the same function in the calibration process as the front panel ZERO knob does in the Zero Setup process. It should be set to the center of its range before beginning calibration. Centering the Fine Gain Adjustment potentiometer is not as easy as centering the ZERO knob. The best way to center it is to place a calibration weight on the spout and to observe the weight display while the potentiometer is adjusted. Turn the screw clockwise until the weight display stops changing, then turn it counterclockwise and count the turns until the display stops changing again. Turn the screw clockwise ½ the number of counterclockwise turns (i.e. if it took 6 counterclockwise turns for the display to stop changing, then turn the screw 3 turns clockwise). It should now be centered.

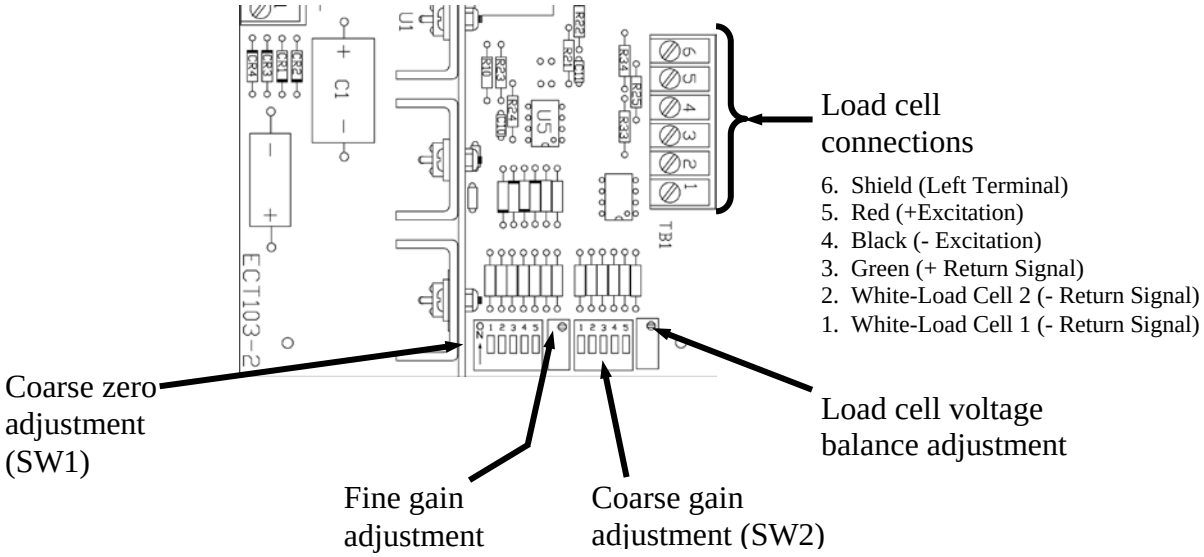


Figure 3-11. Coarse Zero, Fine Gain, Coarse Gain, and Load Cell Voltage Balance Adjustments

5. Use the Coarse Gain Adjustment (SW2) dipswitches on the main PC board in combination to make the display read as close to the weight of the test weight as possible. Refer to the following table for information on setting the switches.

Table 3-2. Coarse Gain Adjustment Switch Settings

Step	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5
0	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF
5	ON	OFF	ON	OFF	OFF
6	OFF	ON	ON	OFF	OFF
7	ON	ON	ON	OFF	OFF
8	OFF	OFF	OFF	ON	OFF
9	ON	OFF	OFF	ON	OFF
10	OFF	ON	OFF	ON	OFF
11	ON	ON	OFF	ON	OFF
12	OFF	OFF	ON	ON	OFF
13	ON	OFF	ON	ON	OFF
14	OFF	ON	ON	ON	OFF
15	ON	ON	ON	ON	OFF
16	OFF	OFF	OFF	OFF	ON
17	ON	OFF	OFF	OFF	ON
18	OFF	ON	OFF	OFF	ON
19	ON	ON	OFF	OFF	ON
20	OFF	OFF	ON	OFF	ON
21	ON	OFF	ON	OFF	ON
22	OFF	ON	ON	OFF	ON
23	ON	ON	ON	OFF	ON
24	OFF	OFF	OFF	ON	ON
25	ON	OFF	OFF	ON	ON
26	OFF	ON	OFF	ON	ON
27	ON	ON	OFF	ON	ON

Step	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5
28	OFF	OFF	ON	ON	ON
29	ON	OFF	ON	ON	ON
30	OFF	ON	ON	ON	ON
31	ON	ON	ON	ON	ON

6. Use the Fine Gain Adjustment potentiometer to trim the weight display reading so that it is exactly the same as the weight of the test weight. Refer to Figure 3-11.
7. Remove the test weight from the spout. Check the weight display to make sure it returns to 0.00.
8. If the weight display does not return to 0.00, use the ZERO knob on the front of the control panel to trim the weight display to 0.00.
9. Repeat steps 2 through 7, until the unit is calibrated.
10. Close the control box when the calibration is completed.

Note: *This procedure may have to be repeated several times before the Model IBC-2000 is properly calibrated. When more extensive calibration is required, use the coarse adjustment switches.*

3.8.2 Optional T3000 Control Set

The Calibration Menu is used to calibrate the weighing system of the T3000. There are two available methods of calibration. The two methods are:

- Via the control panel
- Via web page

Before beginning the calibration procedure, be sure that the machine is ready to be calibrated. Make sure that the load points have been installed properly. Follow the steps below to make sure the Model IBC-2000 is ready for calibration:

1. Make sure the load system is free of binding and that nothing is draped over the equipment, such as hoses, electrical cords, tubes, etc.
2. Verify that the load cells are mounted so that 100% of the load always passes vertically through the load cells at the same point.
3. Check all communication and power cables to be sure they are securely fastened to their connectors on the rear of the control panel.
4. Make sure that power is supplied to the controller. The panel display should illuminate.

Important: *The operator MUST log in with the proper security level to initiate calibration. Once logged in, an access timer will run. If the timer expires (typically about 5 minutes), the operator will be logged out. The operator will have to log in again to regain access.*

When the operator selects CALIBRATION from the Configuration Menu, the CALIBRATION screen appears. There is one line on that screen, it is the Cal Type line. The currently selected method of calibration will appear at the far right on the Cal Type line. Use the left/right arrow keys to toggle to until TRAD is displayed on the line. Press the Enter key to access the screen for the TRAD calibration method.

3.8.2.1 TRAD Calibration

This screen will provide the following lines for the operator.

- Zero Value – This value should be set to zero.
- Zero Ct – This parameter is controlled by the controller.
- Do Trad. Cal (Zero) – Start the calibration procedure.
- Span Value – The amount of weight being used for calibration.
- Span Ct – This parameter is controlled by the controller.
- Do Trad. Cal (Span) – Start the calibration procedure.

Use this procedure to calibrate a machine with traditional load cells.

1. Turn on the meter.
2. Press the User shortcut key. Enter the User ID and medium or high-level password.
3. Press the Setup key to access the CONFIGURATION MENU.
4. Use the up/down arrow buttons to scroll to the CALIBRATION line. Press the Enter key to access CALIBRATION.

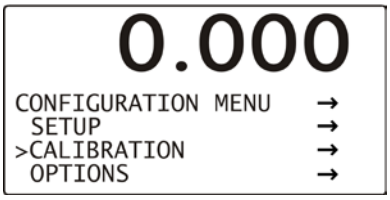


Figure 3-12. Calibration Line

5. Use the left/right arrow keys to toggle to the TRAD selection if it is not already displayed. Press the Enter key.

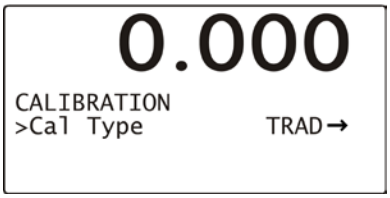


Figure 3-13. Selecting TRAD Calibration

6. A Function OK message will flash briefly in place of the Cal Type line, then the TRADITIONAL CAL screen will appear. Check the display to make sure that the Zero Value reads 0.0.

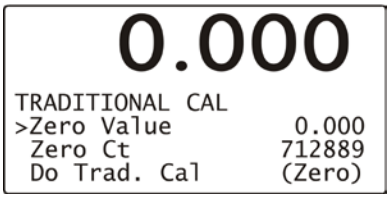


Figure 3-14. Checking Zero Value

7. Use the up/down arrow keys to scroll to the Do Trad. Cal (Zero). Press the Enter key. The weight display will display !Calibration in Progress! and will return to its calibration screen.

8. Use the up/down arrow keys to scroll to the Span Value selection and use the alphanumeric keypad to enter the weight that will be used for calibration. Press the Enter key.

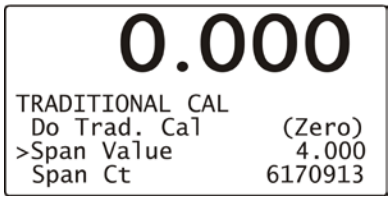


Figure 3-15. Setting Span Value

9. Use the up/down arrow keys to scroll down to the Do Trad. Cal (Span). Place the calibration weight on the scale by placing it on the receiver pan. Press the Enter key. The weight display will display !Calibration in Progress! and will then return to its calibration screen. Press the Exit key three times to return to the main screen.

3.9 Timer and Counter Programming

Depending on how the IBC-2000 is equipped, the machine may utilize timers to allow them to function correctly. IBC-2000 timers are adjustable.

3.9.1 Plug-In Style Block Timers

The timer used on IBC-2000 machines that are not equipped with a PLC is a plug-in style block timer. These timers are adjusted using a set of switches. The timer mechanism is located inside the control box.

The timer is equipped with 10 dipswitches. The switches are either ON or OFF. To calculate the amount of delay that is currently set, the operator will need to add the value of all of the switches that are in the ON position. Each switch has a specific amount of delay that it controls. The amount of each delay is different. The top dipswitch controls the shortest amount of delay, and the bottom dipswitch controls the largest amount of delay. The amount of delay that is set can be calculated by adding the value of each switch that is turned on.

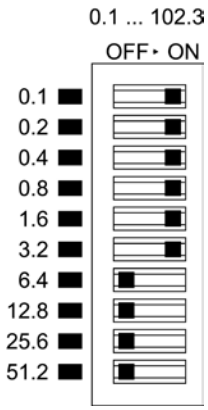


Figure 3-16. Plug-In Style Block Timer Switches

In the graphic shown above, the delay is set to 6.3 seconds. If the switch for position 3.2 were switched to the OFF position, the amount of delay would be 3.1 seconds.

3.9.2 PLC Timers and Counters

The Allen-Bradley MicroLogix™ 1000 Programmable Logic Controller (PLC) will perform all timer functions. The PLC is mounted inside the control box and is connected to multiple electrical components. Components that are connected to the Input side of the PLC are components that are being monitored by the PLC. Components that are connected to the Output side of the PLC are components that are being controlled by the PLC.

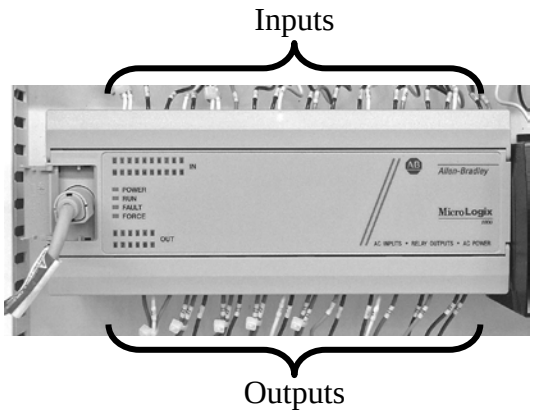


Figure 4-17. Programmable Logic Controller (PLC)

The operator adjusts the timer settings via the Allen-Bradley PV300 control panel that is connected to the PLC. The PV300 is mounted in the control box door, just to the right of the T3000. The PLC is mounted inside the control box. Refer to 4.4.4.1 PV300 Menus for information on timer adjustments.

- **Side Squeezer On-Time (optional)** – This timer controls how long the squeezer will be applied (cylinders fully extended).
- **Side Squeezer Off-Time (optional)** – This timer controls how long the squeezer will be in the rest position (cylinders fully retracted).
- **Bottom Thumper On-Time (optional)** – This timer controls how long the bottom thumpers will stay extended.
- **Bottom Thumper Off-Time (optional)** – This timer controls how long the bottom thumpers will stay retracted.
- **Squeezing Delay (optional)** – This timer controls the amount of time that will pass after the start of the dispensing cycle before the squeezing function will start.

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Chapter 4
Operation

4.1 General Description

This chapter will provide detailed descriptions of the operational controls of the IBC-2000.

4.2 General Dispense Cycle Information

The IBC-2000 is a product dispenser. This means that the machine is used to empty a large container into a smaller container, into a filler, or into some type of conveying equipment. When equipped with a weighing mechanism, the machine will weigh the bulk bag prior to dispensing. As the machine dispenses the product, the weighing controls see a decrease in the weight of the bulk bag. The operator will program the machine so that it will only dispense a specific amount, per cycle. These weighing machines are equipped set up as dual set point machines. This means that the machine will use two rates for dispensing product, bulk rate and dribble rate. Bulk rate is a faster rate that is used to dispense the product quickly. Once the weight of the bulk bag reaches the dribble (SP-1) weight, the machine will partially close the flow control device. This will restrict the flow of product to the dribble rate. This reduced flow rate is used to complete the dispensing cycle. Once the weight of the bulk bag reaches the cutoff (SP-2) weight, the flow control device close completely and stop the flow of product. Once the flow control device closes, weight of the bulk bag after the dispensing cycle should equal the bulk bag weight prior to the dispensing cycle minus the target weight.

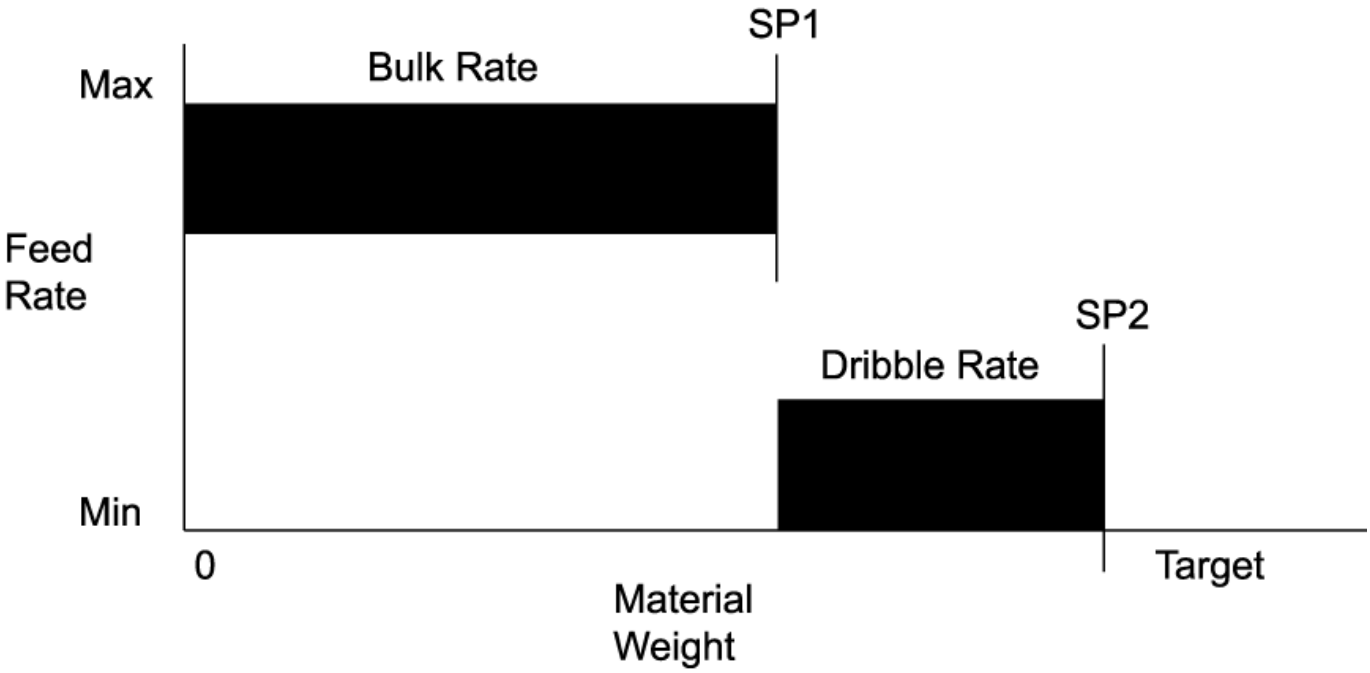


Figure 4-1. Dispense Rates

4.2.1 Basic Dispensing Process

The basic dispensing process will vary depending on how the machine is equipped. Find the appropriate information below to fit the machine that is being used.

