

Stainless Steel, Air-Operated

Dispensing Valve

306715N

ΕN

Air-operated dispense valves for use with paints, coatings, solvents and lubrication-fluids.



Important Safety Instructions

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

Model No. 205612, Series B

Without seat or fluid needle.

Model No. 205435

Includes Dispensing Valve 205612, chrome—plated tapered fluid needle, and seat.

Model No. 685457

Includes Dispensing Valve 205612, chrome—plated tapered fluid needle, and seat.

Model No. 244382 and 244384

Includes Dispensing Valve 205612, with cup seal and non–drip needle and nozzle.

Model No. 207440, Series D

Includes chrome—plated fluid needle with tungsten carbide ball and seat.

Model No. 25E676

EcoQuip® water dispensing valve with cup seal, and non-drip needle and nozzle.

Model No. 904227

Includes automatic dispense.

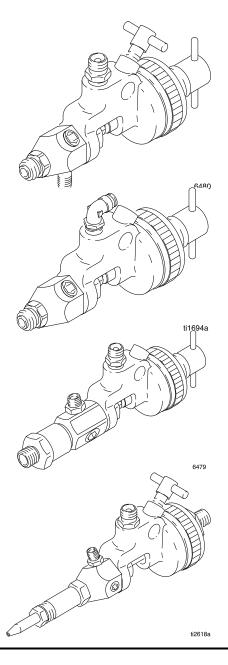


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Warnings

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.

⚠ WARNING



SKIN INJECTION HAZARD

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



- Do not point dispensing device at anyone or at any part of the body.
- Do not put your hand over the fluid outlet.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing equipment.



- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.
- Do not "blow back" fluid; this is not an air spray system.





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.

⚠ WARNING

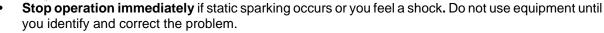


FIRE AND EXPLOSION HAZARD

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.







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.



MOVING PARTS HAZARD

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



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

Installation

Grounding







The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.

Check your local electrical code for detailed instructions for your area and type of equipment and be sure to ground all of these components.

Pump: use a ground wire and clamp as instructed in your separate pump instruction manual.

Air and fluid hoses: use only electrically conductive hoses with a maximum of 500 feet (150 m) combined hose length to ensure grounding continuity.

Air compressors and hydraulic power supplies: ground according to the manufacturer's recommendations.

Dispensing valve: obtain grounding through connection to a properly grounded fluid hose and pump.

Fluid supply container: follow local code.

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

Typical Installation

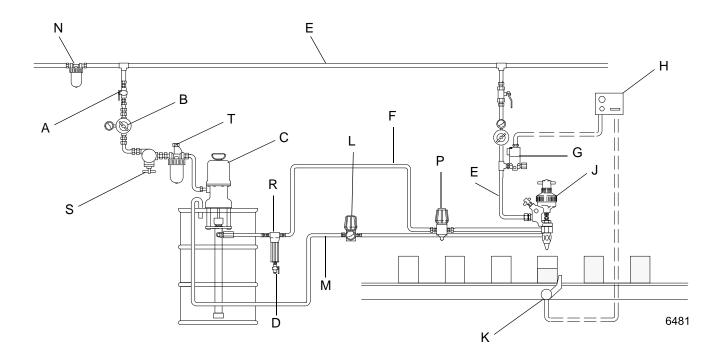


Fig. 1: Typical Installation

Key:

- A Bleed-type Master Air Valve
- B Air Regulator
- C Supply Pump
- D Fluid Drain Valve
- E Air Line
- F Fluid Line
- G Solenoid Valve
- H Control Box
- J Dispensing Valve
- K Sensing Device
- L Back Pressure Valve
- M Circulation Return Line (optional)
- N Air Line Filter
- P Fluid Pressure Regulator
- R Fluid Filter
- S Pump Runaway Valve
- T Air Line Lubricator

General Information

NOTE: Reference numbers and letters in parentheses in the text refer to the callouts in the figures and the parts drawing.

NOTE: Always use Genuine Graco Parts and Accessories, available from your Graco distributor.

The **Typical Installation** drawing is only a guide for selecting required and optional accessories for an automatic dispensing system. Contact your Graco distributor for assistance in designing a system to meet your particular needs.

Ventilate the Dispense Booth







Do not operate the valve unless ventilating air flow is above the minimum required value. Provide fresh air ventilation to avoid the buildup of flammable or toxic vapors when spraying, flushing, or cleaning the dispensing valve. Interlock the dispensing valve air and fluid supply to prevent operation unless ventilating air flow is above the minimum required value.

