



INSTRUCTIONS

This manual contains important warnings and information.
READ AND KEEP IT FOR REFERENCE.

First choice when quality counts.™

Rev. U
Supersedes N
and PCN P
Includes Rev. R – T

19 LITER (5 GALLON) PAIL SIZE

Air-Powered Ram

10 bar, 1.0 MPa (150 psi) Maximum Air Inlet Pressure

Part No. 206-450, Series K

For use with high pressure extrusion pumps.
Order wiper plate separately.

Part No. 222-781, Series A

For use with Check-Mate™ 200 and 450 Pumps.
Order wiper plate separately.

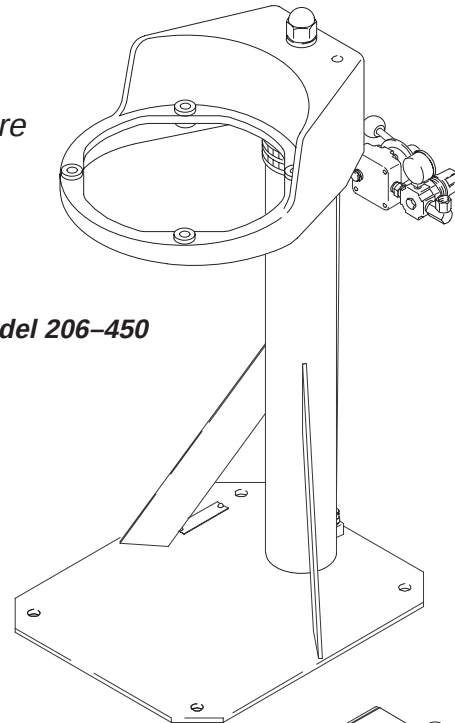
Part No. 237-636, Series A

For use with short versions of Monark® and President® Check-Mate™ 200 and 450 Pumps.
Order wiper plate separately.

Part No. 237-561, Series A

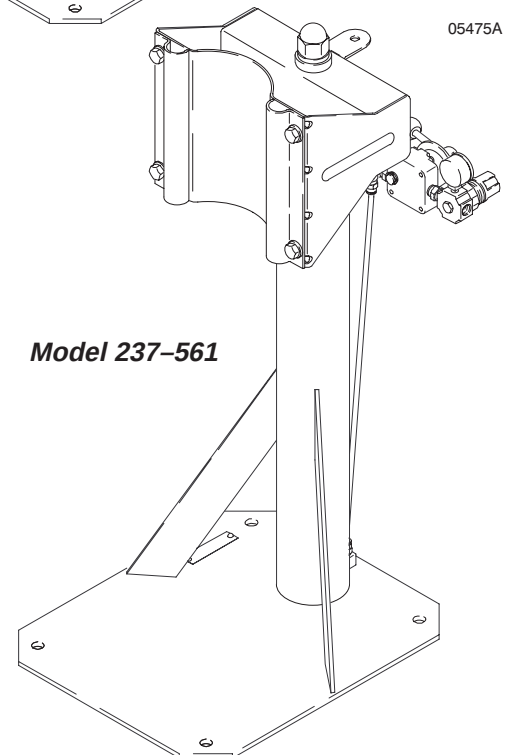
For use with Bulldog® and Senator® Check-Mate™ 450 Pumps and all Check-Mate™ 800 Pumps.
Order wiper plate separately.

Model 206-450



05475A

Model 237-561



05394

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Symbols

Warning Symbol



This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

Caution Symbol



This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

WARNING



INSTRUCTIONS

EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are uncertain about usage, call your Graco distributor.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure stated on the equipment or in the **Technical Data** for your equipment. Do not exceed the maximum working pressure of the lowest rated component in your system.
- Wear hearing protection when operating this equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.



MOVING PARTS HAZARD

Moving parts, such as the pump's priming piston and the wiper plate, can pinch or amputate your fingers.

- Keep clear of all moving parts when starting or operating the pump.
- Keep hands and fingers away from the priming piston during operation and whenever the pump is charged with air.
- Keep your hands away from the wiper plate and the lip of the pail while the ram is operating.
- Before servicing the equipment, follow the **Pressure Relief Procedure** on page 4 to prevent the equipment from starting unexpectedly.

Setup

This air-powered ram extruder forces high viscosity fluids into the intake valve of the fluid pump. Wiper plates for use with this ram are listed on page 16.

NOTE: Always use Genuine Graco Parts and Accessories, available from your Graco distributor. If you supply your own accessories, be sure they are adequately sized and pressure rated for your system.

Location

1. Position the ram so the air regulators for the pump and the ram will be easily accessible. Ensure that there is sufficient overhead clearance when the ram is fully raised. Refer to **Dimensions** on page 19.
2. Using the holes in the ram base (28) as a guide, drill four holes for 1/2 in. (13 mm) anchors. Refer to **Dimensions** on page 19.
3. Check that the ram base is level in all directions. If necessary, level the base using metal shims. Secure the base to the floor using 13 mm (1/2 in.) anchors which are long enough to prevent the ram from tipping.

NOTE: The ram may also be mounted on portable cart 237–557. See manual 308–567 for details.

Setup of Accessories and Connecting Air Lines

Refer to Fig. 1.

WARNING

A main air bleed valve (E) and a pump air bleed valve (H) are required. These accessories help reduce the risk of serious injury, including fluid injection and splashing of fluid in the eyes or on the skin, and injury from moving parts if you are adjusting or repairing the pump.

The main air bleed valve (E) shuts off and relieves the air to the pump and ram. The ram will hold pressure if the ram director valve (U) is in the horizontal (neutral) position. To relieve air pressure in the ram, close the main air bleed valve (E) and move the director valve (U) to DOWN. The ram will slowly drop.

The pump air bleed valve (H) relieves air trapped between it and the pump after the air is shut off. Trapped air can cause the pump to cycle unexpectedly. Locate the valve close to the pump.

- **The main air bleed valve (E)** is required in your system to shut off the air supply to the pump (A) and ram (B) (see the **WARNING** at left). When closed, the valve will bleed off all air in the ram and pump, and the ram will slowly drop. Be sure the valve is easily accessible from the pump, and is located **upstream** from the air manifold (F).
- **The pump air bleed valve (H)** is required in your system to relieve air trapped between it and the air motor when the valve is closed (see the **WARNING** at left). Be sure the valve is easily accessible from the pump, and is located **downstream** from the air regulator (G).
- **The air regulator (G)** controls pump speed and outlet pressure by adjusting the air pressure to the pump (A). Locate the regulator close to the pump, but **upstream** from the pump air bleed valve (H).
- **The air manifold (F)** has a swivel air inlet. To supply air to the ram, connect a hose (EE) between an auxiliary port of the air manifold and the ram air inlet.
- **The ram air regulator (T)** controls the air pressure to the ram.
- **The ram director valve (U)** controls the raising and lowering of the ram.
- **The air release valve (V)** opens and closes the flow of air to assist raising the wiper plate (C) out of an empty pail.

