

Plural Component Mixer Manifold

307400R

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For mixing two component reactive materials with plural component spraying and dispensing equipment. For professional use only.

Model 24H002 Series A

High Volume Mixer: 1/2 npt fluid outlet; for use in high volume applications, such as airless spray or high solids epoxy.

Model 241692 Series A

Includes Model 24H002 and a static pipe mixer.

Ball Valve Kit 218413

Updates the handle and ball valve of Series A, Model 215625, Low Volume Mixer. See page 11.

Ball Valve Kit 218414

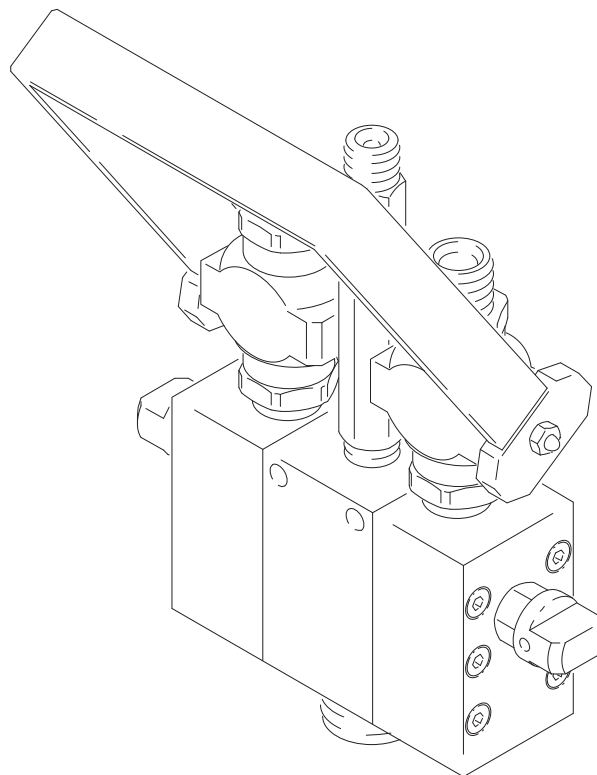
Updates the handle and ball valve of Series A, Model 24H002, High Volume Mixer. See page 11.

3000 psi (21.0 MPa, 210 bar) Maximum Working Pressure



Important Safety Instructions

Read all warnings and instructions in this manual. Save these instructions.















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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	
   	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: <ul style="list-style-type: none"> • Use equipment only in well-ventilated area. • Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking). • Ground all equipment in the work area. See Grounding instructions. • Never spray or flush solvent at high pressure. • Keep work area free of debris, including solvent, rags and gasoline. • Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present. • Use only grounded hoses. • Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive. • Stop operation immediately if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.
    	SKIN INJECTION HAZARD High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment. <ul style="list-style-type: none"> • Do not spray without tip guard and trigger guard installed. • Engage trigger lock when not spraying. • Do not point gun at anyone or at any part of the body. • Do not put your hand over the spray tip. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow the Pressure Relief Procedure when you stop spraying 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.
 	MOVING PARTS HAZARD Moving parts can pinch, cut or amputate fingers and other body parts. <ul style="list-style-type: none"> • Keep clear of moving parts. • Do not operate equipment with protective guards or covers removed. • Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure and disconnect all power sources.



WARNING



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.



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 **Dimensions** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Dimensions** 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.



REACTIVE CHEMICALS HAZARD

Graco Inc. does not manufacture or supply any of the reactive chemical components that are used in this equipment, and is not responsible for their effects. Because of the vast number of chemicals that could be used, and their varying chemical reactions, the buyer and user of this equipment should determine all facts relating to the materials used, including any of the potential hazards involved. Particular inquiry and investigation should be made into potential dangers relating to toxic fumes, fires, explosions, reaction times, and exposure of human beings to the individual components or their resultant mixtures. Graco assumes no responsibility for loss, damage, expense, or claims for bodily injury or property damage, direct or consequential, arising from use of such chemical components.



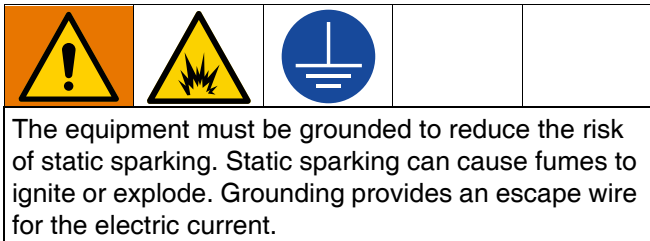
PERSONAL PROTECTIVE EQUIPMENT

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.

