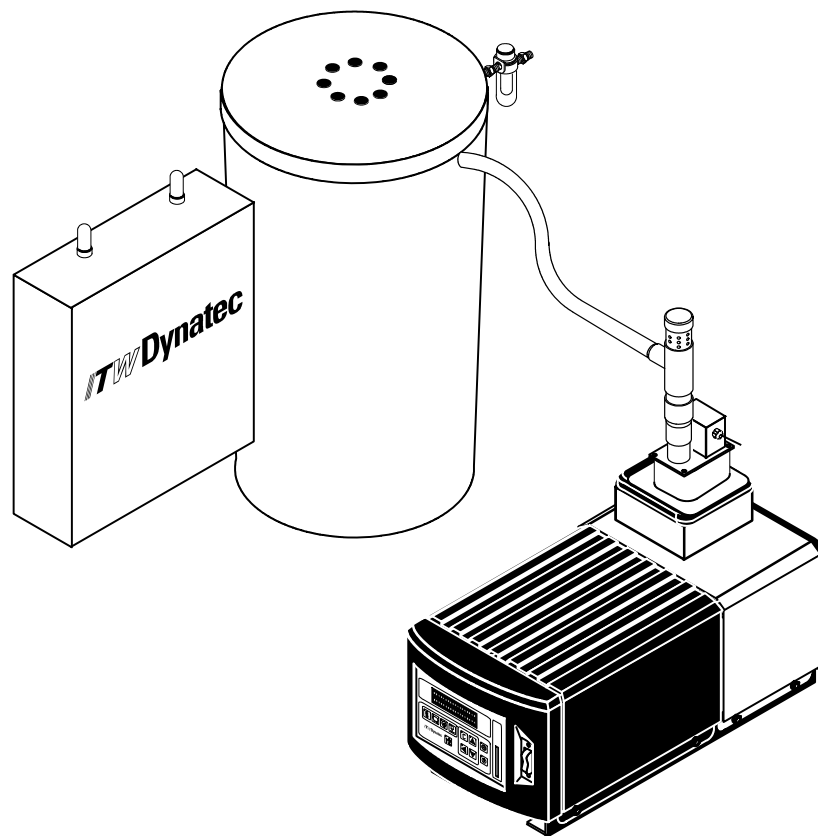




Adhesive Application Solutions • ISO 9001 Certified

HF SERIES HOPPER FEEDERS Models HF-2, HF-3, HF-4 and HF-7 OPERATIONS AND SERVICE MANUAL



IMPORTANT ! - READ ALL INSTRUCTIONS BEFORE OPERATING THIS EQUIPMENT

It is the customer's responsibility to have all operators and service personnel read and understand this information. Contact your ITW Dynatec customer service representative for additional copies.

NOTICE! Please be sure to include the serial number of your application system each time you order replacement parts and/or supplies. This will enable us to send you the correct items that you need.

**ITW Dynatec Service Parts Direct Dial: 1-800-538-9540
ITW Dynatec Technical Service Direct Dial: 1-800-654-6711**

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Adhesive Application Solutions

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Adhesive Application Systems

Hopper Feeder PRE-INSTALLATION INSTRUCTIONS

ITW Dynatec recommends that the following steps be taken before installation of the Hopper Feeder.

Air

1. Run a 1" I.D., or larger, air feed pipe from the plant's main air line to the Hopper Feeder's air filter/ regulator's 1/4" FPT inlet. This is a high-volume assembly that is designed to eliminate the flow restrictions found in standard air filter/ regulators.

2. Connect the air feed pipe to the Hopper Feeder's air filter/ regulator's inlet with 1" I.D. hose. The working pressure of the hose must be greater than the compressor's potential output pressure.

3. If a ball valve is installed in the air feed line, the valve area **MUST** be the same size I.D. as the pipe that feeds it. For example, the valve area in a standard brass ball valve is a full size smaller than the feed pipe. Most poly valves are full size.

4. Air Pressure & Consumption

a. When an HF 2 with 15 feet to 20 feet of 1.25" I.D. is transporting adhesive, the air regulator should be able to maintain at least 60 psi during the firing sequence. At 60 psi, air consumption is approximately 18 SCFM.

b. When a bulk-feed Hopper Feeder (HF 3, HF 4, and HF 7) is fired, the air regulator should be able to maintain at least 80 psi. Air consumption will be 30 to 35 SCFM. If either a long distance (for example, 100 to 150 feet) is specified or if the adhesive has high surface-tack, you will need to sustain 85 to 90 psi during the firing cycle.

Adhesive Flow

1. Either 1.25" I.D. (1.5" O.D.) PVC reinforced hose (not recommended for runs over 25') or 1.25" I.D. PVC (schedule 40) pipe may be used to transport the adhesive. However, PVC pipe will transport the adhesive both further and in greater volume than the hose will. When the Hopper Feeder is not in the process of transporting adhesive, there is very little adhesive left in the transport hose/ pipe. We estimate one to three pounds over a 100 foot distance.

2. To optimize adhesive flow through the system, run the reinforced-PVC hose or the PVC pipe between the bulk supply-container and the melt-tank in as straight a line as possible. In addition to being the shortest distance, the elimination of elbows reduces both drag and back pressure. The maximum distance vertically should be 15'. If a longer distance is required contact ITW Dynatec.

3. If reinforced-PVC hose is routed around corners, run the hose through an 18" long spiral-wire guide (available from ITW Dynatec). Then attach the spiral-wire guide rather than the PVC hose to a mounting bracket. This will prevent the hose from either collapsing or from having too tight an arc.

cont.

4. PVC Hose

a. You may use 1.25" I.D. reinforced hose directly from the bulk Dispense-Container to the melt-tank. If you do, make sure that the hose is kept as round as possible and that it is not collapsing either because of sharp turns or because it is lying across a sharp-edged piece of metal.

b. The hose will slide over the copper transmission pipe which is located at both the melt-tank and the bulk Dispense-Container. If you heat the end of the hose with either a heated-air gun or if you place it in hot water for approximately 30 seconds, it will soften, and it will be easier to slide on.

c. If the hose is routed around a corner, make the curve as long and as sweeping as possible. Use the spiral-wire guide mentioned in item #3. This will improve adhesive flow by reducing both drag and back pressure.

5. PVC Pipe: **Recommended Method**

a. If PVC pipe is used, make sure that the connection point at each pipe segment is thoroughly sealed. A leak at a joint will reduce the system's ability to transport adhesive, and the larger the leak, the more the system's transport capacity is reduced.

b. If you use PVC pipe, 1.25" I.D. PVC (1.5" O.D.) reinforced hose should be used to connect both the melt-tank at the down-connection point and the bulk Dispense-Container at the up-connection point to the PVC pipe. Make sure that the hose is kept as round as possible and that it is not collapsing into an oval shape because of sharp turns. The hose will slide over the copper pipe at both the melt-tank and the bulk Dispense-Container. The hose will slide on more easily if you heat the end of the hose with either a heated-air gun or if you place it in hot water for approximately 30 seconds.

c. When PVC pipe is used, make sure that either the 45-degree or 90-degree sweep-elbow assembly that ITW Dynatec supplies is installed at both the up-connection and down-connection points of the PVC pipe. A modified transition adapter to which the hose connects is factory-installed in each elbow. More adhesive will flow through the 45-degree sweep-elbow than through a 90-degree sweep-elbow.

Electrical

1. A 5-amp, 115 VAC electrical-outlet is required for the level-control box that is mounted near the melt-tank. The level-control box includes a factory-installed 6-foot power cable with a 3-prong plug.

2. Dynatec recommends that the level-control box be mounted five feet above the floor and within an arm's length of the melt-tank's lid assembly. This will make the melt-tank's level-calibration much easier for the maintenance technician.

3. A 5-amp, 115 VAC duplex electrical-outlet is required for the bulk Dispense-Container's control box. The control box includes two factory-installed 6-foot power cables with 3-prong plugs.

cont.

4. Control cables

- a. The 3-wire shielded electrical cable that runs between the melt-tank's level-sensor and the level control box is factory installed.
- b. A 2-wire electrical cable which is only used for dry contacts must be run between the level control box and the bulk-supply control box (HF 3) or the solenoid valves at the bulk-supply container (HF 4, HF 7). This cable will carry a 115 VAC to the control box/ solenoid during the feed process. It is usually attached to the reinforced-PVC hose or PVC pipe with cable ties. If local code requires that it be installed inside conduit, do so.

Container Dimensions

55 Gallon/250 lbs	22" (ID) X 34" (Height)
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100 Gallon/455 lbs	27" (ID) X 42" (Height)
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If you have any questions, please contact ITW Dynatec at 800-538-9540.

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Adhesive Application Solutions

Chapter 1 SAFETY PRECAUTIONS

All operators and service personnel must read and understand this manual before operating or servicing equipment.

All maintenance and service on this equipment must be performed by trained technicians.

Electrical



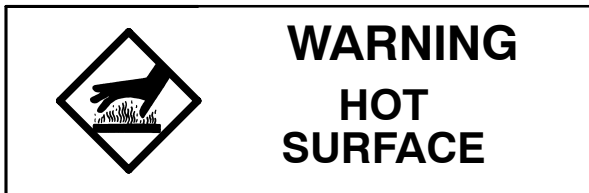
Dangerous voltages exist at several points in this equipment. To avoid personal injury, do not touch exposed connections and components while input

power is on. Disconnect, lockout and tag external electrical power before removing protective panels.

A secure connection to a reliable earth ground is essential for safe operation.

A disconnect switch with lockout capability must be provided in the line ahead of the unit. Wiring used to supply electrical power should be installed by a qualified electrician.

High Temperatures



Severe burns can occur if unprotected skin comes in contact with molten adhesive or hot application system parts.

Safety glasses, gloves and long-sleeved clothing must be worn whenever working with or around adhesive application systems.

High Pressure



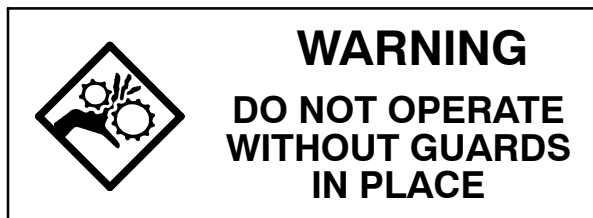
To avoid personal injury, do not operate the equipment without all covers, panels and safety guards properly installed.

To prevent serious injury from molten adhesive under pressure when servicing the equipment, disengage the pumps and relieve the adhesive system's hydraulic pressure (e.g., trigger the heads, hand-held applicators, and/or other application devices into a waste container) before opening any hydraulic fittings or connections.

IMPORTANT NOTE: Even when a system's pressure gauge reads "0" psig, residual pressure and trapped air can remain within it causing hot adhesive and pressure to escape without warning when a filter cap or a hose or hydraulic connection is loosened or removed. For this reason, always wear eye protection and protective clothing.

Either of the two High Pressure symbols shown may be used on equipment.

Protective Covers



Keep all guards in place!

To avoid personal injury, do not operate the application system without all covers, panels and safety guards properly installed.

Eye Protection & Protective Clothing



Wear safety glasses with side shields which conform to ANSI Z87.1 or EN166.

Failure to wear safety glasses could result in severe eye injury.

It is important to protect yourself from potential burns when working around hot melt adhesive equipment.

Wear protective gloves and long-sleeved, protective clothing to prevent burns that could result from contact with hot material or hot components.

Always wear steel-reinforced safety shoes.

It is very important that you PROTECT YOUR EYES when working around hot melt adhesive equipment!

Safe Installation and Operation

To avoid possible failure of hoses, make sure all hoses are routed to avoid kinking, tight radius turns (8" or less) and abrasive contact. Hot-melt hoses should not have prolonged contact with heat-absorbing surfaces such as cold floors or metal troughs. These heat-absorbing surfaces can alter adhesive flow and cause incorrect calibration. Hoses should never be covered with materials that prevent heat dissipation, such as insulation or sheathing.

Read this manual before applying electrical power to the equipment. Equipment may be damaged by incorrect electrical connections.

Do not use adhesive that is dirty or that may be chemically contaminated. Doing so can cause system

clogging and pump damage.

When adhesive hand-held applicators or other movable applicators are used, never point them at yourself or at any other person. Never leave a hand-held applicator's trigger unlocked when not actually in use.

Do not operate the hopper or other system components without adhesive for more than 15 minutes if the temperature is 150 degrees C (300 degrees F) or more. To do so will cause charring of the residual adhesive.

Never activate the heads, hand-held applicators and/ or other application devices until the adhesive's temperature is within the operating range. Severe damage could result to internal parts and seals.

Treatment for Burns From Hot Melt Adhesives

Burns caused by hot melt adhesive must be treated at a burn center.

Care should be used when working with hot melt adhesives in the molten state. Because they rapidly

solidify, they present a unique hazard.

Even when first solidified, they are still hot and can cause severe burns. When working near a hot melt application system, always wear safety gloves, safety glasses and long-sleeved, protective clothing.

Always have first-aid information and supplies available.

Call a physician and/or an emergency medical technician immediately.

Service

Refer all servicing to qualified personnel only.

Explosion/ Fire Hazard

Never operate this unit in an explosive environment.

Use cleaning compounds recommended by ITW Dynatec or your adhesive supplier only. Flash points

of cleaning compounds vary according to their composition, so consult with your supplier to determine the maximum heating temperatures and safety precautions.

Lockout/ Tagout

Follow OSHA 1910.147 (Lockout/ Tagout Regulation) for equipment's lockout procedures and other important lockout/ tagout guidelines.

Be familiar with all lockout sources on the equipment.

Even after the equipment has been locked out, there may be stored energy in the application system, particularly in the capacitors within the panel box. To ensure that all stored energy is relieved, wait at least one minute before servicing electrical capacitors.

Use of PUR (Polyurethane) Adhesives

PUR adhesives emit fumes (MDI and TDI) that can be dangerous to anyone exposed to them. These fumes cannot be detected by the sense of smell. ITW Dynatec strongly recommends that an exhaust hood or system be installed over any PUR system.

Consult with your adhesive manufacturer for specifics about required ventilation.



