



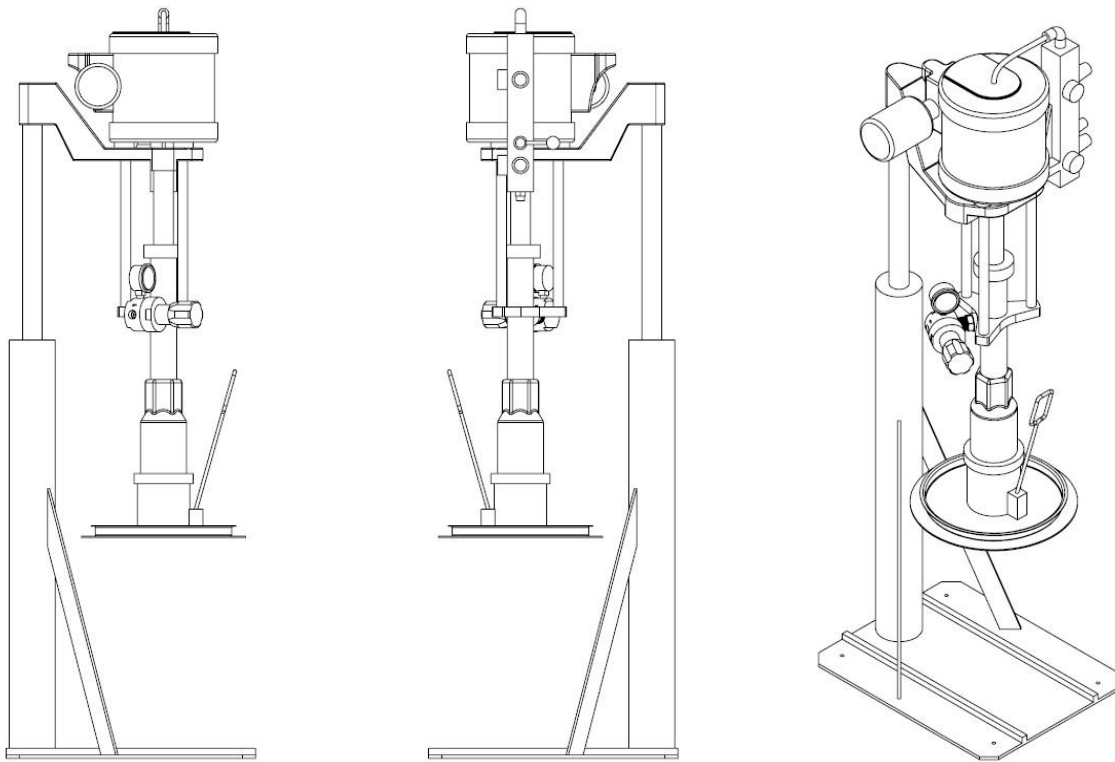
## 5-Gallon Ram Pump (T21286)

### Reference Guide

*(To be used in addendum to Graco-supplied manuals)*

This guide works in conjunction with the supplied operator manual that comes with your Graco Ram Pump. The Ram Pump consists of two major components, the ram and frame style and the size and displacement of the motor. The model ordered is the **S20 frame style with a C11 checkmate air pump**.

Please refer to S20, C11 models when referencing the Graco-supplied manuals.



**Figure 1.** Ram Pump Shown with SG-200 Spray Gun

#### SAFETY

As received, the Graco Ram Pump is bolted and tethered to a wooden pallet. For testing and initial evaluation, the pallet can be used as a temporary “mount”. However, once in production, the Ram Pump should be fastened to the floor for safety.



**WARNING!** Inhalation and/or constant contact with certain materials can be hazardous to your health. To reduce inhalation hazards, ensure adequate ventilation is in place and operational. Protective clothing, organic respirators, face shield, and nitrile gloves are recommended when using fluid transfer equipment.