Installation

Grounding



1. *Pump:* use a ground wire and clamp as instructed in your pump instruction manual.
2. *Fluid hoses:* Use only grounded hoses with a maximum of 500 feet (150 m) combined hose length to ensure grounding continuity.
3. *Spray gun, manifold, or dispensing valve:* obtain grounding through connection to a properly grounded connection to a properly grounded fluid hose and sprayer.
4. *Object being sprayed:* according to local code.
5. *Supply containers:* according to local code.
6. *All solvent pails used when flushing,* according to local code. Use only *metal pails*, which are conductive. Do not place the pail on a non-conductive surface, such as paper or cardboard, which interrupts the grounding continuity.
7. *To maintain grounding continuity when flushing or relieving pressure,* always hold a metal part of the gun firmly to the side of a *grounded metal* pail, then trigger the gun.

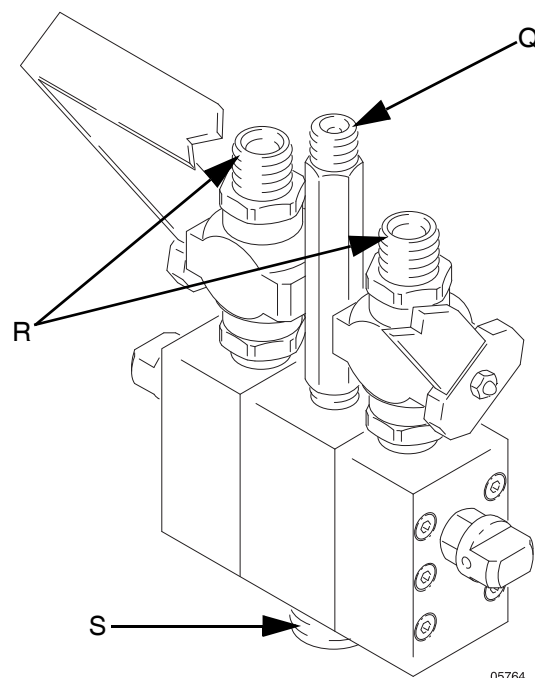
Installation

For assistance in setting up a plural component system, contact your Graco distributor. This will help assure that you select the proper type and size equipment for your job.

Use the spacer (40), screws (37), nuts (38) and lock-washers (39) provided to mount the manifold.

Connect the supply lines from your pump to the manifold inlets (R & Q).

Connect your static mixer or hose to the material outlet (S). Model 24H002 has a 1/2 npt(m) outlet. Model 241692 includes a static mixer with a 3/8 npt(m) outlet.



Model 24H002 Shown

Fig. 1

Operation

Startup

The mixer manifold was tested in oil, which was left in to protect the manifold. Before operating, thoroughly flush the manifold to prevent contamination of the fluids.

Flushing Procedure

NOTE: be sure to label all fluid path parts “component A” or “component B” when disassembling them. Doing so prevents interchanging A and B parts during reassembly, which will contaminate the materials and the fluid path through the equipment.

NOTE: Color-coded chemically resistant tape may be used to label the parts. Use blue for component A, green for component B, white for solvent, and red for mixed material.

Place the handle in the UP, or closed, position. Turn on the solvent supply pump. Open one of the solvent valves. Release the spray gun safety latch. Hold the gun firmly to the side of a grounded metal pail, then trigger the gun to flush. Flush until all contaminants and oil are removed. Release the trigger, engage the safety latch, and close the solvent valve. Repeat for the other solvent valve.

Any ratio check valves on the manifold output side must be flushed. Place a container under both valves to catch the waste solvent. Flush the valves after triggering the gun, one side at a time.

Solvent may channel through viscous fluids and leave a coating of mixed fluid on the inner tube of your hose.

Fig 2 shows the handle in the UP, or closed, position and the right solvent valve open with solvent flowing through the right fluid chamber and out through the mixing chamber.

