Instructions

# High Flow Adhesive Dispense System

3A1201D
ENG

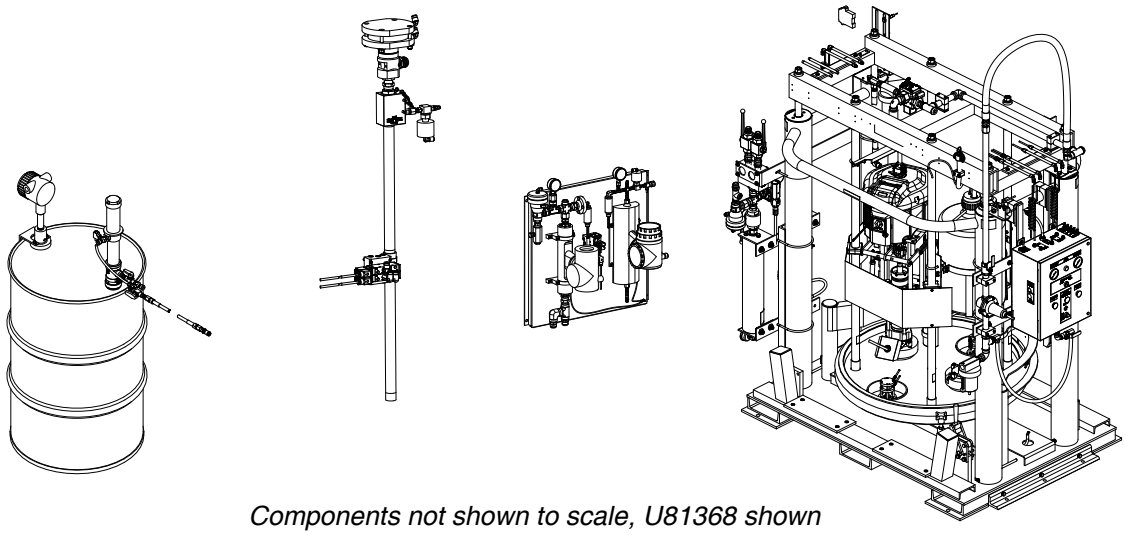
**For dispensing high volume resin paste and low volume catalyst. For professional use only.**

## Part No. U81368, Right-Hand System
## Part No. U81522, Left-Hand System

The resin supply system evacuates 300 gallon (1200 liter) magnadrums. The Adhesive Dispenser system is built to work with other high pressure equipment to optimize material use.

*2500 psi (17 MPa, 172 bar) Maximum Fluid Working Pressure*
*100 psi (0.7 MPa, 7 bar) Maximum Air Inlet Pressure*

**Important Safety Instructions**
Read all warnings and instructions in all supplied manuals. Save all instructions.



*Components not shown to scale, U81368 shown*

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# Contents

# Related Manuals

## Graco Manuals

These manuals can be found at www.graco.com.

| Sub-Component Manuals | | |
|---|---|---|
| **Manual No.** | **Relates to Part** | **Description** |
| 308547 | 237073 | Pressure Relief Valve Instructions and Parts |
| 310551 | 918539 | 3/4 in. NPT Fluid Port Ball Seat Applicator Instructions and Parts |
| 311238 | N65DTO | NXT Air Motor Instructions and Parts |
| 311825 | L580SM | Dura-Flo™ Lowers Instructions and Parts |
| 312766 | 256200 | T1 Supply Pump |
| 310550 | 918537 | 1/2 in. Supply Valve |
| 308168 | 112728 | Air Regulator |
| 308169 | 112859 | Air Filters, Lubricators, and Kits |

## Non-Graco Manuals

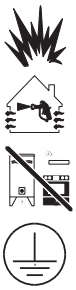
- Flow Meters
- RAM Level Sensors
- Pressure Transducers
- Drum Level Sensor
- Solenoids

# Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

See **Important Methyl Ethyl Ketone Peroxide (MEKP) Safety Information** on page 6.

## ⚠ WARNING



**FIRE AND EXPLOSION HAZARD**

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail.
- If there is static sparking or you feel a shock, **stop operation immediately.** Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.
- See additional information on MEKP in the MEKP section of this manual.

**PERSONAL PROTECTIVE EQUIPMENT**

You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

**TOXIC FLUID OR FUMES HAZARD**

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read MSDSs to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

# WARNING

**SKIN INJECTION HAZARD**

High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**

- Do not point dispensing device at anyone or at any part of the body.
- Do not put your hand over the fluid outlet.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop dispensing and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.

**MOVING PARTS HAZARD**

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

**EQUIPMENT MISUSE HAZARD**

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure. Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

**PRESSURIZED ALUMINUM PARTS HAZARD**

Use of fluids that are incompatible with aluminum in pressurized equipment can cause serious chemical reaction and equipment rupture. Failure to follow this warning can result in death, serious injury, or property damage.

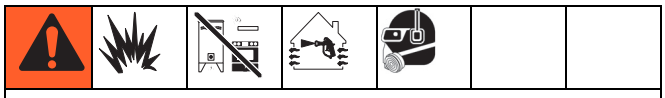
- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents.
- Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.

# Important Methyl Ethyl Ketone Peroxide (MEKP) Safety Information

MEKP is among the more hazardous materials found in commercial channels. Proper handling of the “unstable (reactive)” chemicals presents a serious challenge to the plastics industry. The highly reactive property which makes MEKP valuable to the plastics industry in producing the curing reaction of polyester resins and gel-coats also produces the hazards which require great care and caution in its storage, transportation, handling, processing and disposal.

Workers must be thoroughly informed of the hazards that may result from improper handling of MEKP, especially in regard to contamination and heat. They must be thoroughly instructed regarding the proper storage, use and disposal of MEKP and other hazardous materials used in the laminating operation.

MEKP is flammable and potentially explosive, as well as potentially damaging to the eyes and skin.
Read material manufacturer’s warnings and material MSDS to know specific hazards and precautions related to MEKP.
Contaminated MEKP can become explosive. Prevent contamination of MEKP with other materials, including but not limited to polyester overspray, polymerization accelerators and promoters, and non-stainless metals. Even small amounts of contaminates can make MEKP explosive. This reaction may start slowly, and gradually build-up heat, which can accelerate until fire or an explosion result. This process can take from seconds to days.



Heat applied to MEKP, or heat build-up from contamination reactions can cause it to reach what is called its Self-Accelerating Decomposition Temperature (SADT), which can cause fire or explosion. Spills should be promptly removed, so no residues remain. Spillage can heat up to the point of self-ignition. Dispose in accordance with manufacture’s recommendation.
Store MEKP in a cool, dry and well-ventilated area in the original containers away from direct sunlight and away from other chemicals. It is strongly recommended that the storage temperature remain below 86° F (30° C). Heat will increase the potential for explosive decomposition. Refer to NFPA 432. Keep MEKP away from heat, sparks and open flames.
Current catalysts are premixed and do not require any diluents. Graco strongly recommends that diluents not be used. Diluents add to the possibility of contaminates entering the catalyst system. Never dilute MEKP with acetone or any solvent since this can produce an extremely shock-sensitive compound which can explode.
Use only original equipment or equivalent parts from Graco in the catalyst system (i.e.: hoses, fittings, etc.) because a hazardous chemical reaction may result between substituted parts and MEKP.
To prevent contact with MEKP, appropriate personal protective equipment, including chemically impermeable gloves, boots, aprons and goggles are required for everyone in the work area.

## Polyester Resins and Gel-Coats

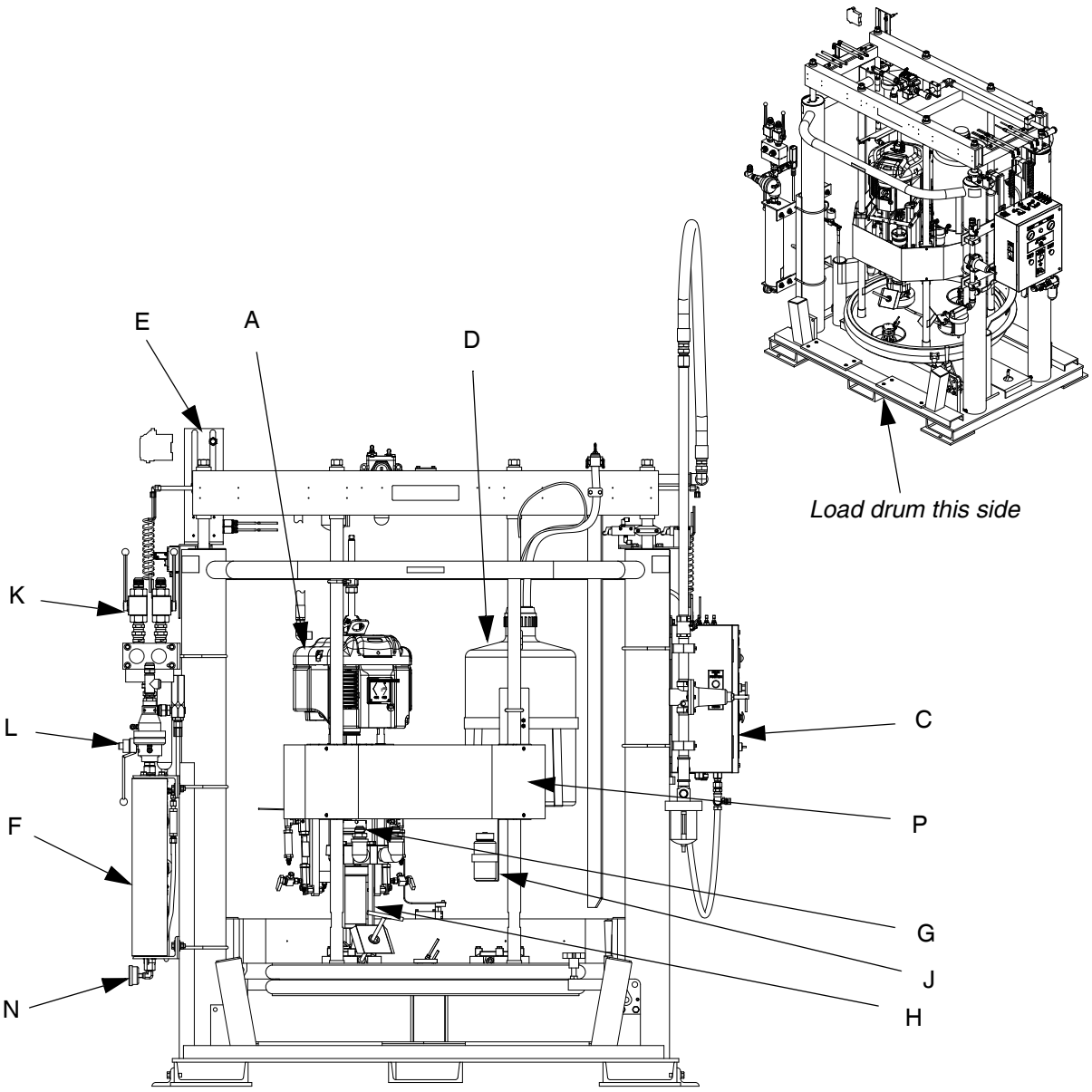
Spraying materials containing polyester resin and gel-coats creates potentially harmful mist, vapors and atomized particulates. Prevent inhalation by providing sufficient ventilation and the use of respirators in the work area.
Read the material manufacturer's warnings and material MSDSs to know specific hazards and precautions related to polyester resins and gel-coats.
To prevent contact with polyester resins and gel-coats, appropriate personal protective equipment, including chemically impermeable gloves, boots, aprons and goggles are required for everyone in the work area.

## Spraying and Lamination Operations

Remove all accumulations of overspray, FRP sandings, etc. from the building as they occur. If this waste is allowed to build up, spillage of catalyst is more likely to start a fire.
If cleaning solvents are required, read material manufacture's warnings and material MSDS to know specific hazards and precautions. (Graco recommends that clean-up solvents be nonflammable.)

**NOTE:** Graco recommends that you consult OSHA Sections 1910.94, 1910.106, 1910.107 and NFPA No. 33, Chapter 16,17, and NFPA No. 91 for further guidance.