CAUTION: Because of the nature of PUR adhesives to strongly bond in the presence of moisture, care must be taken to prevent them from curing inside Dynatec equipment. If PUR adhesive solidifies in a unit, the unit must be replaced. Always purge old PUR adhesive from the system per your adhesive manufacturer's instructions and timetable. **ALLOWING PUR ADHESIVE TO CURE IN A UNIT VOIDS ITW DYNATEC'S WARRANTY.**

In This Manual

WARNINGS and CAUTIONS are found throughout this manual.

WARNINGS mean that failure to observe the specific

instructions may cause injury to personnel.

CAUTIONS mean that failure to observe the specific instructions may damage the equipment.

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Adhesive Application Solutions

Chapter 2 INTRODUCTION & DESCRIPTION

Introduction

Hot melt adhesive supply units (ASUs) require frequent adhesive re-filling.

- If the operator does not refill the ASU often enough, there can be insufficient time to melt and condition the adhesive. This results in equipment down time and employees wait until the hopper temperature returns to setpoint.
- When either the hopper or the bulk adhesive container is left open or is being opened and closed for refilling, external debris, such as box dust, can contaminate the system. The result is char buildup which causes plugged nozzles, clogged filters and cut seals.
- As adhesive level in the hopper lowers, adhesive residue remains on the hopper walls. The combination of high temperatures, a thin layer of adhesive and air causes char buildup to form. Eventually, char falls from the wall and into the system, resulting in plugged nozzles, clogged filters and cut seals. This can cause expensive repairs and/ or machine downtime.

Installation of a HF Hopper Feeder system reduces all of the above problems. The result is lower repair costs and higher production rates.

- The HF-2 model is normally a single unit, while the HF-3 is multi-station (up to six ASUs). The HF-3 can control and feed ASUs from up to 100 feet, depending on type and form of adhesive.

Description

The HF-2 Hopper Feeder utilizes an air venturi-activated suction to pick up the solid “chicklet” or ball form of adhesive from a bulk container (such as a 32-gallon plastic drum or a 250-gallon tote) and convey it by air pressure to the hopper. When the sensor, which is mounted in the ASU’s hopper lid, signals a fill, the air venturi and vibrator are activated. The solid adhesive is then blown from the bulk reservoir, through a clear plastic hose, and is deposited into the ASU’s hopper where the process of melting and conditioning takes place. A green light on the control box is also activated during the filling cycle and will continue to be lit until the filling is complete. An air valve and regulator are also located in the control box. See the System Diagram in Chapter 5.

All models feed up to 500 lbs. of adhesive per hour when used with a ten foot supply hose and a free flowing adhesive of 5/8” (or less) chicklet.

An optional adjustable, fail-safe alarm notifies the operator of any feeding problems, such as an empty adhesive storage tank or a production line problem.

The standard alarm system produces an available alarm and flashing red light if the fill signal is not satisfied. This is located in the control box at each ASU.

The external green light, the air venturi and the vibrator are deactivated when the level of adhesive in the hopper rises to contact the control probe. The control probe is not affected by temperature changes and is calibrated at installation. The air requirements are approximately 20 SCFM (standard cubic feet per minute), for five to twenty seconds. Generally, the hopper feeder will use approximately a half cup of adhesive every one to three minutes, depending on the hot melt usage rate.

In cases where air pressure varies, a small five-gallon air tank with inlet check valve should be used as a reservoir, next to the incoming air supply. Consult the factory for details. Depending on the adhesive usage rate, 60 psi is normally a good starting point for the air venturi and 20 psi for the vibrator. With the hopper feeder in place there is no reason to open and close the hopper lid, since the sensor (the control probe) and external light indicate the level of adhesive in the hopper.

The HF-3 Hopper Feeder utilizes the same conveying method, except the reservoir is a 100-gallon container, and it operates up to six separate ASUs. A sequencer permits only one ASU to be activated at a time. The pneumatic controls are located on the tote.

An optional tote feeding system is available which automatically fills the tote. When the tote level drops, another air venturi and vibrator, on the end of a ten-foot hose which is inserted in a 1,000 lb. gaylord container or a 1,000 lb. super sack, turns on. The adhesive is blown into the HF-3 tote container until the level control is satisfied. An optional poly-bag seal keeps dust and debris out of systems that are fed from a tote into the hopper (standard on the HF-4 model).

An optional stack light, standard on the HF-4 model, indicates operating condition of loader (ON/ FILLING/ ALARM).

A bulk adhesive transfer tower may be utilized as an accessory to the Hopper Feeder models HF2, HF7 or HF3. It allows the transfer of adhesive from a 1,200 to 1,500 lb. bulk shipping container.

Specifications

Feed rate up to 12 lbs. per minute

Electrical Requirements

HF-2 & HF-4 One 120 VAC, 5 amp outlet with ON/OFF switch

HF-3 Two 120 VAC, 5 amp outlets at tote, plus one 120 VAC,
5 amp outlet for each ASU with ON/OFF switch

Pneumatic Requirements

All models 80 psi @ 15scfn, 3/4" diameter

All models 30 SCFM burst for 3 to 7 seconds

Physical Specifications

Maximum adhesive size 0.5 inch square

Model	Adhesive Capacity	Hopper Size	Number of Hoppers Supported	Glue Source	Source Distance
HF-2	113 kg/250 lb.	55 gal.	up to 2*	50 lb. box	20 ft.
HF-3	206 kg/455 lb.	100 gal.	up to 6	tote/ super sack	100 ft.
HF-4	No Limit	?	up to 4	tote/ super sack	100 ft.

* 55 gallon capacity for supporting 2 hoppers

Options

Stack Light: indicates operating condition of loader (ON/ FILLING/ ALARM).

Poly-Bag Seal: keeps dust and debris out of systems that are fed from a tote into the hopper.
(Standard on AL-4 model.)

Transfer Tower: a support that holds a 1,500 lb. shipping container above a hopper feeder for fast unloading of glue. Includes level control. An optional Stand Vibrator is designed to keep a tote full of adhesive pellets flowing freely into the transfer tower.

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Adhesive Application Systems

Chapter 3 INSTALLATION & OPERATION

Note: Re-read Chapter 1 “Safety Precautions” before performing any installation procedures. All installation procedures must be performed by qualified, trained technicians.

Pre-Installation

Pneumatic Air

1. Run a 1” I.D., or larger, air feed pipe from the plant’s main air line to within 10 feet of the Hopper Feeder’s air filter/ regulator’s 1/4” FPT inlet. This is a high volume assembly that is designed to eliminate the flow restrictions found in standard air filter/ regulators.
2. Connect the air feed pipe to the Hopper Feeder’s air filter/ regulator’s inlet with 3/4” I.D. hose. The working pressure of the hose needs to be greater than the compressor’s potential output pressure.
3. If a ball valve is installed in the air feed line, the valve area **MUST** be the same size I.D. as the pipe that feeds it. For example, the valve area in a standard brass ball valve is a full size smaller than the feed pipe.
4. Air Pressure & Consumption:
 - a. When a model HF-2 with 15 feet to 20 feet of 1.25” I.D. adhesive feed hose is fired, the air regulator should be able to maintain at least 60 psi during the firing sequence. At 60 psi, air consumption is approximately 18 SCFM. Depending on the flow properties and the surface tack of the adhesive, there are HF-2 systems that are operational on only 40 to 45 psi of air pressure.
 - b. When a bulk-feed Hopper Feeder is fired, the air regulator should be able to maintain at least 80 psi. Air consumption will be 30 to 35 SCFM. If either a long distance (for example, 100 feet) is specified or if the adhesive has high surface tack, it will need to sustain 85 to 90 psi during the firing cycle.

Adhesive Flow

1. Either 1.25” I.D. (1.5” O.D.) PVC reinforced hose or 1.25” I.D. PVC, schedule 80, pipe may be used to transport the adhesive. However, PVC pipe will transport the adhesive both farther and in greater volume than the hose. When the Hopper Feeder is not in the process of transporting adhesive, there is very little adhesive left in the transport hose/ pipe. (Estimate: one to three pounds over a 100 foot distance).
2. To optimize adhesive flow through the system, run the reinforced PVC hose or the PVC pipe between the bulk supply container and the ASU in as straight a line as possible. In addition to being the shortest distance, the elimination of elbows reduces both drag and back pressure.

cont.

3. If reinforced PVC hose is routed around corners, run the hose through an 18" long spiral-wire guide (available from ITW Dynatec). Then attach the spiral-wave guide rather than the PVC hose to a mounting bracket. This will prevent the hose from either collapsing or from having too tight an arc.
4. PVC Hose:
 - a. You may use 1.25" I.D. reinforced hose directly from the bulk dispense-container to the ASU. If you do, make sure the hose is kept as round as possible and that it does not collapse either because of sharp turns or because it is laying across a sharp-edged piece of metal.
 - b. The hose will slide over the copper transmission pipe which is located at both the ASU and the bulk dispense-container. If you heat the end of the hose with either a heated air gun or if you place it in hot water for approximately 30 seconds, it will soften and will be easier to slide on.
 - c. If the hose is routed around a corner, make the curve as long and as sweeping as possible, and use the spiral-wire guide mentioned in item #3. This will improve adhesive flow by reducing both drag and back pressure.
5. PVC Pipe:
 - a. If PVC pipe is used, make sure that the connection point at each pipe segment is thoroughly sealed. A leak at a joint will reduce the system's ability to transport adhesive, and the larger the leak, the more the system's transport capacity is reduced.
 - b. When using PVC pipe, 1.25" I.D. PVC (1.5" O.D.) reinforced hose is used to connect both the ASU at the down-connection point and the bulk dispense-container at the up-connection point to the PVC pipe. Make sure that the hose is kept as round as possible and that it does not collapse into an oval shape because of sharp turns.

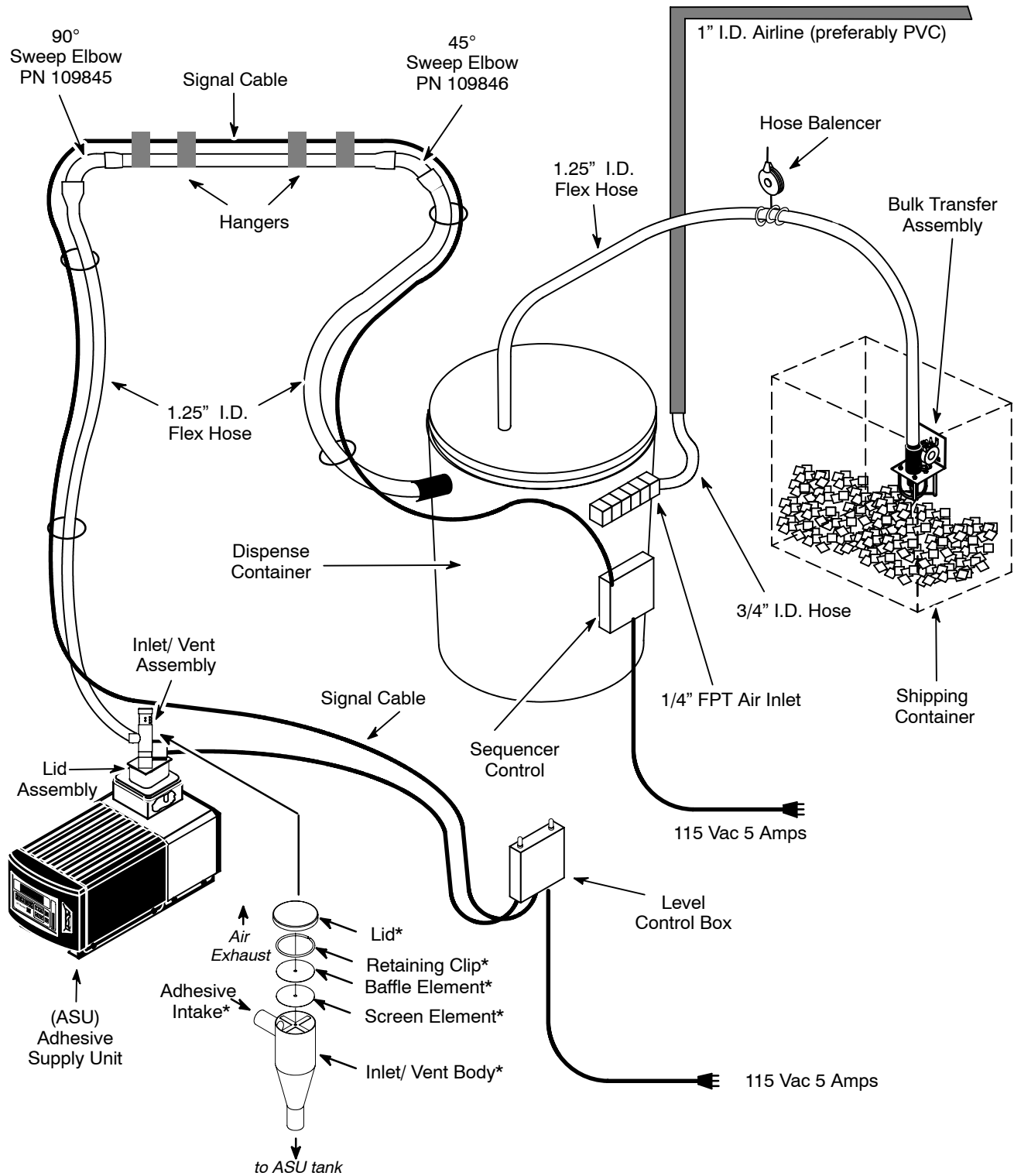
Note: The hose will slide over the copper pipe at both the ASU and the bulk dispense-container. The hose will slide on more easily if you heat the end of the hose with either a heated air gun or if you place it in hot water for approximately 30 seconds.

 - c. When PVC pipe is used, make sure that either the 45-degree or 90-degree sweep elbow assembly supplied by Dynatec is installed at both the up-connection and down-connection points of the PVC pipe. A modified transition adapter to which the hose connects is factory-installed in each elbow. More adhesive will flow through the 45-degree sweep elbow than through the 90-degree sweep elbow.

