Engineered Application Solutions

Installation and Operation of Model 8900 Fixed Ratio

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SAFETY WARNINGS

FOR PROFESSIONAL USE ONLY. OBSERVE ALL WARNINGS.

Read and understand all instruction manuals before operating equipment.

MOVING PARTS HAZARD

KEEP HANDS AND FINGERS AWAY FROM THE PRIMING PISTON DURING OPERATION AND WHENEVER A PUMP IS CHARGED WITH AIR to reduce the risk of injury! On the pump downstroke the priming piston extends beyond the intake cylinder to pull the material into the pump. The priming piston works under extreme force. During operation and whenever the pump is charged with air, the priming piston can severely injure or amputate a hand or finger, or break a tool caught between it and the intake cylinder. Always follow the Pressure Relief Procedure before checking, clearing, cleaning, flushing or servicing the pump.

The air motor piston (located behind the air motor shield) also moves when air is supplied to the motor. **NEVER** operate the pump with the air motor shield removed. Before servicing the pump, follow the Pressure Relief Procedure to prevent the pump from starting accidentally.

OBSERVE ALL OTHER MOVING PARTS WITHIN THE SYSTEM. There are many moving parts within the system that could potentially cause injury. **NEVER WORK ON ANY PART OF THE SYSTEM** while the system is running. Turn off and depressurize the system before maintenance is performed.

ELECTRIC SHOCK HAZARD

Beware of **HIGH VOLTAGE** in systems with electrical equipment. **CONTACT WITH LIVE ELECTRICITY CAN BE FATAL**! Be sure all electrical work is performed by a qualified electrician only. Be sure all electrical equipment is installed and operated only in compliance with applicable codes. **MAKE SURE POWER IS DISCONNECTED WHEN SERVICING AND REPAIRING EQUIPMENT**. Have any checks, installation, or service to electrical equipment performed by a qualified electrician only.

FLUID INJECTION HAZARD

General Safety

This equipment conducts fluid at very high pressures. Spray from the dispense gun, leaks, or ruptured components can inject fluid through your skin and into your body and cause extremely serious bodily injury, including the need for amputation. Also, fluid injected or splashed into the eyes or on the skin can cause serious damage.

NEVER point the dispense gun at anyone or at any part of the body. **NEVER** put hand or fingers over the dispense tip.

ALWAYS follow the Pressure Relief Procedure before cleaning or removing the dispense tip, or servicing any system equipment.

NEVER try to stop or deflect leaks with your hand or body.

Be sure all equipment safety devices are operating properly before each use.

Medical Alert - Airless Spray Wounds

If any fluid appears to penetrate your skin, get **EMERGENCY MEDICAL CARE AT ONCE**. **DO NOT TREAT AS A SIMPLE CUT**. Tell the doctor exactly what fluid was injected.

Note to Physician: Injection in the skin is a traumatic injury. It is important to treat the injury surgically as soon as possible. Do not delay treatment to research toxicity. Toxicity is a concern with some exotic coatings injected directly into the blood stream. Consultation with a plastic surgeon or reconstructive hand surgeon may be advisable.

SYSTEM SAFETY DEVICES

Be sure all system safety devices are operating properly before each use. Do not remove or modify any part of the system; this can cause a malfunction and result in serious bodily injury.

SAFETY LATCH

Whenever you stop manually dispensing, even for a moment, always set the manual gun safety latch in the closed or “safe” position, making the manual dispense gun inoperative. Failure to set the safety latch can result in accidental triggering of the dispense gun, which can result in serious injury.

TRIGGER GUARD

Never operate a spray gun with the trigger guard removed. This guard helps prevent the spray gun from triggering accidentally if it is dropped or bumped.

DIFFUSER (only on spray guns)

The spray gun diffuser breaks up spray and reduces the risk of fluid injection when the tip is not installed. Check diffuser operation regularly. Follow the Pressure Relief Procedure, then remove the spray tip. Aim the spray gun into a grounded metal pail, holding the spray gun firmly to the pail. Using the lowest possible pressure, trigger the spray gun. If the fluid emitted is not diffused into an irregular stream, replace the diffuser immediately.