The dispense booth must have a ventilation system.

Electrically interlock the valve air and fluid supply with the ventilators to prevent valve operation any time that the ventilation air flow falls below minimum values. Check and follow all local codes and regulations regarding air exhaust velocity requirements. Verify the operation of the interlock at least once a year.

Mount Valve

Mount the valve on a 0.50 in. (12.7 mm) diameter rod (Y) on a mounting fixture or a dispensing machine. See Fig. 2 and the **Typical Installation**. Models 205435, 205612, and 685457 are supplied with a clamping screw

for mounting. For Model 207440, order the clamping screw separately (Part No. 205355).

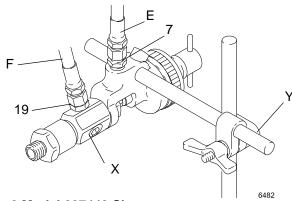


Fig. 2 Model 207440 Shown

Connect the Air Lines

Clean all lines and connections of dirt, burrs, etc. and blow them out with clean air before connecting them to the system. The air supply line (E) should contain an air filter (N) to remove harmful dirt and moisture from the compressed air.

Use a normally closed 3-way air solenoid valve (G) to control the dispensing valve (J). Attach a grounded air supply line (E) from the 3-way valve to the 1/4 npsm(m) air inlet adapter (7) of the dispensing valve. See Fig. 2.

Connect the Fluid Lines

Connect a grounded fluid line (F) from the pump to the fluid inlet adapter (19) of the dispensing valve. You should install a fluid pressure regulator (P) to control fluid pressure to the dispensing valve. A regulator enables you to control fluid pressure more accurately than by regulating air pressure to the pump.

Install a fluid filter (R) to remove particles and sediment which may clog the nozzle.

In a circulating system, remove the plug (4) from the circulation port (X). Connect a return line (M) from the circulating port to the back pressure valve. The back pressure valve ensures regulated pressure to all dispensing valves in the system.

Accessories

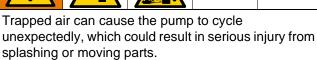
Air Line

 Bleed-type master air valve (A): required in your system to relieve air trapped between it and the air motor when the valve is closed.









Be sure the valve is easily accessible from the pump and located downstream from the air regulator.

Fluid Line

Fluid drain valve (D): required in your system, to relieve fluid pressure in the displacement pump, hose and dispensing valve; triggering the valve to relieve pressure may not be sufficient.

Operation

Pressure Relief Procedure



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 dispensing and before cleaning, checking, or servicing the equipment.

- 1. Turn off power supply to the pump.
- 2. Close the bleed-type master air valve (required with air powered pumps).
- 3. Actuate the dispensing valve to relieve pressure.
- 4. Open the pump drain valve (required in your system) to help relieve fluid pressure in the displacement pump. Actuating the dispensing valve to relieve pressure may not be sufficient. Have a container ready to catch the drainage.
- 5. Leave the drain valve(s) open until you are ready to pressurize the system.

If you suspect that the dispensing valve or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, very slowly loosen the hose end coupling an relieve pressure gradually, then loosen completely. Now clear the valve or hose.

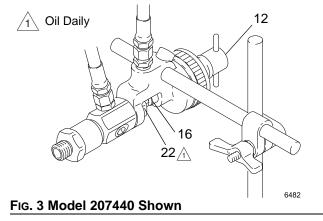
Settings and Adjustments

Before each day's operation, lubricate the exposed portion of the needle (22) and the piston (16) with a lubricant compatible with the fluid being dispensed. See Fig. 3. After lubrication, cover the exposed portions of the needle and piston with a piece of plastic to prevent fluid buildup on these parts. Any buildup could damage the valve packing (9 or 20). See Fig. 4 on page 12.

Set the actuating air to at least 50 psi (345 kPa, 3.4 bar) and start the pump. Adjust the pump speed and pressure to obtain the desired flow rate. Always use the lowest pump speed necessary to get the resultsyou want.

To decrease needle travel, turn the adjusting screw (12) clockwise; to increase, turn counterclockwise. If the valve leaks from the outlet after it is closed, turn the adjusting screw clockwise until the valve stops leaking.

In a circulating system, adjust the back pressure valve to provide constant system back pressure for all dispensing valves while maintaining the proper pressure for fluid circulation. See the Typical Installation on page 6.