Electrical

1. A 5 amp/ 115 VAC electrical outlet is needed for the level control box that is tethered to the ASU's lid assembly by a shielded, 3-wire cable. The level control box includes a factory-installed 6-foot electrical cable with a 3-prong plug.
2. Dynatec recommends that the level control box be mounted 5 feet above the floor and within an arm's length of the ASU's lid assembly. This will make the ASU's level calibration much easier for the maintenance technician.
3. A 5-amp/ 115 VAC duplex electrical outlet is required for a bulk dispense-container's control box. The control box includes two factory-installed 6-foot electrical cables with 3-prong plugs.
4. A 2-wire electrical cable must be run between the ASU's level control box and the bulk-supply container's control box. Since it is only used for a dry contact switch, it is usually attached to the reinforced PVC hose or PVC pipe with cable ties. Local codes may require that it be installed inside conduit.

Installation Diagram (Example)



* Inlet/ Vent components must be assembled in order shown
(4" Inlet/ Vent Assembly illustrated)

Installation

Model HF-2

Refer to Chapter 5 to identify the major components of the HF-2 Hopper Feeder. The hot melt ASU's lid is an integral part of each system and must be correctly identified to assure the correct lid is installed on your feeder.

Procedure

1. Replace the ASU's lid with the lid assembly supplied with the HF Hopper Feeder.
2. Assemble the components of the Inlet/Vent assembly as shown on the previous page.
3. Attach the braided 1 1/4" hose to the adhesive inlet on the hopper lid. It may be helpful to heat the end of the hose with a hot air gun.
4. In the control box: attach the 3/8" poly tube air line to the push lock fitting on the air valve. Attach the 1/4" poly tube to the air regulator push lock fitting. Attach the air filter to the outside of the control box.
5. Plant air (maximum 120 psi) should be supplied to the inlet on the air filter at the control box. A 1/2" inlet air line is required.
6. The air transducer/ regulator should be set to 60 psi when using round, marble-like form. Higher pressure may be required for other forms.
7. The air vibrator regulator should be set at 20 psi. Do not exceed 40 psi.
8. Insert the other end of the 1 1/4" braided hose into the transducer assembly located in the bulk adhesive container. Push both the 1/4" and 3/8" tubing through the container and attach to the transducer and vibrator.
9. Plug the supplied power cord into an acceptable 120 VAC outlet. See Chapter 6 for control wiring information. After the installation and wiring is complete, the sensor must be calibrated (see Chapter 3, "Operation").
10. Use plastic ties to secure poly air lines to the hose along with the electrical cable from the lid assembly.

Models HF-3, HF-4

Installation of these models is nearly identical to the HF-2, except that there are longer multiple hoses, which have spring supports at critical bends to prevent kinking the hose. An electrical cable is required from each ASU to the tote. Usually the cables follow the hoses and are attached to the hoses with plastic ties.

cont.

Alarms (Model HF-4)

There are two indicating alarm systems. Both have visual lights and audible alarms. One is for “No Fill”, meaning the signal to fill is actuated, but no chicklets or beads have fed into the hopper and satisfied the level control. The other is for “No Signal”, meaning there was no signal given for the feeder to feed when the packer has operated for the set time on the timer.

Both alarms are controlled by one to ten minute adjustable timers. For the No Fill alarm (a flashing red light and buzzer), the actual time to feed or satisfy the level control is five to ten seconds. However, if a hopper is low, it may take several minutes to fill, and therefore the timer is set somewhere around two to three minutes. The No Signal alarm (a continuous red light) is energized by the packer when it starts. The alarm sounds and a red light comes on when the preset timer setting is reached with no glue feed. Usually a two minute setting is adequate. Both alarms prevent the hopper from running out of glue.

On the tote feeder, the boom tension cable should be such that the feeder remains upright. A tension adjustment is on the balancer. A circular spring contains the poly bag around the feeder to keep dirt out of the glue. This bag should be pulled through the spring once or twice a shift to keep excess poly from getting into the glue inlet.

Operation

Level Calibration in Hopper

After installation, fill the hopper to two inches from the top of the lid. Close the lid with the sensor probe in place. DO NOT use air pressure at this time, as the control must be calibrated. See Chapter 6 to identify the location of the sensitivity adjustment, test, timing adjustment and selector switches.

1. ACTIVATION SEQUENCE:

To refill the hopper when the adhesive is not in contact with the probe, position the S2 and S3 sequence switches UP and position the S1 and S4 sequence switches DOWN. Adhesive filling will begin and will continue until the adhesive level rises in the hopper and makes contact with the probe.

2. PROBE SENSITIVITY:

This calibration (as the previous one) must be performed with the sensor probe and lid in place on the hot melt hopper. The adhesive level should be below the probe with no contact between the two. Inside the control box, if the red LED is ON, turn the sensitivity potentiometer counter-clockwise until the red LED goes OFF and the green LED comes ON*. Manually fill the ASU's hopper until adhesive contacts the probe. The red LED should come ON and the green LED should go OFF. If not, turn the sensitivity potentiometer clockwise until the red LED comes ON.

** If a delay to allow the operator to check the level is desired, see Chapter 6 for location of the delay potentiometer. One revolution clockwise equals one second delay.*

3. TEST:

Set air pressure to 60 psi and allow the system to fill with adhesive. The red LED should come ON, indicating the control is satisfied. If the red LED does not come on, turn the potentiometer clockwise until the red LED comes ON. The unit is now ready to run. Lastly, the potentiometer setting should be checked by raising and lowering the lid, making sure the green LED comes ON when raising the lid 1/2" and goes OFF when lowering the lid. Continue the adjustments until it goes OFF and ON when the lid is moved.

4. FINAL TEST:

Once the system is operational, observe the adhesive level in each hopper immediately after the fill cycle is complete. The system's electrical and air must be turned OFF when observing the level, otherwise the level cannot be seen due to the activation of the filling cycle. Re-adjust the level if the adhesive is above the lower tip of the probe. Failure to obtain this low level can cause the breather or fill opening to clog.

5. OPTIONAL AUTOMATIC TOTE LEVEL CONTROL CALIBRATION:

The level control has a 30" probe located inside the tote with pneumatic and electrical controls on top of the tote. The same red and green LED indicator lights show satisfied or fill condition, like the receiver control in the control box. The vibrator should be set at 20 psi and the transducer at 60 psi. The transducer and vibrator, attached to the 1 1/4" braided hose, should be inserted in the 1,000 lb. gaylord, a 1,000 super sack or a 50 lb. box. See Chapter 6 for location of LED's sensitivity adjustment and wiring. See separate section for the tote auto level control system.

7. The adhesive level in the hopper can be calibrated to fill higher by a slight counter-clockwise adjustment to the sensitivity potentiometer, see Chapter 6.

Controls

HF-2 Model

See component illustration in Chapter 5 for location of controls.

1. ON/OFF Switch: toggles the Hopper Feeder On and Off.
2. Alarm Re-set Switch: activates when there is no adhesive in the ASU's hopper. Press the alarm re-set switch and verify that there is adhesive in the Hopper Feeder.

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Adhesive Application Systems

Chapter 4 MAINTENANCE & TROUBLESHOOTING

Note: Re-read Chapter 1 "Safety Precautions" before performing any maintenance or troubleshooting procedures. All maintenance and troubleshooting procedures must be performed by qualified, trained technicians.

Maintenance

No routine maintenance is required, other than checking the air line filter for water contamination and the adhesive transducer (in the bulk adhesive container) for debris from outside contaminants.

If adhesive builds up on the probe or vent ("dirty probe"), reduce the air pressure to the venturi. Doing this may slow down the rate of filling, but will minimize adhesive buildup. This should be checked daily for the first week. If buildup continues to be a problem, lower the level in the hopper by adjusting the sensitivity setting on the receiver as discussed in Chapter 3, Operation, items # 2 and 4.

Troubleshooting Chart

Preliminary Check

Before proceeding, verify that all activation switches are positioned as shown in Chapter 6 (i.e., switches 2 & 3 are UP, switches 1 & 4 are DOWN).

There are three main sub-assemblies:

1. Level Control Assembly, including probe and transmitter.
2. Control Box, including power supply and air controls.
3. Air Venturi (transducer) and Hose.

Problem	Possible Cause	Solution
Red LED cannot be adjusted to turn ON.	1. Probe lead not connected. 2. No power to unit. 3. On-board fuse inoperative. 4. Inoperative sensing card.	1. Plug the probe lead into probe. 2. Check for correct voltage to unit (120 volts). 3. Replace fuse. 4. Repair or replace card.
Red LED remains ON at all times.	1. Probe is shorted to case or ground.	1. Unplug probe lead and position it so that the bare end is not touching anything. Turn the calibration pot 20 turns counter-clockwise. The LED

cont.

Problem	Possible Cause	Solution
	2. Inoperative sensing card.	should go out. If it does not, repair, replace or clean antenna probe. 2. Repair or replace card.
Unit triggers when adhesive touches probe, but will not re-set when adhesive recedes from probe or unit and gives false alarm.	1. Improper mount of probe. 2. Improper calibration. 3. Excessive adhesive buildup on probe. See Chapter 3, Level Calibration, item 3.	1. Contact ITW Dynatec. 2. See Chapter 3, Level Calibration, item 3. 3. Perform "dirty probe" maintenance (see pg. 4-1). Recalibrate.
Unit will not detect adhesive.	1. Improper calibration. 2. Probe lead not plugged into probe. 3. Unit was calibrated with adhesive touching. 4. Too much delay. Check dip switches.	1. See Chapter 3, Level Calibration, item 3. 2. Plug probe lead into probe. 3. Verify adhesive is not touching probe. 4. Recalibrate.
Unit will not stay in calibration.	Poor grounding of unit to vessel.	Provide secure ground connection.
Relay operates properly, but no signal at terminals circuit board.	1. Burned or broken electrical path on power supply. Check printed circuit board for damage. 2. Relay contacts inoperative.	1. Turn power OFF, remove module from housing and inspect. Replace if needed. 2. Replace board.
Unit triggers and fill light comes on but does not fill. Adhesive "spirals" inside braided hose, but does not move.	1. Vent blocked. 2. Transducer in container blocked.	1. Use a heat gun to clean out vent. See note at end of troubleshooting chart*. 2. Clean out inlet, clean out transducer inlet on HF-2, empty container. On <i>cont.</i>

Problem	Possible Cause	Solution
		HF-3, remove braided hose from tote and feed 48" wire down inside to unclog.
	2. Transducer plugged at bottom venturi.	2. Remove transducer from container, disassemble and clean inside.
	3. Air fitting plugged.	3. Remove fittings and clean.

**Note: A hot air gun works well to melt adhesive in lid vent or inlet fitting. Fittings are slip fit and can be removed to clean if necessary.*

Compatible Adhesives

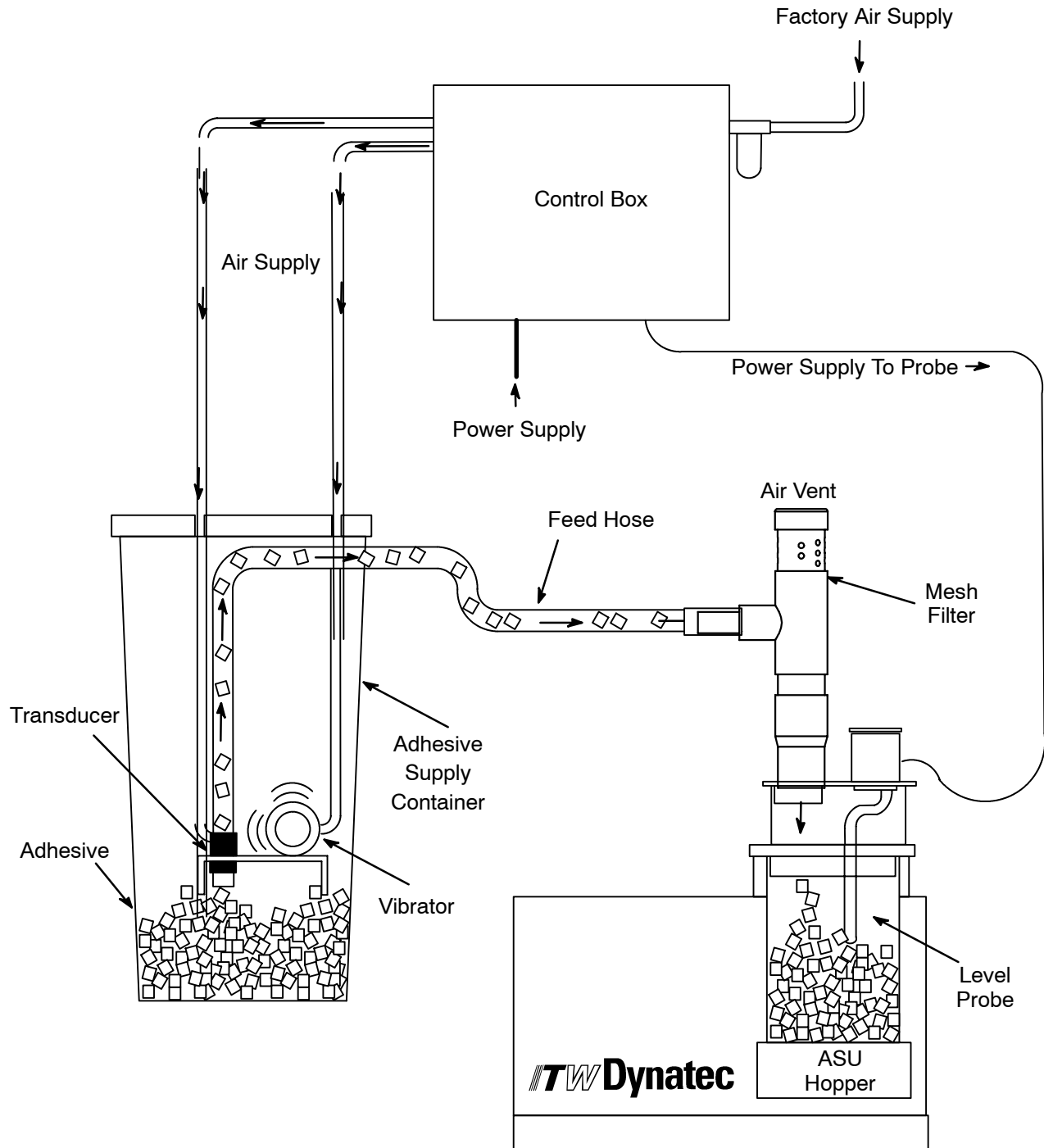
The following is a list of adhesives which are compatible with HF Series Hopper Feeders. ITW Dynatec will test adhesives that are not listed. A good test is to squeeze the adhesive in your hand and let go; if no adhesive particles stick to the hand, the adhesive will generally flow. The size must be less than 5/8 inch.