TIP GUARD (only on spray guns)

ALWAYS have the tip guard in place on the spray gun while spraying. The tip guard alerts you to the fluid injection hazard and helps reduce, but does not prevent, the risk of accidentally placing your fingers or any part of your body close to the spray tip.

GUN TIP/NOZZLE SAFETY

Use extreme caution when cleaning or changing dispense gun tips/nozzles. If the tip/nozzle clogs while spraying/dispensing, engage the gun safety latch immediately. **ALWAYS** follow the Pressure Relief Procedure first, and then remove the spray tip/nozzle to clean it.

NEVER wipe off build-up around the tip/nozzle until pressure is fully relieved and the dispense gun safety latch is engaged.

PRESSURE RELIEF PROCEDURE

To reduce the risk of serious bodily injury, including fluid injection, splashing in the eyes or on the skin, or injury from moving parts, always follow this procedure whenever you shut off the pump, when checking or servicing any part of the spray/dispensing system, when installing, cleaning or changing tips/nozzles, and whenever you stop spraying/dispensing.

1. Engage the gun safety latch.
2. Shut off the air to the pump.
3. Close the bleed-type master air valve (required in your system).
4. Disengage the safety latch.
5. Hold a metal part of the spray gun firmly to the side of a grounded metal pail, and trigger the spray gun to relieve pressure.
6. Engage the gun safety latch.
7. Open the drain valve and/or the pump bleeder valve (required in your system), having a container ready to catch the drainage.
8. Leave the drain valve open until you are ready to spray/dispense again.

If you suspect that the gun/tip/nozzle or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, **VERY SLOWLY** loosen the retaining nut or hose end coupling and relieve pressure gradually, then loosen it completely. Now clear the tip/nozzle or hose.

EQUIPMENT MISUSE HAZARD

General Safety

Any misuse of the equipment or accessories, such as overpressurizing, modifying parts, using incompatible chemicals and fluids, or using worn or damaged parts, can cause them to rupture and result in fluid injection, splashing in the eyes or on the skin, or other serious bodily injury, or fire, explosion or property damage.

NEVER alter or modify any part of this equipment; doing so could cause it to malfunction, and will void the warranty.

CHECK all equipment regularly and repair or replace worn or damaged parts immediately.

Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer.

SYSTEM PRESSURE

NEVER exceed the recommended working pressure or the maximum air inlet pressure stated on your pump literature or in the TECHNICAL DATA, of this manual.

Be sure that all spray/dispensing equipment and accessories are rated to withstand the maximum working pressure of the pump. DO NOT exceed the maximum working pressure of any component or accessory used in the system.

MANY FLUIDS EXPAND WHEN HEATED. Extremely high fluid pressures will develop if the expanding material can not flow. These pressures can rupture hoses and other components, which can result in serious injury. **MAKE SURE** a dispense valve is open during start up of heated systems.

HOSE SAFETY

High pressure fluid in hoses can be very dangerous. If a hose develops a leak, split or rupture due to any kind of wear, damage or misuse, the high pressure spray emitted from it can cause a fluid injection injury or other serious bodily injury or property damage.

ALL FLUID HOSES USED WITH A FLEXING MOTION MUST HAVE SPRING GUARDS ON BOTH ENDS! The spring guards help protect the hose from kinks or bends at or close to the coupling which can result in hose rupture.

TIGHTEN all fluid connections securely before each use. High pressure fluid can dislodge a loose coupling or allow high pressure spray to be emitted from the coupling.

NEVER use a damaged hose. Before each use, check the entire hose for cuts, leaks, abrasion, bulging cover, or damage or movement of the hose couplings. If any of these conditions exist, replace the hose immediately. **DO NOT** try to recouple high pressure hose or mend it with tape or any other device. A repaired hose cannot safety contain high pressure fluid.

