Instructions

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EN

Dispensit® - 702-20

Usage Statement – Depending on valve configuration this valve can be used to dispense the following:
Wide range of water-thin to medium viscosity material.

Dispense Valve

100*psi (0.69 MPa, 6.9 bar) Maximum Working Pressure*

Important Safety Instructions
Read all warnings and instructions in this manual.
Save these instructions.

See Page 3 for model information, including maximum working pressure and approvals.

DISPENSIT® MODEL 702-20
DISPENSE VALVE
OPERATING & MAINTENANCE MANUAL

GENERAL INFORMATION

The Model 702-20 Dispense Valve is designed for applications that require ON/OFF dispensing of beads and/or dots. It has dispensing capability for material viscosities ranging from water-type material to high viscosity epoxies and metal filled pastes. This valve also has a fail-safe design to prevent material dumping in case of a power failure. All wetted parts are disposable for easy maintenance and cleaning. The 702-20 ships complete with the following:

- Model 702-20 Dispense Valve
- One 3 foot (.9 m) section of pneumatic air line
- One package of replacement dispense tubes (type as ordered)
- Seal Kit
- Operating and Maintenance Manual
- Syringe (comes with syringe option)
- Optional syringe clamp (comes with syringe option)
- Receiver Cap with air lines (comes with syringe option)

SAFETY INFORMATION

This product should be used only by employees who have been given appropriate training and safety warnings as set forth in this manual. Read completely before operating.

Warning: Do not exceed 6.9 bar (100 psi) pressure on the operating system or 4.1 bar (60 psi) pressure on the syringe reservoir. Higher pressures are not required and may cause a serious hazard.

Toxicity and flammability hazards depend upon the product being dispensed by this unit, and the user should take appropriate safety precautions as indicated on the MSDS of the product.

Always wear safety glasses.

ILLUSTRATION REFERENCES

Throughout this manual you will find references by illustration item number to the illustrations in the manual. The references are indicated by parentheses around a number such as: (7). Illustrations represent typical valve configurations. The drawings for your exact model are inserted at the back of the manual and include the part numbers for ordering replacement parts.

GENERAL ACCESSORIES

Graco Inc. offers a full line of standard and custom accessories for your dispensing needs including:

- Valve Controllers
- Syringe Feed Systems
- Cartridge Retainers and Pressure Reservoirs
- Transfer Pump Feed Systems for 1, 5 and 55 gallon containers
- Mounting Bases and Brackets

Consult your Dispensit dealer or the factory for details.

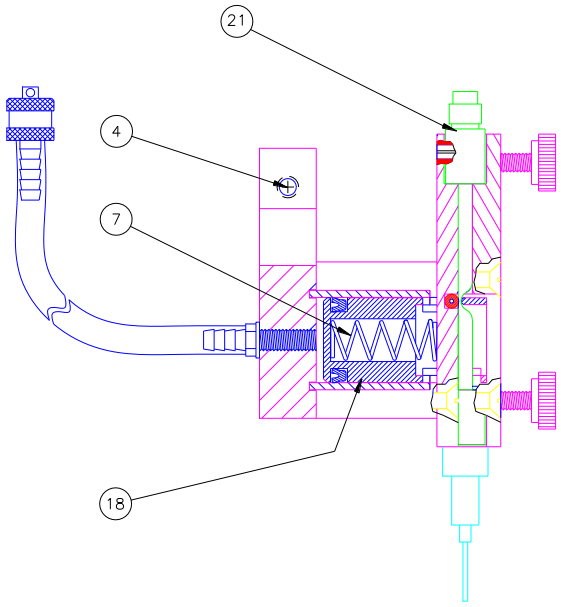
DESCRIPTION OF OPERATION

1. The normal ready state of the system is as follows:
   - The syringe or remote reservoir contains the dispensable material.
   - The system has been purged, filling the dispense tube and needle with material.
   - The Pinch-off Piston (18) is not pressurized, but is held back by the Spring (7) closing the Dispense Tube (21) and holding back the dispensable material.