# Component Identification

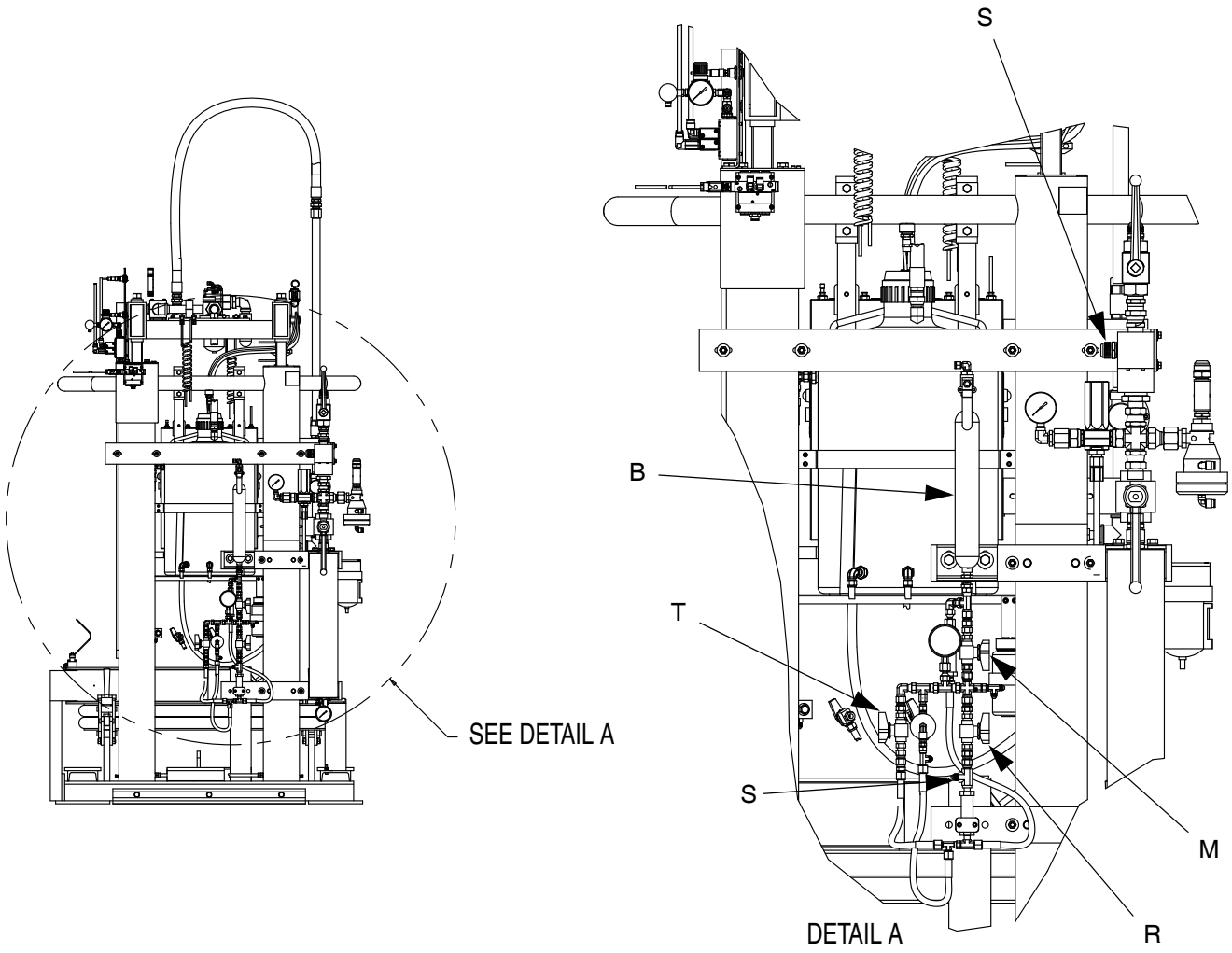



**NOTE:** Operator Controls (C) are located on opposite side for U81523 (Left-hand system).

**Key:**

A NXT 6500 Air Motor
B Catalyst Accumulator
C Operator Controls
D 13 Gallon Catalyst Tank
E Low Level and Drum Empty Switch
F Resin Accumulator
G Catalyst Pump
H 580 Dura-Flo Pump
J Catalyst Weep Bottle
K Hose Outlet Valves (Resin)
L Resin Accumulator Shut-off
M Catalyst Accumulator Shut-off
N Resin Accumulator Charge Pressure
P Protective Cover
R Hose Outlet Valve (Catalyst)
S Connection To Fluid Plate Hoses
T Manual Recirculation Valve

**FIG. 1: Adhesive Dispenser, 24F684 (Right-Hand System) shown**




**Key:**

A NXT 6500 Air Motor
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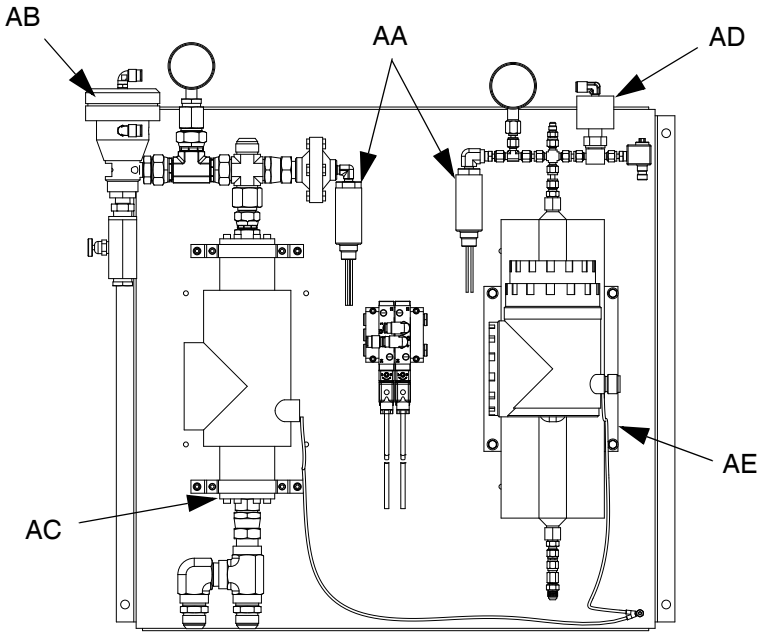
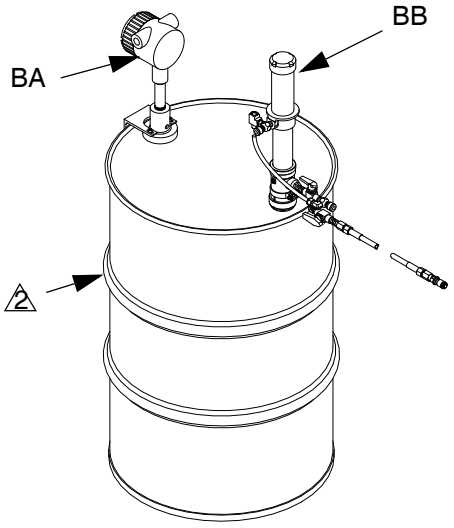
S Connection To Fluid Plate Hoses
T Manual Recirculation Valve

**FIG. 2: Adhesive Dispenser, 24F684 (Right-Hand System) shown**




**Key:**
AA Pressure Transducers
AB Resin Ratio Check
AC Resin Flow Meter
AD Catalyst Ratio Check
AE Catalyst Flow Meter

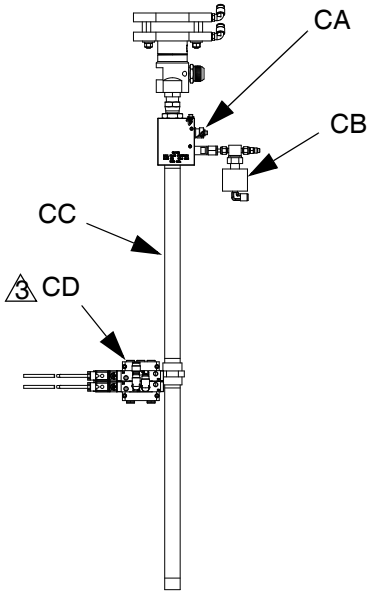
**FIG. 3: Fluid Plate, 24F687**




2 Drum not included.

**Key:**
BA Level Probe
BB T1 Transfer Pump

**FIG. 4: Solvent Flush, 24F689**




3 Field mounted.

**Key:**
CA Solvent Inlet
CB Catalyst Shut-off Valve
CC 25 mm x 24 Element Mixer
CD Solenoid Valve Bank

**FIG. 5: Dispense Valve, 24F688**

# Unpacking the System

The adhesive dispense system was carefully packaged for shipment by Graco. When the system arrives, perform the following procedure to uncrate the system.

**NOTICE**

Removing the unit from the pallet without following the uncrating procedure will damage the equipment.

To unpack the system, do the following:

1. Inspect carefully for shipping damage. Contact the carrier promptly if damage is discovered.
2. Carefully unwrap and remove the plastic packaging material.
3. Inspect the contents carefully. There should not be any loose or damaged parts.
4. Compare the packing slip against all items included in the crate. Report any shortages or other inspection problems immediately.
5. Remove the band straps that hold the Adhesive Dispenser system to the pallet.

**NOTE:** The Adhesive Dispenser system is ready for installation. Before installing the system, see **Component Identification** on page 8 to become familiar with the system components.

# Overview

## Installation Overview

The location of the Adhesive Dispenser system should allow for easy loading and unloading of the 300 gallon (1200 liter) magnadrum or other tote drums with a forklift.

**NOTICE**

The Adhesive Dispenser system must be level and mounted on a horizontal floor. An unlevel condition can keep the Adhesive Dispenser system from operating properly.

Use the mounting holes provided to anchor the frame securely to the floor or frame. The anchor bolts should be sized with sufficient safety factor to withstand the downward force of the follower plate and other objects that can push the frame off the floor.

# Installation

## General Info

Be sure all accessories are adequately sized and pressure-rated to meet system requirements.

## Location

For installation, maintenance or operation instructions, read instruction manuals. Do not install equipment that is approved only for non-hazardous locations in a hazardous area.

**NOTE:**

- Refer to **Grounding** beginning on page 16 for hazardous location equipment requirements.
- Refer to U60377 print for electrical schematics.
- Refer to U60402 print for pneumatic schematics.
- The installation must meet the specific Ex rating of each device. Refer to U60377 for approval ratings.
- Multiple earthing of components is allowed only if high integrity equipotential system is realized between the points of bonding.

**2K Fluid Monitor:** Install according to requirements for associated ATEX rating.

**IMPORTANT:** Do not substitute or modify system components as this may affect Ex rating and safety.

The installation procedures in this section are intended to serve as a guide for installing the adhesive dispense system. If you need more information, contact your Graco distributor.

**NOTE:** When raising and lowering the follower plate, be sure that the unit is unobstructed overhead to avoid interference with other objects.

The installation procedure includes:

- Preparing the site
- Selecting a location for the adhesive dispense components
- Preparing to install the system
- Install
- Grounding the system
- Checking resistance between the component assemblies and the true earth ground
- Connecting air supply lines to adhesive dispenser

## Preparing the Site

Ensure that you have an adequate compressed air supply. Approximately 6 normal cubic meters/min (200 scfm) at 100 psi is required to operate the pump at the maximum rate.

Keep the site clear of any obstacles or debris that could interfere with the installer's and operator's movement.

### Selecting a Location for the Adhesive Dispenser

Refer to **Technical Data** on page 48 for ram mounting and clearance dimensions.

When selecting a location for the Adhesive Dispenser system, keep the following in mind:

1. There should be sufficient space for installing, servicing, and using the equipment.

- Select an accessible location for the system.
- There must be sufficient space around the system for maintenance. Select a convenient location for the equipment.
- Check that there is sufficient overhead clearance for the pump and ram when the ram is in the fully raised position. Make sure the air regulators for the pumps and follower plate are fully accessible.
- Make sure the air source for the panel and shutoff valves are fully accessible.

- Make sure there is easy and safe access to an appropriate pneumatic source. Graco recommends a minimum of 3 feet (0.91 m) of open space in front of the control panel.

2. Make sure that you will be able to level the base of the ram using metal shims.

## Preparing to Install the System

Before installing the system:

- See component manuals for specific data on component requirements. Data presented here pertains to the system only.
- Have all system and subassembly documentation available during installation.
- Be sure that all non-Graco supplied hoses are adequately sized and pressure-rated to meet the system requirements.

## Installing the Adhesive Dispenser

To install the Adhesive Dispenser system, follow the procedure below. Refer to **Technical Data** on page 48 for ram mounting and clearance dimensions.

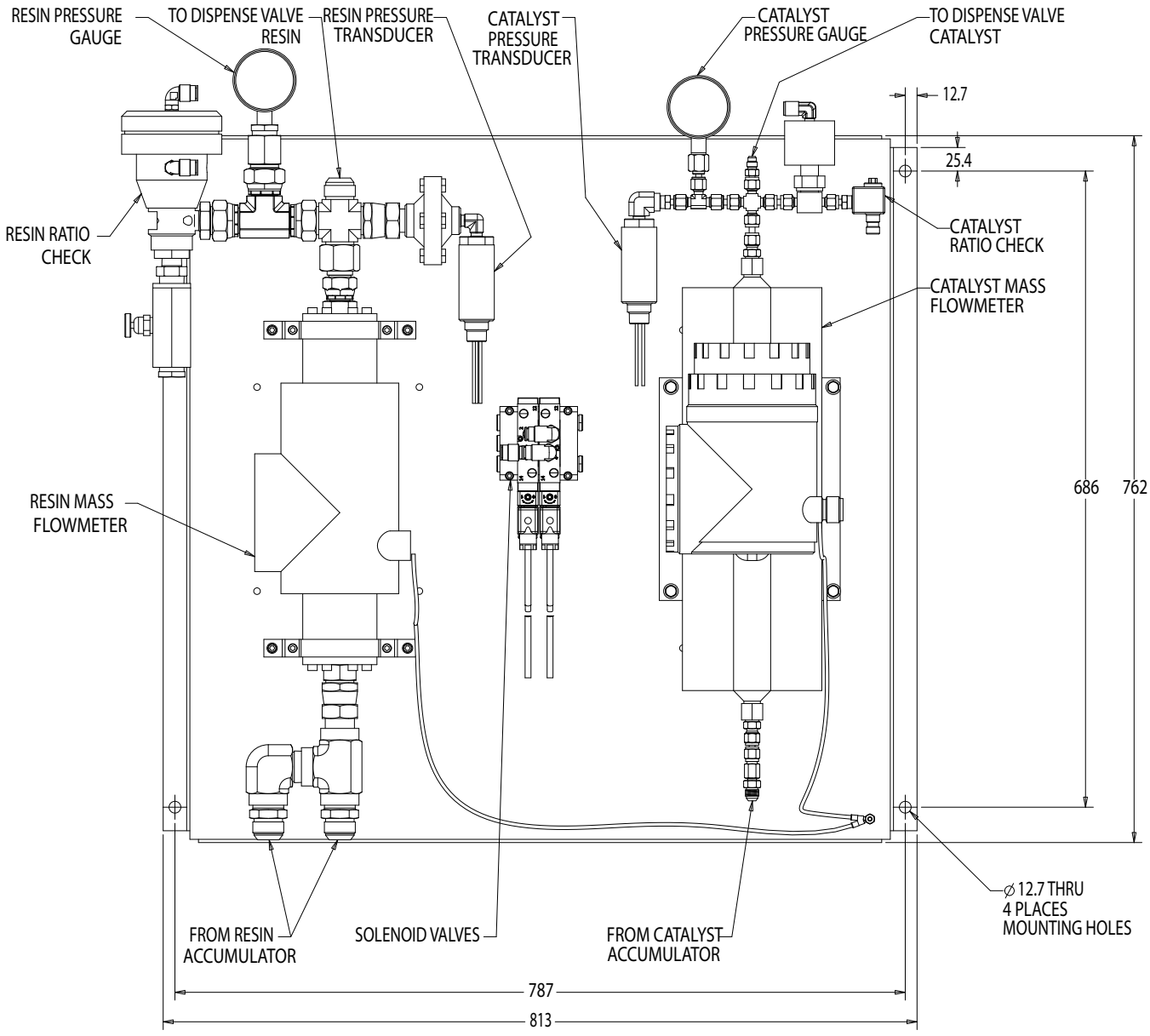
1. Using equipment such as a forklift or handtruck, move the Adhesive Dispenser system into place on the floor. Remove the shipping pallet.
2. Level the Adhesive Dispenser system, using metal shims.
3. Using the holes in the base as a guide, drill holes for 13 mm (1/2 in.) anchors.
4. Bolt the Adhesive Dispenser system to the floor using anchors that are long enough to prevent the unit from tipping. Refer to **Technical Data** on page 48 for more information.