Assembling Model 222–781 Ram

NOTE: Model 222–781 Ram requires the assembly of an extension tube which allows Model 206–450 Ram to be used with Check-Mate™ Pumps. Refer to the parts drawing on page 10.

1. Unscrew the cap nut (13) from the piston rod (20). Remove the lockwasher (7). Lift the pump support (18) off the ram.
2. Install the extension tube (105) on the piston rod (20). Align the holes in the rod and tube, and install the capscrew (104) through the holes. Secure with the nut (103).
3. Install the pump support (18) on the extension tube (105), and secure with the lockwasher (7) and cap nut (13).
4. Install the ram as explained above.

Operation

Pressure Relief Procedure

WARNING



INJECTION HAZARD

The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. Fluid under high pressure can be injected through the skin and cause serious injury. To reduce the risk of an injury from injection, splashing fluid, or moving parts, follow the **Pressure Relief Procedure** whenever you:

- are instructed to relieve the pressure,
- stop spraying/dispersing,
- check or service any of the system equipment,
- or install or clean the spray tip/nozzle.

1. Lock the gun/valve trigger safety.
2. Close the pump air bleed valve (H, required in your system).
3. Shut off the main air bleed valve (E, required in your system). Set the ram director valve (U) to DOWN. The ram will slowly drop.
4. Unlock the gun/valve trigger safety.
5. Hold a metal part of the gun/valve firmly to the side of a grounded metal pail, and trigger the gun/valve to relieve pressure.
6. Lock the gun/valve trigger safety.
7. Open the drain valve (required in your system) and/or the pump bleeder valve (DD), having a container ready to catch the drainage.
8. Leave the drain valve open until you are ready to spray again.

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

Starting and Adjusting the Ram

1. Refer to Fig. 1. Close all air regulators and air valves.
2. Open the main air bleed valve (E) and set the ram air regulator (T) to 2.8 bar, 0.28 MPa (40 psi). Pull up on the director valve (U) handle so the arrow points to UP, and let the ram rise to its full height.
3. Set a full 19 liter (5 gal.) pail of fluid on the ram base, slide it back against the ram tube and supports, and center it under the wiper plate (C). To prevent air from being trapped under the wiper plate, scoop fluid from the center of the pail to the sides, to make the surface concave.

WARNING



MOVING PARTS HAZARD

Moving parts can pinch or amputate your fingers. When the pump is operating and when raising or lowering the ram, keep your fingers and hands away from the pump intake, wiper plate, and lip of the fluid container.

4. With your hands away from the pail and the wiper plate, push down on the director valve (U) handle so the arrow points to DOWN, and lower the ram until the wiper plate rests on the lip of the pail. Move the director valve handle to the horizontal position (neutral).
5. Adjust the pail to be sure it is aligned with the wiper plate, and remove the vent handle (AA) from the wiper plate (C) to open the vent hole (BB).
6. Set the director valve (U) to DOWN and continue to lower the ram until fluid appears at the wiper plate vent hole (BB). Set the director valve to neutral, reinstall the vent handle (AA) and tighten securely. See Fig. 1.

Operation

KEY

- A Pump
- B Ram
- C Wiper Plate
- E Main Air Bleed Valve
(required, for pump and ram)
- F Air Manifold

- G Pump Air Regulator
- H Pump Air Bleed Valve
(required, for pump)
- T Ram Air Regulator
- U Ram Director Valve
- V Air Release Valve

- AA Wiper Plate Vent Handle
- BB Vent Hole
- CC Air Assist Petcock
- DD Pump Bleeder Valve
- EE Air Supply Hose to Ram

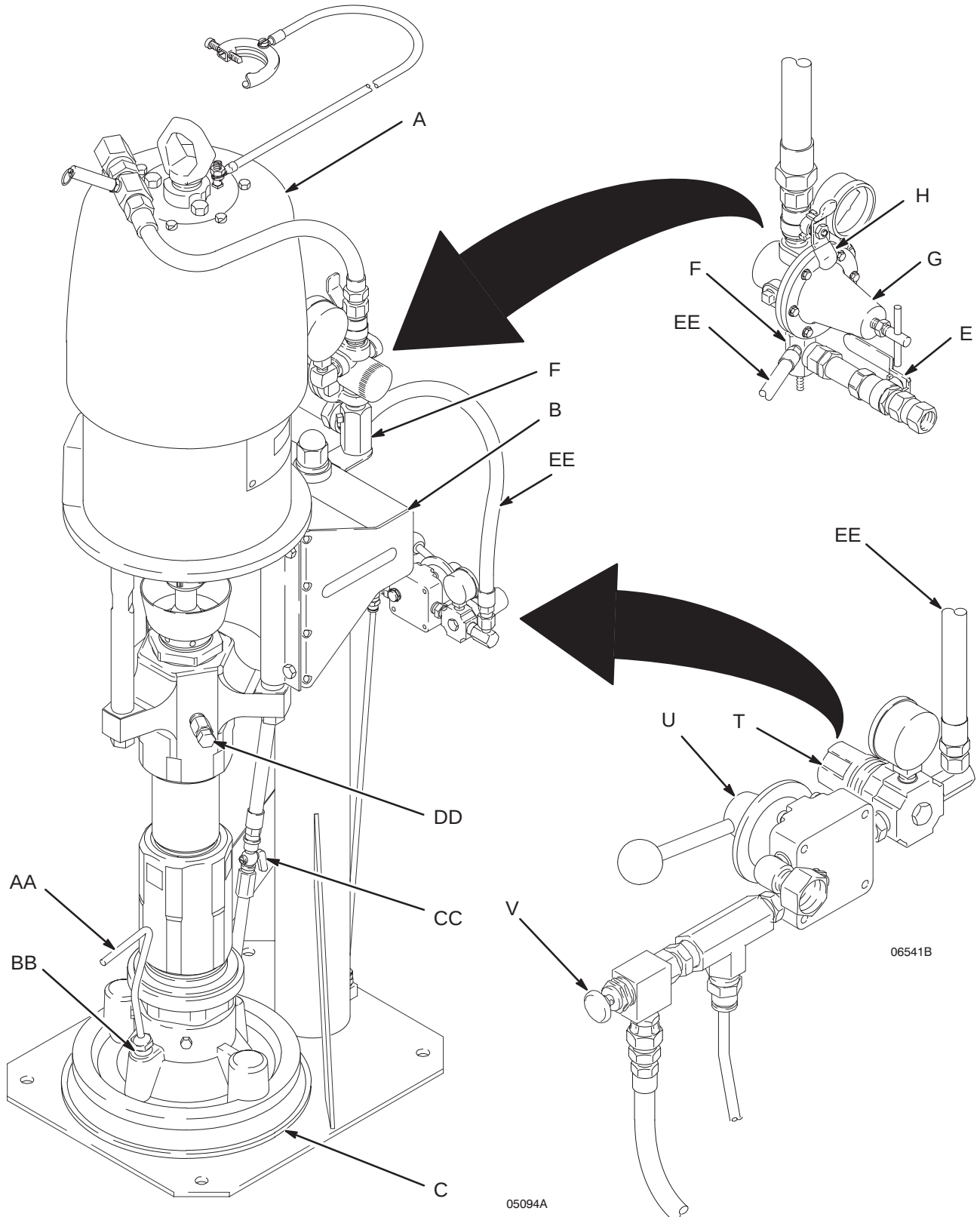


Fig. 1

Operation

Starting and Adjusting the Pump

1. Be sure the pump air regulator (G) is closed. Then set the ram air regulator (T) to about 2.1 bar, 0.21 MPa (30 psi). Set the director valve (U) to DOWN. See Fig. 1.
2. Start the pump (A) as explained in the separate pump instruction manual.
3. Keep the director valve (U) set to DOWN while the pump is operating.

