

# UniDrum<sup>TM</sup> Supply System

309169ZAF

EN

**Bulk Supply System for 300 Gallon (1200 Liter) Magnadrum. For professional use only.**

**Not approved for use in explosive atmospheres or hazardous (classified) locations.**

The UniDrum Supply System evacuates 300 gallon (1200 liter) magnadrum or other tote drums of the same size and capacity. The UniDrum Supply System pumps and transfers flowable and highly viscous materials such as sealant, adhesives, and sound deadeners from bulk drums with maximum efficiency.

The UniDrum Supply System is designed to work with other high pressure equipment to optimize material use.

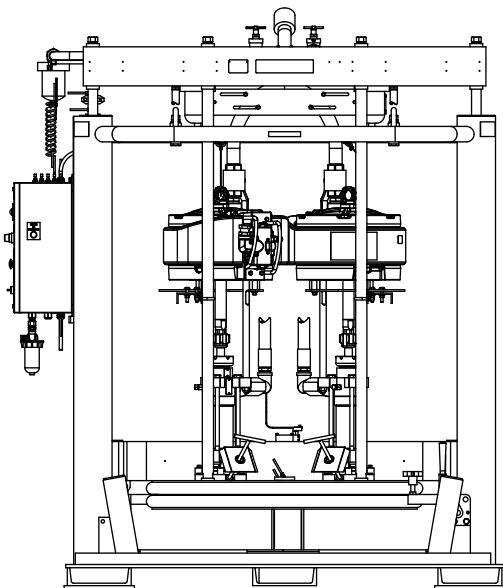
See **Technical Specifications** on page 77 for Maximum Air Working Pressure

See page 4 for model information.

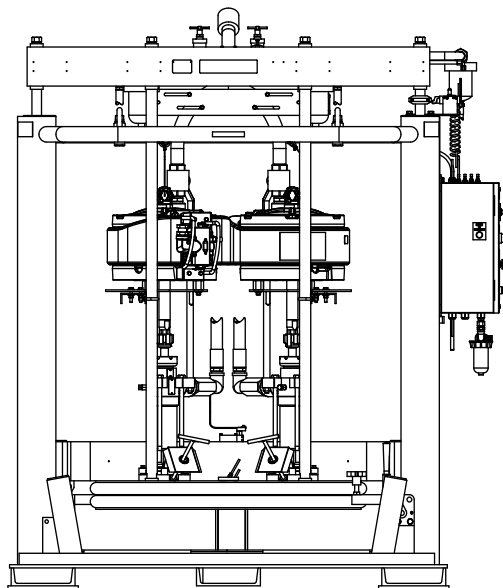


## Important Safety Instructions

Read all warnings and instructions in this manual and related manuals before using the equipment. Save these instructions.



UniDrum Left Hand Supply Unit



UniDrum Right Hand Supply Unit

# Contents

<b>Related Manuals</b> .....	<b>3</b>	<b>Pneumatic Logic Panel Service</b> .....	<b>31</b>
<b>Models</b> .....	<b>4</b>	Filter/Element Replacement .....	31
<b>Warnings</b> .....	<b>5</b>	<b>Ram Assembly Service</b> .....	<b>32</b>
<b>Uncrating the System</b> .....	<b>8</b>	Piston Rod Seal Service .....	32
<b>Overview</b> .....	<b>8</b>	Ram Piston Service .....	33
Installation Overview .....	8	Low/Empty Limit Switch Replacement .....	34
Operation Overview .....	8	Replacing Wipers .....	35
<b>Component Identification</b> .....	<b>9</b>	Pump Removal .....	37
UniDrum Supply System .....	9	<b>Recycling and Disposal</b> .....	<b>38</b>
Pneumatic Logic Panel, 243559 .....	10	End of Product Life .....	38
General Description .....	13	<b>Troubleshooting</b> .....	<b>39</b>
<b>Installation</b> .....	<b>15</b>	Ram Assembly Troubleshooting .....	39
Preparing the Site .....	15	Pump Troubleshooting .....	40
Selecting a Location for the UniDrum .....	15	Air Motor Troubleshooting .....	41
Preparing to Install the UniDrum .....	15	Pneumatic Logic Panel Troubleshooting .....	42
Installing the UniDrum .....	16	<b>Parts</b> .....	<b>43</b>
Grounding the System .....	16	C59784 - 20:1 Left Hand Supply Unit, with King	
Checking the Resistance Between the Pumps and		carbon steel pump .....	43
the True Earth Ground .....	16	C59785 - 20:1 Right Hand Supply Unit, with King	
Connecting the Air Supply Lines to the UniDrum	17	carbon steel pump .....	43
Connecting Output Hose to the Pumps .....	18	C59784 - 20:1 Left Hand Supply Unit, with King	
<b>Operation</b> .....	<b>19</b>	carbon steel pump .....	44
Prepare the Operator .....	19	C58461 - 35:1 Left Hand Supply Unit, with XL10000	
Overview .....	19	carbon steel pump .....	45
General Functional Description .....	19	C58462 - 35:1 Right Hand Supply Unit, with	
System Startup .....	19	XL10000 carbon steel pump .....	45
System Operation .....	19	C58461 - 35:1 Left Hand Supply Unit, with XL10000	
Supply Unit Operation .....	19	carbon steel pump .....	46
System Shutdown .....	19	24P842, 47:1 Left Hand Supply Unit, with XL 10000	
Flushing the System Before Initial Use .....	20	stainless steel pump .....	47
Initial System Startup Procedure .....	21	24P843, 47:1 Right Hand Supply Unit, with XL	
Changing Empty Drums .....	24	10000 stainless steel pump .....	47
Daily System Startup .....	26	24P842, 47:1 Left Hand Supply Unit, with XL 10000	
System Shutdown .....	26	stainless steel pump .....	48
Stopping the System .....	26	246983 - 47:1 Left Hand Supply Unit, with XL10000	
Restarting the System .....	26	stainless steel pump with silicone nitride balls	
<b>Pressure Relief Procedures</b> .....	<b>27</b>	49	
Fluid Pressure Relief Procedure .....	27	246984 - 47:1 Right Hand Supply Unit, with	
Pneumatic Pressure Relief Procedure .....	28	XL10000 stainless steel pump with silicone	
<b>Maintenance</b> .....	<b>29</b>	nitride balls .....	49
Preventative Maintenance Schedule .....	29	246983 - 47:1 Left Hand Supply Unit, with XL10000	
Flushing the System .....	29	stainless steel pump with silicone nitride balls	
Cleaning the System .....	29	50	
Wiper Lubrication .....	30	249154 - 35:1 Left Hand Supply Unit, with XL10000	
		stainless steel pump with silicone nitride balls	
		51	

249155 - 35:1 Right Hand Supply Unit, with XL10000 stainless steel pump with silicone nitride balls . . . . .	51
249154 - 35:1 Left Hand Supply Unit, with XL10000 stainless steel pump with silicone nitride balls . . . . .	52
C58607 - 56:1 Left Hand Supply Unit, with King carbon steel pump. . . . .	53
C58608 - 56:1 Right Hand Supply Unit, with King carbon steel pump. . . . .	53
C58607 - 56:1 Left Hand Supply Unit, with King carbon steel pump. . . . .	54
C59793 - 47:1 Left Hand Supply Unit, with XL10000 carbon steel pump. . . . .	55
C59794 - 47:1 Right Hand Supply Unit, with XL10000 carbon steel pump . . . . .	55
C59793 - 47:1 Left Hand Supply Unit, with XL10000 carbon steel pump. . . . .	56
C58338 - 71:1 Left Hand Supply Unit, with XL10000 carbon steel pump. . . . .	57
C58601 - 71:1 Right Hand Supply Unit, with XL10000 carbon steel pump . . . . .	57
C58338 - 71:1 Left Hand Supply Unit, with XL10000 carbon steel pump. . . . .	58
24R875 - 10:1 Left Hand Supply Unit, with NXT carbon steel pump. . . . .	59
24R876 - 10:1 Right Hand Supply Unit, with NXT carbon steel pump. . . . .	59
24R875 - 10:1 Left Hand Supply Unit, with NXT carbon steel pump. . . . .	60
Pneumatic Logic Panel, 243559 . . . . .	61
Follower Plate, 233041. . . . .	64
Safety Pin Maintenance Kit, 26B772 . . . . .	66
Elevator Assembly, 248126 and 248127 . . . . .	68
Elevator Assembly, 233050, 233066, 24T263, 24T264. . . . .	71

<b>Recommended Spare Parts . . . . .</b>	<b>74</b>
Spare Parts for Pump and Air Motor . . . . .	74
Spare Parts for Ram Plate Assembly . . . . .	74
Spare Parts for Ram Plate Assembly . . . . .	74
Optional Long Bleeder Valve . . . . .	74
<b>Pneumatic Diagram . . . . .</b>	<b>75</b>
<b>Technical Specifications. . . . .</b>	<b>77</b>
Models C59784, C59785 . . . . .	77
Models C58607, C58608 . . . . .	78
Models C58338, C58601 . . . . .	79
Models C58461, C58462, 249154, 249155 . . . . .	80
Models 246983, 246984, C59793, C59794 . . . . .	81
<b>California Proposition 65 . . . . .</b>	<b>81</b>
<b>Graco Standard Warranty. . . . .</b>	<b>82</b>

## Related Manuals

Manual in English	Description
308147	Carbon Steel Dura-Flo® Pump 1800 with XL 10000™ Air Motor
308151	Carbon Steel Dura-Flo® Pump 2400 with XL 10000™ Air Motor
308148	Stainless Steel Dura-Flo® Pump 1800 with XL 10000™ Air Motor
308152	Stainless Steel Dura-Flo® Pump 2400 with XL 10000™ Air Motor
334644	XL 10000™ Air Motor
3A1792	DV Series Dispense Valves
311833	Two-Ball NXT® 1000cc Pumps
308354	Stainless Steel Dura-Flo® 900 Pumps
308812	Stainless Steel Dura-Flo® 1200 Pumps
309348	King Quiet Air Motor
311238	NXT® Air Motor

Dura-Flo® and XL 10000™ are trademarks of Graco, Inc.

# Models











The UniDrum Supply Units listed below are covered in this manual. For specific pump information, refer to the chart in **Servicing the Pumps** on page 35.

Supply Unit Part No.	Pump	Ratio	Max. Outlet Pressure	Max. Fluid Flow	Pump Manual	Tandem System Part No.	Depressurization 2-Day Timer	Platen Material
C59784 (Left Hand)	King, Dura -Flo 580 carbon steel	20:1	1800 psi (12.0 MPa, 124 bar)	12.0 gpm (46 lpm) @ 50 cpm	308151	970152, 970157	No, Yes	Carbon Steel, Painted
C59785 (Right Hand)								
C58607 (Left Hand)	King, Dura -Flo 220 carbon steel	56:1	5000 psi (34.0 MPa, 345 bar)	3.4 gpm (18.26 lpm) @ 60 cpm	308354	970158	Yes	
C58608 (Right Hand)								
C58338 (Left Hand)	XL10000™, Dura -Flo 290 carbon steel	71:1	5000 psi (34.0 MPa, 345 bar)	4.8 gpm (12.8 lpm) @ 60 cpm	308812	970154	Yes	
C58601 (Right Hand)								
C58461 (Left Hand)	XL10000™, Dura -Flo 580 carbon steel	35:1	3400 psi (24.0 MPa, 235 bar)	9.2 gpm (34.8 lpm) @ 60 cpm	308151	N/A	N/A	
C58462 (Right Hand)								
24P842 (Left Hand)	XL10000™, Dura -Flo 430 carbon steel	47:1	4500 psi (31.0 MPa, 310 bar)	6.9 gpm (26.2 lpm) @ 60 cpm	308147	24P841	No	
24P843 (Right Hand)								
C59793 (Left Hand)	XL10000™, Dura -Flo 430 stainless steel	47:1	4500 psi (31.0 MPa, 310 bar)	6.9 gpm (26.2 lpm) @ 60 cpm	308148	970140, 970141	Yes, No	
C59794 (Right Hand)								
246983 (Left Hand)	XL10000™, Dura -Flo 430 stainless steel (with silicon ni-	47:1	4500 psi (31.0 MPa, 310 bar)	6.9 gpm (26.2 lpm) @ 60 cpm	308148	246985, 246986	No, No	
246984 (Right Hand)								
249154 (Left Hand)	XL10000™, Dura -Flo 580 stainless steel (with silicon ni-	35:1	3400 psi (23.1 MPa, 231 bar)	9.2 gpm (34.8 lpm) @ 60 cpm	308152	N/A	N/A	
249155 (Right Hand)								
24R875 (Left Hand)	6500 NXT, Dura -Flo 1000 carbon steel	10:1	1180 psi (8.14 MPa, 81.4 bar)	17.4 gpm (65.8 lpm) @ 60 cpm	311833	N/A	N/A	
24R876 (Right Hand)								

**NOTE:** Models equipped with ball valves, fittings, and a manifold are carbon steel.

# 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 or on warning labels, 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.

 <span style="font-size: 2em; font-weight: bold; margin-left: 10px;">WARNING</span>	
   	<p><b>MOVING PARTS HAZARD</b></p> <p>Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> <li>Keep clear of moving parts.</li> <li>Keep your hands away from the follower plate and the lip of the drum while the ram is operating.</li> <li>Keep your hands away from the ram frame while the ram is operating.</li> <li>Do not operate equipment with protective guards or covers removed.</li> <li>Equipment can start without warning. Before checking, moving, or servicing equipment, follow the <b>Pressure Relief Procedure</b> and disconnect all power sources.</li> </ul>
    	<p><b>SKIN INJECTION HAZARD</b></p> <p>High-pressure fluid from gun, 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. <b>Get immediate surgical treatment.</b></p> <ul style="list-style-type: none"> <li>Do not spray without tip guard and trigger guard installed.</li> <li>Engage trigger lock when not spraying.</li> <li>Do not point gun at anyone or at any part of the body.</li> <li>Do not put your hand over the spray tip.</li> <li>Do not stop or deflect leaks with your hand, body, glove, or rag.</li> <li>Follow the <b>Pressure Relief Procedure</b> when you stop spraying and before cleaning, checking, or servicing equipment.</li> <li>Tighten all fluid connections before operating the equipment.</li> <li>Check hoses and couplings daily. Replace worn or damaged parts immediately.</li> <li>Use only Graco approved hoses. Do not remove any spring guard that is used to help protect the hose from rupture caused by kinks or bends near the couplings.</li> </ul>

# WARNING



## ELECTRIC SHOCK HAZARD

This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.



- Turn off and disconnect power at main switch before disconnecting any cables and before servicing or installing equipment.
- Connect only to grounded power source.
- All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.



## FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. 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 sparking).
- Ground all equipment in the work area. See **Grounding** instructions.
- Never spray or flush solvent at high pressure.
- 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.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.
- **Stop operation immediately** if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.



## 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 Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer.
- 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. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- 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.

# **WARNING**



**SPLATTER HAZARD**

Hot or toxic fluid can cause serious injury if splashed in the eyes or on skin. During blow off of platen, splatter may occur.

- Use minimum air pressure when removing platen from drum.



**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 Safety Data Sheets (SDSs) 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.



**PERSONAL PROTECTIVE EQUIPMENT**

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective 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.

# Uncrating the System

The UniDrum Supply System was carefully packaged for shipment by Graco. When the system arrives, perform the following procedure to uncrate the system.

## NOTICE

Moving the unit off of the pallet without following the uncrating procedure can damage the equipment.

To uncrate the system, perform the following steps:

1. Inspect the crate carefully for shipping damage. Contact the carrier promptly if damage is discovered.
2. Remove the plywood sides and top of the crate.
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 UniDrum to the pallet.
6. The UniDrum is ready for installation. Before installing the system, read the **General Description** section on page 13 to become familiar with the system components.

# Overview

## Installation Overview

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

The UniDrum Supply System must be leveled and mounted on a horizontal floor. An unlevelled condition can keep the UniDrum from operating properly.

Anchor the frame's four foot pads securely to the floor. 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.

## Operation Overview

The UniDrum is a supply system that evacuates fluids from a 300 gallon (1200 liter) magnadrum or other tote drums.

Each UniDrum includes two Graco air motors and displacement pumps, a ram assembly with a follower plate, and a pneumatic layout panel that controls the air components.

In short, the operator places the magnadrum inside the frame with the follower plate placed directly on top of the material. Locally, the system can be operated using the pneumatic layout panel.

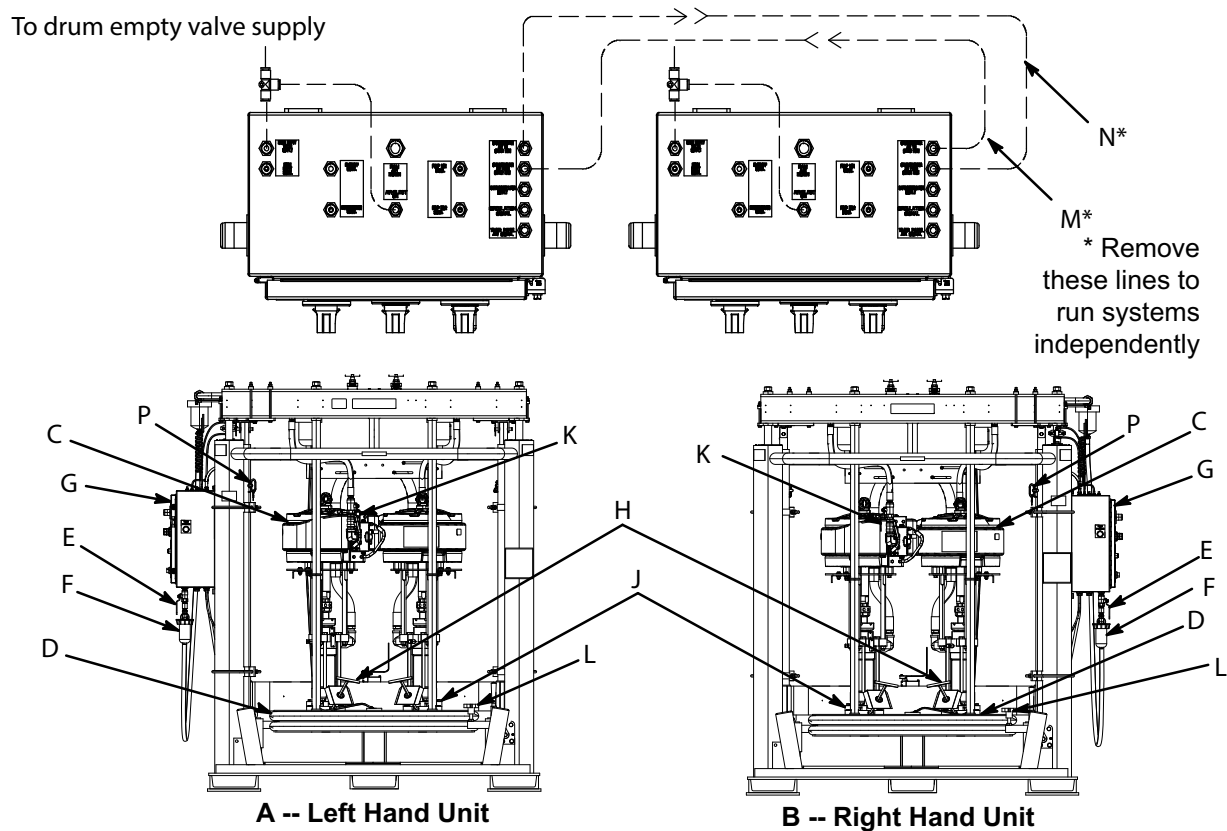
Two displacement pumps evacuate material out of each magnadrum. After removing the empty drum from the system, the operator repeats the evacuation process when another drum is ready for evacuation.



# Component Identification

**NOTE:** FIG. 1 shows the typical UniDrum Supply System equipped with XL 10000™ air motors.

## UniDrum Supply System

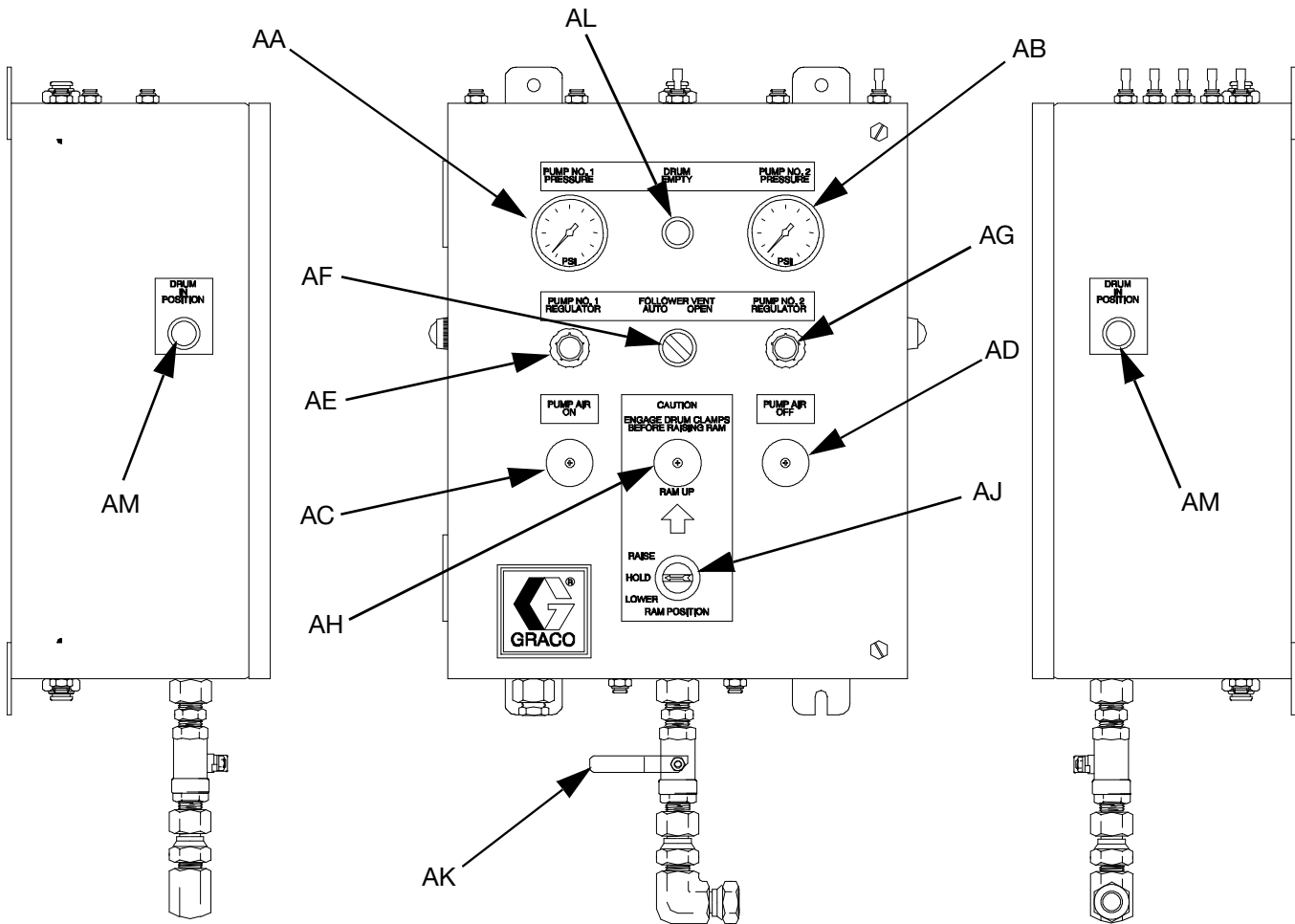


**FIG. 1: UniDrum Supply System with XL 10000 Air Motors**

**Key:**

- A Left Hand (LH) Supply Unit
- B Right Hand (RH) Supply Unit
- C Pumps and Air Unit (see **Models** on page 4)
- D Follower Plate
- E Main Air Inlet
- F Pneumatic Panel Air Filter
- G Pneumatic Logic Panel
- H Bleed Stick
- J Vent Cylinders
- K Pump Inlet Valves
- L Drum Clamps (installed by end user)
- M Changeover Air to Supply Unit 1 (LH)
- N Changeover Air to Supply Unit 2 (RH)
- P Safety Pins

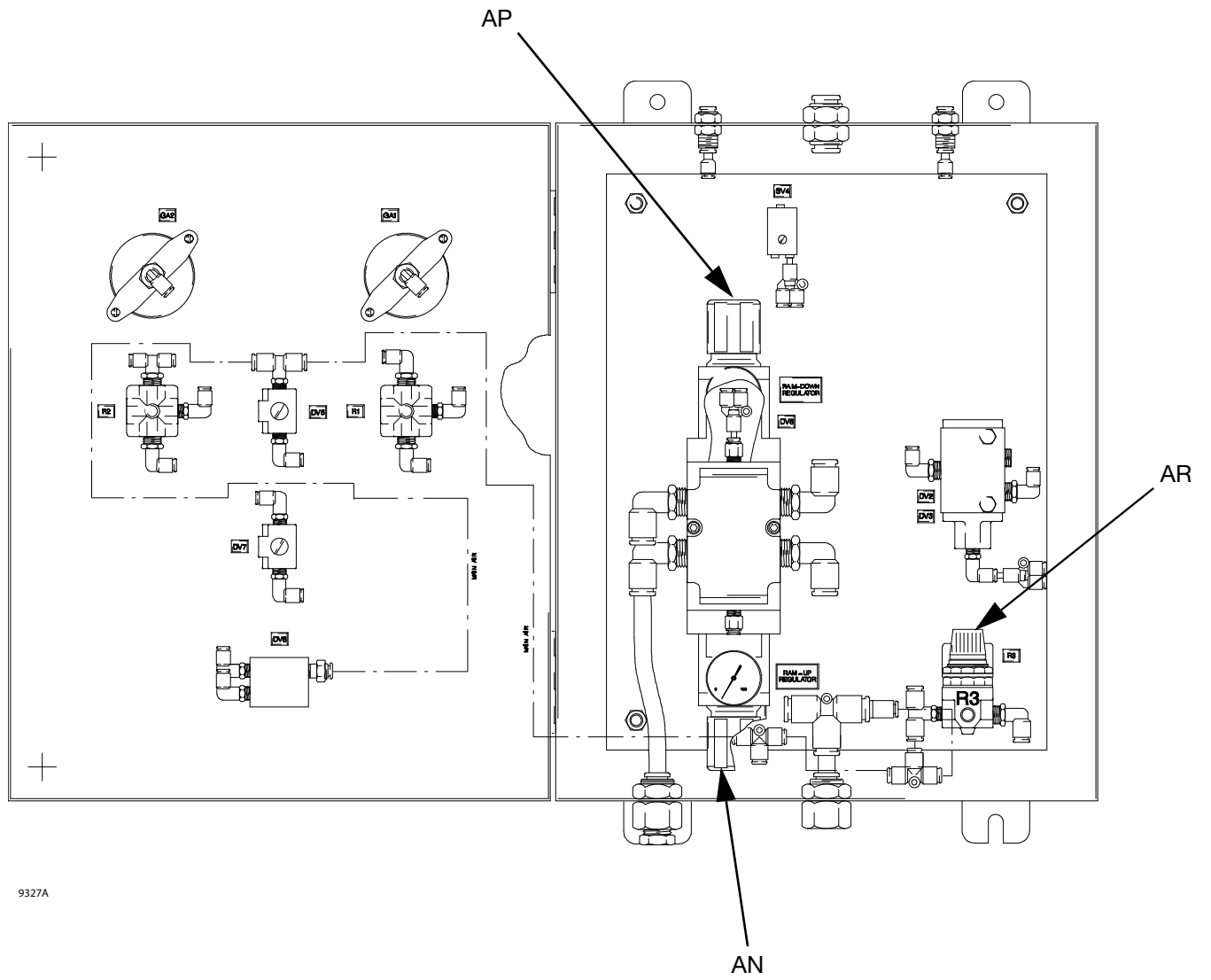
# Pneumatic Logic Panel, 243559



24K173 Panel Shown

9192A

FIG. 2: Pneumatic Logic Panel



9327A

**FIG. 3: Pneumatic Logic Panel Interior**

## Pneumatic Logic Panel Switches and Indicators

Use the table and FIG. 2 when operating the switches and reading the indicators on the Pneumatic Logic Panel (G).

Ref.	Button/Switch/Guage		What it Does
AA	PUMP NO. 1 PRESSURE Air Gauge		Indicates the air outlet pressure setting from Pump No. 1.
AB	PUMP NO. 2 PRESSURE Air Gauge		Indicates the air outlet pressure setting from Pump No. 2.
AC	Pump Air On		Starts Pumps
AD	Pump Air Off		Shuts Off Pumps
AE	PUMP NO. 1 REGULATOR Control Knob		Controls Pump speed and outlet pressure by adjusting the air pressure to Pump No. 1.
AF	FOLLOWER VENT Directional Valve		Opens and closes the vent that relieves air pressure from the Follower Plate (D).
AG	PUMP NO. 2 REGULATOR Control Knob		Controls Pump speed and outlet pressure by adjusting the air pressure to Pump No. 2.
AH	RAM UP Pushbutton		Raises the Follower Plate (D) when the RAM POSITION Switch (AG) is set to RAISE.
AJ	RAM POSITION Switch	RAISE	Allows the Follower Plate (D) to raise.
		HOLD/NEUTRAL	Holds the Follower Plate (D) in the current position.
		LOWER	Lowers the Follower Plate (D).
AK	Panel Air Inlet Valve		Opens air supply line to the Pneumatic Logic Panel (G).
AL	DRUM EMPTY Indicator		Indicates low fluid level in the drum. Signals change to other ram in tandem systems.
AM	DRUM IN POSITION Indicator		Indicates the presence of Magnadrum under the Follower Plate (D).
AN	RAM UP Air Regulator		Controls the air pressure used to raise the ram assembly.
AP	RAM DOWN Air Regulator		Controls the air pressure used to lower the ram assembly.
AR	R3 Regulator		Maintains air pressure on top of the ram cylinders to prevent the Follower Plate (D) from raising too quickly out of the drum.

## General Description

A general description of the UniDrum Supply System helps the installers and operators become familiar with the system components. Contact your Graco distributor for help in choosing accessories to suit your particular needs.

