

USP Valve

3A0860J
EN

Uniblock Series Progressive Valve for oil and grease lubrication.

5076 psi (35 MPa, 350 bar) Maximum Working Pressure



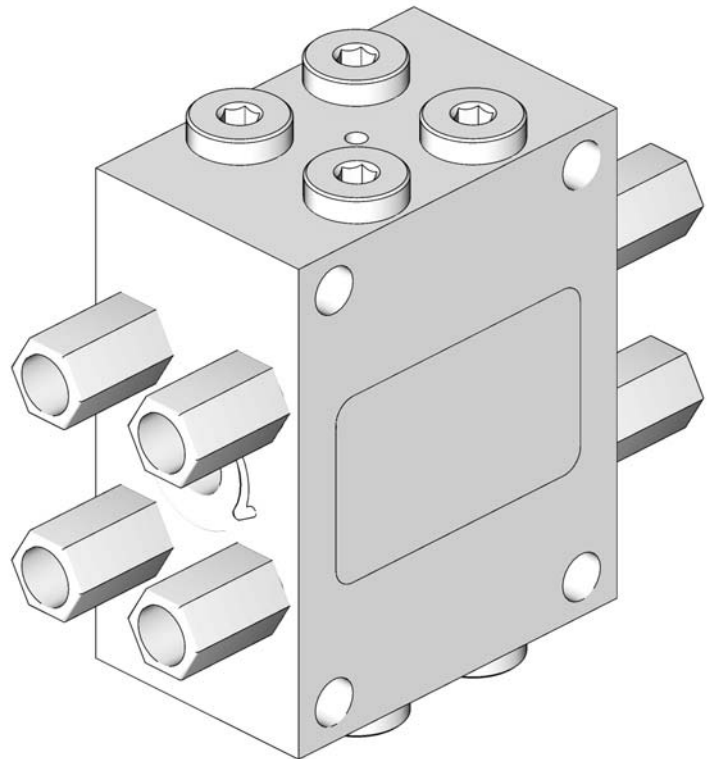
Important Safety Instructions
Read all warnings and instructions in this manual. Save these instructions.

Models

For all models:

- Discharge per outlet = 0.012 in³






Model No.	No. of Outlets	Inlet Thread
24E406	6	1/8 NPT
24E407	8	1/8 NPT
24E408	10	1/8 NPT
24E409	12	1/8 NPT
24E410	14	1/8 NPT
24E411	16	1/8 NPT



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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, 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	
 	<p>SKIN INJECTION HAZARD</p> <p>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.</p> <ul style="list-style-type: none"> • 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.
 	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • 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 Data in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer. • Do not leave the work area while equipment is energized or under pressure. 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. • 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.

Installation

The USP Valve should be ready to install in your system. It has been factory-tested and should not require any additional modification.

As long as lubricant is supplied under pressure, the valve will continue to operate. Whenever lubricant flow ceases, the valve pistons stop. When flow resumes, it will start again at the same point in the discharge cycle.

NOTE: The manufacturers of the machine tool and its component bearings should be consulted to ensure that the ISO 18/14 cleanliness level is adequate.

Outlet Adapters

Each block ships with the correct number of outlet adapters and seals. Install one adapter into each open outlet port. Be sure a seal is installed on each outlet adapter.

Outlet adapters have standard threads for interfacing with tube fittings.

NOTICE

Supplied outlet adapters are required for full functionality and testing.

Recommended Tube Fittings

- Fittings should have a maximum 9/16 in. (14 mm) hex.

USP Divider Port Combination

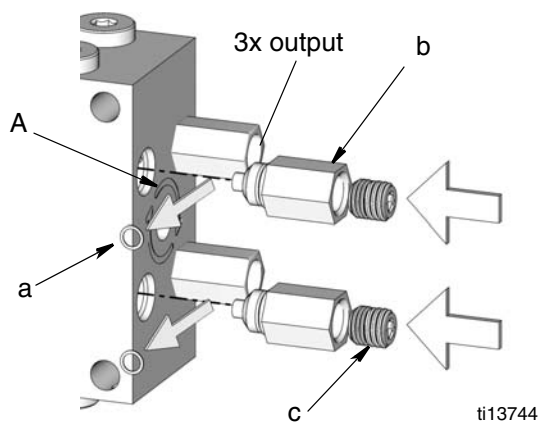


FIG. 1

USP divider block outlets can be combined to increase the amount of lubricant for a particular outlet.

Option 1

- Remove the outlet adapter from block.
- Remove face seal (a) from outlet adapter (b) (FIG. 1).
- Plug outlet adapter (b) with user supplied plug (c) to double the output volume.

