



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

INSTRUCTIONS

First choice when
quality counts.™

45:1 King™ Cart-Mounted Airless Sprayers

Model 233001, Series A

45:1 King pump with outlet fluid filter and inlet air regulator



Model 233022, Series A

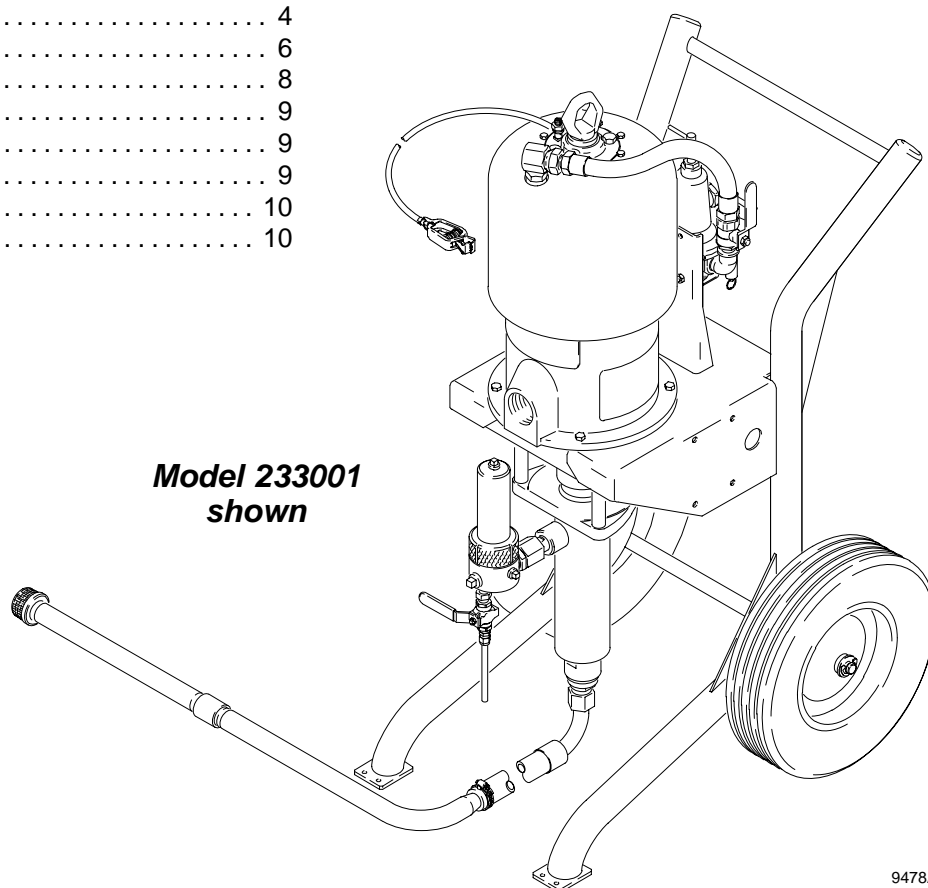
45:1 King pump with outlet fluid filter, inlet air regulator/filter, Silver® airless gun, and fluid hose

4050 psi (28 MPa, 283 bar) Maximum Fluid Working Pressure

90 psi (0.6 MPa, 6.2 bar) Maximum Input Air Pressure

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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.

- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before you operate the equipment.
- Use the equipment only for its intended purpose. If you are not sure, call your Graco distributor.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest-rated system component.
- Use fluids and solvents that are compatible with the equipment wetted parts. Refer to the **Technical Data** section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Do not use hoses to pull equipment.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 180°F (82°C) or below -40°F (-40°C).
- Wear hearing protection when you operate this equipment.
- Do not lift pressurized equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.



MOVING PARTS HAZARD

Moving parts, such as the air motor piston, can pinch or amputate your fingers.

- Keep clear of all moving parts when you start and operate the pump.
- Before you service the equipment, follow the **Pressure Relief Procedure** on page 6 to prevent the equipment from starting unexpectedly.



TOXIC FLUID HAZARD

Hazardous fluid or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, inhaled, or swallowed.

