



INSTRUCTIONS

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

41:1 RATIO BULLDOG® CARBON STEEL

Cart-Mounted Airless Package

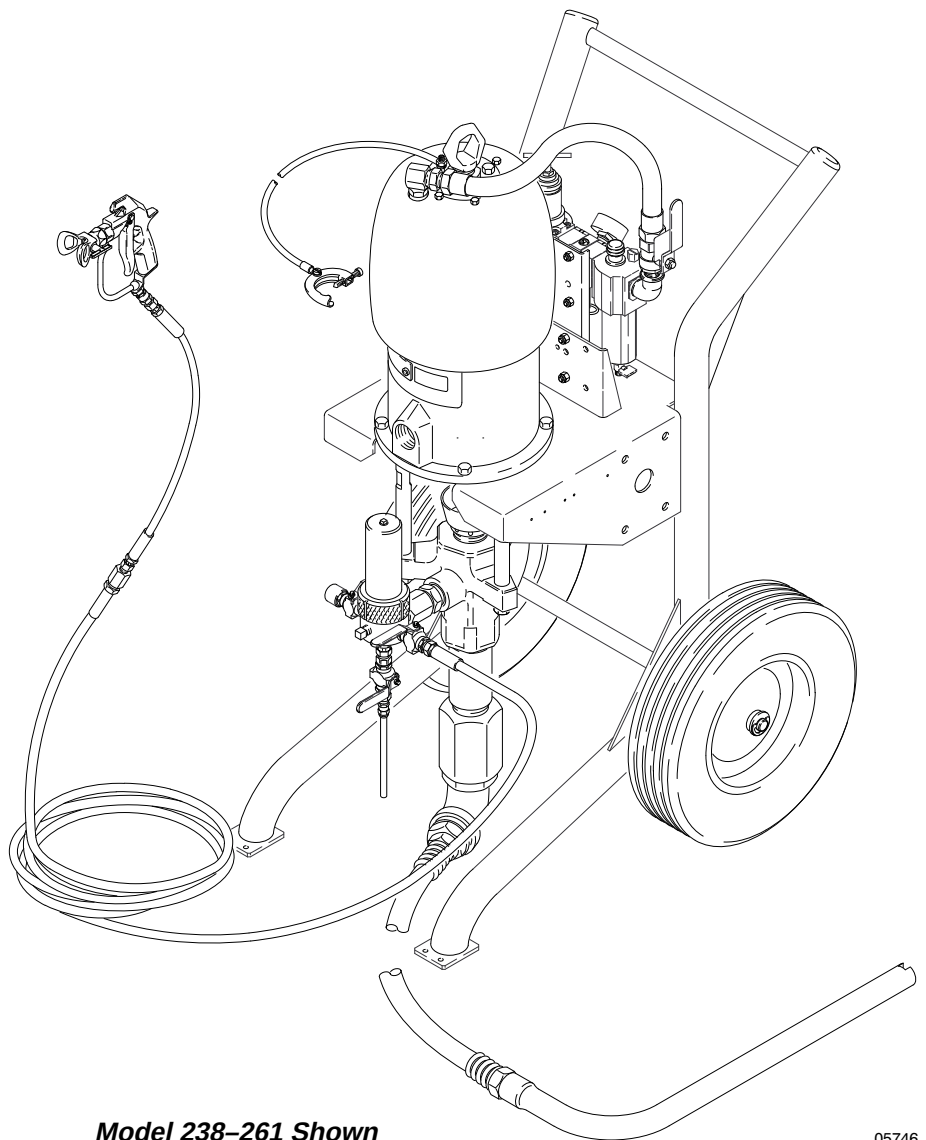
WITH DURA-FLO™ 600 DISPLACEMENT PUMP*283 bar (4100 psi) Maximum Working Pressure**7 bar (100 psi) Maximum Air Inlet Pressure***Part No. 238-258, Series A**

With High Pressure Fluid Filter

Part No. 238-261, Series AWith High Pressure Fluid Filter,
hose, and gun**Part No. 238-259, Series A**

With High Pressure Surge Tank

Refer to page 2 for Table of Contents.

*Model 238-261 Shown*

05746

GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440-1441

©COPYRIGHT 1995, GRACO INC.

Graco Inc. is registered to I.S. EN ISO 9001

Table of Contents

Warnings	2
Setup	5
Operation	8
Parts	12
Technical Data	18
Dimensions	19
Graco Warranty and Disclaimers	20
Toll-Free Graco Phone Numbers	20

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 not sure, call your Graco distributor.
- Do not alter or modify this equipment.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated system component. Refer to the **Technical Data** on page 18 for the maximum working pressure of this equipment.
- Use fluids and solvents which 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 82°C (180°F) or below -40°C (-40°F).
- Wear hearing protection when operating this equipment.
- Do not lift pressurized equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.

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 spraying.
- Check the gun diffuser operation weekly. Refer to the gun manual.
- Be sure the gun trigger safety operates before spraying.
- Lock the gun trigger safety when you stop spraying.
- Follow the **Pressure Relief Procedure** on page 8 if the spray tip clogs and before cleaning, checking or servicing the equipment.
- Tighten all fluid connections before operating 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.



MOVING PARTS HAZARD

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

- Keep clear of all moving parts when starting or operating the pump.
- Before servicing the equipment, follow the **Pressure Relief Procedure** on page 8 to prevent the equipment from starting unexpectedly.

WARNING



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. Refer to **Grounding** 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.
- 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.



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.

Setup

General Information

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

NOTE: Always use Genuine Graco Parts and Accessories, available from your Graco distributor. Refer to the Product Data Sheet for your pump, Form No. 305–753. If you supply your own accessories, be sure they are adequately sized and pressure rated for your system.

Fig. 2 is only a guide for selecting and installing system components and accessories. Contact your Graco distributor for assistance in designing a system to suit your particular needs.