Before you install the system, you should be familiar with the parts described in the following paragraphs.

## System Components

See FIG. 1 on page 9.

- **UniDrum Supply Unit (A,B)** is usually setup to alternate the material supply operation between the left hand (LH) and right hand (RH) Supply Units, which is accomplished using a combination of pneumatic logic and manual operators. Drum changeovers occur after the Follower Plate (D) has reached its preset low limit level in the drum. Alternating between Supply Units eliminates the downtime that is usually expended unloading an empty drum and reloading a full drum.
  - LH Supply Unit (A) accommodates one 300 gallon (1200 liter) drum. The LH Supply Unit has a local Pneumatic Logic Panel (G).
  - RH Supply Unit (B) accommodates one 300 gallon (1200 liter) drum. The RH Supply Unit has a local Pneumatic Logic Panel (G).
- The Pumps evacuate material from the drum. See **Models** on page 4 for a complete list of pumps and technical data.
- **The Follower Plate (D)** is connected to the ram assembly and is designed to apply an even amount of pressure to the material in the drum. With the Follower Plate in its raised position, the operator moves a drum inside the frame. The Follower Plate is lowered directly on top of the material in the drum. When pressure is applied to the Follower Plate, the material is pumped out of the drum through hoses, which are attached to the Pump outlet ports. When the drum is empty, the operator raises the Follower Plate, and removes the empty drum. The process is repeated when another drum is ready to be unloaded.
- **Main Air Inlet Valve (E)** is used to open or shutoff the air supply to the entire Supply Unit.
- **Pneumatic Panel Air Filter (F)** filters air to the Pneumatic Logic Panel (G). The 20 micron filter removes particles, such as dust, moisture, foreign matter and other contaminants from the compressed air.
- **Bleed Sticks (H)** are removed to allow air trapped between the top of the material and Follower Plate (D) to be evacuated. Typically, the Bleed Sticks are removed and the Follower Plate is lowered until the material is evident in the port. The Bleed Sticks are replaced before pumping begins.
- **Vent Cylinders (J)** open to allow air back under the Follower Plate (D) while
- The **Safety Pins (M)** are used to keep the ram from lowering while in the fully raised position during drum changes or maintenance of the supply system.

## Pneumatic Logic Panel (G)

See FIG. 2 on page 10 and FIG. 3 on page 11.

The Pneumatic Logic Panel (G) includes the following system components. For more information, refer to the **Pneumatic Diagram** on page 75.

- PUMP NO. 1 REGULATOR Control Knob (AC) controls Pump speed and outlet pressure for Pump No. 1 by adjusting the air pressure to the Pump.
- PUMP NO. 1 PRESSURE Air Gauge (AA) displays the amount of air pressure supplied to Pump No. 1.
- PUMP NO. 2 REGULATOR Control Knob (AE) controls Pump speed and outlet pressure for Pump No. 2 by adjusting the air pressure to the Pump.
- PUMP NO. 2 PRESSURE Air Gauge (AB) displays the amount of air pressure supplied to Pump No. 2.
- FOLLOWER VENT Directional Valve (AD) is activated to open the vent to relieve container pressure. This switch has two settings:
  - In the AUTO setting, when the RAM POSITION Switch (AG) is placed in the RAISE position, the vent valves open after a short delay. This allows air back under the Follower Plate (D), preventing the creation of a vacuum under the plate. The delay ensures that the downward force on the Follower Plate can be overcome and prevents material from flowing past the vents.

## Component Identification

- In the OPEN position, the vents open after a short delay and remain open to facilitate cleaning. The selector should be returned to the AUTO setting immediately after cleaning is complete. If the valve is left OPEN, the vents may open when the RAM POSITION Switch (AG) is placed in the UP position, and material may flow past the vents onto the top of the Follower Plate (D).
- RAM UP Pushbutton (AF) turns on air pressure to raise the Follower Plate (D) when used in conjunction with the RAM POSITION Switch (AG).
- The RAM POSITION Switch (AG) performs the following three functions:
  - Place the switch in the RAISE position to enable the RAM UP Pushbutton (AF).
  - Place the switch in the HOLD/NEUTRAL position to hold the Follower Plate (D) in the current position.
  - Place the switch in the LOWER position to lower the Follower Plate (D).

# Installation



The UniDrum Supply System is supplied with every major component attached and weighs approximately 3950 lb (1792 kg). The UniDrum Supply System should never be moved or lifted by one person. To avoid serious injury or equipment damage, engage an adequate number of personnel and use a forklift, hand truck, and support devices, such as a hoist when moving and installing the UniDrum.

## NOTICE

Exercise care when the system is being moved to its installed location. Jarring, dropping, or tilting the frame while it is being lifted or moved can result in damage to the system.

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

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

## Preparing the Site

Ensure that you have an adequate compressed air supply. Refer to the applicable instruction manual listed in **Related Manuals** on page 3 to find the air consumption of your Pump. Approximately 450 cfm at 80 psi is required to operate the Pumps 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 UniDrum

Refer to **Technical Specifications** on page 77 for ram mounting and clearance dimensions.

When selecting a location for the UniDrum, 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 (AC, AE) for the Pumps (C) and Follower Plate (D) are fully accessible.
  - Make sure the air source for the control 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 Pneumatic Logic Panel (G).
2. Make sure that you will be able to level the base of the ram using metal shims.

## Preparing to Install the UniDrum

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 UniDrum

To install the UniDrum, follow the procedure below. Refer to **Technical Specifications** on page 77 for ram mounting and clearance dimensions.

1. Using equipment such as a forklift or handtruck, move the UniDrum into place on the floor. Remove the shipping pallet.
2. Level the UniDrum, 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 UniDrum to the floor using anchors that are long enough to prevent the unit from tipping.

## Grounding the System

				
<p>The equipment must be grounded to reduce the risk of static sparking and electric shock. Electric or static sparking can cause fumes to ignite or explode. Improper grounding can cause electric shock. Grounding provides an escape wire for the electric current.</p>				

**Pump:** use a ground wire and clamp. Verify that the ground screw (GS) is attached and tightened securely to the air motor. Connect the clamp (U) of the static ground cable assembly to a true earth ground. For a ground wire and clamp, order Part No. 244524.

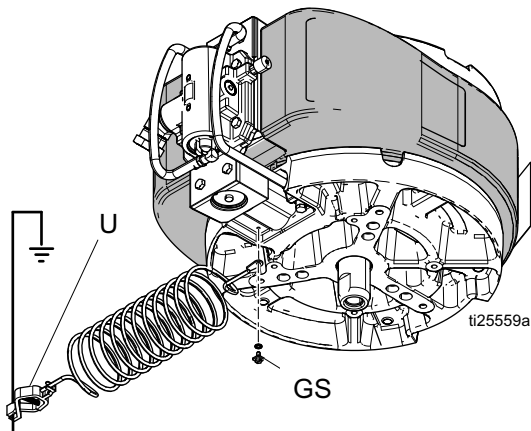


FIG. 4

**Air and fluid hoses:** use only electrically conductive hoses.

**Air compressor:** follow manufacturer's recommendations.

**Spray gun / Dispense valve:** ground through connection to a properly grounded fluid hose and pump.




**Fluid supply container:** follow local codes and regulations.

**Object being sprayed:** follow local codes and regulations.

**Solvent pails used when flushing:** follow local codes and regulations. Use only conductive metal pails, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts grounding continuity.

**To maintain grounding continuity when flushing or relieving pressure:** hold metal part of the spray gun firmly to the side of a grounded metal pail, then trigger the gun.

## Checking the Resistance Between the Pumps and the True Earth Ground

				
<p>To reduce the risk of fire, explosion, or electric shock, the resistance between the Supply Unit components and true earth ground must be less than 1.0 ohms.</p>				

Check the resistance between each Pump and the true earth ground. If the resistance is greater than 1.0 ohms, a different ground site may be required. Do not operate the system until the problem is corrected.

**NOTE:** Use a meter that is capable of measuring resistance at this level.



## Connecting the Air Supply Lines to the UniDrum

Perform the following procedure to connect the input air supply lines to the UniDrum Supply System.

### Connecting Air Supply Lines to the Supply Units

To connect the main air supply line to the LH and RH Supply Units (A, B), perform the following steps:



To reduce the risk of overpressurizing your system, which could result in component rupture and cause serious injury due to splashing and skin injection, never exceed the specified maximum incoming air pressure to the Pumps (see the **Technical Specifications** on page 77).

Have a qualified technician connect both Supply Units to an air supply source that has the following required ratings:

Description	Requirements
Inlet Port Size:	1 in. npt(f)
Air Volume:	450 cfm (maximum)
Input Air:	80 psi (5.5 bar, 0.55 MPa)

1. Check the air supply to ensure that it is properly sized and pressure-rated for this system.
2. Connect the air supply line to the 1 in. npt Main Air Inlet (E).

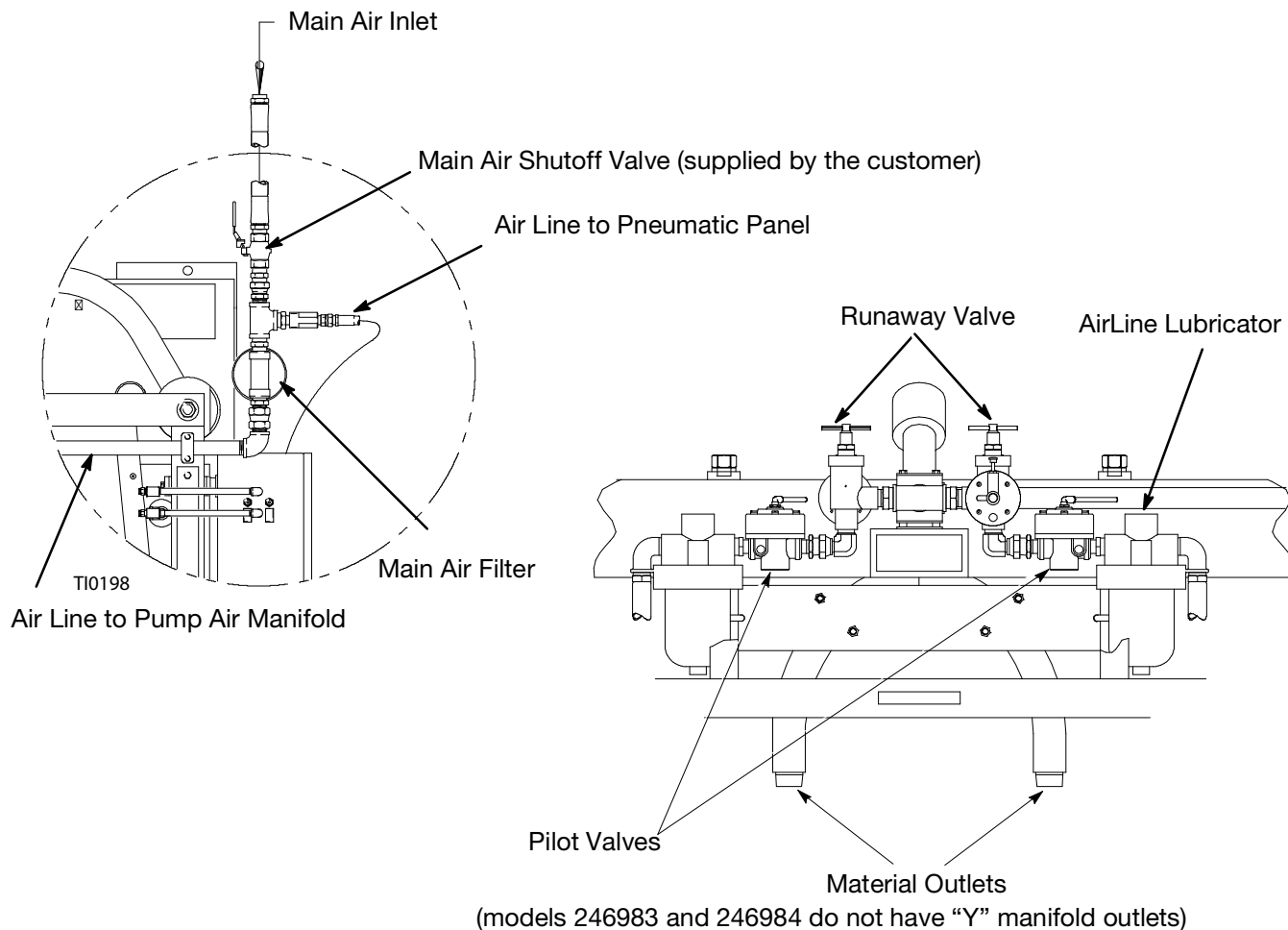


FIG. 5

## Connecting Output Hose to the Pumps

This procedure describes how to connect the fluid output hoses to the two Pumps. It is the customer's responsibility to have the fluid supply hose already installed and ready for connection to the Pumps.

**NOTE:** For more information about the Pumps, see **Related Manuals** on page 3 for the Pump instruction manuals.

**NOTICE**

There must be a minimum of 10 feet (3 m) of fluid supply hose on the outlet to prevent damage to the unit.

**NOTE:** The fluid supply hose must move freely without kinking when the Pumps move up and down.

Check the fluid supply hose to ensure it is properly sized and pressure-rated for this system. Use only electrically conductive hoses. The fluid supply hose should have spring guards on both ends. Connect the fluid supply hose to the fluid manifold outlet.

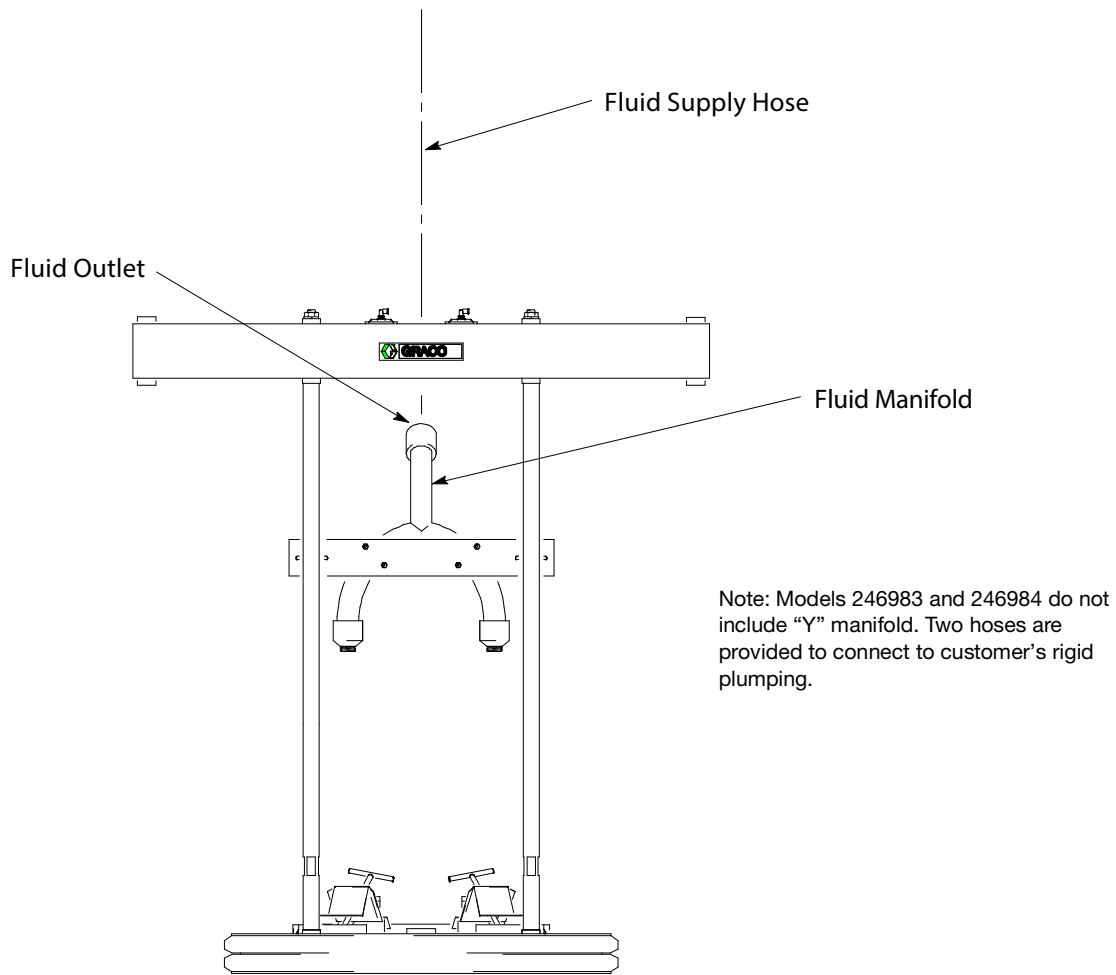


FIG. 6

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# Operation

## Prepare the Operator

All persons who operate the equipment must be trained in the safe, efficient operation of all system components as well as the proper handling of all fluids. All operators must thoroughly read all instruction manuals, tags, and labels before operating the equipment.

## Overview

The UniDrum Supply System uses two air driven reciprocating Pumps (C) on the LH Supply Unit (A) and two air driven reciprocating Pumps (C) on the RH Supply Unit (B). Each Supply Unit Pumps material from a 300 gallon (1200 liter) drum.

## General Functional Description

The LH and RH Supply Units can operate at the same time or as independent units. Generally, the UniDrum Supply System is setup to operate as redundant units. This means that the RH Supply Unit is held in reserve on standby until the drum underneath the LH Supply Unit has been emptied, and vice versa.

Operating a redundant system allows the operator to maintain a continuous supply of material without interruption. The operator is afforded sufficient time to replace an empty drum at one Supply Unit while the drum at the other Supply Unit is being emptied.

## System Startup

There are a series of steps that must be followed in sequential order to startup the system.

## System Operation

Depending upon the system setup, at any time during operation, the operator can:

- Stop the Pumps and relieve ram pressure at the LH Supply Unit (A).
- Stop the Pumps and relieve ram pressure at the RH Supply Unit (B).
- Shutdown the system.

To load the drum into the Supply Unit (A, B), the Follower Plate (D) must be raised and the Bleed Stick (H) removed at the Supply Unit. The Follower Plate (D) is lowered by the operator directly into the drum, and the bleed sticks are replaced. The Pumps are turned on, the Follower Plate (D) is pressurized, and material is pumped from the drum through the outlet ports on the Pumps via a supply hose to one or more targeted applications.

## Supply Unit Operation

The UniDrum Supply System can be setup to alternate between the LH and RH Supply Units. This dual supply system setup virtually eliminates material replenishment downtime.

The UniDrum Supply System allows the operator to load the material drum into the RH Supply Unit (B) while the LH Supply Unit (A) drum is being emptied. When the Supply Unit changeover occurs, the operator unloads the empty drum at the LH Supply Unit (A) while the RH Supply Unit (B) drum is being emptied. The cycle is repeated as many times as needed.

## System Shutdown

For system shutdown, the operator turns off the Pumps (C) and depressurizes the system. Depending upon the type of material, the operator may choose to raise the Follower Plate (D) from the drum or keep the Follower Plate (D) lowered in the drum to prevent the material from being contaminated. Some materials will harden or congeal when exposed to air or used past their shelf life. Material should be kept covered when it is not being used and uncovered when it is ready to use.

## Flushing the System Before Initial Use

Flushing the system before its initial use can prevent material contamination, which may cause the material to fail or perform poorly.

The equipment was tested with lightweight oil, which is left in the fluid passages to protect parts. To avoid contaminating your fluid with oil, flush the equipment with a compatible solvent before using the equipment.



To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure.

### NOTICE

There must be a minimum of 10 feet (3 m) of fluid supply hose on the outlet to prevent damage to the unit.

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 21.
  - b. If the two substances are incompatible, perform the remaining steps in this procedure to flush the system.

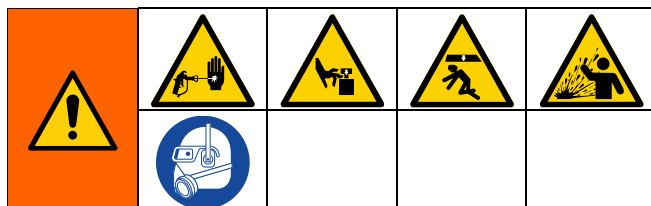
**NOTE:** Use fluids and solvents that are chemically compatible with the equipment wetted parts. See the **Technical Specifications** sections of all the equipment manuals. Always read the material manufacturer's literature before using fluid or solvent in this Pump.

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 the System** on page 16.
5. Perform steps 9 through 15 of the **Initial System Startup Procedure** on page 21 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



To reduce the risk of serious bodily injury, such as skin injection or splashing fluid in the eyes or on the skin, always wear eye protection and protective clothing when installing, operating, or servicing this equipment.

Moving equipment parts can cause personal injury, including severing of hands or fingers. 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.

### 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.



To reduce risk of injury or equipment damage:

- Make sure all material hose connections are secure.
- Do not pressurize the system until you have verified the system is ready and it is safe to do so.

## 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.

**NOTE:** Complete the startup procedure for the LH Supply Unit (A) first. Then, repeat the startup procedure for the RH Supply Unit (B).

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 both Pumps 1/3 full with Graco throat seal liquid (p/n 206995). Refer to your specific pump manual for details.
4. Open the main air shut off valve, making air pressure available to the unit. See FIG. 5 on page 17.
5. At the Pneumatic Logic Panel (G), open the Panel Air Inlet Valve (AK), making air pressure available to the Pneumatic Logic Panel. See FIG. 2 on page 10.
6. Adjust both Pump main air regulators (AE, AG) to 0 psi.
7. Set the RAM POSITION Switch (AJ) to RAISE.
8. Press the RAM UP Pushbutton (AH) to raise the Follower Plate (D) to its highest position.
9. Set the RAM POSITION Switch (AJ) to LOWER to make sure there is no binding in the Safety Pins (P).
10. Set the RAM POSITION Switch (AJ) to RAISE.
11. Press the RAM UP Pushbutton (AH) to raise the Follower Plate (D) to its highest position.
12. Set the RAM POSITION Switch (AJ) to HOLD/NEUTRAL.

## Adjusting the Pump Regulators



**NOTE:** Both Pumps must operate at the same cycles per minute rate to prevent the occurrence of uneven drum evacuation.

**NOTE:** For the maximum air input pressure for each Pump, see the appropriate manual shown in **Related Manuals** on page 3.

13. Run the system under normal conditions. Adjust the PUMP NO. 1 REGULATOR Control Knob (AE) to the desired setting as follows:
  - a. Turn the knob clockwise to increase air pressure or counterclockwise to decrease air pressure. See FIG. 3 on page 11.
  - b. Check the air gauge to verify the air pressure setting.
14. Repeat step 29 to adjust the air regulator for the PUMP NO. 2 REGULATOR Control Knob (AE).

## Adjusting the RAM UP and RAM DOWN Air Regulators

15. At the Pneumatic Logic Panel (G) (see FIG. 2 on page 10), open the hinged cover.
16. Set the RAM POSITION Switch (AJ) to RAISE and push the RAM UP Pushbutton (AH). Verify that the Follower Plate (D) raises at the desired speed. If not, perform the following steps:
  - a. Adjust the RAM UP Air Regulator (AN). Turn the knob clockwise to increase the amount of air pressure. Check the air gauge to verify that air pressure was increased. See FIG. 3. The air pressure factory setting is 50 psi, and it is not recommended to exceed 80 psi.
  - b. Verify that the R3 Regulator (AR) is set to 5 to 10 psi (0.035 to 0.07 MPa, 0.35 to 0.7 bar).

				
Do not set the R3 Regulator higher than 5 to 10 psi (0.035 to 0.07 MPa, 0.35 to 0.7 bar). Setting the R3 Regulator pressure higher than recommended can cause the Follower Plate (D) to drop and result in operator injury.				

<b>NOTICE</b>
Failure to adjust the Regulator R3 properly can cause the platen to exit the drum at a high rate of speed, risking damage to the equipment.

- c. Repeat step 16.a until the ram raises at the desired speed.
17. Set the RAM POSITION Switch (AJ) to DOWN while observing the air gauge inside the panel.
18. Adjust the RAM DOWN Air Regulator (AP) to 50 psi (0.34 MPa, 3.4 bar) as follows (see FIG. 3):
  - 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. The air pressure factory setting is 50 psi, and it is not recommended to exceed 80 psi.
19. Close and secure the hinged cover.

## Preventing Pump Cavitation

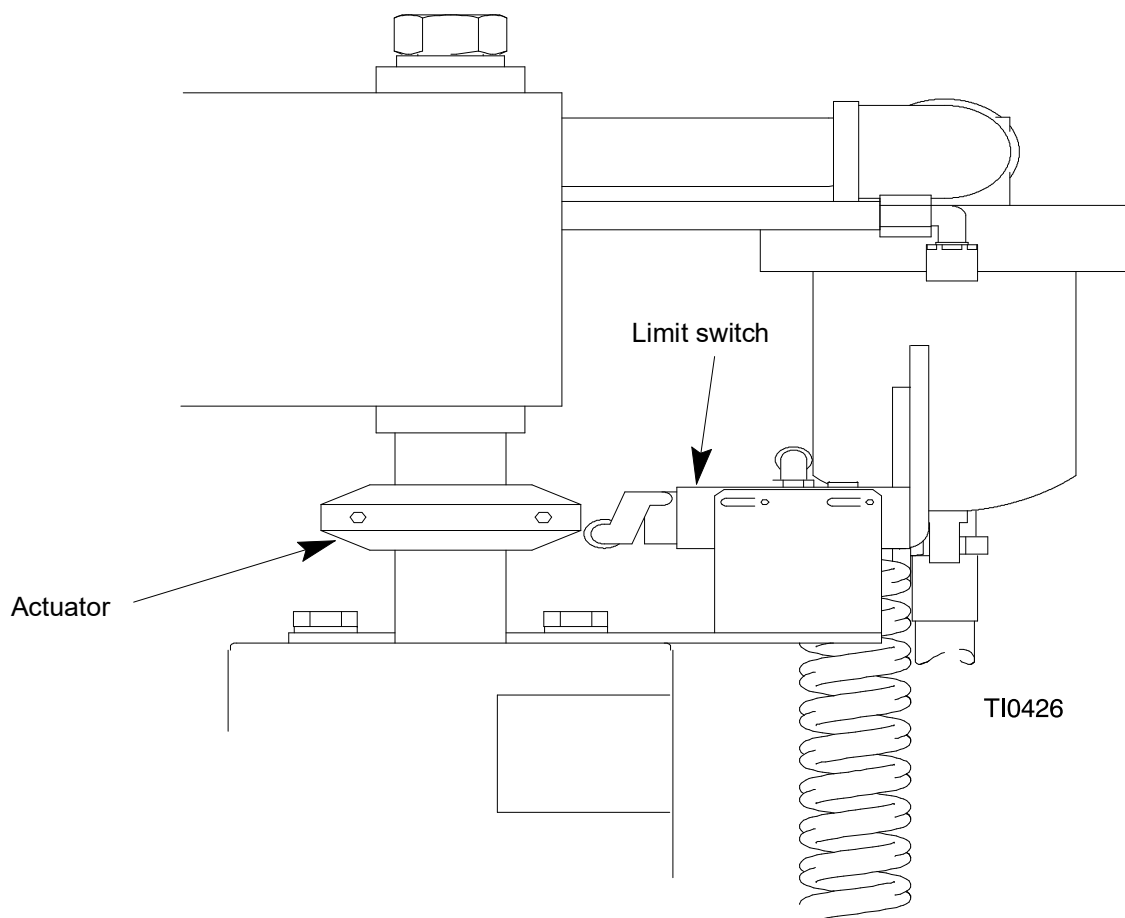
**NOTE:** Cavitation occurs when the Pump cylinder did not fully load with material on the upstroke, and a cavity forms in the material after the Pump changes to the downstroke. Perform step 20 when there is Pump cavitation. If cavitation is not occurring, omit step 20 and proceed to step 21.

20. 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 Empty/Low Limit Switches

**NOTE:** When the low limit switch is activated, the Pumps are normally turned off automatically by a customer-supplied control, and a second set of Pumps begin pumping.

21. Adjust the low limit switch as follows:
  - a. At the Pneumatic Logic Panel (G) (FIG. 2), set the RAM POSITION Switch (AJ) to LOWER, allowing the Follower Plate to activate the low limit switch.
  - b. Verify that the Follower Plate (D) lowers to the limit set point: a level between 1 to 4 in. (25.4 to 101.6 mm) from the bottom of the drum.
  - c. Adjust the low limit switch to activate at the level defined in step 21.b. See FIG. 7.



**FIG. 7**

## Changing Empty Drums

**NOTE:** After the automatic Pump crossover has taken place, immediately replace the empty drum with a new, full drum. If both Uni-Drums become empty at the same time:

- Material will stop being delivered to the dispenser.
- Air may enter the supply hose or pipe header.
- Pump runaway could occur, resulting in damage to the Pumps.

### Drum Changing Procedure

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

1. If used, verify that the two front and rear Drum Clamps (L) are engaged on the UniDrum ram base.
  2. Check that the Pump air is turned off.
  3. Check that the RAM UP Air Regulator (AN) is set to at least 60 psi. Do not exceed 80 psi.
  4. Close the two ball valves at the outlet manifold at the rear of the Uni-Drums.
  5. To raise the Follower Plate (D):
    - a. Set the RAM POSITION Switch (AJ) to RAISE, then wait 5 seconds.
- NOTE:** If RAM UP Pushbutton (AH) is pushed within 5 seconds, the vent valves may open before the pressure under the Follower Plate (D) is relieved causing the material to bleed past the vents.
- b. Push and hold the RAM UP Pushbutton (AH) as the Follower Plate (D) slowly rises.
6. With the ram raised and the RAM POSITION Switch (AJ) set to RAISE, pull the Drum Clamps (L) (if used) back and remove the empty drum, using a suitable lifting device.



Use a long-handled flat-bladed ice scraper if it is necessary to scrape the bottom of the Follower Plate (D). To avoid serious injury, do not put your hands between the plate and the drum.

7. Being careful not to damage the Follower Plate (D) wipers, wipe or scrape any material buildup from the Follower Plate (D) and wipers, and properly dispose of the waste material.