NOTE: Adjust the air pressure to the ram as needed, but **do not** increase it to a level where fluid is forced past the wiper plate (C).

Changing Fluid Pails

WARNING



MOVING PARTS HAZARD

Moving parts can pinch or amputate your fingers. When the pump is operating and when raising or lowering the ram, keep your fingers and hands away from the pump intake, wiper plate, and lip of the fluid container.

To reduce risk of injury or damage to equipment, take care when adjusting air release valve pressure. Too much pressure can cause the wiper plate to rise very quickly or burst the pail. Too little pressure can cause the ram to lift the entire pail from the ground.

When the pail is empty, follow this procedure to load a new pail of material.

1. Stop the pump (A) by closing the pump air bleed valve (H).

2. Before raising the wiper plate, locate the pushbutton on the air release valve (V).
3. Raise the wiper plate out of the pail.
 - a. Set the ram air regulator (T) to 0.07 to 0.10 MPa (0.7–1.0 bar) (10–15 psi).
 - b. Set the director valve (U) to UP to raise the wiper plate. At the same time, carefully equalize pressure in the pail by operating the air release valve (V) open and closed.
4. Raise the wiper plate until it is completely out of the pail.
5. Remove the empty pail.
6. Inspect the wiper plate and, if necessary, remove any remaining material or material build-up.
7. Place the full pail on the ram base.
8. Lower the ram and adjust the position of the pail relative to the wiper plate (C), as explained under **“Starting and Adjusting the Ram”** on page 4.

Shutdown

WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 4.

1. **Relieve the pressure.**
2. Follow the pump shutdown instructions in your separate pump manual.

Troubleshooting



WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 4.

1. **Relieve the pressure.**
2. Check all possible causes and problems before disassembling the ram.

PROBLEM	CAUSE	SOLUTION
Ram will not raise or lower.	Closed air valve or clogged air line.	Clear the air line; increase the air supply. Check that the valves are open.
	Not enough air pressure to ram.	Increase the air pressure, but do not exceed 10 bar, 1.0 MPa (150 psi).
	Worn or damaged piston.	Service. See page 8.
	Director valve is closed or clogged.	Open the valve; clear.
Ram raises and lowers too fast.	Air pressure to ram is too high.	Decrease the air pressure.
Fluid squeezes past the wiper plate.	Air pressure to ram is too high.	Decrease the air pressure.
	Worn or damaged wiper.	Replace. See the separate wiper plate manual.
Pump will not prime properly or pumps air.	Closed air valve or clogged air line.	Clear the air line; increase the air supply. Check that the valves are open.
	Not enough air pressure to ram.	Increase the air pressure, but do not exceed 10 bar, 1.0 MPa (150 psi).
	Worn or damaged piston.	Service. See page 8.
	Director valve is closed or clogged.	Open the valve; clear.
	Director valve is dirty, worn, or damaged.	Clean; service.
	Wiper plate vent is open.	Close the vent.
Air director valve will not hold pail down or lift plate up.	Closed air valve or clogged air line.	Clear the air line; increase the air supply. Check that the valves are open.
	Not enough air pressure to ram.	Increase the air pressure, but do not exceed 10 bar, 1.0 MPa (150 psi).
	Valve passage clogged.	Clean.

Service

Piston Rod Bearing Service

WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 4.

1. **Relieve the pressure.**
2. Unscrew the cap nut (13) and remove the pump support (18) and attaching hardware. See Fig. 2 or the parts drawing for your model.
3. Unscrew the cylinder cap (19) and pull the rod guide housing (27) up off the piston rod (20).
4. Remove the v-block packing (16) and bearings (17).
5. Clean and inspect all parts for wear or damage. Replace as needed.

Piston Service

WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 4.

1. **Relieve the pressure.**
2. Unscrew the cap nut (13) and remove the pump support (18) and attaching hardware. See Fig. 2 or the parts drawing for your model.

3. Unscrew the cylinder cap (19) and pull the rod guide housing (27) up off the piston rod (20).
4. Carefully pull the piston rod (20) and piston (21) straight up out of the base (28).

CAUTION

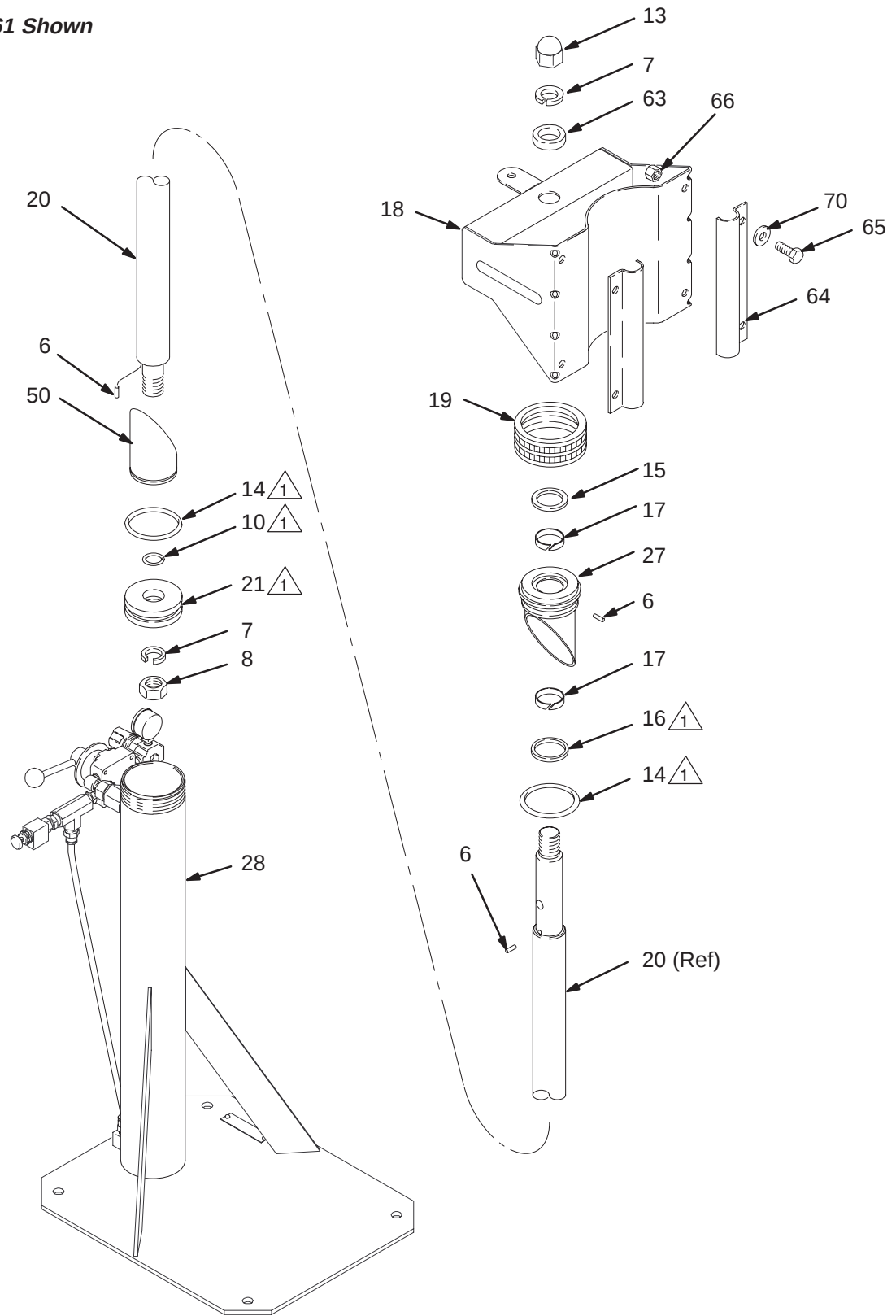
Do not tilt the piston rod to one side when removing it from the base or when installing it. Such movement can damage the piston or inside surface of the base cylinder.