**WARNING!** *This product is intended for use in industrial compressed air systems only. Do not use this product where pressures and temperatures can exceed material requirements.*

## PARTS & CONNECTIONS

### *Main System Components*

C11 checkmate air pump

S20 (Single Post) frame style

**Manifold Controls**

*Grounding wire (green - not shown)  
to be connected for safety*



### Throat Seal & Packing Nut

- Ensure packing nut is snug/tight. (wrench supplied). Ongoing maintenance schedule required.
- Open cup should have visible lubricant at all times (3 - 5 mL)

### Downstream Material Pressure Regulator

Stainless steel, 150 psi rated

### Material Out

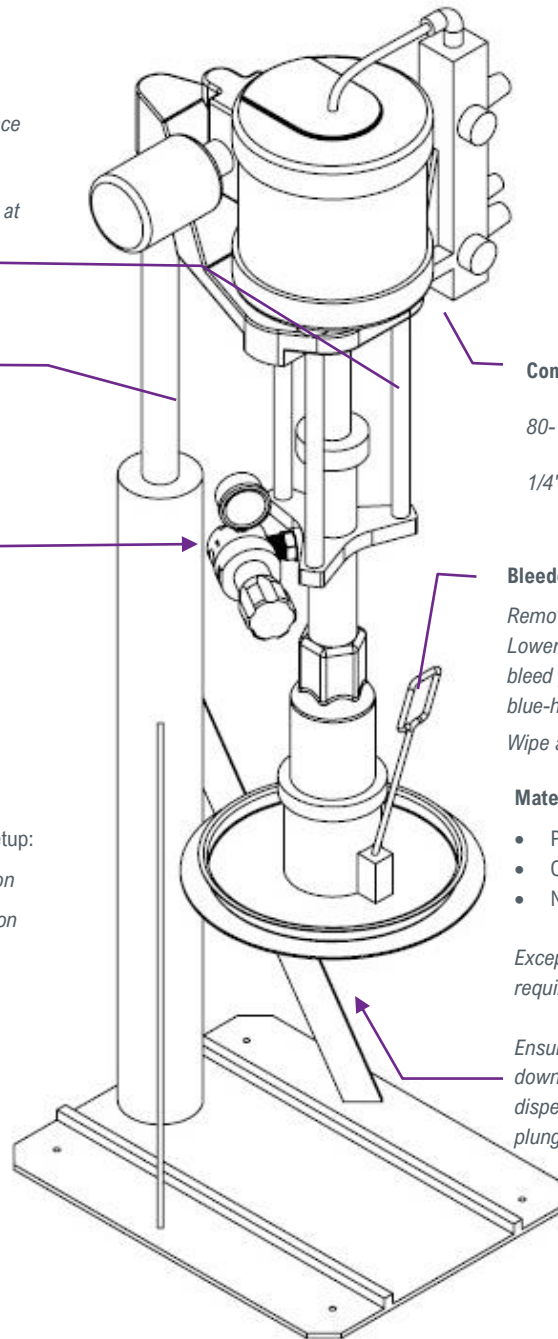
3/8" NPT connection to pipe or high-pressure hose

### Ram Head Accepts 5-Gallon Pails

We configure the heads to customer's setup:

- T21286-001 Straight pail configuration
- T21286-002 Tapered pail configuration (shown)

BOTH HAVE ORANGE WIPER!



### Compressed Air In

80-100 psi dry air recommended

1/4" - 3/8" push-fit tube adapter (supplied)

### Bleeder/Prime Port

Remove when fitting new pail of material  
Lower head into pail until material is visible in bleed port holes. Quickly re-insert and tighten blue-handled plug.