### Load Material

**NOTICE**

When opening 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 (D). Check that the DRUM IN POSITION Indicator (AM) is lit.
10. It is extremely important to lubricate the Follower Plate wiper with a lubricant that is compatible with the material to be pumped. Check with your material supplier for compatibility.
11. If used, push the two front and rear Drum Clamps (L) forward until engaged.
12. Remove the Safety Pins (P).

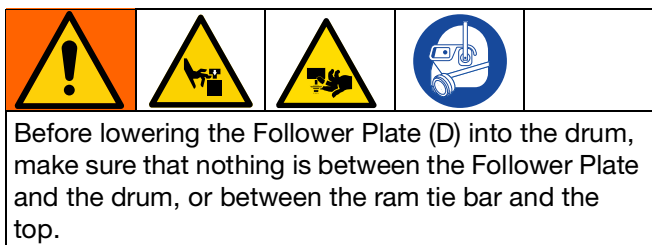


To reduce the risk of serious bodily injury, such as splashing fluid in the eyes or on the skin, always wear eye protection and protective clothing when operating this equipment.

The pressure relieved by removing the bleed sticks may cause the Follower Plate (D) to lower unexpectedly. To prevent personal injury from moving parts, such as pinching or amputating hands or fingers, keep hands and fingers away from the Follower Plate (D) when removing the bleed sticks.

13. Remove the bleed sticks from the Follower Plate (D).





14. Lower the Follower Plate (D) as follows:
  - a. Set the RAM POSITION Switch (AJ) to LOWER.
  - b. Lower the Follower Plate (D) until the material is evident in the bleed ports.
  - c. Set the RAM POSITION Switch (AJ) to HOLD/NEUTRAL.
  - d. Replace the Bleed Sticks (H).
  - e. Set the RAM POSITION Switch (AJ) to LOWER.
15. Close both Pump No. 1 and Pump No. 2 Inlet Valves (K) (located on top of the air motor).
16. Prime the Pumps as follows:
  - a. Set both the Pump No. 1 REGULATOR Control Knob (AE) and Pump No. 2 REGULATOR Control Knob (AG) to 30 psi.
  - b. Push the Pump Air On button (AC) to open the air supply to the Pumps.

**NOTE:** Pumps should not start if the inlet valves were closed in step 15.

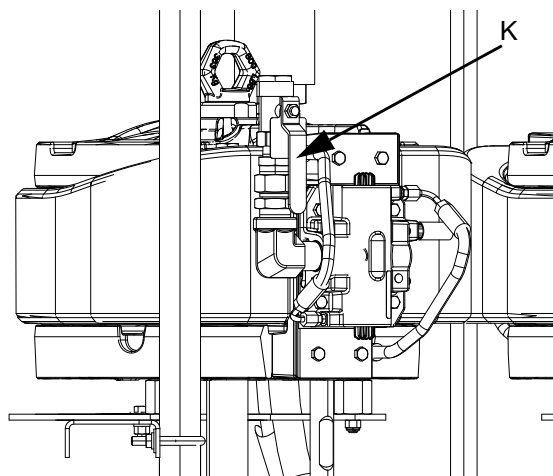
- c. Use a catch device to bleed the Pump. Slowly open Pump No. 1 bleed valve. Back off the adjustment screw several turns; do not remove the screw.
- d. Open the Pump No. 1 Inlet Valve (K) to start the Pump.
- e. Allow the Pump to cycle slowly until all air escapes and material flows free of air from the bleed valve.
- f. Close the Pump No. 1 Inlet Valve (K) and the bleed valve.

- g. Wipe any excess material from the Pump bleed valve outlet to prevent material from drying and curing. Cover the Pump bleed valve outlet with a material-compatible grease.

**NOTE:** If the Pump bleed valve has a grease zerk, apply a material-compatible grease into the zerk fitting until grease flows from the grease bleed hole.

- h. Repeat steps c - g for Pump No. 2.

17. Push the Pump Air Off button (AD) on the Pneumatic Logic Panel (G).
18. Open both Pump No. 1 and Pump No. 2 Inlet Valves (K) (located on top of the air motor).



**FIG. 8**

**NOTE:** If the Pump does not prime properly, which may occur with heavier, high viscosity fluids, increase the air pressure with the RAM DOWN Air Regulator (AP).

**NOTE:** If fluid is forced out around the top wiper, ram pressure is too high; decrease the air pressure with the RAM UP Air Regulator (AN).

**NOTE:** Ram pressure adjustments are carried out using the dual REGULATOR Control Knobs (AE, AG) inside the Pneumatic Logic Panel (G). The upper regulator knob controls the downward pressure of the ram, and the lower regulator knob controls the upward pressure of the ram. See FIG. 3 on page 11.

## Daily System Startup

This procedure is normally provided by the integrator.

## System Shutdown

This procedure is normally provided by the integrator.

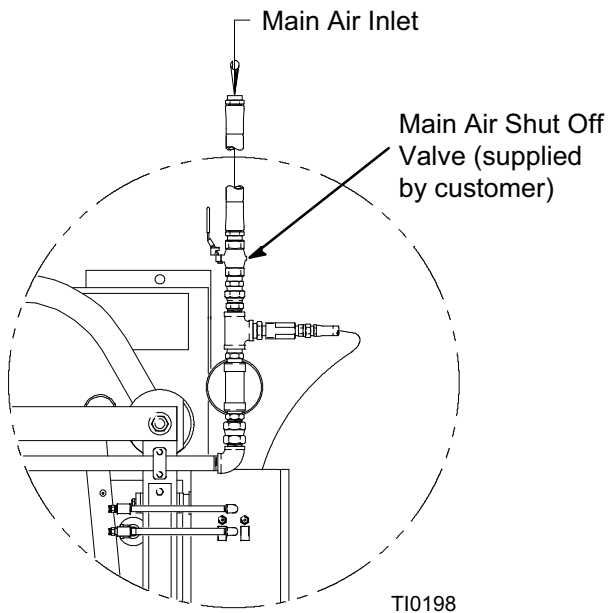
## Stopping the System

To stop the system, close the main air shutoff valve (see FIG. 9) to the Supply Unit.

## Restarting the System

To restart the system, perform the following steps:

1. Open the main air shut off valve to the Supply Unit (see FIG. 9).



**FIG. 9**

# Pressure Relief Procedures

These procedures describe how to relieve pressure from the system.



Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

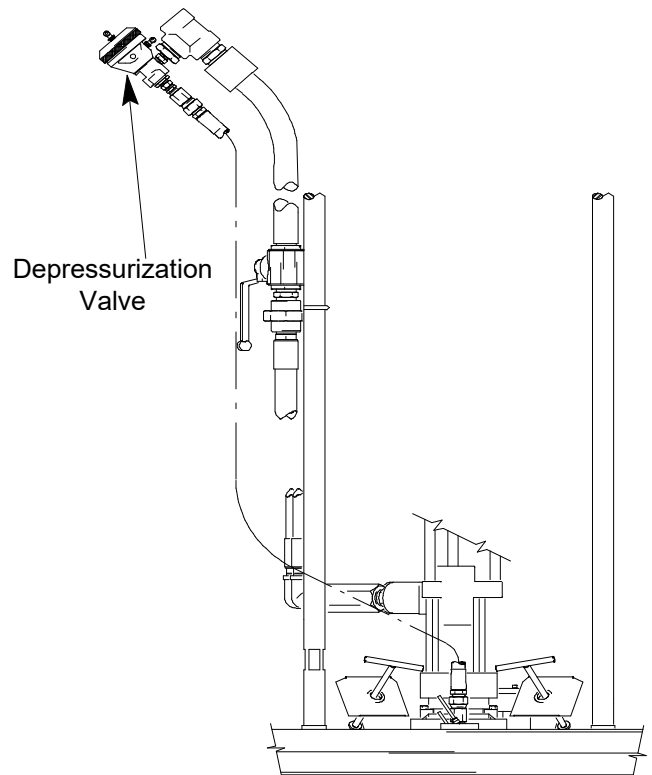
## Fluid Pressure Relief Procedure

This procedure describes how to relieve pressure on the Follower Plate (D) and in the Pumps (C). Use this procedure whenever you shutoff the Pumps and before checking or adjusting any part of the system.

At the Pneumatic Logic Panel (G) (FIG. 11), perform the following steps:

1. Close the Main Air Inlet Valve (E). See FIG. 11.
2. Open any downstream fluid valves that may be part of the system.

**NOTE:** Depressurization kit not included with all models. See page 2 for a complete list of models and features.



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FIG. 10

**NOTE:** In order to fully relieve system pressure, including ram cylinders, the steps in the **Pneumatic Pressure Relief Procedure** on page 28 must be performed.

## Pneumatic Pressure Relief Procedure

This procedure describes how to relieve pressure on the Pneumatic Logic Panel (G) and cylinders. Use this procedure whenever you perform ram assembly service on the piston rod seal or the ram piston.

1. Follow **Fluid Pressure Relief Procedure** on page 27.
2. Fully lower the ram by setting the RAM POSITION Switch (AJ) to LOWER. Leave the switch in the LOWER position.
3. Open the door on the Pneumatic Logic Panel (G).
4. Adjust the air pressure to 0 PSI for the RAM DOWN Air Regulator (AP). Refer to the gauge on the RAM DOWN Air Regulator (AP) and R3 Regulator (AR) to verify the ram has been depressurized. See FIG. 12.
5. Slowly open the drain cock located on the bottom of the air cylinders (CL).
6. After the air pressure has been relieved, remove the Ram Down air line running from the top of the Pneumatic Logic Panel (G) to the ram cross bar (CB).
7. Close the main air inlet on header.
8. Leave the drain cock open and the Ram Down airline removed until service is complete.
9. After service is complete, close drain cocks and make all pneumatic connections and open the main air shutoff valve to header. Perform the **Adjusting the RAM UP and RAM DOWN Air Regulators** procedure, page 22.

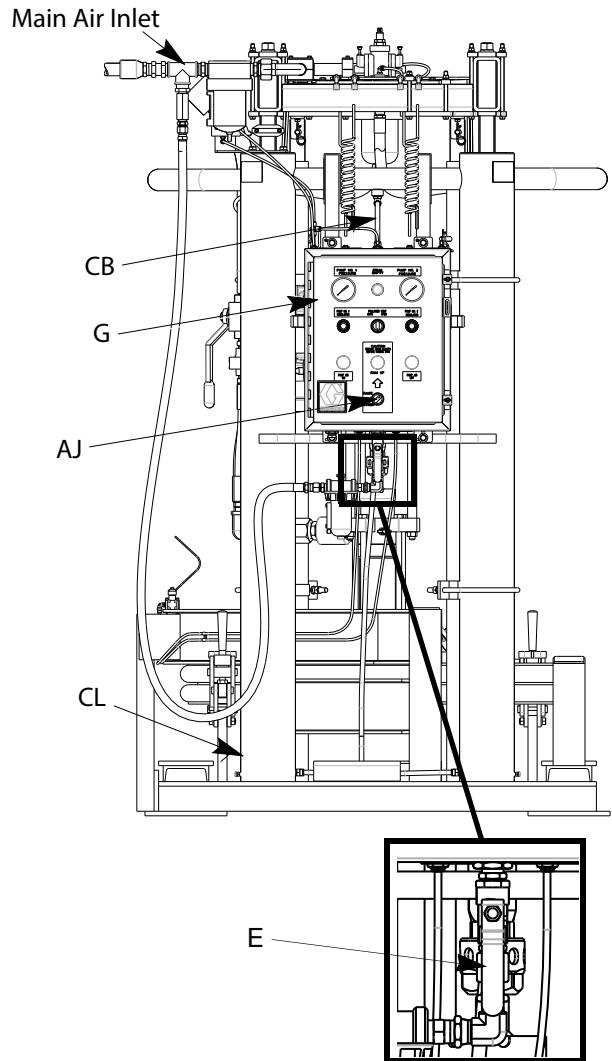


FIG. 11

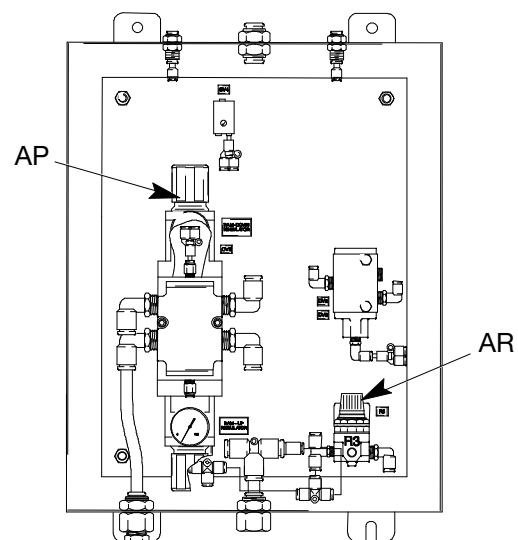


FIG. 12

# Maintenance

## Preventative 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 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.



To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure.

To flush the system, perform the following procedure:

1. Place a drum of compatible flush material under the Follower Plate (D).
2. Run the Pumps to move 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 (D).
4. Return the system to previous operation settings.

## 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:

1. Turn the RAM POSITION Switch (AJ) to RAISE, then press the RAM UP Pushbutton (AH) to move the ram to the fully raised position.
2. To lock the ram in the fully raised position, move the RAM POSITION Switch to the HOLD/NEUTRAL position and insert both safety hitch pins (806) into the outer support bars (802) and install both pin lock clips.

**NOTE:** Locks that use 1/4 in. shackles can be used in place of the cotter pins (CP) provided with the safety hitch pins (806).

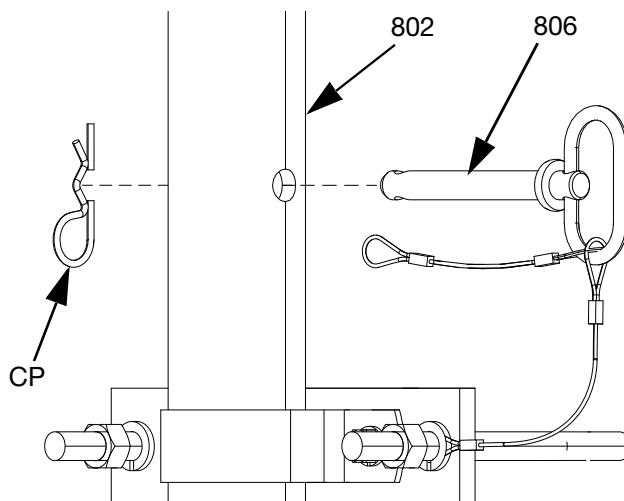





FIG. 13

3. Once both safety hitch pins (806) are secured, turn off all air to the system by closing the main air shutoff valve on the header and follow your facility's pre-established lock-out/tag-out procedures. See FIG. 11 on page 28.

4. It is recommended to clean the platen between each drum change, or as recommended by your facility's maintenance plan.

				
<p>Use a long-handled flat-bladed ice scraper if it is necessary to scrape the bottom of the Follower Plate (D). To avoid serious injury, do not put your hands between the plate and the drum.</p>				

5. Being careful not to damage the Follower Plate (D) wipers, wipe or scrape any material buildup from the Follower Plate (D) and wipers, and properly dispose of the waste material.
6. Apply a generous amount of lubricant to the Follower Plate (D) wipers.
7. To place the ram back into operation, verify the RAM POSITION Switch (AJ) is still in the HOLD/NEUTRAL position, and open the main air shutoff valve on the header.
8. Turn the RAM POSITION Switch (AJ) to RAISE, then press the RAM UP Pushbutton (AH) to move the ram to the fully raised position.
9. Remove both safety hitch pins (806).
10. Return the system to previous operation settings.

## Wiper Lubrication

It is extremely important that the Follower Plate (D) wipers be thoroughly lubricated between drum changes. The Follower Plate (D) may stick without lubrication.

# Pneumatic Logic Panel Service

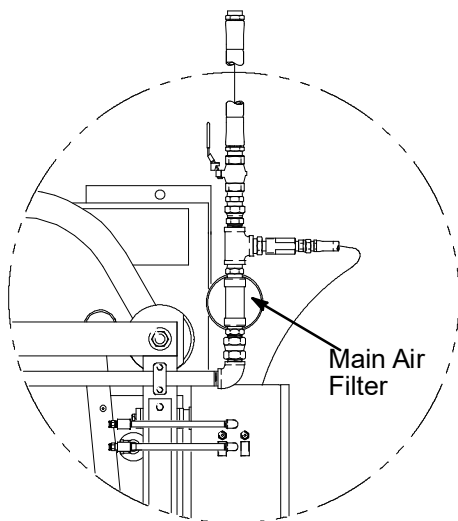
## Filter/Element Replacement

The air filter is located between the air supply source and the Pneumatic Logic Panel (G). See FIG. 12.

To replace an air filter/element, perform the following steps:



1. Follow the **Pressure Relief Procedures** on page 27.
2. At the Pneumatic Logic Panel (G), perform the following steps:
  - a. Push the Pump Air Off button (AD) to shut off the air supply at both pumps.
  - b. Close the main air inlet valve.
  - c. Turn the main air shut off valve under the panel to the OFF position.



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FIG. 14

## Filter Removal

3. Turn the air filter counterclockwise to unscrew the filter from its mounting.

## 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. Perform the **Daily System Startup** procedure on page 26.
7. Check for air leakage around the filter.
8. Return the system to previous operation settings.

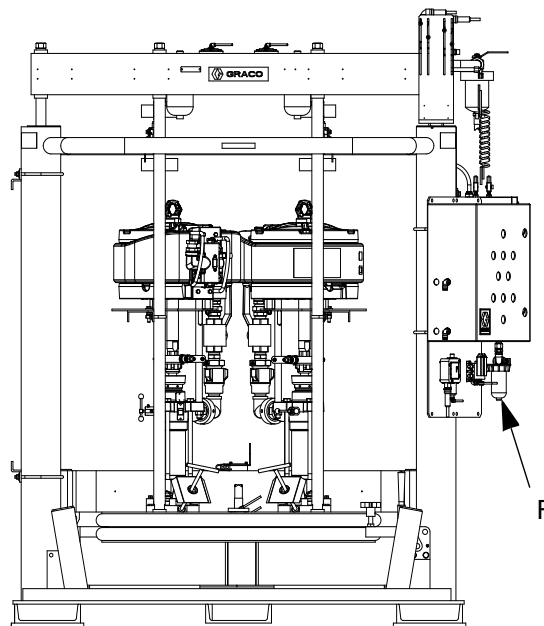


FIG. 15

# Ram Assembly Service

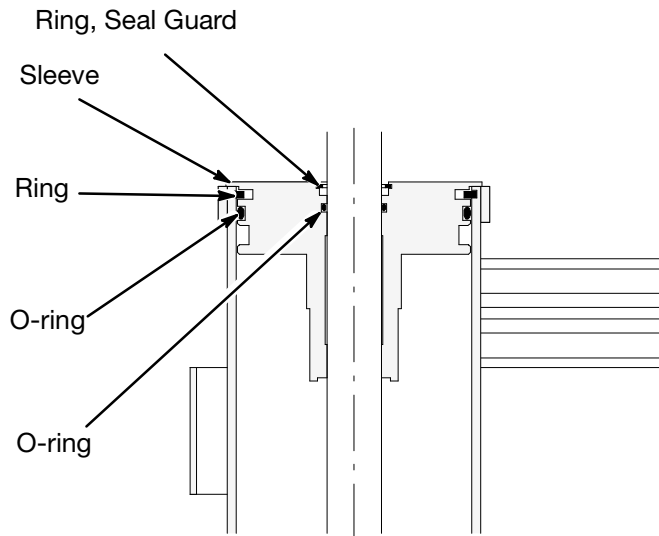
## Piston Rod Seal Service



1. Relieve the air pressure. Follow the **Pneumatic Pressure Relief Procedure** on page 28.
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).



7056A

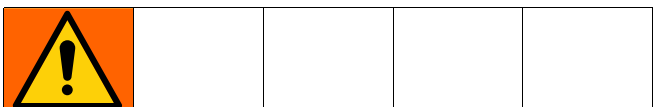
**FIG. 16**



## Ram Piston Service

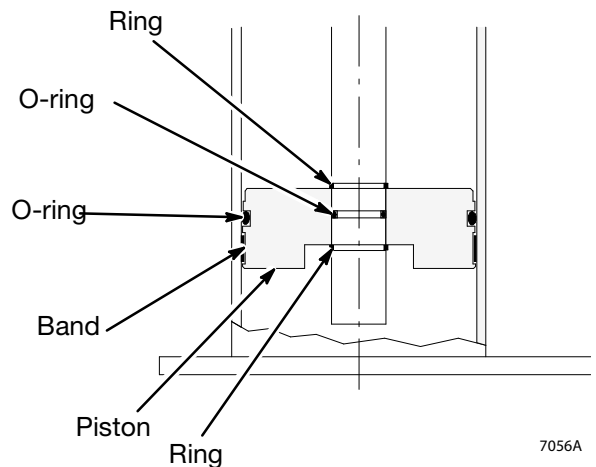


1. Relieve the air pressure. Follow the **Pneumatic Pressure Relief Procedure** on page 28.
2. Remove the tie bar as explained in the **Piston Rod Seal Service** section on page 32.
3. Remove the guide sleeve and slide it off of the piston rod.



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

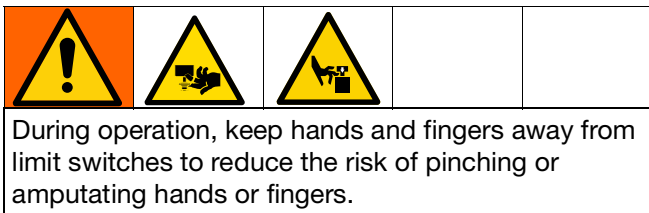
4. Carefully pull the piston rod straight up out of the cylinder. If the rod is cocked to one side, the piston or inside surfaces of the cylinder could be damaged.
5. Carefully lay the piston and rod down so the rod will not be damaged or bent. Remove the lower piston retaining ring. Slide the piston 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** section on page 32.



7056A

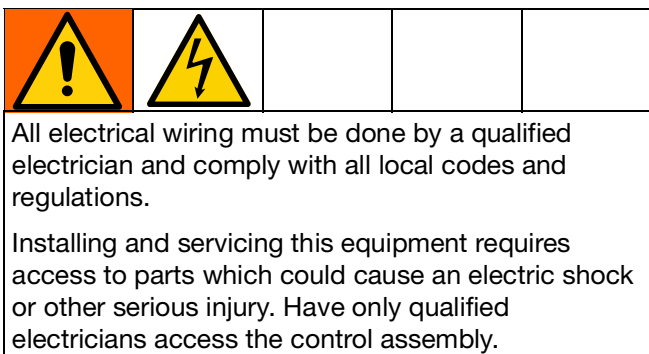
**FIG. 17**

## Low/Empty Limit Switch Replacement



To replace the Low/Empty Limit Switch, perform the following steps:

1. Perform the System Shutdown procedure provided by the integrator at the applicable Supply Unit (LH or RH).



2. Shut off power to the Pneumatic Logic Panel (G).

**NOTE:** When raising and lowering the Follower Plate (D), make sure 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 ensure 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 (306) 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 (306). See FIG. 18.

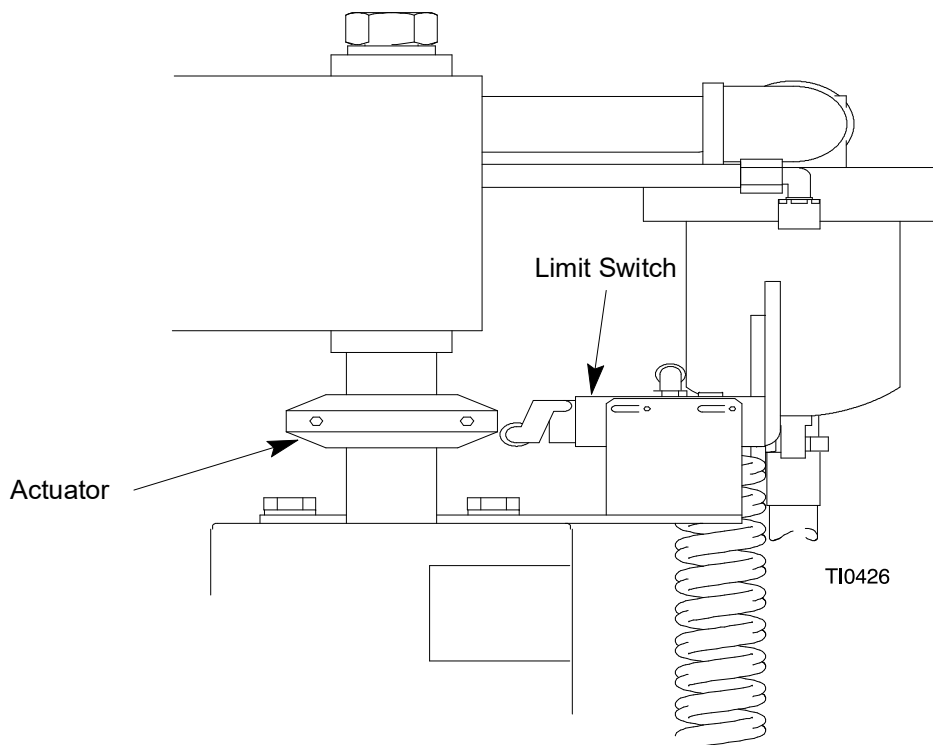


FIG. 18

## Switch Replacement

7. Install the new limit switch (305) on the limit bracket (306) 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.
10. Reinstall the cover on the control panel.
11. Reapply air to the control panel.
12. Perform the **Daily System Startup** procedure provided by the integrator at the applicable Supply Unit (LH or RH).
13. Verify that the limit switch operates correctly.
14. Return the system to previous operation settings.

## Servicing the Pumps

When the Pumps and air motors require service, refer to the applicable instruction manual for detailed information. See **Related Manuals**, page 3.

## Replacing Wipers



1. Perform the **Fluid Pressure Relief Procedure** on page 27.
2. To replace worn or damaged wipers (412), raise the Follower Plate (D) up out of the drum. Remove the drum from the base. Wipe the fluid off the Follower Plate (D).



Use a long-handled flat-bladed ice scraper if it is necessary to scrape the bottom of the Follower Plate (D). To avoid serious injury, do not put your hands between the plate and the drum.

3. Separate the wiper joint (WJ) and bend back the strapping (413a) covering the clamp setscrew (413c). See Detail A of FIG. 19. Loosen the

setscrew, pull the end of the strapping through the clamp (413b) and remove the wiper.

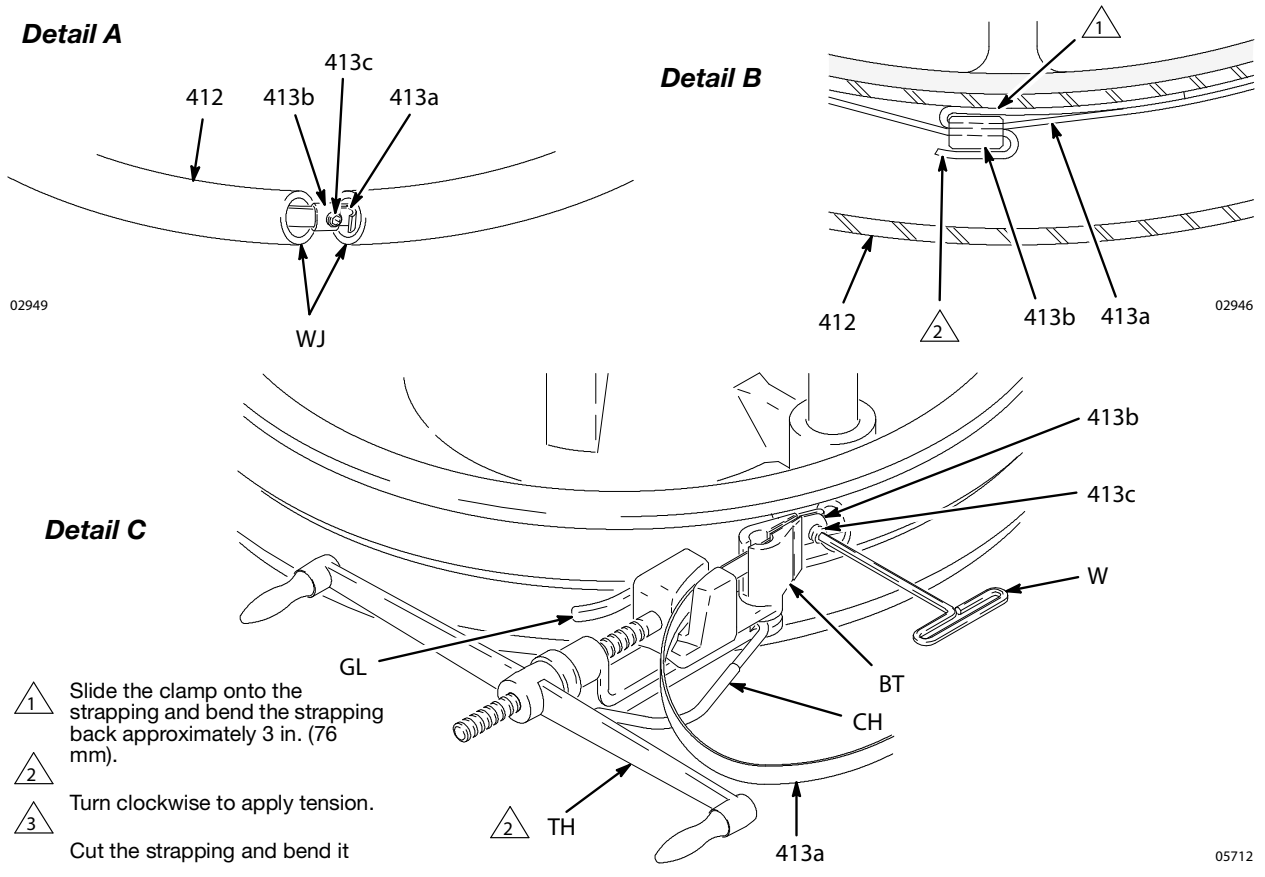
4. Slide the strapping (413a) through the new wiper (412). Slide the clamp (413b) onto the new strapping and bend the strapping back approximately 3 in. (76 mm). Insert the strapping through the clamp a second time. See Detail B of FIG. 19.
5. Install the wipers on the Follower Plate (D). Position the wipers so that the wiper joints (WJ) are 180° apart.