4.2.1.1 Non-Weighing Machines, Without A Flow Control Device

If the machine does not come equipped with a flow control device, the operator will untie the bag discharge nozzle and the product will flow out of the bag until the bag is empty.

4.2.1.2 Non-Weighing Machines, With A Manual Flow Control Device

On non-weighing machines that are equipped with a manual knife gate, the operator will open the knife gate by hand. The product will flow out of the bag until the bag is empty, or until the operator closes the knife gate.

4.2.1.3 De-Weighing Machines

For de-weighing units, this process will include the following events:

- The flow control device will open and product will flow out of the bulk bag
- While the product is flowing, the weighing system will weigh the product in the bulk bag
- When dribble weight is achieved, the knife gate will partially close
- Product will continue to flow through the knife gate
- When the cutoff weight is achieved, the flow control device will close completely.

When equipped with a T3000, the IBC-2000 also has a unique over/under reject feature. This setting is called the Target Window. The operator will manually set the overweight and underweight points. If the final weight of the bulk bag at the end of the dispensing cycle is outside of this range, the IBC-2000 will prevent the start of the next dispensing cycle until the operator manually acknowledges the condition. This feature is helpful when there is a sudden change in the bulk density of the material. This guarantees that no container over or under the allowable weight will be shipped.

4.2.2 Typical Dispensing Cycle

The typical dispensing cycle will vary, based on the configuration of the machine. The dispensing cycle listed below assume that the machine has been turned ON, the controls have warmed up, and that the machine is already calibrated. The dispensing cycle can be broken down into the following basic processes.

- Preparing the bulk bag to dispense
- Dispensing the product

4.2.2.1 Preparing the Bulk Bag To Dispense – Fork Style UPD

1. Use a forklift to lift the UPD off of the top of the IBC-2000.
2. Use the forklift to lower the UPD and position it above the full bulk bag.
3. Place the four loops on the top of the bulk bag over the four bag hangers on the UPD.
4. If equipped with a bag liner tensioner, pull on the snap hook to extend the bag liner tensioner cable.
5. Connect the hook on bag liner tensioner cable to the bulk bag liner.

6. Use the forklift to raise the bulk bag into position above the receiver pan.
7. Route the bag discharge nozzle through the discharge hole in the receiver pan.
8. Set the UPD into the notches in the top rails of at the top of the IBC-2000.

Important: *When positioning the UPD at the top of the IBC-2000, the UPD must sit down in the notches in the top frame rails.*

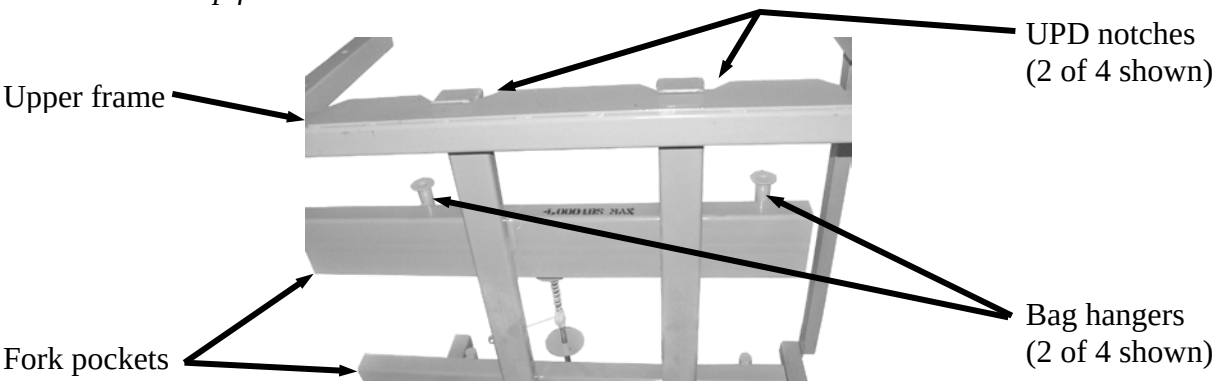


Figure 4-2. UPD – Fork Style

9. Prepare the bag discharge nozzle. The steps taken here will vary based on the type of bulk bag and the type of discharge nozzle.
    a. Style A discharges – Reach up and pull the bag spout down through the opening in the receiver pan. Place the bag spout inside the discharge nozzle and untie the tie off string. If the bag has a bag liner, reach inside the bag spout and pull out the bag liner spout. Untie the bag liner spout tie off string.
    b. Style B discharge – Open the access door. Reach inside the enclosure and pull the bag spout down through the opening in the receiver pan. Untie the tie off string on the bag spout. If the bag is equipped with a bag liner, reach inside the bag spout and grab the bag liner spout and pull it down. Untie the bag liner spout tie off string. Close the door.
    c. Style C discharge – From the open side of the protective enclosure, pull the bag spout down through the opening in the receiver pan. Untie the outer bag tie. Open the end of the bag discharge and hook the rear portion around the metal discharge nozzle. Reach inside the bag discharge to access the discharge spout from the bag liner. Pull it down and place it inside the discharge nozzle. Untie the bag liner spout tie off string and quickly pull the outer bag spout down over the discharge nozzle and position the drawstring around the bag spout. Trip the pneumatic actuator switch to retract the drawstring cylinders.
    d. Style D discharge – Open the access door. Pull the bag spout down through the opening in the receiver pan. Untie the outer bag tie. Open the end of the bag discharge and hook the rear portion around the metal discharge nozzle. Reach inside the bag discharge to access the discharge spout from the bag liner. Pull it down and place it inside the discharge nozzle. Untie the bag liner spout tie off string and quickly pull the outer bag spout down over the discharge nozzle and position the drawstring around the bag spout. Trip the pneumatic actuator switch to retract the drawstring cylinders.

4.2.2.2 Preparing the Bulk Bag To Dispense – Hoist/Trolley Style UPD

Use the following steps to lift and place a bulk bag on the receiver pan in preparation for dispensing.

1. Position a full bulk bag in front of the IBC-2000.
2. Use the machine controls to move the trolley out to the front of the machine.
3. Use the machine controls to lower the UPD from the hoist.
4. Hook the bag straps over the bag straphangers on the UPD.
5. If equipped with a bag liner tensioner, pull on the snap hook to extend the bag liner tensioner cable.
6. Connect the hook on bag liner tensioner cable to the bulk bag liner.
7. Use the hoist controls to lift the UPD and bulk bag with the hoist.
8. Use the trolley controls to move the trolley and bulk bag inward.
9. Center the bulk bag over the receiver pan.
10. Route the bag discharge through discharge opening in the receiver pan. It may be necessary to lower the bulk bag slightly to do this.
11. Lower the bulk bag onto the receiver pan. The full weight of the bulk bag should rest in the receiver pan, however, the UPD should still have slight tension on the bulk bag straps to prevent them from coming off of the bag straphangers.
12. Connect the bulk bag discharge to the machine discharge. Refer to 1.6.4 Discharge Types for information on how the bulk bag discharge should be attached to the machine discharge.

4.2.2.3 Dispensing the Product

The process for dispensing the product will vary based on how the machine is equipped.

4.2.2.3.1 Dispensing Product – No Flow Control Device

On machines that are not equipped with a flow control device, dispensing the product is accomplished by simply untying the bag discharge tie-off and allowing the product to flow out of the bulk bag.

4.2.2.3.2 Dispensing Product – Manual Knife Gate

On machines equipped with a manual knife gate, dispensing the product is accomplished by pulling the handle on the knife gate to open it. Pushing on the handle (closing the knife gate) stops the dispensing process.

4.2.2.3.3 Dispensing Product – Manual Electronic Controls

For machines equipped with manual flow controls, the process for dispensing the product is detailed below:

1. Push the STOP button in.
2. Turn the POWER switch to the ON position. The green POWER ON indicator and the red STOP indicator should illuminate.
3. Pull the STOP button out.
4. Press the START button.
5. The flow control gate will open and product will dispense.
6. When the bulk bag is empty, or if the operator needs to stop the flow of product, press the STOP button in. The flow control device will close and stop the flow of product.

4.2.2.3.4 Dispensing Product – Automatic Electronic Controls

1. Push the STOP button in.
2. Turn the POWER switch to the ON position. The green POWER ON indicator and the red STOP indicator should illuminate.
3. Check to make sure that a container or some type of receiving system is in place under the discharge.
4. Hit the pneumatic actuator switch to retract the drawstring cylinders (if equipped).
5. Pull the STOP button out.
6. Press the START button.
7. The IBC-2000 will auto-zero (this requires the auto-zero function to be enabled).
8. The flow control device will open.
9. The vibrator (if equipped) and the bottom thumpers (if equipped) will turn on. Product will flow through the flow control device.
10. When SP-1 (dribble weight) is achieved, the flow control device will partially close. The dispensing cycle will continue, but at a reduced dispensing rate.
11. When the SP-2 (cutoff weight) is achieved, the flow control device will close completely.
12. The vibrator and bottom thumpers will shut off. This flow of product has stopped.

4.2.2.4 Accumulated Dispensing

Some applications may require that multiple bulk bags be emptied (and weighed) to fill a container. For example, if the operator were filling a 10,000 lb container, dispensing from 4,000 lb packages, it would take 2 ½ bulk bags to fill the container. When accumulated dispensing is enabled, the controller will keep track of how much weight has been dispensed into the container, from multiple bulk bags.

1. Push the STOP button in.
2. Turn the POWER switch to the ON position. The green POWER ON indicator and the red STOP indicator should illuminate.
3. Position a container under the discharge.
4. Pull the STOP button out.
5. Press the START button.
6. The IBC-2000 will auto-zero (this requires the auto-zero function to be enabled).
7. The flow control device will open.
8. The vibrator (if equipped) and the bottom thumpers (if equipped) will turn on. Product will flow through the flow control device.
9. If the bulk bag is completely empty, but the target weight has not been achieved, press the STOP button in. The flow control device will close and the vibrator (if equipped) and bottom thumpers (if equipped) will shut off.
10. Remove the empty bulk bag and place a full bulk bag for dispensing. Refer to 4.2.2.1 Preparing the Bulk Bag To Dispense – Fork Style UPD or 4.2.2.2 Preparing the Bulk Bag To Dispense – Hoist/Trolley Style UPD.
11. Pull the STOP button out.
12. Press the START button. The dispensing cycle will resume.
13. When SP-1 (dribble weight) is achieved, the flow control device will partially close. The dispensing cycle will continue, but at a reduced dispensing rate.
14. When the SP-2 (cutoff weight) is achieved, the flow control device will close completely.
15. The vibrator and bottom thumpers will shut off. This flow of product has stopped.

4.3 Operational Controls

The operational controls will vary, based on the optional features that have been selected. The types of controls are:

- Non-weighing controls
- Weighing – Analog controls
- Weighing – T3000 controls
- PLC controls (PV300 control panel)

4.3.1 Non-Weighing Controls

The base IBC-2000 is a non-weighing unit. This means that it comes equipped with a set of basic controls for manual operation.

4.3.1.1 Base Non-Weighing Machine

The base IBC-2000 does not come equipped with electronic or pneumatic controls.

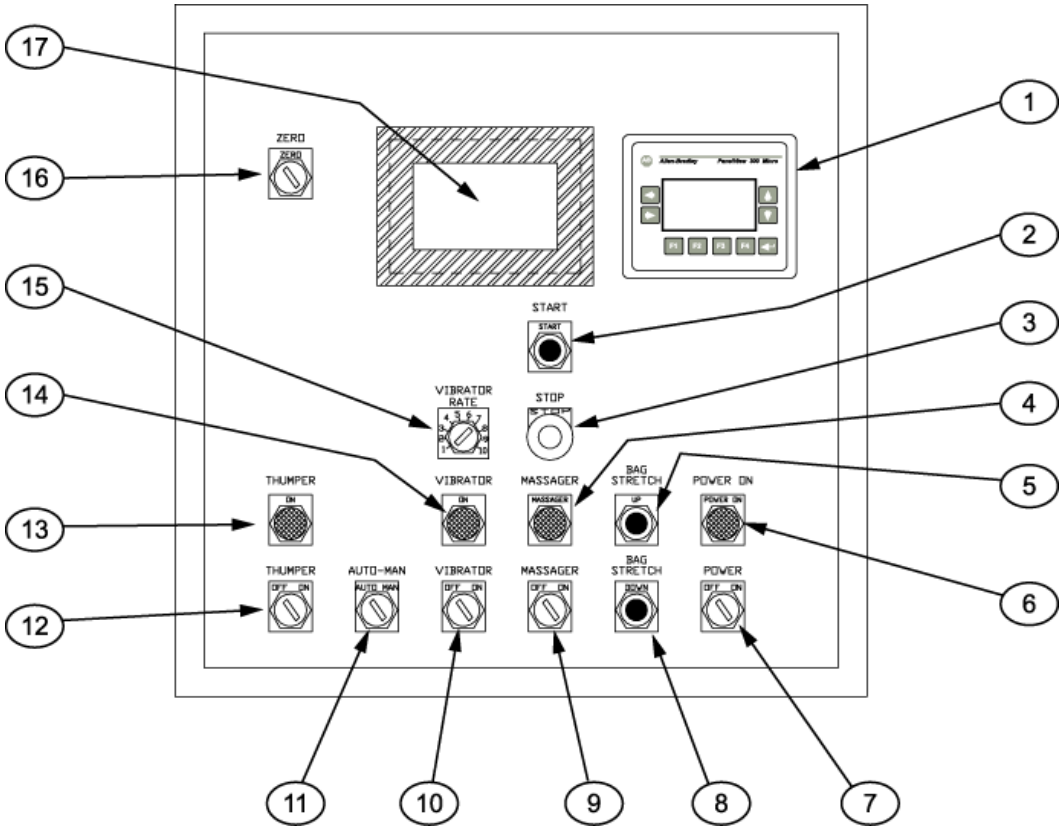
4.3.1.2 Non-Weighing Machine With Electronic Controls

Some non-weighing IBC-2000 machines will have electronic and/or pneumatic controls. The actual controls will vary based on options ordered. Examples of controls that may be used would be:

- Bottom thumpers
- Pneumatic knife gate
- Side or roller squeezers
- Pneumatic or electronic vibrator
- Electric hoist/trolley system

4.3.2 Analog Control Unit

The analog control unit uses an electronic weigh meter in conjunction with potentiometers and toggle switches to set the operating parameters and to zero the machine.



Item #	Description	Item #	Description
1	PV300 control panel	10	VIBRATOR switch
2	START button	11	AUTO / MANUAL switch
3	STOP button/indicator	12	THUMPER switch
4	MASSAGER indicator	13	THUMPER indicator
5	BAG STRETCH indicator	14	VIBRATOR indicator
6	POWER ON indicator	15	VIBRATOR RATE knob
7	POWER switch	16	ZERO knob
8	BAG STRETCH button	17	Weigh meter
9	MASSAGER switch		

Figure 4-3. Analog Control Unit

4.3.1.2 T3000 Control Unit

The T3000 control panel uses an electronic display in conjunction with a T3000 control pad that allows the user to make system adjustments and to monitor the system status.