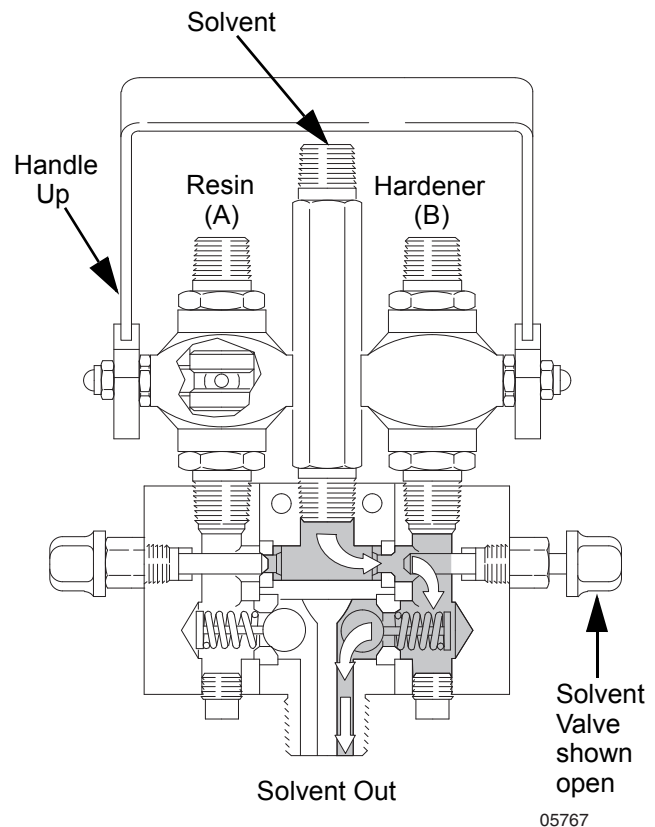


FIG. 2

Be sure all fluid is thoroughly flushed from the hose after each use.

Disassemble all other dispensing equipment, as necessary, and clean thoroughly.

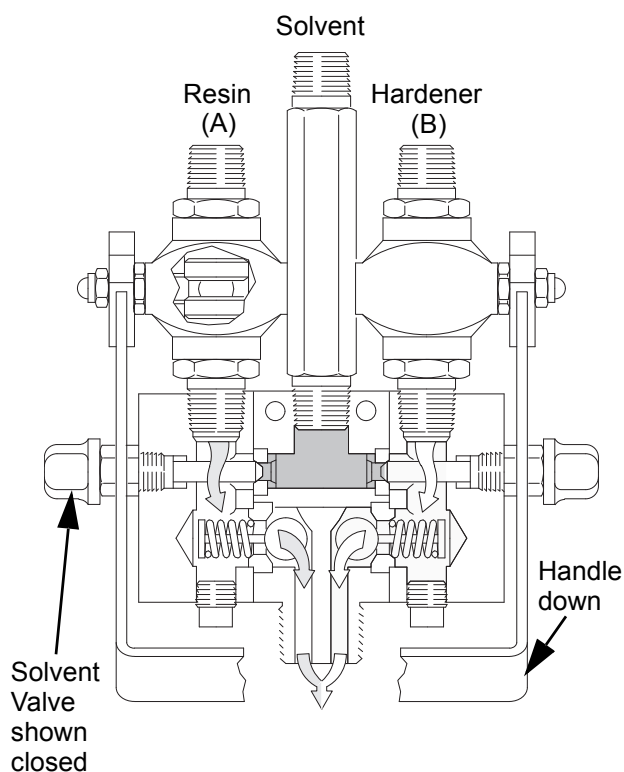
NOTICE

To prevent fluid from setting up in the dispensing equipment, flush the system frequently. Be sure there is adequate solvent in the solvent supply before starting to spray.

Dispensing

To dispense the resin and hardener, turn on the supply pumps. Then push the handle forward (DOWN) to the open position. To stop the flow, move the handle to the UP or closed position.

Fig 3 shows the handle in the DOWN, or open, position, solvent valve closed, and resin and hardener flowing through the manifold.



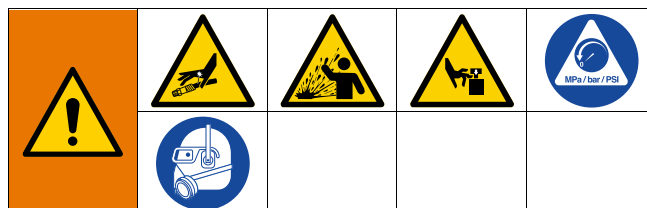
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FIG. 3

Pressure Relief Procedure



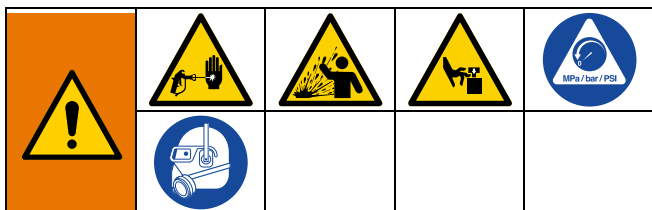
Follow the Pressure Relief Procedure whenever you see this symbol.