2. The dispense cycle begins when the controller is activated.

3. The Pinch-off Piston (18) moves forward to release the dispense tube allowing material to flow.

4. To complete the dispense cycle, the Pinch-off Piston (18) is pushed back by the Spring (7), sealing the dispense tube to prevent material drip. The system is again in the normal ready state.



SETUP PROCEDURE

MOUNTING DISPENSE VALVE

For optimum operation, the Model 702-20 Dispense Valve must be mounted on a 1/2 inch (12.7 mm) support rod post or frame. When mounting, affix the valve firmly in place by tightening the socket head cap screw (4) with a 5/32 inch Allen wrench. Depending on the application, the valve may be tilted to a maximum of 60^0 from the vertical.

AIR CONTROLLER

Operation of the Model 702-20 Dispense Valve requires a controller that can provide the following:

- A minimum of 0.5 SCFM (2.3 cm^3) of dry, unlubricated air at a minimum pressure of 4.8 bar (70 psi) and a maximum of 6.9 bar (100 psi).
- Time delay capability to allow the valve to cycle.
- Independent air pressure regulators for material reservoir and valve operation.
- “Purge capability” which is the ability for the operator to pass or not pass air to the pinch-off piston (18) on the dispense valve.
- For semiautomatic or automatic applications, a foot switch or other control to cycle the valve.
- Connection for .16” ID x .25” OD(6.35mm) pressure tubing for use between the dispense valve and controller.
- Connection for .16” ID x .25” OD(6.35mm) pressure tubing for use between the controller and syringe. **NOTE:** The syringe air supply must be regulated to a maximum of 4.1bar (60 psi).

OPERATING PROCEDURES

DRY SYSTEM CHECKOUT

This is an initial checkout to determine if the setup has been properly completed.
Conduct the dry system checkout without any material in the system.

1. Attach the color-coded pneumatic pressure line from the fitting (6) to the color-coded cycle air outlet on the air supply controller.
2. Turn on the electric and air supply.
3. Set the air pressure to 4.8 bar (70 psi) on the system pressure gauge.
4. In the normal rest position the pinch-off piston (18) is held back by the spring (7), sealing the dispense tube(21).
5. Momentarily press the dispense valve cycling control switch. The pinch-off piston (18) is pressurized to release the dispense tube. The controller dispense valve air solenoid valve should cycle and cause a slight fluctuation in the system pressure gauge. When this happens, the system is correctly installed.

MATERIAL LOADING

REMOTE MOUNTED MATERIAL SUPPLY

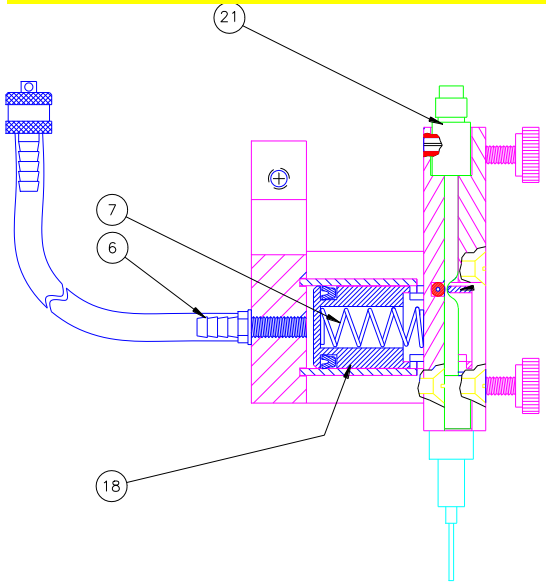
If the material supply is remote mounted then connect material supply tubing to the Dispense Valve material inlet luer lock fitting. When using a remote reservoir, the material supply tubing and fittings must be compatible with the material being dispensed and be capable of withstanding the dispensing pressure.