**EQUIPMENT MISUSE HAZARD**

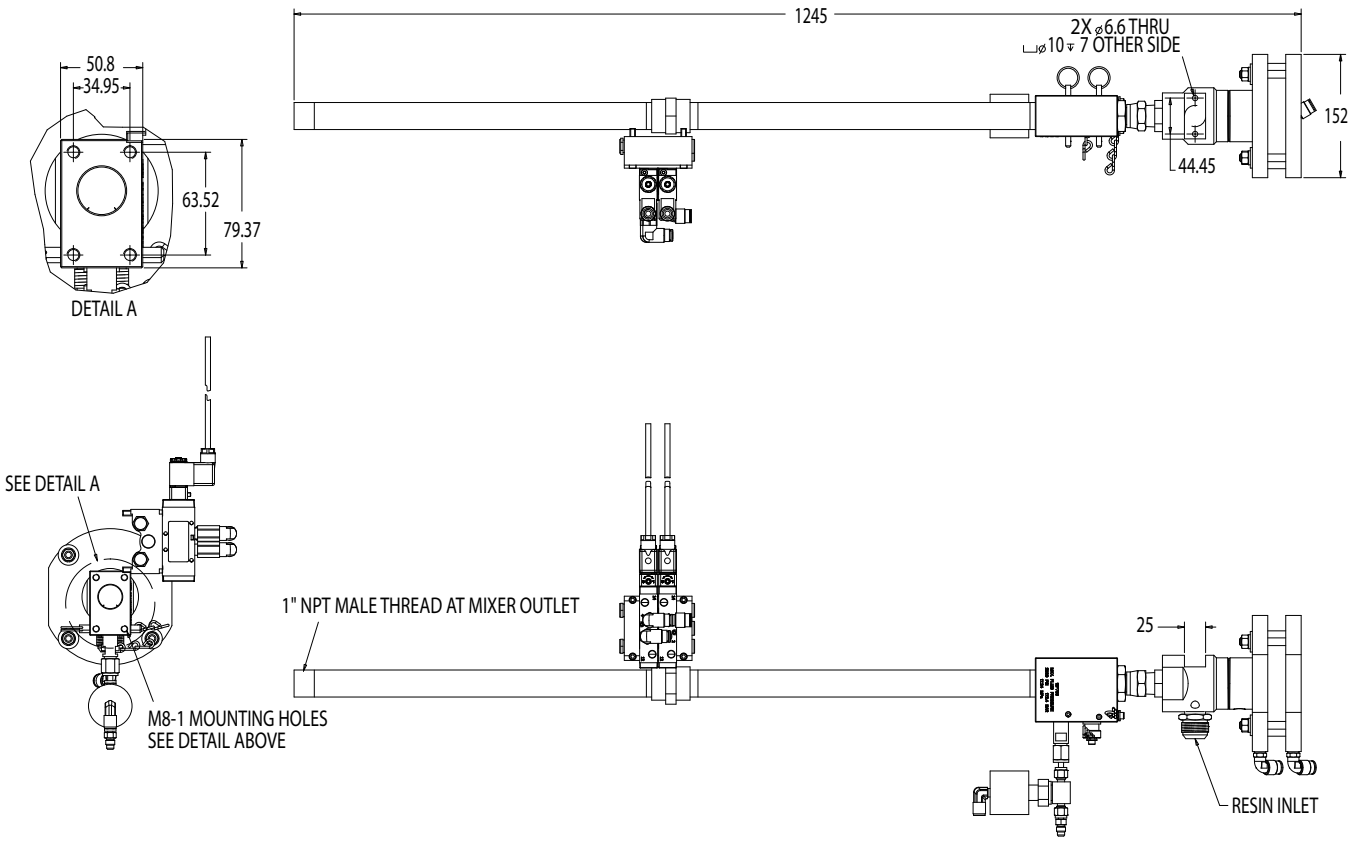
- The Adhesive Dispenser system is shipped with every major component already attached and weighs approx. 3830 lb (1737 kg). The Adhesive Dispenser system should never be moved or lifted by one person. To prevent equipment damage or personal injury, engage an adequate number of personnel and use a forklift, hand truck, and support devices, such as a hoist when moving and installing the Adhesive Dispenser system.
- Be sure to use as many people as needed when the frame is being lifted or moved. Exercise care to avoid jarring, dropping, or tilting the frame while it is being moved to its installed location to prevent injury or property damage.

5. Attach the material outlet hoses and recirculation hoses per identification tags.
6. Position the air inlet plumbing assembly so that the regulator appears in the position shown in FIG. 1 on page 8 and FIG. 7 on page 18. Prior to shipment, the assembly is shifted to a lowered position.

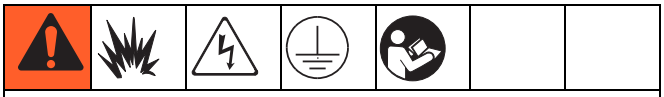
# Installing the Fluid Monitor



# Installing the Dispense Valve



# Grounding



- The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit.
- See grounding procedure and related warnings in supplied manuals. See **Related Manuals** on page 3.

Ground wires from the fluid stations and pumps must be connected to the same true earth ground. See FIG. 6, page 17.

Ground the system as described here and in the individual component manuals. A ground wire and clamp, part number 223547, is available from Graco.

## Adhesive Dispenser

Connect a ground wire to a true earth ground.

## 2K Fluid Monitor Plate

Connect a ground wire to a true earth ground.

## Magnadrum

Connect ground strap from RAM pump to drum.

## NXT Air Motors

To be done at adhesive dispenser.

## Dispense Valve Assembly

Connect a ground wire to a true earth ground.

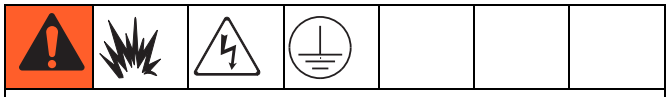
## Flow Meters

See Flow Meter manuals.

## Solvent Supply

Follow local code.

# Check Resistance



To ensure proper grounding, resistance between components and true earth ground **must** be less than 1 ohm.

Have a qualified electrician check resistance between each component and true earth ground. If resistance is greater than 1 ohm, a different ground site may be required. Do not operate the system until the problem is corrected.

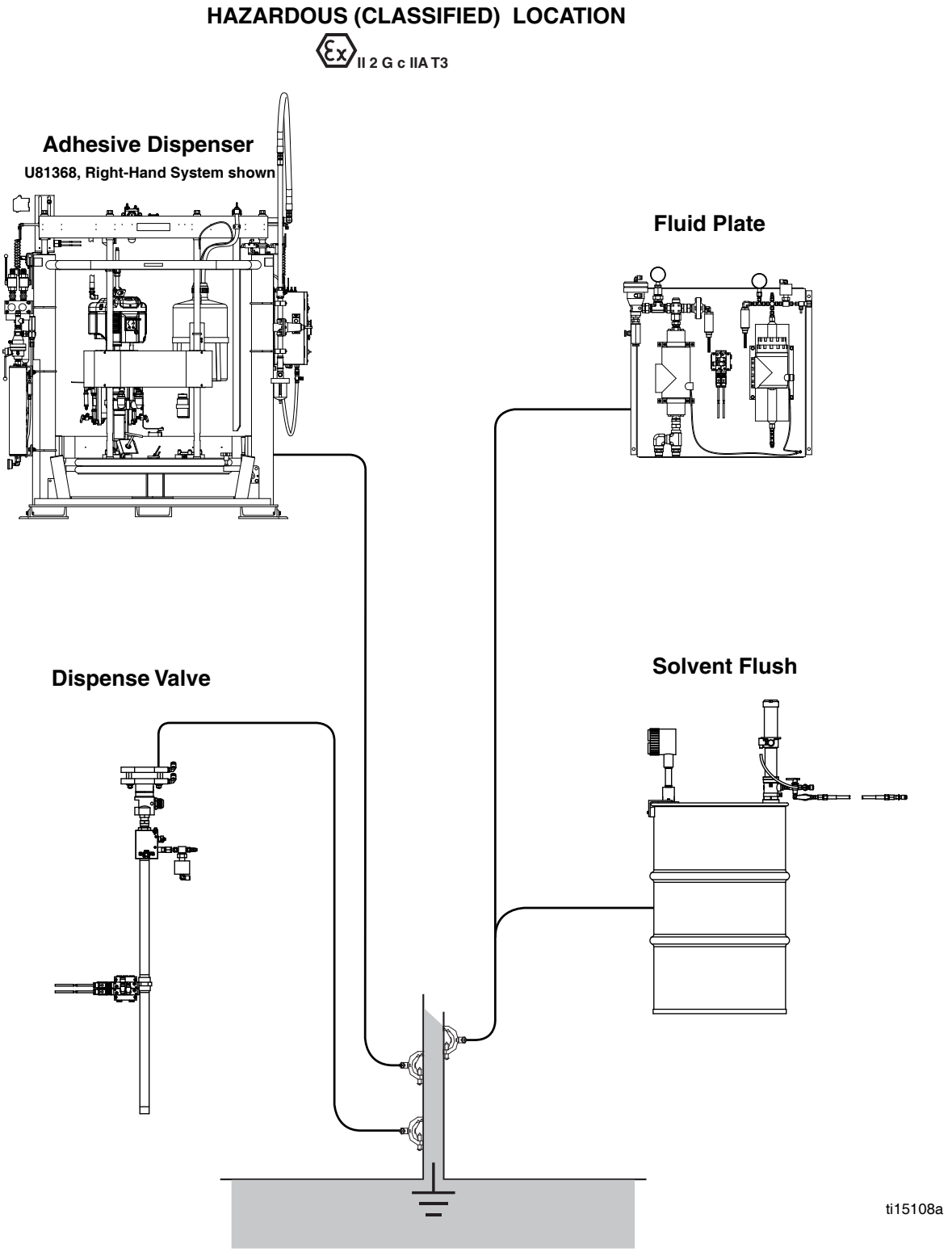



**FIG. 6: Grounding**

# Connecting the Air Supply Lines

To reduce the risk of overpressurizing your system, which could result in component rupture and cause serious injury, never exceed the specified maximum incoming air pressure to the pumps. See **Technical Data** on page 48.

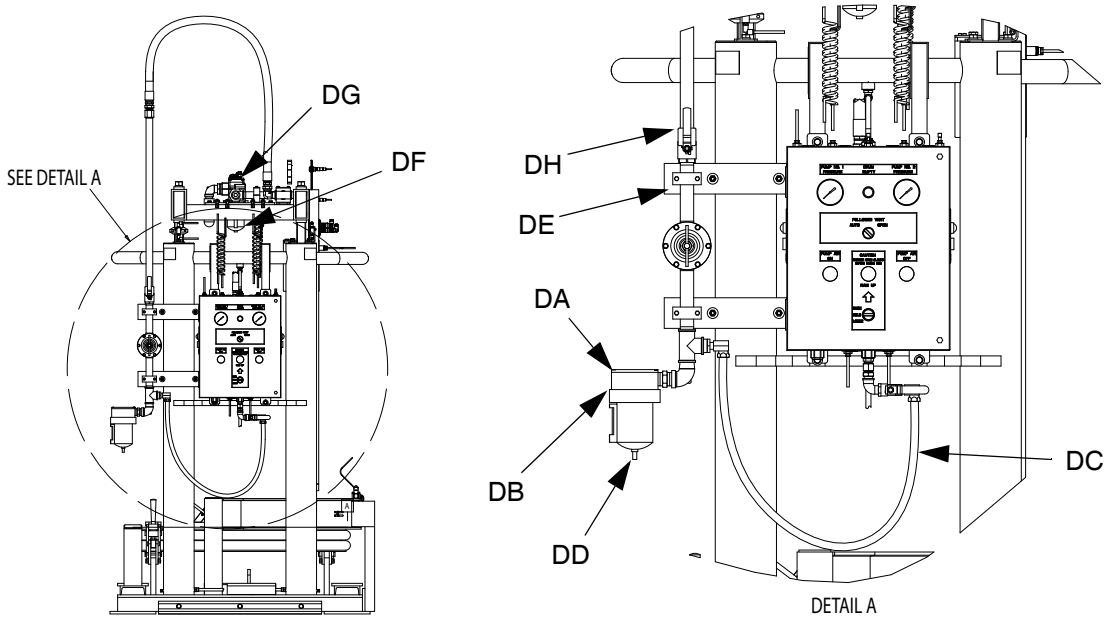
Perform the following procedure to connect the input air supply lines to the adhesive dispenser system.

| Description | Requirements |
|---|---|
| Inlet Port Size | 1 in. npt(f) |
| Air Volume | 6 normal cubic meters/min (200 scfm) |
| Input Air | 100 psi (0.69 bar, 0.69 MPa) |

1. Check the air supply to ensure that it is properly sized and pressure-rated for this system.
2. Connect a main air venting shut-off valve and air supply line to the 1 in. npt main air inlet. Verify the main air shutoff is closed and air is vented from the equipment prior to connecting the air line.

**NOTE:** The main air shutoff is customer supplied.

3. Refer to U60402 for pneumatic connections for connecting air supply lines to the 2K fluid monitor, adhesive valve, and solvent flush.