Prepare the Operator

All persons who operate the equipment must be trained in the safe, efficient operation of all system components as well as the proper handling of all fluids. All operators must thoroughly read all instruction manuals, tags, and labels before operating the equipment.

Prepare the Site

The pump requires 2.8 m³/min (100 scfm) of compressed air while operating at 7 bar (100 psi) air pressure and 60 cycles per minute. Ensure that you have an adequate compressed air supply.

Refer to Fig. 2. Bring a compressed air supply line (A) from the air compressor to the pump location. Be sure all air hoses (A) are properly sized and pressure-rated for your system. Use only electrically conductive hoses. The air hose should have a 3/4 npt(m) thread.

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

Keep the site clear of any obstacles or debris that could interfere with the operator's movement.

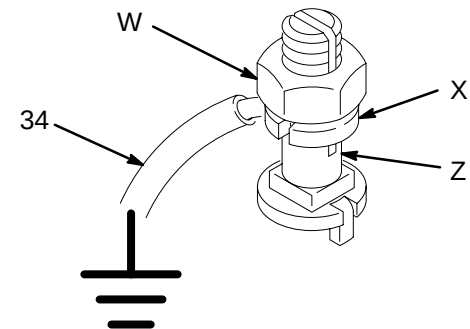
Have a grounded, metal pail available for use when flushing the system or draining the fluid filter.

Grounding

**WARNING**

**FIRE AND EXPLOSION HAZARD**
Before operating the pump, ground the system as explained below. Also read the section **FIRE OR EXPLOSION HAZARD** on page 4.

1. *Pump:* use the ground wire and clamp (supplied). See Fig. 1. Loosen the grounding lug locknut (W) and washer (X). Insert one end of the ground wire (34) into the slot in lug (Z) and tighten the locknut securely. Connect the other end of the wire to a true earth ground.



0864

Fig. 1

2. *Air and fluid hoses:* use only electrically conductive hoses.
3. *Air compressor:* follow manufacturer's recommendations.
4. *Spray gun:* ground through connection to a properly grounded fluid hose and pump.
5. *Fluid supply container:* follow your local code.
6. *Object being sprayed:* follow your local code.
7. *Solvent pails used when flushing:* follow your local code. Use only metal pails, which are conductive, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts the grounding continuity.
8. *To maintain grounding continuity when flushing or relieving pressure,* hold a metal part of the spray gun firmly to the side of a grounded *metal* pail, then trigger the gun.

Setup

Supplied Components

Refer to Fig. 2.

WARNING

A red-handled bleed-type master air valve (35) and a fluid drain valve (D) are supplied. 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 bleed-type master air valve relieves air trapped between this valve and the pump after the valve is closed. Trapped air can cause the pump to cycle unexpectedly. Locate the valve 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.

- **The red-handled bleed-type master air valve (35)** is required in your system to relieve air trapped between it and the air motor when the valve is closed (see the **WARNING** above). Be sure the bleed valve is easily accessible from the pump, and is located **downstream** from the air filter/regulator (41).
- With a wrench, loosen and remove the **female air line coupler (38)**. Screw it onto the main air hose (A). Leave the mating coupler (37) attached to the air filter/regulator (41).
- **The air filter/regulator (41)** controls pump speed and outlet pressure by adjusting the air pressure to the pump. It also removes harmful dirt and moisture from the compressed air supply. Locate close to the pump, but **upstream** from the bleed-type master air valve (35).
- **The air manifold (47)** provides ports for connecting lines to air-powered accessories.
- **The air relief valve (48)** opens automatically to prevent overpressurization of the pump.
- **The air line lubricator (43)** provides automatic air motor lubrication.
- **The fluid filter (7) or surge tank** includes a 60 mesh (250 micron) stainless steel element to filter particles from the fluid as it leaves the pump. It includes the **fluid drain valve (D)**, which is required in your system to relieve fluid pressure in the hose and gun (see the **WARNING** at left).
- **The suction hose (8) and tube (11)** allow the pump to draw fluid from a 19 liter (5 gallon) pail (E).
- **Two fluid shutoff valves (9)** are supplied at the fluid filter outlets. Attach the fluid hose (103) to one of the valves. Keep the other valve capped and closed at all times unless you are using a second hose and gun.

Connect the Suction Hose

Apply thread sealant to the suction hose (8) and screw it into the bushing (5) at the pump's fluid intake. Screw the suction tube (11) onto the other end of the hose.

Connect the Fluid Hoses and Gun

NOTE: Model 238–261 includes a Hose and Gun Kit (101), which supplies fluid hoses, a spray gun, and connecting parts (ref. nos. 102–106). If you supply your own fluid hoses and gun, be sure they are properly sized and pressure-rated for your system. Use only electrically conductive hoses.

1. Connect the main fluid hose (103) to one fluid shutoff valve (9) at the fluid filter (7) outlet.
2. Screw the coupling (105) onto the other end of the main fluid hose (103).
3. Screw the short whip hose (104) onto the coupling (105).
4. Screw the whip hose (104) onto the gun swivel (106).
5. Screw the gun swivel (106) onto the fluid inlet of the spray gun (102).

Assemble Model 238–261

1. Assemble the fluid hoses and gun as explained in the preceding paragraph.
2. Mark the date of assembly on the designation plate (107) and install the plate as shown on its separate instruction sheet.