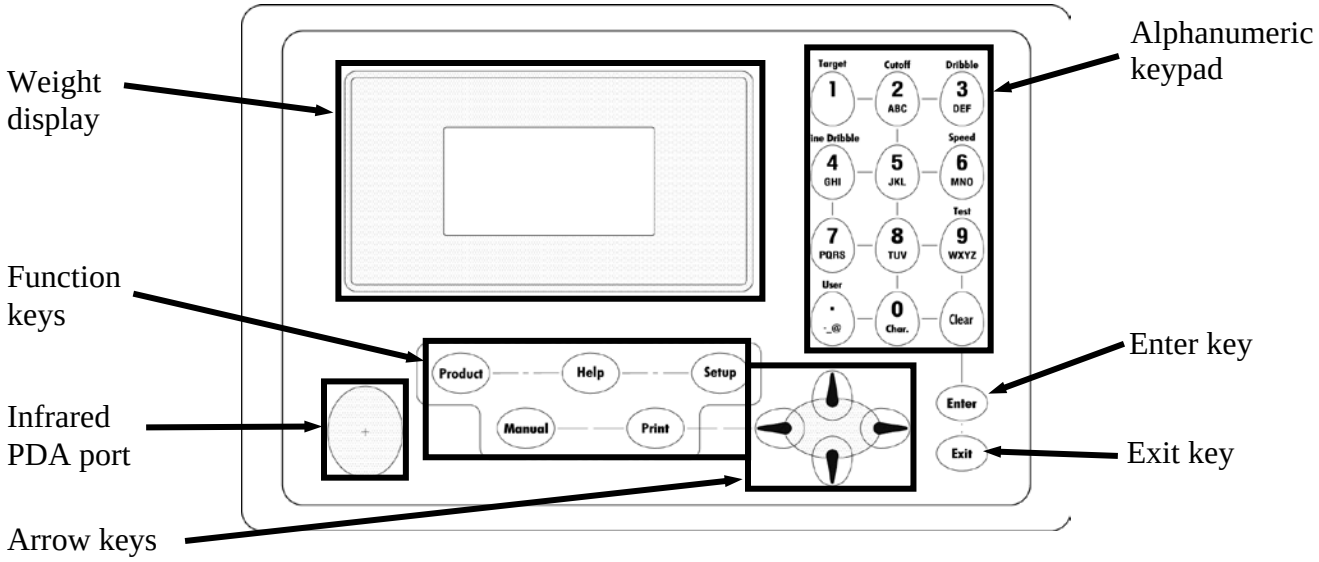
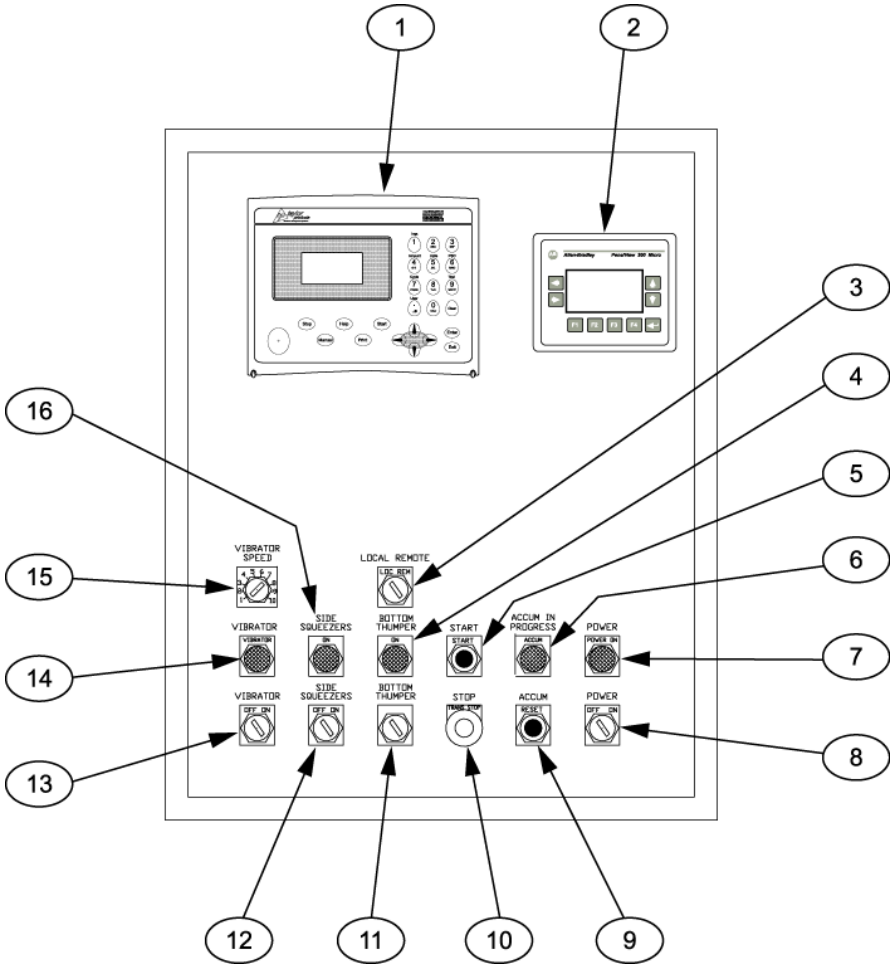


Figure 7-4. T3000 Faceplate Layout



Item #	Description	Item #	Description
1	T3000 control panel	9	ACCUM RESET button
2	PV300 control panel	10	STOP button
3	LOCAL / REMOTE switch	11	BOTTOM THUMPER switch
4	BOTTOM THUMPER indicator	12	SIDE SQUEEZERS switch
5	START button	13	VIBRATOR switch
6	ACCUM IN PROGRESS indicator	14	VIBRATOR indicator
7	POWER indicator	15	VIBRATOR SPEED control knob
8	POWER switch	16	SIDE SQUEEZERS indicator

Figure 4-5. T3000 Control Panel

4.3.2 Allen-Bradley MicroLogix™ 1000

All weighing IBC-2000 units are equipped with an Allen-Bradley MicroLogix™ 1000 Programmable Logic Controller (PLC). The PLC is located inside the control box. The PLC is loaded at the factory with a software program that includes adjustable timers for specific functions. The PLC is equipped with multiple input and output connections. The inputs are used to monitor device status, while the outputs are used to control device operation. The processor takes the incoming data and compares that data to the program. When input conditions and the program deem it necessary that the PLC activate or change the state of a device connected to one of the output terminals, the PLC will execute that command.

Figure 4-6. Programmable Logic Controller (PLC)

The PLC also provides the ability to monitor the inputs and outputs. The PLC is equipped with LEDs to provide the status of each input and output. The PLC is also equipped with LEDs to provide the status of the power input, the current operational state, if there are any program or hardware faults, and if any of the outputs have been manually activated (forced).

4.3.3 PV300 Control Panel

All weighing IBC-2000 units are equipped with an Allen-Bradley PV300 control panel. This control panel is the interface to the Allen-Bradley MicroLogix™ 1000 PLC that is located inside the control box. The control panel is used to adjust system timers controlled by the PLC. The PV300 uses a series of menus to allow the operator to make these adjustments.

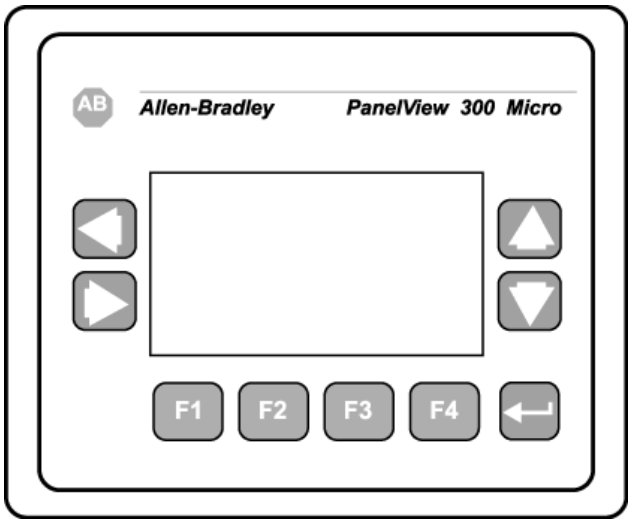


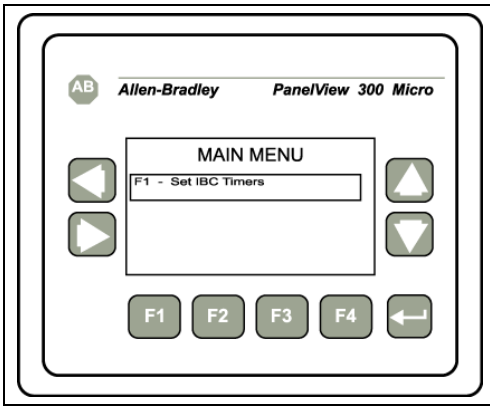
Figure 4-7. Allen-Bradley PV300 Control Panel

4.3.3.1 PV300 Menus

The PV300 has several menus that allow the operator to adjust different timer functions for the IBC-2000. The available timer functions, and their definitions are listed below:

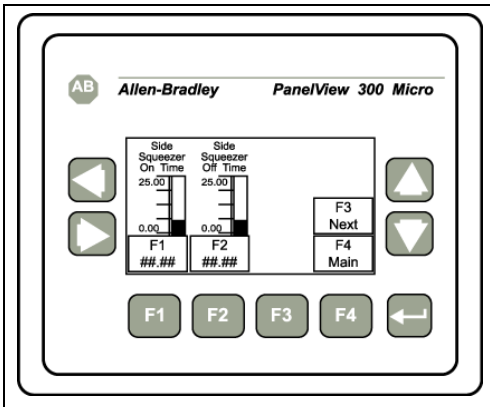
> ***Note:*** *Some of the timers mentioned below are for optional features. The machine that accompanied this manual may or may not have or use all of the timers listed.*

Table 4-1. PV300 Main Menu



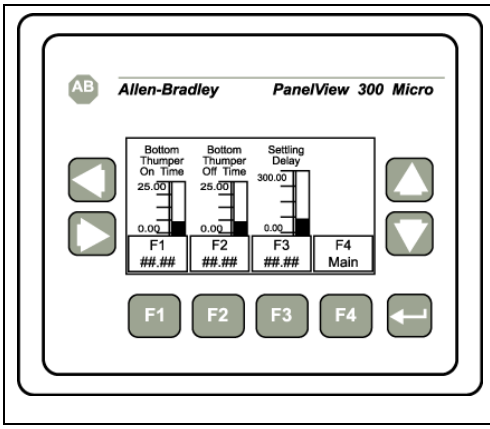
Key	Function
F1	Pressing F1 will result in the system advancing to the first of the IBC-2000 Timers screen.

Table 4-2. PV300 Timer 1 Menu



Key	Function
F1	Pressing F1 will result in the system opening a number entry screen where the Side Squeezer On Time timer can be adjusted.
F2	Pressing F2 will result in the system opening a number entry screen where the Side Squeezer Off Time timer can be adjusted.
F3	Pressing F3 will result in the system going to the next timer menu.
F4	Pressing F4 will result in the system returning to the Main Menu screen.

Table 4-3. PV300 Timer 2 Menu



Key	Function
F1	Pressing F1 will result in the system opening a number entry screen where the Bottom Thumper On Time timer can be adjusted.
F2	Pressing F2 will result in the system opening a number entry screen where the Bottom Thumper Off Time timer can be adjusted.
F3	Pressing F3 will result in the system opening a number entry screen where the Settling Delay timer can be adjusted.
F4	Pressing F4 will result in the system returning to the Main Menu screen.

4.4 Initial Setup

IBC-2000 units can be categorized based on the type of controls they use.

- Non-weighing
- Weighing – analog controls
- Weighing – T3000 controls

4.4.1 Setting Up a Non-Weighing IBC-2000 to Dispense

A non-weighing IBC-2000 does not require any special setup procedures.

4.4.2 Setting Up a Analog IBC-2000 to Dispense

The IBC-2000 is configured as a dual set point machine. It will use two dispensing speeds when dispensing, bulk rate and dribble rate. The bulk rate will dispense the product at a fast pace until it is approximately 90% of the desired dispensing weight has been achieved. The machine will then slow the feed rate to the dribble rate. This rate is noticeably slower and is used to dispense the remaining the rest of the way. Use the steps below to setup an IBC-2000 with analog controls.

1. Push the STOP button in.
2. Turn the POWER switch to the ON position. Allow thirty (30) minutes for controls to warm up.
3. Set the dribble weight.
    a. Turn the DISPLAY SELECT switch to the SP-1 position.
    b. While holding the DISPLAY SELECT switch in the SP-1 position, turn the SP-1 knob until the numbers on the weigh meter display approximately 90% of the target weight.
4. Set the cutoff weight.
    a. Turn the DISPLAY SELECT switch to the SP-2 position.
    b. While holding the DISPLAY SELECT switch in the SP-2 position, turn the SP-2 knob until the numbers on the weigh meter display approximately 98% of the target weight.

    Note: *Due to the weight of product in free fall, the target weight should be set a little low. How much below the actual target weight will depend on the bulk density of the material and local voltage.*

5. Release the DISPLAY SELECT switch.
6. Pull the STOP button out. The dispensing cycle will start.
7. When the dispense cycle completes, check the weight display. Compare the actual weight displayed to the desired target weight.
    a. If the actual and target weights match, setup is complete. The IBC-2000 is ready to operate.
    b. If the actual and target weights do not match, adjust the SP-2 setting by an amount that is equal to the difference between the target and actual weights. If the package weight is too high, adjust the SP-2 setting down. If the actual weight is too low, adjust the SP-2 up (i.e. target weight = 5 lbs, actual weight = 5.5 lbs. Adjust SP-2 down by .5 lbs.). Repeat steps 6 and 7 until the actual weight and the target weight match.

4.4.2 Setting Up a IBC-2000 With T3000 Controls to Dispense

The process for setting up a T3000 equipped IBC-2000 will vary based on whether or not the product has already been programmed into the T3000 control panel.

4.4.2.1 Selecting Preprogrammed Products

IBC-2000 units equipped with the T3000 can be programmed to dispense as many as 25 different products. Use the steps below to select a specific product from the available list.

1. Check the T3000 to make sure the Dispenser is configured for the specific product that is being used.
2. Make sure the T3000 is in Standby Mode.
3. If the product shown on the display is the product that is going to be packaged, the setup is complete. If not, continue to step 4.
4. If the product shown on the Standby Menu is not the product being packaged, do the following:
    a. Press the Product button once. A list of products that have been programmed into the control panel will appear. The currently selected product will be displayed.
    b. The operator can change the product using the up or down arrow buttons to scroll through the available list of products. When the desired product is found, position the cursor next to it and press the Enter button. The menu for that product will appear, with the cursor adjacent to the Accept Settings line. Press Enter again to accept the settings, or use the up/down arrows to scroll through the available parameters for that product. To change a specific parameter, place the cursor next to that line and key in the new value for that parameter, followed by pressing the Enter button. When finished, scroll back to the Accept Settings line and press the Enter button to accept the changes.