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

6. Grip the strapping (413a) with the bonding tool (BT) as shown. With your thumb on the gripper lever (GL), turn the tool handle (TH) clockwise to apply tension.

**NOTE:** Be careful not to pull the cutting handle (CH) 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 (413b). Stop turning the handle.
8. Tighten the setscrew with a wrench (W). Pull the cutting handle (CH) to cut. Remove the bonding tool (BT). Bend the strapping back over the clamp (413b).
9. Pound the wiper all the way around with a rubber mallet until the wiper joints (WJ) are butted tightly together.
10. Return the system to previous operation settings. Refer to the **Load Material** procedure on page 24.



**FIG. 19**

## Pump Removal

**NOTE:** See **Parts** on page 43.



1. Relieve the air pressure from the air motors and ram assembly to be serviced. Follow the **Fluid Pressure Relief Procedure** on page 27.
2. Disconnect electrical power from the system.
3. Move the RAM POSITION Switch (AG) to HOLD/NEUTRAL.
4. Close the Pump outlet ball valves and relieve the fluid pressure from the Pumps at the Pump bleed valve on the ram assembly to be serviced.
5. Using an overhead lifting device, attach and secure a chain capable of lifting the weight of the Pump assembly to the eye at the top of the air motor.

**NOTE:** For effective Pump removal, the lifting point must be directly above the Pump and capable of moving sideways. The lifting action should be the “chain fall” type that allows a slow upward and downward movement.

**NOTE:** Check the **Technical Specifications** in the separate Pump manual to find the weight of the Pump being serviced. For example, Graco XL 10000™ 45:1 SST Pump (24Y208) weighs 236 lb (106 kg) per manual 308148.

6. Detach the air hose from the air motor.
7. Detach the fluid supply hose at the Pump outlet.

**NOTE:** When loosening the Pump and the air motor fasteners in steps below, ensure the chain slack is taken up to prevent the Pump assembly from falling.

8. On the Follower Plate adapter, loosen and rotate or remove four lugs and hex bolts holding the flange of the Pump lower.
9. On the underside of the air motor, remove the bolts securing the air motor to the motor support brackets. It may be necessary to move or remove some brackets for effective Pump removal.
10. 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

**NOTE:** When lifting the Pump in steps below, ensure the lifting chain does not damage the air controls mounted at the top of the ram cross-members.

11. Using a “chain fall” style lifting device, slowly pull the Pump upward a few inches until the base of the Pump clears the Pump mounting adapter and the air motor clears the support brackets.
12. Pull the Pump assembly out of the ram assembly and guide the Pump assembly downward to the floor, placing the base of the Pump on a wood surface and taking care not to damage the seal area of the Pump inlet housing.
13. Remove the gasket and o-ring (32, 33) from the Pump adapter. They should be discarded and replaced when the Pump is reinstalled.
14. Clean excess and hardened material from the Pump adapter on the Follower Plate (D).
15. Ensure that material is not rising through the Pump adapter in the Follower Plate (D). If material is flowing upward, move the RAM POSITION Switch (AG) to RAISE until the flow stops, then move the switch back to HOLD/NEUTRAL.
16. Move the Pump assembly to a suitable work area and repair the Pump using the appropriate Graco Instruction Manual.

## Pump Installation

1. When the Pump is serviced and tested and ready to be replaced in the UniDrum ram assembly, 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.
3. Before returning the reassembled Pump to production use, it must be primed with material and air removed from the material. See the Starting and Adjusting the Pump section in your appropriate Pump Instruction manual shown in **Related Manuals** on page 3.

# Recycling and Disposal

## End of Product Life

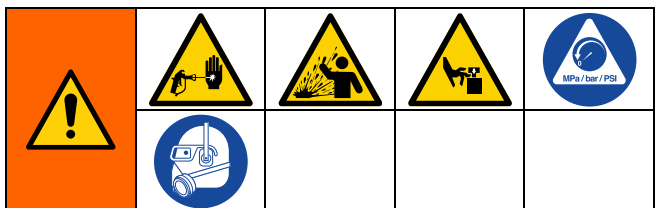
At the end of the product's useful life, dismantle and recycle it in a responsible manner.

- Perform the **Pressure Relief Procedures**.
- Drain and dispose of fluids according to applicable regulations. Refer to the material manufacturer's Safety Data Sheet.
- Remove motors, batteries, circuit boards, LCDs (liquid crystal displays), and other electronic components. Recycle according to applicable regulations.
- Do not dispose of batteries or electronic components with household or commercial waste.



- Deliver remaining product to a recycling facility.

# Troubleshooting



Follow **Pressure Relief Procedures**, page 27 and 28, before checking or repairing the UniDrum Supply System.

**NOTE:** Check all possible problems and causes before disassembling the equipment.

## Ram Assembly Troubleshooting

Problem	Cause	Solution
Ram won't raise or lower	Closed main air shutoff valve or clogged air line	Open air valve, clear air line
	Not enough air pressure	Increase ram pressure
	Worn or damaged piston	Replace piston. See <b>Ram Piston Service</b> on page 33.
	Safety Pins (M) still in place	Remove pins.
Ram raises or lowers too fast	Ram air pressure too high	Decrease ram air pressure
Ram drops when in the RAISE or HOLD/NEUTRAL position	Regulator R3 pressure set too high	Reset R3 pressure to between 5-7 psi.
Fluid squeezes past Follower Plate wipers	Ram air pressure too high	Decrease ram air pressure
	Worn or damaged wipers	Replace wipers. See <b>Replacing Wipers</b> on page 35.
Pump won't prime properly, or pumps air	Not enough ram air pressure	Increase ram pressure
	Worn or damaged ram piston	Replace ram piston. See <b>Ram Piston Service</b> on page 33.
	Bent drum has stopped Follower Plate	Replace drum

## Pump Troubleshooting

For additional information about the displacement Pump, refer to **Related Manuals** on page 3 to find the applicable instruction manual.

Problem	Cause	Solution
Rapid downstroke or upstroke (pump cavitation)	Air is trapped in Pump.	Bleed air from the Pumps and prime using the procedure described in steps 16a - 16h on page 25.
	Downstroke: Lower check in Pump is worn. Upstroke: Upper check in Pump is worn.	Rebuild and replace Pump, as necessary.
Material leaks around Pump outlet	Outlet fitting is loose.	Tighten outlet fitting.
Material leaks around Bleed Port (Q)	Bleed Port fitting is loose.	Tighten Bleed Port fitting.
Pump won't move up or down	Problem with air motor.	See <b>Air Motor Troubleshooting</b> chart on page 41.
	Foreign object lodged in Pump.	Remove object and rebuild Pump assembly.
Wet cup leaks	Worn throat packings.	Tighten wet cup. Replace throat packings.



## Air Motor Troubleshooting

For additional information about the air motor, refer to **Related Manuals** on page 3 to find the applicable instruction manual.

Problem	Cause	Solution
Air motor will not shift directions, stalled in DOWN position	Main air valve spool is dirty or damaged	Clean/rebuild main air valve.
Air motor will not shift directions, stalled in UP position		
Air motor stalled halfway between the top and bottom		
Air continually exhausting around air motor shaft.	Air motor shaft seal is damaged	Replace air motor shaft seal.
Air continually exhausting around the air valve/slide valve	Air valve/slide valve gasket is damaged	Replace the valve gasket.
Air continually exhausting from muffler while the motor is idle	Internal seal damage	Rebuild air motor.
Oil leaking from exhaust port	Too much lubricant mixed in with the air supply	Reduce lubricant supply.
Frost build-up on muffler	Air motor operating at high pressure, or high cycle rate	Reduce pressure, cycle rate, or duty cycle of the air motor.

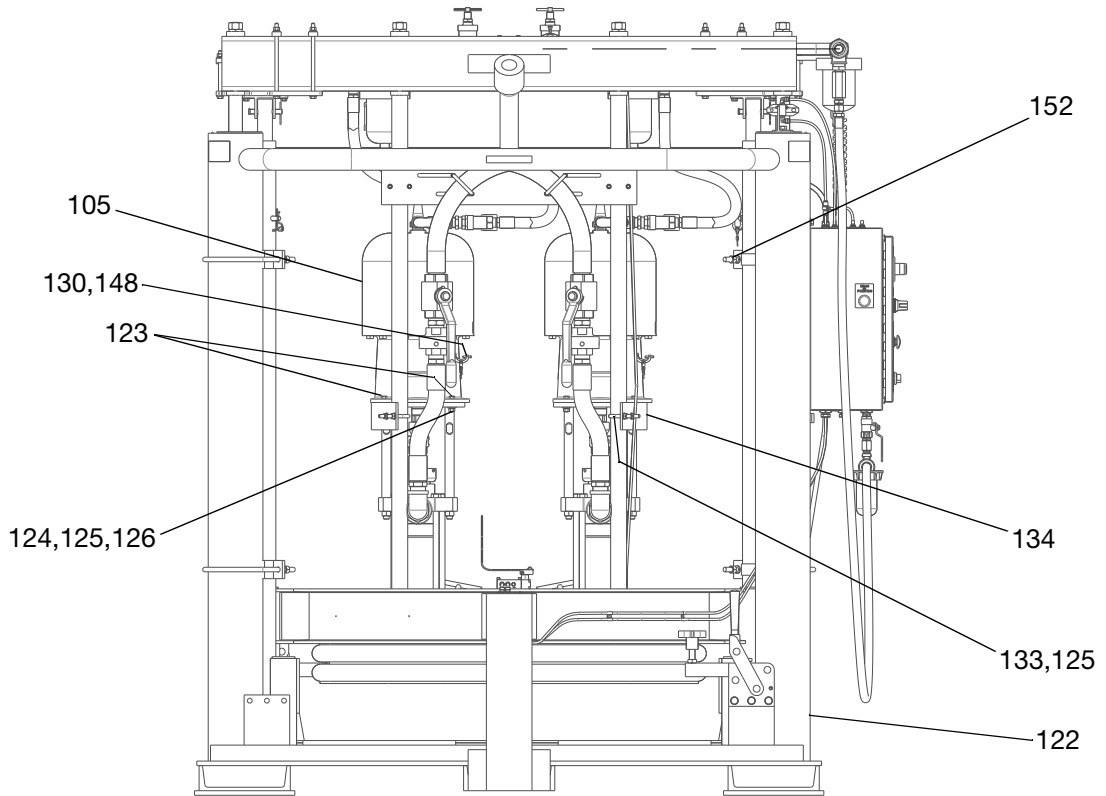
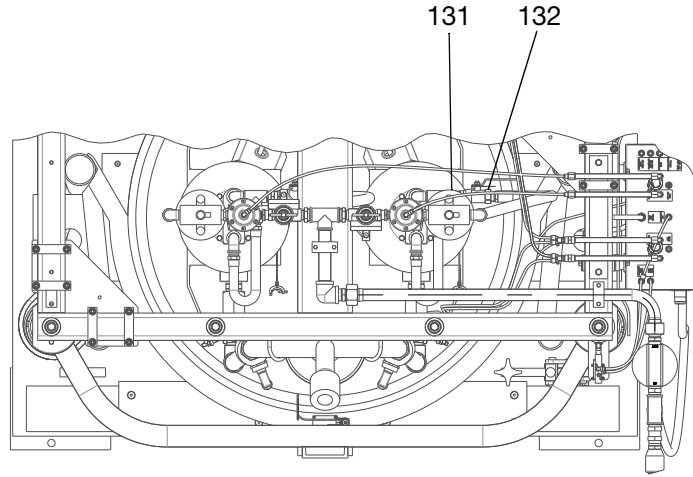
## Pneumatic Logic Panel Troubleshooting

Problem	Cause	Solution
Ram will not move up or down.	Main air valve on box is not open. Air supply to unit is not on.	Open valve. Turn on air supply.
Ram will not move up.	Direction valve is not in the UP position. RAM UP Pushbutton (AF) is not pushed. Resistance in drum is too great. Insufficient lubrication of the Follower Plate seal.	Set direction valve to the UP position. Push RAM UP Pushbutton (AF). Turn air pressure up to 60 psi. The ram may take a few minutes to withdraw from the container. After the plate has been removed from the container, clean the seal and thoroughly lubricate.
Pumps will not operate.	Air regulator is set too low.	Increase air pressure setting.
Vent valve will not open.	FOLLOWER VENT switch is not in AUTO position.	Put FOLLOWER VENT switch in AUTO position.

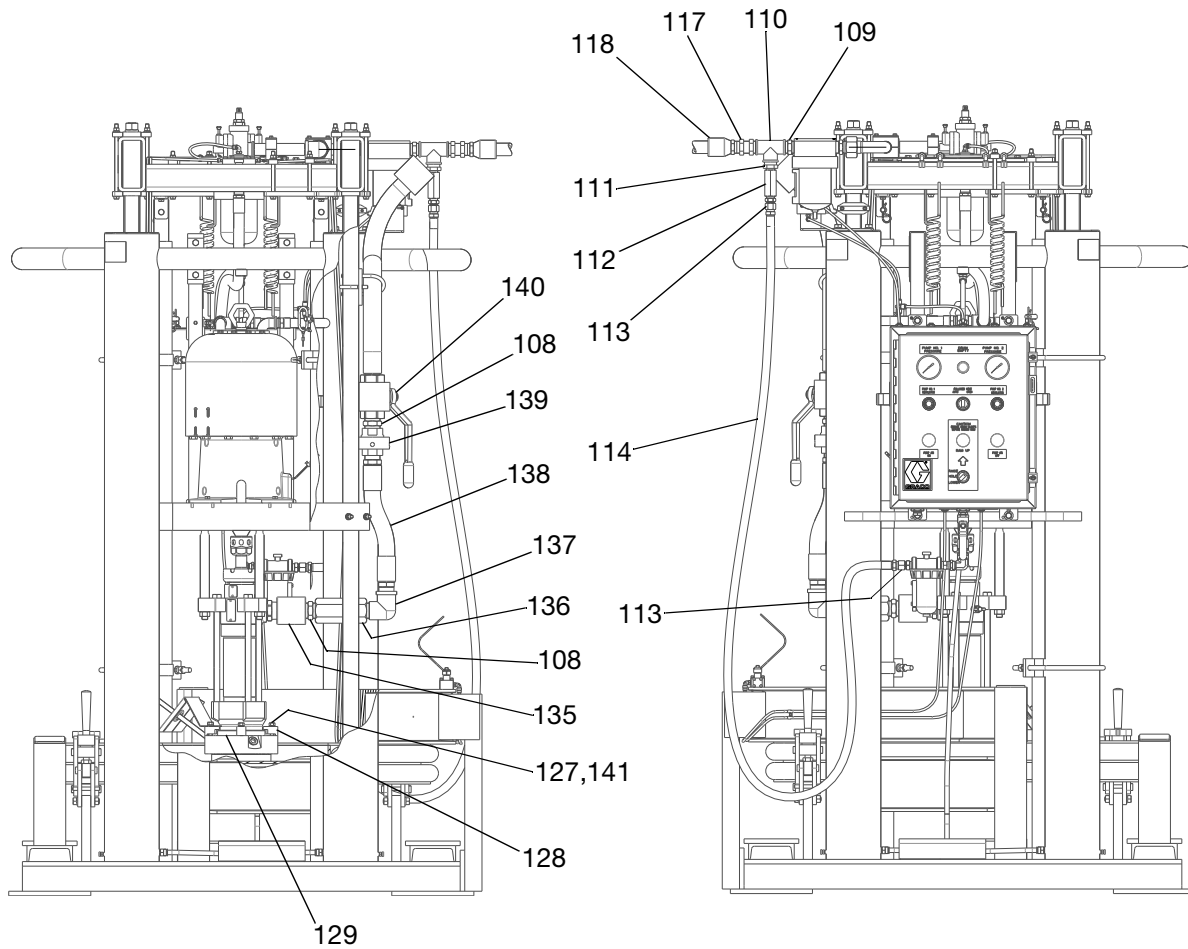
# Parts

**C59784 - 20:1 Left Hand Supply Unit, with King carbon steel pump**

**C59785 - 20:1 Right Hand Supply Unit, with King carbon steel pump**



Parts



**C59784 - 20:1 Left Hand Supply Unit, with King carbon steel pump**

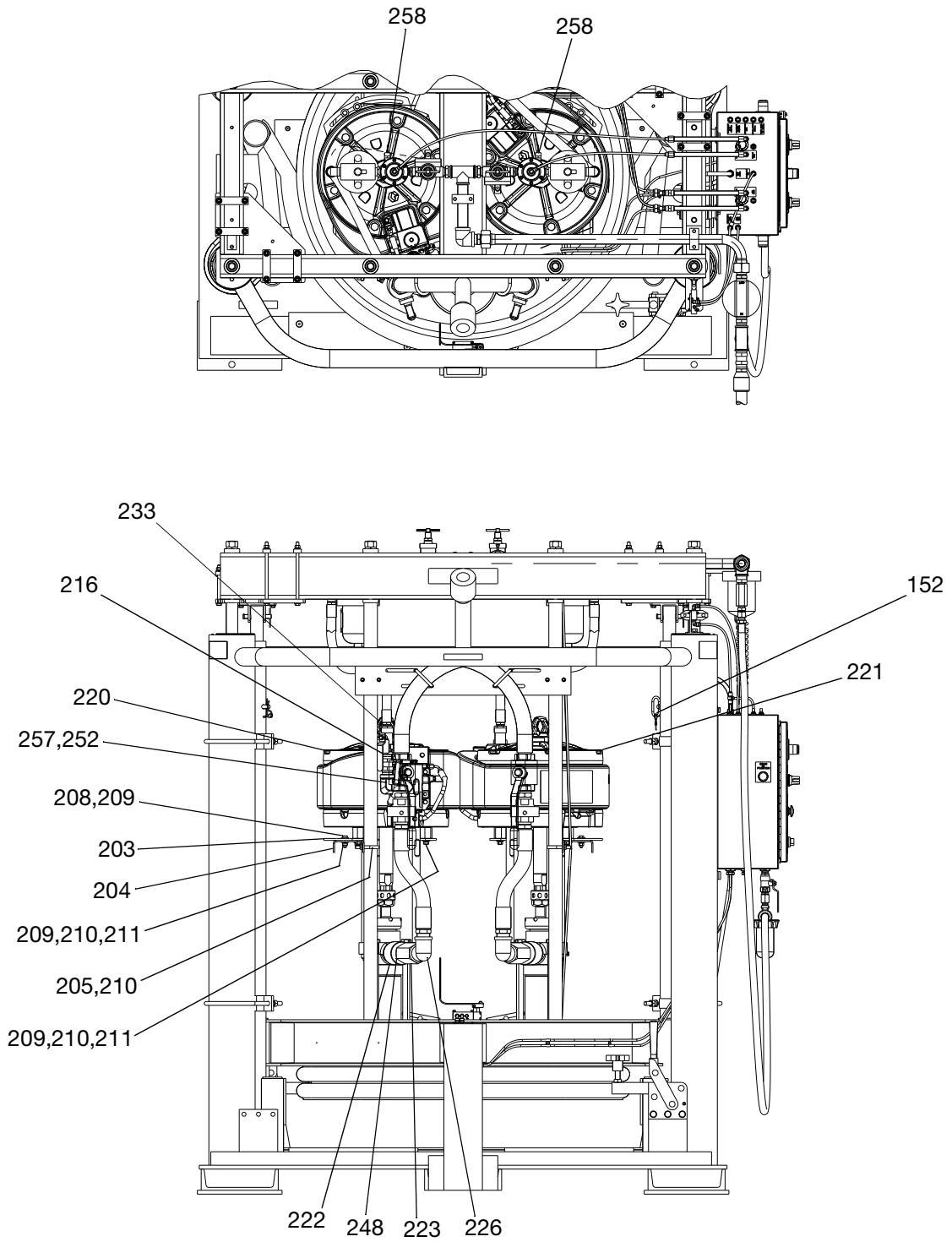
**C59785 - 20:1 Right Hand Supply Unit, with King carbon steel pump**

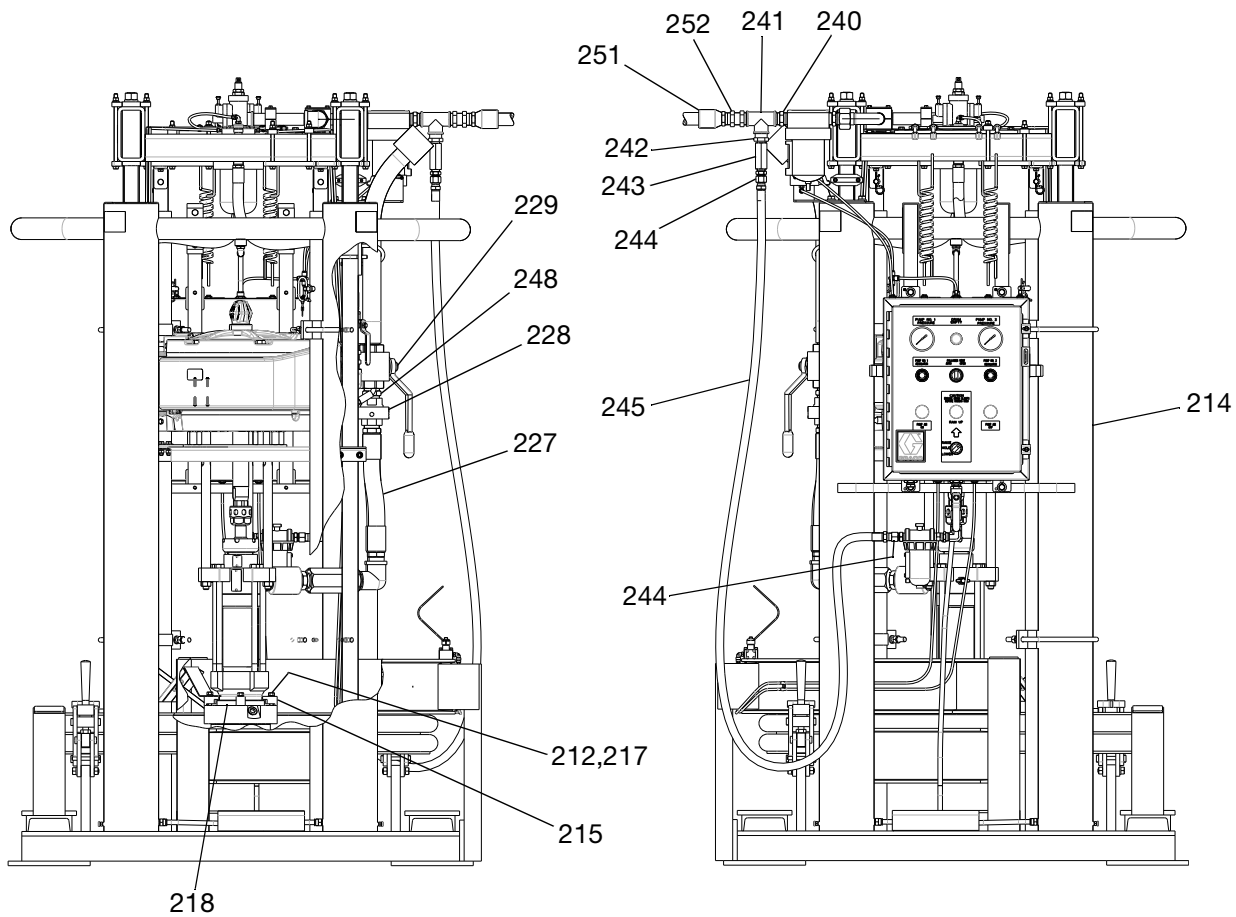
Ref.	Part	Description	Qty.
105	222833	PUMP,KING,QUIET,20:1	2
108	C20490	FITTING,NIPPLE,HEX	4
109	C20489	FITTING,NIPPLE	1
110	106464	FITTING,TEE, PIPE, 1" NPT	1
111	C20463	FITTING, nipple, reducing, hex	1
112	C57799	VALVE,CHECK, 1/2"	1
113	C19019	FITTING,UNION SWIVEL	2
114	214656	HOSE,COUPLED	1
117	C19032	SWIVEL,SWIVEL UNION	1
118	C12039	HOSE,AIR	1
122	233050	ELEVATOR, RAM 300 gal RH	1
	233066	ELEVATOR, RAM 300 gal LH	1
123	102637	SCREW,CAP	8
124	C19200	WASHER,PLAIN	8
125	C19213	WASHER,LOCK	16
126	100307	NUT,HEX	8
127	100133	WASHER,LOCK, 3/8	8

Ref.	Part	Description	Qty.
128	196073	CLAMP	8
129	109495	PACKING,O-RING	2
130	237569	WIRE,ASSY,25 FT	2
131	175013	FITTING,NIPPLE, PIPE	2
132	113332	VALVE,BALL,VENTED	2
133	C20450	BOLT,U	4
134	617205	BRACKET,PUMP MOUNTING	2
135	C38457	FITTING,COUPLING,REDUCING	2
136	521850	VALVE,CHECK	2
137	C38324	FITTING,ELBOW,STREET	2
138	233058	HOSE,COUPLED	2
139	521975	FITTING,UNION,PIPE	2
140	118854	VALVE,BALL,HIGH PRESSURE	2
141	111803	SCREW,CAP,HEX HD	8
142	070408	SEALANT, pipe, SST	1
148	104911	TERMINAL, ring	2
152	---	PINS, safety, kit, see page 66	1

C58461 - 35:1 Left Hand Supply Unit, with XL10000 carbon steel pump

C58462 - 35:1 Right Hand Supply Unit, with XL10000 carbon steel pump





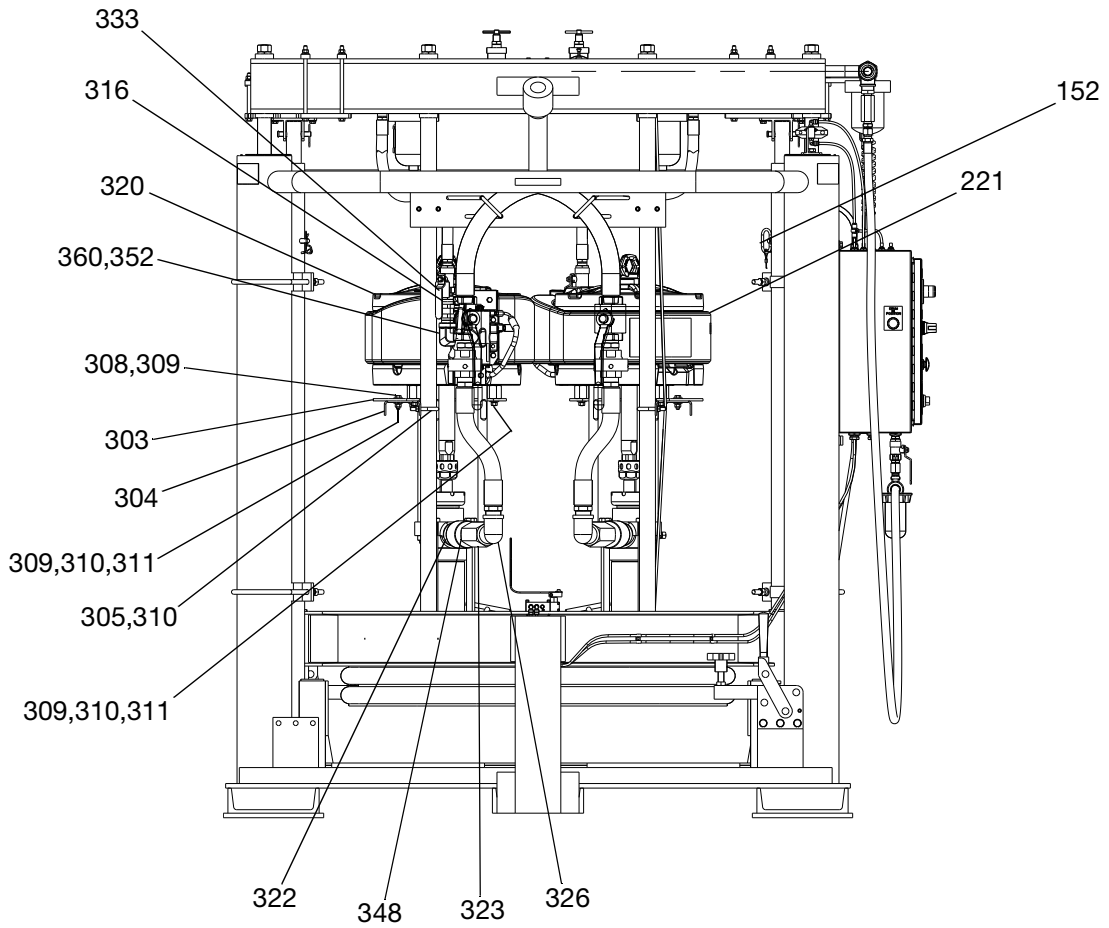
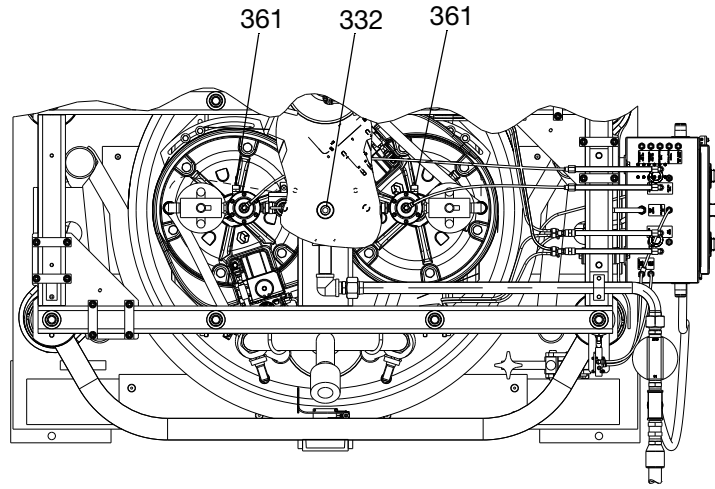
**C58461 - 35:1 Left Hand Supply Unit, with XL10000 carbon steel pump**