Setup

KEY

SUPPLIED WITH ALL MODELS

- 1 Pump
- 2 Cart
- 5 Pump Intake Bushing
- 7 Fluid Filter (includes drain valve)
(surge tank on Model 238–259)
- D Fluid Drain Valve (required)
- 8 Suction Hose
- 9 Fluid Shutoff Valves
- 11 Suction Tube
- 34 Ground Wire (required; see page 5
for installation instructions)
- 35 Red-Handled Bleed-Type Master
Air Valve (required, for pump)
- 37 Air Line Male Coupler
- 38 Air Line Female Coupler
- 41 Pump Air Filter/Regulator
- 43 Air Line Lubricator
- 47 Air Manifold
- 48 Air Relief Valve (partially hidden)

SUPPLIED WITH MODEL 238–261 ONLY

- 102 Airless Spray Gun
- 103 Electrically Conductive Fluid Supply Hose
- 104 Electrically Conductive Fluid Whip Hose
- 105 Coupling
- 106 Gun Swivel

COMPONENTS YOU MUST SUPPLY

- A Electrically Conductive Air Supply Hose
- B Bleed-Type Master Air Valve
(for accessories)
- C Air Line Moisture Trap and Drain Valve
- E Grounded 19 Liter (5 Gallon) Pail

Detail of Air Line Connections

- 1** Keep this valve capped and closed unless you are using a second hose and gun.

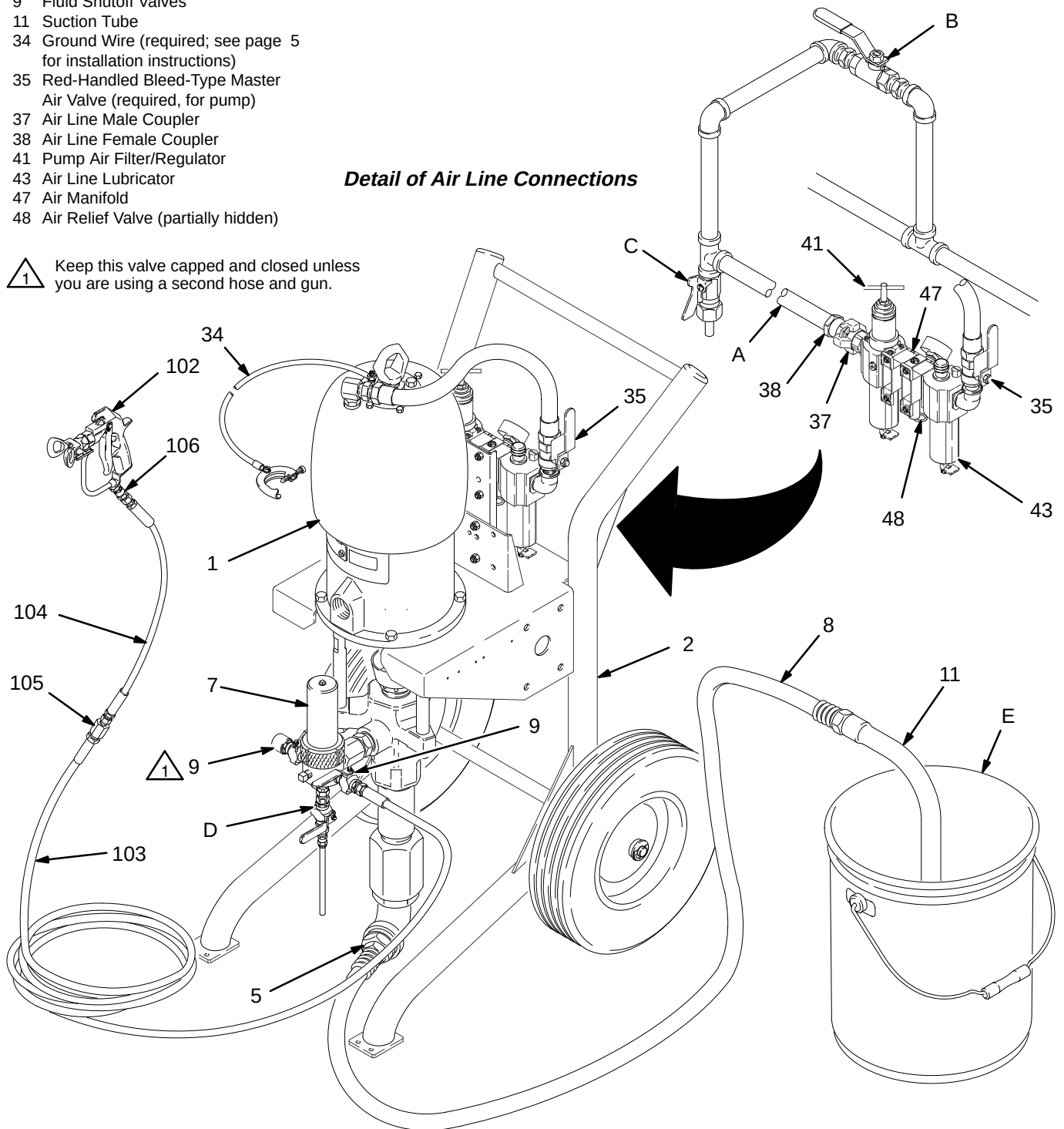


Fig. 2

Model 238–261 Shown

05745

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,
- check or service any of the system equipment,
- or install or clean the spray tips.

1. Lock the gun trigger safety.
2. Close the red-handled bleed-type master air valve (35, required in your system).
3. Open the fluid shutoff valve (9).
4. Unlock the gun trigger safety.
5. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure.
6. Lock the gun trigger safety.
7. Open the drain valve (D, required in your system), 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 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 or hose.*

Packing Nut/Wet-Cup

Before starting, fill the packing nut (F) 1/3 full with Graco Throat Seal Liquid (TSL) or compatible solvent. See Fig. 3.

WARNING

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

The packing nut is torqued at the factory and is ready for operation. If it becomes loose and there is leaking from the throat packings, **relieve pressure**, then torque the nut to 61–75 N.m (45–55 ft-lb) using the supplied wrench. Do this whenever necessary. Do not overtighten the packing nut.

Flush the 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 10.

Using the Airless Spray Gun

Before operating the equipment, read the instruction manual supplied with the gun.

Spray some test patterns before doing any finished work. Refer to the gun manual for detailed information on correct spraying technique.