- Know the specific hazards of the fluid you are using.
- Store hazardous fluid in an approved container. Dispose of hazardous fluid according to all local, state, and national guidelines.
- Always wear protective eyewear, gloves, clothing, and respirator as recommended by the fluid and solvent manufacturer.

WARNING



INJECTION HAZARD

Spray from the gun, leaks, or ruptured components can inject fluid into your body and cause extremely serious injury, including the need for amputation. Fluid splashed in the eyes or on the skin can also cause serious injury.



- Fluid injected into the skin might look like just a cut, but it is a serious injury. **Get immediate medical attention.**
- Do not point the gun at anyone or at any part of the body.
- Do not put your hand or fingers over the spray tip.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Do not “blow back” fluid; this is not an air spray system.
- Always have the tip guard and the trigger guard on the gun when you spray.
- Check the gun diffuser operation weekly. Refer to the gun manual.
- Be sure the gun trigger safety operates before you spray.
- Lock the gun trigger safety when you stop spraying.
- Follow the **Pressure Relief Procedure** on page 6 if the spray tip clogs and before you clean, check, or service the equipment.
- Tighten all fluid connections before you operate the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn or damaged parts immediately. Do not repair high pressure couplings; you must replace the entire hose.
- Use only Graco approved hoses. Do not remove the spring guard, which protects the hose from rupture caused by kinks or bends near the couplings.



FIRE AND EXPLOSION HAZARD

Improper grounding, poor ventilation, open flames, or sparks can cause a hazardous condition and result in a fire or explosion and serious injury.

- Ground the equipment and the object being sprayed. See **Ground the System** on page 5.
- If there is any static sparking or you feel an electric shock while using this equipment, **stop spraying immediately**. Do not use the equipment until you identify and correct the problem.
- Provide fresh air ventilation to avoid the buildup of flammable fumes from solvents or the fluid being sprayed.
- Keep the spray area free of debris, including solvent, rags, and gasoline.
- Electrically disconnect all equipment in the spray area.
- Extinguish all open flames or pilot lights in the spray area, and do not smoke in the spray area.
- Do not turn on or off any light switch in the spray area while operating or if fumes are present.
- Do not operate a gasoline engine in the spray area.

Typical Installation

The pump requires 4.2 m³/min (150 scfm) of compressed air while operating at 90 psi (0.6 MPa, 6.2 bar) air pressure and 64 cycles per minute. Ensure that you have an adequate compressed air supply.

Supplied with Model 233022 Only

- P Air filter
 - Q Electrically conductive fluid hose
 - R Silver airless spray gun
 - S Fluid outlet fitting
 - T Gun adapter
- Components You Must Supply**
- U Electrically conductive air supply hose
 - V Bleed-type master air valve (for accessories)
 - W Air line moisture trap and drain valve
 - X Grounded 30-gallon (114 liter) pail (not shown)

Always Use Genuine Graco Parts and Accessories.

supply your own fluid and gun, make sure properly sized and rated for your system. Use only electrically rated fluid hoses. Connect the hose (Q) to the fluid filter (R) to the gun (R).

Model 233022 shown

Bring a compressed air supply line (U) from the air compressor to the pump. Be sure all air hoses are properly sized and pressure rated for your system. Use an electrically rated hose with a 3/4 npt (n) fitting.

Install a bleed-type master air valve (V) in the air line to isolate the pump components for servicing. Install an air line moisture trap and drain valve (W) to help remove moisture from the compressed air supply.

If you supply your own accessories, be sure they are adequately sized and pressure rated for your system.

Have a grounded, metal pail available for use when you flush the system or drain the fluid filter.

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Have a grounded, metal pail available for use when you flush the system or drain the fluid filter.

Setup

Airless Spray Gun

Systems supplied with an airless spray gun are also supplied with gun instruction manual 308236. Before you spray, read the gun instruction manual. Spray some test patterns on scraps before you spray any permanent surfaces. See the gun manual for detailed spraying techniques.