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

1. Close the mixer fluid valves.
2. Flush the dispensing equipment as described in the **Flushing Procedure** on page 6.
3. Shut off the fluid and solvent pumps.
4. Hold a metal part of the spray gun firmly to a grounded metal pail, and trigger the gun to relieve pressure.
5. Engage the gun safety latch
6. Open any drain valves, and leave them open until you are ready to spray again.
7. If fluid has hardened in the hose or mixer, close the fluid valve, shut off the fluid and solvent pumps, and *slowly* loosen the fluid inlet hose(s) to relieve pressure, then remove the dispensing hose.

Troubleshooting



1. **Relieve the pressure** before you check or service any system equipment.
2. Check all possible causes and solutions in the **Troubleshooting Chart** before disassembling the manifold.

Problem	Cause	Solution
Little or no resin (A) output	The fluid inlet is plugged.	Clean the inlet, remove the obstruction.
	The fluid supply container is empty.	Refill the fluid supply.
Little or no hardener (B) output	The fluid inlet is plugged.	Clean the inlet, remove the obstruction.
	The fluid supply container is empty.	Refill the fluid supply.
The mixed fluid will not flush out	There is hardened fluid in the mixing chamber.	Clean the chamber with a compatible solvent; service it as necessary.
	The solvent supply container is empty.	Refill the solvent supply.
	The solvent is not compatible with the fluid.	Change to a compatible solvent.

Service

Manifold Repair



NOTE: Repair kits are available for the manifold. Parts included in the kits are indicated with a †, for example (9†). See page 11.

1. Perform the **Pressure Relief Procedure** on page 7.
2. Remove the twelve socket-head screws (2) to separate the two valve housings (8) from the manifold housing (7). Remove all parts from the housings.
3. Clean all parts thoroughly in a compatible solvent. Use a soft bristle brush to clean the manifold passageways.
4. Install the two check valve assemblies (9†) and valve seats (6†) in the manifold housing (7).
5. Install the needle valve (12), back-up ring (4**), and seal (3†) in each of the valve housings (8).
6. Install six socket-head screws (2) through one valve housing (8) and into the manifold housing (7), so the distance between the housings is 0.060 in. (1.5 mm).
7. Tighten the needle valve slightly, so that the tapered end centers in the seat (6) and holds its position.
8. Turn the six socket screws (2) oppositely and evenly to 60–70 in-lbs (6.7–7.9 N•m). Back off the needle valve (12) slightly.
9. Repeat step 8 as the torque will relax.

NOTICE

Be sure to tighten the six socket screws (2) evenly. The upper four screws, which surround the needle valve assembly (12), are critical in ensuring that the needle seats properly. If the bottom two screws are over-tightened, they will throw off the alignment.

10. Repeat the procedure from step 9 on the other valve housing (8).

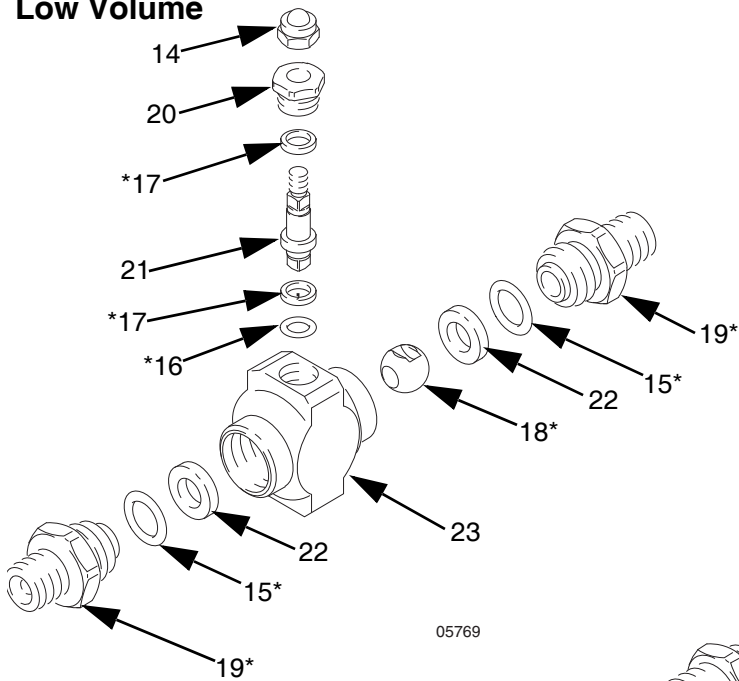
Ball Valve Repair

NOTE: Repair Kit 217560 is available for the ball valves. Parts included in the kit are indicated with an asterisk, for example (18*). See page 11.