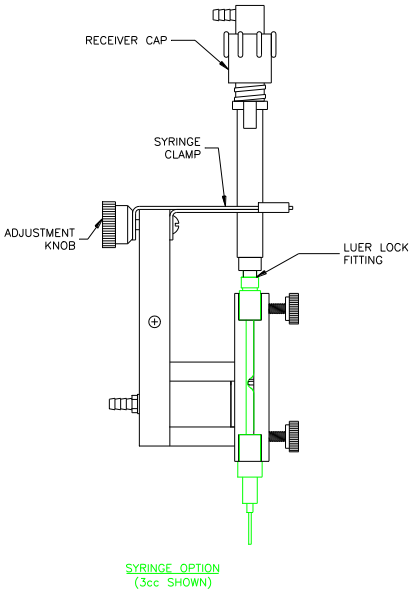
VALVE MOUNTED SYRINGE MATERIAL SUPPLY

1. Place the filled syringe of material through the syringe clamp, mating the syringe to the male luer lock fitting on the dispense tube, turning until snug (do not over tighten).
2. Hand tighten the syringe clamp using the adjustment knob until snug.
3. Install the receiver cap assembly to the top of the syringe.
4. Attach the air line to the regulator and set the air pressure control to 1.0 bar (15 psi) or to the setting required for the application.

WARNING: Do not exceed 6.9 bar (100 psi) pressure on the operating system or 4.1 bar (60 psi) pressure on the syringe reservoir. Higher pressures are not required and may cause a serious hazard.

WARNING: Do not apply either operating or reservoir air pressure to the product unless all screws are in place and properly tightened, and the receiver cap and/or reservoir lid is properly in place and tightened. All air connections should be fastened securely.





OPERATING PROCEDURES

WET SYSTEM CHECKOUT

Using the purge cycle on the air supply controller, run the material through the dispense line until a smooth material flow is observed through the dispensing needle.

After the purge cycle has been completed, set the air supply controller to the manual cycle mode and cycle the Dispense Valve several times.

PERIODIC MAINTENANCE

The Model 702-20 Dispense Valve has been engineered for easy cleanup with a disposable dispense tube and luer lock needle.

WARNING: Do not attempt disassembly or cleaning of the unit while it is under pressure.

DISPENSE NEEDLE REPLACEMENT

Remove the luer lock dispensing needle by grasping at the base and twisting one-quarter turn counter clockwise. Clean with water or solvent depending on the material dispensed. A fine wire, used cautiously, will help open clogged needles. Replace if damaged or severely clogged. Replacement needles can be ordered for the Model 702-20 Dispense Valve by specifying the proper part number.

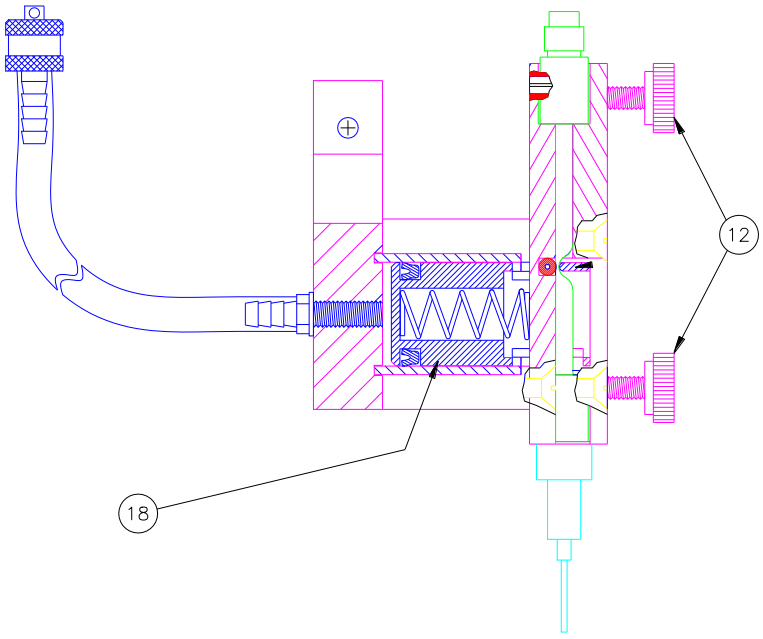
PERIODIC MAINTENANCE

DISPENSE TUBE REPLACEMENT

Dispense tube life is difficult to predict due to its dependence on the cycles, speed, downtime and material dispensed. A common sign of a worn dispense tube is a reduction in shot volume. Inspect the dispense tube periodically and replace if necessary.