5. Carefully lay the piston (21) and piston rod (20) down to avoid bending the rod.
6. Remove the piston retainer nut (8), washer (7), piston (21), outer piston o-ring (14), and inner piston o-ring (10).
7. Clean and inspect all parts for wear or damage. Replace as needed.
8. Install the piston o-rings (14 and 10) on the piston (21). Lubricate the piston and o-rings.
9. Slide the piston (21) onto the piston rod (20) and secure tightly with the washer (7) and retainer nut (8).
10. Carefully insert the piston (21) into the base's cylinder (28) and push the piston rod (20) straight down into the cylinder.
11. Install the rod guide housing (27) on the piston and screw on the cylinder cap (19).
12. Reinstall the pump support (18) and attaching hardware.

Service

Model 237-561 Shown

 Lubricate.



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Fig. 2

Parts

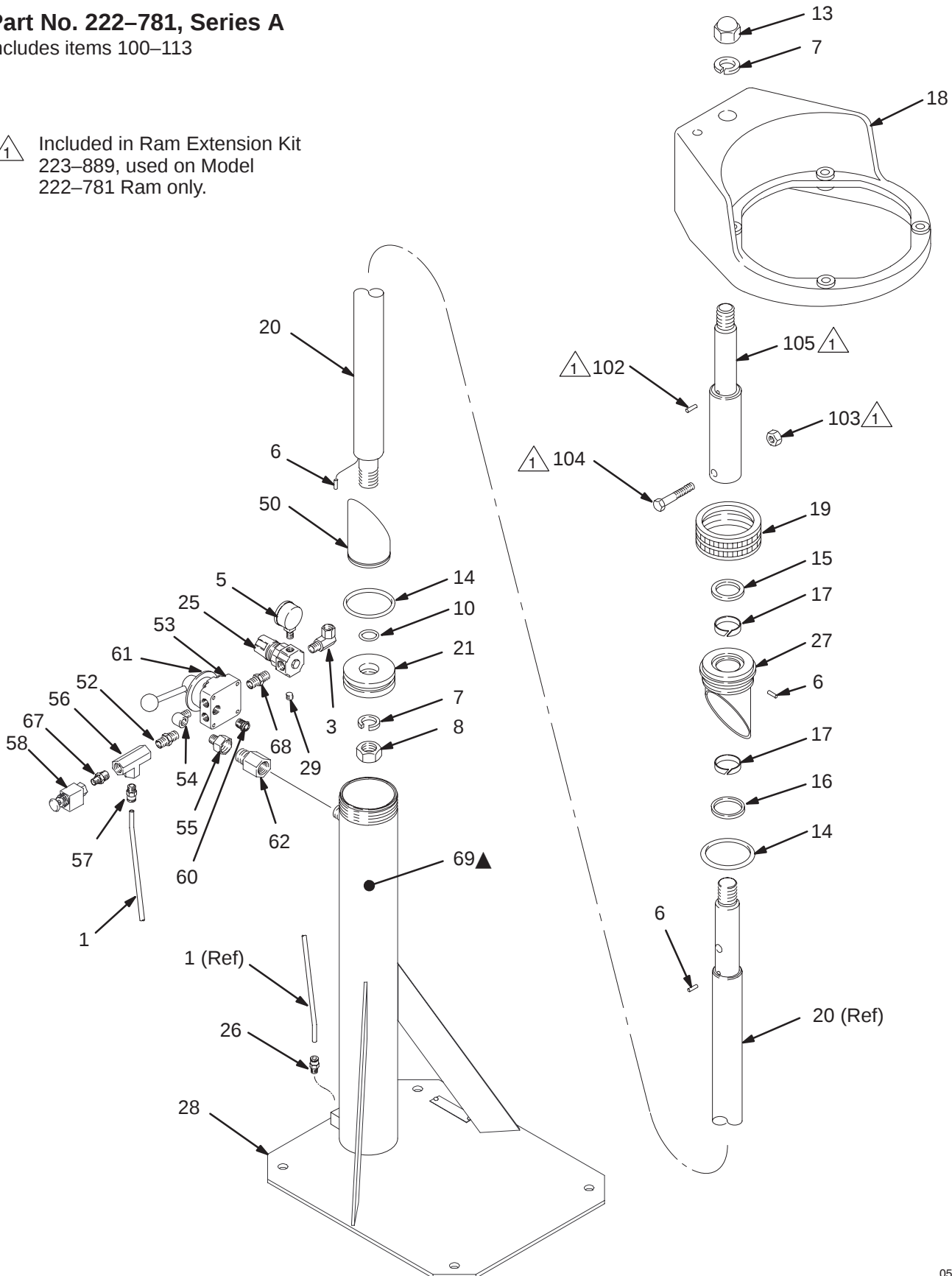
Part No. 206–450, Series K

includes items 1–69

Part No. 222–781, Series A

includes items 100–113

 Included in Ram Extension Kit 223–889, used on Model 222–781 Ram only.