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.

Prime the Pump

1. See Fig. 3. Remove the tip guard and spray tip from the gun (102). See the gun instruction manual.
2. Close the air filter/regulator (41) and bleed-type air valves (B, 35).
3. Close the fluid drain valve (D).
4. Engage the air line coupler (38) with the mating coupler (37) attached to the air filter/regulator (41) inlet and twist with a wrench to lock.
5. Check that all fittings throughout the system are tightened securely.
6. Place the suction tube (11) into the fluid supply container.
7. Open the fluid shutoff valve (9).
8. Open the bleed-type air valves (B, 35).
9. Hold a metal part of the gun (102) firmly to the side of a grounded metal pail and hold the trigger open.
10. Slowly open the air filter/regulator (41) until the pump starts.
11. Cycle the pump slowly until all air is pushed out and the pump and hoses are fully primed.
12. Release the gun trigger and lock the trigger safety. The pump should stall against pressure.
13. If the pump fails to prime properly, open the drain valve (D). Use the drain valve as a priming valve until the fluid flows from the valve. Close the valve.

NOTE: When changing 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.

Set the Air and Fluid Pressure

WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 8.

1. **Relieve the pressure.** Install the tip guard and spray tip in the gun, as explained in the gun manual.
2. Open the air filter/regulator (41) slowly. Use the regulator to control pump speed and fluid pressure. Always use the lowest air pressure necessary to get the desired results. Higher pressures cause premature tip and pump wear.

NOTE: To open the air filter/regulator, turn the T-handle in (clockwise). To close the regulator, turn the handle counterclockwise. To lock the regulator setting, tighten the jam nut.

WARNING

COMPONENT RUPTURE HAZARD



To reduce the risk of overpressurizing your system, which could cause component rupture and serious injury, *never exceed the specified Maximum Incoming Air Pressure to the pump* (see the **Technical Data**, on page 18).

3. 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.

CAUTION

Do not allow the pump to run dry. It will quickly accelerate to a high speed, causing damage. If your 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

Shutdown and Care of the Pump

WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 8.

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** below.

Flushing

WARNING



FIRE AND EXPLOSION HAZARD

Before flushing, read the section **FIRE OR EXPLOSION HAZARD** on page 4. Be sure the entire system and flushing pails are properly grounded. Refer to **Grounding** on page 5.

Flush the pump:

- Before the 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 the pump.

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.

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 the parts from corrosion.

WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 8.

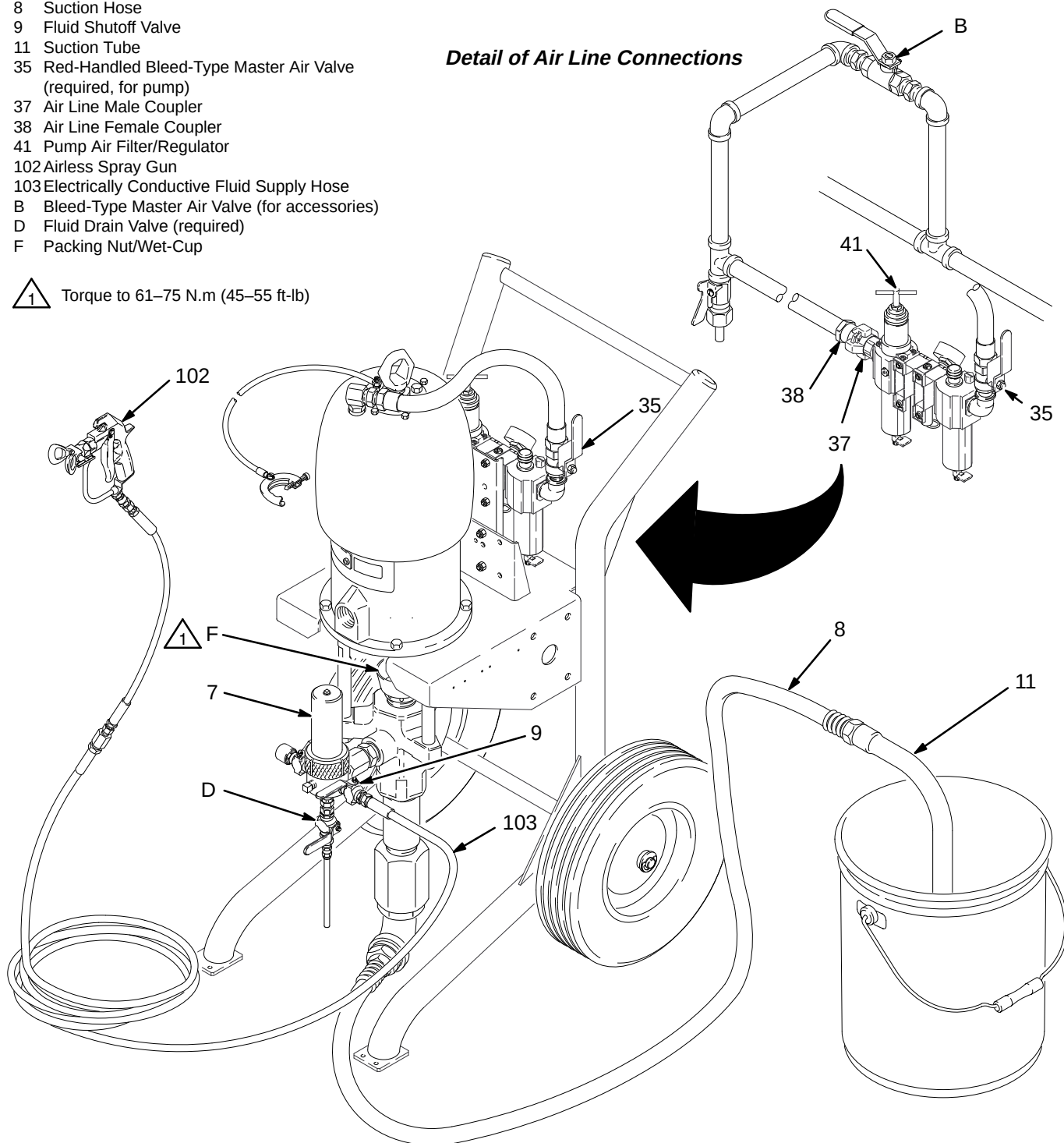
1. **Relieve the pressure.**
2. Remove the tip guard and spray tip from the gun. See the gun instruction manual.
3. Remove the filter element from the fluid filter (7) or surge tank. Reinstall the filter or surge tank bowl.
4. Place the suction tube (11) in a container of solvent.
5. Hold a metal part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