To change the dispense tube, DO NOT disassemble the valve.

1. Depressurize the syringe or reservoir, and remove/disconnect it.
2. Pressurize the pinch-off piston (18)*. This is the purge mode. The dispense tube will now be completely free of compression.
3. Loosen the upper and Knobs (12)* enough to allow the dispense tube to pass out the side of the valve.
4. Install a new dispense tube hub by sliding through the side of the valve. Gently tighten the upper and lower screw knobs.
5. Return air control to normal operating mode.
6. Reinstall the syringe or reservoir and purge the valve.



One package of replacement dispense tubes is supplied with the unit. Additional tubes can be ordered for the Model 702-20 Dispense Valve by specifying the proper part number as shown in the Recommended Spare Parts section of this manual.

PERIODIC MAINTENANCE

DISASSEMBLY

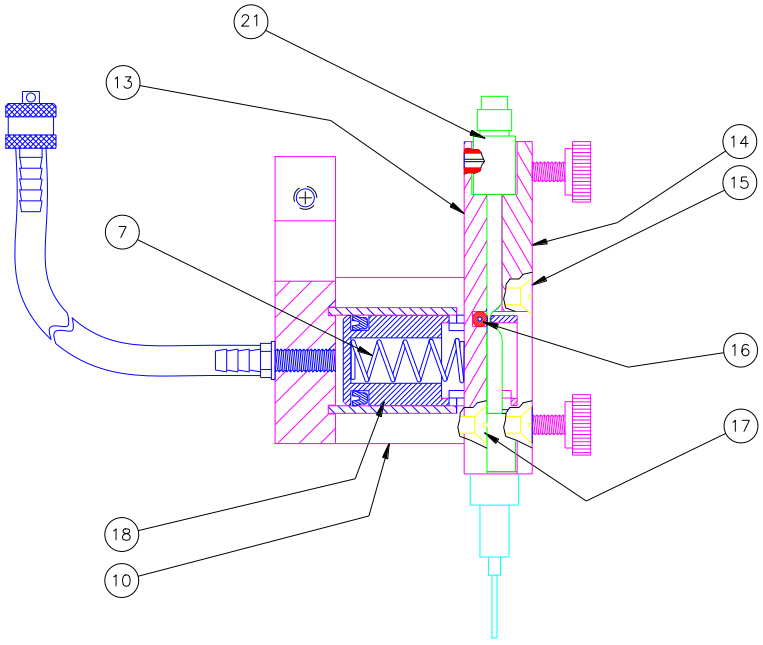
Caution: Make sure you have your safety glasses on and that the valve is pointed away from you and others. The high compression spring can become a flying object if it escapes your control.

Note: In addition to the items in the seal kit, the parts most likely to require replacement are the dispense tube an dispensing needle.

1. Turn off the material inlet pressure to the valve.
2. Turn off the air intake pressure to the valve.
3. Remove the air pressure line and its end fitting from the valve. Do not remove the mating fitting that is screwed into the valve.
4. Remove the material inlet line if the material supply is remote or remove the syringe if present.
5. Remove the dispense valve from its mounting.
6. Disconnect the needle, needle block and dispense tube fittings.
7. Remove the Faceplate (14) by loosening and removing two Screws (15) holding it in place.