Lubricant from the plugged outlet adapter is redirected to the next outlet on the USP divider block flowing in a clockwise order, following direction arrows (A) stamped on block (see FIG. 1).

For example in FIG. 1: Removing face seals and plugging 2 outlet adapters will triple the amount of lubricant at the next outlet. This outlet will include the output of plugged outlets that are now rerouted as well as its own output.

Option 2- Using Doubling Plug Accessory

- Remove the outlet adapter (b) and face seal (a) from outlet that is going to be combined (FIG. 2).

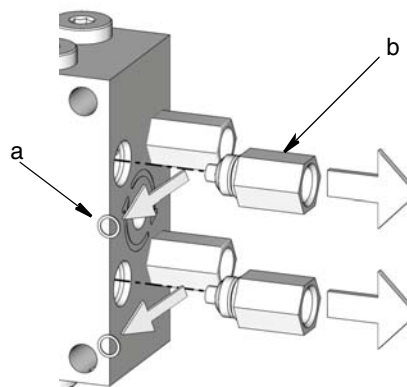


FIG. 2

2. Plug outlet using Graco doubling plug accessory part number 24F467 (FIG. 3).

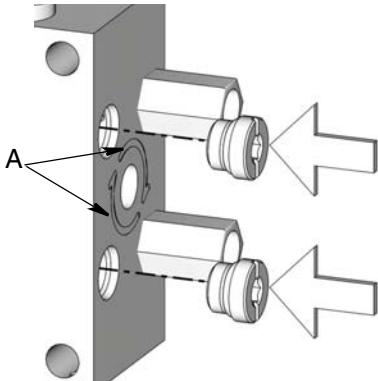


FIG. 3

Lubricant from the plugged outlet/s is redirected to the next outlet on USP divider block flowing in a clockwise order, following direction arrows (A) stamped on block (see FIG. 3).

Pressure Relief Procedure



Loosen inlet connection (B) to allow air to bleed from fitting and relieve pressure in block.

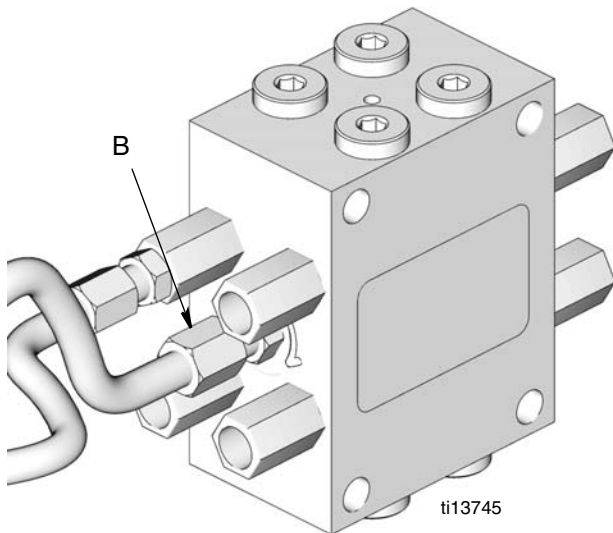


FIG. 4

Purging Air From System

Before machine operation is resumed, following maintenance or repair procedures, manual system air purging is required.

Purging Air from Pump to USP Valve Lines

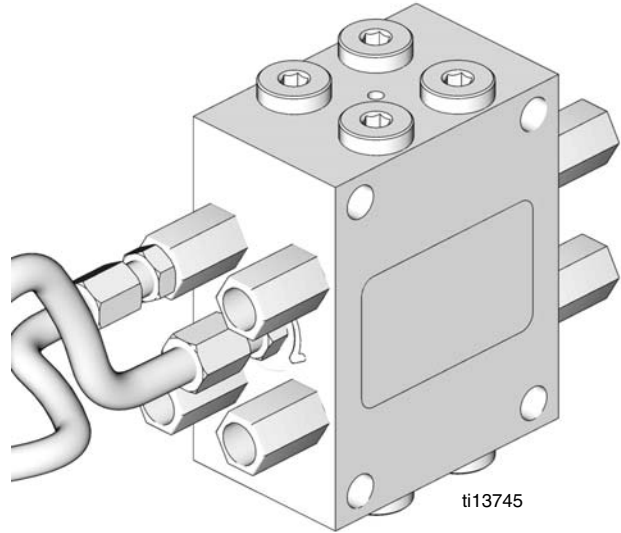


FIG. 5

Steps 1- 3, refer to FIG. 5.