**NOTE:** U81368 (Right-Hand System) shown. Connection is the same for U81522 (Left-Hand System).

**Key:**

DA Main Air Inlet
DB Main Air Shutoff Valve (not shown, supplied by the customer
DC Air Line to Pneumatic Panel
DD Main Air Filter
DE Air Line to Pump Air
DF Air Line Lubricator
DG Pilot Valve
DH Pump Air Inlet Valve

**FIG. 7**

# Pneumatic Controls and Indicators

Use the following table and FIG. 8 on page 21 when operating the switches and reading the indicators on the pneumatic layout panel.

| Ref | Button/Switch/Gauge | | What it Does |
|---|---|---|---|
| EA | PUMP NO. 1 PRESSURE Air Gauge | | Indicates the air inlet pressure setting for pump #1 |
| EB | PUMP NO. 2 PRESSURE Air Gauge | | Indicates the air inlet pressure setting for pump #2 |
| EC | Pump Air On | | Permits air to be applied to pump system. Pump will only cycle when the air motor solenoid is activated. |
| ED | Pump Air Off | | Shut off pump |
| EE | PUMP NO. 1 REGULATOR Control Knob | | Controls pump speed and outlet pressure by adjusting the air pressure to pump #1 (located next to panel) |
| EF | FOLLOWER VENT OPEN Directional Valve | | Opens and closes the vents that relieve air pressure in the follower plate assembly. |
| EH | RAM UP Pushbutton | | Raises the follower plate. |
| EJ | RAM POSITION Switch | RAISE | Enables Ram Up push button |
| | | HOLD | Holds the follower plate in the current position. |
| | | LOWER | Lowers the follower plate |
| EK | Air Inlet Valve - RAM | | Opens air supply line to the RAM |
| EM | DRUM EMPTY Indicator | | Indicates low fluid level in drum. Signals change to other ram in tandem systems. |
| EN | DRUM IN POSITION Indicator | | Indicates presence of Magnadrum under follower plate. |
| EP | Air Inlet Valve - Resin Pump #1 | | Opens air supply line to resin pump #1 (located next to panel) |
| ES | RAM DOWN | | When both RAM DOWN buttons are pressed, it allows the follower to enter magnadrum. Once the follower is in the magnadrum, the RAM DOWN buttons are disabled. |

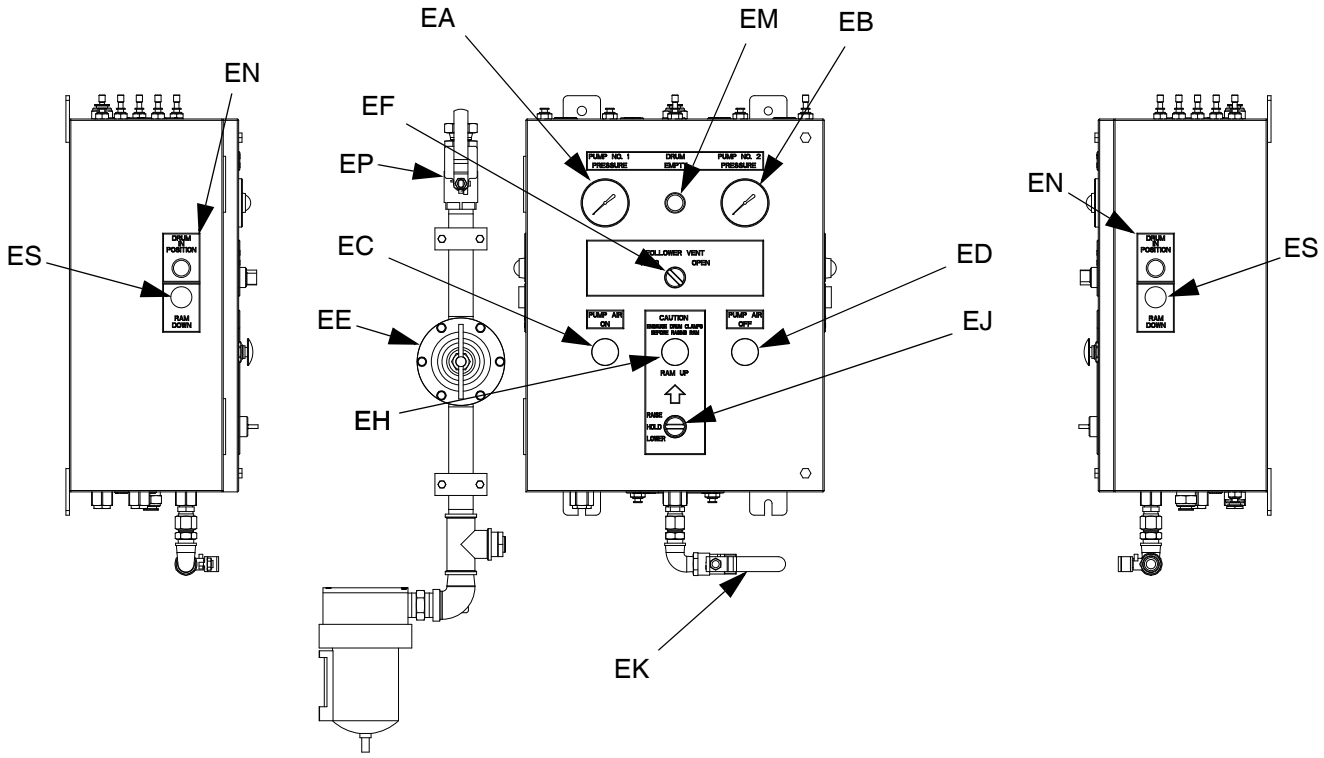

EA
EM
EB
EN
EF
EP
EC
ED
EE
EJ
EH
EK
ES
EN
ES
PUMP NO. 1 PRESSURE
DRUM EMPTY
PUMP NO. 2 PRESSURE
FOLLOWER VENT OPEN
PUMP AIR ON
CAUTION
PUMP AIR OFF
RAM UP
RAISE
HOLD
LOWER
DRUM IN POSITION
RAM DOWN

**FIG. 8**

# Operation

## Pre-Charge the Accumulator

During this procedure the nitrogen bottle, the accumulator, and the charging harness will all be under significant pressure. To prevent personal injury from ruptured components, wear appropriate safety equipment.

**NOTICE**

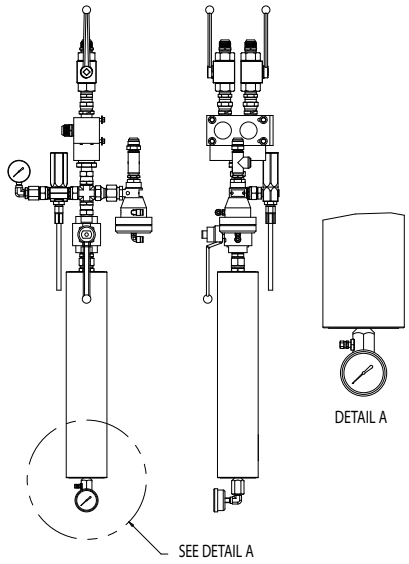
Use dry nitrogen gas only to prevent machine damage.

**NOTE:** Charge accumulator to approximately 90% of the minimum operating pressure. This will change with changes to the flowrate and may need to be adjusted.

1. With pump air off to resin pump, place resin in recirculation mode.

**NOTE:** The pump should not be cycling at this time.

2. Verify resin pressure is approximately 0 psi by referencing the gauge located near the accumulator and the pressure transducer mounted on the fluid plate.
3. Connect the charging harness to the accumulator.
4. Connect the other end of the harness to the nitrogen bottle.
5. Slowly open the nitrogen bottle valve while observing the pressure gauge.
6. When the correct pressure is reached, close the nitrogen valve.
7. Open the bleed valve on the charging harness to relieve residual pressure in the charging harness.
8. Remove the charging harness and replace the bottle guard.




**NOTE:** Nitrogen source and charge kit not provided by Graco.

**FIG. 9: Accumulator Assembly, Pressure Gauge**

# Recharging the Catalyst Accumulator

Every 100-150 hours of running time the catalyst accumulator will need to be recharged because the air inside will become saturated, no longer providing surge suppression. To recharge the accumulator, it needs to be drained. This procedure drains the accumulator without removing it from the system to prevent spillage of catalyst.

1. Depressurize the catalyst system by opening the Manual Catalyst Recirculation Valve. See FIG. 10.
2. Isolate the components downstream (Fluid Monitor Plate) by closing the Hose Outlet Valve. See FIG. 1 and FIG. 2 on pages 8 and 9.
3. Open the catalyst refill line on the catalyst tank to atmosphere allowing it to vent.
4. Open the Catalyst Accumulator Recharge Valve. See FIG. 10.
5. Press and hold the Catalyst Accumulator Recharge Button for approximately 15 – 20 seconds to refill the accumulator. See FIG. 10.

Recharge pressure must be less than 5 psi to prevent over-pressurization of the catalyst tank. If over-pressurization occurs, a seal or gasket may fail resulting in leaked material. See **Important Methyl Ethyl Ketone Peroxide (MEKP) Safety Information** on page 6.

6. Close Catalyst Accumulator Recharge Valve.
7. Close the catalyst refill line to prevent contaminants entering the tank.
8. Close the Manual Catalyst Recirculation Valve.
9. Open the Hose Outlet Valve.
10. The catalyst system will need to be brought up to operating pressure by taking a purge shot. Place resin in recirculate mode to conserve material.

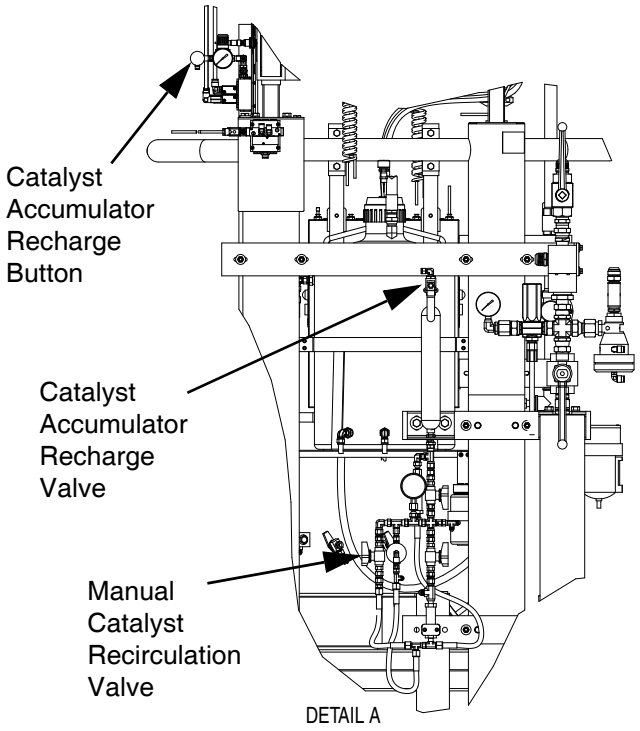



**FIG. 10: Catalyst Accumulator Components**

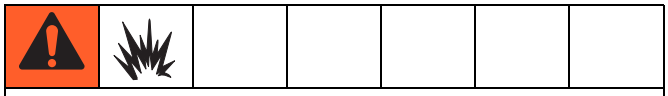
# Flushing the System Before Initial Use

**NOTICE**

Flush the system before performing the initial material loading procedure. The system was factory-tested using a light soluble oil, a soybean oil, or some other oil as tagged. Flush the system to avoid contaminating the material that has been designated for initial material loading.

To flush the system, perform the following procedure:

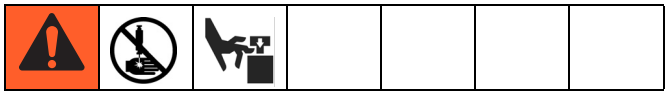
1. Select the material for the initial material load.
2. Verify whether the factory-test oil and the initial material load are compatible:
   a. If the two substances are compatible, omit the remaining steps in this procedure and perform the **Initial System Startup Procedure** on page 26.
   b. If the two substances are incompatible, perform the remaining steps in this procedure to flush the system.



To prevent fire and explosion, use fluids and solvents that are chemically compatible with the equipment wetted parts. See the Technical Data sections of all the equipment manuals. Always read the material manufacturer's literature before using fluid or solvent in this pump. See **Important Methyl Ethyl Ketone Peroxide (MEKP) Safety Information** on page 6 for more information.

3. Select a drum containing a compatible material that can dissolve, clean, and eliminate the factory-test oil from the system. If necessary, check with the material supplier for a recommended flush material.
4. Before flushing, be sure the entire system and flushing drums are properly grounded. Refer to **Grounding**on page 16.
5. Perform steps 7 through 12 of the **Initial System Startup Procedure** on page 26 to load the drum containing the solvent.
6. Run the flush material through the system for approximately 1 to 2 minutes.
7. Remove the drum containing the flush material.

# Initial System Startup Procedure

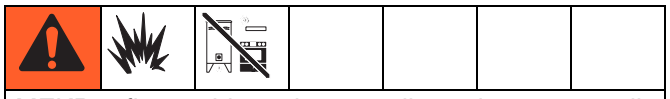


**NOTICE**

The use of a non-compatible lubricant can cause material contamination or inadequate performance.

Use only a lubricant compatible with the material to be pumped. Check with the material supplier for a recommended lubricant.

To help avoid damage to equipment, do not use a drum of material that has been dented or otherwise damaged; damage to the follower plate wiper may result.



MEKP is flammable and potentially explosive, as well as potentially damaging to the eyes and skin.
Read material manufacturer's warnings and material MSDS to know specific hazards and precautions related to MEKP.
Contaminated MEKP can become explosive. Prevent contamination of MEKP with other materials, including but not limited to polyester overspray, polymerization accelerators and promoters, and non-stainless metals. Even small amounts of contaminates can make MEKP explosive. This reaction may start slowly, and gradually build-up heat, which can accelerate until fire or an explosion result. This process can take from seconds to days.

## Settings for Initial System Startup

The initial system startup procedure contains the checklist of settings, adjustments, and procedural steps that must be completed before the system is ready for daily operation.

Perform the initial system startup procedure as follows:

1. Check all material hoses and fittings to ensure tightness and to prevent any material leakage.
2. Check all system air lines. Make sure that all routing of air lines will not interfere with any moving components within the system.
3. Fill the packing nut/wet cup on resin pump 1/3 full with Graco throat seal liquid (p/n 206995). Refer to your specific pump manual for details.
4. Adjust main air regulator on the resin pump to 0 psi. See FIG. 8 on page 21.
5. At the pneumatic layout panel, open the main air inlet valve, making air pressure available to the RAM. See FIG. 7 on page 18.
6. Disconnect all catalyst pumps by removing pin from center linkage.
7. Fill the catalyst supply bottle (maximum 12 gallons) with preferred catalyst, to a minimum level of at least two inches above the catalyst bottle outlet fittings.
8. Replace dust cap on catalyst fill tube after filling to prevent contaminates from entering the system.

**NOTE:** It is recommended to fill the catalyst supply bottle prior to loading the Adhesive Dispenser system with resin.