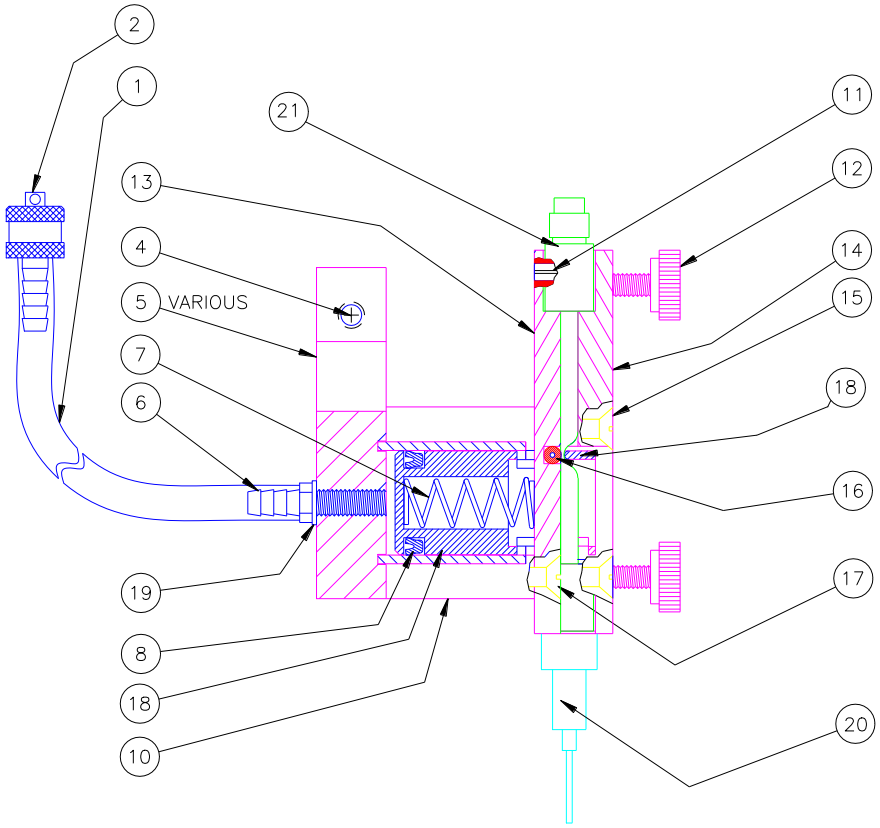
NOTE: There is a Spring (7) behind the Backplate (13). In the next step hold the Backplate (13) with your thumb over the Pinch-off Piston (18) while removing the screws.

8. Loosen and remove two Screws (17) holding the Backplate (13) in place. The Backplate (13), the Pinch-off Piston (18), and the Spring (7) will come loose from the rest of the valve.
9. At this time all four Spacers (10) will be free and may be set aside.
10. Disassemble Backplate (13) from pinch-off piston assembly.
    Note: Be careful, spring is in a compressed position.
11. Remove the Spring (7) from the Pinch-off Piston (18).
12. Remove the Bumper (16) from the Backplate (13).



13. Remove the U-cup Seals. Note the direction the old seals face as you remove them since the new seals must face the same direction when you install them.

MODEL 702-20 GENERAL ILLUSTRATION



1	Tubing	**13**	Backplate
2	Hose Connector (1/8" typical)	**14**	Faceplate
4	Screw,#10-32 x 3/4	**15**	Screw,#6-32 x 2
5	Cylinder Base Assembly	**16**	Bumper
6	Fitting,#10-32 x 1/4OD Tube	**17**	Screw,#6-32 x 1-3/8
7	Spring	**18**	Pinch-off Piston
8	U-Cup Seal	**19**	Nylon Gasket
10	Spacer	**20**	Needle
11	Roll Pin	**21**	Dispense Tube
12	Knob (Dispense Tube Removal)		

PERIODIC MAINTENANCE

ASSEMBLY

Caution: Make sure you have your safety glasses on and that the valve is pointed away from you and others. The spring can become a flying object if it escapes your control.