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Parts

Part No. 206–450, Series K

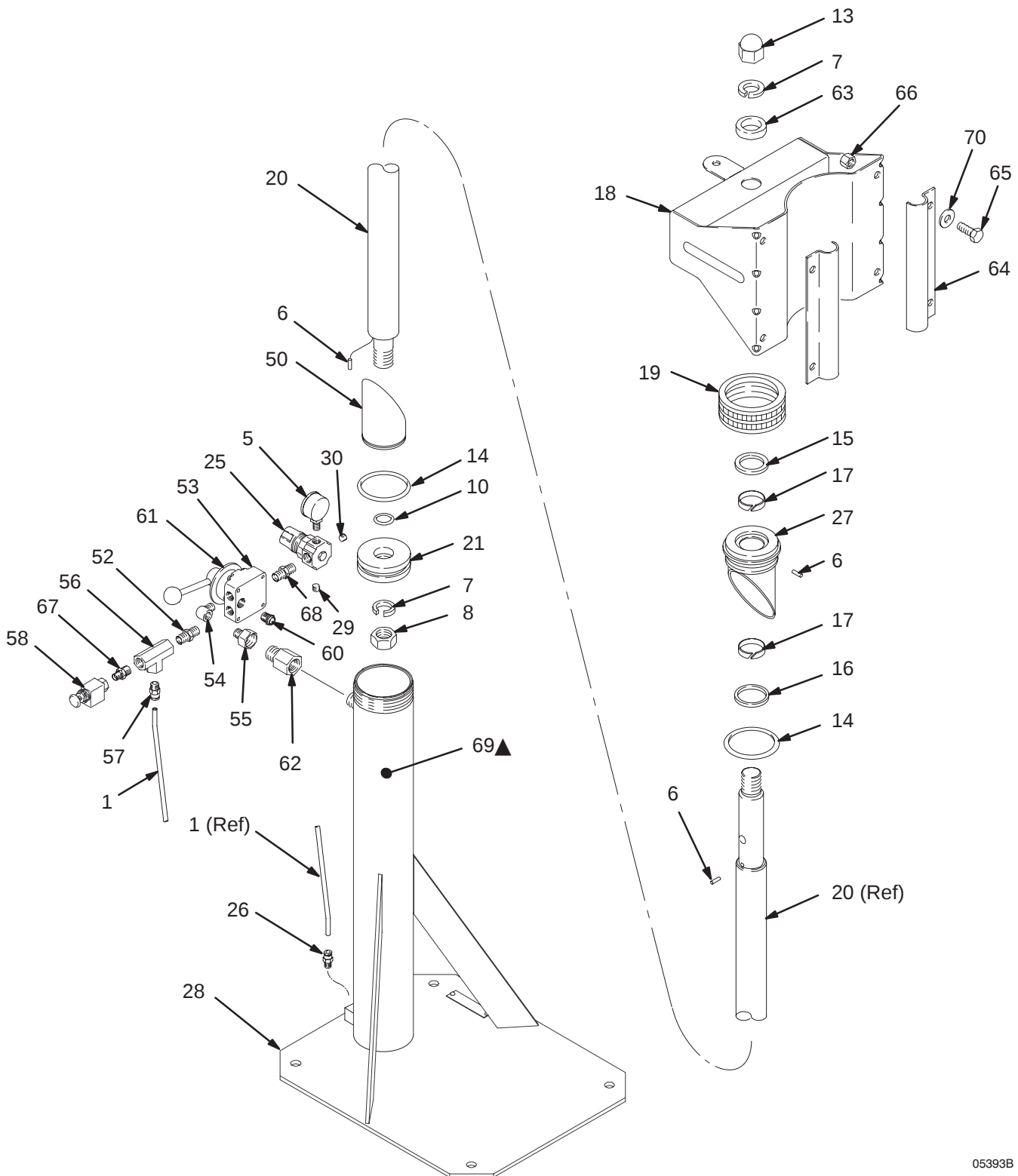
Ref. No.	Part No.	Description	Qty.	Ref. No.	Part No.	Description	Qty.
1		TUBE, nylon; 1/4" OD; 20" (508 mm); purchase locally	1	51	113–896	AIR CONTROL VALVE ASSY Includes items 52–61, 67, 68	1
3	155–541	UNION, swivel, 90°; 1/4 npt(m) x 1/4 npsm(f)	1	52	113–029	. NIPPLE; 1/4 npt	1
5✓	110–319	GAUGE, air pressure	1	53	113–030	. VALVE, air director	1
6†	101–154	PIN, Drive-Lok; 0.19" (4.8 mm) dia; 0.68" (17.3 mm) long	3	54	113–031	. ELBOW; 1/4 npt (m x f)	1
7†	101–533	LOCKWASHER, spring; 7/8"	2	55	113–032	. ADAPTER; 1/4 npt(m) x 1/2 npt(f)	1
8†	102–301	NUT, hex jam; 7/8"–9	1	56	113–914	. TEE, pipe; 1/4 npt (f x 2) run; 1/4 npt(f) branch	1
10✓	156–401	O-RING; nitrile rubber	1	57	113–034	. FITTING, tube; 1/4" OD tube x 1/4 npt(m)	1
13†	160–107	NUT, cap; 7/8"–9	1	58	113–913	. VALVE, air release; 1/8 npt(f)	1
14✓	160–258	O-RING; nitrile rubber	2	60	113–037	. MUFFLER; 1/4 npt(m)	1
15✓	161–569	SEAL, wiper; felt	1	61	290–073	. LABEL, orientation	1
16	163–011	PACKING, v-block; nitrile rubber	1	62	110–332	ADAPTER; 1/2 npt (m x f)	1
17	165–287	BEARING, split strip; Teflon®	2	67	113–912	ADAPTER; 1/4 npt x 1/8 npt	1
18†	166–533	SUPPORT, pump	1	68	114–378	VALVE, check; 1/4 npt(m)	1
19†	166–552	CAP, cylinder	1	69▲	290–138	LABEL, warning	2
20	166–553	ROD, piston	1	✓ Keep these spare parts on hand to reduce down time.			
21	183–943	PISTON	1	† These parts are not normally sold as replacement parts. They do not usually need replacement or are available at local hardware outlets. Available from Graco on special order only.			
25	110–318	AIR REGULATOR See Manual 308–167 for parts	1	▲ Replacement Danger and Warning labels, tags and cards are available at no cost.			
26	113–208	CONNECTOR, tube; 1/4" OD tube x 1/8 npt(m)	1				
27†	206–725	HOUSING, rod guide	1				
28†	206–726	BASE	1				
29	104–765	PLUG, pipe; 1/8 npt	1				
50†	210–153	GUIDE, rod	1				