HANDLE AND ROUTE HOSES CAREFULLY. Do not pull on hoses to move equipment. Do not use fluids which are not compatible with the inner tube and cover of the hose. **DO NOT** expose Graco hoses to temperatures above 82°C (180°F) or below -40°C (-40°F) unless they are specifically rated for such duty, and then only use them when you are sure they are operating within their designed temperature limits.

HOSE GROUNDING CONTINUITY FOR PAINT CIRCULATION SYSTEMS

Proper hose grounding continuity is essential to maintaining a grounded spray system. Check the electrical resistance of your air and fluid hoses at least once a week. If our hose does not have a tag on it which specifies the maximum electrical resistance, contact the hose supplier or manufacturer for the maximum resistance limits. Use a resistance meter in the appropriate range for your hose to check the resistance. If the resistance exceeds the recommended limits, replace it immediately. An ungrounded or poorly grounded hose can make your system hazardous. Also, read **FIRE OR EXPLOSION HAZARD**.

FIRE OR EXPLOSION HAZARD FOR PAINT CIRCULATION SYSTEMS

Static electricity is created by the high velocity flow of fluid through the pump and hose. If every part of the spray equipment is not properly grounded, sparking may occur, and the system may become hazardous. Sparking may also occur when plugging in or unplugging a power supply cord. Sparks can ignite fumes from solvents and the fluid being sprayed, dust particles and other flammable substances, whether you are spraying indoors or outdoors, and can cause a fire or explosion and serious bodily injury and property damage. Do not plug in or unplug any power supply cords in the spray area when there is any chance of igniting fumes still in the air.

If you experience any static sparking or even a slight shock while using this equipment, **STOP SPRAYING IMMEDIATELY**. Check the entire system proper grounding. Do not use the system again until the problem has been identified and corrected.

GROUNDING FOR PAINT CIRCULATION SYSTEMS

To reduce the risk of static sparking, ground the pump, object being sprayed, and all other spray equipment used or located in the spray area. **CHECK** your local electrical code for detailed grounding instructions for your area and type of equipment. **BE SURE** to ground all of this spray equipment:

1. *Pump:* use a ground wire and clamp.
2. *Air hoses:* use only grounded air hoses.
3. *Fluid hoses:* use only grounded fluid hoses.
4. *Air compressor:* follow manufacturer's recommendations.
5. *Spray gun:* grounding is obtained through connection to a properly grounded fluid hose and pump.
6. *Fluid supply container:* according to your local code.
7. *Object being sprayed:* according to your local code.
8. *All solvent pails used when flushing, according to your local code.* Use only metal pails, which are conductive, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts the grounding continuity.
9. To maintain grounding continuity when flushing or relieving pressure, always hold a metal part of the spray gun firmly to the side of a grounded metal pail, then trigger the spray gun.

FLUSHING SAFETY

Before flushing a spray system, be sure the entire system and flushing pails are properly grounded. Refer to **Grounding**. Follow the Pressure Relief Procedure, and remove the spray tip/nozzle from the spray gun. Always use the lowest possible fluid pressure, and maintain firm possible fluid pressure, and maintain firm metal-to-metal contact between the spray gun and the pail during flushing to reduce the risk of fluid injection injury, static sparking and splashing.

ATTENTION OPERATIONS AND MAINTENANCE PERSONNEL

Safety glasses, gloves and long sleeved clothing are sensible and highly recommended precautions when working with industrial dispensing equipment.

HEATED SYSTEMS

PUR HEATED MATERIALS: Some heated systems are designed to dispense **PUR** materials. Those systems are supplied with ventilation hoods and proper ventilation requirements, as well as specially designed system components. **DO NOT** dispense **PUR** material with your heated system **UNLESS** your system is designed for that purpose **AND** the proper ventilation equipment is installed and proper ventilation equipment is installed and operational. Failure to adhere to these cautions may result in damage to the system equipment and/or injury to the equipment users.