Adhesive Systems:	1261
API:	74ELG-2
H.B. Fuller:	HL6582X - HL7245 HL7262 HL7268 HL7276 HL7430 HL7500 HM0904 HM1504
National Starch	34-1127 34-2101 34-2628C 34-2635 34-2644
Swift Adhesives:	81060 84171 84183 85015

Recommended Spare Parts for all Models

Part Number	Description	Quantity
104830	Vibrator	1
104826	Transmitter	1
104834	Receiver	1
104844	Timer Delay Alarm Control	1
104845	Audible Alarm	1
113489	Solenoid Valve	1
N01033	Fuse, 5A, 250V, 312	1
N06937	Fuse, 250 mA, 250V	1
104832	Filter (*for 2" vent assembly)	1
109324	Filter (*for 4" vent assembly)	1

Chapter 5 COMPONENT ILLUSTRATIONS & BILLS OF MATERIAL



Hot melt adhesive in the adhesive supply container is pneumatically conveyed to the ASU's hopper. A transducer at the end of the feed hose is submerged in the supply container. As adhesive level lowers in the ASU's hopper, the probe senses the absence of adhesive and turns on compressed air to the transducer, causing adhesive to flow. When the adhesive level contacts the probe in the hopper, the sensor automatically turns off the air pressure and adhesive flow stops.

System Diagram: All Models

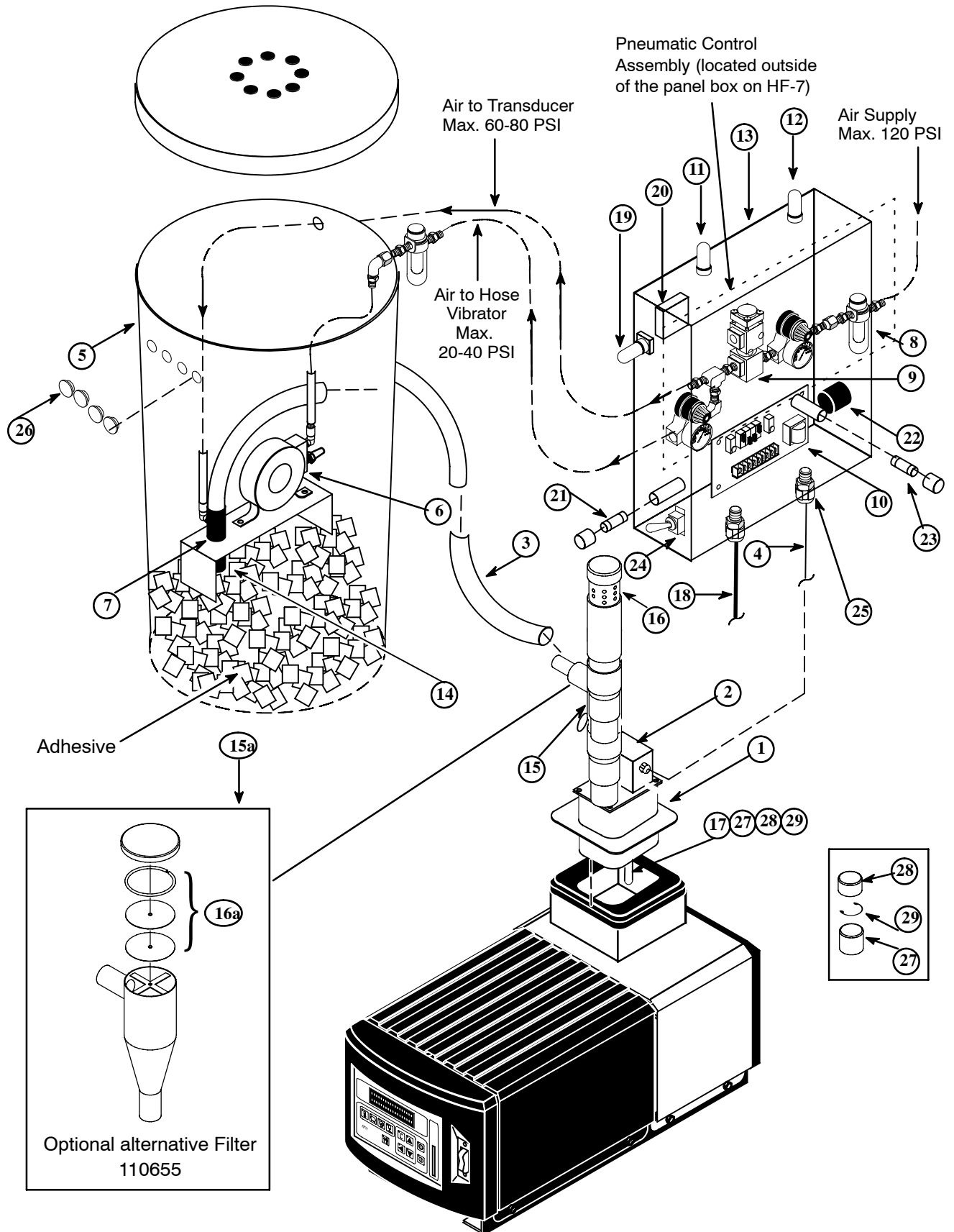
Bill of Materials for Major Parts Listing, Model HF-2

<i>Item No.</i>	<i>Part Number</i>	<i>Description</i>	<i>Qty.</i>
1	110656	Probe Sensor Housing & Lid Assembly (DMS 05 & 10 and Dmini ASUs)	1
	118300	Probe Sensor Housing & Lid Assembly (DMSR 05 & 10 ASU)	1
2	104826	Transmitter	1
3	104827	Hose Braided	1
4	104828	Cable, 2 cond. Shield	1
5	104829	Container, 30 gallon	1
6	104830	Vibrator	1
7	104831	Transducer	1
8	105827	Filter-2-196	1
9	104833	Pneumatic Control Assembly	1
10	104834	Receiver	1
11	104835	Light Assembly, Red	1
12	104836	Light Assembly, Green	1
13	104837	Control Box Assembly	1
14	104838	Vibrator Bracket Assembly	1
15	110654	Inlet, 2", PVC	1
15a	110655	Inlet, 4", Stainless Steel	1
16	104832	Filter Screen, 2" Inlet	1
16a	109324	Filter Screen, 4" Inlet	1
17	104841	Level Probe Sensor	1
18	104842	Power Cord	1
19	104843	Alarm Reset Switch	1
20	104844	Time Delay Alarm Control	1
21	N01033	Fuse, 5A, 250V, 312	1
22	104845	Audible Alarm	1
23	N06937	Fuse, 250 mA, 250v	1
24	1-398	ON/ OFF Toggle Switch	1
25	2-874	Cord Grip	3
26	109847	Exuast Plug	1-8
27	111498	Insulator, Lid Assembly	1
28	804712	Insulator, Probe, Lid Assembly	1
29	804710	Snap Ring, Lid Assembly	1



WARNING

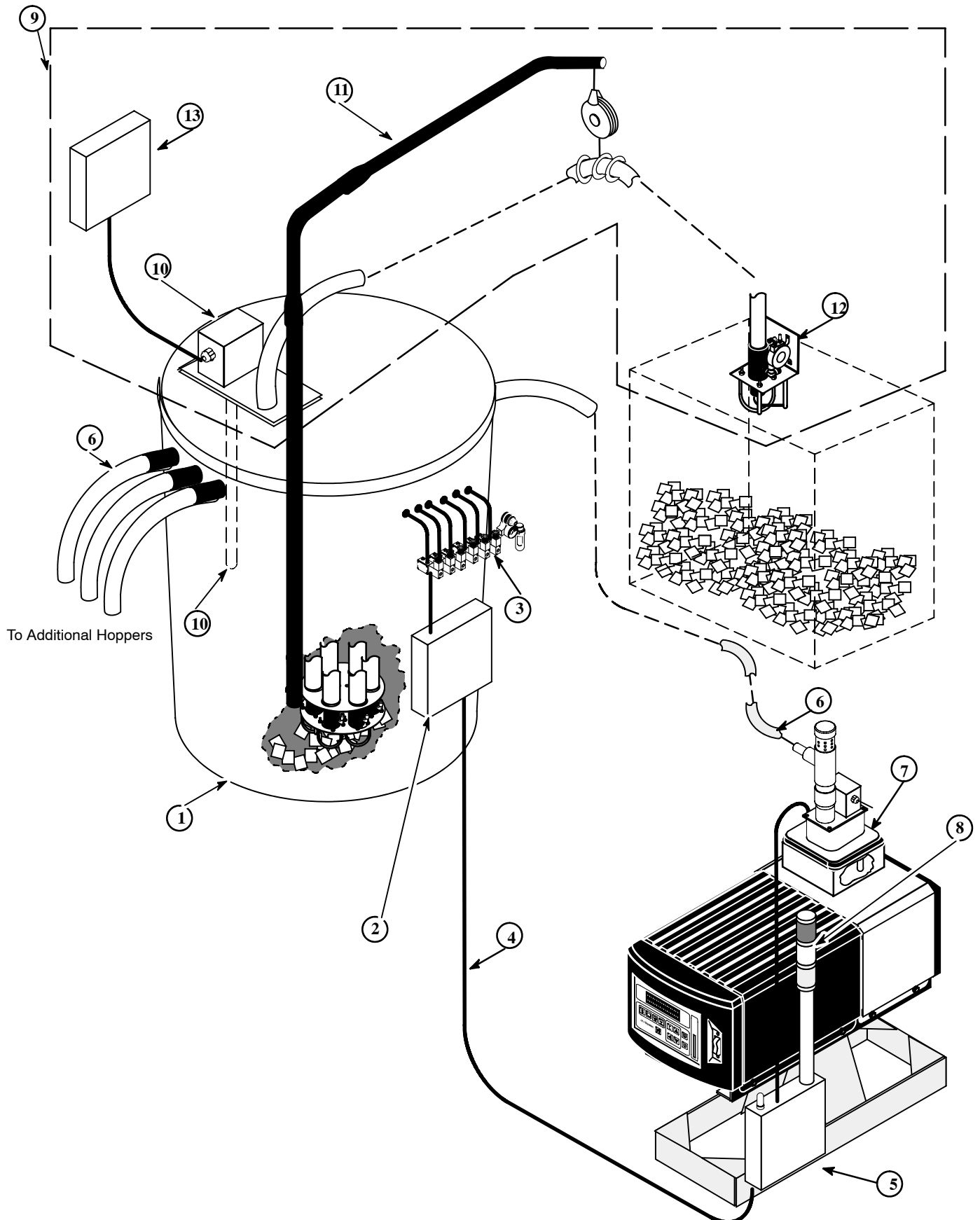
All parts must be periodically inspected and replaced if worn or broken. Failure to do this can affect equipment's operation and can result in personal injury.



Component Illustration: Major Parts Listing HF-2 & HF-7

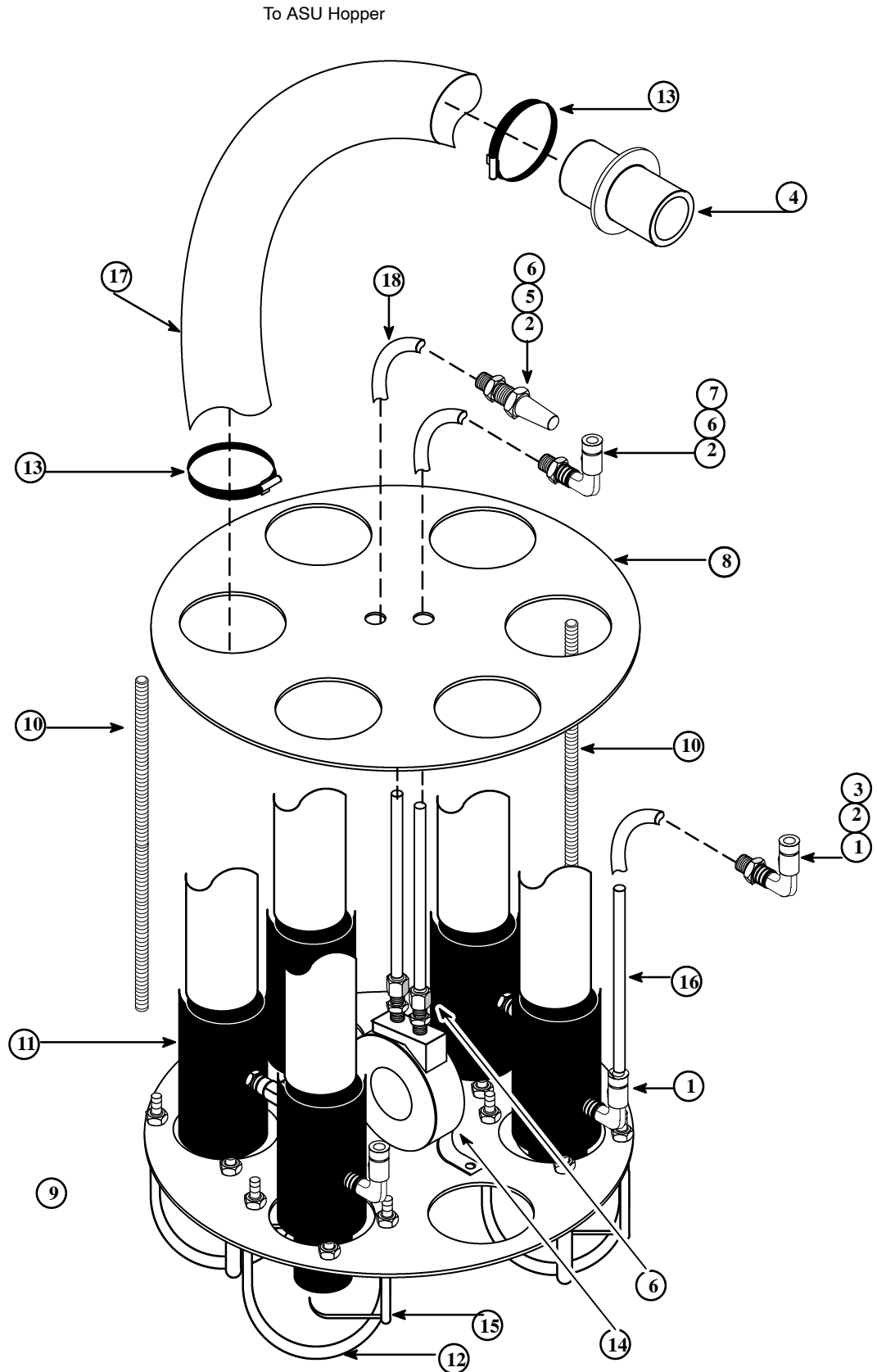
Bill of Materials for Major Parts Listing, HF-3