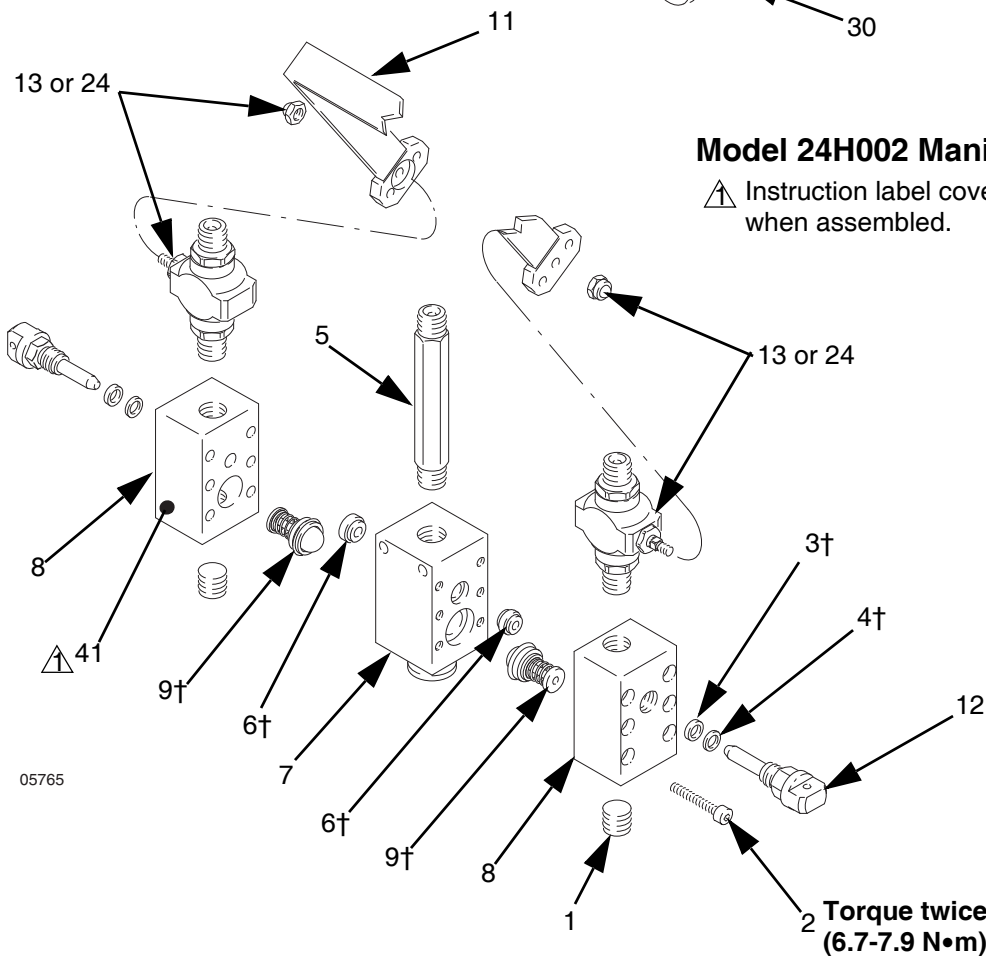
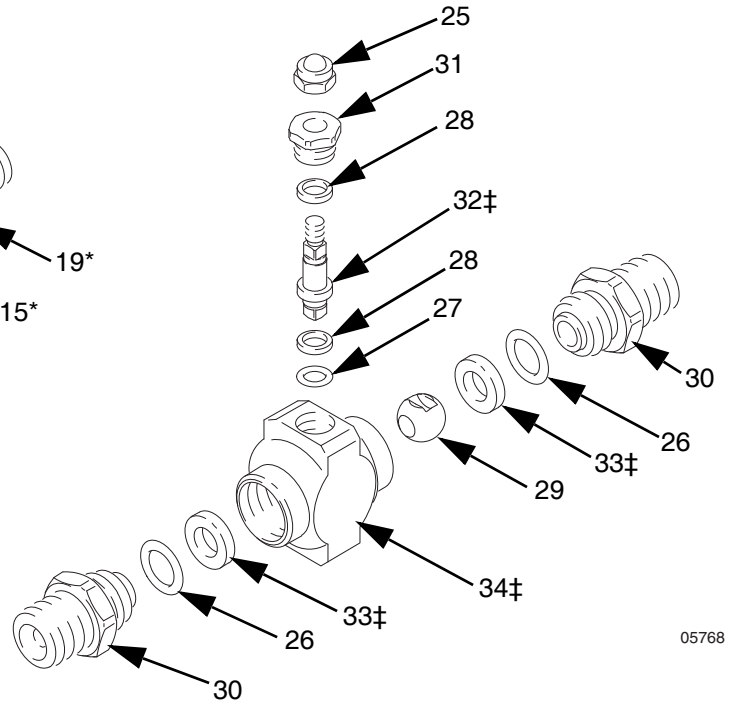
When reassembling a ball valve (13 or 24), install the ball (18* or 29*) so that the round hole aligns with the main passageway of the valve body and the square hole aligns with the stem (21 or 32) passageway.