Wipe any excess material from platen

### Material-In

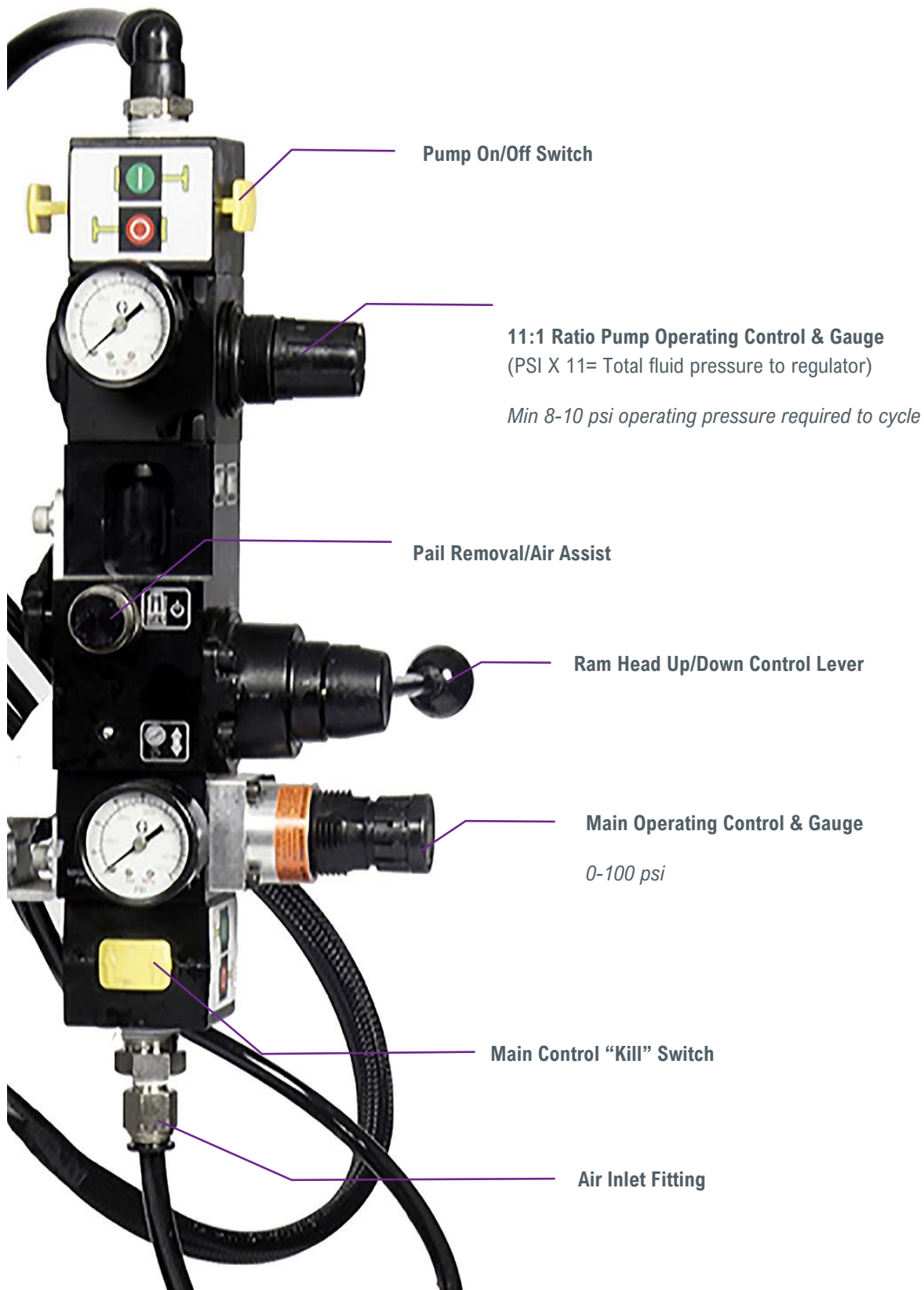
- Positive displacement check valve
- Once primed, suction with "pull" the head down.
- No downward pressure should be required.

Exception: Downward pressure of 1-2 psi may be required for extremely thick material (500K cP+).

Ensure pressure is relieved (Kill switch) at end of shift or downtime. Application of prolonged pressure without dispensing can cause material to "blow" past wiper and plunge to bottom of pail.