Item No.	Part Number	Description	Qty. Per. ASU
	105309	HF-3-2-206 Hopper Feeder, 2 ASU's, 100Gal/455lbs container	
	105310	HF-3-3206 Hopper Feeder, 3 ASU's, 100Gal/455lbs container	
	105311	HF-3-3-206 Hopper Feeder, 4 ASU's, 100Gal/455lbs container	
	105312	HF-3-3-206 Hopper Feeder, 5 ASU's, 100Gal/455lbs container	
	105324	HF-3-3-206 Hopper Feeder, 6 ASU's, 100Gal/455lbs container	
1	117298	Container, 100Gal	1
2	104917	Sequencer System	1
3	104918	Pneumatic Control System	1
4	105322	Cable Assembly	1
5	104922	Controller Assembly	1
6	104827	Adhesive Supply Tube	1
7	(see list)	Lid, Assembly (Chose from lid options on System Data Sheet)	1
<u>Options</u>			
8	110675	Stack Light Assembly	1/ ASU
		(1-419) Red Lens fixture	
		(1-418) Green Lens fixture	
		(1-417) Base and Cover	
		(1-416) Tube	
		(1-420) Light Bulb	
9	107170	Automatic Adhesive Transfer System	1/HF-3
10	(865)	Casting With 24" Probe	1
11	104593	Boom Assembly	1
12	104920	Transducer Rack Assembly	1
13	104922	Controller Assembly	1



Bill of Materials for Rack, Transducer P1AB Assembly, Model HF-3

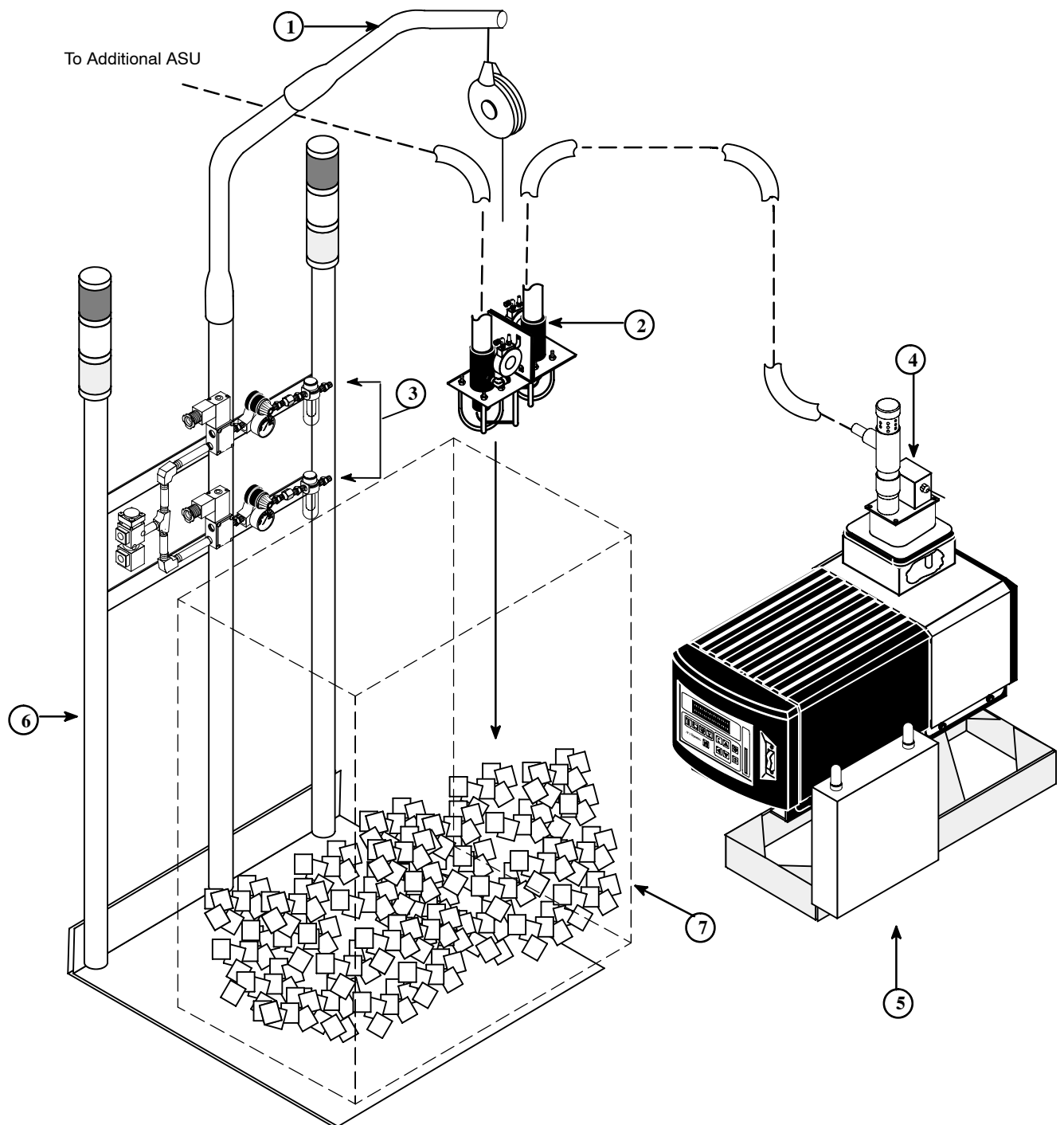
Item No.	Part Number	Description	Qty./ 6 ASUs
1	1-473	Fitting, 90° 1/2 x 1/4 MPT	12
2	2-931	Air Break	12
3	2-926	Fitting, Straight 1/2 x 1/4 MPT	12
4	708	Flange	6
5	N02535	Muffler	1
6	2-902	Fitting Straight 1/4 x 1/4 MPT	2
7	N06412	Fitting, 90° 1/4 x 1/4 MPT	1
8	803	Upper Plate	1
9	804	Lower Plate	1
10	N/A	All Thread 14"	3
11	551	Transducer	2
12	N/A	U-bolt 5/16 x 3 1/2 x 3 5/16	3
13	1-052	Hose Clamp	4
14	1-434	Vibrator	1
15	244	Diffuser	2
16		Poly Tube 1/2"	8'
17	2-147	Braided Hose 1 1/4"	8'
18	1-104	Poly Tube 1/4"	8'



Component Illustration: Rack 2,

Bill of Materials for Major Parts Listing, Model HF-4

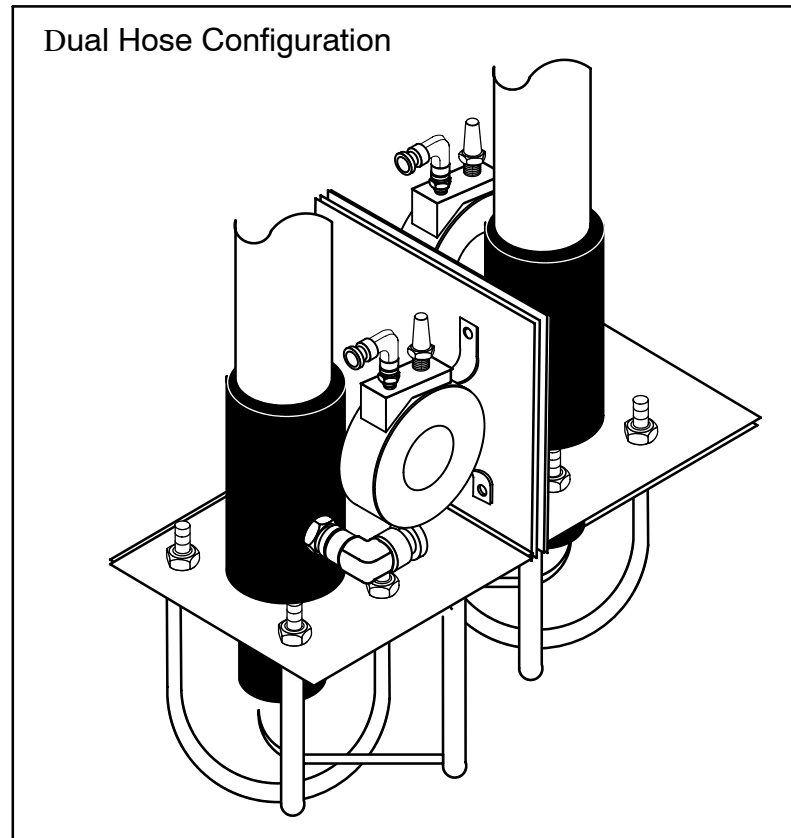
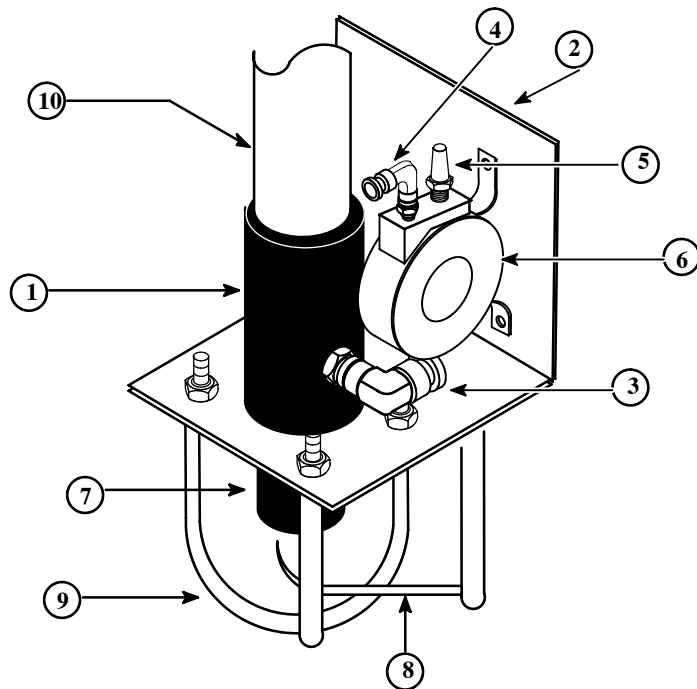
<i>Item No.</i>	<i>Part Number</i>	<i>Description</i>	<i>Qty.</i>
1	104953	Boom Assembly	1
2	104954	Auto Delivery System, Single	1
	104955	Auto Delivery System, Dual	1
3	104956	Pneumatic Assembly, Single	1
	104957	Pneumatic Assembly, Dual	1
4		Lid Assembly	1
5	104958	Control Box	1
6	104959	Stand & Light Assembly, Single	1
	104960	Stand & Light Assembly, Dual	1
7		Bulk Supply of Adhesive (Not Included)	



Component Illustration: Major Parts Listing HF-4

Bill of Materials for Dual Auto Delivery Assembly, Model HF-4

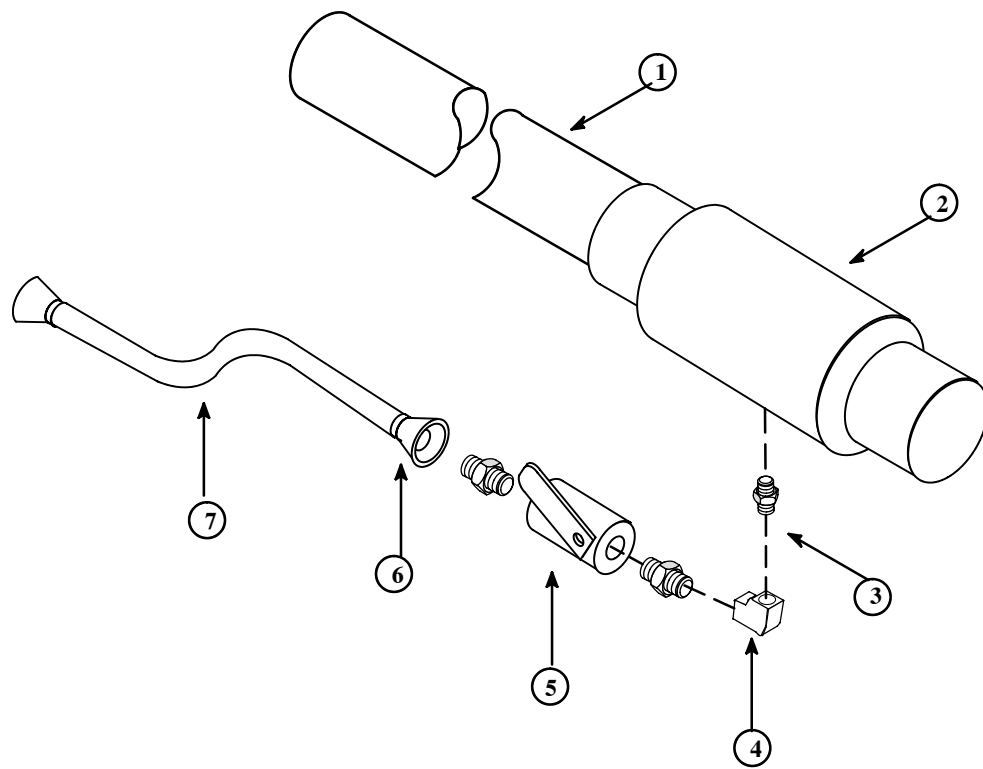
<i>Item No.</i>	<i>Part Number</i>	<i>Description</i>	<i>Qty.</i>
1	1-448	Transducer, Hi-Flow	1
2	1017	#2 Wand Plate	1
3	1-469	Fitting, 90° 1/2" x 3/8" MPT	1
4	1-437	Fitting, Straight 1/4 " x 1/8" MPT	1
5	N02745	Muffler 1/8"	1
6	3-055	Vibrator, Ball, Al Wand	1
7	1-444	Collar, Split Steel, 1 7/16	1
8	244	Diffuser	1
9		U Bolt, 5/116 x 2 1/2 x 3 3/16	2
10		Upper feed Tube	1