Part No. 222–781, Series A

Ref. No.	Part No.	Description	Qty.	Ref. No.	Part No.	Description	Qty.
100	206–450	RAM; includes items 1–69 above	1	107	184–140	. PLATE, mounting, pump; not shown	1
101	223–889	RAM EXTENSION KIT; includes items 102–113; refer to manual 308–026 or 308–198 for pump mounting instructions	1	108	102–025	. NUT, hex; 1/4–20; not shown	2
102	101–154	. PIN, Drive-Lok; 0.19" (4.8 mm) dia; 0.68" (17.3 mm) long	1	109	102–313	. CAPSCREW, hex hd; 1/4–20 x 1–3/4" (45 mm) long; not shown	2
103	100–131	. NUT, hex	1	110	100–101	. CAPSCREW, hex hd; 3/8–16 x 1" (25 mm) long; not shown	4
104	107–144	. SCREW, cap, hex hd; 3/8–16 unc–2a x 2–1/4" (57 mm) lg	1	111	100–016	. LOCKWASHER, spring; 1/4"; not shown	2
105	184–150	. TUBE, extension	1	112	100–270	. CAPSCREW, hex hd; 1/4–20 x 5/8" (15.9 mm) long; not shown	2
106	100–133	. LOCKWASHER, spring; 3/8"; not shown	4	113	100–468	. CAPSCREW, hex hd; 3/8–16 x 2" (50.8 mm) long; not shown	4

Parts

Part No. 237-561, Series A



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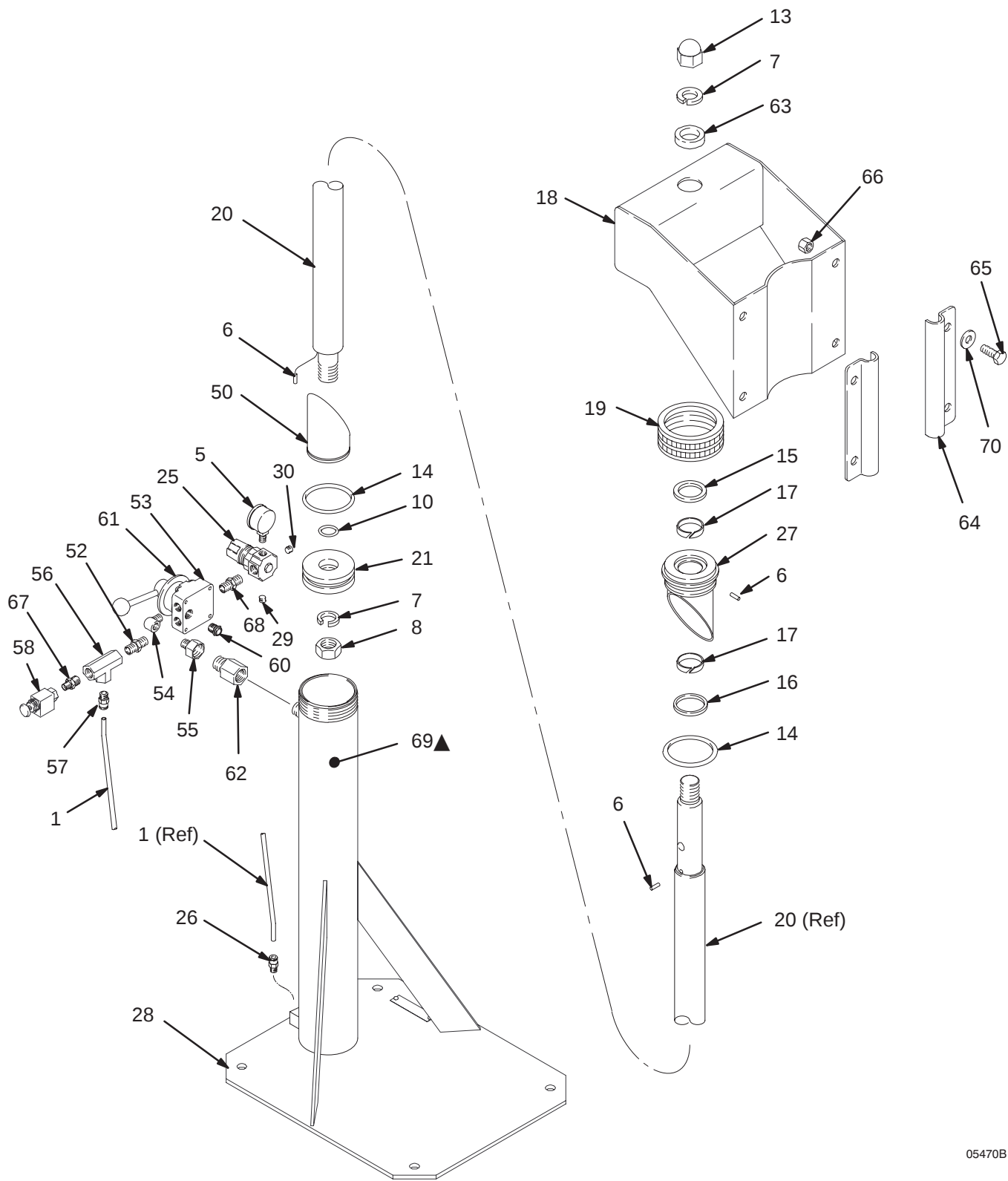
Parts

Part No. 237–561, Series A

Ref. No.	Part No.	Description	Qty.	Ref. No.	Part No.	Description	Qty.
1		TUBE, nylon; 1/4" OD; 20" (508 mm); purchase locally	1	53	113–030	. VALVE, air director	1
5✓	110–319	GAUGE, air pressure	1	54	113–031	. ELBOW; 1/4 npt (m x f)	1
6†	101–154	PIN, Drive-Lok; 0.19" (4.8 mm) dia; 0.68" (17.3 mm) long	3	55	113–032	. ADAPTER; 1/4 npt(m) x 1/2 npt(f)	1
7†	101–533	LOCKWASHER, spring; 7/8"	2	56	113–914	. TEE, pipe; 1/4 npt (f x 2) run; 1/4 npt(f) branch	1
8†	102–301	NUT, hex jam; 7/8"–9	1	57	113–034	. FITTING, tube; 1/4" OD tube x 1/4 npt(m)	1
10✓	156–401	O-RING; nitrile rubber	1	58	113–913	. VALVE, air release; 1/8 npt(f)	1
13†	160–107	NUT, cap; 7/8"–9	1	60	113–037	. MUFLER; 1/4 npt(m)	1
14✓	160–258	O-RING; nitrile rubber	2	61	290–073	. LABEL, orientation	1
15✓	161–569	SEAL, wiper; felt	1	62	110–332	ADAPTER; 1/2 npt (m x f)	1
16	163–011	PACKING, v-block; nitrile rubber	1	63	190–265	SPACER	1
17	165–287	BEARING, split strip; Teflon®	2	64	190–267	CLAMP, pump support	2
18	237–560	SUPPORT, pump	1	65	100–680	SCREW, cap, hex hd; 3/8–16; 0.875" (22 mm) long	4
19†	166–552	CAP, cylinder	1	66	101–566	NUT, lock; 3/8–16	4
20	166–553	ROD, piston	1	67	113–912	ADAPTER; 1/4 npt x 1/8 npt	1
21	183–943	PISTON	1	68	114–378	VALVE, check; 1/4 npt(m)	1
25	110–318	AIR REGULATOR See Manual 308–167 for parts	1	69▲	290–138	LABEL, warning	2
26	113–208	CONNECTOR, tube; 1/4" OD tube x 1/8 npt(m)	1	70	100–023	WASHER, flat; 3/8 in. (9.5 mm)	4
27†	206–725	HOUSING, rod guide	1	▲ Replacement Danger and Warning labels, tags and cards are available at no cost.			
28†	206–726	BASE	1	✓ Keep these spare parts on hand to reduce down time.			
29	104–765	PLUG, pipe; 1/8 npt	1	† These parts are not normally sold as replacement parts. They do not usually need replacement or are available at local hardware outlets. Available from Graco on special order only.			
30	100–721	PLUG, pipe; 1/4 npt	1				
50†	210–153	GUIDE, rod	1				
51	113–896	AIR CONTROL VALVE ASSY Includes items 52–61, 67, 68	1				
52	113–029	. NIPPLE; 1/4 npt	1				