Maintenance

Clean the Dispensing Valve Daily

NOTICE

Be sure the solvent you use is compatible with the fluid being dispensed, to avoid clogging the valve's fluid passages.



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 dispensing and before cleaning, checking, or servicing the equipment.

An important part of the care and maintenance of your automatic dispensing valve is proper flushing. Flush the valve daily with a compatible solvent until all traces of fluid are removed from the valve passages. Follow the **Pressure Relief Procedure** before flushing.

Clean the outside surfaces of the valve by wiping with a soft cloth dampened with a compatible solvent.

NOTICE

Never immerse the entire dispensing valve in solvent. Immersing in solvent removes lubricants and tends to damage packings.

To remove a hardened particle from the orifice, blow air through the orifice from the front.

Flushing







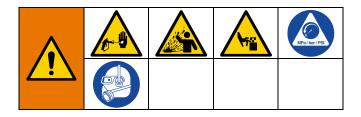




To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure and maintain firm metal-to-metal contact between the dispensing valved and the pail during flushing.

- Flush at the lowest pressure possible. Check connectors for leaks and tighten as necessary.
- 1. Follow Pressure Relief Procedure, page 9.
- 2. Remove nozzle from the dispensing valve.
- 3. Start the pump and flush the system with a compatible solvent as explained in the instructions for your pump manual.
- Check the system under pressure for leaks. If any are found, follow the Pressure Relief Procedure and repair the leaks.
- 5. Pressurize the system again and make sure the leaking has stopped.

Troubleshooting



- 1. Follow **Pressure Relief Procedure**, page 9, before checking or repairing dispensing valve.
- 2. Check all possible problems and causes before disassembling gun.

Problem	Cause	Solution
Uneven dispensing pattern	Fluid pressure too low.	Increase air pressure to pump, or adjust fluid pressure regulator.
Valve will not stop dispensing	Fluid pressure too high.	Reduce air pressure to pump, or adjust fluid pressure regulator.
	Fluid needle binding.	Clean, repair.
	Piston packing binding.	Repair.
	Obstructed or worn needle or seat	Clean or replace.
Valve will not dispense.	Pump not operating.	Refer to separate pump manual.
	Fluid line clogged.	Clear.
	Fluid valve closed.	Open.
	Clogged orifice or needle seat.	Clean.
	No trigger or actuator pressure.	Check, clean all lines.
	Worn or dry piston packings.	Replace.

Service

Needle, Seat, and Packings



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 dispensing and before cleaning, checking, or servicing the equipment.

- To clean or replace the needle (22), its seat (23) or packings (9 or 20), follow the Pressure Relief Procedure, then
- 2. Flush the valve with a compatible solvent.
- Follow the Pressure Relief Procedure after flushing and disconnect the fluid hose(s).

- 4. Screw the locknut (8) off the outlet housing (17) and align the slot in the air piston (16) with the slot in the valve housing (18).
- 5. Swing the outlet housing out of the valve housing and slide the needle out of the socket in the air piston.
- 6. Screw the packing nut (10) out and remove the packings (9 or 20), gland (24, model 207440 only), and needle (22).
- 7. Screw the seat (23) out of the outlet housing (17). See Fig. 3.
- 8. Handle the needle and seatcarefully and inspect them closely for wear or damage.
- 9. Reassemble the valve using new parts as necessary.
- Soak a new leather packing in light, compatible oil before installing it.

NOTE: When reassembling models 205435, 205612, and 685457, torque the seat (23) to 23–27 ft-lb (31–37 N•m)

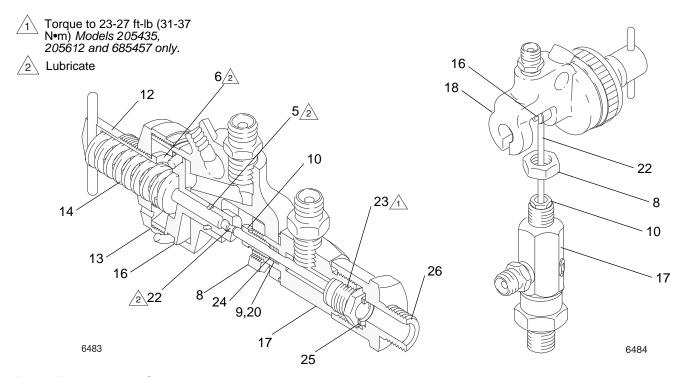


Fig. 4: Model 207440 Shown

Air Piston, Spring and Seals











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 dispensing and before cleaning, checking, or servicing the equipment.