Parts

Ref No. 13 Ball Valve 215622, Series B Low Volume



Ref No. 24 Ball Valve 215623, Series B High Volume



Model 24H002 Manifold, Series A

⚠ Instruction label covers parts 7 and 8 when assembled.

Torque twice to 60-70 in-lb
(6.7-7.9 N•m)

Model 24H002, Series A

Ref. Part	Description	Qty.	Ref. Part	Description	Qty.
1 100721	PLUG, internal hex; 1/4; 1/4 npt	2	24 215623	VALVE, ball; used in model 24H002 Series B includes items 25–34	2
2 104472	CAPSCREW, hex hd; 10–32 x 1–1/2	12			
3† 105694	SEAL, shaft; SST and PTFE	2	25 102310	. NUT	1
4† 177019	RING, back-up; Acetal	2	26* 104892	. O-RING; PTFE	2
5 177021	NIPPLE, pipe, hex; 1/4 npt	1	27* 104893	. O-RING; PTFE	1
6† 177022	SEAT, valve; Acetal	2	28* 164900	. WASHER, back-up; Acetal	2
7 181115	HOUSING, manifold;	1	29* 178746	. BALL	1
8 177030	HOUSING, valve;	2	30 165599	. STUD; 3/8 npt	2
9† 215618	CHECK VALVE Assy	2	31 165964	. NUT, packing	1
11 217562	HANDLE	2	32 178745	. STEM	1
12 215621	NEEDLE VALVE Assy	2	33* 172094	. SEAT, ball; Nylatron®	2
13 215622	VALVE, ball; used in model 215625 Series B Includes items 14–23	2	34 178743	. HOUSING, valve	1
			37‡ 104429	CAPSCREW, hex hd; 1/4 x 2.25" (not shown)	2
14 102310	. NUT	1	38‡ 100015	NUT, hex, mscr; 1/4 (not shown)	2
15* 104892	. O-RING; PTFE	2	39‡ 100016	LOCKWASHER; 1/4" (not shown)	2
16* 104893	. O-RING; PTFE	1	40‡ 178928	SPACER (not shown)	1
17* 164900	. WASHER, back-up; Acetal	2	41 188732	LABEL, instruction	1
18* 178746	. BALL	1			
19 165274	. STUD; 1/4 npt	2			
20 165964	. NUT, packing	1			
21 178745	. STEM	1			
22* 172094	. SEAT, ball; Nylatron®	2			
23 178743	. HOUSING	1			

* Supplied in Repair Kit 217560.

† Supplied in Repair Kit 215913 or 215914. Order Repair Kit 215913 for Model 215625, and Repair Kit 215914 for Model 24H002.

‡ One spacer (40), two screws (37), nuts (38) and lock washers (39) are included for mounting the manifold.

Kits for Series A Manifolds**Ball Valve Kit 218413**

Updates the handle (11) and ball valve (13) of Series A 215625 Low Volume Mixer. Includes:

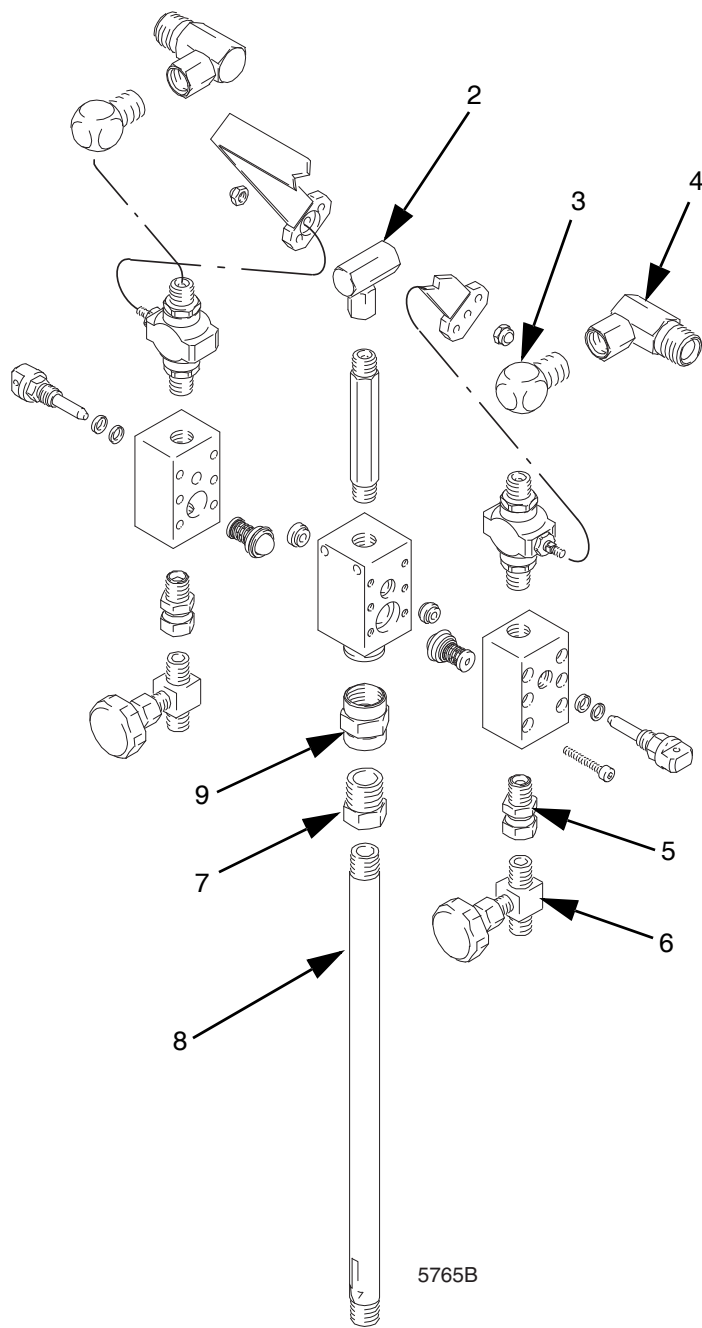
Ref. Part	Description	Qty.
11 217562	HANDLE	1
13 215622	VALVE, ball; used in model 215625 Series B Includes items 14–23	2

Ball Valve Kit 218414

Updates the handle (11) and ball valve (24) of Series A 24H002 High Volume Mixer. Includes:

Ref. Part	Description	Qty.
11 217562	HANDLE	1
24 215623	VALVE, ball; used in model 24H002 Series B includes items 25–34	2