Parts

Part No. 237-636, Series A



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Parts

Part No. 237–636, Series A

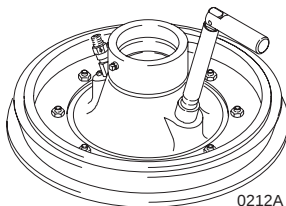
Ref. No.	Part No.	Description	Qty.	Ref. No.	Part No.	Description	Qty.
1		TUBE, nylon; 1/4" OD; 20" (508 mm); purchase locally	1	52	113–029	. NIPPLE; 1/4 npt	1
5✓	110–319	GAUGE, air pressure	1	53	113–030	. VALVE, air director	1
6†	101–154	PIN, Drive-Lok; 0.19" (4.8 mm) dia; 0.68" (17.3 mm) long	3	54	113–031	. ELBOW; 1/4 npt (m x f)	1
7†	101–533	LOCKWASHER, spring; 7/8"	2	55	113–032	. ADAPTER; 1/4 npt(m) x 1/2 npt(f)	1
8†	102–301	NUT, hex jam; 7/8"–9	1	56	113–914	. TEE, pipe; 1/4 npt (f x 2) run; 1/4 npt(f) branch	1
10✓	156–401	O-RING; nitrile rubber	1	57	113–034	. FITTING, tube; 1/4" OD tube x 1/4 npt(m)	1
13†	160–107	NUT, cap; 7/8"–9	1	58	113–913	. VALVE, air release; 1/8 npt(f)	1
14✓	160–258	O-RING; nitrile rubber	2	60	113–037	. MUFFLER; 1/4 npt(m)	1
15✓	161–569	SEAL, wiper; felt	1	61	290–073	. LABEL, orientation	1
16	163–011	PACKING, v-block; nitrile rubber	1	62	110–332	ADAPTER; 1/2 npt (m x f)	1
17	165–287	BEARING, split strip; Teflon®	2	63	190–265	SPACER	1
18	237–562	SUPPORT, pump	1	64	190–256	CLAMP, pump support	2
19†	166–552	CAP, cylinder	1	65	100–680	SCREW, cap, hex hd; 3/8–16; 0.875" (22 mm) long	4
20	166–553	ROD, piston	1	66	101–566	NUT, lock; 3/8–16	4
21	183–943	PISTON	1	67	113–912	ADAPTER; 1/4 npt x 1/8 npt	1
25	110–318	AIR REGULATOR See Manual 308–167 for parts	1	68	114–378	VALVE, check; 1/4 npt(m)	1
26	113–208	CONNECTOR, tube; 1/4" OD tube x 1/8 npt(m)	1	69▲	290–138	LABEL, warning	2
27†	206–725	HOUSING, rod guide	1	70	100–023	WASHER, flat; 3/8 in. (9.5 mm)	4
28†	206–726	BASE	1	✓ Keep these spare parts on hand to reduce down time.			
29	104–765	PLUG, pipe; 1/8 npt	1	† These parts are not normally sold as replacement parts. They do not usually need replacement or are available at local hardware outlets. Available from Graco on special order only.			
30	100–721	PLUG, pipe; 1/4 npt	1				
50†	210–153	GUIDE, rod	1				
51	113–896	AIR CONTROL VALVE ASSY Includes items 52–61, 67, 68	1				

Accessories

222-812 Carbon Steel Wiper Plate, buna-N and polyethylene wipers

PATENT PENDING

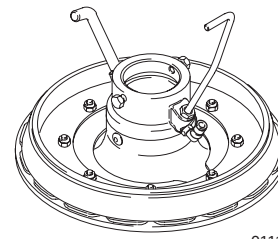
Can be used with both straight-sided and tapered pails. Applies pressure on surface of highly viscous fluids, to force fluid into the pump intake and assist priming. Refer to Instruction Manual 308-049.



222-909 Stainless Steel Wiper Plate with Teflon® coated and polyethylene wipers

PATENT PENDING

Can be used with both straight-sided and tapered pails. Applies pressure on surface of highly viscous fluids, to force fluid into the pump intake and assist priming. Refer to Instruction Manual 308-049.



206-747 Wiper Plate (For Use Only With Pumps Mounted on Model 206-450 Ram)

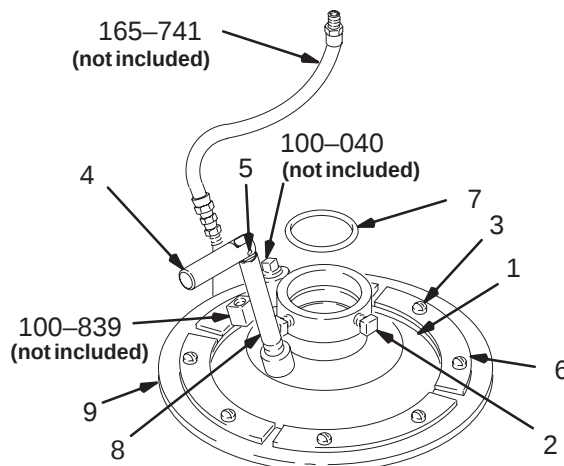
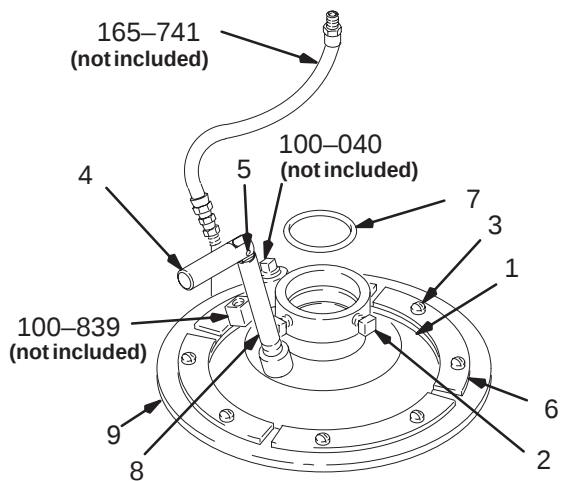
For use with 20:1 Ratio King™, and 25:1 and 40:1 Ratio Bulldog® Pumps. Includes:

Ref. No.	Part No.	Description	Qty.
1	206-748	PLATE, wiper; bare	1
2	100-556	SCREW, soc hd set; 5/16-18 x 3/8"	2
3	100-799	SCREW, rd hd mach; 1/4-20 x 1/2"	8
4	177-542	HANDLE, probe stem	1
5	101-831	ROLL PIN; 3/16" dia.; 3/4" long	1
6	160-343	CLAMP, wiper ring seal	4
7	162-440	O-RING; nitrile rubber	1
8	166-560	STEM, probe	1
9	167-594	WIPER	1

206-745 Wiper Plate (For Use Only With Pumps Mounted on Model 206-450 Ram)

For use with 24:1 and 48:1 Ratio President®, 40:1 Ratio Bulldog®, and 45:1 Ratio King™ Pumps. Includes:

Ref. No.	Part No.	Description	Qty.
1	206-746	PLATE, wiper; bare	1
2	100-556	SCREW, soc hd set; 5/16-18 x 3/8"	2
3	100-799	SCREW, rd hd mach; 1/4-20 x 1/2"	8
4	177-542	HANDLE, probe stem	1
5	101-831	ROLL PIN; 3/16" dia.; 3/4" long	1
6	160-343	CLAMP, wiper ring seal	4
7	160-721	O-RING; nitrile rubber	1
8	166-560	STEM, probe	1
9	167-594	WIPER	1



Manual Change Summary

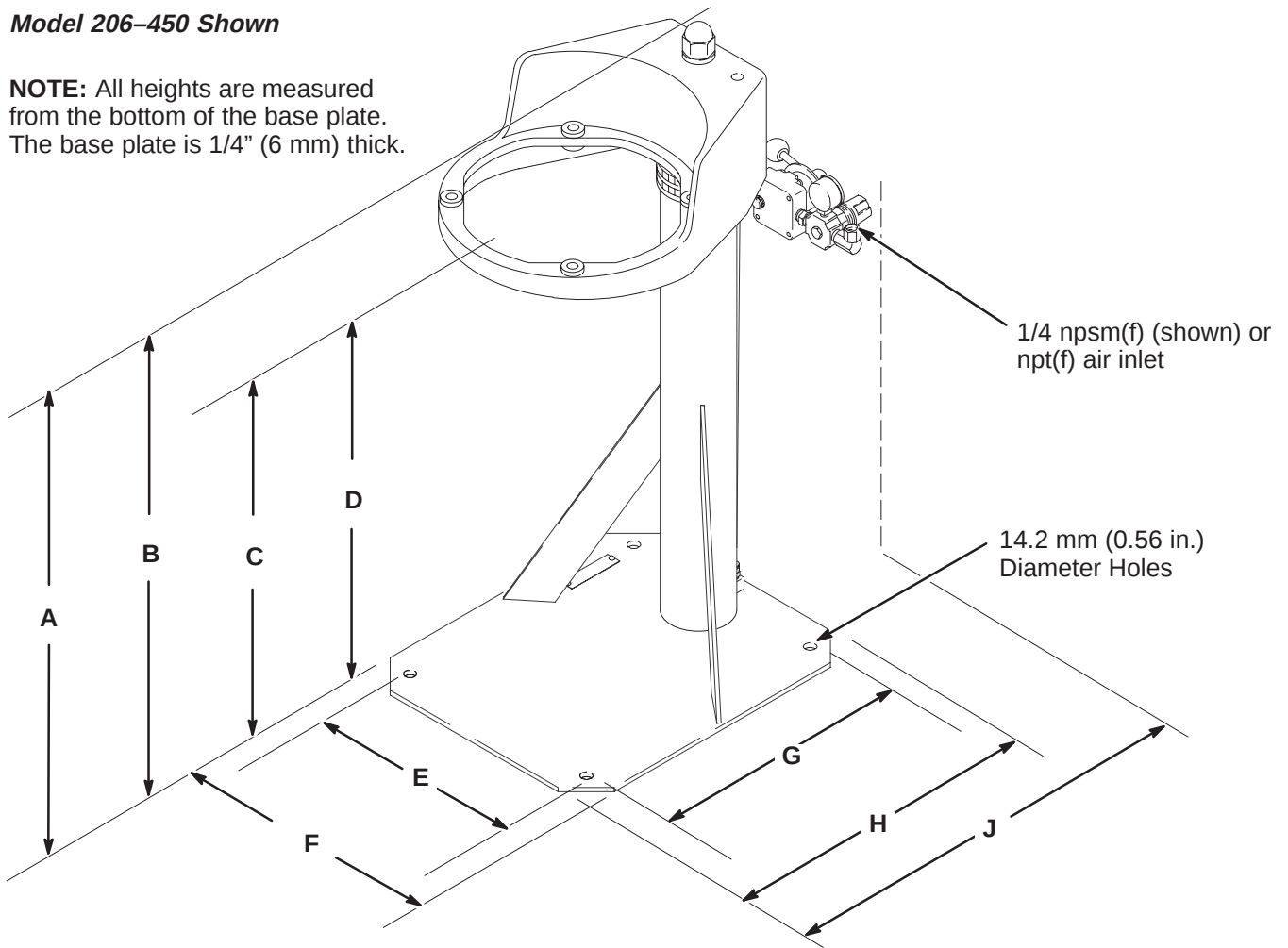
The manual is revised per ECOs V4036, V4548, V4610, and V5379.

[illegible]

Dimensions

Model 206–450 Shown

NOTE: All heights are measured from the bottom of the base plate. The base plate is 1/4" (6 mm) thick.



Weight: Approximately 100 lb (45.4 kg).

05475

Ram Model	A (Raised)	B (Lowered)	C (Raised)	D (Lowered)	E	F	G	H	J
206–450	1226 mm (48.25 in.)	794 mm (31.25 in.)	1086 mm (42.75 in.)	654 mm (25.75 in.)	279 mm (11 in.)	356 mm (14 in.)	356 mm (14 in.)	432 mm (17 in.)	560 mm (22.0 in.)
222–781	1391 mm (54.75 in.)	959 mm (37.75 in.)	1251 mm (49.25 in.)	819 mm (32.25 in.)	279 mm (11 in.)	356 mm (14 in.)	356 mm (14 in.)	432 mm (17 in.)	560 mm (22.0 in.)
237–561	1235 mm (48.60 in.)	813 mm (32.0 in.)	Not Applicable	Not Applicable	279 mm (11 in.)	356 mm (14 in.)	356 mm (14 in.)	432 mm (17 in.)	560 mm (22.0 in.)
237–636	1235 mm (48.60 in.)	813 mm (32.0 in.)	Not Applicable	Not Applicable	279 mm (11 in.)	356 mm (14 in.)	356 mm (14 in.)	432 mm (17 in.)	560 mm (22.0 in.)

Graco Standard Warranty

Graco warrants all equipment manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor 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.

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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 Phone Number

TO PLACE AN ORDER, contact your Graco distributor, or call this number to identify the distributor closest to you:
1-800-367-4023 Toll Free

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