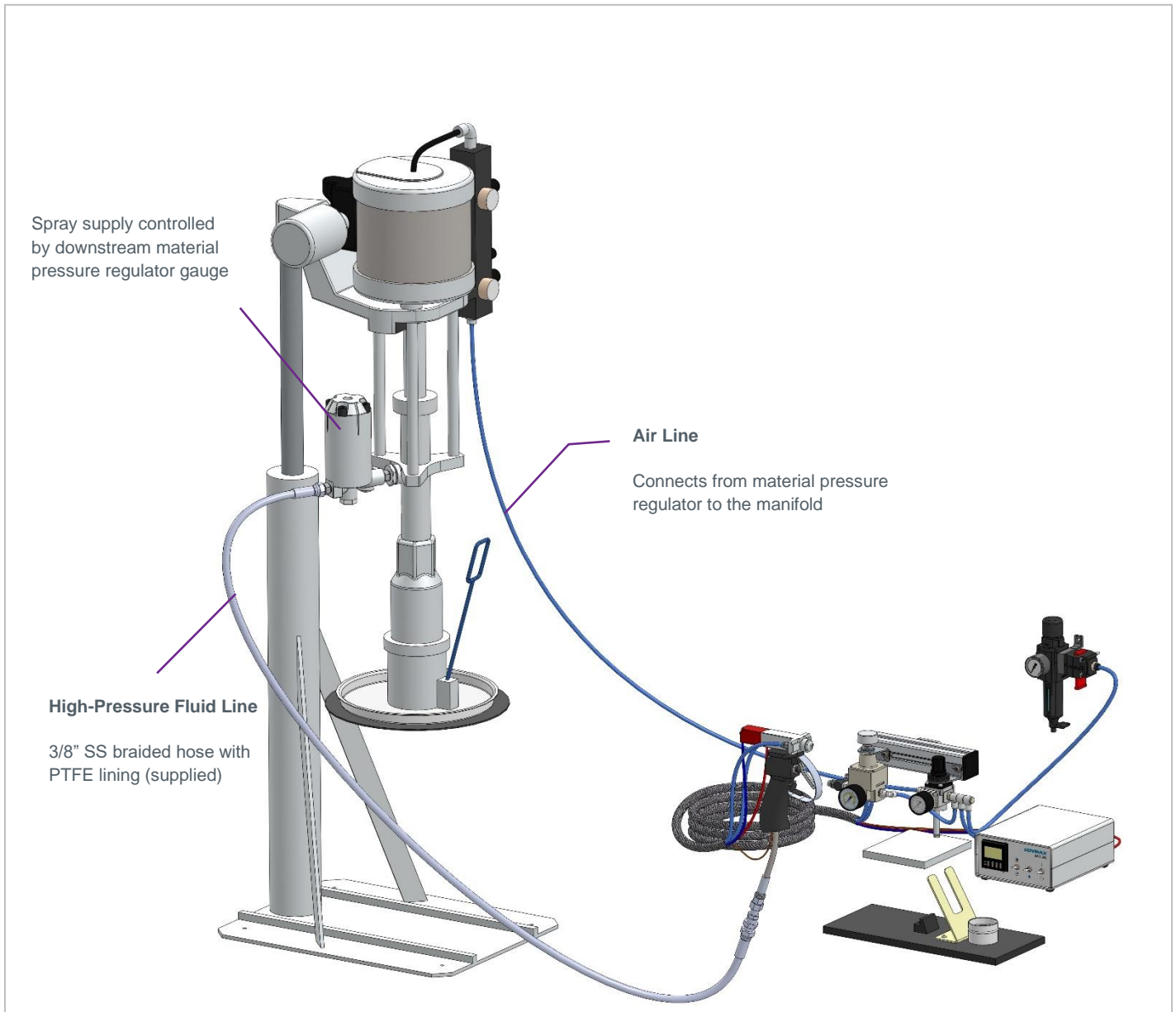
**Figure 2.** Ram Pump System Components

### Manifold Controls



**Figure 3.** Close Up of Manifold Controls

### Example Configuration



**Figure 4.** Typical Configuration of SG-200 Spray System with Ramp Pump

### UPON CUSTOMER RECEIPT: INSTALLATION TIPS

- Do not throw away any spare parts, manuals, throat seal liquid, the packing nut wrench, the quick-start instructions, or the spare wiper kit parts.
- Place the Ram Pump as close to the dispense point as possible. Secure as required.