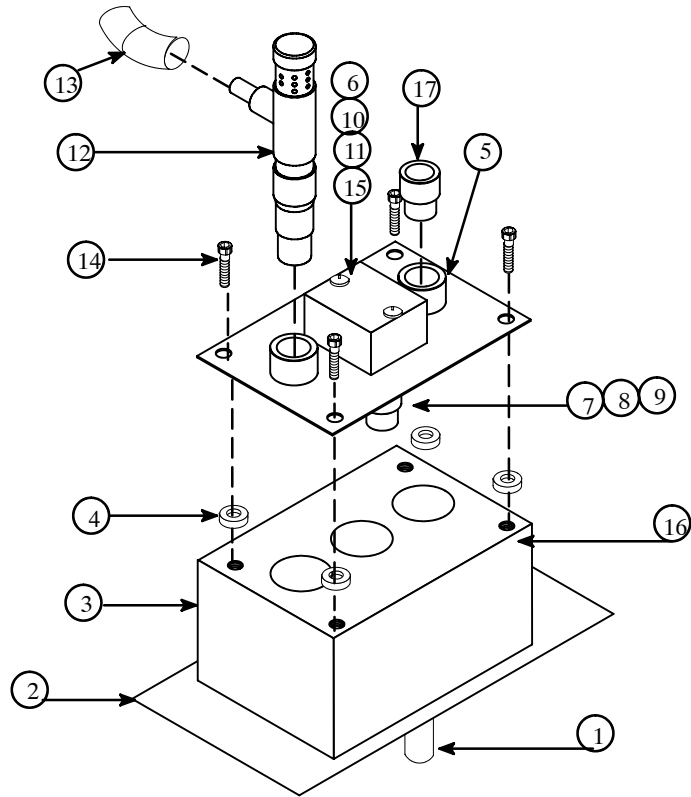
Component Illustration: Dual Auto Delivery Assembly HF-4

Bill of Materials for Hand-Held Manual Loader, All Models

<i>Item No.</i>	<i>Part Number</i>	<i>Description</i>	<i>Qty.</i>
1	104827	Hose, 1 1/4 x 8'	1
2	104831	Transducer	1
3	N01067	Fitting, Straight	2
4	N01644	Fitting, 90° Elbow	1
5	104984	Valve	1
6	104930	Fitting	2
7	104933	Tubing, 3/8 x 15	1



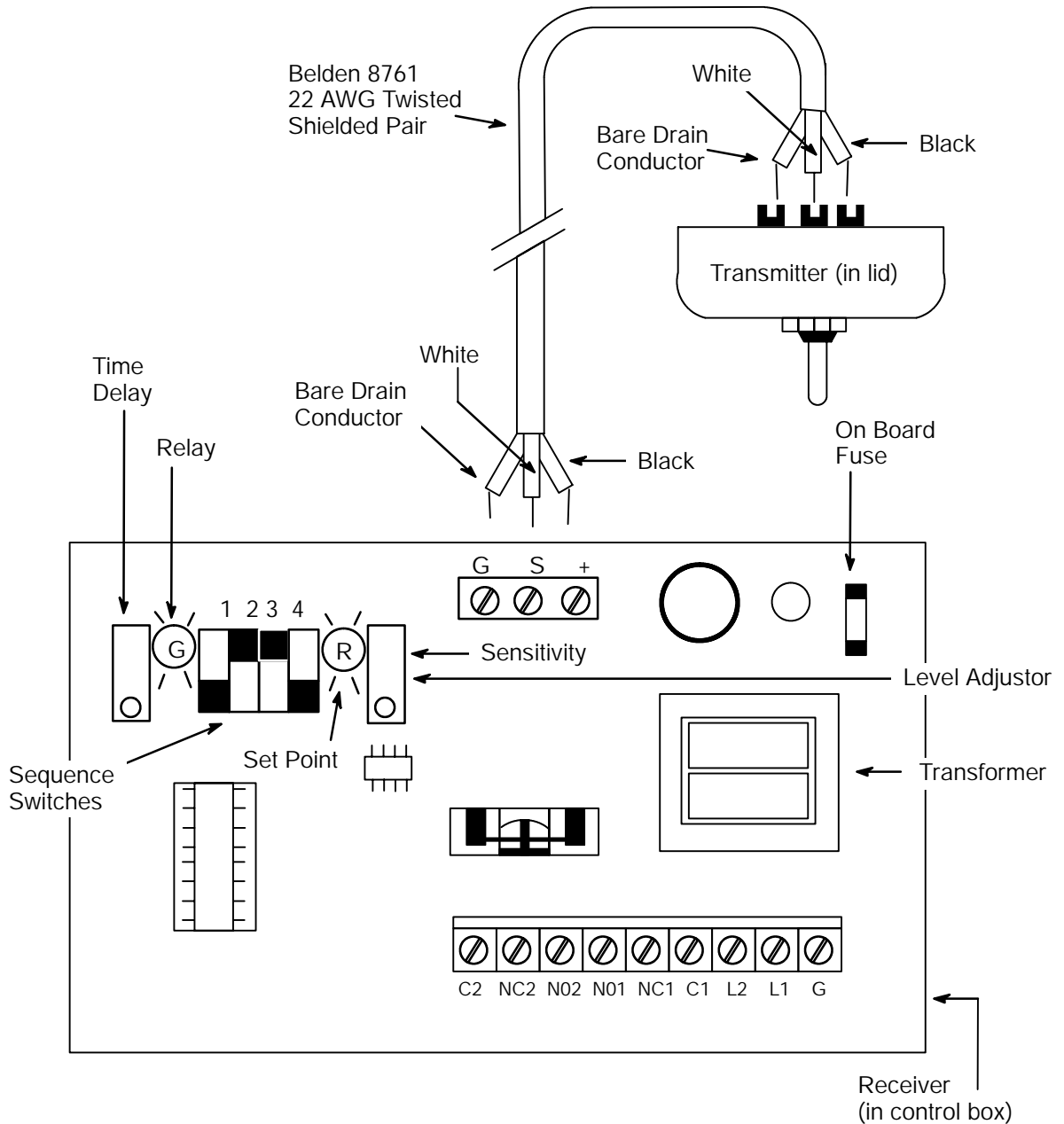
Component Illustration: Hand-Held Manual Loader, All Models



Bill of Materials for Nordson-compatible 2300 Shoebox

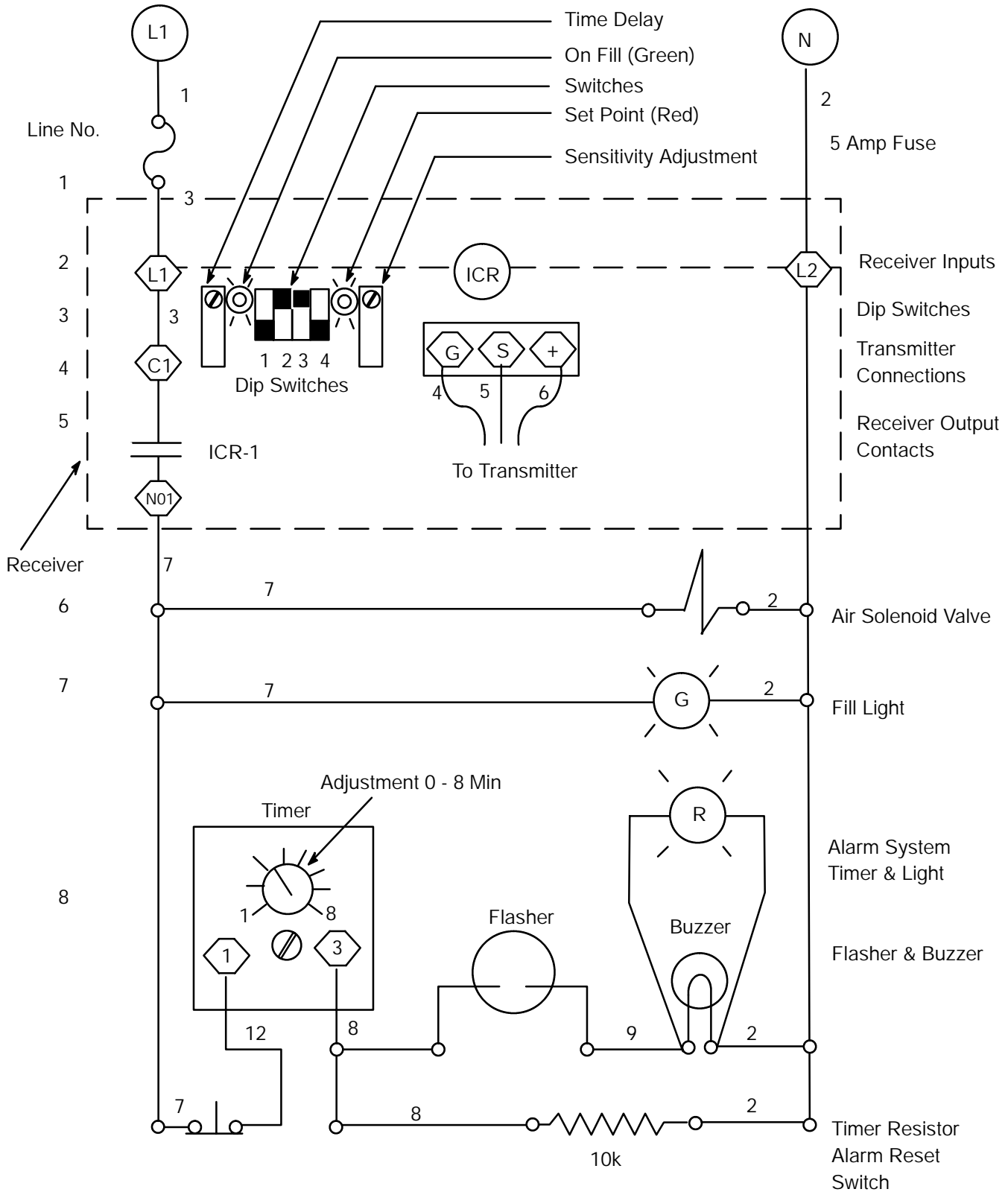
Item No.	Part Number	Description	Qty.
1	934-04	Probe	1
2	System Specific	Lid	1
3	System Specific	Transfer Chamber	1
4	L00006	Spacer, Insulator	4
5	724-01	Casting	1
6	2-874	Cord Grip	1
7	584	Insulator Probe	1
8	1-463	Snap Ring	1
9	585	Insulator Box	1
10	2-953	Transmitter	1
11	551	Lid Casting	1
12	110654	Inlet vent Assembly	1
13	System Specific	45 deg. Elbow	1
14		Hex Bolt 8-32 x 3/4	4
15		6-32 x 1/2 Button Head Screw	3
16		8-32 Nut	1
17		Vent	1