9. Set the RAM POSITION switch to RAISE.
10. Press the RAM UP button to raise the follower plate above the height of the material drum to be used.
11. Set the RAM POSITION switch to HOLD.
12. Roll a drum into the supply unit under the elevated follower plate.

**NOTE:** Whenever a drum change is required, remove the cover from the drum of new material by holding it level and lifting it straight up. Tipping the cover may allow accumulated dirt to spill into the drum, which may result in damage to the material and equipment.

13. ***IMPORTANT:*** Lubricate the follower plate wiper with a lubricant that is compatible with the material to be pumped. Check with your material supplier for compatibility.

**NOTE:** Before lowering the follower plate assembly into the drum, make sure that nothing is between the follower plate and the drum, or between the ram tie bar and the top of the ram posts.

14. Remove bleed sticks at the base of each resin pump, if applicable.

15. Lower the follower plate as follows:

    a. Set the Ram Position selector to LOWER.

    b. Press both two-hand control buttons to lower the follower plate until the material is evident in the bleedstick ports. Once the follower plate enters the drum, two-hand control is no longer active.

    c. Set the Ram Position selector to HOLD.

    d. Replace the bleedsticks.

    e. Set the Ram Position selector to LOWER.

16. Close resin pump #1 air inlet valves.

17. Prime the resin system as follows:

    a. Push the pump Air On button to open the air supply to the pumps.

**Note:** Pumps should not start if inlet valves were closed in step 16.

    b. Place a waste container under pump #1 bleed valve.

    c. Place waste containers under ratio check outlet and under dispense mixer.

    d. Actuate resin ratio check solenoid and resin dispense solenoid.

    e. Open resin pump #1 bleeder valve.

    f. Open resin pump #1 air inlet valve to start pump.

    g. Slowly adjust resin pump #1 regulator until pump begins to cycle.

    h. Close bleed valve once material is purged of air.

    i. Dispense material until all the air is purged from the system.

    j. De-activate the resin ratio check solenoid and resin dispense solenoid.

    k. Shut off pump #1 inlet air valve.

18. Push pump air off button on control panel.

19. Reconnect both catalyst pumps.

## Catalyst Initial Startup

20. Check that pump #1 inlet air valves is closed and main air pump regulator ise backed out (0 psi).

21. Reconnect both catalyst pumps to pumpline drive by inserting pin in center linkage.

22. Open catalyst feed outlet valves located on the catalyst bottle.

23. Place resin pumps in recirculation mode.

24. Place waste containers under catalyst ratio check outlet.

25. Remove catalyst non-drip valve from mix block and place in a waste container.

26. Open pump #1 inlet air valve.

27. Slowly increase pump #1 air regulator until pumps begin to cycle slowly.

28. Dispense material until all the air is purged from the system.

29. Close resin pump #1 inlet air valve.

30. Push pump air off button on control panel.

31. Run the system under normal conditions. Adjust the PUMP NO. 1 REGULATOR to the desired setting as follows:

    a. Turn the knob clockwise to increase air pressure or counterclockwise to decrease air pressure (see FIG. 11 on page 29).

    b. Check the air gauge to verify the air pressure setting.

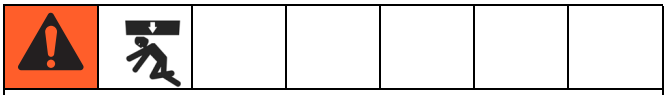
## Adjusting the Ram-Up and Ram-Down Regulators

32. Open the hinged cover at the pneumatic layout panel. See **Pneumatic Controls and Indicators** on page 20.

33. Set the RAM POSITION switch to RAISE and push the RAM UP pushbutton. Verify that the follower plate (5) elevates at the desired speed. If not, do the following:

    a. Adjust the RAM-UP REGULATOR. Turn the knob clockwise to increase the amount of air pressure. Check the air gauge to verify that air pressure was increased. See FIG. 11 on page 29.

    b. Verify that regulator R3 is set to 5 to 10 psi (0.035 to 0.07 MPa, 0.35 to 0.7 bar).



Improper setting of the Regulator R3 while the selector is in the HOLD position, can cause the plate to drop and operator injury.

    c. Repeat step 32a until the ram raises at the desired speed.

34. Set the RAM POSITION switch to DOWN while observing the air gauge inside the panel.

35. Adjust the RAM-DOWN REGULATOR to 50 psi (0.34 MPa, 3.4 bar) as follows:

**NOTE:** See FIG. 11 on page 29.

    a. Turn the knob clockwise to increase air pressure or counterclockwise to decrease air pressure.

    b. Check the air gauge to verify the air pressure setting.

36. Close and secure the hinged cover.

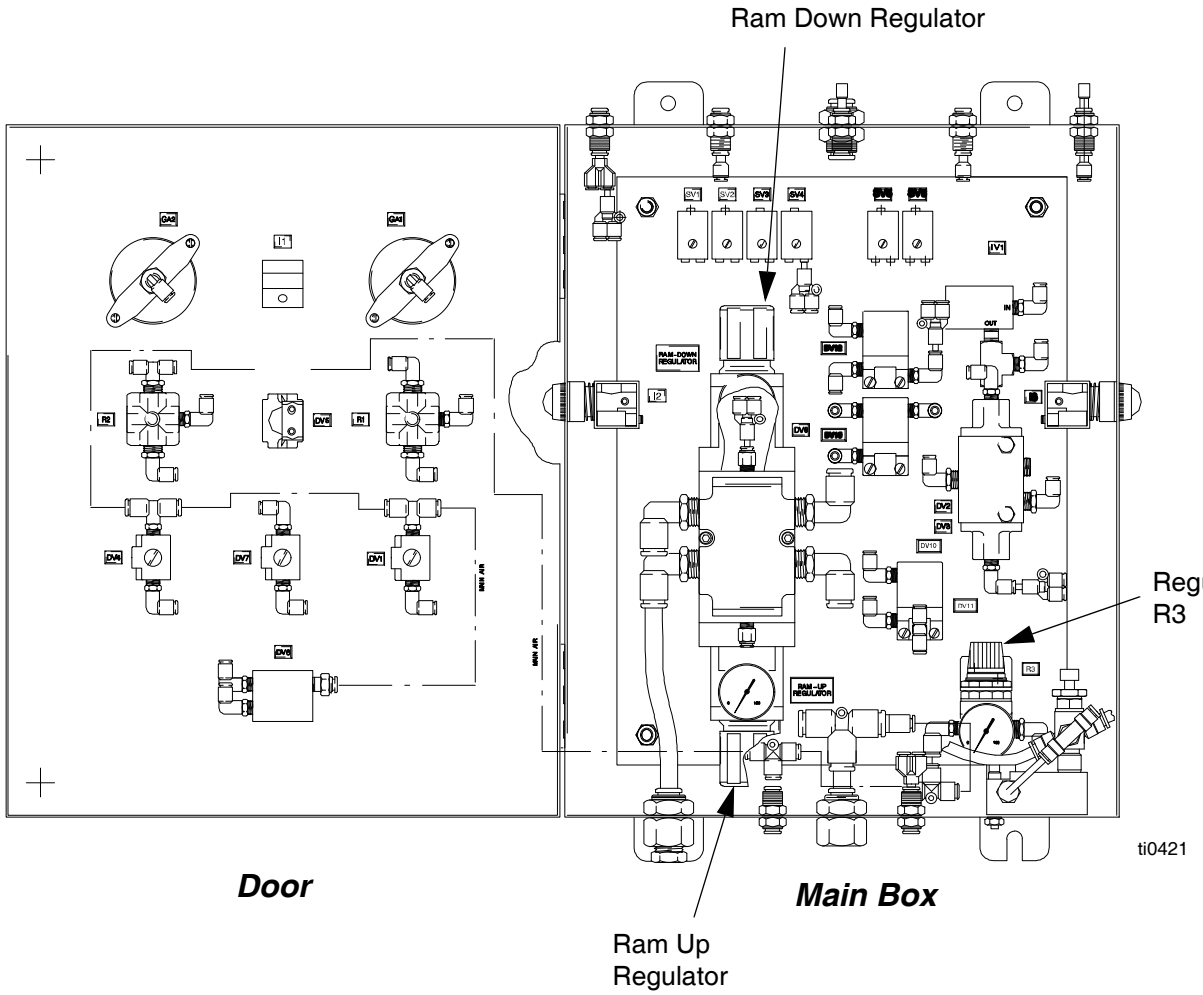

Ram Down Regulator
Regulator
R3
ti0421
Door
Main Box
Ram Up
Regulator

**FIG. 11**

## Preventing Pump Cavitation

**NOTE:** Cavitation occurs when the pump cylinder did not fully load with material on the upstroke, and a cavity forms in the material after the pump changes to the downstroke. Perform step 37 when there is pump cavitation. If cavitation is not occurring, omit step 37 and proceed to step 38.

37. To prevent cavitation from occurring, perform the following steps:

    a. Lower the air motor air pressure until cavitation stops.

    b. Increase the ram down pressure.

## Adjusting the Low Limit Switch

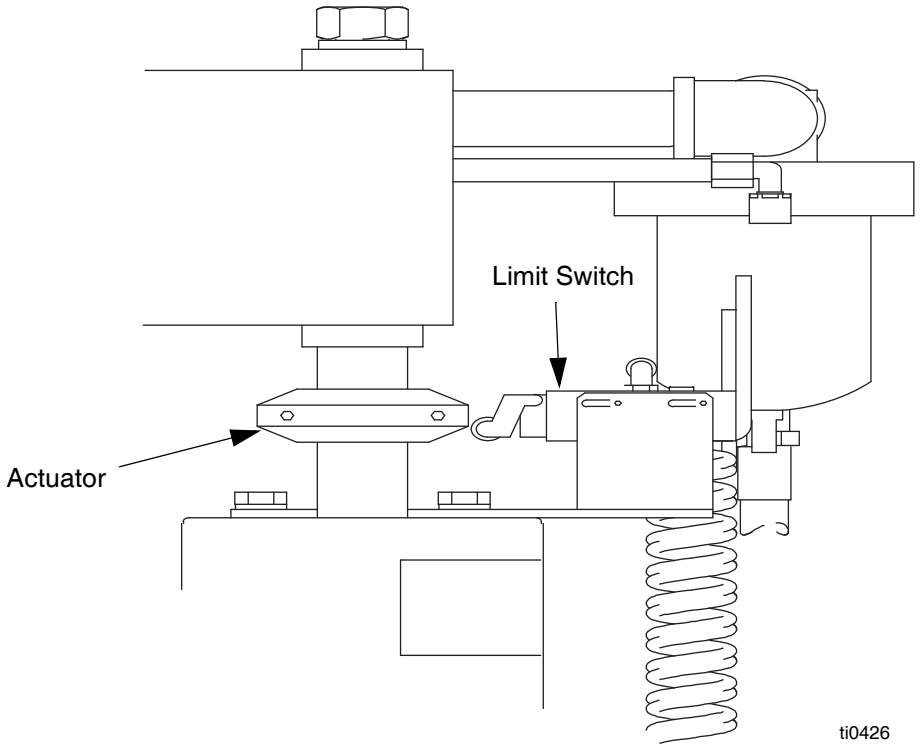
**NOTE:** When the low limit switch is activated, the pumps are automatically turned off.

38. Adjust the low limit switch as follows:

    a. At the control panel set the RAM POSITION switch to LOWER, allowing the follower plate to activate the lower limit switch. See **Pneumatic Controls and Indicators** on page 20.

    b. Verify that the follower plate lowers to the limit set point: a level between 1 to 4 inches (25.4 to 101.6 mm) from the bottom of the drum.

    c. Adjust the actuator to activate the switch at the level defined in step 38b.



## Emergency Stop

When an emergency stop is required, do the following:

### Stopping the System

1. To stop the system, close the main air inlet supply to the supply unit.

### Restarting the System

2. To restart the system, do the following:

   a. Open the main air valve to the supply unit. See FIG. 12.

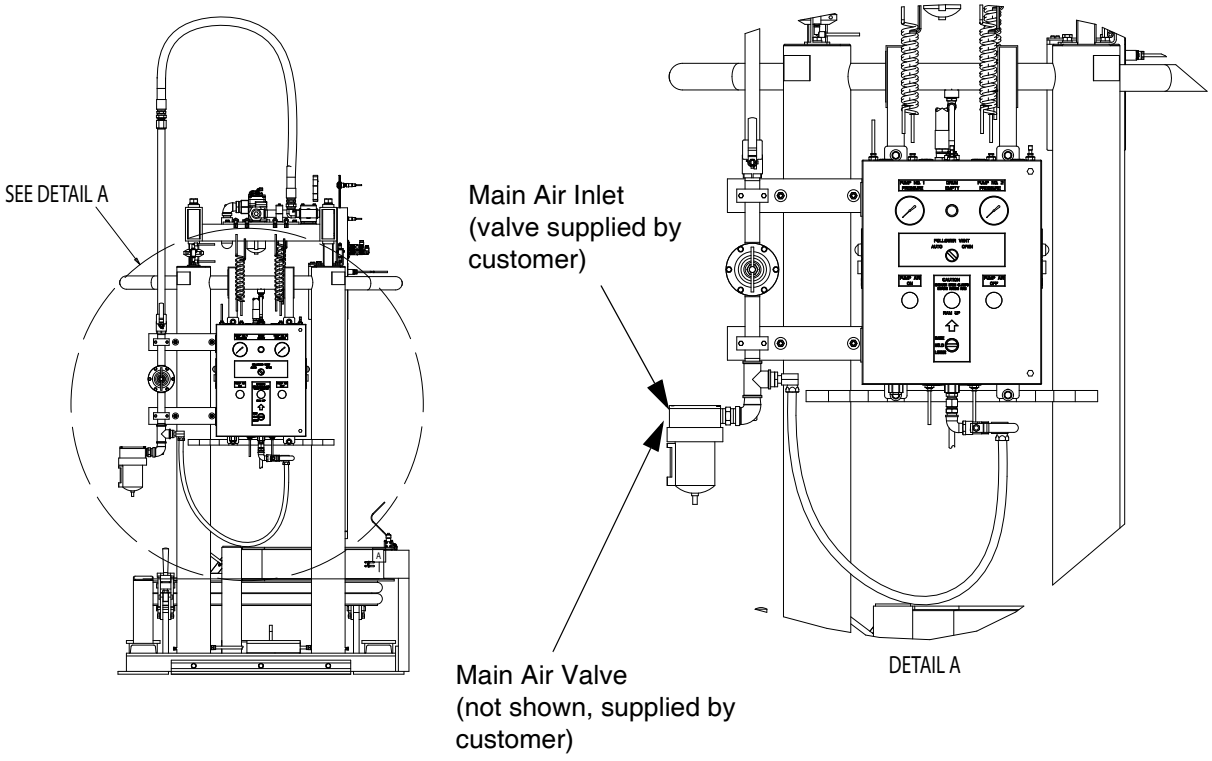



**FIG. 12: U81368 shown**

# Pump Operation

## Setting the Ratio

1. Close the main air valve inlet to remove air pressure from the system. See FIG. 12 on page 31.

**NOTE:** Relieving air pressure prevents pump operation.

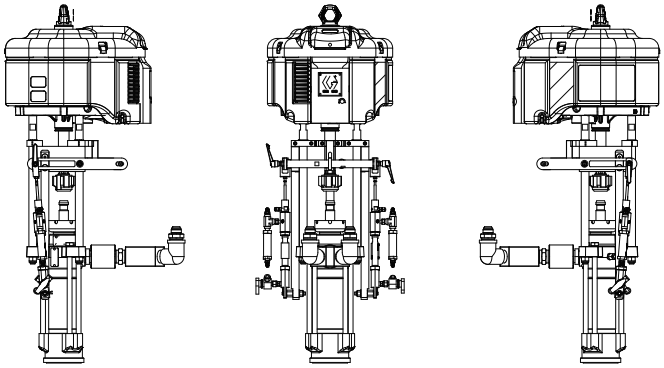
2. To adjust the volume of the catalyst pumps:

   a. Push in and rotate the clamping handle counterclockwise to loosen.

   b. Slide the pump forward to decrease the ratio or slide back to increase the ratio.