- Hard piping is suggested when making long runs.
- Point-of-use regulators are available when multiple users and different distances from supply are required. (See Dymax price list)

## MOUNTING

The Graco Ram Pump ships bolted and tethered to a pallet. In-field installation should mount directly to concrete or other structured flooring surface. See the Graco Equipment Manual for details. Grounding connection per application.

## INITIAL SETUP

The Ram Pump is an all pneumatic, check-valve style pump. A clean, dry air supply should be used to connect and drive the Ram Pump. If dry air is not available, a filter regulator with dump can be installed (T16307).

### *Powering the Unit*

1. Remove the banding.
2. Connect the 1/4" Air Line to a clean, dry air supply (60 psi min. - 110 psi max.).
3. Become familiar with the Manifold. The Top Switch/Lever controls the Piston and Air Motor. The Bottom Switch/Lever controls the up/down motion of entire Ram Head when changing Pails.
4. On the Manifold, slide the Bottom Air Switch to the ON position.
5. Slowly move the lever to the UP position. The Ram Head will begin to raise. Maximum distance is approx. 24" - 30" off the floor.

### *Connect High-Pressure Hose*

1. Locate the Out Port of the Downstream Material Regulator.
2. Using a 3/8" NPT Nipple, connect the 3/8" Braided SS Hose to the Downstream Material Regulator.
3. Place the loose end of the Braided SS Hose in a clean bucket. It will be used to purge the line later.

### *Inspect & Prime System*

It is recommended that new equipment is initially primed and washed with Isopropyl Alcohol 91% or equivalent solvent *Please note that the solvent must be compatible with buna, silicone, and PTFE seals.*

This familiarizes users with equipment operation and serves as an operational check before placing the equipment into a production environment.

1. Before starting, ensure that the Ram Motor Actuation Lever is in the OFF position.
2. Inspect Ram Head Bolts (Qty. 2), Bleed Ports, and Regulator connections for tightness.
3. Use the style of Pail (straight vs tapered) that will be used in production.
4. Fill the Pail roughly half full with solvent or IPA wash.
5. Place the Pail under the raised Ram Head.
6. Remove the blue-handled Bleed Port Plug on the Ram Head (keep in hand).
7. Slowly lower the Ram Head into the Pail using the level on the Manifold.
8. Apply downward pressure until fluid begins to purge/spill from the Bleed Port.

**NOTE:** *Stop the downward pressure by returning the Manifold Lever to the "level" OFF position.*

9. Quickly reinsert the blue-handled Bleed Port Plug and retighten to seal. Clean any residue/material around the Bleed Port.

At this point, the Ram Pump Head is resting on the fluid top layer and the system is ready to prime. The check valve displacement will pull the Ram Head downward, so no further downward force should be required from the controls. Leaving force on the Ram Head can result in the Ram Head plunging to the bottom of the pail during periods of downtime.



## **Flush & Purge System**

**NOTE:** Do not use MEK or equivalent caustic solvents. IPA is recommended due to its compatibility with the internal pump components.

1. With the Ram Head in place, secure the loose end of the Braided SS Hose (clamp or handheld) into the bucket. A bucket cover or splash mat is recommended to control any splashing that may occur during flush.
2. Set the Pump Control Gauge between 2-5 psi for the initial flush.
3. Turn on the Pump and cycle until the material flushes fully through the Regulator and the full length of Braided SS Hose.
4. Continue to cycle until the air is displaced and constant flow of fluid is achieved.