1. Install the line from the system pump to the USP valve. **Do not** completely tighten the connection at the valve's lube inlet.
2. Cycle the system pump until air-free lubricant is observed flowing from the line at the valve's lube inlet.
3. Tighten the fitting at the lube inlet port while lubricant is still flowing.

The system is now ready for operation.

Purging Air After Adding or Replacing a USP Valve Module

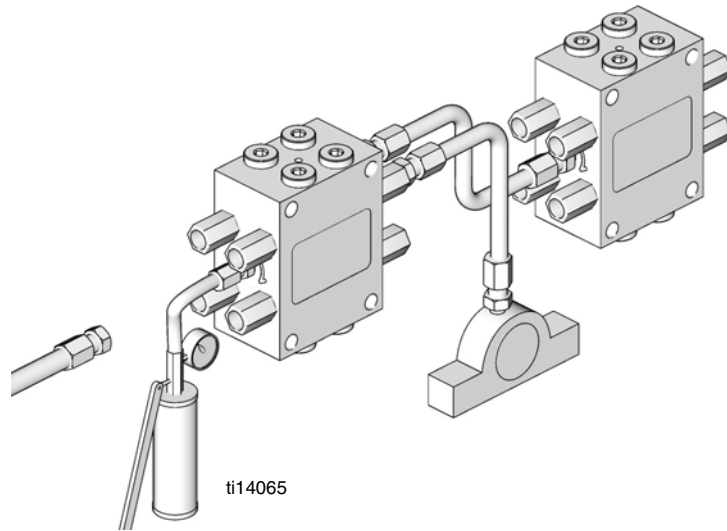


FIG. 6

Steps 1- 7, refer to FIG. 6.

1. Install the new USP valve assembly.
2. Connect the tubing or hoses to the appropriate valve or lubrication point(s)
3. **Do not** completely tighten the connection(s) at the inlet or at lubrication points.
4. Disconnect and remove the line from the pump at the valve inlet.
5. Attach a hand pump filled with clean, filtered lubricant to the inlet port.
6. Operate the hand pump until air-free lubricant is observed flowing from each lube inlet connector and/or each lubrication point's connector.
7. Tighten the inlet fitting or at the lubrication port while lubricant is still flowing.
8. Remove the hand pump and reconnect the system pump to the valve inlet.

Blockages

Blocks require a higher than normal pumping pressure. Depending on the application or system design, this blockage will usually result in a complete loss of lubricant flow into the total system and no bearing will be receiving lubrication.

The loss of flow due to a blockage is first indicated with the higher than normal system pressure that is developed by the pump as it attempts to overcome this blockage. Higher pressure is limited, isolated and signaled through the use of various performance indicators, reset and relief, incorporated into the system design. Contact your Graco distributor for available parts.

Cleaning Valves

NOTICE

- Dirt and foreign material will damage lubricating equipment. Perform all service and disassembly under the cleanest possible conditions.
- Hard or sharp metal objects such as punches, screwdrivers, and picks can scratch and damage piston bore. When cleaning these surfaces use a brass rod and hand pressure only.

1. Remove end plugs only and try to move each piston back and forth without removing the piston from the valve section.

If all pistons move freely and there is no indication of a more serious problem:

2. Replace end plugs.

Contamination Blockage

If dirt, foreign material or any other form of contamination is found in a valve, cleaning that valve will only temporarily solve contamination blockage problems. The source of the contamination must be eliminated for satisfactory service.

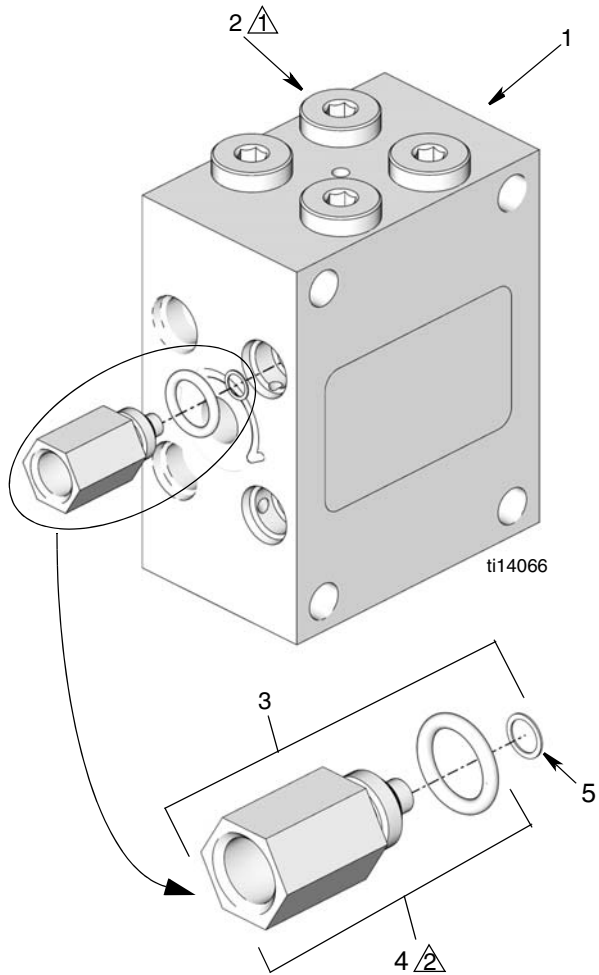
The system filtering method must be investigated, filter elements should be inspected and cleaned if necessary.