HOT MATERIALS BURN! Extreme care should be taken when working with or around heated materials. Severe burns can result if skin contact occurs.

WEAR PROTECTIVE CLOTHING! Cover all exposed skin; always include a face shield, arm shields and gloves.

OVERHEATED MATERIAL IS DANGEROUS! Do not exceed the maximum temperature recommended by the material supplier. Turn off the electricity if the material exceed the maximum temperature.

OBSERVE MATERIAL HANDLING RECOMMENDATIONS! It is your responsibility to provide adequate ventilation for this system and to properly dispose of waste materials as recommended by the material supplier.

2.0 REQUIRED AIR SUPPLY

1. Install a 1/2” air supply line to the main air control.
2. Connect all of the pneumatics for the supply units.

3.0 INITIAL START-UP

1. Check all material hoses and fittings to insure tightness to prevent any material leakage.
2. Turn the air motor air supply on both pumps to zero.
3. Turn the main air supply “ON”.
4. Raise each ram to its full up position.
5. Continue with material loading.

4.0 INITIAL MATERIAL LOADING

NOTE: Verify that all material passages are open to allow the system to fill properly. Open all material ball valves; coupled ball valves, upward is open.

NOTE: Load the catalyst material first, and then repeat this procedure for the resin material.

1. Open a container of the proper material and locate it under the elevated ram.

   NOTE: Whenever container changes are required, remove the cover from the container of new material by lifting it straight up and held flat. Tipping the cover may allow accumulated dirt and trash to spill into the container, which may result in damage to the equipment.

2. Lubricate the follower seal with grease or petroleum jelly.
3. Before lowering the pump into the container, make sure that nothing is between the follower plate and the container or between the ram tie bar and the top of the ram posts.
4. Lower the ram into the container.

   a. To lower the pump and follower into the container, move the ram control handle to the down position.

   b. As the follower enter the container, loosen the air bleed stick. Removing the bleed stick allows trapped air between the follower plate and the top of the material to escape. When air stops exhausting from the bleed stick port, replace and tighten the bleed stick.

5. Disconnect the hoses between the supply pumps and the meter assembly and hold it over a material waste container, SLOWLY adjust the air motor regulator to approximately 40 PSI. This will allow the material passage to fill.

6. Dispense material until air-free material is dispensed.

7. Turn “OFF” the air supply tot he air motors and re-connect the dispense valve.

5.0 EMPTY CONTAINER CHANGING

CAUTION
Gloves, long sleeved clothing and eye protection should always be worn when working with industrial dispensing equipment.

When a container of material is empty, the following procedures are to be followed when loading a new container of material.

1. Raise the ram out of the container:

   With the ram air supply regulator set at 15-20 PSI, turn the ram control knob to the “UP” position. At the same time, equalize the pressure in the container by cycling the container blow off control open and closed.

   NOTE: (A) Not enough blow off pressure when raising the follower plate from the container will cause the container to rise into the air. (B) Too much blow off pressure may cause the follower plate to exit the container at a quick rate of speed.

2. With the ram completely out of the container, remove the empty container.

3. Being careful not to damage the follower seal, scrape any hardened material or material build up from the follower plate and seal.

4. Remove the lid from a new container of material. Remove any other packing materials from the container, exposing the material. Make sure that there are not any foreign materials on the material surface. Place the container under the raised follower plate.

5. Lower the ram into the container:

   With the ram air supply regulator set at 30-40 PSI, turn the ram control knob to the “DOWN” position. At the same time, loosen the material bleed stick to allow air to escape from between the follower plate and the top of the material. When all of the air has escaped, tighten the bleed stick.

   NOTE: (A) Failure to tighten the bleed stick will result in material leakage onto the follower plate.

6. Refer to the component forms for further information.

6.0 FILLING THE METER WITH MATERIAL

NOTE: The following procedures assume that the supply units are filled with material up to the meter.