The system is now flushed and clean. This material will require purging before initial production.

## **Prepare for Production**

Calculate pressures required.

1. **Set pump psi.** Locate air pump pressure gauge near top of control manifold. This pressure is being magnified by 11x with the C11 checkmate pump. For example: If the pump pressure is set 10 psi, then the fluid pressure being delivered directly from the ram pump is 121 psi.
2. **Set downstream material regulator psi.** Using the hex key, adjust the material flow psi as required. The material regulator assists in minimizing pressure spikes that result during ram pump cycling.

Tips:

- Material flow should usually range between 20-60 psi depending on viscosity.
- The ram pump flow's psi should always be greater than the downstream material regulator's psi to ensure even dispense of fluid material.

## **CONNECT TO VALVE/APPLICATION**

If connecting the ramp pump to the dispense system for the first time, solvent air and foreign matter require purging. To do so:

1. Place the Ram Head in the UP position, with Pump in the OFF position.
2. Remove the blue-handled Bleed Port Screw.
3. Lower the Ram Head into the Pail. Ensure that the style of the Ram Head matches the style of the Pail (straight vs tapered pail).
4. Stop when material purges upward through the Bleed Port. Reinstall the blue-handled Bleed Port Plug and retighten.
5. Place catch containers at the outlet end of the braided hose (or manifold).
6. Turn on the Ram Pump and observe the control pressures.
7. Dial-in the appropriate pump and material regulator pressures until the desired flow rate is achieved without over pressurization.
8. Turn off the Pump Motor
9. With the delivery line now purged, connect the Dispensing Valves or Application Inlets.
10. Turn on the Pump Motor.

#### 11. Purge the Valves and Point-of-Use Implements.

The system is now ready to dispense.

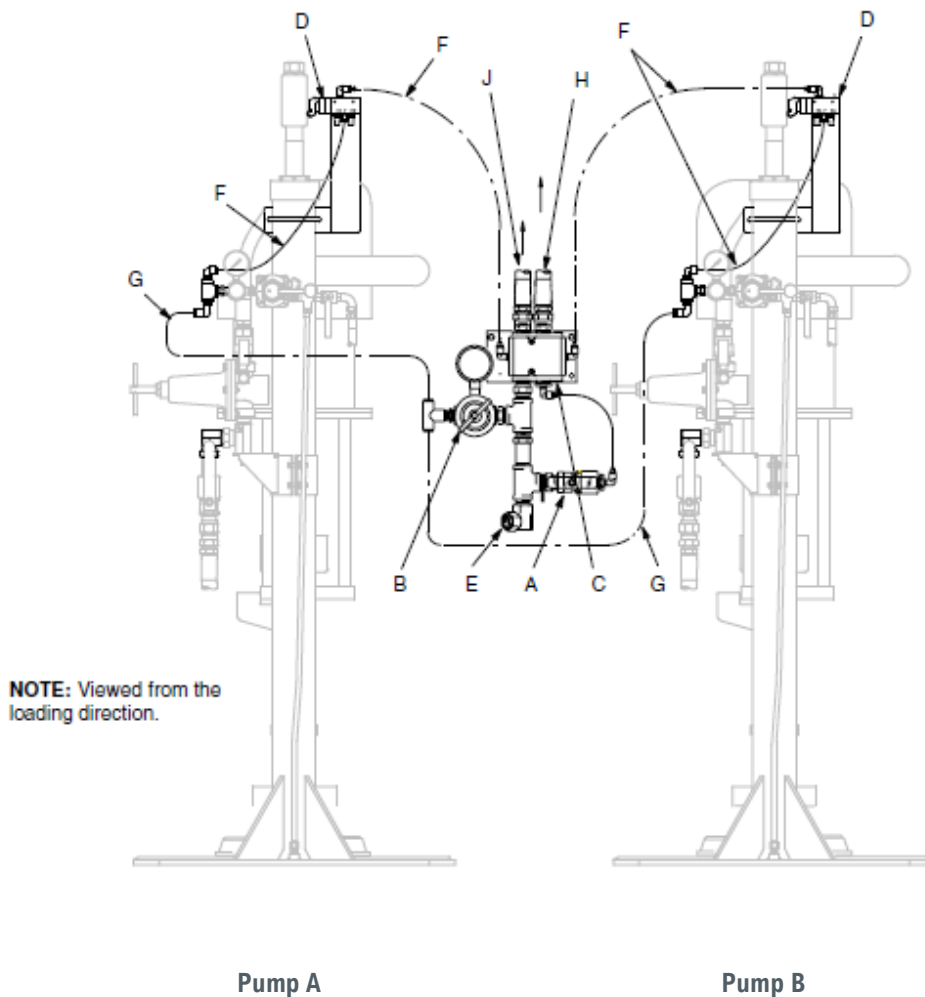
## PRODUCTION OPTIONS: “ENDLESS TANK”