- 1. Follow the **Pressure Relief Procedure**, then disassemble the valve.
- 2. Remove the air cylinder cap (13), take out the spring (14) and pull the piston (16) out.
- 3. Clean and inspect all parts.
- 4. Check the piston o-rings (5and 6) carefully.
- Lubricate all parts with a light waterproof grease and reassemble the valve using new parts as necessary.

Packing Configurations

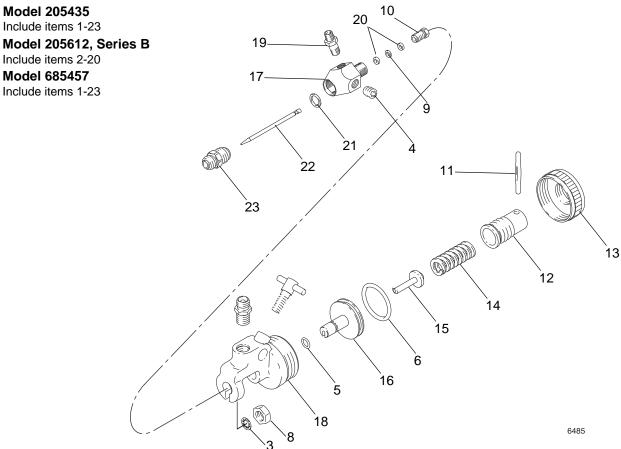
As shown in the following chart, on Models 205435, 205612, and 685457, the standard packings are two 181524 UHMWPE packings and one 164116 leather packing. On Model 207440, the standard packings are two 182523 UHMWPE packings and one 166258 leather packing. On Models 244382, 244384, and 25E676, the standard packing is one 617272 cup seal. On Model 904227 the standard packing is three 164116 leather packings.

If your usage requires packings different from those that are standard on your valve, refer to the chart of available packing configurations.

Model No.	Standard Packings	Optional Packings
205435, 205612, and 685457	(2) 181524 UHMWPE and (1) 164116 leather	(3) 164116 leather
207440	(2) 181523 UHMWPE and (1) 166258 leather	(3) 166258 leather
244382, 244384, and 25E676	(1) UHMWPE cup seal	None
904227	(3) 164116 leather	None

NOTE: For applications using abrasive fluids, UHMWPE/leather packings are recommended. PTFE packing are not recommended for abrasives.

Parts

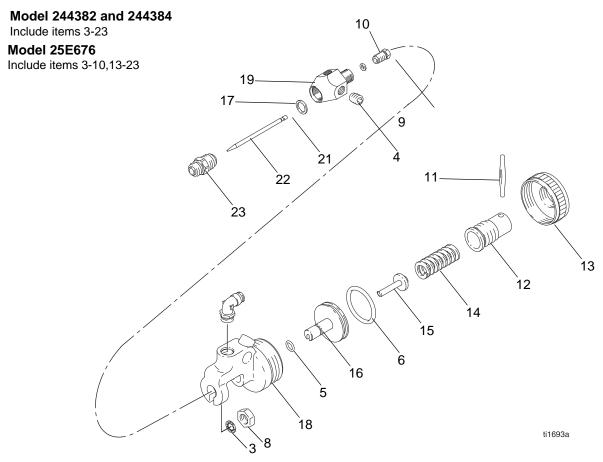


		J	
Ref.	Part	Description	Qty.
1	205612	VALVE, dispensing	1
		Included items 2-20	
2	205355	SCREW, tee-handle	1
3	101920	LOCKWASHER, int shockproof;	1
		9/16 screw size	
4	101970	PLUG, pipe; 1/4 npt	1
5	155685	O-RING; nitrile rubber	1
6	156593	O-RING; nitrile rubber	1
7	162453	NIPPLE, hex; 1/4 npsm x 1/4 npt	1
8	162782	LOCKNUT, hex; 9/16-18	1
9	164116	PACKING, flat; leather	1
10	164313	NUT, packing	1
11	164736	PIN, adjusting screw	1
12	164737	SCREW, adjusting	1
13	164738	CAP, air cylinder	1
14	164739	SPRING, helical compression	1
15	164740	GUIDE, spring	1
16	164741	PISTON, air	1
17	164744	HOUSING, outlet	1
18	164745	HOUSING, dispensing valve	1
19	164856	NIPPLE, hex reducing;	1
		3/8-18 npt x 1/4-18 npt	