The reservoir filling method should be reviewed to eliminate any chance of foreign material entering the reservoir during filling.


Separation Blockage


If a hard wax or soap-like material is found in the Valve Section, grease separation is occurring. This means that the oil is being squeezed from the grease at normal system operating pressure and the grease thickener is being deposited in the divider valve. Cleaning the divider valve will only temporarily solve the problem. Consult your lubricant supplier for recommendations on alternate lubricants and your local Graco distributor to verify compatibility with centralized lubricating systems.

Parts



FN	Part No.	Description	Qty
1		VALVE, 4 piston honed, models 24E406, 24E407	1
		VALVE, 6 piston honed, models 24E408, 24E409	1
		VALVE, 8 piston honed, models 24E410, 24E411	1
2	24E757	PLUG, w/o ring, models 24E406, 24E407	8
		PLUG, w/o ring, models 24E408, 24E409	12
		PLUG, w/o ring, models 24E410, 24E411	16
3	24E857	KIT, checked outlet adapter, NPSF	
		• Model 24E406	6
		• Model 24E407	8
		• Model 24E408	10
		• Model 24E409	12
		• Model 24E410	14
		• Model 24E411	16
4	25A175	ADAPTER, outlet, NPSF	1
5	125011	SEAL, face, elastomeric	1
6	557349	PLUG, dry seal 1/8 NPTF (not shown, shipped loose)	1

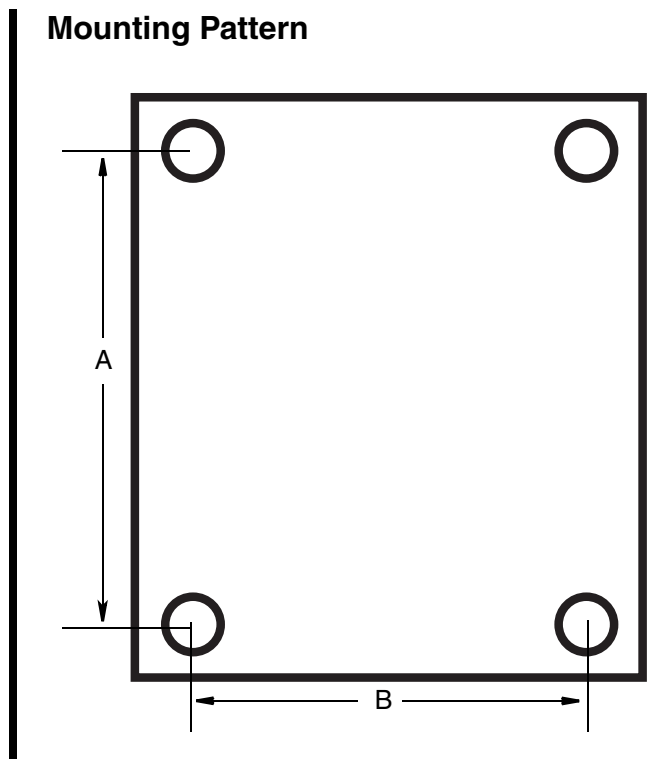
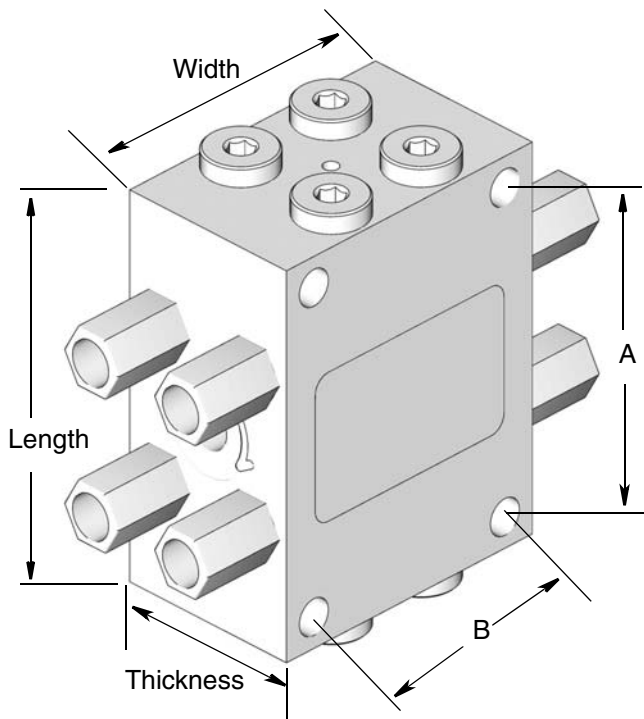
 Torque to 15 - 18 ft.-lbs (20.3 - 24.4 N.m)