4.4.3.1 Using the T3000 to Set Up A Product From Scratch

To configure one of the 25 available product selections for a specific product, follow the steps below:

1. Press the Setup key once. The Configuration Menu will appear and will have the cursor on the ADJUST PRODUCT line. Press the Enter key.
2. The cursor will be positioned next to the currently selected product ID. Use the arrow keys to scroll down until the cursor is next to the first product number that has not been previously programmed.
3. Press the Enter key to select that product.
4. Position the cursor next to the line for the product name. Use the alphanumeric keypad to enter the name that has been selected for this product configuration. The default name can be used, but it is not recommended. Magnum Systems recommends using a name that provides some indication of what the product configuration is for. Press the Enter key to save the change.
5. Scroll down to the Unit of Measure line. Use the left/right arrow keys to select the appropriate unit of measure (Lb, Oz, Kg, G). Press the Enter key to save the change.
6. Scroll down to the WAVERSAVER line. Use the alphanumeric keypad to enter the desired setting. Magnum Systems recommends setting the WAVERSAVER to 3.50 Hz. Press the Enter key to save the change.
7. Scroll down to the Averages line. Use the alphanumeric keypad to enter the desired setting. Press the Enter key to save the change.
8. Scroll down to the Jog line. Press the Enter key to access the Jog Menu.

9. Set Jog On Time to 0.000s, to disable the jog function. Press the Enter key to save the setting.
10. Press the Exit key.
11. Scroll down to the Fill Timer Line. Use the alphanumeric keypad to enter a new value, if desired. Press the Enter key to save the setting.
12. Scroll down to the Wait Timer line. Use the alphanumeric keypad to enter a new value, if desired. Press the Enter key to save the setting.
13. Scroll down to the Speeds line. Use the left/right arrow keys to select the Dual speed setting. Press the Enter key to access the settings for that dispense speed.
14. Use the left/right arrow keys to toggle between OFF and ON. When this option is ON, the controller will auto adjust the dribble point.
15. Leave the Mode setting at the factory preset setting.
16. Scroll down to the Fill Proof Menu and press the Enter key.
    a. The Fast Switch and Slow Switch settings MUST be off for the machine to run.
    b. The recommended setting for the Fast Switch Tmr and the Slow Switch Tmr is 5s.
17. Press the Exit key three times to return to the Standby Display.

4.5 Starting the Unit

Once the unit has been installed, and calibrated, it can now be started. The process for starting the Model IBC-2000 will vary, depending on the configuration of the machine.

4.5.1 Non-Weighing Unit

Non-weighing IBC-2000 machines can be equipped with or without electronic controls. Starting the machine will vary, based on how the machine is equipped.

4.5.1.1 Non-Weighing IBC-2000, Without Electronic Controls

When the IBC-2000 is not equipped with electronic controls, setup and operation are very simple. To set the machine up, follow the steps below.

1. Remove the UPD using a forklift.
2. Lower the UPD and position it over the bulk bag.
3. Place the bag straps over the bag straphangers on the UPD.
4. Using the forklift, lift the UPD and bulk bag and place it on the top of the IBC-2000. Refer to 1.6.13.1 Universal Pickup Device (UPD) – Fork Style, for information on placing the UPD at the top of the IBC-2000.
5. Position the bulk bag discharge spout on the discharge. The method will vary based on the type of discharge the machine is equipped with. Refer to 1.6.4 Discharge Types for information on how to work with each specific type of discharge.
6. Untie the bag discharge nozzle tie off.

4.5.1.2 Non-Weighing IBC-2000, With Electronic Controls

When the IBC-2000 is equipped with electronic (non-weighing) controls, setup and operation are very simple. To set the machine up, follow the steps below.

1. Press the STOP button in.
2. Turn the power switch to the ON position. The POWER ON indicator should illuminate.
3. Place a bulk bag for dispensing. Refer to 1.6.13 Bulk Bag Lifting and Placing.
4. Make sure the container being filled is in place.
5. Pull the STOP button out.
6. Press the START button. The bag massagers and vibrator, if equipped, will start.
7. Pull the handle on the knife gate to open it. Product will start flowing out of the bulk bag.

4.5.2 Weighing IBC-2000

The startup procedure for an IBC-2000 that is equipped to weigh will vary, depending on the type of controls.

4.5.2.1 Weighing IBC-2000, Analog Controls

When the IBC-2000 is equipped to weigh, with analog controls, setup and operation procedures are included below:

1. Press the STOP button in.
2. Turn the power switch to the ON position. The POWER ON indicator should illuminate. The weigh display, or controller display, should also illuminate and perform its initiation sequence. When complete, the weigh display or controller should display its opening screen.

   Important: *Allow the IBC-2000 to warm up for at least 30 minutes before performing setup procedures or starting the first dispense cycle.*

3. Place a bulk bag for dispensing. Refer to 1.6.13 Bulk Bag Lifting and Placing.
4. Make sure the container being filled is in place.
5. Hit the pneumatic actuator switch.
6. Pull the STOP button out.

CAUTION Once the power switch is in the ON position, and the STOP button has been pulled out, the machine could start operating automatically, or someone could accidentally start the machine by hitting the pneumatic actuator switch.

7. Press the START button. The bag massagers and vibrator, if equipped, will start. The knife gate will open fully to start the dispensing cycle.

4.5.2.2 Weighing IBC-2000, T3000 Controls

When the IBC-2000 is equipped to weigh, with T3000 controls, setup and operation procedures are included below:

1. Press the STOP button in.
2. Turn the power switch to the ON position. The POWER ON indicator and STOP indicator should illuminate. The weigh display, or controller display, should also illuminate and perform its initiation sequence. When complete, the weigh display or controller should display its opening screen.

   Important: *Allow the IBC-2000 to warm up for at least 30 minutes before performing setup procedures or starting the first dispense cycle.*

3. Place a bulk bag for dispensing. Refer to 1.6.13 Bulk Bag Lifting and Placing.
4. Make sure the container being filled is in place.
5. Hit the pneumatic actuator switch.
6. Select the desired product from the menu. Refer to 4.4.2.1 Selecting Preprogrammed Products.
7. Pull the STOP button out.

CAUTION Once the power switch is in the ON position, and the STOP button has been pulled out, the machine could start operating automatically, or someone could accidentally start the machine by hitting the pneumatic actuator switch.

8. Press the START button. The bag massagers and vibrator, if equipped, will start. The knife gate will open fully to start the dispensing cycle.

Chapter 5
Preventive Maintenance

5.1 General Description

To minimize downtime, preventive maintenance should be made a priority. Proper preventive maintenance practices will also extend the life of the equipment. Developing a preventive maintenance schedule will ensure that critical maintenance procedures are not missed.

5.2 Daily Maintenance Procedures

At the start of each working day, the following maintenance tasks should be performed before starting the machine:

1. Thoroughly clean the machine.
2. For de-weighing machines, check the calibration, using a known weight. If necessary, calibrate the machine. Refer to 3.8 Calibration.

5.2.1 Cleaning

Keeping the IBC-2000 clean is an important part of the daily maintenance tasks. Remove any dust and/or dirt that has accumulated on a daily basis. Keeping the unit clean will keep debris from entering the control mechanisms, which could cause the performance of the IBC-2000 to suffer. Also, by taking the time to clean the IBC-2000 on a daily basis, the operator will be able to give the IBC-2000 a thorough inspection. Take the time to inspect all components for possible damage.

5.2.2 Check Calibration

For machines that are equipped to weigh, the calibration of the machine should be checked using a known weight. If calibration is required, refer to 3.8 Calibration.

5.3 Monthly Maintenance

On a monthly basis (every 700 operating hours), the operator should do the following items:

1. Inspect and service the filter and lubricator in the FRL.
2. Inspect all hoses, air cylinders, linkages, and bearings. Replace any worn or damaged parts.
3. Clean any dust or product that may have accumulated around the load cells.
4. Check the calibration. Refer to 3.8 Calibration.
5. Check all fasteners. Tighten them if they are loose.

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Chapter 6
Troubleshooting

6.1 General Description

When a problem occurs, proper troubleshooting techniques will allow maintenance personnel to quickly identify the problem.

6.2 The Troubleshooting Process

The actual troubleshooting process is just as important as the repair process. Use the following troubleshooting keys to assist with the troubleshooting process:

- Identify the trouble symptom
  - What is the problem?
  - What were the circumstances when the problem occurred?
  - Could weather be a factor?
  - Are there any other contributing factors?
- Sectionalize the problem
  - Look at the problem.
  - What area of the machine is the problem occurring in?
  - Has anything changed recently?
- Isolate the problem
  - Try simple things first.
  - Observe indication and trouble codes.
  - Check test points.
  - Avoid complicating the problem.

6.3 Trouble Symptoms

Use the following information to assist in troubleshooting.

6.3.1 Scale is Not Accurate

If the load cell is providing inaccurate readings, check the following:

1. Check for proper calibration. Refer to 3.8 Calibration.
2. Check to make sure there is nothing restricting material flow from the bulk bag.
3. Check to make sure that nothing is coming in contact with the frame.
4. Check the shipping bolts/nuts. Make sure the shipping bolts/nuts have been backed off and none of the weight of the frame is being supported by them.

6.3.2 Scale Does Not Return to Zero

If the scale reading does not return to zero after the weigh bucket has been dumped. Check the following items:

1. If the AutoZero function is enabled, the weight display will show a negative weight reading.
2. Check to make sure that nothing is coming in contact with the main frame.
3. Check the inside of the bulk bag to make sure that the product is not sticking to the inside of the weigh bucket.

6.3.3 The Cutoff Device Does Not Open

If the knife gate does not open , check the following:

1. Check the power coming into the unit to make sure you have the proper voltage.
2. Check the air pressure setting to make sure the pressure is adequate.
3. Check the function of the MAC valve. Press the test button(s) to see if the pneumatic valve changes states.
4. Check for the presence of air to the MAC valve. If compressed air is not available, correct the air supply problem.
5. Check the cutoff device for physical damage.

6.3.4 Weighments are Erratic

If the weighments vary from too high to too low, check the following items.

1. Check the dribble (SP-1) and cutoff (SP-2) set points. Once SP-1 is achieved, the machine should run at the dribble rate for a minimum of two seconds for proper operation.
2. Check the load cells for proper operation. If a load cell is damaged or does not function properly, replace it.
3. Check the zero of the machine. Make sure it stays on zero and doesn't jump around. If the zero is unstable, a faulty load cell or zero pot may be the cause.

6.3.5 Machine Fails To Start After The STOP Button Is Pulled Out

If the IBC-2000 won't start when the bag clamp actuator switch is tripped, even though the machine is turned on, check the following items.

1. Check the STOP button to see if the contacts are working properly.
2. Check the voltage to and from the STOP button. The voltage should be 110 volts.
3. Check the MAC valve to see if it is getting voltage and the valve is functioning properly.
4. Check for the presence of voltage at the auto zero delay timer. If voltage is present, check to see if the valve changes states. If it does not change states, replace the MAC valve. Refer to 7.3.8 MAC Valve Replacement.
5. Check the MAC valve to see if it is getting air. If compressed air is not being supplied to the MAC valve, correct the air supply problem.

6.3.6 Load Cell Fails Frequently

CAUTION A sudden jerk or shock, such as being struck by a tool or hitting the spout, etc., can cause load cell damage. The load cell is NOT covered by warranty.

If the load cell fails frequently, check the following items:

1. Check the operating conditions to make sure that the load cell is not jarred, jerked, or being loaded with a sudden excessive force.
2. Check the load cell to make sure that the weight of the bulk bag does not exceed the rating of the load cell.

6.3.7 Dispensing speeds are too slow

If the dispense rate is slow, check the following items:

1. Check the dribble (SP-1) setting to make sure it isn't set too low. This would result in longer dispensing times.
2. Check the knife gate to make sure that it is opening fully.

6.4 T3000 Alarms

During the dispensing process, conditions may occur that result in an alarm from the T3000. There are 3 different categories of alarms:

- Fill alarms
- Jog alarms
- Dispenser discharge alarms

For a full description of these alarms, refer to Chapter 3: Operating Procedures/Dispenser, of the Magnum Systems Filler/Dispenser/IBC T3000 User Guide, that is included in Appendix E of this manual.

6.4.1 Fill Alarms

Fill alarms are used to indicate that current conditions will not allow the selected fill feature to function properly. These alarms are:

- Not OK to fill alarm
- Lost OK to fill alarm
- No fast feed alarm
- Feed on alarm
- No medium feed alarm
- No slow feed alarm
- Slow feed on alarm
- Fill timeout alarm
- Underfill/overfill alarm

6.4.2 Jog Alarms

Jog alarms are used to indicate that current conditions will not allow the selected jog feature to function properly. These alarms are:

- Did not jog alarm
- Jog stuck on alarm
- Jog count alarm

6.4.3 Filler Discharge Alarms

Filler discharge alarms are used to indicate that current conditions will not allow the selected fill feature to function properly. These alarms are:

- Not OK to discharge alarm
- No discharge alarm
- Discharge clogged alarm
- Discharge on alarm

Chapter 7
Repair and Adjustment

7.1 General Description

When troubleshooting procedures have indicated that a component needs to be repaired, replaced, or adjusted, following the repair procedures contained in this chapter will assist maintenance personnel return the machine to operation in a timely manner.

7.2 System Adjustments

Depending on how the IBC-2000 is configured, there are several adjustments that may be required from time to time. They are:

- Air pressure adjustments
- Pneumatic vibrator adjustments
- Electronic vibrator adjustments
- Carriage height adjustment

7.2.1 Air Pressure Adjustments

The Filter/Regulator/Lubricator (FRL) is the air pressure regulator for the IBC-2000. The machine requires that compressed air from the compressor be between 80 and 100 PSI (.55-.69 MPa) at 15 SCFM for proper operation. The operator will set the pressure regulator on the FRL to 80 PSI (.55 MPa). If air pressure is too high, the air pressure regulator can be used to adjust the output air pressure. The pressure regulator cannot be used to increase the air pressure higher than the pressure of the source.

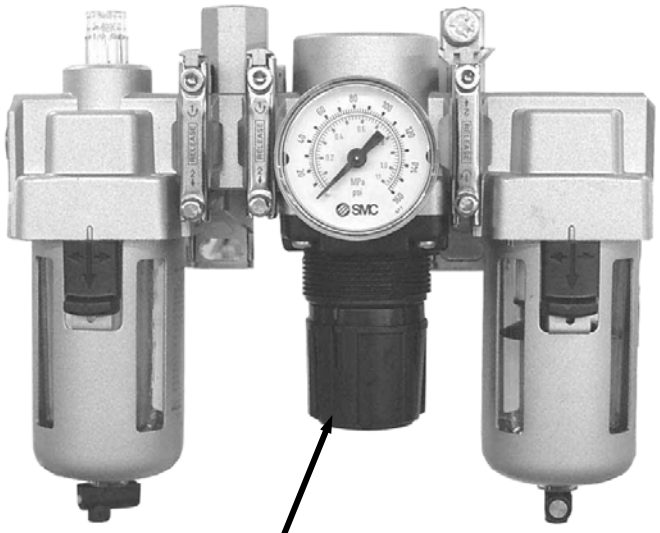


Figure 7-1. Air Pressure Adjustment

7.2.2 Pneumatic Vibrator Adjustments

An optional feature for the IBC-2000 is a pneumatic vibrator to assist the product in flowing out of the bulk bag. Product density will may vary based on different atmospheric conditions, or if using the machine to dispense multiple products. The rate of vibration can be controlled manually by adjusting the how much air is allowed to flow to the vibrator. The airflow adjustment is mounted in the air supply line to the vibrator.

7.2.3 Electronic Vibrator Adjustments

An optional feature for the IBC-2000 is an electronic vibrator to assist the product in flowing out of the bulk bag. Product density will may vary based on different atmospheric conditions, or if using the machine to dispense multiple products. The rate of vibration can be controlled manually by adjusting the control knob on the control panel.