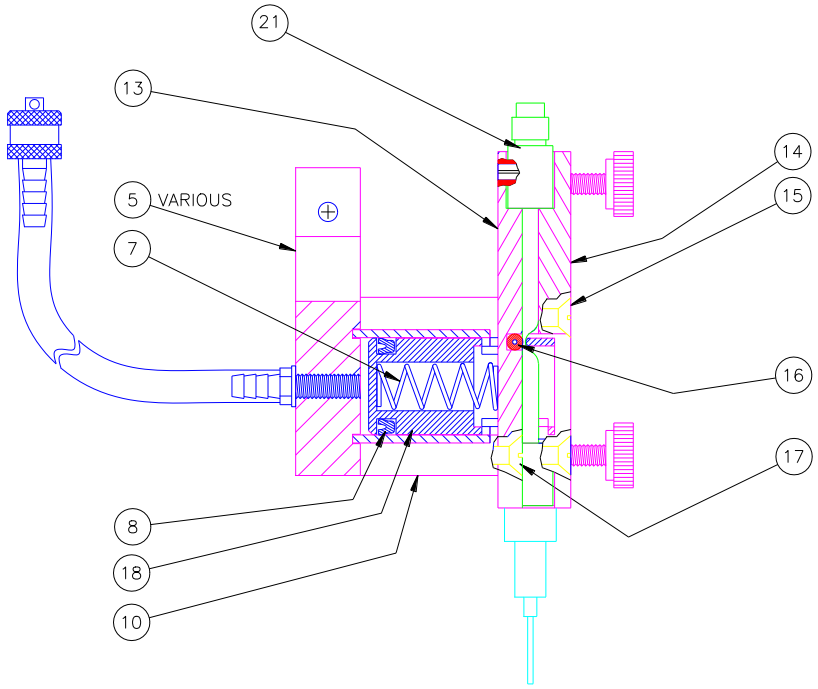
Note: Clean all valve parts with an appropriate solvent prior to reassembly. Always install new, lubricated o-rings and seals when assembling the valve. Use Krytox 203GPL (part number 84/0200-K3/11) for lubricating valve parts including seals and o-rings. Lightly lubricate the inside bore of the Cylinder Base Assembly (5) and the outside of the Pinch-off Piston (18). Check the Pinch-off Piston (18) and Faceplate (14) for wear at the tube contact area and if worn or distorted secure replacements before proceeding.

Note: Use caution as you install new U-cup seals so that they are not pinched or torn. Do this by making sure they are lubricated, and by tucking the lips of the seal inward before uniformly pushing them into position.

Note what direction the old seals face as you remove them. Make sure the new seals face in the proper direction when you install them. Consult the drawings for orientation to be sure.

1. Install the lubricated U-cup Seal (8) on the Pinch-off Piston (18).
2. Insert the Bumper (16) into the Backplate (13).
3. Insert the Spring (7) into the Pinch-off Piston (18).
4. Set the pinch-off piston assembly on top of the Cylinder Base Assembly (5). Use a blunt tool to carefully tuck the U-cup Seal (8) in while easing the piston into the Cylinder Base Assembly (5). *See drawings for piston orientation.*
5. Compress the Spring (7) with a small screwdriver or other tool to assist in placing the Backplate (13) in position. Be sure the Spring (7) is centered under the Backplate (13).
6. Insert the two Spacers (10) and install two flat head Screws (17) and tighten them to tie the Backplate (13) down.
7. Place the Faceplate (14) onto the Backplate (13). *See drawing for orientation*. Slide the two remaining Spacers (10) into position and install the two remaining flat head Screws (15) through the faceplate and spacers and tighten them.
8. Complete the assembly by remounting the valve and installing its dispense tube and needle.
9. Attach the material inlet line to the remote material supply or remount the syringe if so equipped.
10. Attach the air inlet line.

Perform the Dry System Checkout, Material Loading and Wet System Checkout.
The valve is ready to be put back in service.



TROUBLESHOOTING

If operating difficulties are encountered, review the symptoms below. With each problem there are one or more possible causes that should be investigated to resolve the situation.