45:1 King Pump

See pump instruction manual 307013 for additional warnings, operating and service instructions, technical data, and parts.

Ground the System

WARNING



FIRE AND EXPLOSION HAZARD

Improper grounding could cause static sparking, which could cause a fire or explosion. To reduce the risk of property damage or serious injury, follow the grounding instructions below.

The following grounding instructions are minimum requirements for a system. Your system may include other equipment or objects that must be grounded. Check your local electrical code for detailed grounding instructions for your area and type of equipment. Your system must be connected to a true earth ground.

- **Pump:** Ground wire is supplied and attached to grounding lug on top of pump. Connect other end of ground wire (the clamp end) to a true earth ground.
- **Air compressors and hydraulic power supplies:** Follow manufacturer's recommendations for grounding.
- **Air, fluid, and hydraulic hoses connected to the pump:** Use only electrically conductive hoses with a maximum of 500 feet (150 m) combined hose length to ensure grounding continuity. Check the electrical resistance of your air and fluid hoses at least once a week. If the total resistance to ground exceeds 29 megohms, replace the hose immediately.
NOTE: Use a meter that is capable of measuring resistance at this level.
- **Spray gun:** Connect to a properly grounded fluid hose and pump.
- **Fluid supply container:** Follow the local code for grounding.
- **Object being sprayed:** Follow the local code for grounding.
- **All solvent pails used when flushing:** Follow the local code for grounding. 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.

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.

Understanding Supplied Accessories

WARNING

A red-handled bleed-type master air valve (J) and a fluid drain valve (D) are supplied. These accessories are required in your system to 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 while you adjust or repair the pump.

The bleed-type master air valve relieves air trapped between it and the pump after the air is shut off. Trapped air can cause the pump to cycle unexpectedly. It must be installed close to the pump.

The fluid drain valve assists in relieving fluid pressure in the displacement pump, hose, and gun. Triggering the gun to relieve pressure may not be sufficient.

- **Red-handled bleed-type master air valve (J)**
Required in your system to relieve air trapped between it and the air motor when the valve is closed (see **Warning** above). It is installed as required to be easily accessible from the pump and **downstream** from the air regulator (G).
- **Fluid drain valve (D)**
Required in your system to relieve fluid pressure in the hose and gun (see **Warning** above). Included with fluid filter (C).
- **Fluid filter (C)**
Includes a 60-mesh (250 micron) stainless steel element to filter particles from the fluid as it leaves the pump.
- **Air regulator (G)**
Controls pump speed and outlet pressure by regulating the air pressure to the pump. It is installed as required — close to the pump and **upstream** from the bleed-type master air valve (J).
- **Air relief valve (M)**
Opens automatically to prevent overpressurization of the pump.
- **Air filter (P) (Model 233022 only)**
Filters incoming compressed air to protect system from harmful particles.

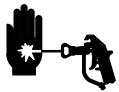
Operation

⚠ CAUTION

To avoid tip-over, the cart must be on a flat and level surface. Failure to follow this caution could result in injury or equipment damage.

Pressure Relief Procedure

⚠ WARNING



INJECTION HAZARD

The system pressure must be manually relieved to prevent the system from starting or spraying unexpectedly. 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 this **Pressure Relief Procedure** whenever you

- Are instructed to relieve the pressure
- Stop spraying
- Clean, check, or service any of the system equipment
- Install or clean the spray tip

1. Close red-handled bleed-type master air valve (J).
2. Hold metal part of gun firmly on side of grounded metal pail, and trigger gun to relieve pressure.
3. Lock gun trigger safety.
4. Open drain valve (D), and have a container ready to catch drainage. Leave drain valve open until you are ready to spray again.

If you suspect that the spray tip or hose is clogged or that pressure has not been fully relieved after you have followed the steps above, **very slowly** loosen the tip guard retaining nut or hose end coupling, and relieve pressure gradually. Then loosen it completely. Then clear the tip or hose.

Keep Throat Seal Liquid in Packing Nut/Wet-Cup

The packing nut/wet-cup is shown in the **Typical Installation** drawing on page 4. Keep it one-third full with Graco Throat Seal Liquid (TSL) (supplied with this sprayer).