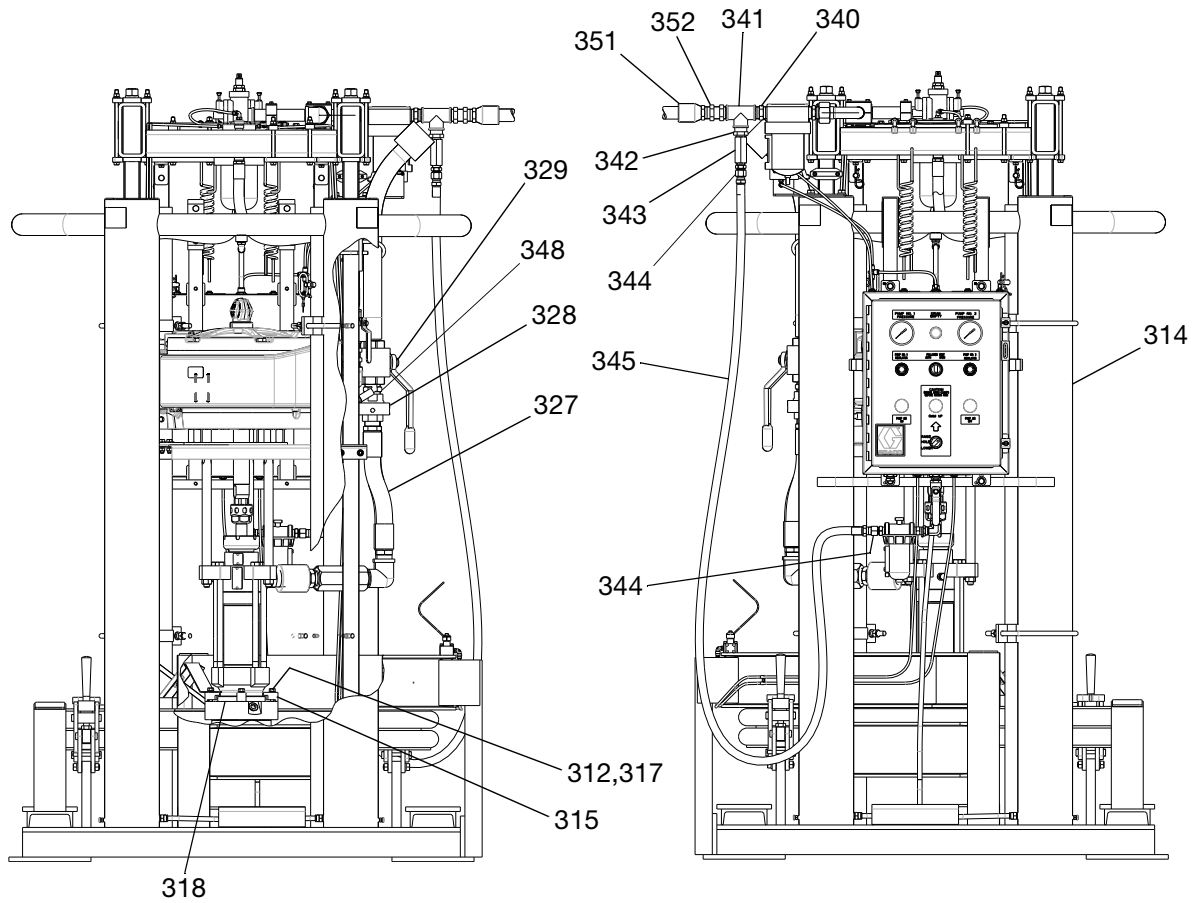
**C58462 - 35:1 Right Hand Supply Unit, with XL10000 carbon steel pump**

Ref.	Part	Description	Qty.
152	---	PINS, safety, kit, see page 66	1
203	C58360	PLATE, adjuster, UniDrum	2
204	C58361	BRACKET, pump support	2
205	C20450	U-BOLT	4
208	C19126	SCREW, cap hex head	4
209	C19200	WASHER, plain	14
210	C19213	WASHER, lock medium	16
211	100307	NUT, hex, 3/8-16 regular	10
212	111803	SCREW, cap, hex head	8
214	233050	ELEVATOR, RAM 300 gal RH	1
	233066	ELEVATOR, RAM 300 gal LH	1
215	196073	CLAMP	8
216	158555	FITTING,NIPPLE, 1 X 3/4 NPT	2
217	100133	WASHER	8
218	109495	PACKING, O-RING	2
220	24Y213	PUMP, XL, 35:1 (24 cm cs)	2
221	24Y214	PUMP, XL, 35:1 (24 cm cs)	2
222	C38457	FITTING, coupling reducing	2

Ref.	Part	Description	Qty.
223	521850	VALVE, check	2
226	C38324	FITTING, elbow, street	2
227	233058	HOSE, coupled	2
228	521975	FITTING, union, pipe	2
229	118854	VALVE, ball, high pressure	2
230	070408	SEALANT, pipe, stainless steel	1
233	113332	VALVE, ball, vented	2
240	C20489	FITTING, nipple	1
241	106464	TEE, Pipe	1
242	C20463	FITTING, nipple, reducing	1
243	C57799	VALVE, check, 1/2"	1
244	C19019	FITTING, union, swivel	2
245	214656	HOSE, coupled	1
248	19D339	FITTING, nipple, hex	4
251	C12039	HOSE, air	1
252	C19032	SWIVEL, Swivel union	3
257	94/0398/99	Fitting, 90°, 1" NPT	2
258	103347	VALVE, safety, 100 psi	2

**24P842, 47:1 Left Hand Supply Unit, with XL 10000 stainless steel pump**  
**24P843, 47:1 Right Hand Supply Unit, with XL 10000 stainless steel pump**





**24P842, 47:1 Left Hand Supply Unit, with XL 10000 stainless steel pump**

**24P843, 47:1 Right Hand Supply Unit, with XL 10000 stainless steel pump**

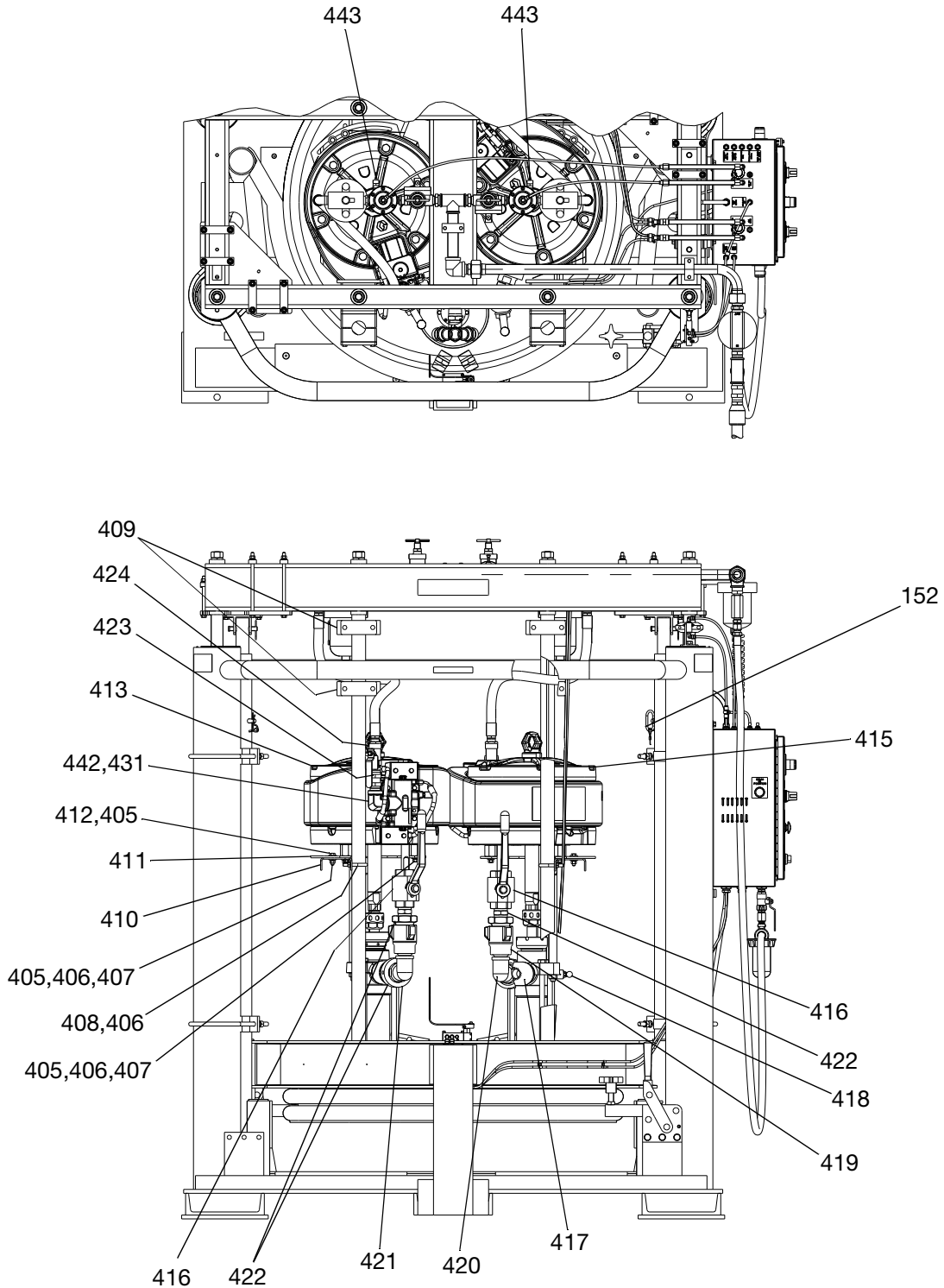
Ref.	Part	Description	Qty.
152	---	PINS, safety, kit, see page 66	1
303	C58360	PLATE, adjuster, UniDrum	2
304	C58361	BRACKET, pump support	2
305	C20450	U-BOLT	4
308	C19126	SCREW, cap hex head	4
309	C19200	WASHER, plain	14
310	C19213	WASHER, lock medium	18
311	100307	NUT, hex, 3/8-16 regular	10
312	111803	SCREW, cap, hex head	8
314	233050	ELEVATOR, RAM 300 gal RH	1
	233066	ELEVATOR, RAM 300 gal LH	1
315	196073	CLAMP	8
316	158555	FITTING,NIPPLE, 1 X 3/4 NPT	2
317	100133	WASHER	8
318	109495	PACKING, O-RING	2
320	24Y211	PUMP, XL, 47:1	1
321	24Y212	PUMP, XL, 47:1	1
322	C38457	FITTING, coupling reducing	2
323	521850	VALVE, check	2

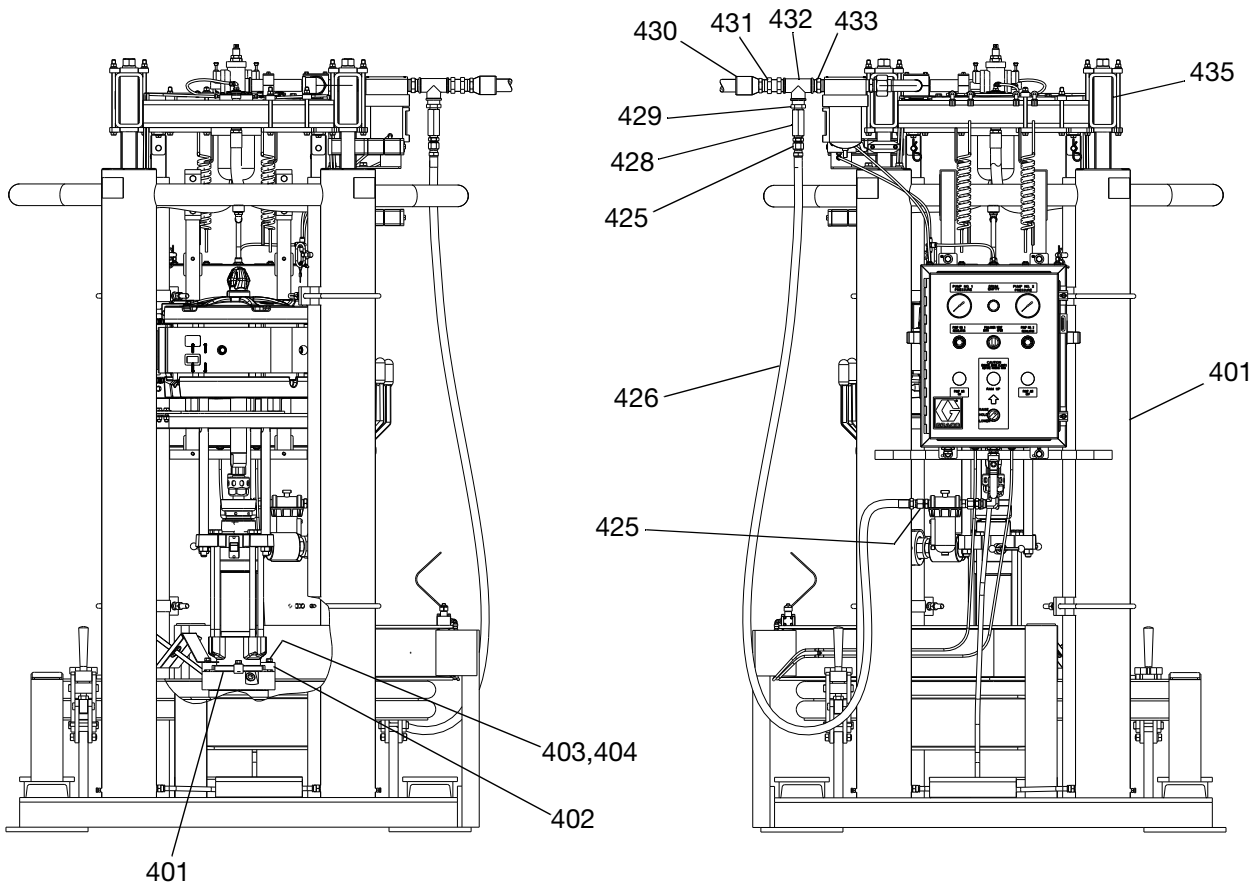
Ref.	Part	Description	Qty.
326	C38324	FITTING, elbow, street	2
327	233058	HOSE, coupled	2
328	521975	FITTING, union, pipe	2
329	118854	VALVE, ball, high pressure	2
330	070408	SEALANT, pipe, stainless steel	1
332	102726	PLUG,PIPE HEADLES	1
333	113332	VALVE, ball, vented	2
340	C20489	FITTING, nipple	1
341	106464	TEE, Pipe	1
342	C20463	FITTING, nipple, reducing	1
343	C57799	VALVE, check, 1/2"	1
344	C19019	FITTING, union, swivel	2
345	214656	HOSE, coupled	1
348	19D339	FITTING, nipple, hex	4
351	C12039	HOSE, air	1
352	C19032	SWIVEL, Swivel union	3
360	94/0398/99	FITTING, 90°, 1" NPT	2
361	103347	VALVE, safety, 100 psi	2



**246983 - 47:1 Left Hand Supply Unit, with XL10000 stainless steel pump with silicone nitride balls**

**246984 - 47:1 Right Hand Supply Unit, with XL10000 stainless steel pump with silicone nitride balls**





**246983 - 47:1 Left Hand Supply Unit, with XL10000 stainless steel pump with silicone nitride balls**

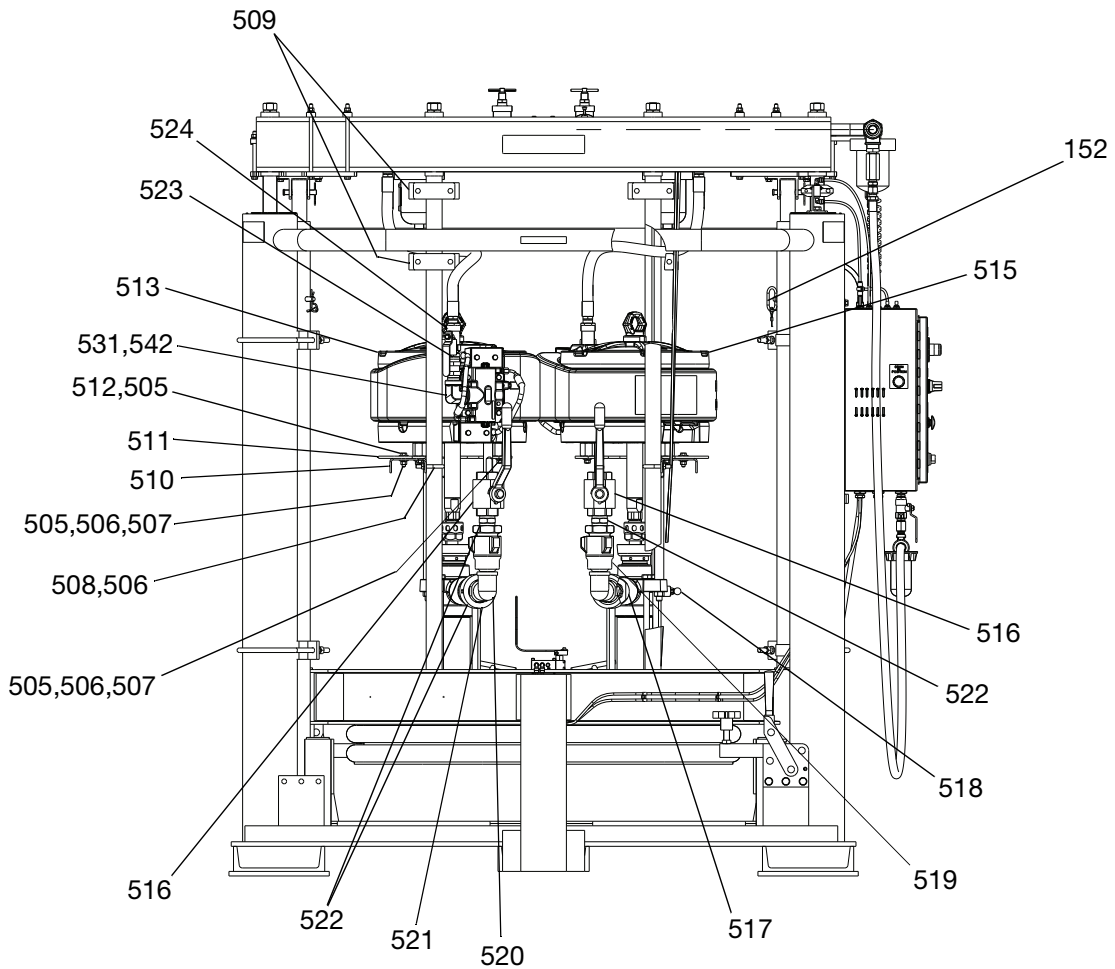
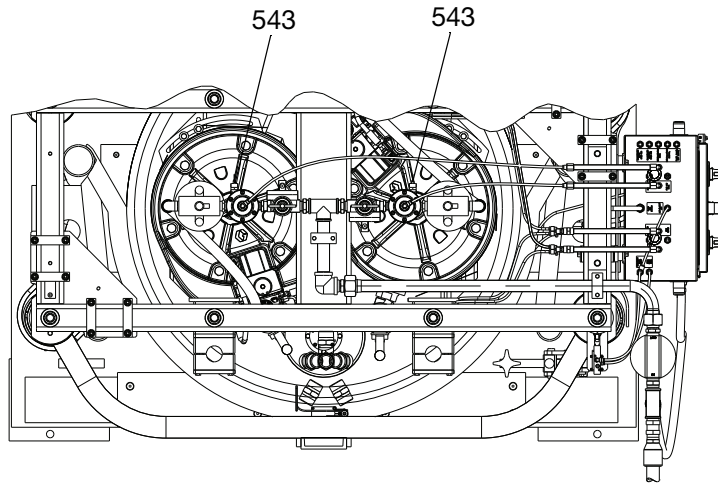
**246984 - 47:1 Right Hand Supply Unit, with XL10000 stainless steel pump with silicone nitride balls**

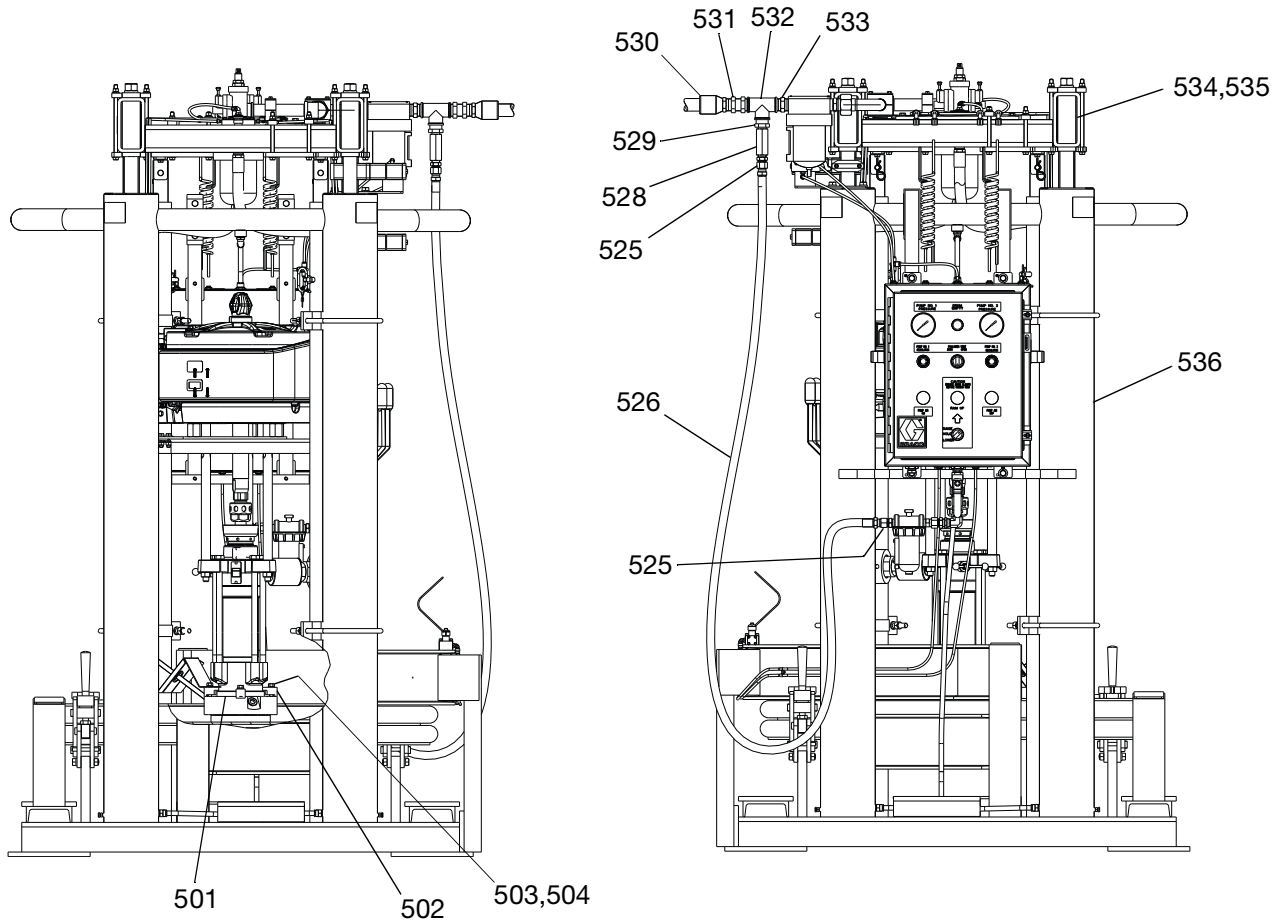
Ref.	Part	Description	Qty.
152	---	PINS, safety, kit, see page 66	1
401	248126	RAM, elevator 300 gallon, (left)	1
	248127	RAM, elevator 300 gallon, (right)	1
403	C58360	PLATE, adjuster	2
404	C58361	BRACKET, support	2
405	C20450	BOLT, u	4
408	C19126	SCREW, cap	2
409	C19200	WASHER, plain	14
410	C19213	WASHER, lock	18
411	100307	NUT, hex	10
412	111803	SCREW, cap	8
413	24Y227	PUMP, XL, 47:1 (left)	1
	24Y228	PUMP, XL, 47:1 (right)	1
415	196073	CLAMP	8
417	100133	WASHER, lock	8
418	109495	O-RING	2
422	C38457	FITTING, coupling	2
423	246929	VALVE, check	2
426	C38324	FITTING, elbow	2

Ref.	Part	Description	Qty.
428	521975	FITTING, union	2
429	118854	VALVE, ball	4
433	113332	VALVE, ball	2
435	15D133	CLAMP, support	4
437	15D140	MANIFOLD	1
438	234428	HOSE, coupled, 1-1/4 in. x 15 ft.	2
439	246994	VALVE, bleed	2
440	C20489	FITTING, nipple	1
441	106464	TEE, pipe	1
442	C20463	FITTING, nipple	1
443	C57799	VALVE, check, 1/2 in.	1
444	C19019	FITTING, union	2
445	214656	HOSE, coupled, 10 ft.	1
448	C20490	FITTING, nipple	6
451	C12039	HOSE, air	1
452	C19032	SWIVEL, union	3
467	158555	NIPPLE, reducing	2
470	103347	VALVE, safety, 100 psi	2
471	94/0398/99	FITTING, 90°, 1" NPT	2

**249154 - 35:1 Left Hand Supply Unit, with XL10000 stainless steel pump with silicone nitride balls**

**249155 - 35:1 Right Hand Supply Unit, with XL10000 stainless steel pump with silicone nitride balls**





**249154 - 35:1 Left Hand Supply Unit, with XL10000 stainless steel pump with silicone nitride balls**

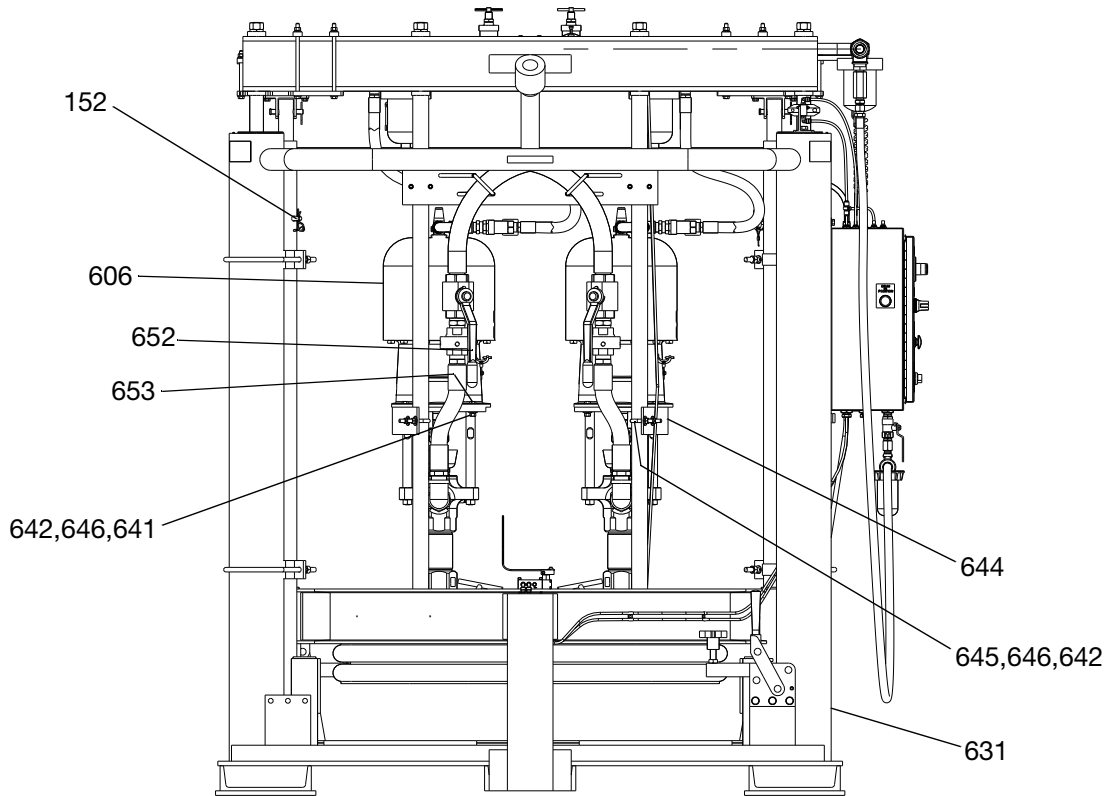
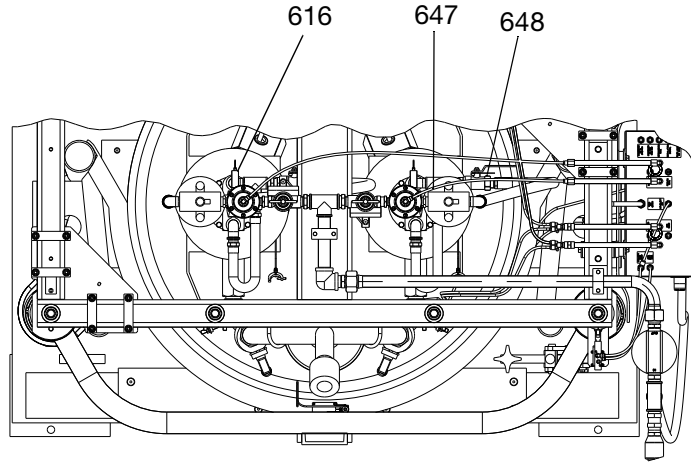
**249155 - 35:1 Right Hand Supply Unit, with XL10000 stainless steel pump with silicone nitride balls**