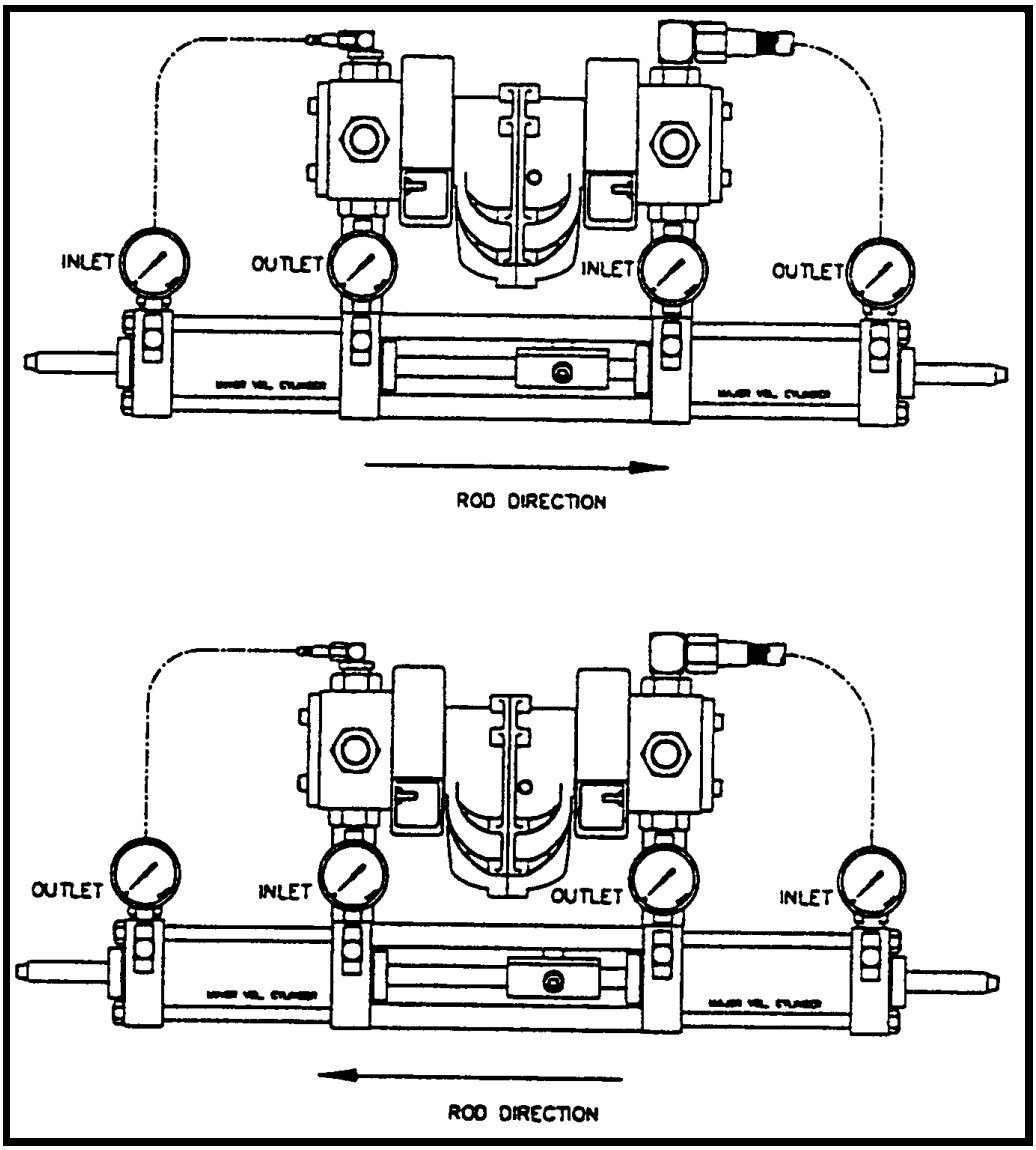
1. Open the material ball valve on the minor volume pump outlet (if present).
2. Open the coupled ball valves mounted on the boom assembly.
3. Open the base purge ball valve.
4. Open the dispense gun.
5. Place a material waste container under the open dispense gun.
6. Turn air to the system “ON”.
7. Leave the major volume pump ball valve closed (if present).
8. Adjust the minor volume supply pump air pressure to allow smooth pumping action. Continue this until catalyst material flows from the dispense point into the material waste container.