See **Pressure Relief** procedure at left.

The packing nut is torqued at the factory and ready for operation. If it becomes loose and there is leaking from the throat packings, **relieve the pressure**, and gradually tighten the nut with the supplied wrench until leaking stops. Tighten the nut whenever necessary, but do not overtighten.

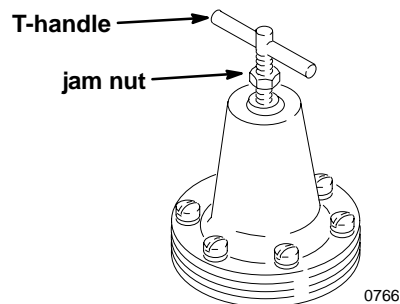
Flush Pump Before First Use

The pump is tested with lightweight oil, which is left in to protect the pump parts. If the fluid you are using may be contaminated by the oil, flush it out with a compatible solvent. See **Flushing** on page 7.

Setting Air and Fluid Pressure with the Air Regulator

To set the air and fluid pressure with the air regulator (G), slowly increase the air pressure, and use the regulator setting to control the pump speed and fluid pressure. Always use the lowest air pressure necessary to get desired results. Higher pressures cause premature tip and pump wear.

- To increase air pressure, turn T-handle clockwise.
- To decrease air pressure, turn T-handle counterclockwise.
- To lock regulator setting, tighten jam nut.



With the pump and lines primed, and with adequate air pressure and volume supplied, the pump will start and stop as you open and close the gun.

⚠ WARNING

COMPONENT RUPTURE HAZARD



To reduce the risk of overpressurizing the system, which could cause component rupture and serious injury, never exceed 90 psi (0.6 MPa, 6.2 bar) input air pressure.

⚠ CAUTION

Do not allow the pump to run dry. It will quickly accelerate to a high speed and cause damage. If the pump is running too fast, stop it immediately and check the fluid supply. If the container is empty and air has been pumped into the lines, refill the container and prime the pump and the lines, or flush and leave it filled with a compatible solvent. Eliminate all air from the fluid system.

Operation

Priming the Pump

The assumed starting point for this procedure is as follows:

- Sprayer is set up, including fluid hose and gun, as shown in the **Typical Installation** drawing on page 4.
 - Sprayer is grounded as explained in **Ground the System** on page 5.
1. Remove tip guard and spray tip from gun. See gun instruction manual.
 2. Close air regulator (G) and bleed-type air valves (J, V).
NOTE: To open the air regulator (G), turn the T-handle clockwise. To close the regulator, turn the T-handle counterclockwise.
 3. Close fluid drain valve (D).
 4. Check that all fittings in system are tight.
 5. Place suction tube (E) into fluid supply container.
 6. Open bleed-type air valves (J, V).
 7. Hold metal part of the gun (R) firmly to side of a grounded metal pail and hold trigger open.
 8. Slowly open air regulator (G) until pump starts.
 9. Cycle pump slowly until all air is pushed out and pump and hoses are fully primed.
 10. Release gun trigger, and lock trigger safety. Pump should stall against pressure.
 11. If pump fails to prime, open drain valve (D), and use drain valve as a priming valve until fluid flows from valve. Then close drain valve.



See **Pressure Relief** procedure at left.

12. **Relieve the pressure**, and install tip guard and spray tip in gun, as explained in gun manual.

NOTE: When you change fluid containers with the hose and gun already primed, open the drain valve (D) to help prime the pump and vent air before it enters the hose. Close the drain valve when all air is eliminated.

Pump Shutdown and Care



See **Pressure Relief** procedure on page 6.

For overnight shutdown, stop the pump at the bottom of its stroke to prevent fluid from drying on the exposed displacement rod and damaging the throat packings. **Relieve the pressure.**

Always flush the pump before the fluid dries on the displacement rod. See **Flushing** at right.

Flushing

WARNING



Read **Fire and Explosion Hazard** on page 3. Be sure the entire system and flushing pails are properly grounded. See **Ground the System** on page 5.