Operation

KEY

- 7 Fluid Filter (surge tank on Model 238–259)
- 8 Suction Hose
- 9 Fluid Shutoff Valve
- 11 Suction Tube
- 35 Red-Handled Bleed-Type Master Air Valve (required, for pump)
- 37 Air Line Male Coupler
- 38 Air Line Female Coupler
- 41 Pump Air Filter/Regulator
- 102 Airless Spray Gun
- 103 Electrically Conductive Fluid Supply Hose
- B Bleed-Type Master Air Valve (for accessories)
- D Fluid Drain Valve (required)
- F Packing Nut/Wet-Cup

 Torque to 61–75 N.m (45–55 ft-lb)



Model 238–261 Shown

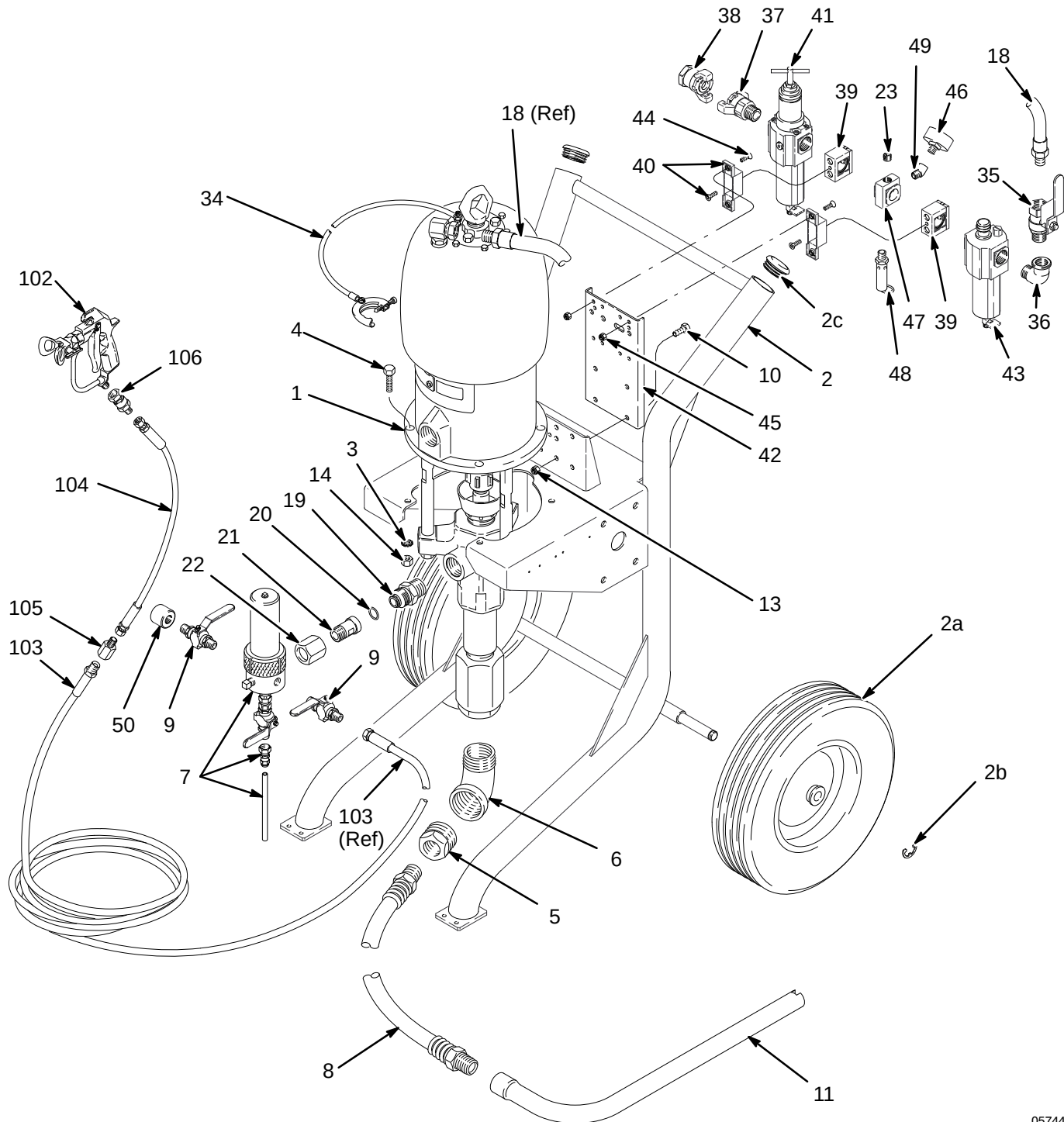
Fig. 3

05745

Parts

Part No. 238–258, Series A (includes items 1–50)

Part No. 238–261, Series A (includes items 1–107)



05744

Parts

Part No. 238–258, Series A (includes items 1–50)