Chapter 6 ENGINEERING DRAWINGS

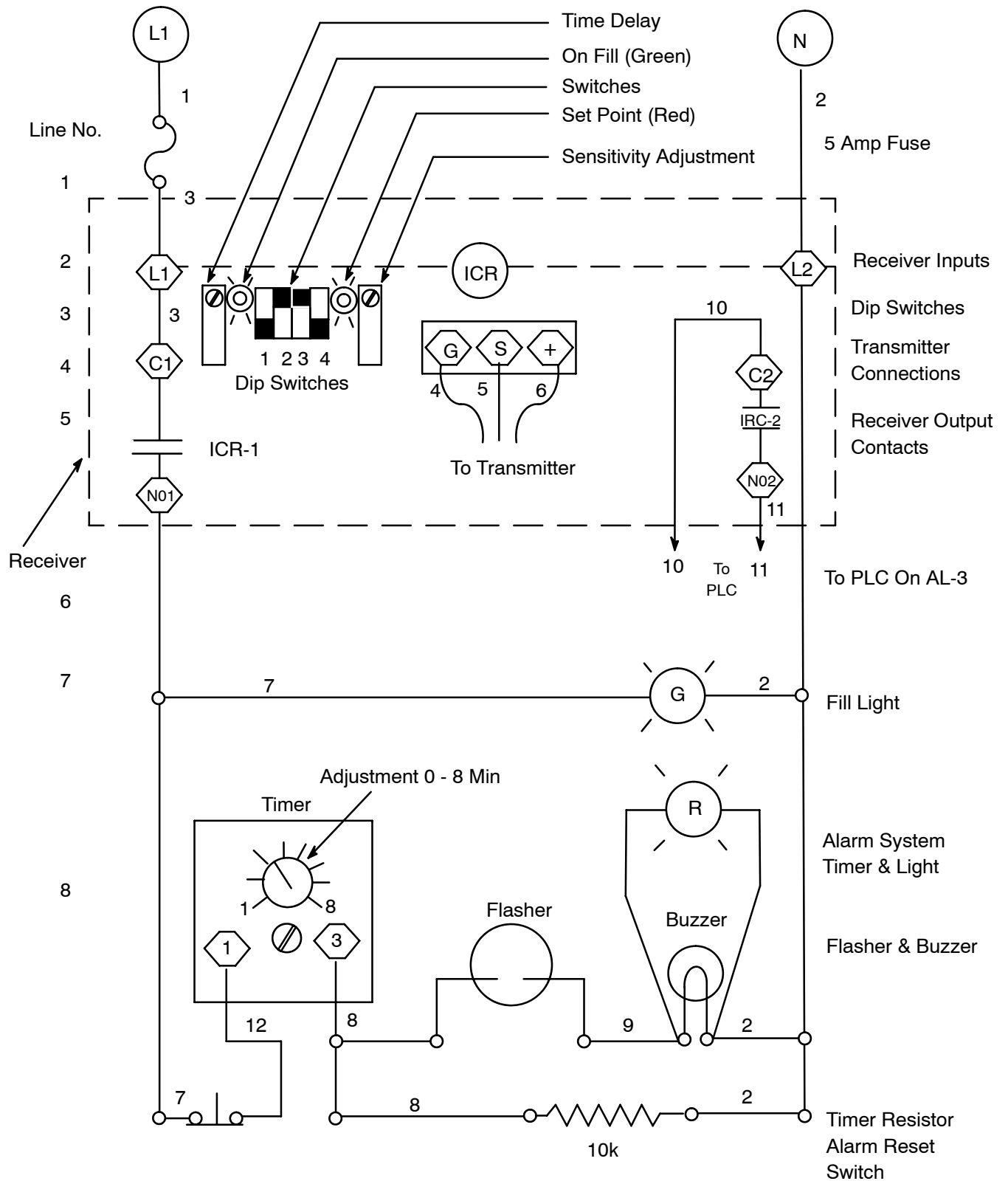


G = Ground
 S = Signal
 + = Supply Voltage to Transmitter

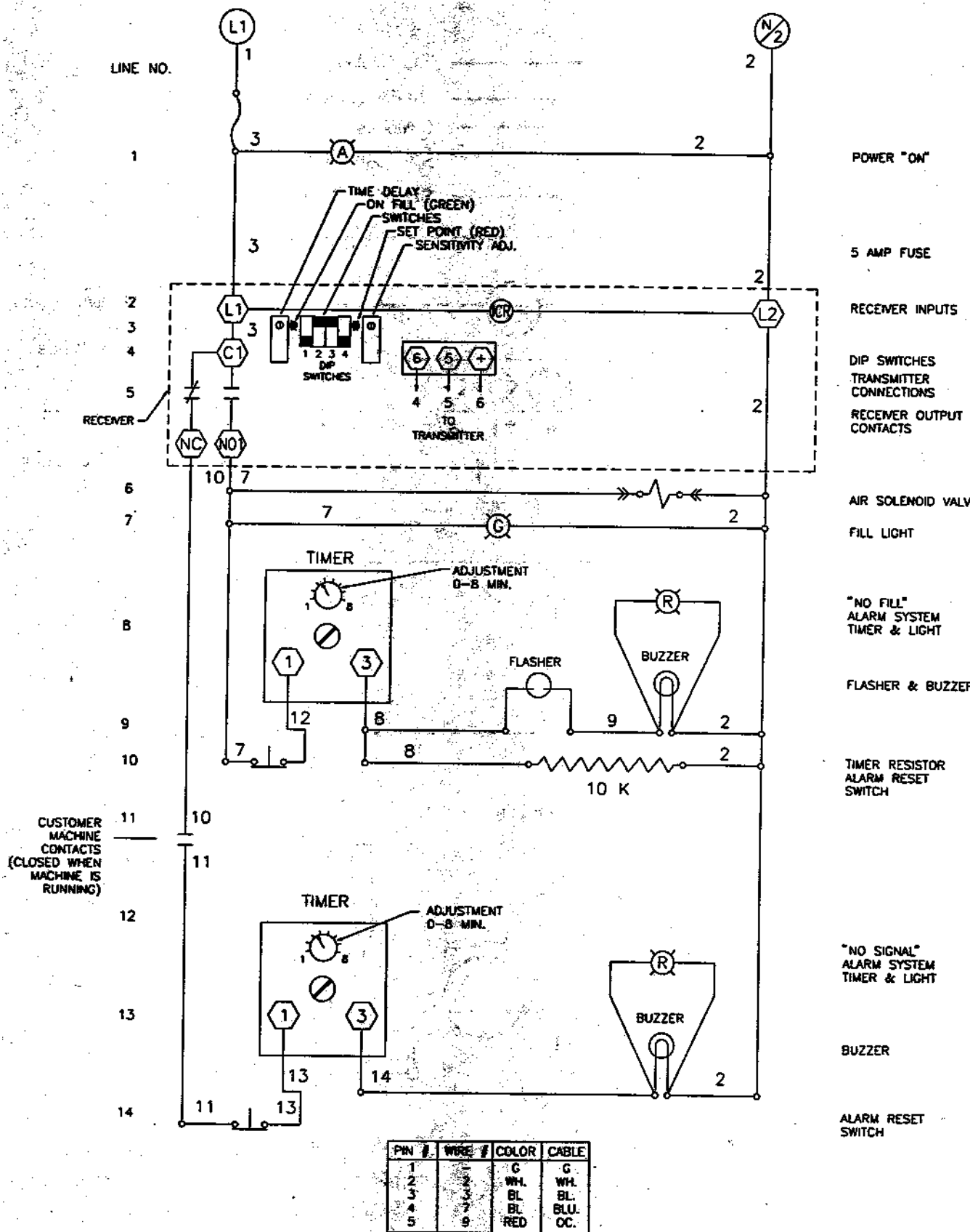
Control Adjustments: All Models



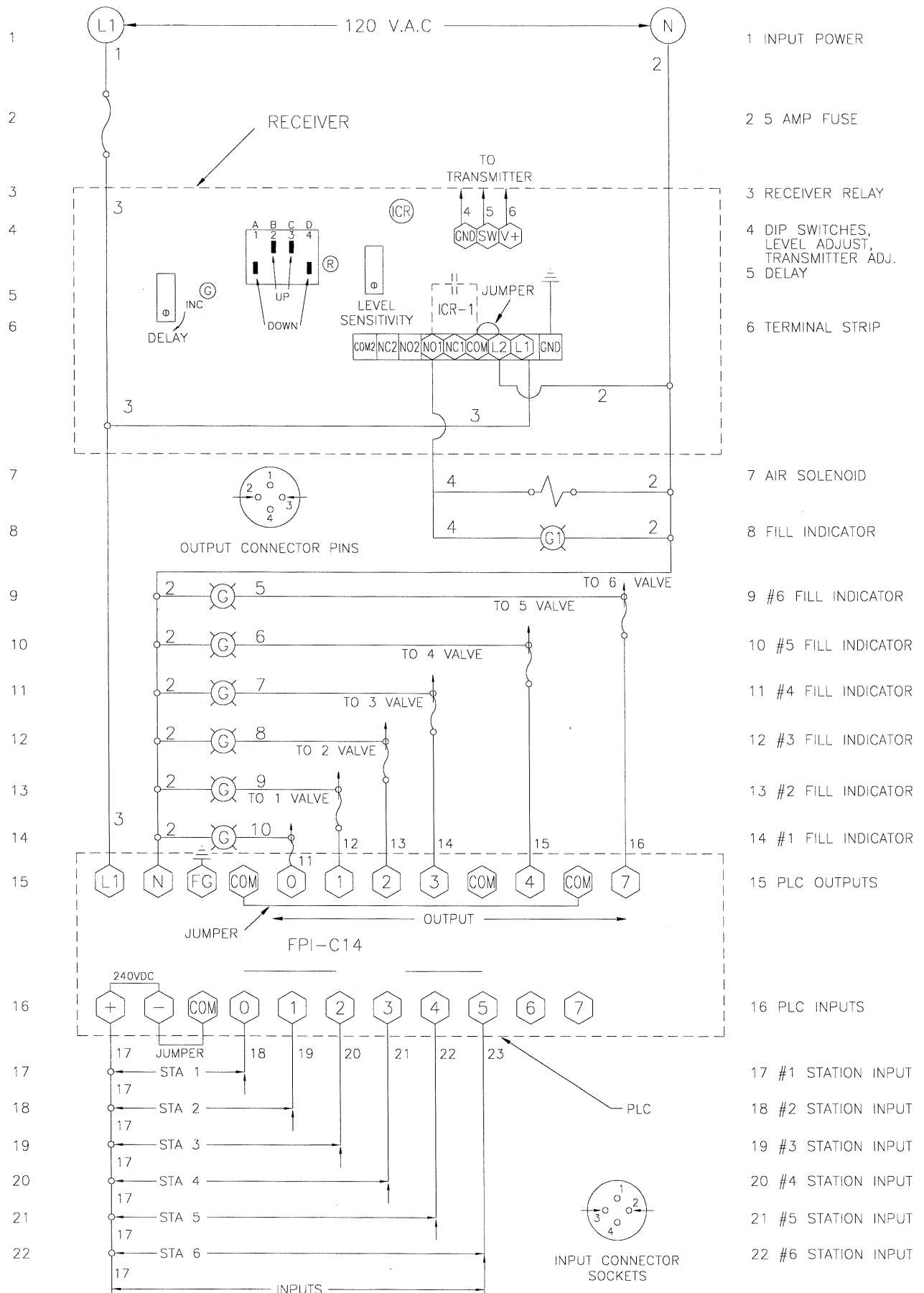
Wiring Diagram HF-2



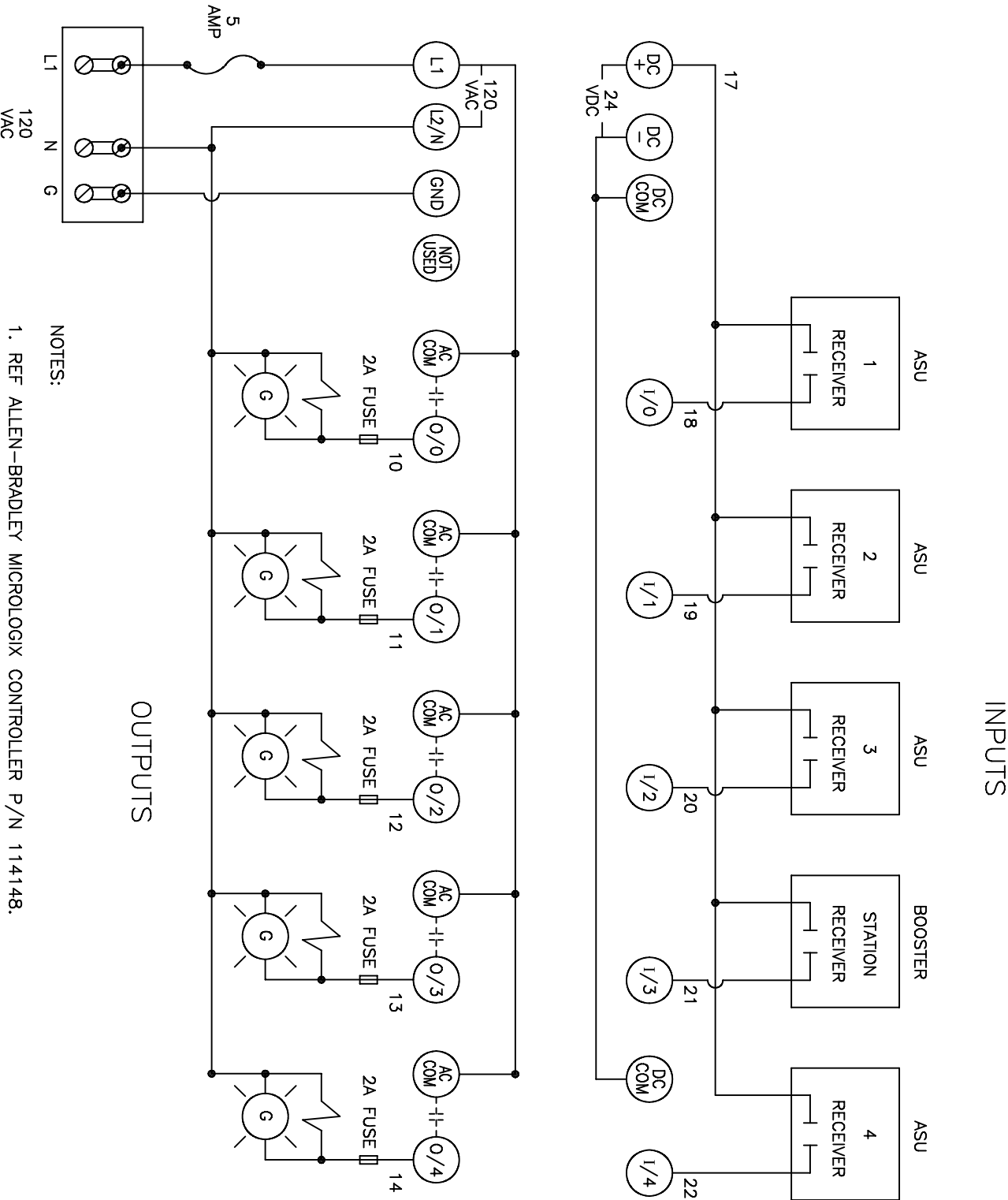
Wiring Diagram HF-3



Wiring Diagram HF-4



Sequencer Schematic HF-3



PN 114828 Schematic, Micrologix Controller, HF-3

Appendix

ACCESSORY: BULK ADHESIVE TRANSFER TOWER

Description

The PN 112223 Bulk Adhesive Transfer Tower automatically transfers adhesive from a 1,200 to 1,500 lb., 45-inch cube, bulk shipping container into the HF2, HF7 or HF3 dispensing container.

The adhesive manufactures shipping container is positioned on the heavy-duty stainless-steel frame above the hopper feeder's dispensing container. Corner guides on the frame seat the container securely and a sealed chute links the bottom of the container to the feeder. The operator can monitor the flow of adhesive to the feeder through the chute's viewing port.

The hopper feeder's dispense container sits on a stainless steel open platform. A sealed chute above the unit provides the pathway for the glue to enter the dispense container.