Flush the pump at the following times:

- Before first use
- When changing colors or fluids
- Before fluid can dry or settle out in a dormant pump (check the pot life of catalyzed fluids)
- Before storing

Flush with a fluid that is compatible with the fluid you are pumping and with the wetted parts in your system. Check with your fluid manufacturer or supplier for recommended flushing fluids and flushing frequency.



See **Pressure Relief** procedure on page 6.

1. **Relieve the pressure.**
2. Remove tip guard and spray tip from gun.
3. Remove filter element from fluid filter (C), and reinstall filter bowl.
4. Place suction tube (E) in container of compatible flushing solvent.
5. Hold metal part of gun firmly to side of a grounded metal pail.
6. Start pump. Always use lowest possible fluid pressure when flushing.
7. Trigger gun.
8. Flush system until clear solvent flows from gun.
9. **Relieve the pressure.**
10. Clean tip guard, spray tip, and fluid filter element separately, then reinstall them.
11. Clean inside and outside of suction tube (E).

CAUTION

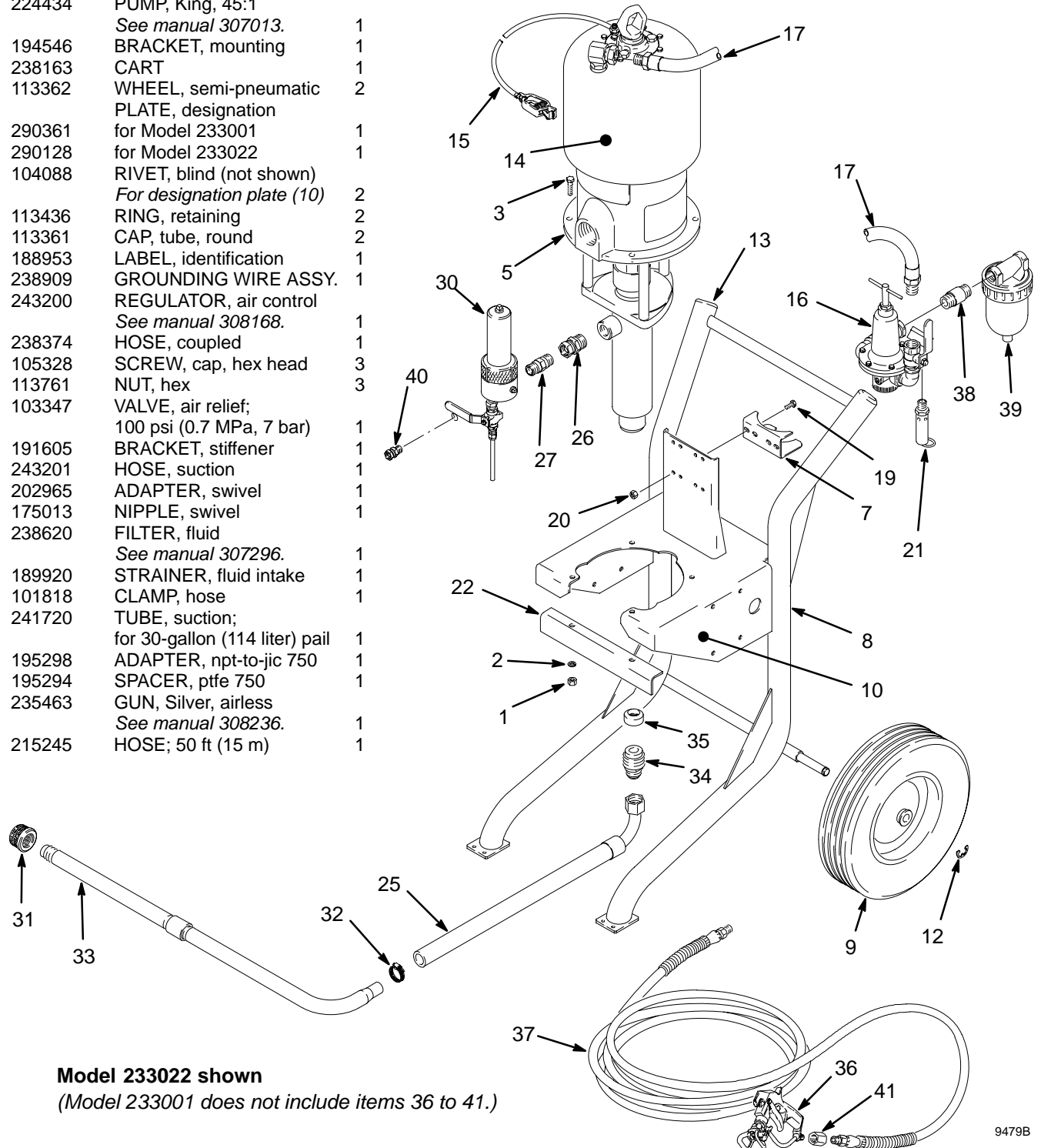
Never leave water or water-base fluid in the pump overnight. If you are pumping water-base fluid, flush with water first, then with a rust inhibitor such as mineral spirits. Relieve the pressure, but leave the rust inhibitor in the pump to protect against corrosion.