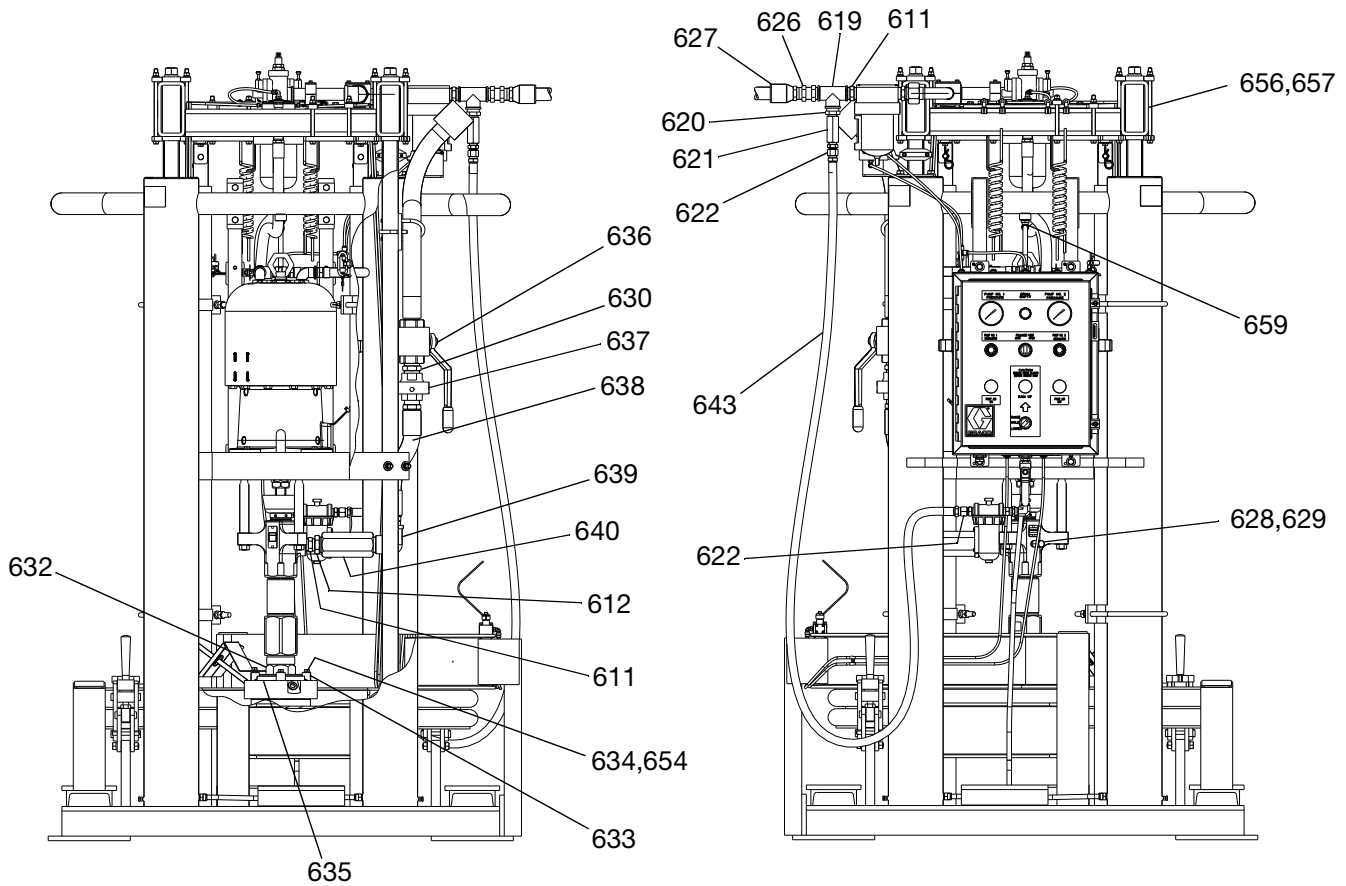
Ref.	Part	Description	Qty.
152	---	PINS, safety, kit, see page 66	1
501	248126	RAM, elevator 300 gallon, (left)	1
	248127	RAM, elevator 300 gallon, (right)	1
503	C58360	PLATE, adjuster	2
504	C58361	BRACKET, support	2
505	C20450	BOLT, u	4
508	C19126	SCREW, cap	2
509	C19200	WASHER, plain	14
510	C19213	WASHER, lock	18
511	100307	NUT, hex	10
512	111803	SCREW, cap	8
513	24Y192	PUMP, XL, 35:1 (left)	1
	24Y206	PUMP, XL, 35:1 (right)	1
515	196073	CLAMP	8
517	100133	WASHER, lock	8
518	109495	O-RING	2
522	C38457	FITTING, coupling	2
523	246929	VALVE, check	2
526	C38324	FITTING, elbow	2

Ref.	Part	Description	Qty.
528	521975	FITTING, union	2
529	118854	VALVE, ball	4
533	113332	VALVE, ball	2
535	15D133	CLAMP, support	4
537	15D140	MANIFOLD	1
538	234420	HOSE, coupled	2
539	246994	VALVE, bleed	2
540	C20489	FITTING, nipple	1
541	106464	TEE, pipe	1
542	C20463	FITTING, nipple	1
543	C57799	VALVE, check, 1/2 in.	1
544	C19019	FITTING, union	2
545	214656	HOSE, coupled, 10 ft.	1
548	C20490	FITTING, nipple	6
551	C12039	HOSE, air	1
552	C19032	SWIVEL, union	3
567	158555	NIPPLE, reducing	2
570	103347	VALVE, safety, 100 psi	2
571	94/0398/99	FITTING, 90°, 1" NPT	2

**C58607 - 56:1 Left Hand Supply Unit, with King carbon steel pump**

**C58608 - 56:1 Right Hand Supply Unit, with King carbon steel pump**





**C58607 - 56:1 Left Hand Supply Unit, with King carbon steel pump**

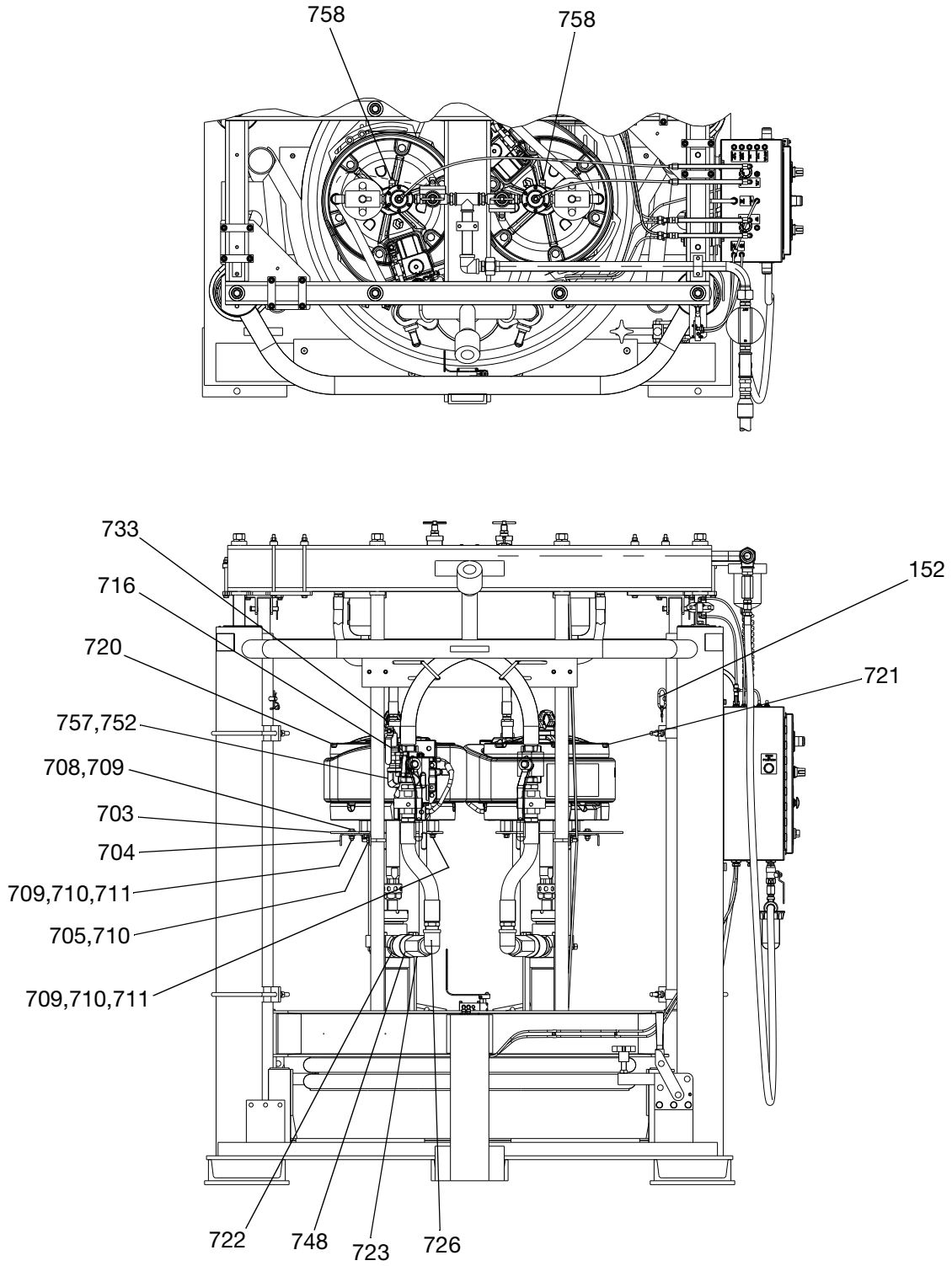
**C58608 - 56:1 Right Hand Supply Unit, with King carbon steel pump**

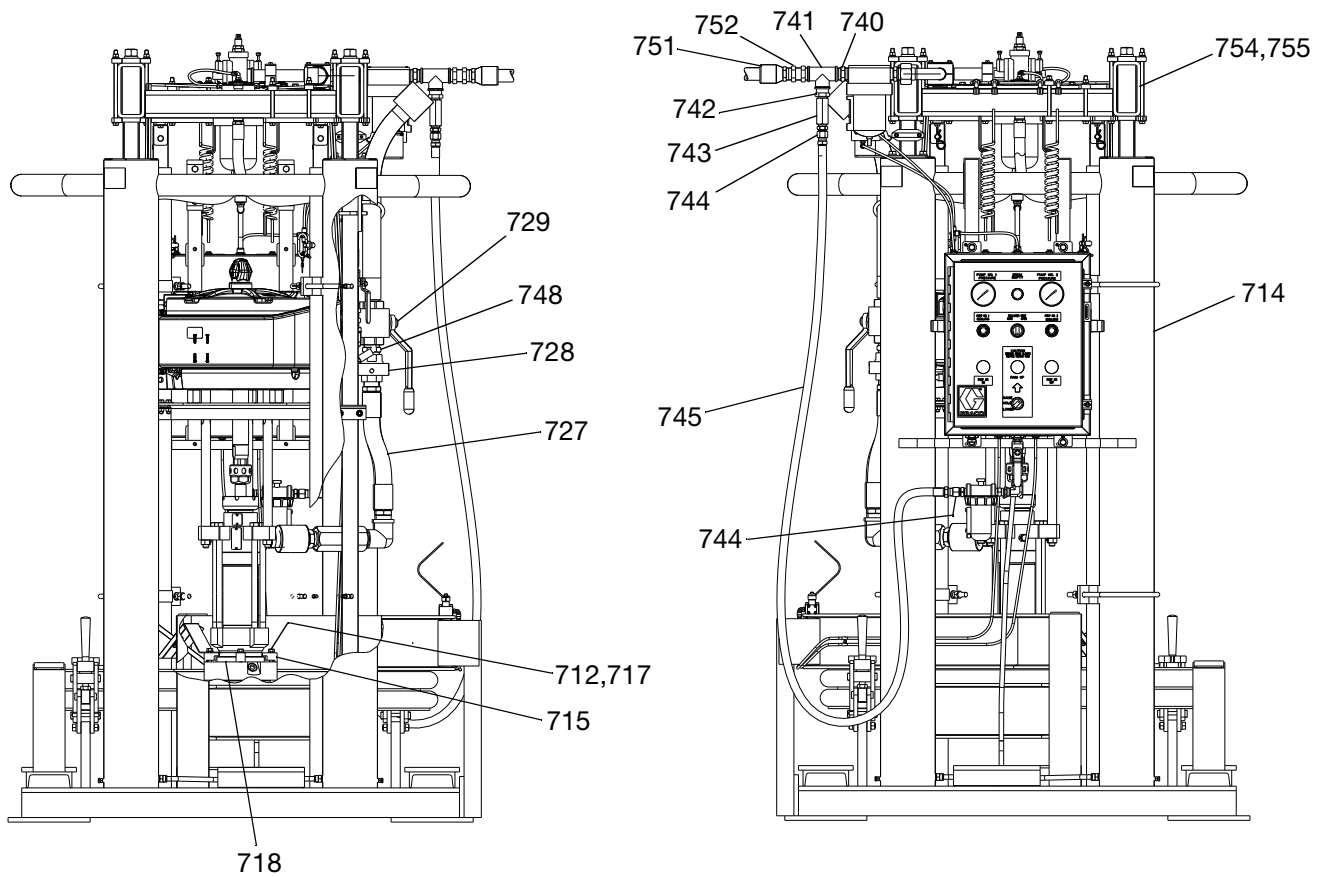
Ref.	Part	Description	Qty.
152	---	PINS, safety, kit, see page 66	1
601	233050	ELEVATOR, RAM 300 gal RH	1
	233066	ELEVATOR, RAM 300 gal LH	1
603	617205	BRACKET, Pump mounting	2
605	C20450	U-BOLT	4
608	C19126	SCREW, cap hex head	8
609	C19200	WASHER	8
610	C19213	WASHER, lock medium	16
611	100307	NUT, hex	8
612	102637	SCREW, cap	8
613	245173	PUMP, King 56:1	2
615	276025	CLAMP	8
617	100133	WASHER	8
618	109495	PACKING, O-RING	2
619	237569	WIRE, assy, 25 feet	2
623	521850	VALVE, check	2
626	C38324	FITTING, elbow, street	2
627	233058	HOSE, coupled	2
628	521975	FITTING, union, pipe	2

Ref.	Part	Description	Qty.
629	118854	VALVE, ball, high pressure	2
630	070408	SEALANT, pipe, stainless steel	
633	113332	VALVE, ball, vented	2
640	C20489	FITTING, nipple	3
641	106464	TEE, Pipe	1
642	C20463	FITTING, nipple, reducing	1
643	C57799	VALVE, check, 1/2"	1
644	C19019	FITTING, union, swivel	2
645	214656	HOSE, coupled	1
648	C20490	FITTING, nipple, hex	2
651	C12039	HOSE, air	1
652	C19032	SWIVEL, Swivel union	1
656	165702	HOUSING, valve	2
657	190128	PLUG, valve	2
660	190166	CYLINDER, intake	2
665	C19662	BUSHING,, 1-1/4"X 1	2
666	108124	VALVE, safety	2
667	175013	NIPPLE, pipe	2

**C59793 - 47:1 Left Hand Supply Unit, with XL10000 carbon steel pump**

**C59794 - 47:1 Right Hand Supply Unit, with XL10000 carbon steel pump**





**C59793 - 47:1 Left Hand Supply Unit, with XL10000 carbon steel pump**

**C59794 - 47:1 Right Hand Supply Unit, with XL10000 carbon steel pump**

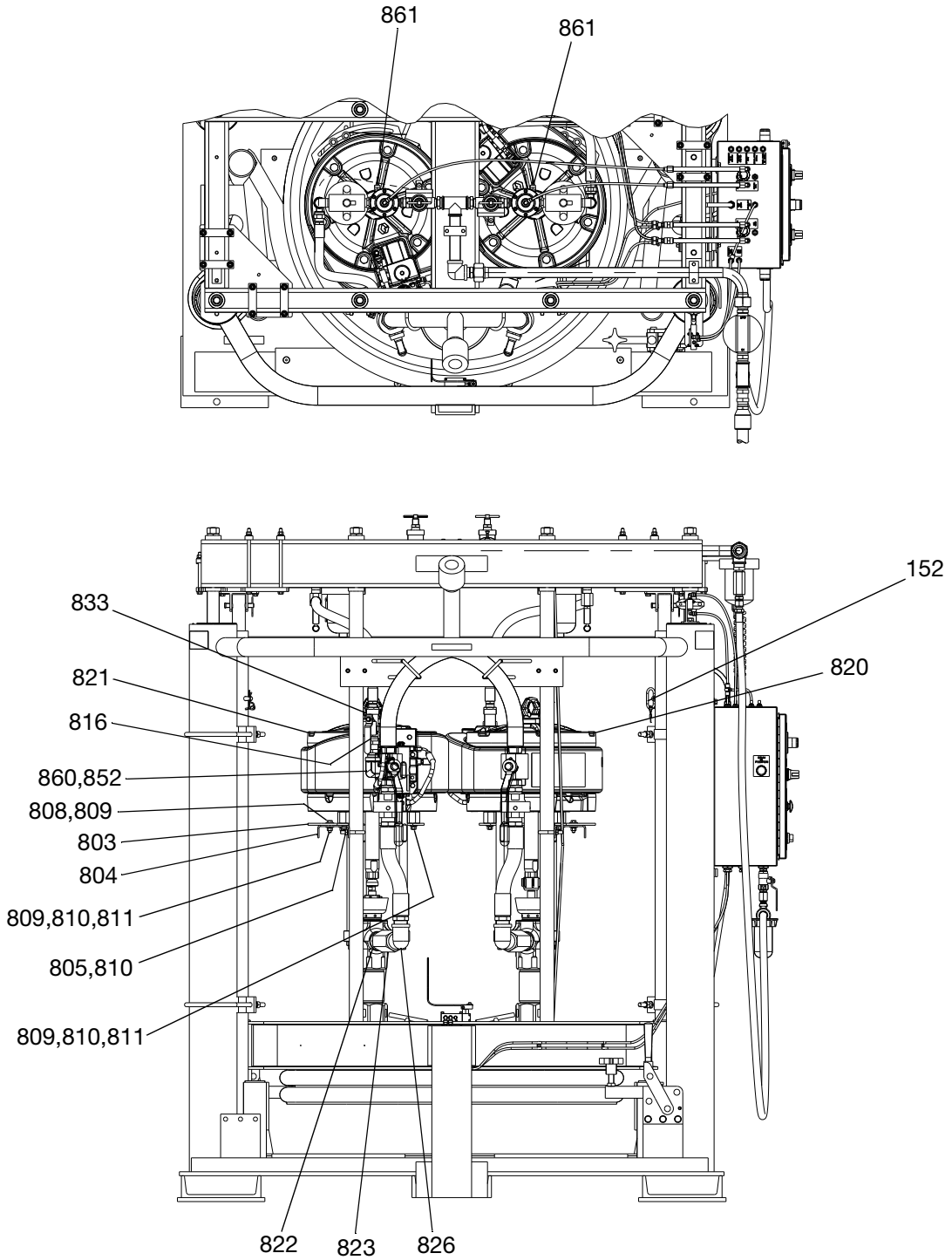
Ref.	Part	Description	Qty.
152	---	PINS, safety, kit, see page 66	1
701	233050	ELEVATOR, RAM 300 gal RH	1
	233066	ELEVATOR, RAM 300 gal LH	
703	C58360	PLATE, adjuster, UniDrum	2
704	C58361	BRACKET, pump support	2
705	C20450	U-BOLT	4
708	C19126	SCREW, cap hex head	4
709	C19200	WASHER	14
710	C19213	WASHER, lock medium	18
711	100307	NUT, hex	10
712	111803	SCREW, cap, hex head	8
	24Y225	PUMP, XL, 47:1	1
713	24Y226	PUMP, XL, 47:1	1
715	196073	CLAMP	8
717	100133	WASHER	8
718	109495	PACKING, O-RING	2
722	C38457	FITTING, coupling reducing	2
723	521850	VALVE, check	2
726	C38324	FITTING, elbow, street	2

Ref.	Part	Description	Qty.
727	233058	HOSE, coupled	2
728	521975	FITTING, union, pipe	2
729	118854	VALVE, ball, high pressure	2
730	070408	SEALANT, pipe, stainless steel	
733	113332	VALVE, ball, vented	2
740	C20489	FITTING, nipple	1
741	106464	TEE, Pipe	1
742	C20463	FITTING, nipple, reducing	2
743	C57799	VALVE, check, 1/2"	1
744	C19019	FITTING, union, swivel	2
745	214656	HOSE, coupled	1
748	C20490	FITTING, nipple, hex	4
751	C12039	HOSE, air	1
752	C19032	SWIVEL, Swivel union	3
767	158555	NIPPLE, reducing	2
770	103347	VALVE, safety, 100 psi	2
771	94/0398/99	FITTING, 90°, 1" NPT	2

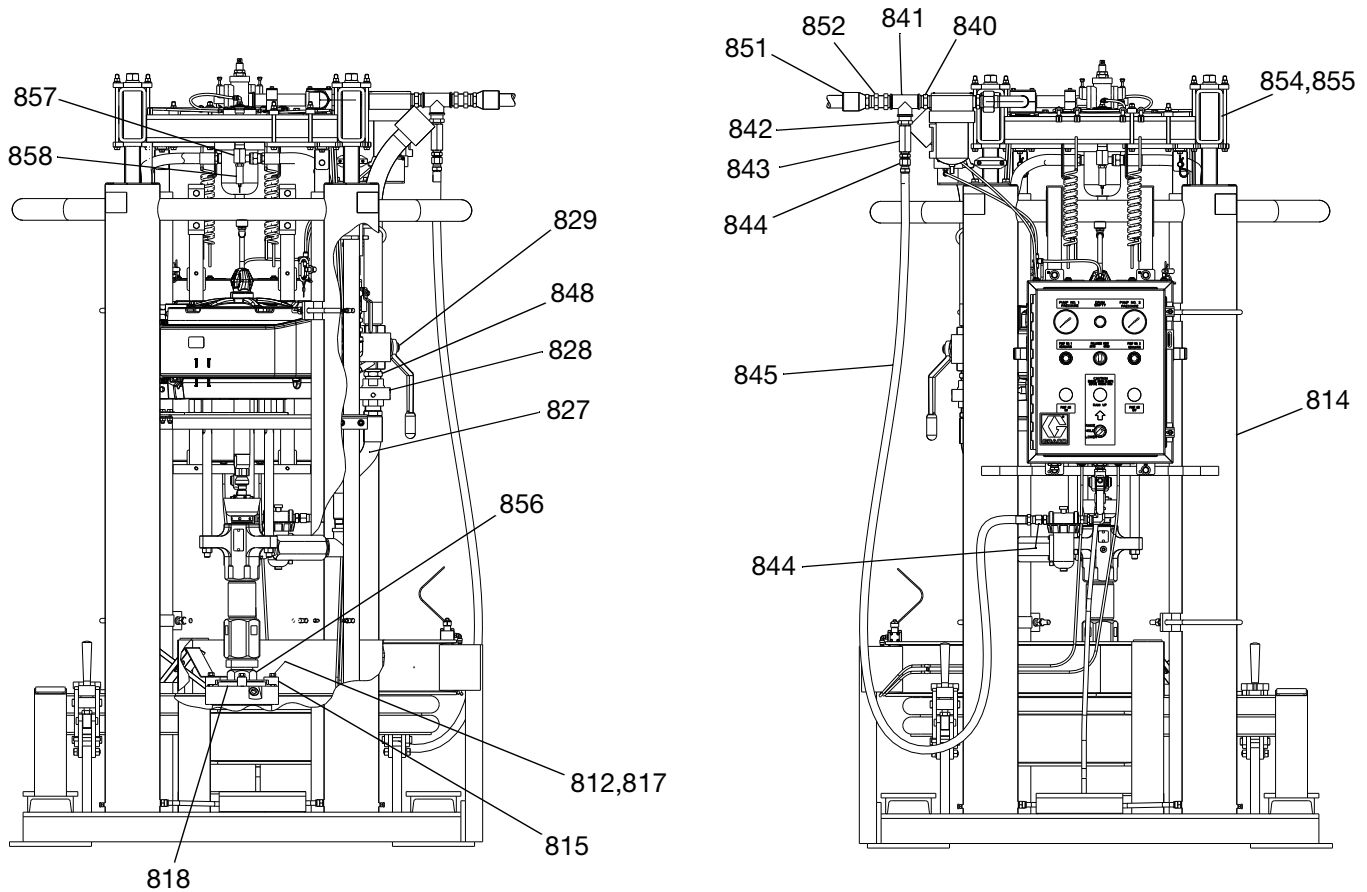


**C58338 - 71:1 Left Hand Supply Unit, with XL10000 carbon steel pump**

**C58601 - 71:1 Right Hand Supply Unit, with XL10000 carbon steel pump**



Parts



**C58338 - 71:1 Left Hand Supply Unit, with XL10000 carbon steel pump**

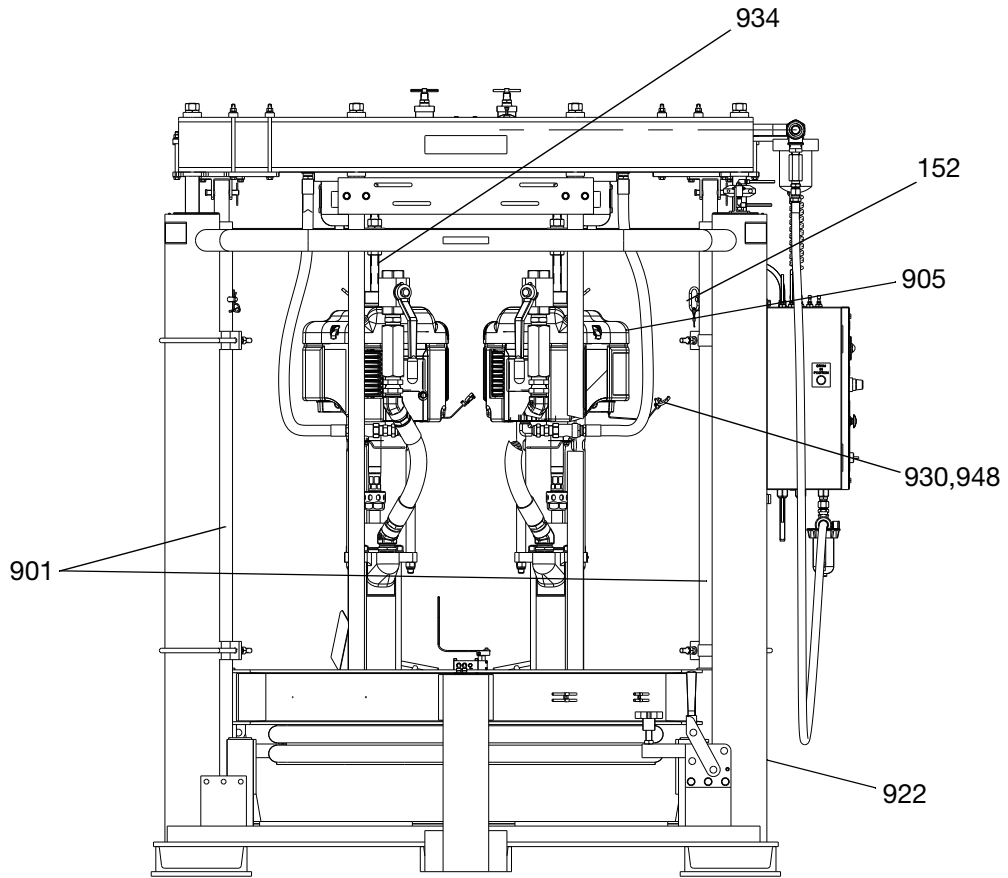
**C58601 - 71:1 Right Hand Supply Unit, with XL10000 carbon steel pump**

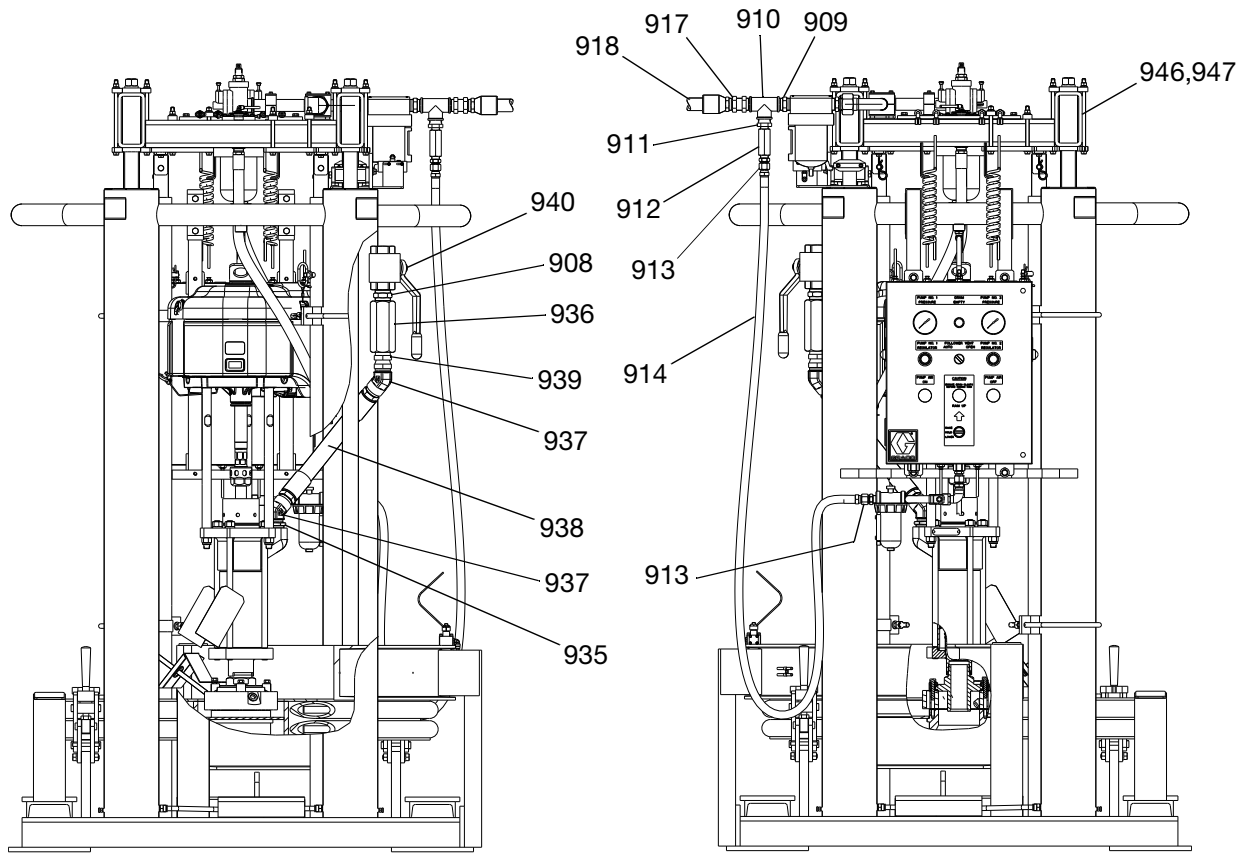
Ref.	Part	Description	Qty.
152	---	PINS, safety, kit, see page 66	1
801	233050	ELEVATOR, RAM 300 gal RH	1
	233066	ELEVATOR, RAM 300 gal LH	
803	C58360	PLATE, adjuster, UniDrum	2
804	C58361	BRACKET, pump support	2
805	C20450	U-BOLT	4
808	C19126	SCREW, cap hex head	4
809	C19200	WASHER, plain	14
810	C19213	WASHER, lock medium	18
811	100307	NUT, hex, 3/8-16 regular	10
812	111803	SCREW, cap, hex hd	8
813	24Y223	PUMP, XL, 71:1	1
	24Y224	PUMP, XL, 71:1	1
815	196073	CLAMP	8
817	100133	WASHER	8
818	109495	PACKING, O-RING	2
823	521850	VALVE, check	2
826	C38324	FITTING, elbow, street	2
827	233058	HOSE, coupled	2