3. Push the handle in and turn clockwise to lock the position.

**NOTE:** Each pump must be adjusted individually but they do not need to be adjusted to the same position. However, they will wear more evenly if they have approximately the same stroke length.



4. Perform a purge shot from the mixer. This will allow the pressure in the catalyst accumulator to stabilize after the adjustments have been made.

# Ratio Check

Typically, the ratio will be verified by the resin and catalyst flowmeter outputs. However, to confirm the flowmeter outputs are correct, ratio check valves are located on the Fluid Monitor plate. Ratio checks should be performed periodically to verify that the flowmeters are functioning properly.

While dispensing material through the dispense valve, note the resin and catalyst pressure on the pressure gauges or transducers located on the on the Fluid Monitor Plate.

**NOTE:** To increase the accuracy of the ratio check, needle valves are provided to adjust the ratio check dispensing pressure. By adjusting the needle valves to match the running dispense pressure, it will increase the accuracy of the ratio check.

1. Place waste containers under the resin and catalyst ratio check.

2. Actuate the resin and catalyst ratio check valves. While dispensing adjust the ratio check needle valves to the running dispense pressure.

3. After setting pressures, tare waste container and place back under ratio check valves.

4. Dispense material by actuating the resin and catalyst ratio check valves for approximately 10 seconds.

5. Weigh each container to verify ratio.

# Pressure Relief Procedure

This procedure describes how to relieve pressure from the system. Use this procedure whenever you shutoff the pumps and before checking or adjusting any part of the system, to reduce the risk of serious injury.


Follow the Pressure Relief Procedure below before checking or repairing the follower plate or any other part of the system and when shutting down the system.

Keep hands and fingers away from the follower plate, pump inlets, and the drum when raising or lowering the follower plate to reduce the risk of pinching or amputating hands or fingers.

During operation, also keep hands and fingers away from limit switches to reduce the risk of pinching or amputating hands or fingers.

The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. Material under high pressure can be injected through the skin and cause serious injury. To reduce the risk of an injury from injection, splashing fluid, moving parts, follow the Pressure Relief Procedure whenever you:

- are instructed to relieve the pressure
- stop dispensing material
- check or service any of the system equipment
- install or clean the follower plate wipers.

To relieve pressure on the follower plate and in the pumps, perform the following procedure:

At the pneumatic layout panel, do the following:

1. Close the main air inlet valve. See FIG. 12 on page 31.
2. Open the accumulator isolation ball valves.
3. Open recirculation valves for resin and catalyst.
4. Place waste containers under the ratio check valves then open the ratio check valves.
5. To verify that the pressure has been fully relieved, refer to the pressure gauges located by the resin and catalyst accumulators and the pressure gauge located on the fluid monitor plate.

# Changing Empty Drums

When the drum becomes empty:

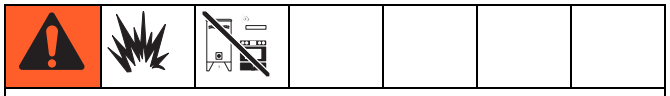
- Material will stop being delivered to the dispenser.
- Air may enter the outlet hose.
- Pump runaway could occur, resulting in damage to the pumps.

**NOTE:** Refer to manual 311238 for Datatrak runaway operation.

## Drum Changing Procedure

To remove an empty drum and load a new, full drum:

1. Verify that the two front and rear drum clamps are engaged on the Adhesive Dispenser system ram base.
2. Check that the pump air is turned off.
3. Fill the catalyst supply bottle (maximum 12 gallons) with preferred catalyst, to a minimum level of at least two inches above the catalyst bottle outlet fittings.

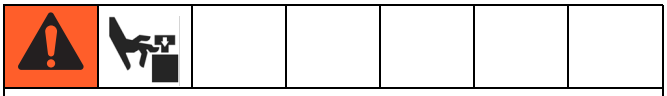


MEKP is flammable and potentially explosive, as well as potentially damaging to the eyes and skin.
Read material manufacturer's warnings and material MSDS to know specific hazards and precautions related to MEKP.
Contaminated MEKP can become explosive. Prevent contamination of MEKP with other materials, including but not limited to polyester overspray, polymerization accelerators and promoters, and non-stainless metals. Even small amounts of contaminates can make MEKP explosive. This reaction may start slowly, and gradually build-up heat, which can accelerate until fire or an explosion result. This process can take from seconds to days.

4. Check that the RAM UP air regulator is set to 60 psi (maximum).
5. To raise the follower plate:
   a. Set the RAM POSITION control to RAISE.
   b. Push and hold the RAM UP button as the follower plate slowly rises.

**NOTE:** If the Ram Up button is not pushed within 5 seconds, the vent valves may open before the pressure in the follower plate is relieved causing the material to bleed past the vents.

6. With the ram raised and the RAM POSITION control set to RAISE, pull the drum clamps back and remove the empty drum, using a suitable lifting device.



To prevent amputation, use a long-handled flat-bladed ice scraper if it is necessary to scrape the bottom of the follower plate. Do not put your hands between the plate and the drum.

7. ***IMPORTANT:*** Being careful not to damage the follower plate wipers, wipe or scrape any material buildup from the follower plate and wipers, and properly dispose of the waste material.

**NOTE:** When you open a new drum, take care to remove the cover by holding it level. Tipping the cover may allow accumulated dirt to spill into the material, which can damage the equipment. Also check that the drum is not damaged or dented.

8. Remove the cover from the new drum and remove any other packing from the drum, exposing the material. Make sure there are no foreign objects on the surface of the material.
9. Position the new drum, using a suitable lifting device, under the raised follower plate. Check that the DRUM IN PLACE indicator is lighted.
10. ***IMPORTANT:*** Lubricate the follower plate wipers with a lubricant approved by the material manufacturer.
11. Push the two front and rear drum clamps forward until engaged.

- To reduce the risk of serious bodily injury, such as fluid injection or splashing fluid in the eyes or on the skin, always wear eye protection and protective clothing when installing, operating, or servicing this dispensing system.
- Moving equipment parts can cause personal injury, including severing of hands or fingers. Make sure all personnel are clear of moving parts before operating the equipment.

**NOTICE**

The use of a non-compatible lubricant can cause material contamination or inadequate performance.

Use only a lubricant compatible with the material to be pumped. Check with the material supplier for a recommended lubricant.

To help avoid damage to equipment, do not use a drum of material that has been dented or otherwise damaged; damage to the follower plate wiper may result.

**NOTE:** Before lowering the follower plate assembly into the drum, make sure that nothing is between the follower plate and the drum, or between the ram tie bar and the top of the ram posts.

12. Remove bleed sticks at the base of each pump.
13. Lower the follower plate as follows:
    a. Set the Ram Position selector to LOWER.
    b. Lower the follower plate until the material is evident in the bleedstick ports.
    c. Press both two-hand control buttons to lower the follower plate until the material is evident in the bleedstick ports. Once the follower plate enters the drum, two-hand control is no longer active.
    d. Set the Ram Position selector to HOLD.
    e. Replace the bleedsticks.
    f. Set the Ram Position selector to LOWER.
14. Close the pump #1 inlet valve.
15. Prime the resin system as follows:
    a. Push the pump Air On button to open the air supply to the pumps.

**NOTE:** Pumps should not start if inlet valves were closed in step 16.

    b. Place a waste container under pump #1 bleed valve.
    c. Place waste containers under ratio check outlet and under dispense mixer.
    d. Actuate resin ratio check solenoid and resin dispense solenoid.
    e. Open resin pump #1 bleeder valve.
    f. Open resin pump #1 air inlet valve to start pump.
    g. Slowly adjust resin pump #1 regulator until pump begins to cycle.
    h. Close bleed valve once material is purged of air.
    i. Dispense material until all the air is purged from the system.
    j. De-activate the resin ratio check solenoid and resin dispense solenoid.
    k. Shut off pump #1 inlet air valve.
16. Push pump air off button on control panel.

**NOTE:**

- If the pump does not prime properly, which may occur with heavier, high viscosity fluids, increase the Ram Down air pressure.
- If fluid is forced out around the top wiper, ram pressure is too high; decrease the air pressure to the ram.
- Ram pressure adjustments may be carried out using the dual regulator inside the pneumatic panel, where the upper regulator knob controls the downward pressure of the ram, and the lower regulator knob controls the upward pressure of the ram.

# Routine Maintenance

## Recommended Spare Parts

| Adhesive Dispenser Spare Parts (Refer to drawing 24F684) | | | |
|---|---|---|---|
| **Part No.** | **Qty** | **Description** | **Where Used** |
| 125090 | 1 | Accumulator Kit | Resin Accumulator |
| 24G425 | 1 | Slave Pump | Resin and Catalyst Pump Assembly, 2k Meter |
| LPA-190-SK | 2 | Slave Pump Seal Kit | Seal Kit |
| 253745 | 1 | Packings Repair Kit | Resin Pump, 2k meter |
| 109495 | 1 | O-ring | Resin Pump to Ram Plate |
| 918241 | 1 | Wiper Kit | Ram Plate Assembly (U81482) |
| 517286 | 2 | Plunger | Ram Plate Assembly (U81482) |
| 196053 | 2 | Plate | Ram Plate Assembly (U81482) |
| 115783 | 2 | Bolt | Ram Plate Assembly (U81482) |
| 196052 | 8 | Spacer | Ram Plate Assembly (U81482) |
| 112245 | 2 | O-ring | Ram Plate Assembly (U81482) |
| 115782 | 2 | Air Cylinder | Ram Plate Assembly (U81482) |
| 196051 | 2 | Spacer | Ram Plate Assembly (U81482) |
| 115784 | 8 | Screw | Ram Plate Assembly (U81482) |
| 617230 | 2 | Gasket | Ram Plate Assembly (U81482) |
| 918110 | 4 | Ram Repair Kit | Ram Piston Assembly (241902) |
| **Flow Monitor Spare Parts (Refer to drawing 24F687)** | | | |
| 918538 | 1 | 1/2 Valve Repair Kit | Resin Ratio Check, Fluid Valve |
| 124806 | 1 | ATEX Solenoid Valve | Controls |
| **Dispense Valve Spare Parts (Refer to drawing 24F688)** | | | |
| 918540 | 1 | 3/4 Valve Repair Kit | Resin Dispense Valve, Mixer |
| 60/0008-A/98 | 2 | 1 in. x 12 Element Mixer | Mixer/Dispense Valve |
| 24F708 | 1 | Catalyst Non-Drip Valve | Catalyst Valve, Dispense Valve |
| 124806 | 1 | ATEX Solenoid Valve | Controls |
| **Solvent Flush Spare Parts (Refer to drawing 24F689)** | | | |
| 24F707 | 1 | Solvent Non-Drip Valve | Solvent Flush, Dispense Valve |
| 247967 | 1 | T1 Repair Kit Seals | Solvent Pump, Solvent Purge |

# Preventive Maintenance Schedule

The operating conditions of your particular system determine how often maintenance is required.

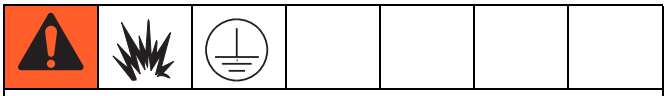
Establish a preventive maintenance schedule by recording when and what kind of maintenance is needed, and then determine a regular schedule for checking your system.

# Flushing the System

Flush the resin pump:

- Before the first use
- When changing material or fluid part number or brand
- Before fluid can dry or settle out in a dormant pump (check the shelf life or pot life of catalyzed fluids)
- Before storing the pump

Flush with a fluid that is compatible with the fluid you are pumping and with the wetted parts in your system. Check with your fluid manufacturer or supplier for recommended flushing fluids and flushing frequency.



- Before flushing, read the section **FIRE AND EXPLOSION HAZARD** on page 4. Be sure the entire system and flushing pails are properly grounded. Refer to **Grounding** on page 16.

To flush the system, perform the following procedure:

1. Place a drum of compatible flush material under the follower plate.
2. Run the pumps and circulate the flush material through the system for approximately 1 to 2 minutes or until the solution is clean.
3. Remove the drum containing the flush material from under the follower plate.
4. Return the system to current readiness condition.

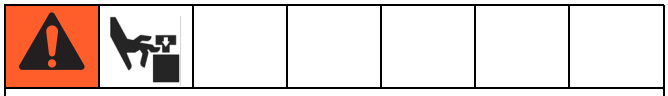
# Cleaning the System

**NOTICE**

Cleaning the system after using it can prevent material contamination, which may cause the material to fail or perform poorly. Do not load new material into a contaminated system.