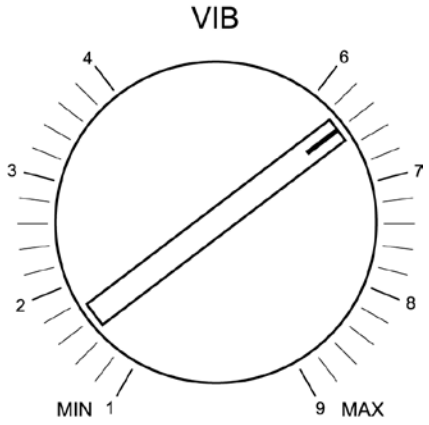
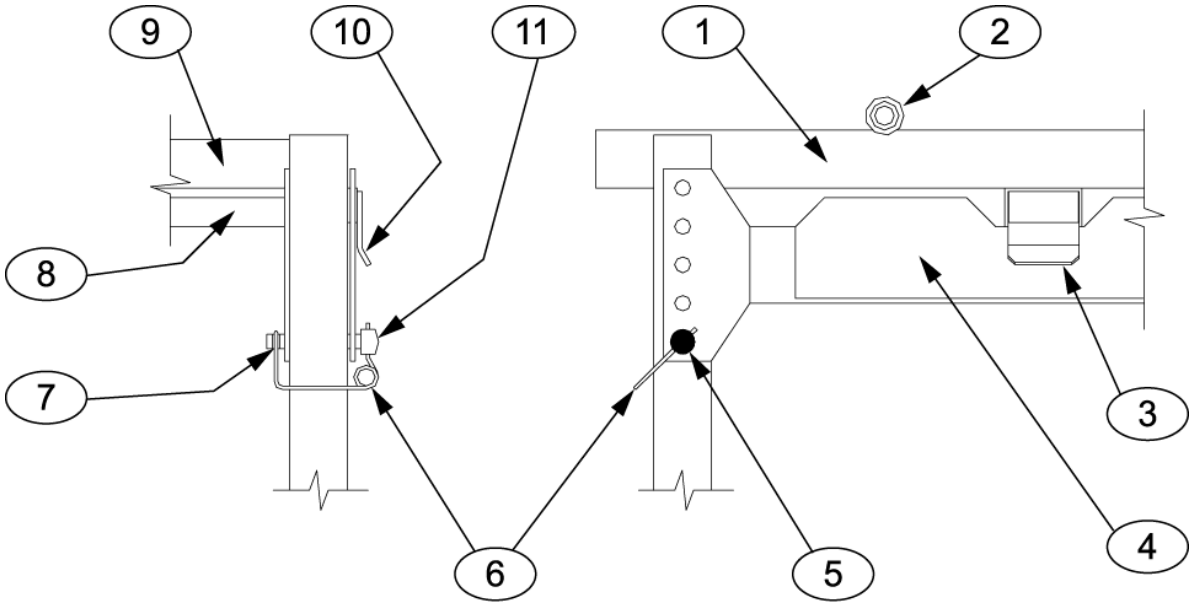


Figure 7-2. Electronic Vibrator Adjustment Knob

7.2.4 Carriage Height Adjustment

On IBC-2000 units that are equipped with the fork style UPD, the machine has five height settings to accommodate bulk bags of varying lengths. To adjust the UPD height, use the following steps:

1. Turn the machine off.
2. Lift the UPD off of the top of the IBC-2000 and set it aside.
3. Unhook each of the bales on the four safety snap pins.
4. While supporting the crossmember, remove the safety snap pins.
5. Raise or lower the upper frame to the desired height.
6. Install one safety snap pin in each adjustment bracket.
7. Hook each of the bales on the four safety snap pins over the end of each safety snap pin and position the bale so that it rests in the groove in the end of the safety snap pin.
8. Use the forklift to pickup the UPD.
9. Install a filled bulk bag on the UPD.
10. Lift the UPD and bulk bag and position them on the IBC-2000.
11. Make sure the bulk bag is properly positioned on the receiver pan.
12. Turn the IBC-2000 on and test for proper operation.



Front View Side View

Item #	Description	Item #	Description
1	UPD - Fork Style	7	Bale sitting in notch on safety snap pin
2	Bag hanger	8	UPD
3	Front UPD tab - left side view	9	Rear frame cross member
4	Adjustable support arm	10	Front UPD tab - front view
5	Safety snap pin	11	Front carriage tab - front view
6	Bale on safety snap pin		

Figure 7-3. Carriage Height Adjustment (1 of 4 Brackets Shown)

7.2.5 Door Safety Switch Adjustment

It may be necessary to adjust the door safety switch periodically or if the door safety switch has been replaced. The goal in this adjustment is to prevent the machine from operating, even if the door is only open slightly. Due to dust containment requirements, it is important to retain a tight seal at the door opening. Use the steps below to adjust it.

1. Loosen the setscrew on the bale.
2. Rotate the bale to the desired position.
3. Tighten the setscrew.

7.3 System Repairs

Over time, components on the IBC-2000 may become worn or damaged. If this occurs, follow the procedures in this section to repair or replace individual components.

WARNING *When replacing parts, it is critical that only parts approved by Magnum Systems are used.*

7.3.1 Load Cell Replacement

In the event of a load cell failure, use the following steps to replace it.

CAUTION A sudden jerk or shock, such as being struck by a tool or hitting the weigh bucket etc., can cause load cell damage. The load cell is NOT covered by warranty.

7.3.1.1 Load Cell Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Install the shipping bracket at the corner where the load cell is being replaced.
4. Use the shipping bracket to remove any load that is on the load cell.
5. Open the control panel.
6. Label and disconnect the load cell wires from the control board in the control panel.
7. Pull the load cell cable out of the control panel.
8. Remove any tie wraps that may be securing the load cell cable to the control panel, IBC-2000, or other cables.
9. Loosen and remove the load cell mounting bolts.
10. Remove the load cell and set it aside.

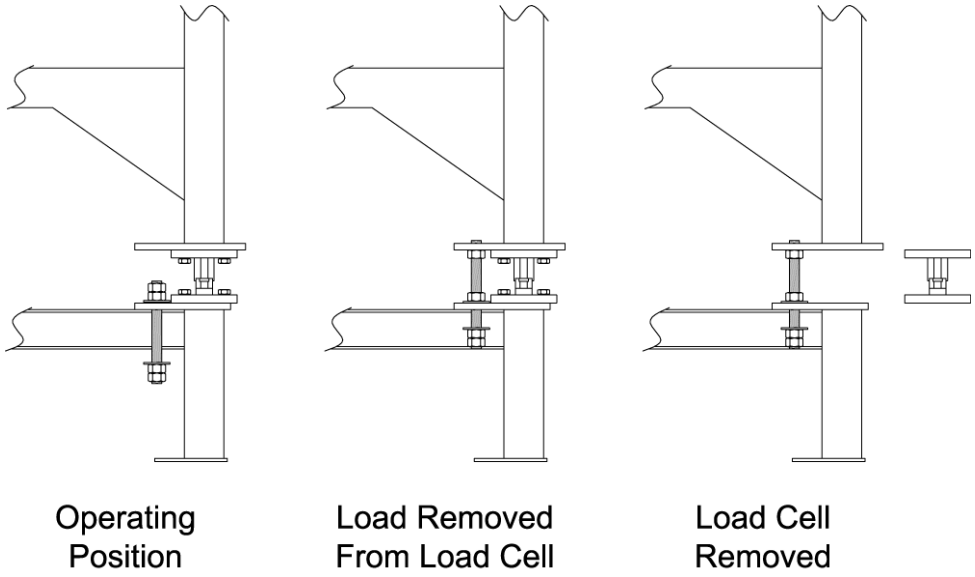


Figure 7-4. Load Cell (1 of 4 shown)

7.3.1.2 Load Cell Installation

1. Slide the load cell into place in between the upper and lower frames.
2. Install the lock washers on the mounting bolts.
3. Install the mounting bolts and tighten them.
4. Route the load cell cable to the control panel in the same manner as the cable on the load cell that was replaced.
5. Secure the load cell cable to the IBC-2000 in the same manner as the cable on the load cell that was replaced.
6. Route the load cell cable into the control panel.
7. Open the control panel door.
8. Connect the load cell cable to the control panel as specified in the electrical schematics.
9. Close the control panel door.
10. Remove the shipping bracket.
11. Calibrate the IBC-3000. Refer to 3.8 Calibration.
12. Check the IBC-2000 for proper operation.

7.3.2 Knife Gate Blade Replacement

Depending on the abrasiveness of certain products, the knife gate blade may become worn and require replacement. Use the following steps to replace it.

> ***Important:*** *Prior to starting this procedure, make sure that there isn't any product in the discharge nozzle above the knife gate. Any product that is in the discharge nozzle will flow uncontrolled through the knife gate if the blade is removed.*

7.3.2.1 Knife Gate Blade Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Loosen and remove the nuts on the bolts that secure the clevis to knife gate blade.

4. Remove the bolts that secure the clevis to the knife gate blade.
5. Fully retract the knife gate cylinder by hand.
6. Remove the nuts and washers from the bolts that secure the knife gate blade to the knife gate housing.
7. Remove the bolts that secure the knife gate blade to the knife gate housing.
8. Slide the knife gate blade out of the knife gate housing.

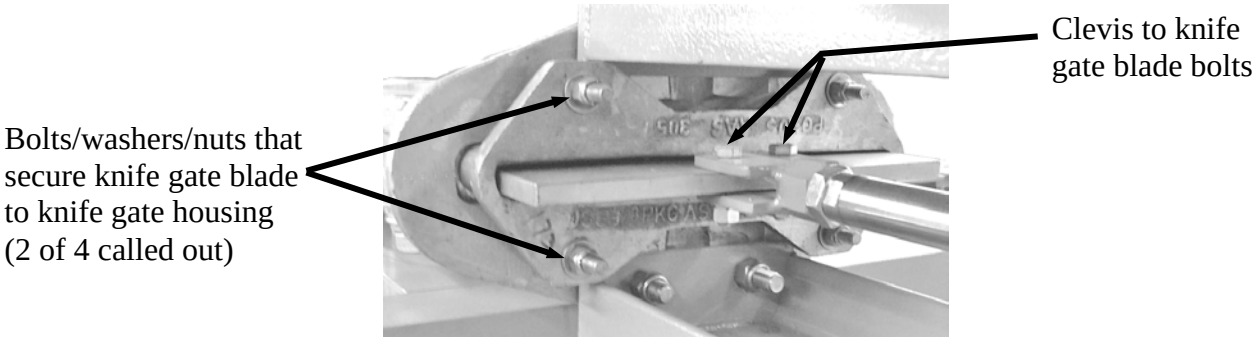


Figure 7-5. Knife Gate Blade Mounting

7.3.2.2 Knife Gate Blade Installation

1. Slide the knife gate blade into the knife gate housing.
2. Insert the bolts that secure the knife gate blade to the knife gate housing.
3. Install the washers and nuts onto the bolts that secure the knife gate blade to the knife gate housing.
4. Tighten the nuts on the bolts that secure the knife gate blade to the knife gate housing.
5. Extend the knife gate cylinder rod by hand.
6. Line the holes in the clevis up with the holes in the knife gate.
7. Insert the two clevis to knife gate bolts from the top.
8. Install the washers and nuts on the two clevis to knife gate bolts.
9. Tighten the nuts on the clevis to knife gate bolts.
10. Connect the main electrical and pneumatic connections.
11. Test the knife gate operation using the test buttons on the MAC valve that controls the knife gate cylinder.

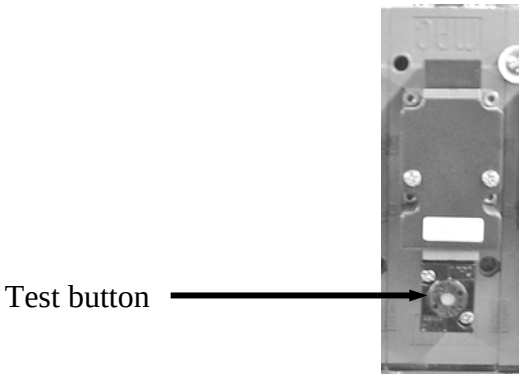


Figure 7-6. Test Button on MAC Valve

7.3.3 Knife Gate Cylinder Replacement

In the event that the knife gate cylinder becomes damaged or develops a leak, use the following information to replace the cylinder.

7.3.3.1 Knife Gate Cylinder Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Mark the air supply lines that are connected to the knife gate cylinder.
4. Disconnect the air supply lines from the quick connect fittings on the cylinder.
5. Loosen and remove the nuts on the bolts that secure the clevis to knife gate blade.
6. Remove the bolts that secure the clevis to the knife gate blade.
7. Loosen the nuts on the cylinder mounting bolts.
8. Remove the nuts and washers on the bottom two cylinder mounting bolts.
9. Support the knife gate cylinder and remove the nuts and washers on the top two cylinder mounting bolts.
10. Back the cylinder out of the mounting bracket and place it on a bench.

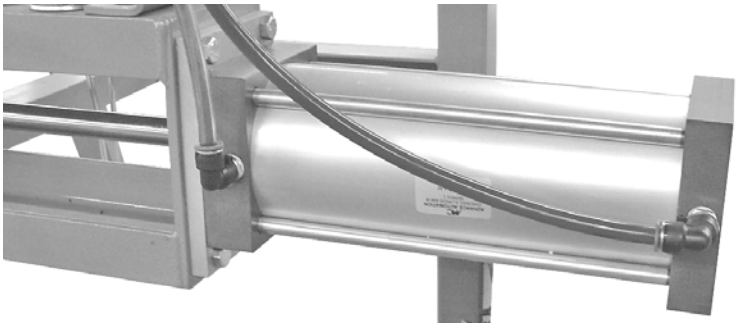


Figure 7-7. Knife Gate Cylinder

7.3.3.2 Knife Gate Cylinder Installation

1. Guide the rod end of the cylinder through the hole in the center of the mounting plate.
2. Line up the mounting holes in the cylinder base with the mounting holes in the cylinder mount.
3. Insert the top two cylinder mounting bolts.
4. Install the washers and nuts on the top two cylinder mounting bolts.
5. Install the lower two cylinder mounting bolts.
6. Install the washers and nuts on the bottom two cylinder mounting bolts.
7. Tighten the nuts on the cylinder mounting bolts.
8. Extend the cylinder by hand.
9. Install the bolts that secure the clevis to the knife gate blade.
10. Install and tighten the nuts on the bolts that secure the clevis to knife gate blade.
11. Install the air supply lines to the quick connect fittings on the cylinder.
12. Connect the main electrical and pneumatic connections.
13. Turn the IBC-2000 on and test for proper operation.

7.3.4 Knife Gate Assembly Replacement

If the knife gate assembly becomes damaged, use the following information to replace it.

> ***Important:*** *Prior to starting this procedure, make sure that there isn't any product in the discharge nozzle above the knife gate. Any product that is in the discharge nozzle will spill when the discharge nozzle is disconnected from the knife gate.*

7.3.4.1 Knife Gate Assembly Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connection.
3. Loosen the nuts that secure the clevis to the knife gate blade.
4. Remove the bolts that secure the clevis to the knife gate blade.
5. Retract the knife gate cylinder by hand.
6. Loosen and remove the bolts that secure the discharge nozzle to the knife gate housing.
7. Loosen and remove the bolts that secure the knife gate housing to the base frame.
8. Retract the knife gate cylinder rod by hand.
9. Loosen and remove the nuts that secure the knife gate housing to the knife gate cylinder mounting bracket.
10. Lift the knife gate housing slightly and slide it out to the side.