   NOTE: The minor side of the meter is filled first to minimize waste of material during the initial start up.

9. Now open the major volume pump ball valve. Adjust the supply pump air pressure on the base pump to allow smooth pumping action. Continue this until a mixture of base and catalyst material begins to flow from the dispense gun into the material waste container, then, remove air pressures.
10. Close the dispense gun.
11. The meter is now full of both major and minor volume material.
12. Turn main air “OFF”.
13. Close the coupled ball valves, ball valves “DOWN”.
14. The base purge ball valve should already be open (if equipped), if it is not, then open it.
15. Turn main air to the system back “ON”.
16. Allow base material to flow from the dispense gun until no trace of catalyst appears.
17. Close the dispense gun.
18. Turn “OFF” main air to the system.

7.0 FLOW RATE ADJUSTMENT

The dispensing flow rate for the system is controlled by the material pressure of the base (major volume) and catalyst (minor volume). The air pressure on the base pump will generally determine the amount of flow coming from the material outlet. Use the following procedure to initially establish the flow rate; adjustments may be made after complete set up in order to establish the proper flow rate.



The above diagram shows the inlet and outlet of the meter cylinders in relationship to the direction of rod movement. The material pressure gauges will either represent inlet or outlet pressure, depending on the direction of the rod. The inlet and outlet pressures are very critical when establishing meter flow rates and balanced pressures.

7.0 FLOW RATE ADJUSTMENT (continued)

The following procedures assume that the meter is full of material and air to the system is on.

1. With the supply pump air pressures both set to zero, open the pump ball valves to the meter.

2. Open the dispense gun and place a material waste container under the outlet.

3. Adjust the major volume (base) air motor until the inlet and outlet pressure gauges on the base side read approximately 500 PSI.

4. The catalyst outlet gauge should also be reading approximately 500 PSI. Note the direction that the rod is moving to make sure that your are looking at the correct gauge.

5. Adjust the minor volume (catalyst) air motor until the inlet catalyst gauge equals the outlet catalyst pressure.

   NOTE: The catalyst meter gauges will not necessarily be equal to the base meter gauges. However, it is imperative that the inlet and outlet pressure for the catalyst meter cylinder by balanced.

6. To change the flow rate, change the major volume material pressure first. Note the outlet pressure created on the minor volume outlet, and then match the minor volume inlet with the minor volume outlet by changing the minor volume air motor pressure.

   NOTE: For 1:1 proportions, adjust both feed pump regulators up or down together to achieve the desired flow rate.

8.0 DAILY START-UP PROCEDURES

1. Turn air pressure “ON” to the unit.
2. Open the coupled ball valve s(push up).
3. Make certain that the base purge ball valve is closed.
4. With a material waste container under the gun outlet, open the dispense gun.
5. Dispense material until well mixed material is being dispensed.
6. The system is now ready to operate.

9.0 DAILY SHUT-DOWN PROCEDURES / PURGE PROCEDURES

9.1 BASE PURGE SYSTEM

1. Close the coupled ball valves (push down).
2. Open the base purge ball valve.
3. Hold the dispense gun over a material waste container.
4. Hold the dispense gun open until only major volume material (base) is evident.
5. Close the base purge ball valve.
6. Close the main air valve located under the meter base plate to remove air pressure from the meter.

NOTE: After the system is purged, do not open the dispense gun until the next system operation.

9.2 DISPOSABLE MIXER SYSTEM

1. Remove mixer and discard.
2. Trigger gun to be sure outlet are clear.
3. Turn off main air valve
4. Wiper off nose of gun.
5. If material is moisture sensitive or dies out, protect outlet with night cap and ISO pump oil.