Ref.	Part	Description	Qty.
20	181524	PACKING, flat; UHMWPE	2
21	164111	GASKET; nylon	1
22	181525	NEEDLE, fluid (Model 205435 only)	1
22	181526	NEEDLE, fluid (Model 685457 only)	1
23	164747	SEAT, valve, 0.125 orifice (Model 205435 only)	1
23	164750	SEAT, valve, 0.312 orifice (Model 685457 only)	1
56▲	172479	LABEL, warning (Models 205435 and 685457)	1

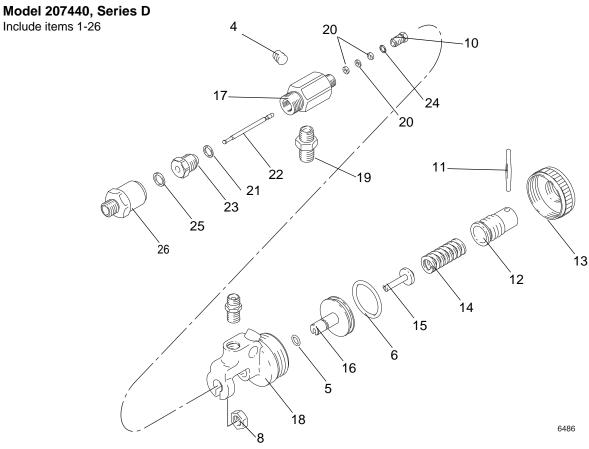
▲ Replacement safety labels, tags, and cards are available at no cost.

Optional Needle and Seat Set For Models 205435, 205612 & 685457			
Size	Seat	Needle	
0.062	164746	181525	
0.125	164747	181525	
0.187	164748	181526	
0.250	164749	181526	
0.312	164750	181526	



Ref.	Part	Description	Qty.
3	101920	LOCKWASHER, int shockproof;	1
		9/16 screw size	
4	101970	PLUG, pipe; 1/4 npt	1
5	155685	O-RING; nitrile rubber	1
6	156593	O-RING; nitrile rubber	1
8	162782	LOCKNUT, hex; 9/16-18	1
9	617272	SEAL, u-cup	1
10	617271	NUT, packing	1
11	164736	PIN, adjusting screw	1
12	164737	SCREW, adjusting	1
13	164738	CAP, air cylinder	1
	191197	CAP, cylinder (for 25E676 only)	
14	164739	SPRING, helical compression	1
15	164740	GUIDE, spring	1
16	164741	PISTON, air	1
17	164744	HOUSING, outlet	1
18	164745	HOUSING, dispensing valve	1
21	164111	GASKET; nylon	1

Needle (22) and Nozzle (23) Kits for Non-Drip Valves			
Valve Needle/Nozzle Size Size			
244382	244385	1/8 in.	
244384 25E676	244387 corrosion-resistant	1/4 in.	

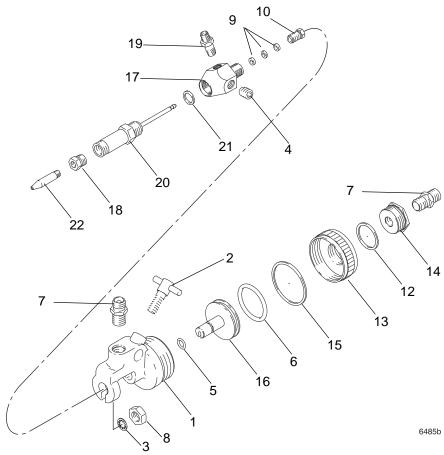


Ref.	Part	Description	Qty.
4	101748	PLUG, pipe; 3/8 npt	1
5	155685	O-RING; nitrile rubber	1
6	156593	O-RING; nitrile rubber	1
7	162453	NIPPLE, hex;1/4 npsm x 1/4 npt	
8	102300	NUT, hex; 9/16-18	1
9	181523	PACKING, flat; UHMWPE	2
10	164313	NUT, packing	1
11	164736	PIN, adjusting screw	1
12	164737	SCREW, adjusting	1
13	164738	CAP, air cylinder	1
14	164739	SPRING, helical compression	1
15	164740	GUIDE, spring	1
16	164741	PISTON, air	1
17	166470	HOUSING, outlet	1
18	164745	HOUSING, dispensing valve	1
19	157350	NIPPLE, hex; 3/8 npt x 1/4 npt	1
20	166258	PACKING, flat; leather	1
21	167730	GASKET; nylon	1
22	220194	NEEDLE, valve	1

Ref.	Part	Description	Qty.
23	206987	SEAT, valve	1
24	166255	GLAND; stainless steel	1
25	166969	WASHER, non-metallic	1
26	167738	ADAPTER, pipe; 7/8-14 unf(f) x 3/8-18 npt(m)	1
56▲	172479	LABEL, warning	1

▲ Replacement safety labels, tags, and cards are available at no cost.