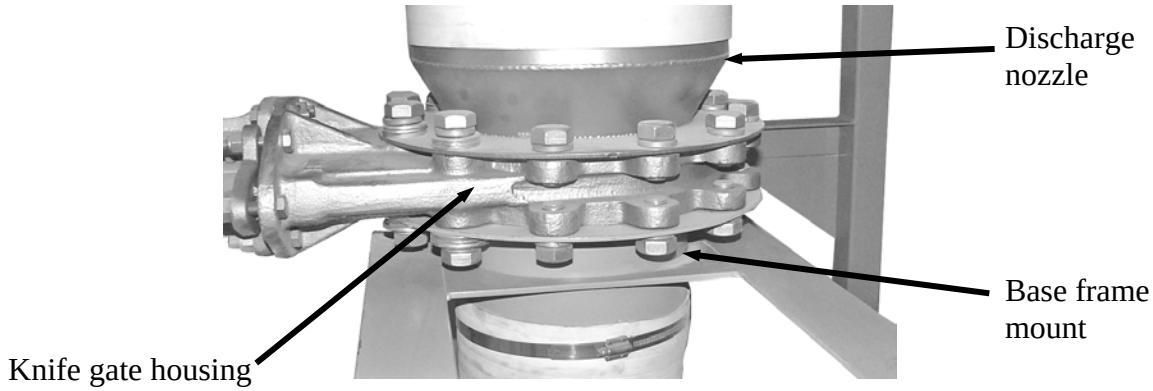


Figure 7-8. Knife Gate Mounting

7.3.4.2 Knife Gate Assembly Installation

> ***Important:*** *Check the top of the knife gate housing mounting surface and the bottom of the discharge nozzle for any gasket material that may be stuck to them. Clean any gasket material off of these surfaces prior to installing the new gasket and knife gate.*

1. Position a new gasket on the mounting surface of the base frame.
2. Position the knife gate housing on the mounting surface of the base frame.
3. Install and hand tighten the knife gate housing to base frame bolts.
4. Finish tightening the knife gate housing to base frame bolts.
5. Position a new gasket on the top mounting surface of the knife gate housing.

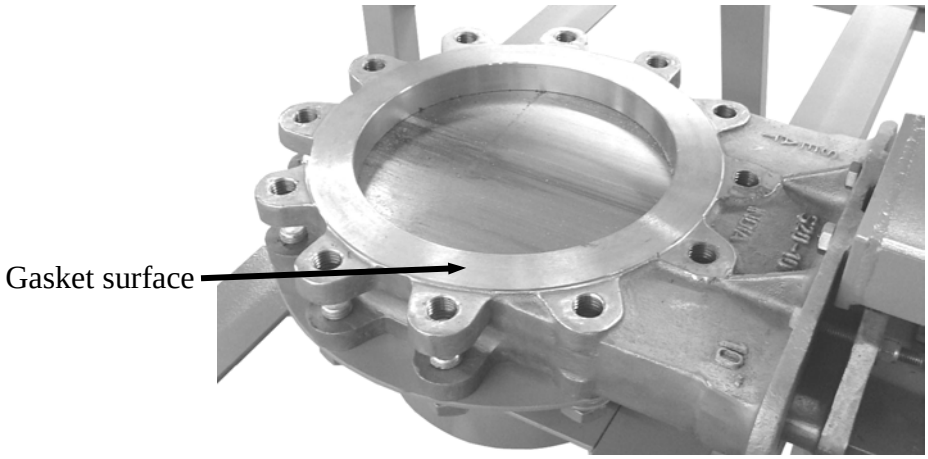


Figure 7-9. Knife Gate Gasket Surface

6. Position the discharge nozzle on top of the knife gate housing.
7. Install and hand tighten the discharge nozzle to knife gate housing bolts.
8. Finish tightening the discharge nozzle to knife gate housing bolts.
9. Extend the knife gate cylinder rod by hand.
10. Line the holes in the clevis up with the holes in the knife gate blade.
11. Install the bolts that secure the clevis to the knife gate blade.
12. Install and tighten the nuts on the bolts that secure the clevis to knife gate blade.
13. Connect the main electrical and pneumatic connection.
14. Turn the IBC-2000 on and test for proper operation.

7.3.5 Receiver Pan Solid Mount Replacement

If one of the solid mounts for the receiver pan becomes damaged or worn, use the information below to replace the solid mount.

7.3.5.1 Receiver Pan Solid Mount Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Support the receiver pan leg for the solid mount that is being replaced.
4. Loosen and remove the mounting bolts for the solid mount.
5. If necessary, lift the receiver pan leg slightly.
6. Slide the solid mount out.

7.3.5.2 Receiver Pan Solid Mount Installation

1. Slide the new mount into position.
2. Install the lower mounting bolts and tighten them.
3. Lower the receiver pan leg onto the solid mount.
4. Install the upper mounting bolts and tighten them.
5. Connect the main electrical and pneumatic connections.
6. Turn the IBC-2000 on and check for proper operation.

7.3.6 Air Mount Isolator Replacement

If one of the air mount isolators develops a leak or becomes damaged, use the information below to replace the air mount isolator.

7.3.6.1 Air Mount Isolator Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Support the receiver pan leg for the air mount isolator that is being replaced.
4. Disconnect the air supply lines from the quick connect fittings.
5. Remove the air fitting from the bottom of the air mount isolator.
6. Loosen and remove the two upper air mount isolator mounting bolts.
7. Loosen and remove the two lower air mount isolator mounting bolts.
8. If necessary, lift the receiver pan leg slightly.
9. Slide the air mount isolator out.

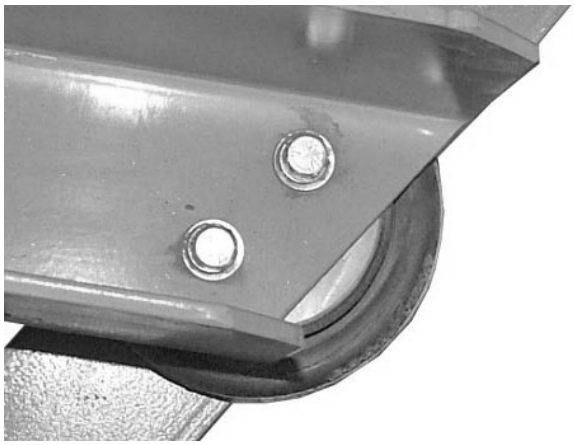


Figure 7-10. Upper Air Mount Isolator Mounting Bolts

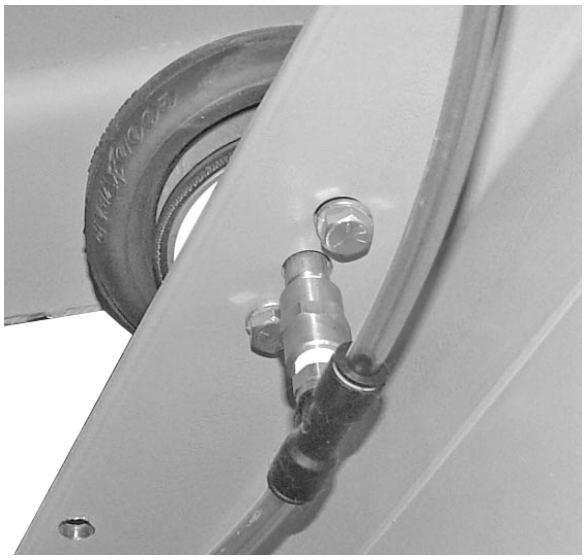


Figure 7-11. Lower Air Mount Isolator Mounting Bolts and Air Fittings

7.3.6.2 Air Mount Isolator Installation

1. Slide the air mount isolator into position.
2. Install the lower air mount isolator mounting bolts and tighten them.
3. Clean the threads on the air supply pipe.
4. Apply Teflon® plumbers tape to the threads on the air supply pipe. Start at the end of the pipe and tightly wrap the tape up the thread in a clockwise fashion.
5. Install the air supply pipe into the threads on the air mount isolator. Tighten the air supply pipe.
6. Lower the receiver pan leg onto the air mount isolator.
7. Install the two upper air mount isolator mounting bolts and tighten them.
8. Connect the two air supply lines to the quick connect fittings.
9. Connect the main electrical and pneumatic connections.
10. Turn the IBC-2000 on and check for proper operation.

7.3.7 Flexible Discharge Tube Replacement

IBC-2000 machines are equipped with a flexible discharge tube. The discharge tube will require periodic replacement. The frequency is entirely dependent on the operating environment and the abrasiveness of the product being packaged. Use the steps below to replace a damaged flexible discharge tube.

> ***Important:*** *Prior to removing the flexible discharge, make sure that there is no product above the knife gate. This would result in product spillage when the flexible discharge tube is removed.*

7.3.7.1 Flexible Discharge Tube Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Loosen the lower flexible discharge tube clamp and slide it down the tube.
4. Loosen the upper flexible discharge tube clamp and slide it down the tube.
5. Pull the top of the discharge tube down off of the discharge nozzle.
6. Pull the bottom of the discharge tube up and off of the knife gate inlet flange. The discharge tube should now be free and can be set aside.
7. Inspect the clamps for damage or wear. If they are damaged or worn, discard them and install new ones with the new discharge tube.

7.3.7.2 Flexible Discharge Tube Installation

1. Clean the flanges on the discharge nozzle and the knife gate inlet.
2. Place the two clamps over the knife gate inlet flange.
3. Slide the flexible discharge tube onto the knife gate flange.
4. Slide the flexible discharge tube onto the discharge nozzle.
5. Slide the upper discharge tube clamp up the discharge tube until it is positioned about one inch above the lower lip of the discharge nozzle.
6. Tighten the screw on the upper discharge tube clamp.
7. Pull the lower discharge tube clamp up on the knife gate inlet flange until it is positioned about one inch below the upper lip of the inlet flange.
8. Tighten the screw on the lower discharge tube clamp.
9. Connect the main electrical and pneumatic connections.
10. Turn the IBC-2000 on and test for proper operation.

7.3.8 MAC Valve Replacement

In the event that a MAC valve becomes damaged, or fails to function, or develops a leak, follow the procedure below to replace the MAC valve.

7.3.8.1 MAC Valve Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Disconnect the air line from the quick connect fitting on the MAC valve.
4. Remove the four mounting screws.
5. Unplug and remove the MAC valve.

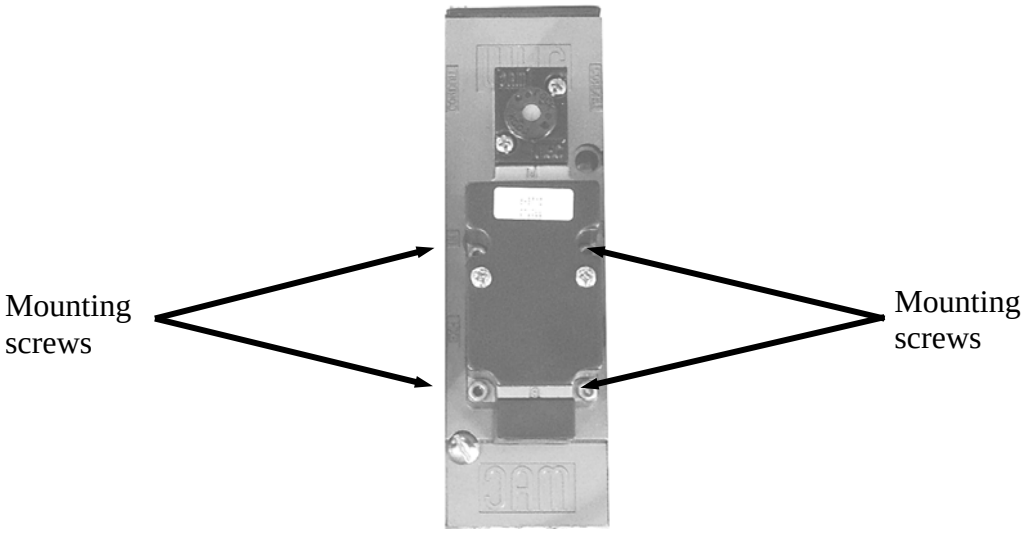


Figure 7-12. MAC Valve Solenoid Mounting Screws

7.3.8.2 MAC Valve Installation

1. Position the valve gasket securely in the groove in the valve base.
2. Position the new MAC valve and plug it in.

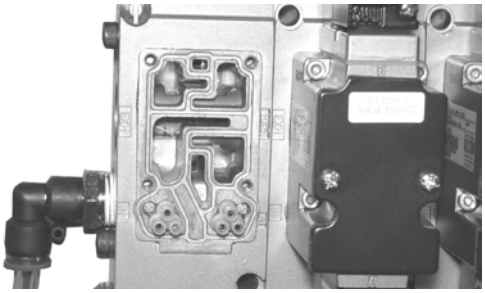


Figure 7-13. MAC Valve (Solenoid Removed)

3. Install and tighten the four mounting screws.
4. Connect the air line to the quick connect fitting on the MAC valve.
5. Connect the main electrical and pneumatic connections.
6. Turn the IBC-2000 on and test for proper operation.

7.3.9 Pneumatic Quick Connect Fitting Replacement

In the event that a quick connect fitting becomes damaged and requires replacement, use the following procedures to replace the quick connect fitting.

7.3.9.1 Pneumatic Quick Connect Fitting Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Disconnect the air supply line from the fitting by pressing in on the collar while pulling out on the air supply line.
4. Using a wrench, unscrew the fitting.

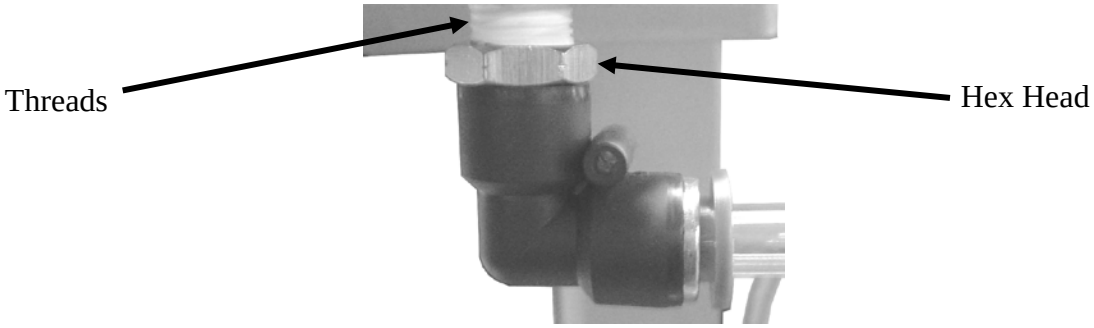


Figure 7-14. Air Supply Fitting

7.3.9.2 Pneumatic Quick Connect Fitting Installation

1. Using Teflon® tape, wrap the threads of the new fitting, starting at the bottom of the thread working toward the hex head in the same direction as the threads.
2. Screw the new fitting into the threads and use a wrench to carefully tighten the fitting.

CAUTION Over tightening the fitting can damage the fitting, or the component that it is being threaded into.

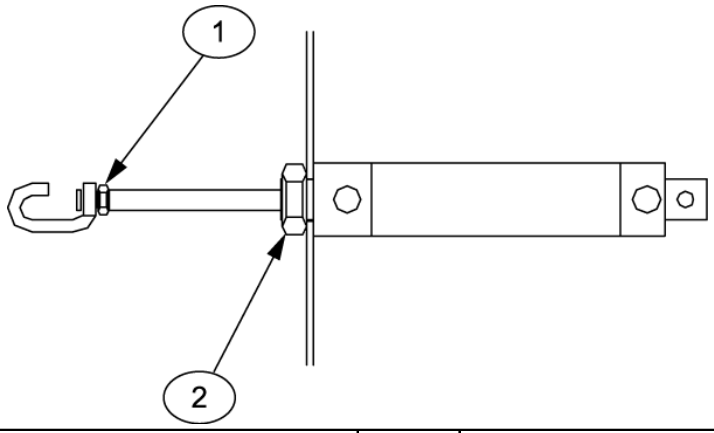
3. Reconnect the air supply line to the fitting.
4. Reconnect the main pneumatic connection and check for any leaks. If a leak is found, disconnect the main pneumatic connection and then disconnect/reconnect the air connections, then reconnect the main pneumatic connection. Repeat as necessary, until no leaks are present.
5. Connect the main electrical and pneumatic connections.
6. Turn the IBC-2000 on and test for proper operation.

7.3.10 Drawstring Cylinder Replacement

On models that are equipped with drawstring cylinders, if one of the cylinders fails, or develops a leak, using the following information to replace it.