 Torque to 8 - 10 ft.-lbs (10.8 - 13.5 N.m)

Technical Data

Wetted Parts	Steel, Fluorocarbon
Maximum Pressure	5076 psi (35 MPa, 350 bar)
Maximum Operating Temperature	Fluorocarbon seals 350°F (177°C)
Lubricant	Oil or grease up to NLGI #2
Output Volume	0.012 in ³
Inlet Threads	1/8 - 27 NPT
Outlet Adapter Threads	1/8 - 27 NPSF
Maximum Cycle Rate with Prox Switch	200 cpm
Mounting Holes Accommodate Bolt Diameter	0.25 in. (6 mm)

Dimensions

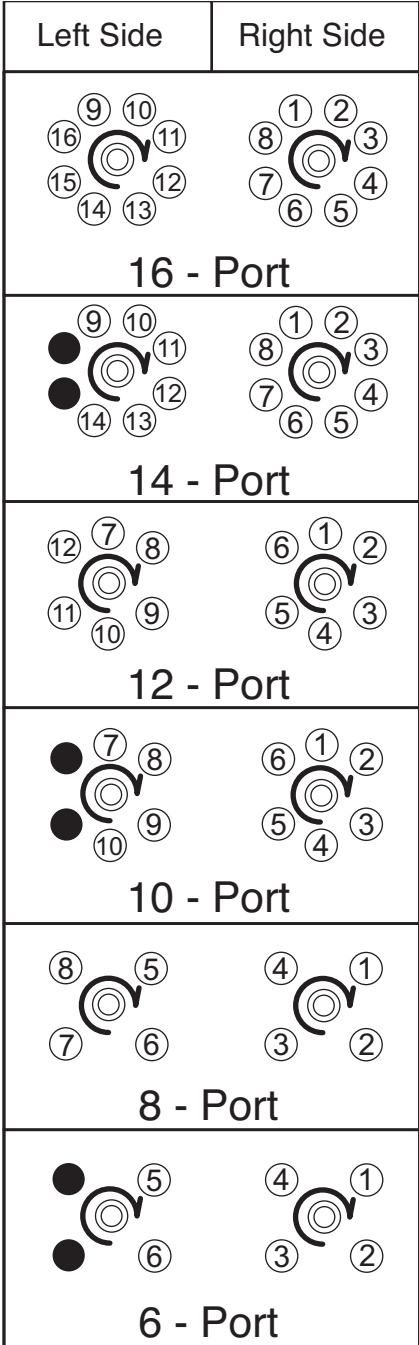


USP Outlets	Length		Width		Thickness		Mounting Holes A		Mounting Holes B	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
6	2.98	75.7	2.37	60.2	1.50	38.1	2.50	63.5	1.84	46.7
8	2.98	75.7	2.37	60.2	1.50	38.1	2.50	63.5	1.84	46.7
10	2.98	75.7	2.48	63.0	1.75	44.5	2.50	63.5	2.08	52.8
12	2.98	75.7	2.48	63.0	1.75	44.5	2.50	63.5	2.08	52.8
14	2.98	75.7	2.88	73.2	2.25	57.2	2.50	63.5	2.40	60.9
16	2.98	75.7	2.88	73.2	2.25	57.2	2.50	63.5	2.40	60.9

Outlet Pattern Numbering

NOTE:

- Port combinations do not continue across factory plugged outlets. Factory plugged ports are included on 6, 10 and 14 outlet USP Valve models. On the following diagrams the factory plugged outlets are represented as blacked ports.
- Do not remove plugs from the factory plugged outlets.



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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.

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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

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

Phone: 612-623-6928 or **Toll Free:** 1-800-533-9655, **Fax:** 612-378-3590

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

Original instructions. This manual contains English. MM 3A0860

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Revised July 2015