Parts

45:1 King Cart-Mounted Airless Sprayer, Model 233001, Series A (includes items 1 to 35)

45:1 King Cart-Mounted Airless Sprayer, Model 233022, Series A (includes items 1 to 41)

Ref. No.	Part No.	Description	Qty.	Ref. No.	Part No.	Description	Qty.
1	100131	NUT, full, hex	4	38	100627	NIPPLE; 3/4 in. x 3/4 in.	1
2	100133	WASHER, lock	4	39	106150	FILTER, air; 3/4 npt(f)	1
3	100004	SCREW, cap	4	40	155665	UNION, adapter	1
4	206994	Throat Seal Liquid (TSL); 8 oz.	1	41	100083	ADAPTER, 1/4 in. x 3/8 in.	1
5	224434	PUMP, King, 45:1 <i>See manual 307013.</i>	1				
7	194546	BRACKET, mounting	1				
8	238163	CART	1				
9	113362	WHEEL, semi-pneumatic	2				
10		PLATE, designation for Model 233001	1				
	290361	for Model 233001	1				
	290128	for Model 233022	1				
11	104088	RIVET, blind (not shown) <i>For designation plate (10)</i>	2				
12	113436	RING, retaining	2				
13	113361	CAP, tube, round	2				
14	188953	LABEL, identification	1				
15	238909	GROUNDING WIRE ASSY.	1				
16	243200	REGULATOR, air control <i>See manual 308168.</i>	1				
17	238374	HOSE, coupled	1				
19	105328	SCREW, cap, hex head	3				
20	113761	NUT, hex	3				
21	103347	VALVE, air relief; 100 psi (0.7 MPa, 7 bar)	1				
22	191605	BRACKET, stiffener	1				
25	243201	HOSE, suction	1				
26	202965	ADAPTER, swivel	1				
27	175013	NIPPLE, swivel	1				
30	238620	FILTER, fluid <i>See manual 307296.</i>	1				
31	189920	STRAINER, fluid intake	1				
32	101818	CLAMP, hose	1				
33	241720	TUBE, suction; for 30-gallon (114 liter) pail	1				
34	195298	ADAPTER, npt-to-jic 750	1				
35	195294	SPACER, ptfе 750	1				
36	235463	GUN, Silver, airless <i>See manual 308236.</i>	1				
37	215245	HOSE; 50 ft (15 m)	1				



Model 233022 shown

(Model 233001 does not include items 36 to 41.)