10.0 RATIO CHECK

Checking the ratio allows the user to take samples of the metered material to ensure that the equipment is metering properly.

NOTE: The unit meters by volume, but it is more convenient to check the ratio by weight. It will be necessary for you to know the ratio by weight or the specific gravity of the materials to convert volumetric ratio to weight ratio.

1. Close meter outlet coupled ball valves (push down) located on the meter base plate.
2. Hold the dispense gun open over a material waste container, to relieve pressure.
3. Remove the dispense hoses from the gun. Take the material sample form the outlet of these hoses.
4. Open coupled ball valves (push up) and collect a large material sample in separate cups. Material flowing from exposed cone checks provide a sample for ratio check. When sample is collected, close coupled ball valves.
5. Weigh the base and catalyst samples remembering to subtract the weight of the cup.
6. Convert material manufacturer's ratio to "parts catalyst per 100 parts base by weight". For example, a 2:1 ratio (base:catalyst) becomes 100:50.
7. Divide catalyst sample weight by base sample weight.
8. Multiply the result of Step 7 (above) by 100. The product is the parts catalyst dispensed by the machine per 100 parts base, by weight.
9. Compare the weight ratio obtained to the desired weight ratio. Repeat to obtain several successful ratio checks.
10. Put new mix elements in the gun and reconnect the hoses.

10.0 RATIO CHECK PROCEDURE (continued)

EXAMPLE

Conversion Formula:

Parts by Volume (PBV) to Parts by Weight (PBW)

$$\frac{\text{Parts Catalyst by Volume}}{\text{Parts Base by Volume}} \times \frac{\text{Specific Gravity Catalyst}}{\text{Specific Gravity Base}} \times 100 = \mathbf{X}$$

X = 100 : Parts Catalyst by Weight

RATIO CHECK EXAMPLE

$$\frac{\text{Catalyst Sample Weight LESS Container Weight}}{\text{Base Sample Weight LESS Container Weight}} \times 100 = \textbf{PRODUCT}$$

PRODUCT = PARTS CATALYST PER 100 PARTS BASE

- Manufacturer's specified weight ratio = 4:1 or 100:25.
- Weight of Base in ratio check is 245 grams.
- Weight of Catalyst in ratio check is 61.2 grams.
- 61.2 divided by 245 (61.2 / 245 = .2497) equals .2497.
- .2497 x 100 = 24.97 parts catalyst per 100 parts base.

Three ratio checks are recommended to ensure accuracy at final set-up. The presence of any air (visible or not visible) in the material or system will result in inaccurate ratio checks. If the ratio check cannot be made with repetitive accuracy, review air bleed procedures.

NOTE: Some materials contain substantial amounts of entrained air due to manufacturing, transportation, set-up of system, or drum change. Air must be removed (through de-gassing, recirculation, or self removal over time) before accurate metering can be accomplished.

11.0 RAM MAINTENANCE PROCEDURES

1. Clean build up material from the follower seals/wiper during every barrel change. Use an object/scraper without any sharp edges. If the follower seals/wiper are cut during cleaning, you will need to replace them.

2. To prohibit material adhesion to follower components, it is advisable to coat the exterior of the follower with a thin coat of lubricant, petroleum jelly or 10W oil. This will ease maintenance/clean-up in the future.

3. Frequency of service will depend on the duty cycle, lubricator maintenance and the quality of the air supply. Approximate rebuild every 3 year.

12.0 AIR MOTOR MAINTENANCE PROCEDURES

1. Do not let the air motor drive an empty/unprimed pump. If the air motor is driving quickly on one or both strokes, it can potentially destroy itself. This is unnecessary wear and tear that can be prevented.

2. Make certain that the air motor has a quality, lubricated air supply.

3. Frequency of service will depend on the duty cycle, lubricator maintenance and the quality of the plant air supply. Approximate rebuild every 3 year.