7.3.10.1 Drawstring Cylinder Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Note the position of the cylinder.
4. Label the air supply lines that are connected to the cylinder.
5. Disconnect the air supply lines from the quick connect fittings.
6. Open the access door on the discharge enclosure.
7. Loosen the jam nut on the end of the cylinder rod.
8. Remove the hook from the end of the cylinder rod.
9. Remove the jam nut from the end of the cylinder rod.
10. Loosen and remove the cylinder mounting nut from the inside of the discharge enclosure.
11. Remove the cylinder.



Item #	Description	Item #	Description
1	Drawstring cylinder hook jam nut	2	Drawstring cylinder retaining nut

Figure 7-15. Drawstring Cylinder Mounting

7.3.10.2 Drawstring Cylinder Installation

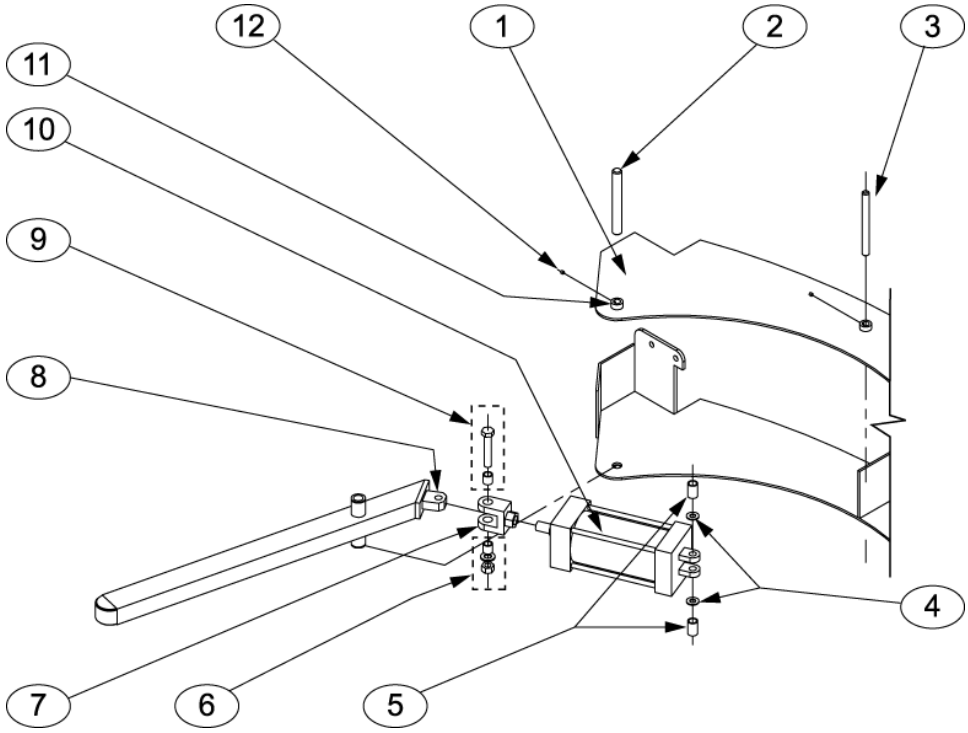
1. If the cylinder does not have the quick connect fittings installed, transfer the fittings from the old cylinder to the new cylinder. Make sure to use Teflon® tape on the threads.
2. Position the cylinder in the mounting hole in the same position as the previous cylinder.
3. Install and tighten the cylinder mounting nut from the inside of the discharge enclosure.
4. Thread the jam nut onto the end of the cylinder rod.
5. Thread the hook onto the end of the cylinder rod.
6. Position the hook so that the open side of the hook is facing upward. Tighten the jam nut against the hook.
7. Close the door on the discharge enclosure.
8. Connect the air supply lines to the cylinder.
9. Connect the main electrical and pneumatic connections.
10. Turn the IBC-2000 on and test for proper operation.

7.3.11 Side/Roller Squeezer Cylinder Replacement

For machines that are equipped with a side or roller squeezer, the instructions below are used to replace one of the two pneumatic cylinders. If both cylinders require replacement at the same time, repeat the process on the second cylinder.

7.3.10.1 Side/Roller Squeezer Cylinder Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Label the air supply lines and disconnect them from the squeezer cylinder that is being replaced.
4. Loosen and remove the nut from the clevis bolt that secures the cylinder rod to the squeezer arm.
5. Loosen the setscrew on the upper cylinder pivot shaft collar.
6. Loosen the setscrew on the lower cylinder pivot shaft collar.
7. With one hand under the lower pivot shaft collar, push the cylinder pivot shaft out from the top.
8. Remove the clevis bolt that secures the cylinder rod to the squeezer arm.
9. Slide the cylinder out.



Item #	Description	Item #	Description
1	Top plate	7	Cylinder clevis
2	Squeezer arm pivot pin	8	Squeezer arm tab
3	Cylinder pivot pin	9	Clevis bolt and bushing
4	Cylinder pivot washers	10	Cylinder
5	Cylinder pivot bushings	11	Pivot pin collar
6	Squeezer arm pivot bushing, washer, nut	12	Pivot pin set screw

Figure 7-16. Squeezer Arm Cylinder – Exploded View

7.3.10.2 Side/Roller Squeezer Cylinder Installation

1. If the cylinder is not equipped with quick connect pneumatic fittings, transfer the fittings from the old cylinder to the new cylinder. Make sure to clean the threads on the fittings and apply new Teflon® tape.
2. Slide the cylinder into position. The cylinder mounting ears should be lined up with the pivot shaft collars and the clevis should be positioned over the squeezer arm to cylinder mounting ear.
3. Slide the pivot shaft in through the bottom pivot shaft collar until it just protrudes through the top pivot shaft collar. It may be necessary to shift the cylinder a little to allow the shaft to pass through the pivot holes in the mounting ears.
4. While holding the pivot shaft in position, tighten the bottom pivot shaft collar setscrew.
5. Tighten the top pivot shaft collar setscrew.
6. Insert the clevis bolt from the top through the clevis and the squeezer arm mounting ear.
7. Install and tighten the nut on the clevis bolt.
8. Connect the air supply lines at the quick connect fittings on the cylinder.
9. Connect the main electrical and pneumatic connections.
10. Turn the IBC-2000 on and test for proper operation.

7.3.11 Side/Roller Squeezer Arm Replacement

In the event that one of the optional squeezer arms becomes damaged or worn. Use the following steps to replace it.

7.3.11.1 Side/Roller Squeezer Arm Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. If the machine is equipped with a roller squeezer, remove the roller and bearing.
4. Remove the nut from the clevis bolt that secures the clevis to the squeezer arm.
5. Remove the clevis bolt.
6. Loosen the setscrew on the top squeezer arm pivot shaft collar.
7. Loosen the setscrew on the bottom squeezer arm pivot shaft collar.
8. Slide the pivot shaft out from the top to the bottom.
9. Slide the squeezer arm forward until it is free. Make sure to capture the spacers.
10. Remove the squeezer arm.

7.3.11.2 Side/Roller Squeezer Arm Installation

1. Position the squeezer arm for installation.
2. Slide the squeezer arm so that the pivot point is between the upper and lower pivot collars.
3. Insert the spacers. There should be one above and one below the side squeezer arm.
4. Install the pivot shaft from the bottom. It may be necessary to move the squeezer arm slightly to get the shaft to slide through the pivot point.
5. Once in position, tighten the setscrew in the bottom squeezer arm pivot shaft collar.
6. Tighten the setscrew in the top squeezer arm pivot shaft collar.
7. Position the cylinder rod clevis on the squeezer arm so the bolt can be inserted to connect them.
8. Install the clevis bolt from the top.
9. Install and tighten the nut on the clevis bolt.
10. Connect the main electrical and pneumatic connections.
11. Test the IBC-2000 for proper operation.

7.3.12 Roller Squeezer Roller and Bearing Replacement

If one of the rollers, or roller bearings becomes damaged, use the steps below to replace the roller and/or bearing.

7.3.12.1 Roller Squeezer Roller and Bearing Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Loosen the setscrew that secures the upper bearing on the roller shaft.
4. While supporting the roller, loosen the setscrew that secures the lower bearing on the roller shaft.
5. Slide the roller down the roller shaft until it clears the roller shaft.
6. Place the roller on a workbench.
7. Loosen and remove the bolts that secure the bearings to the roller.
8. Remove the bearings.

7.3.12.2 Roller Squeezer Roller and Bearing Installation

1. Position the bearings on the roller, while the roller is positioned on a workbench.
2. Install and tighten the bolts that secure the bearings to the roller.
3. Check the setscrews in the bearings to make sure that they are backed out enough to allow them to slide onto the roller shaft.
4. Slide the roller onto the roller shaft and position it in its desired operating location.
5. Tighten the setscrew on the lower bearing.
6. Tighten the setscrew on the upper bearing.
7. Connect the main electrical and pneumatic connections.
8. Turn the IBC-2000 on and test for proper operation.

7.3.13 Electronic Vibrator Replacement

If the electronic vibrator fails to function, and troubleshooting steps have indicated that the electronic vibrator should be replaced, use the steps below to replace it.

7.3.13.1 Electronic Vibrator Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Locate the vibrator control module inside the control cabinet.
4. Label the connections to the vibrator control module.
5. Disconnect the wires from the vibrator control module.
6. Pull the cable free from the control cabinet.
7. Undo any tie straps or other devices that are used to secure the cable to the frame.
8. Pull the cable to the vibrator and coil it up and secure the coil. This is done to prevent a tripping hazard once the vibrator is free of the receiver pan.
9. With the help from an assistant, support the vibrator while loosening the mounting bolts.
10. Remove the mounting bolts and the vibrator.

7.3.13.2 Electronic Vibrator Installation

1. Check the new vibrator and make sure that the cable is coiled and secured to prevent tripping over it.
2. With the help from an assistant, lift the vibrator into position. While the assistant is holding the vibrator in position, install the mounting bolts, at least a couple of turns, to support the vibrator.
3. Tighten the vibrator mounting bolts, turning each bolt a little at a time in a criss-cross pattern, until each bolt is tight.
4. Route the vibrator cable to the control cabinet in a similar fashion to how the cable on the previous vibrator was routed, and secure it to the base frame.
5. Route the cable into the control cabinet and prepare the wires to be connected to the vibrator control module.
6. Make the vibrator control module connections.
7. Connect the main electrical and pneumatic connections.
8. Turn the IBC-2000 on and test for proper operation.

7.3.14 Pneumatic Vibrator Replacement

If the electronic vibrator fails to function, and troubleshooting steps have indicated that the electronic vibrator should be replaced, use the steps below to replace it.

7.3.14.1 Pneumatic Vibrator Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Locate the pneumatic quick connect fittings on the vibrator.
4. Label the air supply lines so they can be properly reconnected to the new vibrator.
5. Disconnect the air supply lines from the vibrator.
6. With the help from an assistant, support the vibrator while loosening the mounting bolts.
7. Remove the mounting bolts and the vibrator.

7.3.14.2 Pneumatic Vibrator Installation

1. If the vibrator is not equipped with quick connect pneumatic fittings, transfer the fittings from the old vibrator to the new vibrator. Make sure to clean the threads on the fittings and apply new Teflon® tape.
2. With the help from an assistant, lift the vibrator into position. While the assistant is holding the vibrator in position, install the mounting bolts, at least a couple of turns, to support the vibrator.
3. Tighten the vibrator mounting bolts, turning each bolt a little at a time in a criss-cross pattern, until each bolt is tight.
4. Connect the air supply lines to the quick connect fittings on the vibrator.
5. Connect the main electrical and pneumatic connections.
6. Turn the IBC-2000 on and test for proper operation.

7.3.15 Pneumatic Vibrator Flow Control Valve Replacement

If the pneumatic flow control valve fails to operate or develops a leak, use the steps below to replace it.

7.3.15.1 Pneumatic Vibrator Flow Control Valve Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Locate the pneumatic quick connect fittings on the pneumatic vibrator flow control valve.
4. Label air supply lines.
5. Disconnect the air supply lines from the pneumatic vibrator control valve.
6. Remove the bolts that secure the pneumatic vibrator flow control valve to the IBC-2000.
7. Remove the pneumatic vibrator flow control valve.

7.3.15.2 Pneumatic Vibrator Flow Control Valve Installation

1. Position the pneumatic vibrator flow control valve.
2. Install and tighten the pneumatic vibrator flow control valve mounting bolts.
3. Connect the air supply lines to the quick connect fittings on the pneumatic vibrator flow control valve.
4. Connect the main electrical and pneumatic connections.
5. Turn the IBC-2000 on and test for proper operation.

7.3.16 Bottom Thumper Pad Replacement

If one of the bottom thumper pads becomes worn or damaged, use the steps below to replace it.

7.3.16.1 Bottom Thumper Pad Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Back the jam nut away from the bottom thumper pad nut.
4. Remove the cotter pin from the bottom thumper pad nut.
5. Unscrew the bottom thumper pad from the end of the cylinder rod.

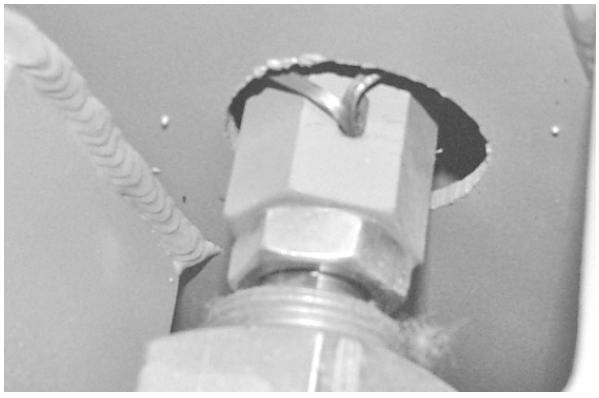


Figure 7-17. Bottom Thumper Pad Nut, Jam Nut, and Cotter Pin

7.3.16.2 Bottom Thumper Pad Installation

1. Screw the new bottom thumper pad onto the end of the cylinder rod.
2. Line the hole in the nut on the back of the bottom thumper pad up with the hole in the cylinder rod.
3. Install the cotter pin and bend the ends over to keep the cotter pin from backing out.
4. Tighten the jam nut against the bottom thumper pad nut.
5. Connect the main electrical and pneumatic connections.
6. Turn the IBC-2000 on and test for proper operation.

7.3.17 Bottom Thumper Cylinder Replacement

In the event that one of the bottom thumper cylinders develops a leak or fails, use the steps below to replace it.

7.3.17.1 Bottom Thumper Cylinder Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Make note of the alignment of the cylinder being removed so the new cylinder can be installed in the same position.
4. Label the air supply lines that are connected to the bottom thumper cylinder.
5. Disconnect the air supply lines from the quick connect fittings on the bottom thumper cylinder.
6. Remove the bottom thumper pad. Refer to 7.3.16 Bottom Thumper Pad Replacement.
7. Use a wrench to break the cylinder mounting nut loose.
8. While holding the cylinder, remove the cylinder mounting nut.
9. Slide the cylinder downward until it clears the mounting bracket.

7.3.17.2 Bottom Thumper Cylinder Installation

1. If the cylinder is not equipped with quick connect pneumatic fittings, transfer the fittings from the old cylinder to the new cylinder. Make sure to clean the threads on the fittings and apply new Teflon® tape.
2. Slide the rod end of the cylinder through the hole in the mounting bracket.
3. Loosely install the mounting nut on the end of the cylinder to hold the cylinder in place.
4. Check the position of the cylinder to make sure that it is properly aligned.
5. Tighten the cylinder retaining nut.
6. Install the bottom thumper pad. Refer to 7.3.16 Bottom Thumper Pad Replacement.
7. Connect the air supply lines to the quick connect fittings on the cylinder.
8. Connect the main electrical and pneumatic connections.
9. Turn the IBC-2000 on and test for proper operation.