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Technical Data

Maximum fluid working pressure	4050 psi (28 MPa, 283 bar)
Maximum input air pressure	90 psi (0.6 MPa, 6.2 bar)
Ratio (air piston to fluid piston)	45:1
Pump performance & air consumption	See pump manual 307013.
Air inlet size	3/4 npt(f)
Fluid outlet size (at fluid filter)	3/8 npt(m)
Fluid inlet	Suction hose has a 1-in. (25.4 mm) I.D. and a 1 5/16 unc swivel thread
Maximum operating temperature	180°F (82°C)
Wetted parts	Pump: See manual 307013. Gun: See manual 308236. Fluid filter: See manual 307296. Suction hose and tube: nylon, aluminum Fluid fittings: zinc-plated malleable iron, zinc-plated carbon steel Drain tube, fluid Hoses: nylon

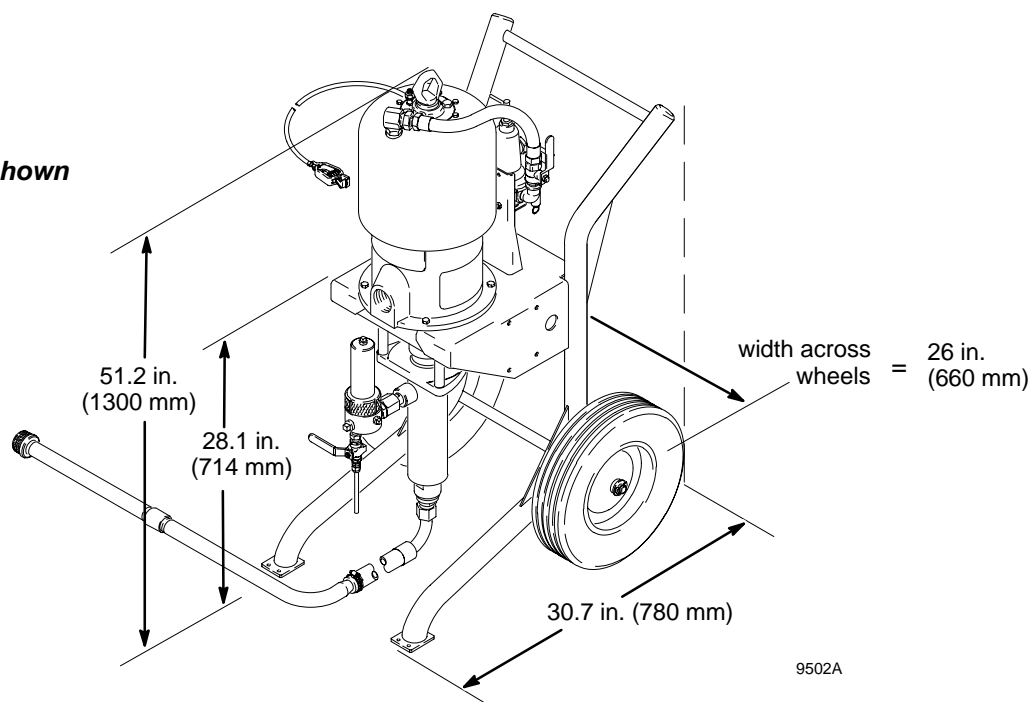
Sound Data

Tested at 15 cycles per minute

	at 40 psi (0.3 MPa, 2.8 bar) input air pressure	at 70 psi (0.5 MPa, 4.8 bar) input air pressure	at 90 psi (0.6 MPa, 6.2 bar) input air pressure
Sound Pressure Level (measured 1 meter from unit)	78.8 (dBa)	82.7 (dBa)	90.5 (dBa)
Sound Power Level (measured per ISO 9614-2)	86.5 (dBa)	88.8 (dBa)	97.7 (dBa)

Dimensions

Model 233001 shown



Graco 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.

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

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

Graco makes no warranty, and disclaims all implied warranties of merchantability and fitness for a particular purpose in connection with accessories, equipment, materials or components sold but not manufactured by Graco. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

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

FOR GRACO CANADA CUSTOMERS

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ADDITIONAL WARRANTY COVERAGE

Graco does provide extended warranty and wear warranty for products described in the "Graco Contractor Equipment Warranty Program".

Graco Phone Number

TO PLACE AN ORDER, contact your Graco distributor, or call this number to identify the distributor closest to you:

1-800-690-2894 Toll Free

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