13.0 PUMP MAINTENANCE PROCEDURES

1. Clean trail material build-up from the pump rod and throat packing reservoir **daily** to extend pump packing life.

   NOTE: Graco TSL (Part #206-995) or 10W Non-Detergent oil may also be added to packing reservoir to help prohibit trail material on the rod. Check with your material supplier for compatibility. For moisture sensitive materials, use ISO pump oil (Part #217-394).

2. Pump packings should be checked and tightened as required at intervals corresponding to barrel changes.

   a. Dump air supply to air motor.

   b. Relieve static material pressure in the pump by opening the pump bleed port.

   c. Use the pump packing wrench provided to tighten and check packings.

   d. Do not over tighten by using a leverage bar-took, “hand” tight is sufficient.

3. Recommend total pump tube rebuild **bi-annually**.

4. Recommend pump packing replacement **annually** or as required.

14.0 DISPENSE VALVE MAINTENANCE

1. Teflon tape is recommended as a pipe thread seal, but care should be taken not to over tighten fittings.
2. Never attempt to tighten fittings or service guns while system is pressurized.
3. Gun should be supplied with only enough material pressure to dispense at the required rate of flow.
4. When performing service, always use a proper size wrench and secure parts in a soft jawed vise or chuck.
5. Care must be taken not to scar or nick valve parts, particularly those that pass through packings or function as a seal.
6. Never soak o-rings in solvent if they are to be used in reassembly.
7. Care should be taken to prevent o-rings and rubber components from being damaged as parts are pressed or threaded together.
8. To purge air form the system (especially on low viscosity materials) the hose should be held on an upward slope from the supply source with the gun open at the highest point.
9. Rebuild interval will vary with material and frequency of use, approximately 6-12 months.

MAINTENANCE INSTRUCTIONS

Refer to the individual component forms for maintenance instructions on other system components.

15.0 TROUBLESHOOTING GUIDE 8900 SERIES METERING UNIT

PROBLEM	CAUSE	SOLUTION
Inconsistent Material Mix	Material inlet pressures are not set correctly	Follow flow rate procedures
	Mix elements not assembled correctly or need replacing.	Fix or replace.
	Cylinder cups are bypassing material.	Replace cylinder cups.
	Material outlet hoses are not sized correctly.	Call Graco Tech Service (612) 379-3622.
	Material ball valves are bypassing.	Rebuild/replace.
	Insufficient air supply to material supply pumps.	Verify consistent air supply
	Purge valve open.	Close, during operation.
Meter Pressures Never Change	Broken material gauge(s)	Replace.
Meter will not Shift at the End of the Stroke	Limit valve not working correctly.	Rebuild.
	No material inlet pressure	Verify
	No air supply to limit valve	Verify
Meter will not Move at All	Material inlet pressure not enough to drive meter	Verify low pressure on the gauges before increasing
	4-way ball valve orientation incorrect.	Check, fix.
	Dispense valve closed.	Open.
	Blockage in material hose.	Depressurize system and repair.
	Blockage in meter assembly	Depressurize system and repair.
Material leaking from Meter End Caps	Seals worn	Replace
	End caps loose.	Hand tighten with wrench provided.

15.0 TROUBLESHOOTING GUIDE
RAM

PROBLEM	CAUSE	SOLUTION
Ram won't raise or lower	Closed air valve or clogged air line	Open, clear
	Not enough air pressure.	Increase
	Director valve closed or clogged	Open, clear
	Worn or damaged piston/rod	Replace
Ram raises or lowers too fast	Air pressure too high	Decrease
Air leaks around cylinder lift rods continually while the ram is in the DOWN position	Worn upper seals in the ram post(s)	Replace
Air leaks around cylinder lift rods continually while the ram is in the UP position.	Worn piston seals in the ram post(s)	Replace
Fluid squeezes past follow plate seals/wipers	Ram down pressure too high	Decrease
	Worn or damaged seal/wipers	Replace