NOTHING HAPPENS - If absolutely nothing happens when trying to cycle the Dispense Valve, check the electric and pneumatic power. Check all control connections for proper installation.

VALVE CYCLES, NOTHING DISPENSED - First, try to purge the unit; this should fix most situations. If nothing is dispensed, check to see that there is enough pressure to the reservoir. Perhaps the reservoir/tube/needle path is clogged; examine and clear or replace as necessary. Consider whether the material could have “set up” in the system.

IRREGULAR VOLUME DISPENSED - Irregular dispensing can usually be attributed to faulty material. The material must be a smooth (homogeneous) mixture, without any air trapped in it. A second cause could possibly be that the material is not filling the dispense tube fully and in time. Check the reservoir pressure -- it may be too low for the type of material being dispensed and/or the cycle time may be set too fast. Cycle time is a function of the air supply controller. To adjust, follow the directions found in the controller operating manual.

REDUCED VOLUMES DISPENSED Check to see if dispense tube requires replacement or whether needle is partially clogged.

TUBING LIFE VERY SHORT - Incorrect dispense tube (tube wall thickness too large).

VALVE DRIPS — Dispense tube needs replacing; wrong dispense tube used (wall thickness too small).

SLOW OR SLUGGISH CYCLE TIME - This may be due to inadequate lubrication of the piston walls. Remove the pinch-off piston. Apply a very thin film of Krytox lubricant (part number 84/0200-K3/11) to the outside diameter surfaces of the pistons and the U-cup seal and reassemble. This will restore smooth and consistent operation.

MODEL 702-20 RECOMMENDED SPARE PARTS

Note: These parts are routine supply items or wear parts not covered by warranty for normal wear.

Quantity	Description	Part Number
1	SEAL KIT,702-20	*see assembly drawing for part number*
**	KRYTOX 203GPL ASSEMBLY LUBRICANT	84/0200-K3/11
Dispense Tubes **Custom Dispense Tubes Available - Consult Factory**		
	Part Number	**Description**
	Dispense Tube Sampler Package, 2 each of Dispense tubes marked *	A1020220-10
**	Dispense Tube,5542-HU.037, Pack of 10*	A1020157-10
**	Dispense Tube,5542-HU.043, Pack of 10	A1020211-10
**	Dispense Tube,5542-HU.050, Pack of 10*	A1020212-10
**	Dispense Tube,5542-HU.060, Pack of 10	A1020087-10
**	Dispense Tube,5542-HU.066, Pack of 10 *	A1020152-10
**	Dispense Tube,5542-HU.080, Pack of 10 *	A1020213-10
**	Dispense Tube,5542-HU.100, Pack of 10*	A1020090-10
**	Dispense Tube,5542-PP.068, Pack of 10	A1020153-10
**	Dispense Tube,5542-P.100, Pack of 10	A1020088-10
**	Dispense Tube,5542-GP.100, Pack of 10	A1020221-10
	Note: Last 3 digits of description indicate tube inside diameter in .001" increments. Note: Tube material is coded in description as HU = TPE Urethane, P=Natural Polyethylene, PP = Pink Polyethylene, GP = Green Polyethylene	
Luer Lock Hub Replacement Needles **Needle length shown is length projecting from LL hub. Other lengths available.**		
	Description	**Needle Part Number**
**	Needle Sampler Package, 10 each of 14, 16, 18, 20 and 22 gauge ½" long needles	E4000025-50
**	Needle,LL,14 ga.x ½", Dark Green,Pack of 50 *	E4000001-50
**	Needle,LL,14 ga.x 1", Dark Green, Pack of 50	E4000014-50
**	Needle,LL,15 ga.x ½", Orange, Pack of 50	E4000004-50
**	Needle,LL,16 ga.x ½", Purple, Pack of 50 *	E4000088-50
**	Needle,LL,16 ga.x 1", Purple, Pack of 50 *	E4000005-50
**	Needle,LL,18 ga.x ½", Pin, Pack of 50 *	E4000006-50
**	Needle,LL,19 ga.x ½", Brown, Pack of 50	E4000008-50
**	Needle,LL,20 ga.x ½", Yellow, Pack of 50 *	E4000009-50
**	Needle,LL,22 ga.x ½", Black, Pack of 50 *	E4000011-50
**	Needle,LL,23 ga.x ½", Light Blue, Pack of 50	E4000024-50