Clean the system to avoid untimely equipment malfunctions and to ensure that system components operate efficiently.

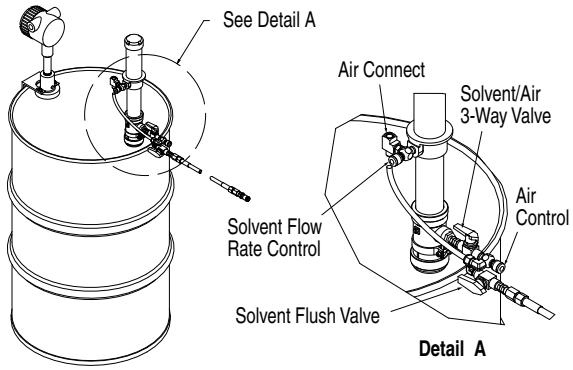
To clean the system, perform the following procedure:



To prevent amputation, use a long-handled flat-bladed ice scraper if it is necessary to scrape the bottom of the follower plate. Do not put your hands between the plate and the drum.

1. ***IMPORTANT:*** Being careful not to damage the follower plate wipers, wipe or scrape any material buildup from the follower plate and wipers, and properly dispose of the waste material.
2. Apply a generous amount of lubricant to the follower plate wipers.
3. Return the system to current readiness condition.

# Cleaning the Mixer




**NOTE:** Use a solvent specified by the material manufacturer to clean the dispense valve.

1. Place a waste container beneath the dispense valve.
2. Following a solvent flush procedure provided by the material manufacturer, open the solvent flush valve on the solvent stick pump.
3. A three way valve mounted off of the solvent stick pump allows solvent or air pressure to be applied to the mixer. Independent needle valves control the output the solvent stick pump and the volume of air applied to the mixer. After solvent flushing, switch to air flush to purge lines of solvent. See FIG. 13.

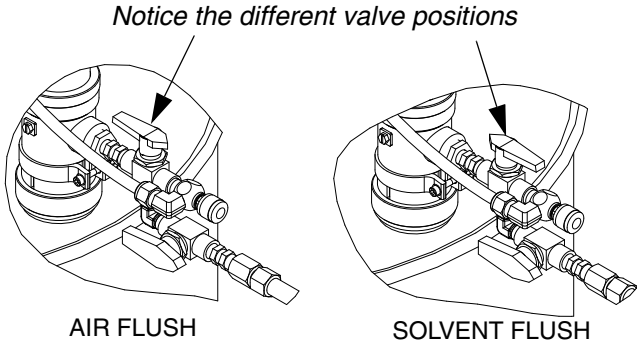



**FIG. 13: Valve Positions**

4. Once the mixer has been flushed and thoroughly cleaned close solvent flush valve and remove the catalyst non-drip from the mixer block.

**NOTE:** If the mixer is not thoroughly cleaned, it will directly affect the performance of the equipment. To verify cleanliness of mixer, it may be necessary to remove the mixer sections from the mixer block by unthreading. The element slides out of the housing from one end only to clean.

5. Clean the non-drip valve and lubricate the o-rings with compatible grease.
6. Replace the non-drip valve.

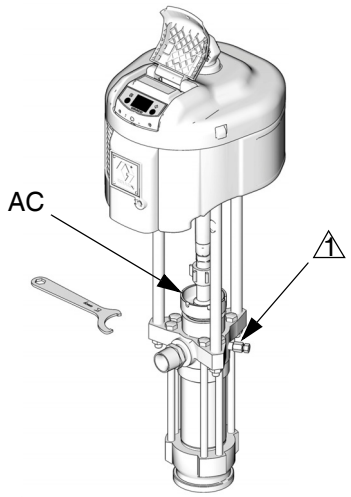
# Daily Mixer Maintenance

Remove and clean the mixer and elements from the mix manifold daily to prevent material build-up.

## Wet-Cups

See FIG. 14. Check the wet-cup (AC) daily. Keep the wet-cup 1/3 filled with Graco Throat Seal Liquid (TSL) or compatible solvent.

Using the supplied wrench, adjust the packing nut weekly so it is just snug; do not overtighten. Torque to 135-169 N•m (100-125 ft-lb).




1 Bleed hole must face down.

**FIG. 14: Bleeder Valve and Wet-Cup**

## Wiper Lubrication

It is extremely important that the follower plate wipers be thoroughly lubricated between drum changes. The follower plate may stick without lubrication.

## Catalyst Supply Tank Screen

Remove, inspect, and clean the catalyst supply tank screen prior to re-filling the tank.

## Catalyst Weep Bottle

Visually inspect the catalyst weep bottle prior to production runs. Material in the bottle indicates a pump seal failure.

## Catalyst Accumulator

Every 100-150 hours of running time, the catalyst accumulator will require recharging. See **Recharging the Catalyst Accumulator** on page 23.

# Pneumatic Service

The pneumatic layout panel service procedures include:

- Filter/element replacement

## Filter/Element Replacement

The air filter is located between the air supply source and the pneumatic layout panel. See FIG. 15.

To replace an air filter/element, do the following:

1. At the pneumatic layout panel, do the following:
   a. Press the PUMP AIR OFF to shutoff the air supply at both pumps.
   b. Close the main air inlet valve.

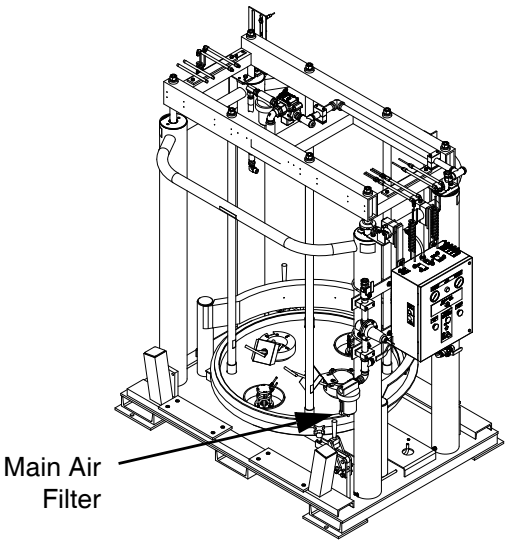



**FIG. 15: U81368 shown**

2. Relieve the pressure.

### Filter Removal

3. Turn the air filter counterclockwise to unscrew the filter from its mounting. See filter manual 308169 for more information.

### Filter/Element Replacement

4. Replace the old air filter element with a new filter element.
5. Clean the sight glass, if necessary. Reinstall the sight glass back on its threaded mounting. Tighten the sight glass.
6. Check for air leakage around the filter.
7. Return the system to current readiness condition.

## Air Motor Lubricator

See lubricator manual 308169.

# Ram Assembly Service

## Piston Rod Seal Service (FIG. 16)

1. Relieve the air pressure.
2. Remove the four nuts and lockwashers holding the tie bar to the rods. Remove the tie bar.
3. Remove the guide sleeve retaining ring by gripping the ring tab with a pair of pliers and rotating the ring out of its groove.
4. Remove the guide sleeve by sliding it off of the rod. Four 1/4 in. – 20 holes are provided to ease removal of the guide sleeve.

- Do not use pressurized air to remove the guide sleeve or piston. Failure to follow this instruction may result in personal injury.

5. Inspect the parts for wear or damage. Replace as necessary.
6. Install new o-rings and seal guard. Lubricate the packings with o-ring lubricant.
7. Slide the guide sleeve onto the rod and push it into the cylinder. Replace the retaining ring by feeding it around the guide sleeve groove.
8. Reinstall the tie bar using the nuts and lockwashers. Torque to 40 ft-lb (54 N•m).

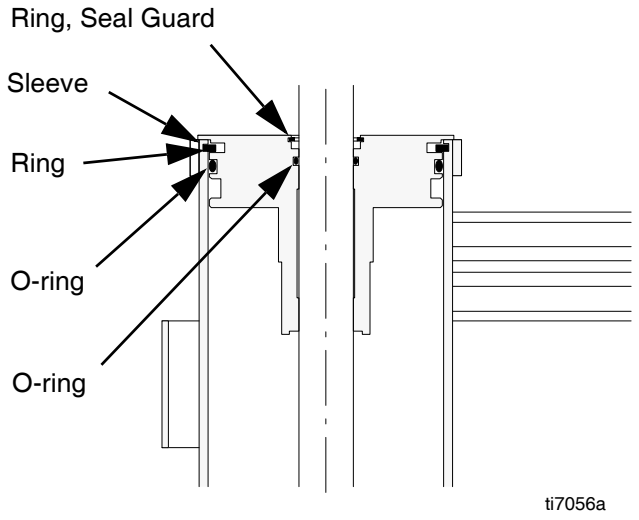



FIG. 16

# Ram Piston Service (FIG. 17)

1. Relieve the air pressure.
2. Remove the tie bar as explained under Piston Rod Seal Service.
3. Remove the guide sleeve and slide it off of the piston rod.

- Do not use pressurized air to remove the guide sleeve or piston. Failure to follow this instruction may result in personal injury.

4. Carefully pull the piston rod **straight** up out of the cylinder. If the rod is cocked to one side, the piston or inside surfaces of the cylinder could be damaged.
5. Carefully lay the piston and rod down so the rod will not be damaged or bent. Remove the lower piston retaining ring. Slide the piston off the piston rod.
6. Install new O-ring seals on the piston rod and the piston. Lubricate the piston and seals. Reinstall the piston and retaining ring.
7. Carefully insert the piston into the cylinder and push the rod straight down into the cylinder. Add 3 ounces of lubricant to each cylinder after inserting the piston.
8. Slide the guide sleeve onto the piston rod. Reinstall the retaining ring and tie bar, as explained under Piston Rod Seal Service.

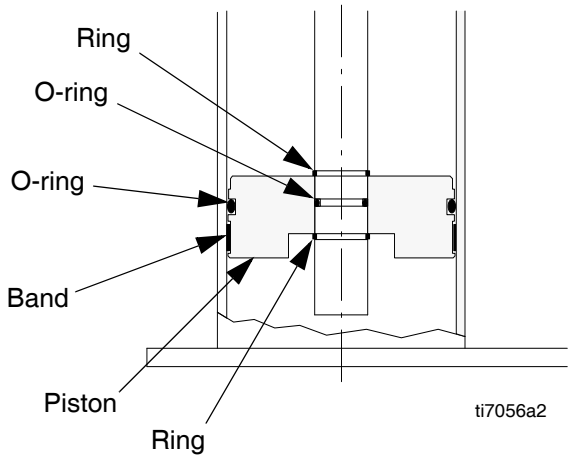



FIG. 17

# Low/Empty Limit Switch Replacement (FIG. 18)

1. Perform the System Shutdown procedure provided by the integrator.

2. Shut off main air control panel.

**NOTE:** When raising and lowering the follower plate, be sure that the unit is unobstructed overhead to avoid interference with other objects.

### Switch Removal

3. Disconnect the air tubing from the switch. Note the tube and fitting relationship to insure they are reconnected correctly.

4. Mark the surface on the ram limit bracket using a felt-tipped pen to ensure that the new lower limit switch is installed in the same spot.

5. Measure the distance from the mounting bracket to the outer diameter of the limit switch roller to ensure that the new roller is installed in the same position.

6. Remove the fasteners holding the switch to the limit bracket.

### Install New Switch

7. Install the new limit switch on the limit bracket using the fasteners.

8. Reconnect the tubing for the limit switch.

9. Make sure that the limit switch roller is positioned in the same location per the measurement in step 5. See FIG. 18 on page 43.

10. Reinstall the cover on the control panel.

11. Resupply air to the control panel.

12. Perform the Daily System Startup procedure provided by the integrator.

13. Verify that the limit switch operates correctly.

14. Return the system to current readiness condition.

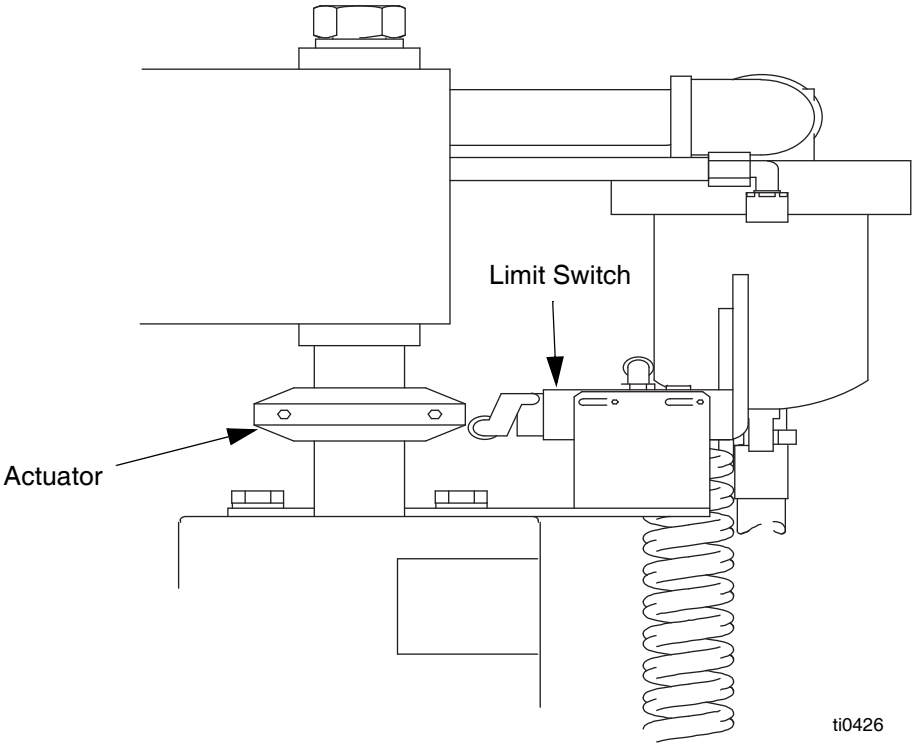



**FIG. 18**

# Replacing Wipers (FIG. 19)

1. Perform the System Shutdown procedure provided by the integrator.

2. To replace worn or damaged wipers, raise the follower plate up out of the drum. Remove the drum from the base. Wipe the fluid off the follower plate. Refer to **Changing Empty Drums** on page 34.

3. Separate the wiper joint (A) and bend back the strapping covering the clamp setscrew. See Detail A of FIG. 19. Loosen the setscrew, pull the end of the strapping through the clamp and remove the wiper.