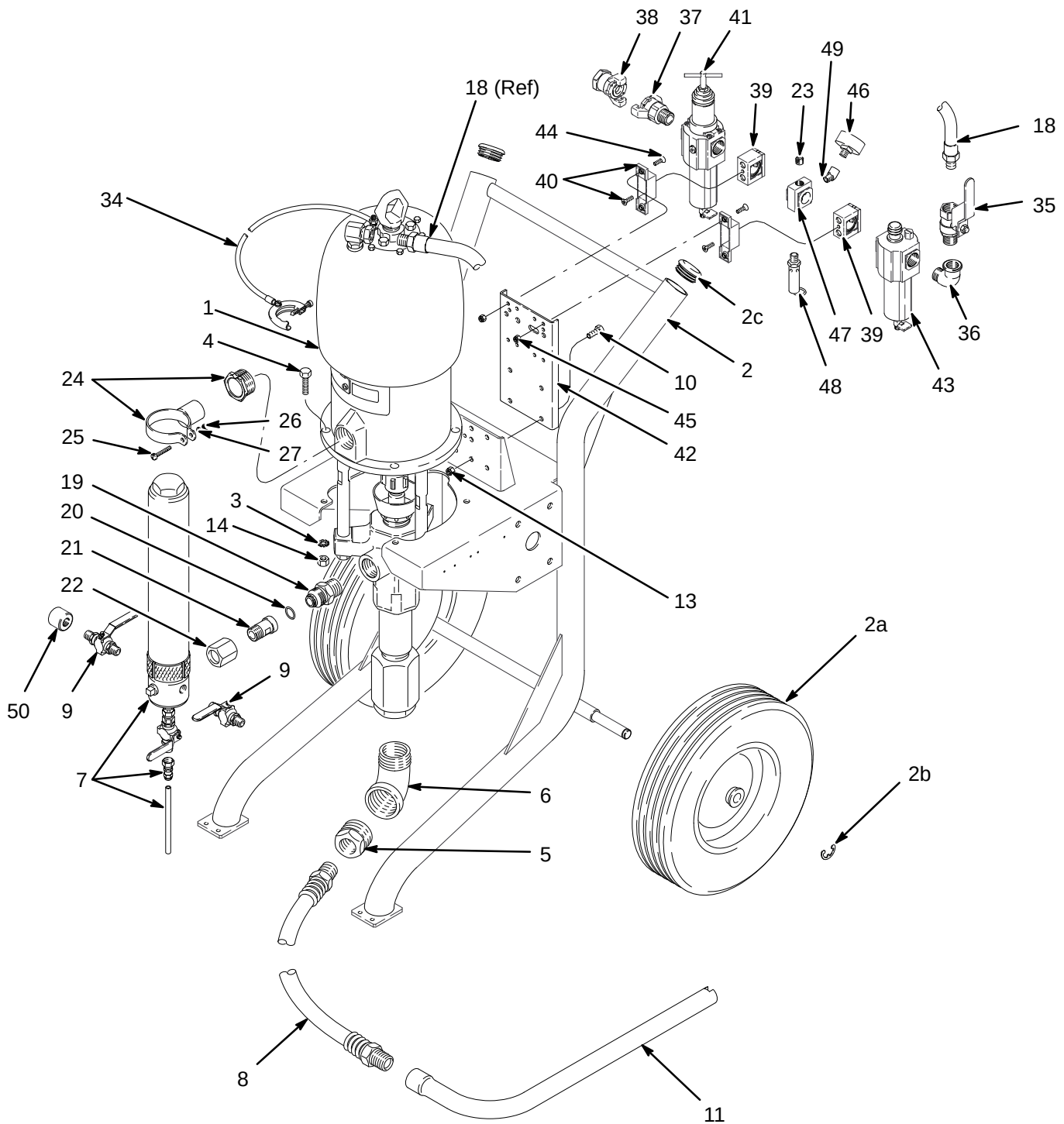
Part No. 238–261, Series A (includes items 1–107)

Ref. No.	Part No.	Description	Qty.	Ref. No.	Part No.	Description	Qty.
1	236–463	PUMP, Bulldog, 41:1 ratio; <i>See manual 308–349 for parts</i>	1	34	237–569	GROUND WIRE AND CLAMP	1
2	238–271	CART, portable Includes replaceable items 2a–2c	1	35*	113–218	BLEED VALVE, red-handled; 3/4 npt (m x f)	1
2a	113–362	. WHEEL	2	36*	100–549	ELBOW, street, 90°; 3/4 npt (m x f)	1
2b	113–436	. RING, retaining	2	37*	113–429	COUPLER, air line; 3/4 npt(m)	1
2c	113–361	. CAP	2	38*	113–430	COUPLER, air line; 3/4 npt(f)	1
3	113–427	LOCKWASHER, external tooth; 3/8"	4	39*	113–431	CLAMP, air regulator	2
4	100–004	CAPSCREW, hex hd; 3/8–16 unc–2a; 31 mm (1.25 in.) long	4	40*	113–432	BRACKET, mounting	2
5	102–000	BUSHING, reducer; 1–1/2" npt(m) x 1" npt(f); malleable iron	1	41*	113–494	AIR FILTER/REGULATOR; 3/4 npt(f) inlet and outlet; 0.3–10 bar (5–150 psi) pressure range; 40 micron polypropylene filter	1
6	101–552	ELBOW, street, 90°; 1–1/2" npt(m x f); chrome-plated malleable iron	1	42	191–383	BRACKET, mounting	1
7	238–620	FLUID FILTER, with 250 micron (60 mesh) stainless steel element and drain valve <i>See manual 307–296 for parts</i>	1	43*	113–435	LUBRICATOR, air line	1
8	237–522	HOSE, suction; nylon; 25 mm (1 in.) ID; 1" npt (mbe); 1.8 m (6 ft) long	1	44	113–428	SCREW, hex socket; 1/4–20 x 25 mm (1 in.) long	4
9	238–612	VALVE, ball; 3/8 npt (mbe)	2	45	102–040	NUT, lock, hex; 1/4–20	4
10	100–057	SCREW, cap, hex hd; 5/16–18 x 19 mm (3/4 in.) long	4	46*	112–123	GAUGE, air	1
11	169–528	TUBE, suction; aluminum	1	47*	113–442	MANIFOLD, air; 1/4 npt(f)	1
12	206–994	THROAT SEAL LIQUID; 0.5 liter (8 oz); not shown	1	48	113–498	RELIEF VALVE, air; 7.6 bar (110 psi)	1
13	111–040	NUT, lock; with nylon insert; 5/16–18	4	49*	113–444	ELBOW, 45°; 1/4 npt (m x f)	1
14	100–131	NUT, full, hex; 3/8–16 unc–2b	5	50	113–562	CAP, valve	1
18*	238–374	HOSE, air; 19 mm (3/4 in.) ID; 3/4 npt (mbe); 559 mm (22 in.) long	1	101	238–614	HOSE AND GUN KIT Includes items 102–106	1
19	190–413	NIPPLE; 3/4 npt x 1–3/8 unf–2a; carbon steel	1	102	238–591	. AIRLESS SPRAY GUN <i>See manual 308–236 for parts</i>	1
20	112–973	O-RING; PTFE	1	103	238–396	. HOSE, fluid; nylon; 9.5 mm (3/8 in.) ID; 3/8 npt(m) x 3/8 npsm(f); 15.2 m (50 ft) long	1
21	190–411	ADAPTER; 3/4 npt(m); carbon steel	1	104	238–383	. HOSE, fluid; nylon; 6.3 mm (1/4 in.) ID; 1/4 npsm (f); 1.8 m (6 ft) long	1
22	190–412	NUT; 1–3/8 unf–2b; carbon steel	1	105	150–287	. COUPLING; 1/4 npt(m) x 3/8 npt(f)	1
23*	100–721	PLUG, pipe; 1/4 npt	1	106	189–018	. SWIVEL, gun	1
				107	238–130	KIT, designation plate (not shown)	1