Increase production reliability and reduce downtime with automatic cross-over systems. These simple communication switches turn one pump online when another pump is emptying with material.

## Component Identification and Function

### KEY

- |                                  |                                      |
|----------------------------------|--------------------------------------|
| <b>A</b> Ball Valve              | <b>F</b> 1/4 in. Nylon Tube          |
| <b>B</b> Regulator               | <b>G</b> 3/8 in. Nylon Tube          |
| <b>C</b> 4-Way Piloted Air Valve | <b>H</b> 15 ft. (4.6 m) Coupled Hose |
| <b>D</b> Limit Valves (2)        | <b>J</b> 6 ft. (1.8 m) Coupled Hose  |
| <b>E</b> 3/4 npsm Main Air Inlet |                                      |



Inquire with Dymax Application Engineering or Systems Integration Departments for application solutions.



## MAINTENANCE

Occasional maintenance to the wiper, throat seal, and downstream material regulator gauge should be performed to inspect degradation and ensure proper function.

The ram unit (throat, piston, check valve, head) and downstream material regulator should all be cleaned thoroughly any time material type is changed, or as part of a regularly scheduled maintenance procedure.

## Additional Information/Frequently Asked Questions

### Basic Maintenance

[http://graco.custhelp.com/app/answers/detail/a\\_id/342/kw/cleaning%20ram%20pump/related/1](http://graco.custhelp.com/app/answers/detail/a_id/342/kw/cleaning%20ram%20pump/related/1)

### Replacing Wipers

[http://graco.custhelp.com/app/answers/detail/a\\_id/2100/kw/5%20single%20post](http://graco.custhelp.com/app/answers/detail/a_id/2100/kw/5%20single%20post)

### Pump Cycling, Not Moving Fluid

[http://graco.custhelp.com/app/answers/detail/a\\_id/52/kw/ram%20pump%20install](http://graco.custhelp.com/app/answers/detail/a_id/52/kw/ram%20pump%20install)

### Throat Seal

[http://graco.custhelp.com/app/answers/detail/a\\_id/16/~what-causes-premature-throat-seal-leakage%3F](http://graco.custhelp.com/app/answers/detail/a_id/16/~what-causes-premature-throat-seal-leakage%3F)

[http://graco.custhelp.com/app/answers/detail/a\\_id/2105/kw/cleaning%20ram%20pump](http://graco.custhelp.com/app/answers/detail/a_id/2105/kw/cleaning%20ram%20pump)

### Packing Nut Adjustment

**NOTE:** *Do not over torque the packing nuts. Follow manufacturers specified force requirements with torque wrench.*

[http://graco.custhelp.com/app/answers/detail/a\\_id/396/kw/cleaning%20ram%20pump/related/1](http://graco.custhelp.com/app/answers/detail/a_id/396/kw/cleaning%20ram%20pump/related/1)

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