4. Slide the strapping through the new wiper. Slide the clamp onto the new strapping and bend the strapping back approximately 3 in. (76 mm). Insert the strapping through the clamp a second time. See Detail B of FIG. 19.

5. Install the wipers on the follower plate. Position the wipers so that their joints (A) are 180 apart.

**NOTE:** You will need the special banding tool (C) shown in Detail C of FIG. 19 to tighten the strapping. Order Part No. 168092 Banding Tool.

6. Grip the strapping with the tool (C) as shown. With your thumb on the gripper lever (E), turn the tool handle (F) clockwise to apply tension.

**NOTE:** Be careful not to pull the cutting handle (D) until you are ready to cut the strapping in step 8.

7. Continue turning the tool handle until you see the strapping stop moving through the clamp. Stop turning the handle.

8. Tighten the setscrew (B) with a wrench (G). Pull the cutting handle (D) to cut. Remove the tool (C). Bend the strapping back over the clamp (414).

9. Pound the wiper all the way around with a rubber mallet until the joints (A) are butted tightly together. Check the overall circumference of both wipers. They should measure less than 135 in. (343 cm). Adjust as necessary.

10. Return the system to current readiness condition. Refer to **Changing Empty Drums** on page 34.

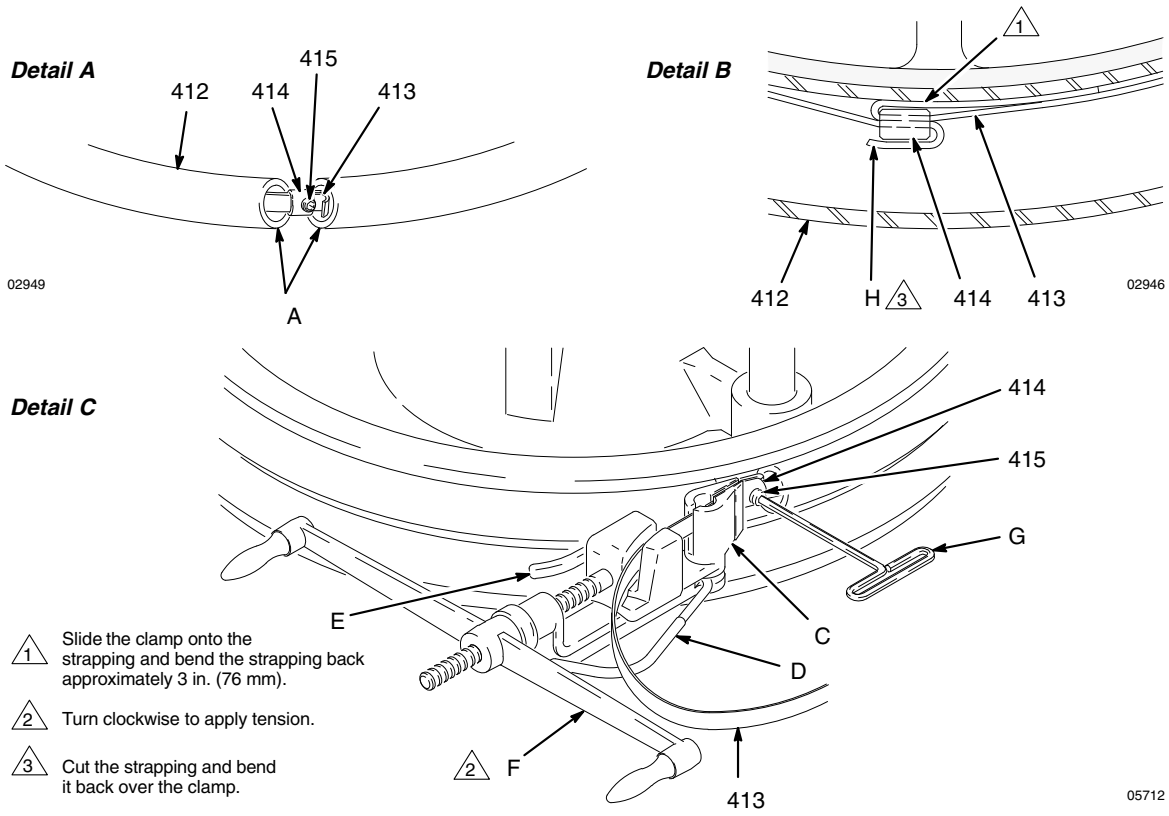



**FIG. 19**

# Pump Assembly Service

## Resin Pump Removal

Refer to drawing package.

1. Relieve the air pressure from the air motors and ram assembly to be serviced.
2. Move the RAM POSITION switch to HOLD.
3. Open the pump recirculation valve(s) and relieve the fluid pressure from the pumps at the pump bleed valve on the ram assembly to be serviced.
4. Close hose outlet valves to prevent the downstream plumbing from draining.

**NOTE:** Check the Technical Data page in the separate pump manual to find the weight of the pump being serviced. For example, Graco Premier 45:1 SST Pump (222939) weighs 240 lb (109 kg) per Form 308148.

**NOTE:** If the air motor does not require servicing, leave it attached to its mounting.

5. If servicing the air motor, detach the air hose from the air motor.
6. Detach the fluid supply hose at the pump outlet.
7. If removing air motor, remove catalyst pumps.
8. On the follower plate adapter, loosen and rotate or remove four lugs and hex bolts holding the flange of the pump lower.
9. Detach any other connections to the pump assembly to ensure the pump is free of attachments before removal. Possible connections include:

- Air motor exhaust kit
- Pump proximity switch kit
- Pump grounding wire

10. Use a hammer and brass rod to loosen coupling nut (8). When coupling nut drops down remove coupling collars (7) and coupling nut from displacement rod.

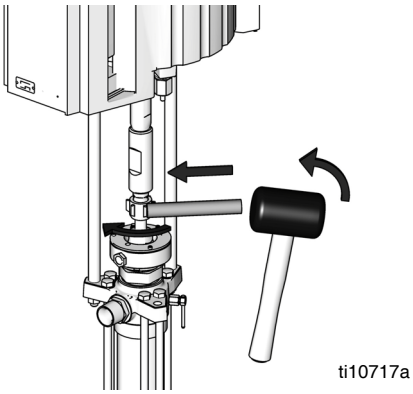



**FIG. 20**

11. Use a wrench to hold the tie rod flats to keep the rods from turning. Unscrew the nuts (5) from the tie rods (3) and carefully remove the displacement pump (2).

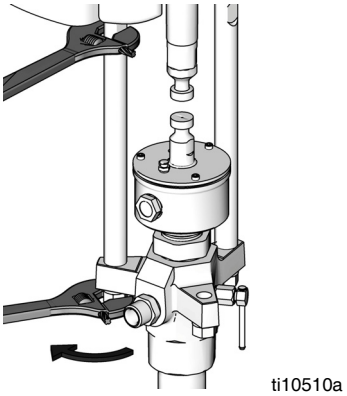



**FIG. 21**

12. Raise the ram assembly to lift the air motor away from the displacement pump.
13. Use two people to lift out the displacement pump.
14. Remove the gasket and o-ring (items 32 and 33) from the pump adapter. They should be discarded and replaced when the pump is reinstalled.
15. Clean excess and hardened material from the pump adapter on the follower plate.

16. Ensure that material is not rising through the pump adapter in the follower plate. If material is flowing upward, move the RAM POSITION switch to RAISE until the flow stops, then move the switch back to HOLD.

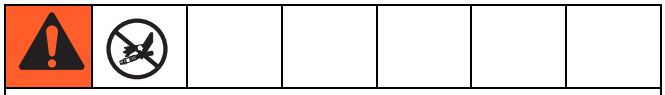
17. Move the pump assembly to a suitable work area and repair the pump using the appropriate Graco instruction manual. See **Related Manuals** on page 3.

# Pump Installation

Refer to drawing package.

1. When the pump is serviced and tested and ready to be replaced in the Adhesive Dispenser system Ram, perform the steps of the Pump Removal procedure in reverse order.

2. It is recommended that the pump be tagged with the type and date of repair and the name of the technician who performed the repair.



Failure to open the hose outlet valves in the following step will result in an overpressure situation.

3. Open hose outlet valves.

4. Before returning the reassembled pump to production use, it must be primed with material and air removed from the material. Follow the Pump Instruction Form and the pump material bleeding procedure from **Changing Empty Drums** on page 34.

# Technical Data

| | |
|---|---|
| Maximum Fluid Working Pressure | 2500 psi (17 MPa, 172 bar) |
| Maximum Air Inlet Pressure | 80 psi (0.55 MPa, 5.5 bar) |
| Minimum Air Flow | 200 scfm (6 normal cubic meters per minute) |
| Maximum Pump Air Inlet Working Pressure | 100 psi (0.7 MPa, 7 bar) |
| Maximum Ram Air Inlet Pressure | 80 psi (0.55 MPa, 5.5 bar) |
| Maximum Pump Operating Temperature | 65.5°C (150°F) |
| Ratio | 23:1 |
| Pump Cycles Per 3.8 Liters (1 Gal.) | Dura-Flo 2400 (580 cc): 6.5 |
| Fluid Flow At 60 Cycles Per Minute | Dura-Flo 2400 (580 cc): 34.6 lpm (9.2 gpm) |
| Motor Piston Effective Area | See motor manual, supplied. |
| Stroke Length | See motor manual, supplied. |
| Lower Effective Area | Dura-Flo 2400 (580 cc): 24 $cm^2$ (3.72 $in.^2$) |
| Motor Fitting Sizes | See motor manual, supplied. |
| System Main Air Inlet Size | 1 in. npt(f) |
| Fluid Inlet Size | 2 in. npt(f) |
| Fluid Outlet Size | 1-1/2 in. npt(m) |
| Sound Pressure | NXT air motors: See manual 311238, supplied. |
| Sound Power | NXT air motors: See manual 311238, supplied. |
| Wetted Parts | Dura-Flo 2400 (580 cc): See manual 311825 |
| Dimensions | Width: 69 in. (1753 mm)<br>Depth: 51 in. (1295 mm)<br>Height (lowered): 85.2 in. (2164 mm)<br>Height (raised): 141 in. 3581 mm) |
| Overall Weight | Approximately 3830 lb (1737 kg)<br>Adhesive Dispenser: 3530 lb (1601 kg)<br>Fluid Monitor: 150 lb (68 kg) |

## Pump Performance Charts

### Fluid Outlet Pressure

To find fluid outlet pressure (MPa/bar/psi) at a specific flow (lpm/gpm) and operating pressure (A/B/C):

1. Locate desired flow at bottom of chart.
2. Follow vertical line up to intersection with selected operating pressure curve (solid line). Follow left to scale to read fluid outlet pressure.

### Pump Air or Hydraulic Oil Consumption

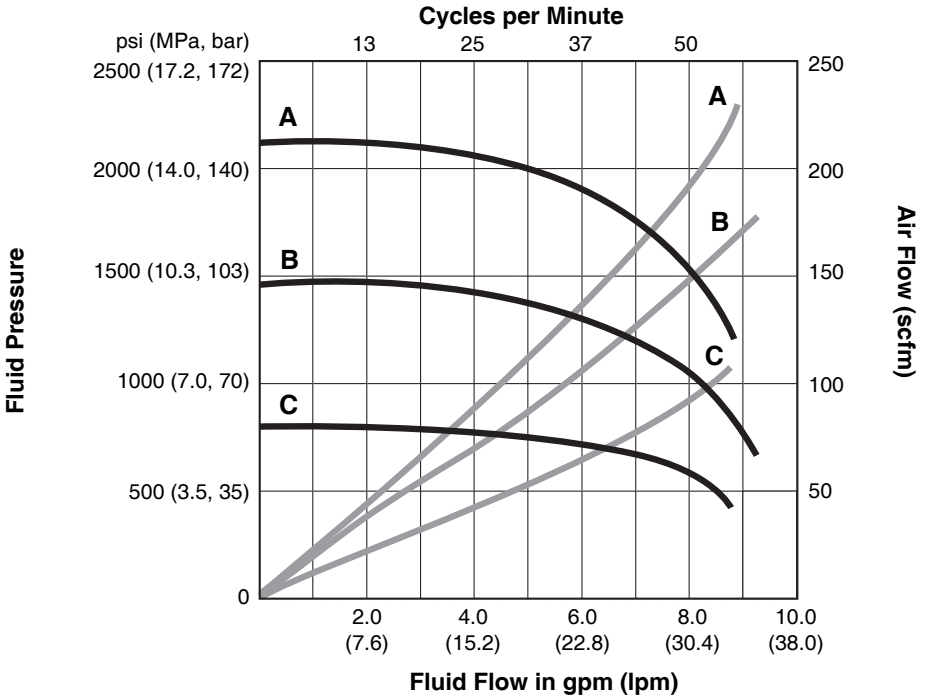
To find air or hydraulic oil consumption at a specific flow (lpm/gpm) and operating pressure (A/B/C):

1. Locate desired flow at bottom of chart.
2. Follow vertical line up to intersection with selected operating pressure curve (dashed line). Follow left to scale to read air or oil consumption.

**Key**

**A** 0.7 MPa, 7 bar (100 psi) air pressure or 10.5 MPa, 105 bar (1500 psi) hydraulic oil pressure
**B** 0.5 MPa, 4.9 bar (70 psi) air pressure or 7.5 MPa, 75 bar (1050 psi) hydraulic oil pressure
**C** 0.3 MPa, 2.8 bar (40 psi) air pressure or 4.2 MPa, 42 bar (600 psi) hydraulic oil pressure
**Test Fluid:** No. 10 Weight Oil

**Dura-Flo 2400 Pumps with NXT Model 6500 Air Motors**



# Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

**THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE**.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

**GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO**. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

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# Graco Information

## Sealant and Adhesive Dispensing Equipment

**For the latest information about Graco products, visit** www.graco.com.
**For patent information, see** www.graco.com/patents.

**TO PLACE AN ORDER, contact your Graco distributor, go to** www.graco.com and select **"Where to Buy" in the top blue bar, or call to find the nearest distributor.**

***If calling from the US:*** **800-746-1334**
***If calling from outside the US:*** **0-1-330-966-3000**

*All written and visual data contained in this document reflects the latest product information available at the time of publication.*
*Graco reserves the right to make changes at any time without notice.*

Original instructions. This manual contains English. MM 3A1201

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