Ref.	Part	Description	Qty.
828	521975	FITTING, union, pipe	2
829	118854	VALVE, ball, high pressure	2
830	070408	SEALANT, pipe, stainless steel	
833	113332	VALVE, ball, vented	2
840	C20489	FITTING, nipple	1
841	106464	TEE, Pipe	1
842	C20463	FITTING, nipple, reducing	2
843	C57799	VALVE, check, 1/2"	1
844	C19019	FITTING, union, swivel	2
845	214656	HOSE, coupled	1
848	C20490	FITTING, nipple, hex	2
851	C12039	HOSE, air	1
852	C19032	SWIVEL, Swivel union	3
860	190166	CYLINDER, intake	2
865	C20465	FITTING, reducing, nipple	1
867	158555	FITTING, nipple, 1x3/4NPT	2
870	120306	VALVE, safety, 85 psi	2
871	94/0398/99	FITTING, 90°, 1" NPT	2

**24R875 - 10:1 Left Hand Supply Unit, with NXT carbon steel pump**

**24R876 - 10:1 Right Hand Supply Unit, with NXT carbon steel pump**





**24R875 - 10:1 Left Hand Supply Unit, with NXT carbon steel pump**

**24R876 - 10:1 Right Hand Supply Unit, with NXT carbon steel pump**

Ref.	Part	Description	Qty.
152	---	PINS, safety, kit, see page 66	1
901	24T263	ELEVATOR, RAM 300 gal RH	1
	24T264	ELEVATOR, RAM 300 gal LH	1
904	24P001	BRACKET, pump support	2
912	111803	SCREW, cap, hex head	8
913	P10LCK	PUMP, duraflo, 6500/100	2
915	276025	CLAMP	8
916	158555	NIPPLE, reducing	2
917	100133	WASHER	8
918	109495	PACKING, O-RING	2
919	237569	WIRE, assy, 25 feet	2
922	C38457	FITTING, coupling reducing	2
923	521850	VALVE, check	2
926	127120	FITTING, elbow, street, 45	2
927	233058	HOSE, coupled	2
928	121447	FITTING, swivel, 1 1/4	2
929	118854	VALVE, ball, high pressure	2

Ref.	Part	Description	Qty.
930	070408	SEALANT, pipe, stainless steel	
933	113332	VALVE, ball, vented	2
940	C20489	FITTING, nipple	1
941	106464	TEE, Pipe	1
942	C20463	FITTING, nipple, reducing	2
943	C57799	VALVE, check, 1/2"	1
944	C19019	FITTING, union, swivel	2
945	214656	HOSE, coupled	1
948	C20490	FITTING, nipple, hex	2
950	160327	FITTING, union, adapter, 90	4
951	C12039	HOSE, air	1
952	C19032	SWIVEL, swivel union	1
960	16V673	CYLINDER, intake, mod	2
965	16A999	FITTING, bushing, hex	2
967	175013	FITTING, nipple, pipe	2

# Pneumatic Logic Panel, 243559

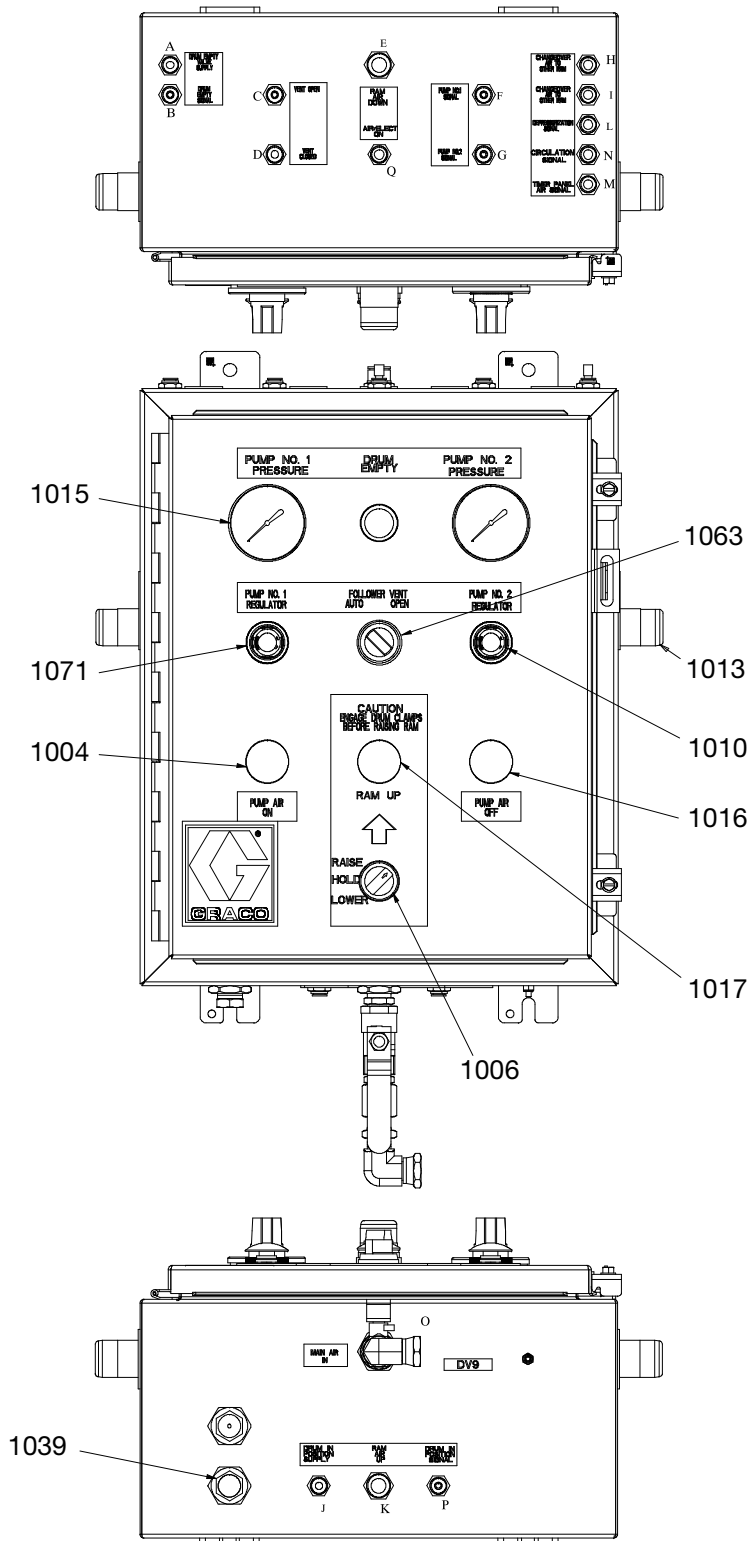


FIG. 20

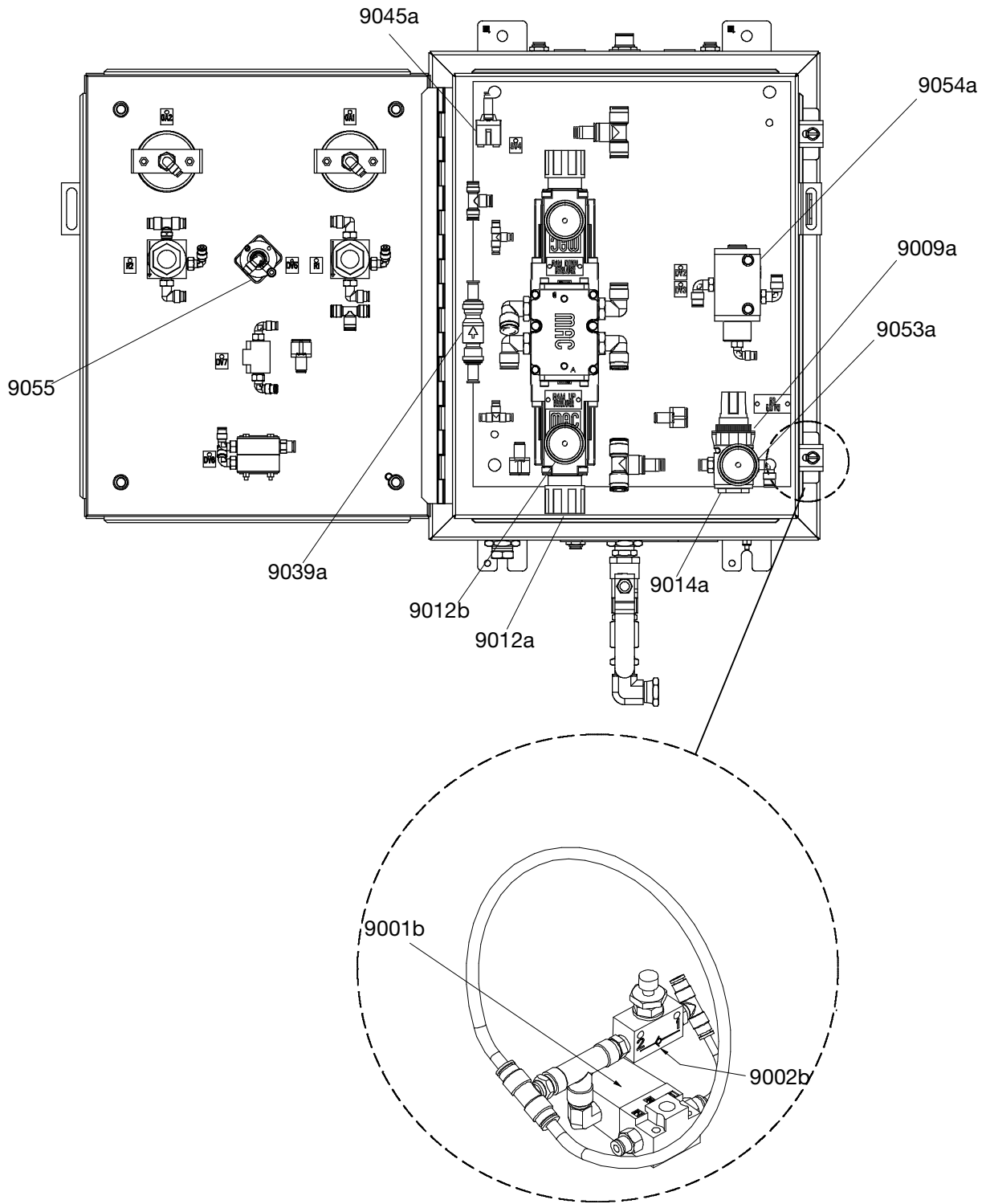


FIG. 21

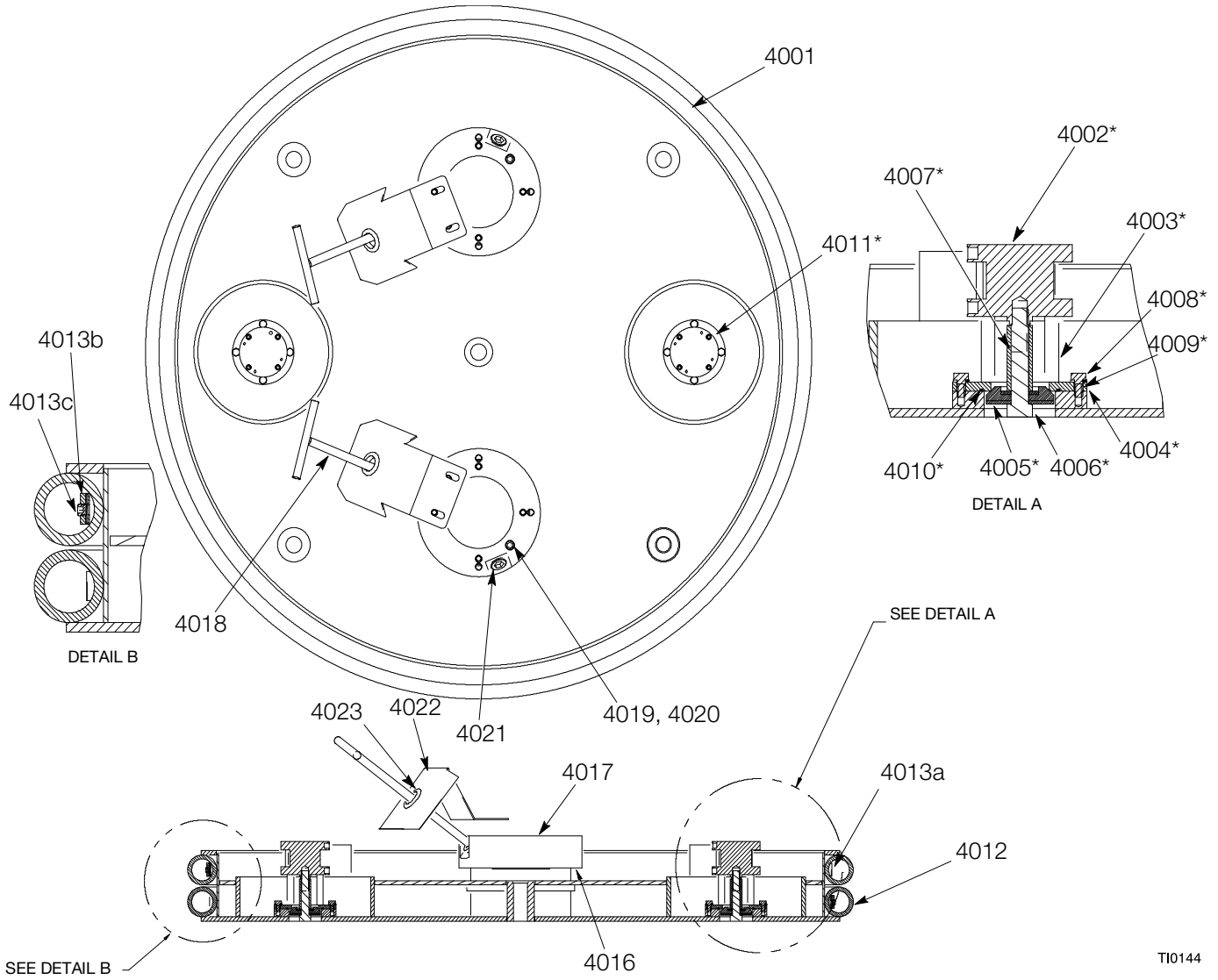
**Pneumatic Logic Panel, 243559**

Ref.	Part	Description	Qty.
1004	517315	VALVE, 3 way, button, palm	1
1005a	125441	VALVE, air, pilot, 4-way, 5 port	3
1006	125504	VALVE, pneumatic, 3 position	1
1008a	125464	VALVE, impulse, one shot	1
1009a	125516	VALVE, pneumatic, logic, OR	6
1010	125506	VALVE, pneumatic, regulator	2
1011	125510	INDICATOR, pneumatic, red	1
1012a	517412	REGULATOR, valve, dual, 4 way	1
1012b	127379	GAUGE, pressure, air, 0-160 psi	2
1013	125459	INDICATOR, pneumatic, green	2
1014a	125507	VALVE, pneumatic, regulator	1
1015	125452	GAUGE, pressure, air, panel mount	2
1016	517314	VALVE, 3 way, button, palm	1
1017	517313	VALVE, 3 way, button, palm	1
1039	125502	FITTING, plug, hex, muffler	1
1051a	125501	VALVE, pneumatic, check, push in	1
1061a	121265	VALVE, remote, air actuated	3
1062a	125511	GAUGE, pressure, air	1
1063	24J876	SWITCH, pneumatic, assembly	1
1071	125505	NUT, pneumatic, regulator, plast	2
1071a	125505	NUT, pneumatic, regulator, plast	1

**Timer Control Valve**

Ref.	Part	Description	Qty.
9001b	121265	VALVE, remote, air actuated	1
9002b	125409	VALVE, flow controller	1

# Follower Plate, 233041



**FIG. 22**

TI0144



**Follower Plate, 233041**

Ref.	Part	Description	Qty.
4001	233040	PLATE, ram	1
4002*	115782	CYLINDER, air	2
4003*	196052	SPACER	8
4004*	196053	PLATE	2
4005	517286	PLUNGER	2
4006*	115783	BOLT, hex hd	2
4007*	196051	SPACER	2
4008*	100333	SCREW, cap, hex hd	8
4009*	100016	WASHER, lock; 1/4 in.	8
4010*	112245	O-RING	2
4011*	115784	SCREW, cap, socket hd	8
4012**	617195	WIPER	2
4013**	24X821	KIT, banding, seal, UniDrum (1 kit per wiper)	1
4013a	---	STRAPPING; steel	144 in.
4013b	---	CLAMP, banding	1
4013c	---	SCREW, set	1
4016	617230	GASKET	2
4017	196072	RING, adapter	2
4018	233044	PLUG, vent	2
4019	C19843	CAPSCREW	4
4020	106115	LOCKWASHER	4
4021	102726	PLUG, pipe	2
4022	196122	SHIELD	2
4023	114269	GROMMET	2

\* *These parts may be purchased separately or in Kit 234958.*

\*\* *These parts may be purchased separately or in Wiper Kit, 918241.*

# Safety Pin Maintenance Kit, 26B772

Left-Handed Unit  
Shown

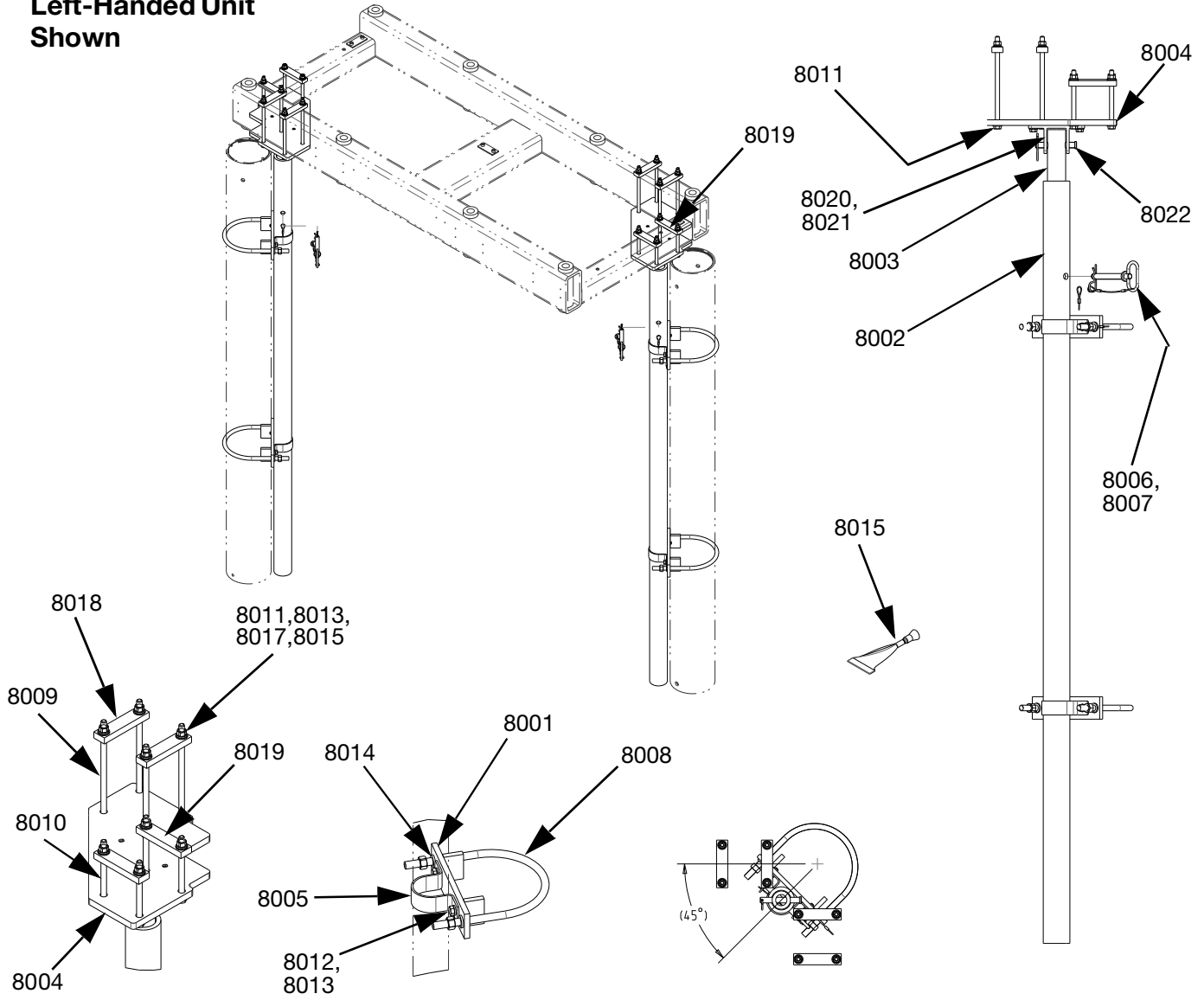


FIG. 23

**Safety Pins, 26B772**

Ref.	Part	Description	Qty.
8001	26B769	BRACKET, cylinder support	4
8002	18D250	TUBE, support, outer	2
8003	18D251	TUBE, support, inner	2
8004	18D249	PLATE, base, lock out	2
8005	133303	STRAP, pipe, 2 in.	4
8006	16Y456	PIN, safety, hitch	2
8007	15G945	CABLE, lanyard, 24 in.	2
8008	15G946	BOLT, U, 1/2 x 8.375	4
8009	133306	SCREW, HHC	8
8010	123389	SCREW	8
8011	101971	WASHER, thrust	32
8012	123284	SCREW, HHC	8
8013	100133	WASHER, lock, 3/8	24
8014	100018	WASHER, lock, spring, 1/2	8
8015	113500	ADHESIVE, anaerobic	1
8017	100307	NUT, hex	16
8018	18D253	PLATE, mounting, u-bolt, 3/8	7
8019	18D254	PLATE, mounting, u-bolt, 3/8, thk	1
8020	18D252	BRACKET, lock out, unidrum	2
8021	113802	SCREW, hex head, flanged	4
8022	133305	PIN, clevis	2

# Elevator Assembly, 248126 and 248127

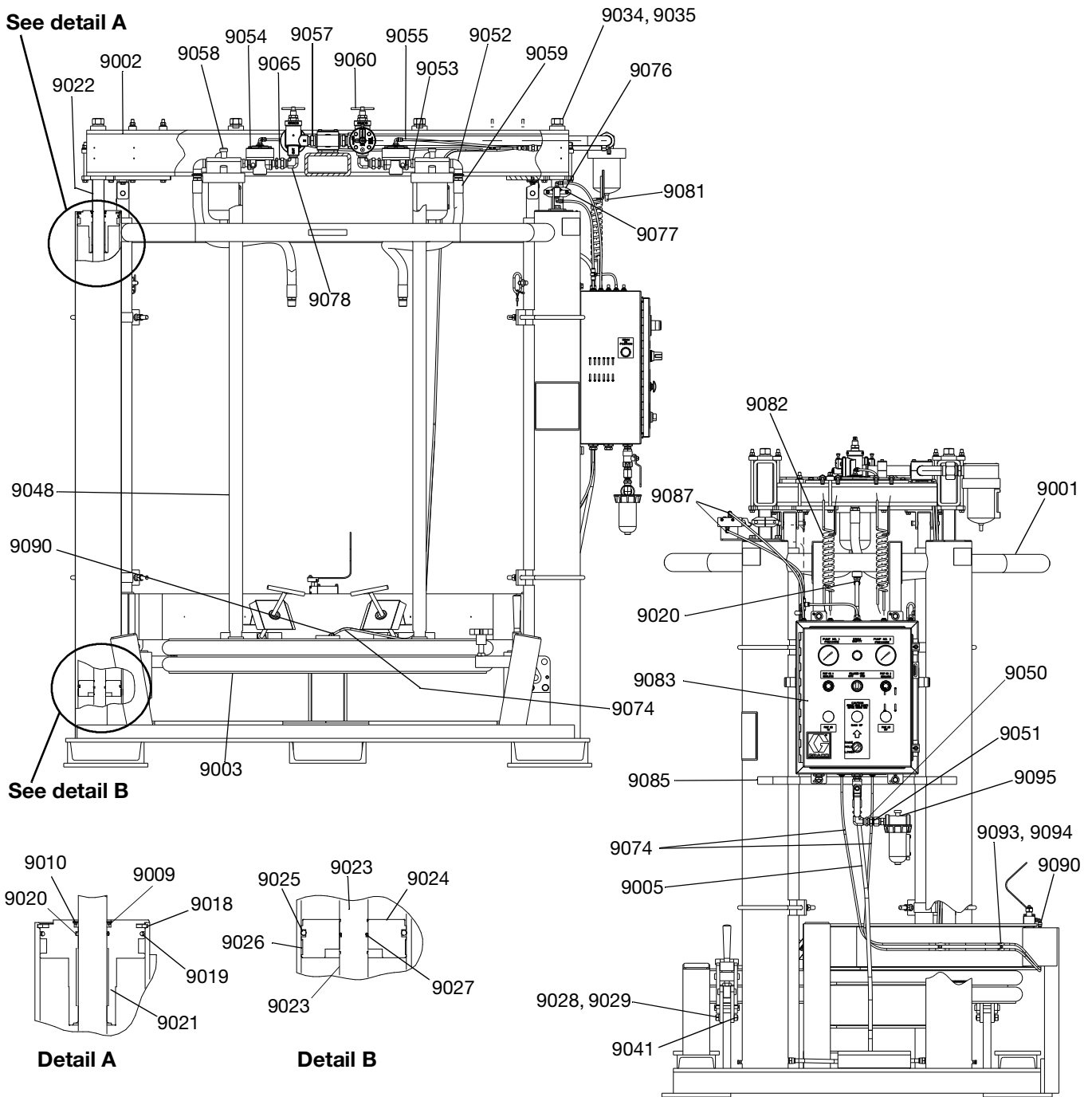


FIG. 24

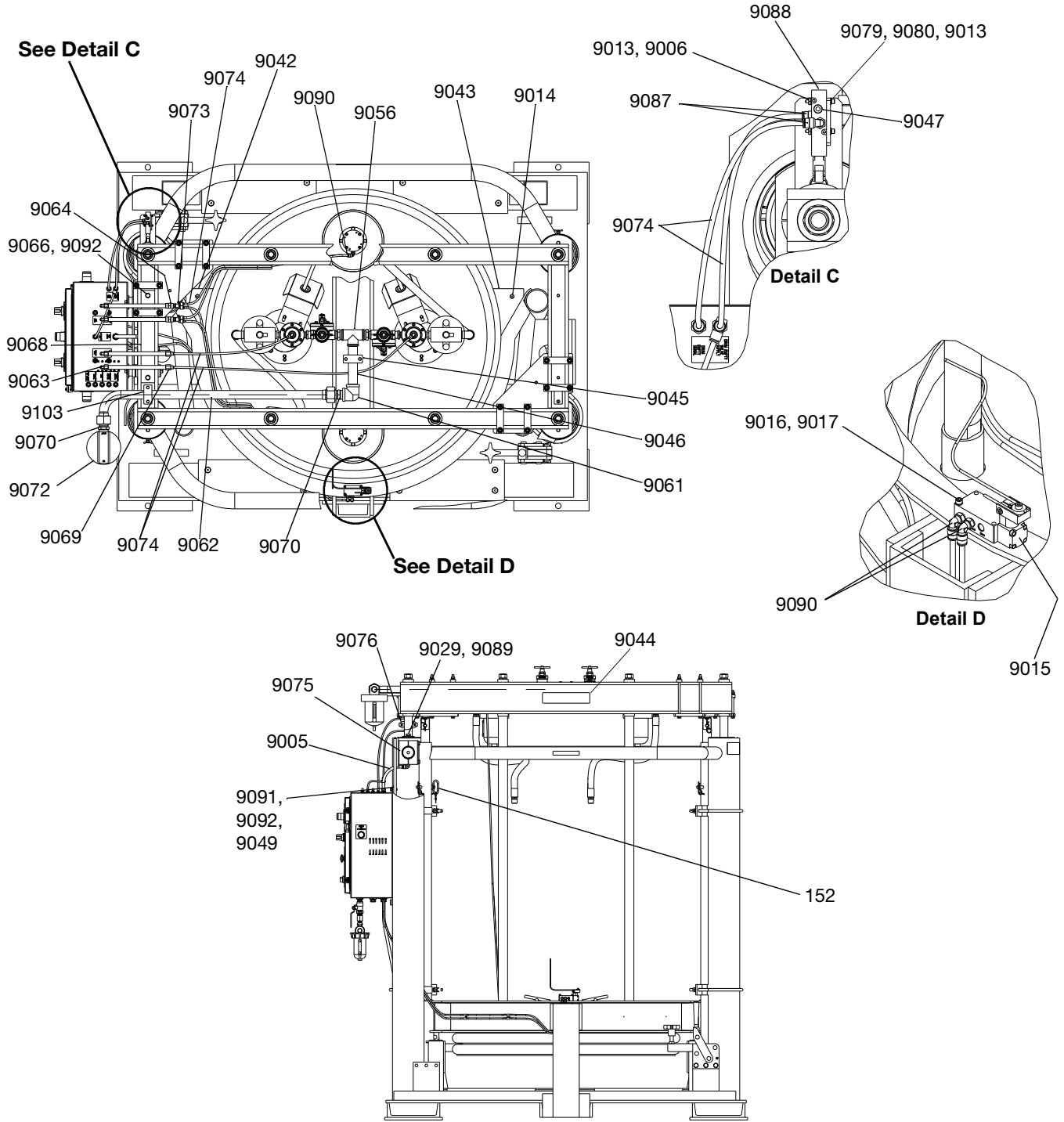


FIG. 25

**Elevator Assembly, 248126 and 248127**

Ref.	Part	Description	Qty.
9001	617206	ELEVATOR, weldment 300 gallon	1
9002	617204	CARRIAGE, weldment 300 gallon	1
9003	233041	PLATE, ram, Neoprene	1
9005	054139	TUBE, nylon	19.8 ft
9006	C19291	NUT, hex	2
9009	C31001	WIPER, rod	4
9010	C03043	RING, snap	4
9013	C19725	WASHER	4
9014	C20811	SCREW, sockethead	12
9015a	115441	ARM, limit switch	1
9015b	C06019	VALVE, limit	1
9016	104472	SCREW, cap	2
9017	100020	WASHER, lock	2
9018	C03042	RING	4
9019	116325	O-RING, packing	4
9020	156593	O--RING, packing	4
9021	C31000	SLEEVE	4
9022	617176	ROD, lift	4
9023	C20417	RING, retaining	8
9024	C03046	PISTON, elevator	4
9025	C20280	O--RING	4
9026	C03047	GUIDE, band	4
9027	158776	O--RING, packing	4
9028	C19130	SCREW, cap, hex	6
9029	100018	WASHER, lock, spring	8
9034	101535	NUT, full hex	8
9035	101533	WASHER, spring lock	8
9041	100321	NUT	6
9042	196084	COVER, right	1
9043	196085	COVER, left	1
9045	516102	CLAMP, pipe	2
9046	114508	NIPPLE, fitting	1
9047	104765	PLUG, pipe	1
9048	617180	ROD, connecting	4
9049	C19200	WASHER, plain	4
9050	C19019	UNION, swivel	1
9051	C20485	NIPPLE, hex	1
9052	100549	ELBOW, street 90°	2
9053	C20461	NIPPLE, reducing	2
9054	515147	REGULATOR, air, 1/2 p	2
9055	C19391	ELBOW, fitting	2
9056	106464	TEE, pipe	1
9057	158555	NIPPLE, reducing	2
9058	214849	LUBRICATOR, air line	2
9059	517290	HOSE	2