* These parts are included in Air Regulation Kit 238–590.

Parts

Part No. 238–259, Series A



05748

Parts

Part No. 238–259, Series A

Ref. No.	Part No.	Description	Qty.	Ref. No.	Part No.	Description	Qty.
1	236–463	PUMP, Bulldog, 41:1 ratio; <i>See manual 308–349 for parts</i>	1	21	190–411	ADAPTER; 3/4 npt(m); carbon steel	1
2	238–271	CART, portable Includes replaceable items 2a–2c	1	22	190–412	NUT; 1–3/8 unf–2b; carbon steel	1
2a	113–362	. WHEEL	2	23*	100–721	PLUG, pipe; 1/4 npt	1
2b	113–436	. RING, retaining	2	24	238–630	CLAMP, surge tank	1
2c	113–361	. CAP	2	25	100–902	SCREW, round hd machine; 1/4–20; 38 mm long	1
3	113–427	LOCKWASHER, external tooth; 3/8"	4	26	100–015	NUT, hex; 1/4–20	1
4	100–004	CAPSCREW, hex hd; 3/8–16 unc–2a; 31 mm (1.25 in.) long	4	27	100–016	LOCKWASHER, spring; 1/4"	1
5	102–000	BUSHING, reducer; 1–1/2" npt(m) x 1" npt(f); malleable iron	1	34	237–569	GROUND WIRE AND CLAMP	1
6	101–552	ELBOW, street, 90°; 1–1/2" npt(m x f); chrome-plated malleable iron	1	35*	113–218	BLEED VALVE, red-handled; 3/4 npt (m x f)	1
7	238–623	HIGH PRESSURE SURGE TANK, with 250 micron (60 mesh) stainless steel element and drain valve <i>See manual 307–296 for parts</i>	1	36*	100–549	ELBOW, street, 90°; 3/4 npt (m x f)	1
8	237–522	HOSE, suction; nylon; 25 mm (1 in.) ID; 1" npt (mbe); 1.8 m (6 ft) long	1	37*	113–429	COUPLER, air line; 3/4 npt(m)	1
9	238–612	VALVE, ball; 3/8 npt (mbe)	2	38*	113–430	COUPLER, air line; 3/4 npt(f)	1
10	100–057	SCREW, cap, hex hd; 5/16–18 x 19 mm (3/4 in.) long	4	39*	113–431	CLAMP, air regulator	2
11	169–528	TUBE, suction; aluminum	1	40*	113–432	BRACKET, mounting	2
12	206–994	THROAT SEAL LIQUID; 0.5 liter (8 oz); not shown	1	41*	113–494	AIR FILTER/REGULATOR; 3/4 npt(f) inlet and outlet; 0.3–10 bar (5–150 psi) pressure range; 40 micron polypropylene filter	1
13	111–040	NUT, lock; with nylon insert; 5/16–18	4	42	191–383	BRACKET, mounting	1
14	100–131	NUT, full, hex; 3/8–16 unc–2b	5	43*	113–435	LUBRICATOR, air line	1
18*	238–374	HOSE, air; 19 mm (3/4 in.) ID; 3/4 npt (mbe); 559 mm (22 in.) long	1	44	113–428	SCREW, hex socket; 1/4–20 x 25 mm (1 in.) long	4
19	190–413	NIPPLE; 3/4 npt x 1–3/8 unf–2a; carbon steel	1	45	102–040	NUT, lock, hex; 1/4–20	4
20	112–973	O-RING; PTFE ®	1	46*	112–123	GAUGE, air	1
				47*	113–442	MANIFOLD, air; 1/4 npt(f)	1
				48	113–498	RELIEF VALVE, air; 7.6 bar (110 psi)	1
				49*	113–444	ELBOW, 45°; 1/4 npt (m x f)	1
				50	113–562	CAP, valve	1

* These parts are included in Air Regulation Kit 238–590.