Model 904227



Ref.	Part	Description	Qty.
1	607872	HOUSING, valve disp.	1
2	205355	SCREW, tee-handle	1
3	101920	LOCKWASHER, int shockproof;	1
		9/16 screw size	
4	101970	PLUG, pipe; 1/4 npt	1
5	155685	O-RING; nitrile rubber	1
6	156593	O-RING; nitrile rubber	2
7	156971	NIPPLE, short	1
8	162782	LOCKNUT, hex; 9/16-18	1
9	164116	PACKING, flat; leather	3
10	164313	NUT, packing	1
12	150694	GASKET, Metallic	1
13	164738	CAP, air cylinder	1
14	608114	BUSHING, cs	1
15	158429	GASKET, copper	1
16	608112	PISTON, air	1
17	164744	HOUSING, outlet	1
18	100030	BUSHING	1
19	164856	NIPPLE, hex reducing;	1
		3/8-18 npt x 1/4-18 npt	
20	946929	NEEDLE, valve	1
21	164111	GASKET; nylon	1
22	161505	NOZZLE, flow gun	1

Dimensions

1/4 npsm Air Inlet



1/4 npt Circulation Port



Models 205435 & 205612: 3/8 npt Fluid Inlet Models 244382 & 244384: 1/4 npt Fluid Inlet



3/8 npt Outlet

1/4 npsm Air Inlet



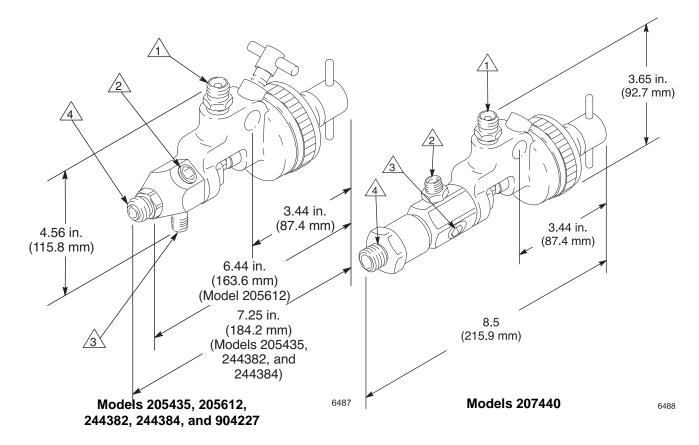
3/8 npt Fluid Inlet



3/8 npt Circulation Port



3/8 npt Outlet



Technical Specifications

	US	Metric
Maximum Working Pressure Model 904227	1500 psi	10.5 MPa, 105 bar
Maximum Working Pressure Models 205612, 205435, 685457, 244382, 244384,2047440, and 25E676	3000 psi	21.0 MPa, 210 bar
Maximum Operating Pressure of Air Actuated Trigger	50 psi	345 kPa, 3.4 bar
Air and Fluid Connections	Models 205435, 205612, 685457, & 904227: 3/8 npt(m) fluid inlet and outlet, 1/4 npsm(m) air inlet, 1/4 npt(f) circulation port Model 207440: 1/4 npt(m) fluid inlet, 3/8 npt(m) fluid outlet, 1/4 npsm(m) air inlet, 3/8 npt(f) circulation port Models 244382 & 244384: 1/4 npt(f) fluid inlet and outlet, 5/32 tube connector air inlet Model 25E676: 1//4 npt(f) fluid inlet, 3/8 npt(m) fluid outlet, 1/4 tube connector air inlet	
Wetted Parts	Models 205435, 205612, 685457, & 904227: 400 Series Stainless Steel, Chrome, Nylon, UHMWPE, Leather Model 207440: 400 Series Stainless Steel, Chrome, Tungsten Carbide, Copper, Acetal Homopolymer, UHMWPE, Leather Models 244382: 400 Series Stainless Steel, Nylon, UHMWPE Model 244384, 25E676: 400 Series Stainless Steel, 17-4 PH Stainless Steel Needle and Nozzle, Nylon, UHMWPE	

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.

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