7.3.18 Receiver Pan Replacement

If the receiver pan becomes damaged or worn, use the following steps to replace it.

7.3.18.1 Receiver Pan Removal

1. If a bulk bag is on the receiver pan, remove it.
2. Turn the IBC-2000 off.
3. Disconnect the main electrical and pneumatic connections.
4. Remove the bolts on the four receiver pan legs that mount the receiver pan to the solid or air mounts.

CAUTION If the machine is equipped with load cells, be careful to not damage them during the removal of the receiver pan. Load cells are not covered under the Magnum Systems warranty.

5. Lift the receiver pan and remove it from the base frame.

7.3.18.2 Receiver Pan Installation

1. Lift the new receiver pan so it can be placed on the base frame.

CAUTION If the machine is equipped with load cells, be careful to not damage them during the removal of the receiver pan. Load cells are not covered under the Magnum Systems warranty.

2. Position the receiver pan above the mounts.
3. Line the mounting holes in the receiver pan up with the mounting holes in the mounts.
4. Install the bolts that secure the receiver pan to the mount.
5. Connect the main electrical and pneumatic connections.
6. Turn the IBC-2000 on and test for proper operation.

7.3.19 Style A Discharge Replacement

Over time, the discharge may becomes damaged or worn. If this occurs, use the following information to replace it.

7.3.19.1 Style A Discharge Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Support the discharge assembly from below to prevent it from falling when the fasteners are removed.
4. Loosen the bolts that secure the two discharge supports to the base frame.
5. Lift the discharge and remove it through the side of the base frame.

7.3.19.2 Style A Discharge Installation

1. Lift the discharge assembly and position it so you can insert it through the side of the base frame.
2. Position the discharge assembly in its mounting position.
3. Install the mounting bolts and install the washers and nuts on them. Tighten the nuts on the bolts.
4. Connect the main electrical and pneumatic connections.
5. Turn the IBC-2000 on and test for proper operation.

7.3.20 Style B Discharge Replacement

Over time, the discharge may becomes damaged or worn. If this occurs, use the following information to replace it.

7.3.20.1 Style B Discharge Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Support the discharge assembly from underneath.
4. Loosen the bolts that secure the discharge from the base frame.
5. Lower the discharge assembly away from the base frame.
6. Place the discharge assembly on a workbench.

7.3.20.2 Style B Discharge Installation

1. If a new discharge assembly is being installed, transfer the other components that are mounted on the old discharge assembly onto the new discharge assembly. Examples of the types of components would be:
    a. Door safety switch
    b. Door
2. Lift the discharge assembly into position and support it.
3. Install the mounting bolts, washers, and nuts and tighten them.
4. Connect the main electrical and pneumatic connections.
5. Turn the IBC-2000 on and test for proper operation.

7.3.21 Style C Discharge Replacement

Over time, the discharge may becomes damaged or worn. If this occurs, use the following information to replace it.

7.3.21.1 Style C Discharge Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Support the discharge assembly from underneath.
4. Loosen the bolts that secure the discharge from the base frame.
5. Lower the discharge assembly away from the base frame.
6. Place the discharge assembly on a workbench.

7.3.21.2 Style C Discharge Installation

1. If a new discharge assembly is being installed, transfer the drawstring cylinders over to the new discharge assembly. Refer to 7.3.10 Drawstring Cylinder Replacement.
2. Lift the discharge assembly into position and support it.
3. Install the mounting bolts, washers, and nuts and tighten them.
4. Connect the main electrical and pneumatic connections.
5. Turn the IBC-2000 on and test for proper operation.

7.3.22 Style D Discharge Replacement

Over time, the discharge may becomes damaged or worn. U the following information to replace it.

7.3.22.1 Style B Discharge Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Support the discharge assembly from underneath.
4. Loosen the bolts that secure the discharge from the base frame.
5. Lower the discharge assembly away from the base frame.
6. Place the discharge assembly on a workbench.

7.3.22.2 Style B Discharge Installation

1. If a new discharge assembly is being installed, transfer the drawstring cylinders over to the new discharge assembly. Refer to 7.3.10 Drawstring Cylinder Replacement.
2. Lift the discharge assembly into position and support it.
3. Install the mounting bolts, washers, and nuts and tighten them.
4. Connect the main electrical and pneumatic connections.
5. Turn the IBC-2000 on and test for proper operation.

7.3.23 Discharge Enclosure Door Safety Switch Replacement

In the event that the door safety switch on the discharge enclosure fails, use the following steps to replace it.

7.3.23.1 Discharge Enclosure Door Safety Switch Removal

1. Turn the IBC-2000 off.
2. Disconnect the main electrical and pneumatic connections.
3. Open the door on the control panel.
4. Trace the cable from the door safety switch to the control panel.
5. Label the door switch cable connections inside the control panel.
6. Disconnect the cable connections inside the control panel.
7. Pull the cable free of the control panel.
8. Remove any cable ties that are used to secure the cable to the frame.
9. Coil the cable up and secure it.
10. Open the discharge enclosure door.
11. Loosen the door safety switch mounting bolts.
12. While holding the safety switch with one hand, remove the mounting bolts with the other hand.
13. Remove the door safety switch.

7.3.23.2 Discharge Enclosure Door Safety Switch Installation

1. Position the door safety switch and line up the mounting holes.
2. Install the door safety switch mounting bolts and tighten them.
3. Route the cable from the safety switch to the control cabinet in a fashion similar to how the cable for the previous cable was routed. Secure the cable to the frame.
4. Route the cable into the control cabinet.
5. Connect the cable to the control panel.
6. Adjust the door safety switch. Refer to 7.2.5 Door Safety Switch Adjustment.
7. Connect the main electrical and pneumatic connections.
8. Turn the IBC-2000 on and test for proper operation.

7.3.24 T3000 Interface Card Replacement

If the T3000 Interface Card becomes damaged or fails to function, use the following procedures to remove it and install a new one.

ESD NOTICE

To protect against ESD damage to the T3000 Interface Card, follow Standard ESD Prevention Procedures. Failure to use recommended protective measures could result in permanent equipment damage, either immediate or latent, when handling components.

7.3.24.1 T3000 Interface Card Removal

1. Turn the IBC-2000 off and disconnect it from its power source.
2. Open the control box.
3. Label each wire for easy identification.
4. Disconnect each wire from the module.
5. While holding the module, remove the mounting screws and the module.

7.3.24.2 T3000 Interface Card Installation

1. Hold the new module in position and install the mounting screws.
2. Reconnect each wire to the module. Take care to be sure that each wire is connected to the appropriate terminal.
3. Close the control box.
4. Reconnect the IBC-2000 power cords to their respective power sources.
5. Turn the IBC-2000 on and check for proper operation.

7.3.25 Vibrator Control Module Replacement

If the Vibrator Control Module becomes damaged or fails to function, use the following procedures to remove it and install a new one.

ESD NOTICE

To protect against ESD damage to the Vibrator Control Module, follow Standard ESD Prevention Procedures. Failure to use recommended protective measures could result in permanent equipment damage, either immediate or latent, when handling components.

7.3.25.1 Vibrator Control Module Removal

1. Turn the IBC-2000 off and disconnect it from its power source.
2. Open the control box.
3. Label each wire for easy identification.
4. Disconnect each wire from the module.
5. While holding the module, remove the mounting screws and the module.

7.3.25.2 Vibrator Control Module Installation

1. Hold the new module in position and install the mounting screws.
2. Reconnect each wire to the module. Take care to be sure that each wire is connected to the appropriate terminal.
3. Close the control box.
4. Reconnect the IBC-2000 power cords to their respective power sources.
5. Turn the IBC-2000 on and check for proper operation.

Glossary

TERM	DEFINITION
AC	Alternating Current
Air mount isolators	An optional feature that is designed to isolate vibration from the receiver pan (from bottom thumpers and/or the vibrator) from reaching the main frame where it can be transferred to the load cells.
Bag liner tensioner	Used to prevent the bulk bag liner from being pulled out of the bulk bag during the dispensing cycle. The bag liner tensioner is mounted on top of the UPD.
Bottom thumpers	A set of four pneumatic cylinders that have metal pads mounted on the ends of the cylinder rods. As the cylinder rods extend and retract, the pads impact the bottom of the bulk bag causing vibration. The vibration helps facilitate the flow of the product from the bag.
Component	An item of hardware as commonly supplied complete by manufacturers.
Cubic Feet/Minute (CFM)	A unit of measure that is used to describe the amount of compressed air that is used by a machine.
DC	Direct Current
De-energize	To deprive an electro-receptive device of its operating current.
Discharge assembly	A device that is part of the transfer path between the bulk bag and the device that is serving as the product receptacle. Some discharges may include an enclosure to reduce dust emissions.
Drawstring	A string attached to two pneumatic cylinders that loops around the discharge nozzle. It is used to help seal and retain the bag discharge to the discharge nozzle.
Drawstring cylinders	A set of two cylinders are used to apply (when the cylinders are retracted), or release (when the cylinders are extended) tension on the drawstring.
ESD	Electrostatic Discharge
Flow control device	Used to stop, start, and meter the flow of product from the bulk bag to the product receptacle. The device used may be a knife gate, iris style valve, or CCOG.
Ground	Ground (Electrical). A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or some other conducting body at a reference potential.
Hoist	Electric motor used to lift the UPD and bulk bag so the bag can be placed on the receiver pan. Also used to lower the empty bulk bag back to the ground so it can be removed from the UPD. Available in either 1-ton or 2-ton models.
kg	Kilogram
lb or lbs	Pound or pounds
Load cell	An electronic device that varies its voltage output based on the amount of weight that is applied to it. A set of four load cells, each rated at 2500 lbs, is used on the IBC-2000.
Load cell frame	Serves as the mounting point for the load cells. On applications where there are height restrictions, the load cells may be mounted directly to the floor.
MAC valve	A device that combines an electric solenoid and a pneumatic valve. Voltage is applied or removed from the solenoid to cause the pneumatic valve to move. Used to control the pneumatic cylinders.
Product	Refers to the material that is being packaged by the machine.
Receiver pan	A large bowl shaped receiving device that is used to support the bulk bag during the dispensing cycle.
Roller Squeezer	A system that uses two pneumatic cylinders to contract and release a set of arms equipped with rollers to squeeze and release the bulk bag. This is done to break up clumps of product inside the bulk bag to facilitate the flow of the product from the bag. Roller squeezers are used in situations where using side squeezers may damage the bulk bag.

TERM	DEFINITION
Side Squeezer	A system that uses two pneumatic cylinders to contract and release a set of arms to squeeze and release the bulk bag. This is done to break up clumps of product inside the bulk bag to facilitate the flow of the product from the bag.
Spout assembly	Part of the transfer path between the bulk bag and the device that is serving as the product receptacle. This device is typically below the discharge assembly and may be constructed out of rigid metal tubing or flexible rubber tubing.
Surge	A sudden rise of current or voltage.
T3000 control panel	User interface for units equipped with this option.
T3000 interface module	An electronic module that is used to translate inputs from analog components into a digital input for the T3000 control panel.
Trolley	When equipped with an electric hoist, the trolley is used to move the hoist forward and rearward on an overhead I-beam. When in the forward position, the hoist can lift a full bulk bag from the ground, or lower an empty bulk bag to the ground. When in the rearward position, the hoist can lower a full bulk bag onto the receiver pan or it can lift an empty bulk bag off of the receiver pan.
Universal Pickup Device (UPD)	Used to lift and hold the bulk bag for the dispensing process. Available in a fork style or a hoist/trolley style.
Vibrator	Available as either an electronic or pneumatic component. It is used to impart vibration to the product via the receiver pan. This vibration helps the product flow from the bulk bag.
Vibrator control module	An electronic module that is used with electronic vibrators to control the rate of vibration. An input from the knob on the control panel is fed to the control module, which results in a change in output to the vibrator.

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Appendix A
Safety Procedures, Cautions, Warnings, and Notices

- General safety precautions must be observed during all phases of operation, service and repair of the IBC-2000. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture and intended use of the IBC-2000.
- The manufacturer assumes no liability for customer's failure to comply with the following requirements:
- Qualified technicians and maintenance personnel should service the equipment described in this manual.
- Do not attempt internal service or adjustments unless another person, capable of rendering first aid and resuscitation, is available.
- Do not substitute parts or modify equipment. This practice could, in some cases, introduce the danger of additional hazards
- The IBC-2000 contains some electrostatic-sensitive components. Therefore, always ground yourself with a proper wrist strap before handling any modules or printed circuit boards so that static charges are removed from the person. Use static suppressive packaging to protect electronic assemblies removed from the IBC-2000.
- Observe all procedural cautions and warnings located on the equipment and throughout this manual.
- Read and follow all instructions
- Follow all warnings and instructions marked on the units and listed in manuals.

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Appendix B
Spare Parts

Table B-1. Typical IBC-2000 Spare Parts List

	Part Description	Part Number
1	Receiver pan mounts – Solid (set of 4)	50-7415
2	Electronic vibrator	50-1054
3	A/C controller	50-1202
4	Drawstring cylinder	50-1164
5	Drawstring cylinder pneumatic actuator switch	53-0226
6	Timer	50-1099
7	Relay	50-1097
8	Knife gate blade – 8-inch knife gate	50-0562
9	Knife gate cylinder – single stage (used for Single Set Point applications)	50-1218
10	Knife gate cylinder – dual stage (used for Dual Set Point applications)	50-1059
11	Bronze flange bushings – side and roller squeezer (2 required per arm)	50-7091
12	Recycling Timer – SSAC ON/OFF (used with side and roller squeezers)	50-1295
13	Pan massager cylinder with hole in rod for cotter pin	50-1160
14	Latch spring (7/16” X 3-1/4”)	50-7481
15	Snap hook	50-0414
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Appendix C
Mechanical Drawings

Table C-1. IBC-2000 Mechanical Drawings

	Drawing Title	Drawing Number
1	Control Panel with T3000	24928-1-401-0
2	Control Panel with T3000 – Internal Components	24928-1-402-0
3	Control Panel – Non-weighing Machine	28017-1-401-00
4	Control Panel – Non-weighing Machine – Internal View	28017-1-402-00
5	Front, Side, Top View, IBC-2000, Load Cell, Fork, Style A	IBC2 Load Cell Fork Style A
6	Front, Side, Top View, IBC-2000, Load Cell, Fork, Style B	IBC2 Load Cell Fork Style B
7	Front, Side, Top View, IBC-2000, Load Cell, Fork, Style C	IBC2 Load Cell Fork Style C
8	Front, Side, Top View, IBC-2000, Load Cell, Fork, Style D	IBC2 Load Cell Fork Style D
9	Front, Side, Top View, IBC-2000, Load Cell, Hoist and Trolley, Style A	IBC2 Load Cell Hoist and Trolley Style A
10	Front, Side, Top View, IBC-2000, Load Cell, Hoist and Trolley, Style B	IBC2 Load Cell Hoist and Trolley Style B
11	Front, Side, Top View, IBC-2000, Load Cell, Hoist and Trolley, Style C	IBC2 Load Cell Hoist and Trolley Style C
12	Front, Side, Top View, IBC-2000, Hoist and Trolley, Style D	IBC2 Hoist and Trolley Style A
13	Load Cell Frame Assembly	LOADCELL-FRAMEASY-01
14	Control Panel – Weighing Machine – Analog Controls	18739-1-401-00
15	Control Panel – Weighing Machine – Analog Controls- Internal View	18739-1-402-00
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Appendix D
Electrical Drawings

Table D-1. IBC-2000 Electrical Drawings

	Drawing Title	Part Number
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Appendix E
T3000 Control Panel User Guide

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This unit was ordered with the base analog control set, thus the T3000 Control Panel User Guide is not needed and not included.

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Appendix F
Custom Features

The documents included in Appendix F will provide information regarding any custom features that were ordered and included in the equipment purchase.

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The equipment that accompanies this manual was not ordered with any custom features, thus no custom documentation is included.

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