The transfer tower system includes a level sensor which signals the operator with both an audible and a visible alarm when the shipping container is empty.

The vertical stand of the transfer tower provides a convenient place to mount the HF Series control panel. Up to six adhesive supply units can be fed from the manufactures shipping container. The unit is totally stainless steel and washdown.

An optional Stand Vibrator is designed to keep a tote full of adhesive pellets flowing freely into the transfer tower.

Installation of Transfer Tower

Before assembling the Transfer Tower, make sure there is adequate room for its placement. As supplied from Dynatec, the The Transfer Tower occupies floor space 48" (4 ft.) square and a clearance of 125" (10.5 ft.) to the top of the tote .

When positioning your Transfer Tower, allow access for a forklift to remove and replace the tote.

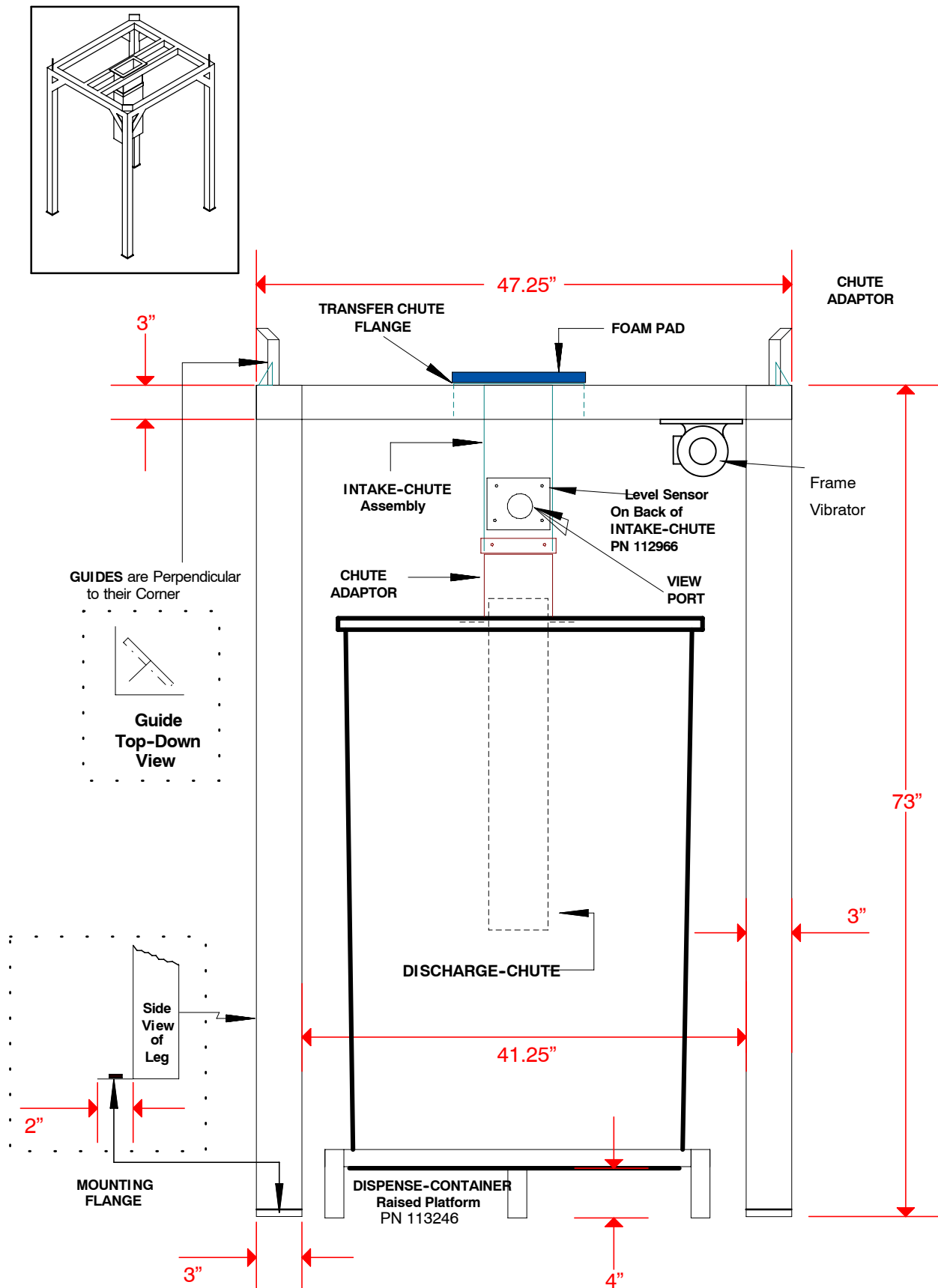
Mounting the Optional Stand Vibrator

Approximate installation time is two hours.

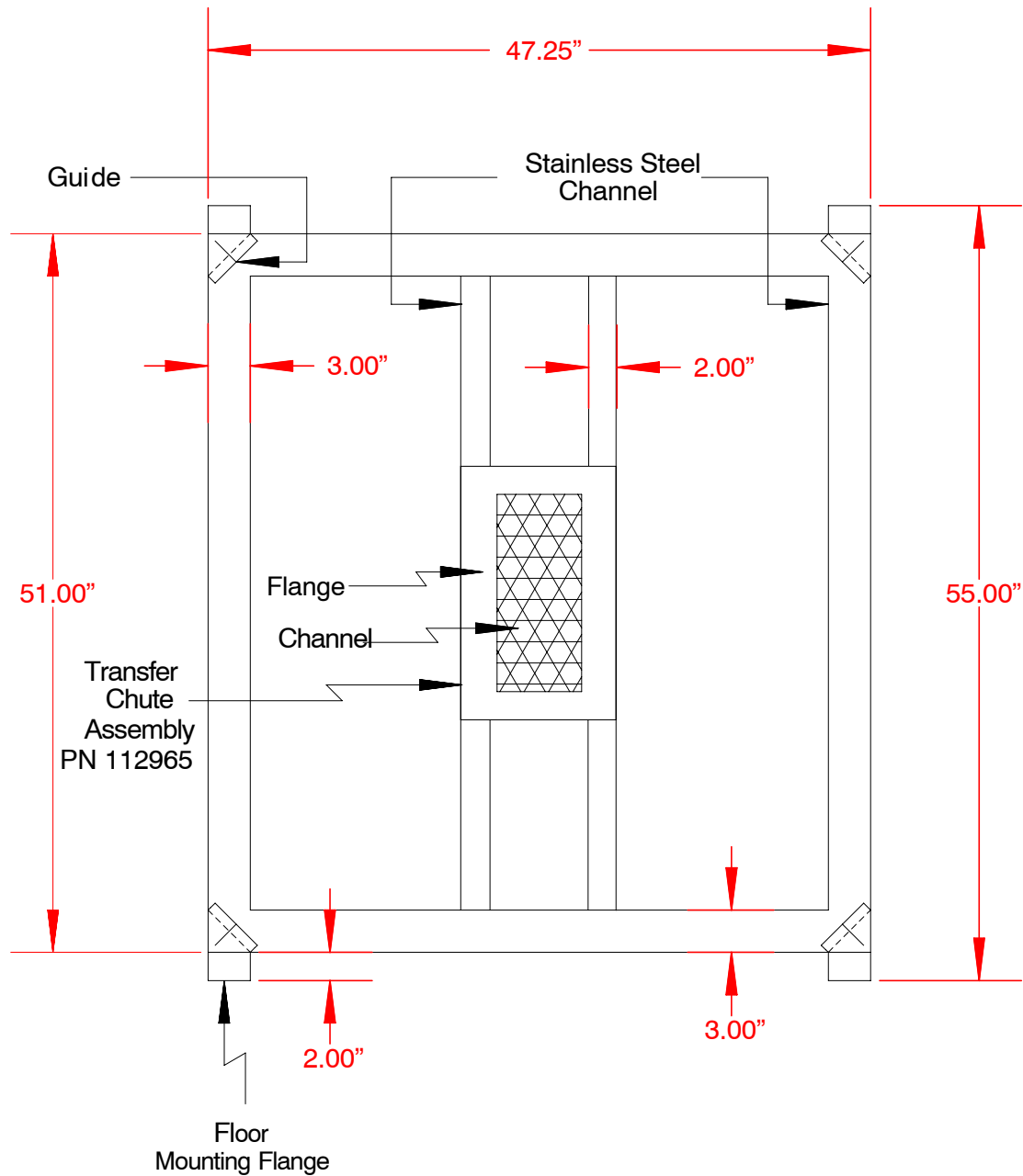
On the side of the transfer tower assembly closest to the pneumatic controls, select a mounting location on the bottom of either of the two, two-in. square Dynatec-supplied stainless-steel frame tubing members, per the following directions:

1. Center the vibrator approx. 7 in. to the side of the stainless steel chute/ downspout which feeds the drum beneath the tote.
2. Mark and drill two clearance holes for the 5/16 in. mounting bolts matching the vibrators base "footprint" (approx. four 7/8in. C-C).
3. Attach the vibrator to the bottom of the frame member with 5/16in.x3 1/2in. long bolts, washers, and lock nuts.
4. Install the vibrator's air regulator into the supply line feeding the hopper feeder's vibrator.
5. Run a 3/8in. poly airline supply from the regulator to the vibrator.
6. Approx. 40 psi of air is required for the stand vibrator to operate.

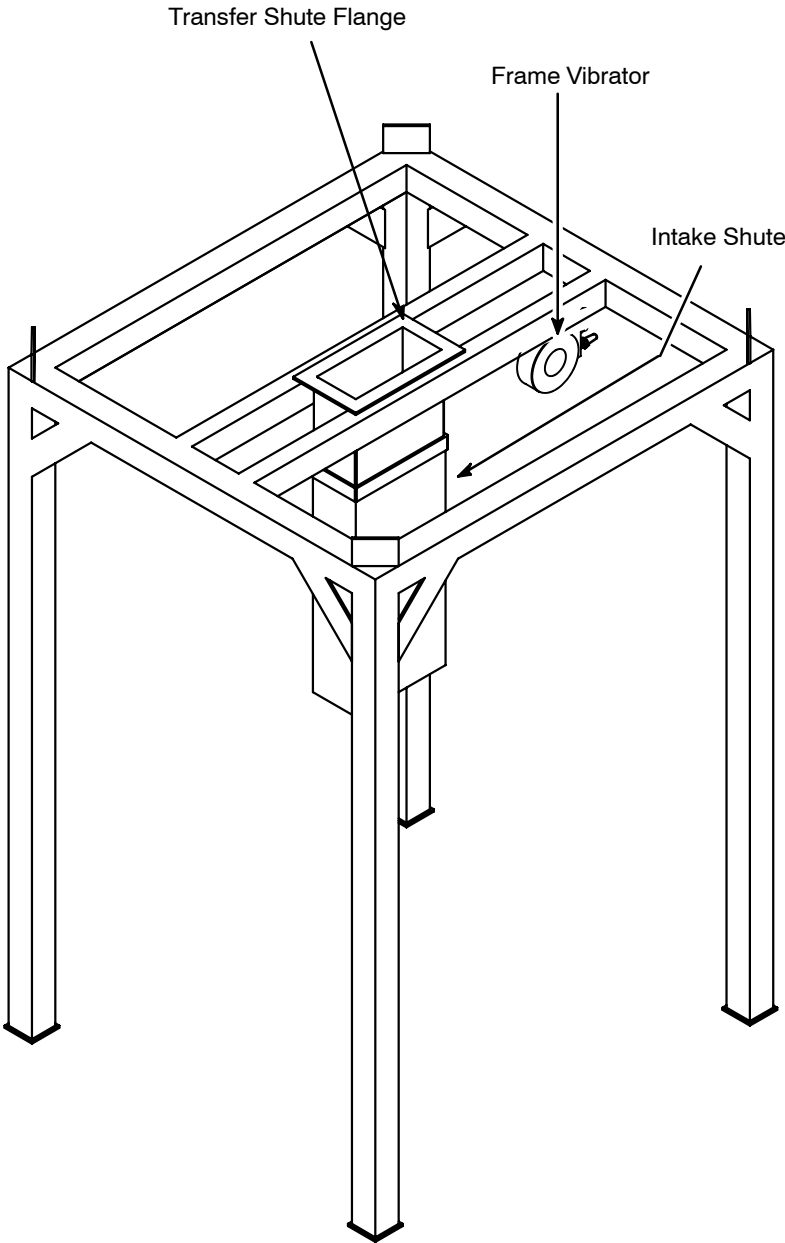
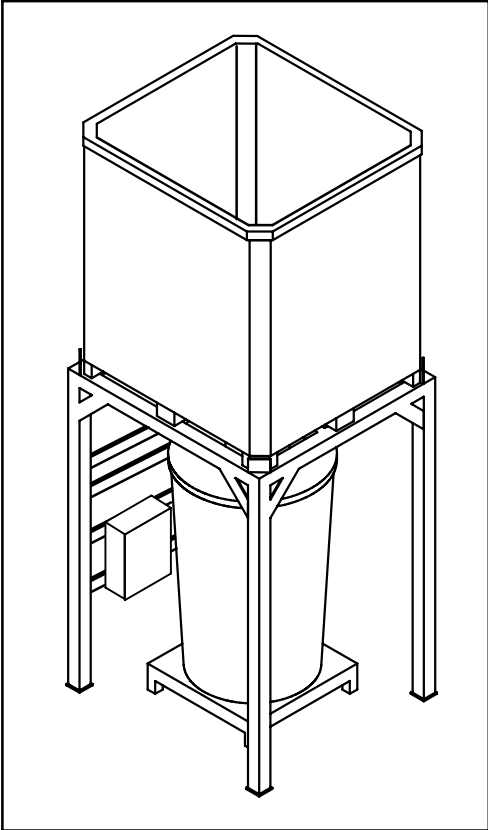
Note: The air on/off timing duration is the same as that which supplies the poly drum tote vibrator via its solenoid valve.



PN 112223 Bulk Adhesive Transfer Tower, Front View



Transfer Tower, Top View



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Adhesive Application Solutions