Model 241692 Series A



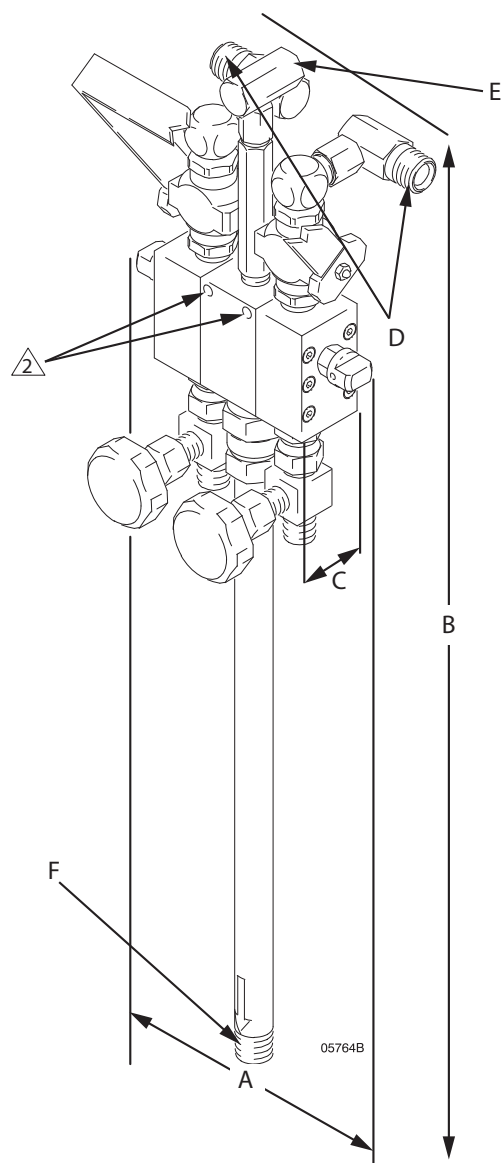
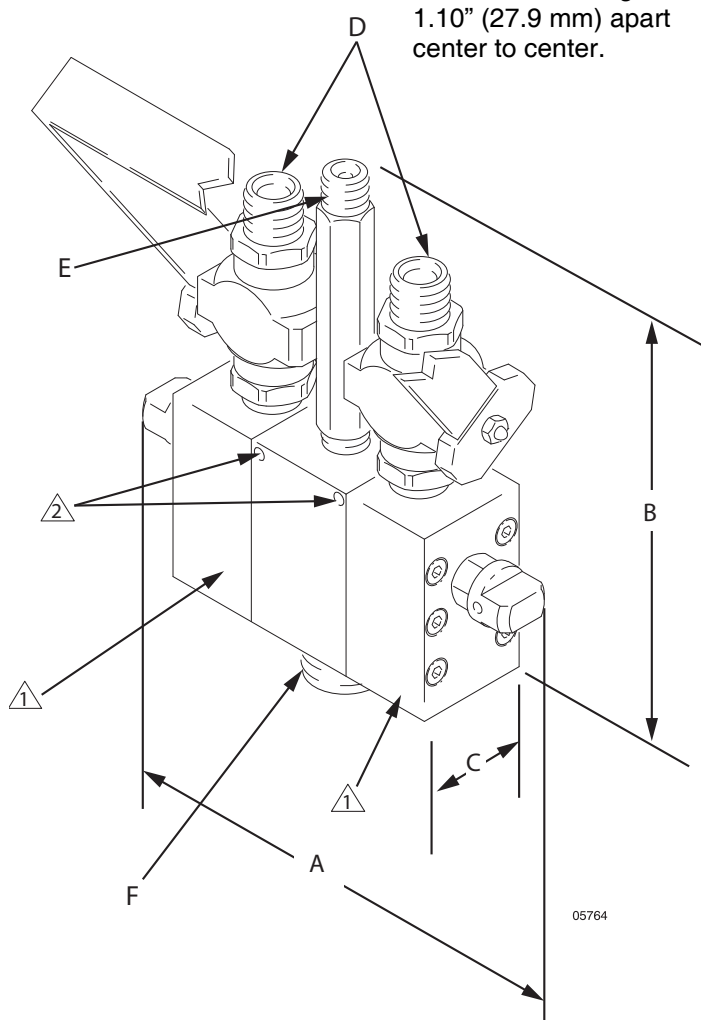
Ref. Part	Description	Qty.	Ref. Part	Description	Qty.
1 24H002	MANIFOLD, mixer; see full parts and listing on pages 10 and 11	1	5 156823	UNION, swivel	2
2 157676	UNION, swivel, 90	1	6 108233	VALVE, needle	2
3 155699	ELBOW, street	2	7 502265	BUSHING, reducer, pipe	1
4 161037	FITTING, union, adapter	2	8 512506	MIXER, static, pipe	1
			9 158581	COUPLING, hex	1

Dimensions

	Model 24H002	Model 241692
A Overall Length	5.5 in (140 mm)	5.5 in (140 mm)
B Overall Height	6.25 in (159 mm)	19.85 in (504 mm)
C Overall Width	1.25 in (32 mm)	1.25 in (32 mm)
D Fluid Inlets	3/8 npt(m)	3/8 npt(m)
E Solvent Inlet	1/4 npt(m)	1/4 npt(m)
F Material Outlet	1/2 npt(m)	3/8 npt(m)

△ 1/4 npt plugged ports
in two end sections of manifold.

△ Two 0.26" (6.6 mm)
diameter mounting holes
1.10" (27.9 mm) apart
center to center.



Technical Specifications

Plural Component Mixer Manifold		
	US	Metric
Maximum working pressure	3000 psi	21.0 MPa, 210 bar
Fluid Port Size		
Model 241692	1/2 npt(f)	
Model 24H002	3/8 npt(m)	
Solvent Port Size		
Model 24H002 and 241692	1/4 npt(m)	
Fluid Outlet Size		
Model 241692	3/8 npt(m)	
Model 24H002	1/2 npt(m)	
Mix Chamber Volume		
Model 24H002 and 241692	0.32 fluid oz.	10 ml
Materials of Construction		
Wetted materials on all models	Chrome Alloy, High Carbon, Nickel Plated and Zinc Plated Steels; 303, 316*, and 416 stainless steels; Acetal, Nylon, PTFE, Plastics and Nylatron®	
Notes		
* 316 Stainless Steel only used in 24H002.		
Nylatron® is a registered trademark of the Polymer Corporation.		

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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.

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Graco Information

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

For patent information, see www.graco.com/patents.

TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.

Phone: 612-623-6921 or Toll Free: 1-800-328-0211 Fax: 612-378-3505 Graco Information

*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.*

Original instructions. This manual contains English. MM 307400

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