** Needles are included in Needle Sampler Package.*

*** The quantity may vary for your application.*

GENERAL GUIDELINES FOR O-RINGS AND U-CUP SEALS

Sizes and materials of construction for O-rings and U-cup seals are selected by Graco Inc. based on compatibility with the chemicals to which they will be exposed. Solvents that may remove residual chemicals often have negative effects on the mechanical properties of O-rings and seals.

O-Ring Guidelines

- Always replace an O-ring with the identical one in size, durometer hardness, type and material of construction. Always be alert to the location and size of each O-ring as many look alike and be careful not to mix them. Often similar sizes may be used in various locations on the equipment and if replaced incorrectly, the equipment may not function properly. Refer to the Machine Operation and Service Manual for the correct part number of all O-rings used throughout the equipment and replace them with factory approved parts only.
- Re-use of O-rings is not recommended. Only re-use O-rings as a last resort. If you must re-use them, be sure that they are clean, have no cuts or flat spots and contain NO foreign material. Also, be sure not to soak them in solvent for extended periods as this can cause deterioration of the O-ring. Always replace O-rings that are cut, nicked, or distorted in shape or cross-section.
- Always apply a very thin film of Krytox 203GPL lubricant, item 84/0200-K3/11, to the entire surface of the o-ring before installation. Avoid excessive lubrication. If installing O-rings over threads on a shaft or across sharp edges, roll or push the O-ring carefully into place being careful to avoid cutting or nicking it.
- Avoid stretching the O-ring too much as it may not return to the proper size.
- Do not use any sharp tools or objects to install O-rings

U-cup Seal Guidelines

- Always replace a U-cup seal with the identical one in size, durometer hardness, type and material of construction. Always be alert to the location and size of each U-cup seal as many look alike and be careful not to mix them. Often similar sizes may be used in various locations on the equipment and if replaced incorrectly, the equipment may not function properly. Refer to the Machine Operation and Service Manual for the correct part number of all U-cups used throughout the equipment and replace them with factory approved parts only.
- Always apply a very thin film of Krytox 203GPL lubricant, item 84/0200-K3/11, to the inner and outer lips of the seal before installation.
- Re-use of U-cup seals is not recommended. Only re-use U-cups as a last resort. If you must re-use them, be sure that they are clean, have no cuts or flat spots and contain NO foreign material. Also, be sure not to soak them in solvent for extended periods as this can cause deterioration of the seal. Always replace U-cups that are cut, have flat spots, are distorted in shape or are damaged in any manner.
- Always be alert to the proper orientation of the sealing lips and re-install them in the same direction as shown on the specific equipment assembly drawing. The U-cup seals are intended to seal in only one direction and if installed incorrectly, chemical leakage through the U-cup can occur.
- Whenever possible, push the back side of the seal over the shaft to protect the inner and outer lips. If this is not possible, carefully tuck the lip in to avoid rolling it back or cutting it.
- If installing over sharp edges, slide the seal carefully into place to avoid cutting it.
- Do not use any sharp tools or objects to install U-cups.

Graco Standard Warranty

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

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

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

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

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

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

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

FOR GRACO CANADA CUSTOMERS
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Graco Information

For the latest information about Graco products, visit www.graco.com.

TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.
Phone: 612-623-6921 **or Toll Free:** 1-800-746-1334 **Fax:** 330-966-3006

All written and visual data contained in this document reflects the latest product information available at the time of publication.
Graco reserves the right to make changes at any time without notice.
For patent information, see www.graco.com/patents.

Original Instructions. This manual contains English. MM 332093

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