[illegible]

Notes

[illegible]

Technical Data

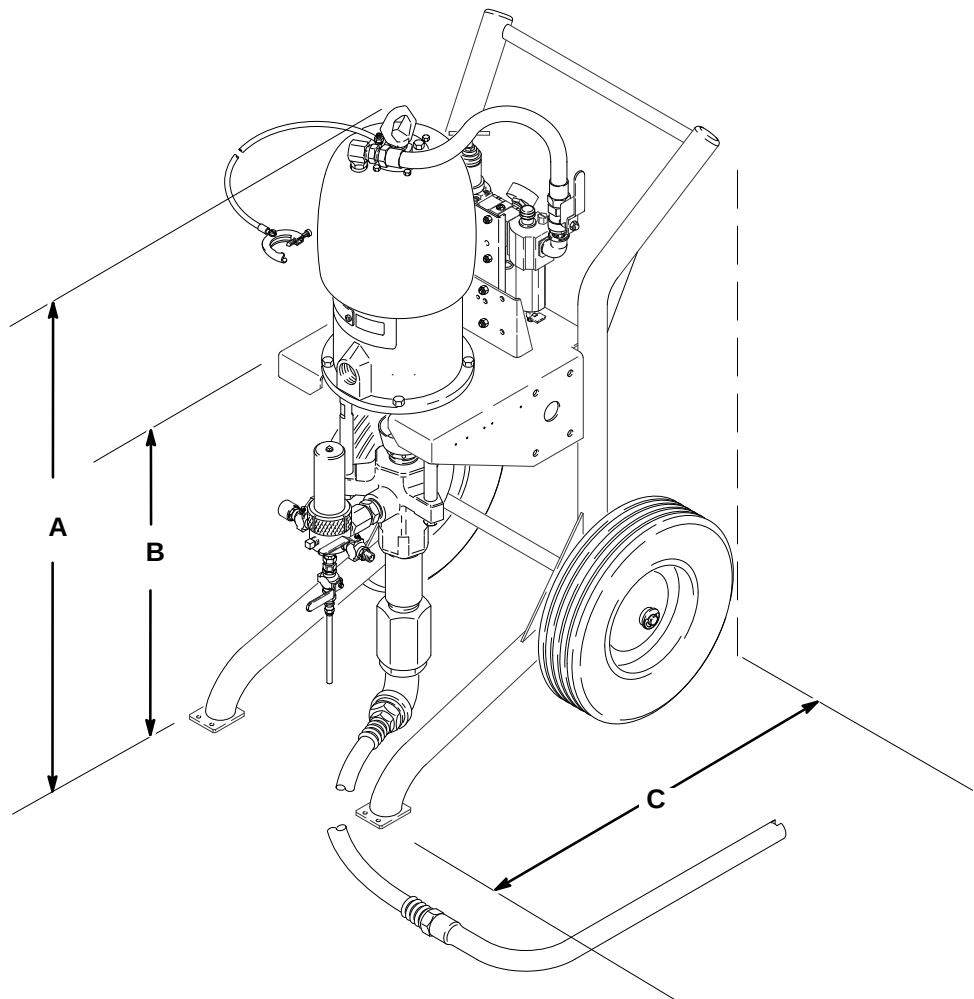
Category	Data
Maximum fluid working pressure	283 bar (4100 psi)
Maximum air input pressure	7 bar (100 psi)
Ratio	41:1
Pump performance data	See pump manual 308–349
Air consumption data	See pump manual 308–349
Air inlet size	3/4 npsm(f)
Fluid outlet size (at fluid filter)	3/8 npt(m)
Fluid inlet size	1–1/2 in. npt(f)
Maximum operating temperature	82°C (180°F)
* Sound level at 100 psi, 25 cycles/min	93 dBA
* Sound power level at 100 psi, 25 cycles/min	108 dBa
Wetted parts	<i>Pump:</i> See pump manual 308–349 <i>Fluid Filter/Surge Tank:</i> See manual 307–296 <i>Suction Hose and Tube:</i> Nylon, Aluminum <i>Fluid Fittings:</i> Zinc-Plated Malleable Iron, Zinc-Plated Carbon Steel <i>Drain Tube, Fluid Hoses:</i> Nylon

* Tested in accordance with ISO 3744.

PTFE® is a registered trademark

Dimensions

Model 238–258 Shown



05747

Pump Model	A	B	C	Width Across Wheels	Weight
238–258	1276 mm (50.25 in.)	724 mm (28.5 in.)	787 mm (31 in.)	660 mm (26 in.)	107 kg (236 lb)
238–261	1276 mm (50.25 in.)	724 mm (28.5 in.)	787 mm (31 in.)	660 mm (26 in.)	112 kg (247 lb)
238–259	1276 mm (50.25 in.)	724 mm (28.5 in.)	787 mm (31 in.)	660 mm (26 in.)	117 kg (259 lb)

The Graco Warranty and Disclaimers

WARRANTY

Graco warrants all equipment listed in this manual which is 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. 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.

For Sales to Canadian Customers:

Except as expressly stated herein, Graco makes no representations, warranties or conditions, express, implied or collateral, concerning any goods or services sold, and **GRACO SHALL NOT BE LIABLE IN ANY MANNER FOR** any other representation, warranty or condition of any kind, whether arising by operation of law or otherwise, including but not limited to, **WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

LIMITATION OF LIABILITY

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or for 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.

SPECIAL WARRANTY FOR DURA-FLO™ DISPLACEMENT PUMP LOWERS

For no additional cost, Graco offers an extended warranty for Dura-Flo displacement pump lowers for 36 months from the date of sale by an authorized Graco distributor to the original purchaser for use. All other terms and conditions of the Graco warranty shall apply.

Graco Phone Numbers

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

Sales Offices: Atlanta, Chicago, Detroit, Los Angeles
Foreign Offices: Belgium, Canada, England, Korea, Switzerland, France, Germany, Hong Kong, Japan

GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440-1441

PRINTED IN U.S.A. 308-631 December 1995