Ref.	Part	Description	Qty.
9060	224040	VALVE, runaway	2
9061	C19438	ELBOW, 90°	2
9062	C19630	NIPPLE, 1 npt	1
9063	113532	ELBOW, fitting (f)	4
9064	113093	CONNECTOR, pipe	2
9065	157191	ADAPTER, fitting, 1/2 npt x 3/4 npt	2
9066	100469	SCREW, cap, hex	2
9068	617202	MANIFOLD, air	1
9069	114112	CONNECTOR (f)	2
9070	160022	UNION	1
9072	112859	FILTER, air, 1 npt	1
9073	C20378	FITTING, branch y	2
9074	C12509	TUBE, nylon	54.8 ft
9075	517272	CLAMP	2
9076	617149	ACTUATOR	1
9077	C19810	SCREW, cap	2
9078	160327	UNION, 90°	2
9079	C19965	SCREW, cap	2
9080	C19212	WASHER, lock	2
9081	617265	BRACKET, mounting	1
9082	517288	TUBE, coiled	2
9083	24K173	BOX, pneumatic control	1
9085	617200	SUPPORT, bracket	1
9087	597151	ELBOW, swivel, 1/8 npt	2
9088	C06182	VALVE, air limit	1
9089	100049	SCREW, cap, hex	2
9090	112698	ELBOW, swivel, (m)	6
9091	C19124	SCREW, cap, hex	4
9092	C19213	WASHER, lock	6
9093	517254	CLIP, tube	2
9094	110299	RIVET, blind	2
9095	106149	FILTER, air, 1/2 npt	1
9103	16U212	CLAMP, pipe	
152	---	PINS, safety, kit, see page	1

# Elevator Assembly, 233050, 233066, 24T263, 24T264

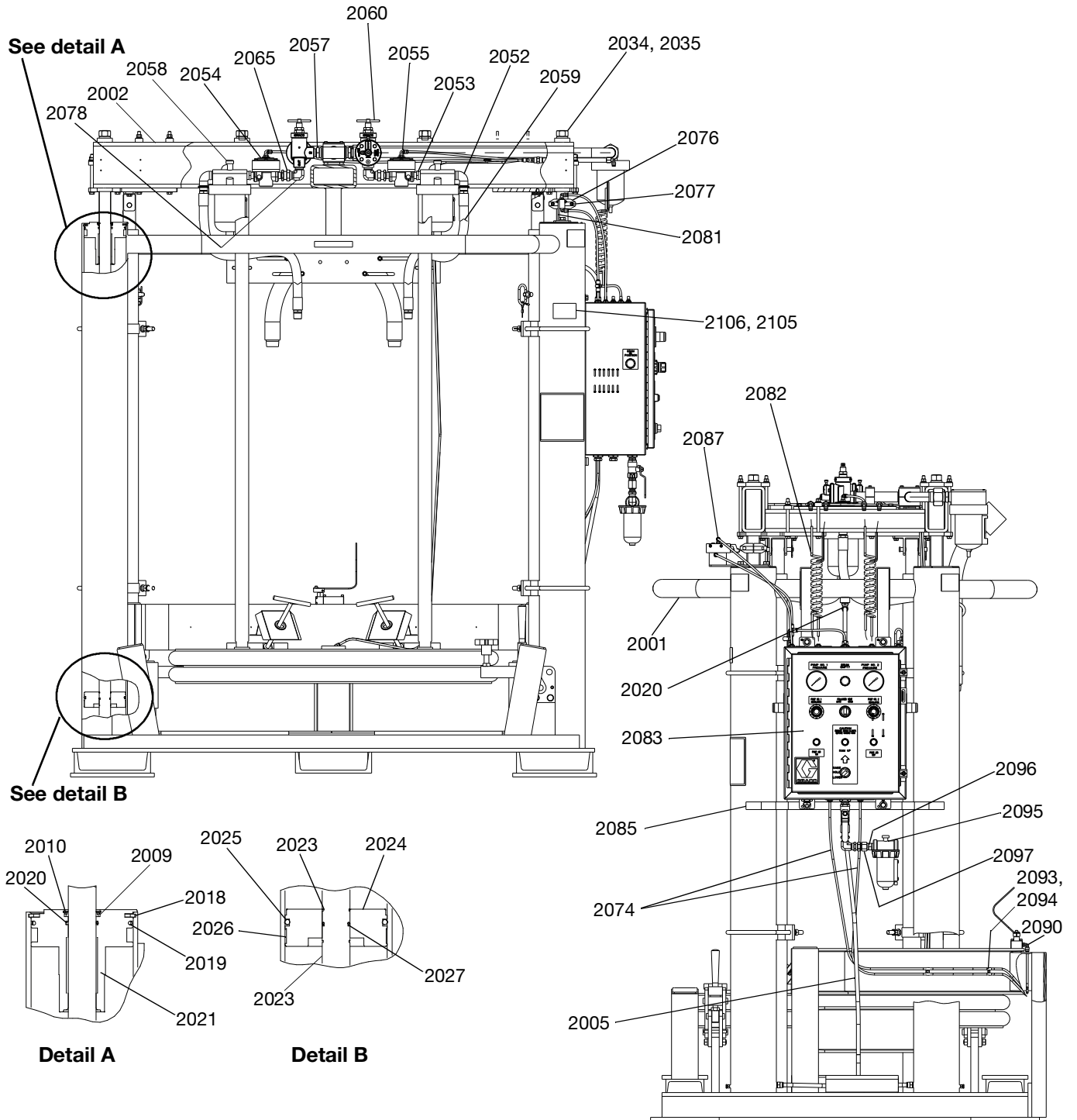
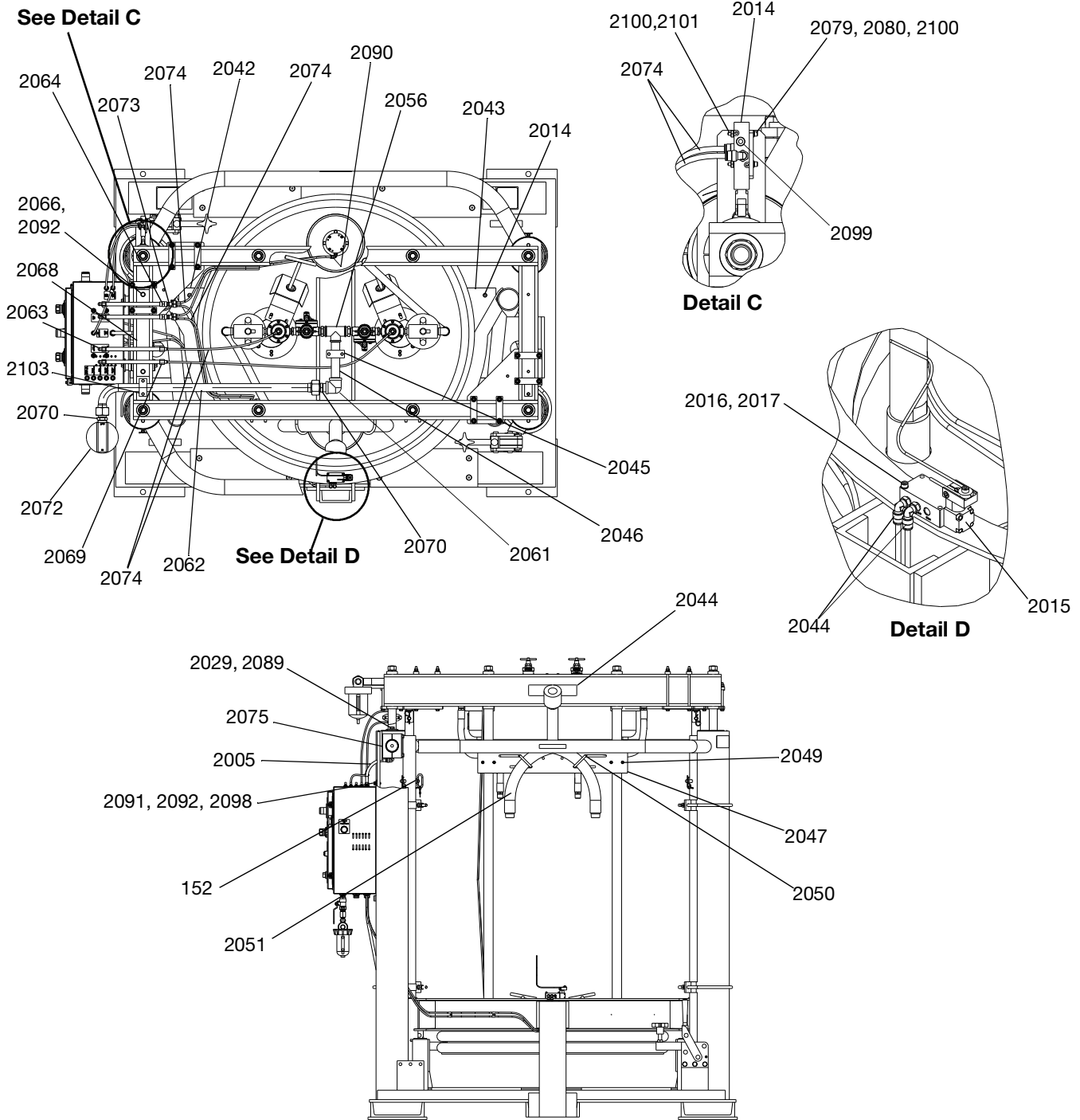


FIG. 26



**FIG. 27**



**Elevator Assembly, 233050, 233066, 24T263, 24T264**

Ref.	Part	Description	Qty.
152	---	PINS, safety, kit, see page 66	1
2001	617206	ELEVATOR, weldment 300 gallon	1
2002	617204	CARRIAGE, weldment 300 gallon	1
2003	233041	PLATE, ram, Neoprene	1
2005	054139	TUBE, nylon	17.8 ft
2009	C31001	WIPER, rod	4
2010	C03043	RING, snap	4
2014	C20811	SCREW, sockethead	12
2015a	115441	ARM, limit switch	1
2015b	C06019	VALVE, limit	1
2016	104472	SCREW, cap	2
2017	100020	WASHER, lock	2
2018	C03042	RING	4
2019	116325	O-RING, packing	4
2020	156593	O--RING, packing	4
2021	C31000	SLEEVE	4
2023	C20417	RING, retaining	8
2024	C03046	PISTON, elevator	4
2025	C20280	O--RING	4
2026	C03047	GUIDE, band	4
2027	158776	O--RING, packing	4
2029	100018	WASHER, lock, spring	8
2034	101535	NUT, full hex	8
2035	101533	WASHER, spring lock	8
2042	196084	COVER, right	1
2043	196085	COVER, left	1
2045	516102	CLAMP, pipe	2
2046	114508	NIPPLE, fitting	1
2047	104765	PLUG, pipe	1
2048	617180	ROD, connecting	4
2049	C19200	WASHER, plain	4
2050	C19019	UNION, swivel	1
2051	C20485	NIPPLE, hex	1
2052	100549	ELBOW, street 90°	2
2053	C20461	NIPPLE, reducing	2
2054	515147	REGULATOR, air, 1/2 p	2
2055	C19391	ELBOW, fitting	2
2056	106464	TEE, pipe	1
2057	158555	NIPPLE, reducing	2
2058	214849	LUBRICATOR, air line	2
2059	517290	HOSE	2
2060	224040	VALVE, runaway	2
2061	C19438	ELBOW, 90°	2
2062	C19630	NIPPLE, 1 npt	1
2063	113532	ELBOW, fitting (f)	4
2064	113093	CONNECTOR, pipe	2
2065	157191	ADAPTER, fitting, 1/2 npt x 3/4 npt	2
2066	100469	SCREW, cap, hex	2
2068	617202	MANIFOLD, air	1
2069	114112	CONNECTOR (f)	2

Ref.	Part	Description	Qty.
2070	C19032	UNION	1
2072	112859	FILTER, air, 1 npt	1
2073	C20378	FITTING, branch y	2
2074	C12509	TUBE, nylon	54.8 ft
2075	517272	CLAMP	2
2076	617149	ACTUATOR	1
2077	C19810	SCREW, cap	2
2078	160327	UNION, 90°	2
2079	C19965	SCREW, cap	2
2080	C19212	WASHER, lock	2
2081	617265	BRACKET, mounting	1
2082	517288	TUBE, coiled	2
2083	24K173	BOX, pneumatic control	1
2085	617200	SUPPORT, bracket	1
2087	597151	ELBOW, swivel, 1/8 npt	2
2088	C06182	VALVE, air limit	1
2089	100049	SCREW, cap, hex	2
2090	112698	ELBOW, swivel, (m)	6
2091	C19124	SCREW, cap, hex	4
2092	C19213	WASHER, lock	6
2093	517254	CLIP, tube	2
2094	110299	RIVET, blind	2
2095	106149	FILTER, air, 1/2 npt	1
2096	617203	SUPPORT, bar	1
2097*	C20450	U-BOLT	2
2098	C20449	U-- BOLT, w/nuts	2
2099	517284	MANIFOLD, discharge	1
2100**	127205	COVER, plate	2
2101**	127207	CLAMP, pair	2
2102**	127209	SCREW, cap, hex head	4
2103**	16W198	BASE, clamp mod	2

\* 233050 and 233066 only.

\*\* 24T263 and 24T264 only.

## Recommended Spare Parts

### Spare Parts for Pump and Air Motor

Refer to the appropriate manual listed in **Related Manuals** on page 3.

### Spare Parts for Ram Plate Assembly

The customer should maintain an inventory of the spare parts (per unit) listed below.

Part	Description	Qty.
918241	WIPER KIT	1
517286*	PLUNGER	2
196053*	PLATE	2
115783*	BOLT	2
196052*	SPACER	8
112245*	O-RING	2
115782*	AIR CYLINDER	2
196051*	SPACER	2
115784*	SCREW	8
617230	GASKET	2
109195	O-RING	4

\* Can be pre-assembled for a quick replacement of vent assembly.

### Spare Parts for Ram Plate Assembly

The customer should maintain an inventory of the spare parts (per unit) listed below.

Part	Description	Qty.
918110	REPAIR KIT	1
108035	FILTER KIT	1

### Optional Long Bleeder Valve

Part	Description	Qty.
190126	BODY, bleeder	1
190128	PLUG, valve	1

# Pneumatic Diagram

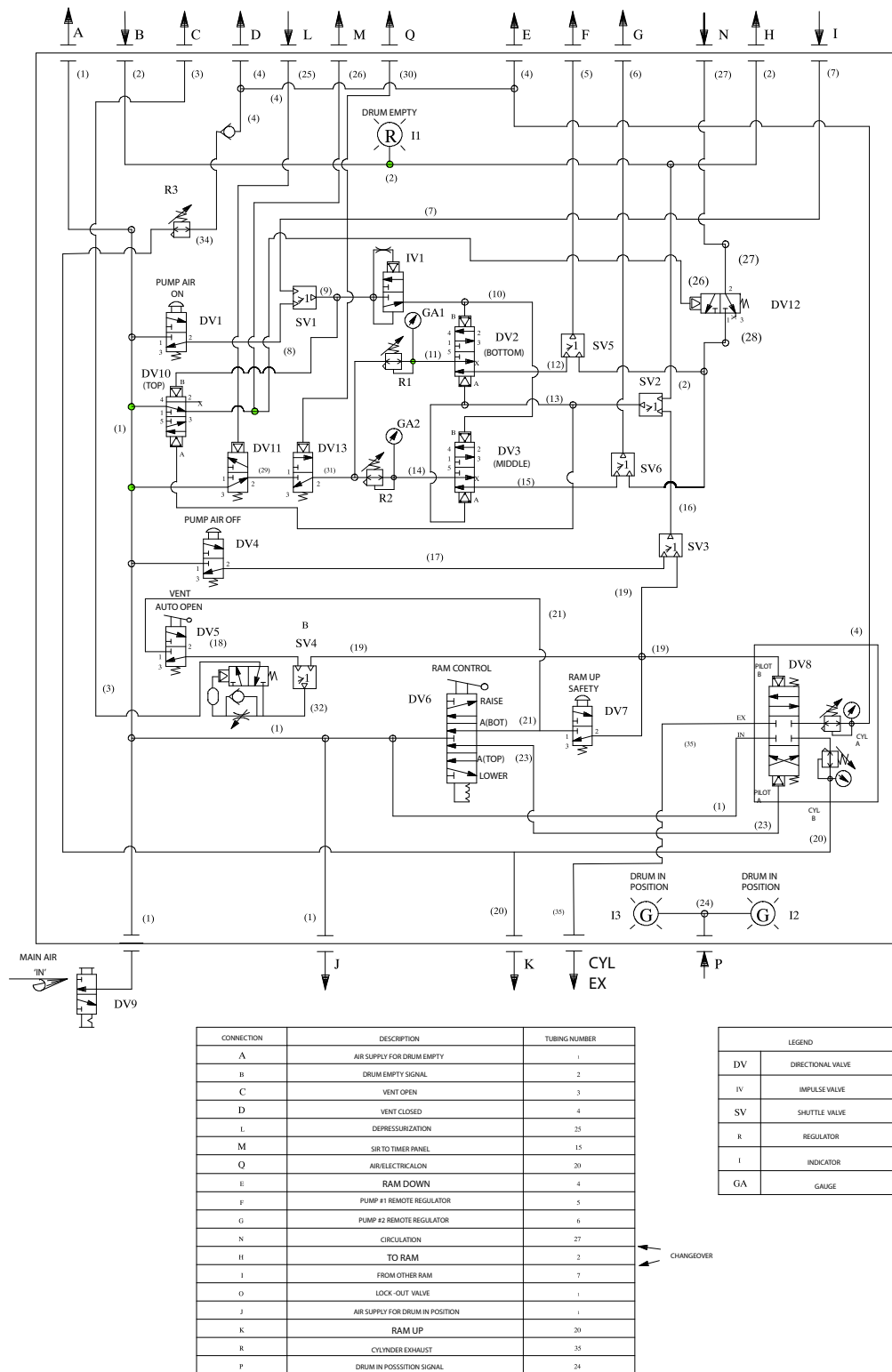


FIG. 28



# Technical Specifications

## Models C59784, C59785

<b>UniDrum Supply System</b>		
	<b>US</b>	<b>Metric</b>
<b>Supply Units (LH and RH)</b>		
Compressed air requirement	80 psi (maximum) (5.5 bar, 0.55 MPa), 450 cfm	
Main air inlet size	1 in. npt(f)	
Overall weight (approximate)	3950 lb	1792 kg
<b>King Pumps</b>		
Ratio	20:1 fluid to air power ratio	
Maximum fluid working pressure	1800 psi (124 bar, 12.0 MPa)	
Maximum air input pressure	90 psi (6.2 bar, 620 kPa)	
Pump cycles	6.5 per 1 gal.	6.5 per 3.8 liters
Recommended pump speed for continuous operation	50 cycles per min	
Maximum flow rate at 50 cycles/min	12.0 gpm	46.0 liters/min
Air motor piston effective area	78.5 in. <sup>2</sup>	506 cm <sup>2</sup>
Stroke length	4.75 in.	120 mm
Displacement pump effective area	3.72 in. <sup>2</sup>	24 cm <sup>2</sup>
Maximum pump operating temperature	180° F	82° C
Air inlet size	3/4 in. npsm(f)	
Fluid inlet size	2 in. npt(f)	
Fluid outlet size	1-1/2 in. npt(m)	
Wetted components	Carbon Steel; Chrome, Zinc, and Electroless Nickel Plating; 304, 440, and 17-4 PH Grades of Stainless Steel; Ductile Iron; Tungsten Carbide; Acetal; PTFE; Leather	
Weight per pump	Approx. 162 lbs.	Approx. 69 kg
<b>Supply System Overall Dimensions</b>		
Width	69 in.	1753 mm
Depth	51 in.	1295 mm
Height (lowered)	85.2 in.	2164 mm
Height (raised)	141 in.	3581 mm

## Models C58607, C58608

<b>UniDrum Supply System</b>		
	<b>US</b>	<b>Metric</b>
<b>Supply Units (LH and RH)</b>		
Compressed air requirement	80 psi (maximum) (5.5 bar, 0.55 MPa), 450 cfm	
Main air inlet size	1 in. npt(f)	
Overall weight (approximate)	3950 lb	1792 kg
<b>King Pumps</b>		
Ratio	56:1 fluid to air power ratio	
Maximum fluid working pressure	5000 psi (345 bar, 34 MPa)	
Maximum air input pressure	90 psi (6 bar, 0.6 MPa)	
Pump cycles	18 per 1 gal.	18 per 3.8 liters
Recommended pump speed for continuous operation	60 cycles per min	
Maximum flow rate at 60 cycles/min	3.4 gpm	12.9 liters/min
Air motor piston effective area	78.5 in. <sup>2</sup>	506 cm <sup>2</sup>
Stroke length	4.75 in.	120 mm
Displacement pump effective area	1.4 in. <sup>2</sup>	9 cm <sup>2</sup>
Maximum pump operating temperature	180° F	82° C
Air inlet size	3/4 in. npsm(f)	
Fluid inlet size	2 in. npt(f)	
Fluid outlet size	1 in. npt(m)	
Wetted components	Carbon Steel; Chrome Steel; Alloy Steel; Chrome, Zinc, and Nickel Plating; 440 and 17-4 PH Grades of Stainless Steel; Ductile Iron; Tungsten Carbide; PTFE; Glass--Filled PTFE	
Weight per pump	Approx. 130 lbs.	Approx. 59 kg
<b>Supply System Overall Dimensions</b>		
Width	69 in.	1753 mm
Depth	51 in.	1295 mm
Height (lowered)	85.2 in.	2164 mm
Height (raised)	141 in.	3581 mm

## Models C58338, C58601

<b>UniDrum Supply System</b>		
	<b>US</b>	<b>Metric</b>
<b>Supply Units (LH and RH)</b>		
Compressed air requirement	80 psi (maximum) (5.5 bar, 0.55 MPa), 450 cfm	
Main air inlet size	1 in. npt(f)	
Overall weight (approximate)	3950 lb	1792 kg
<b>LX 10000 Pumps</b>		
Ratio	71:1 fluid to air power ratio	
Maximum fluid working pressure	5000 psi (345 bar, 34.5 MPa)	
Maximum air input pressure	75 psi (5.2 bar, 0.5 MPa)	
Pump cycles	12.5 per 1 gal.	12.5 per 3.8 liters
Recommended pump speed for continuous operation	40 cycles per min	
Maximum flow rate at 60 cycles/min	4.8 gpm	18.2 liters/min
Air motor piston effective area	132.7 in. <sup>2</sup>	856 cm <sup>2</sup>
Stroke length	4.8 in.	122 mm
Air motor cylinder inside diameter	13 in.	330 mm
Displacement pump effective area	1.86 in. <sup>2</sup>	12 cm <sup>2</sup>
Maximum pump operating temperature	160° F	71° C
Air inlet size	1 in. npt(f)	
Fluid inlet size	2 in. npt(f)	
Fluid outlet size	1-1/2 in. npt(m)	
Wetted components	Carbon Steel; Chrome, Zinc, and Electroless Nickel Plating; 304, 440, and 17-4 PH Grades of Stainless Steel; Ductile Iron; Tungsten Carbide; Acetal; PTFE; Leather	
Weight per pump	Approx. 234 lbs.	Approx. 106 kg
<b>Supply System Overall Dimensions</b>		
Width	69 in.	1753 mm
Depth	51 in.	1295 mm
Height (lowered)	85.2 in.	2164 mm
Height (raised)	141 in.	3581 mm

## Models C58461, C58462, 249154, 249155

UniDrum Supply System		
	US	Metric
<b>Supply Units (LH and RH)</b>		
Compressed air requirement	80 psi (maximum) (5.5 bar, 0.55 MPa), 450 cfm	
Main air inlet size	1 in. npt(f)	
Overall weight (approximate)	3950 lb	1792 kg
<b>XL 10000 Pumps</b>		
Ratio	35:1 fluid to air power ratio	
Maximum fluid working pressure	3400 psi (235 bar, 24 MPa)	
Maximum air input pressure	95 psi (7 bar, 0.7 MPa)	
Pump cycles	6.5 per 1 gal.	6.5 per 3.8 liters
Recommended pump speed for continuous operation	60 cycles per min	
Maximum flow rate at 60 cycles/min	9.2 gpm	34.6 liters/min
Air motor piston effective area	132.7 in. <sup>2</sup>	856 cm <sup>2</sup>
Stroke length	4.8 in.	122 mm
Air motor cylinder inside diameter	13 in.	330 mm
Displacement pump effective area	3.72 in. <sup>2</sup>	24 cm <sup>2</sup>
Maximum pump operating temperature	180° F	82° C
Air inlet size	1 in. npt(f)	
Fluid inlet size	2 in. npt(f)	
Fluid outlet size	1-1/2 in. npt(m)	
Wetted components	Carbon Steel; Chrome, Zinc, and Electroless Nickel Plating; 304, 440, and 17-4 PH Grades of Stainless Steel; Ductile Iron; Tungsten Carbide; Acetal; PTFE; Leather <i>LASD Pumps Only</i> : 304, 329, and 17-4 Stainless Steel, Silicone Nitride, Acetal, PTFE, Ultra High Molecular Weight Polyethylene, Leather	
Weight per pump	Approx. 234 lbs.	Approx. 106 kg
<b>Supply System Overall Dimensions</b>		
Width	69 in.	1753 mm
Depth	51 in.	1295 mm
Height (lowered)	85.2 in.	2164 mm
Height (raised)	141 in.	3581 mm



## Models 246983, 246984, C59793, C59794

UniDrum Supply System		
	US	Metric
<b>Supply Units (LH and RH)</b>		
Compressed air requirement	80 psi (maximum) (5.5 bar, 0.55 MPa), 450 cfm	
Main air inlet size	1 in. npt(f)	
Overall weight (approximate)	3950 lb	1792 kg
<b>XL 10000 Pumps</b>		
Ratio	47:1 fluid to air power ratio	
Maximum fluid working pressure	4500 psi (310 bar, 31.0 MPa)	
Maximum air input pressure	95 psi (7 bar, 0.7 MPa)	
Pump cycles	8.7 per 1 gal.	8.7 per 3.8 liters
Recommended pump speed for continuous operation	60 cycles per min	
Maximum flow rate at 60 cycles/min	6.9 gpm	26.1 liters/min
Air motor piston effective area	132.7 in. <sup>2</sup>	856 cm <sup>2</sup>
Stroke length	4.8 in.	122 mm
Air motor cylinder inside diameter	13 in.	330 mm
Displacement pump effective area	2.79 in. <sup>2</sup>	18 cm <sup>2</sup>
Maximum pump operating temperature	150° F	65.5° C
Air inlet size	1 in. npt(f)	
Fluid inlet size	2 in. npt(f)	
Fluid outlet size	1-1/2 in. npt(m)	
Wetted components	Carbon Steel; Chrome, Zinc, and Electroless Nickel Plating; 304, 440, and 17-4 PH Grades of Stainless Steel; Ductile Iron; Tungsten Carbide; Acetal; PTFE; Leather; Silicon Nitride (models 246983 and 246984 only); UHMW Polyethylene	
Weight per pump	Approx. 234 lbs.	Approx. 106 kg
<b>Supply System Overall Dimensions</b>		
Width	69 in.	1753 mm
Depth	51 in.	1295 mm
Height (lowered)	85.2 in.	2164 mm
Height (raised)	141 in.	3581 mm

## California Proposition 65

### CALIFORNIA RESIDENTS

 **WARNING:** Cancer and reproductive harm – [www.P65warnings.ca.gov](http://www.P65warnings.ca.gov).

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**Graco Headquarters:** Minneapolis

**International Offices:** Belgium, China, Japan, Korea

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