

DutyMax EH™230DI Hydraulic Sprayer

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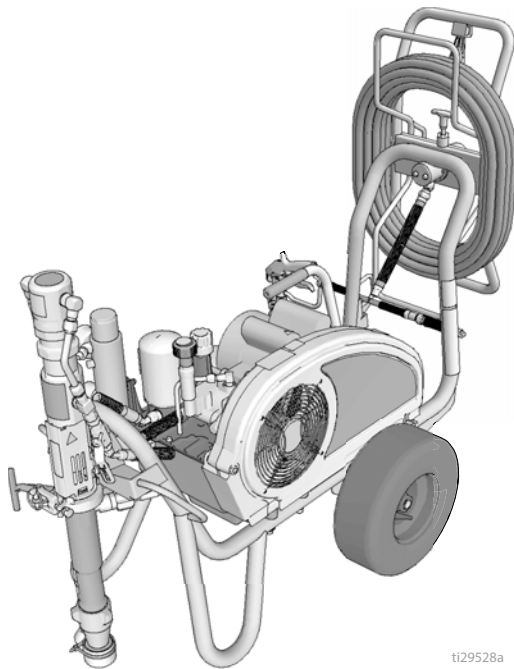
*For professional use only.
Not approved for use in explosive atmosphere or hazardous locations.
For portable airless spraying of architectural paints and coatings.*

3300 psi (22.8 MPa, 228 bar) Maximum Working Pressure



Important Safety Instructions

Read all warnings and instructions in this manual and in related manuals.
Be familiar with the controls and the proper usage of the equipment.
Save these instructions.



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*Use only genuine Graco replacement parts.
The use of non-Graco replacement parts may void warranty.*

Table of Contents

Warnings 3

Component Identification 8

Grounding 9

 Grounding of Pails 9

 Circuit Protection 9

Setup 10

 Pressure Relief Procedure 11

Startup 12

How to Spray 14

 Switch Tip™ and Guard Assembly 14

 How to Adjust the Spray Pattern 14

 Spray 15

 Clear Tip Clogs 15

Clean Up 17

Maintenance 19

Troubleshooting 20

DutyMax EH230DI ProContractor Series Parts 22

Spray Gun Parts 32

Pump Parts 34

Repair 36

 Gun 36

 Pump 41

Technical Specifications 49

Graco Standard Warranty 51

Graco Information 52

Number	Sprayer Model	Description
2AZ582	EH230	240VAC, 50Hz, 13.4A

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

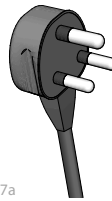
WARNING



GROUNDING

This product must be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This product is equipped with a cord having a grounding wire with an appropriate grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

- Improper installation of the grounding plug is able to result in a risk of electric shock.
- When repair or replacement of the cord or plug is required, do not connect the grounding wire to either flat blade terminal.
- The wire with insulation having an outer surface that is green with or without yellow stripes is the grounding wire.
- Check with a qualified electrician or serviceman when the grounding instructions are not completely understood, or when in doubt as to whether the product is properly grounded.
- Do not modify the plug provided; if it does not fit the outlet, have the proper outlet installed by a qualified electrician.
- This product is for use on a nominal 230V circuit and has a grounding plug similar to the plugs illustrated in the figure below.



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- Only connect the product to an outlet having the same configuration as the plug.
- Do not use an adapter with this product.

Extension Cords:

- Use only a 3-wire extension cord that has a grounding plug and a grounding receptacle that accepts the plug on the product.
- Make sure your extension cord is not damaged. If an extension cord is necessary, use 12 AWG (2.5 mm²) minimum to carry the current that the product draws.
- An undersized cord results in a drop in line voltage and loss of power and overheating.

WARNING



FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:



- Do not spray flammable or combustible materials near an open flame or sources of ignition such as cigarettes, motors, and electrical equipment.



- Paint or solvent flowing through the equipment is able to result in static electricity. Static electricity creates a risk of fire or explosion in the presence of paint or solvent fumes. All parts of the spray system, including the pump, hose assembly, spray gun, and objects in and around the spray area shall be properly grounded to protect against static discharge and sparks. Use Graco conductive or grounded high-pressure airless paint sprayer hoses.



- Verify that all containers and collection systems are grounded to prevent static discharge. Do not use pail liners unless they are anti static or conductive.
- Connect to a grounded outlet and use grounded extensions cords. Do not use a 3-to-2 adapter.
- Do not use a paint or a solvent containing halogenated hydrocarbons.
- Do not spray flammable or combustible liquids in a confined area.
- Keep spray area well-ventilated. Keep a good supply of fresh air moving through the area.
- Sprayer generates sparks. Keep pump assembly in a well ventilated area at least 20 feet (6.1 m) from the spray area when spraying, flushing, cleaning, or servicing. Do not spray pump assembly.
- Do not smoke in the spray area or spray where sparks or flame is present.
- Do not operate light switches, engines, or similar spark producing products in the spray area.
- Keep area clean and free of paint or solvent containers, rags, and other flammable materials.
- Know the contents of the paints and solvents being sprayed. Read all Safety Data Sheets (SDS) and container labels provided with the paints and solvents. Follow the paint and solvents manufacturer's safety instructions.
- Fire extinguisher equipment shall be present and working.



BURN HAZARD

Equipment surfaces and fluid that is heated can become very hot during operation. To avoid severe burns:

- Do not touch hot fluid or equipment.


WARNING
**SKIN INJECTION HAZARD**

High-pressure spray is able to inject toxins into the body and cause serious bodily injury. In the event that injection occurs, **get immediate surgical treatment.**



- Do not aim the gun at, or spray any person or animal.
- Keep hands and other body parts away from the discharge. For example, do not try to stop leaks with any part of the body.



- Always use the nozzle tip guard. Do not spray without nozzle tip guard in place.



- Use Graco nozzle tips.



- Use caution when cleaning and changing nozzle tips. In the case where the nozzle tip clogs while spraying, follow the **Pressure Relief Procedure** for turning off the unit and relieving the pressure before removing the nozzle tip to clean.

- Equipment maintains pressure after power is shut off. Do not leave the equipment energized or under pressure while unattended. Follow the **Pressure Relief Procedure** when the equipment is unattended or not in use, and before servicing, cleaning, or removing parts.

- Check hoses and parts for signs of damage. Replace any damaged hoses or parts.

- This system is capable of producing 3300 psi (22.8 MPa, 228 bar). Use Graco replacement parts or accessories that are rated a minimum of 3300 psi (22.8 MPa, 228 bar).

- Always engage the trigger lock when not spraying. Verify the trigger lock is functioning properly.

- Verify that all connections are secure before operating the unit.

- Know how to stop the unit and bleed pressure quickly. Be thoroughly familiar with the controls.

**ELECTRIC SHOCK HAZARD**

This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.



- Turn off and disconnect power cord before servicing equipment.
- Connect only to grounded electrical outlets.
- Use only 3-wire extension cords.
- Ensure ground prongs are intact on power and extension cords.
- Do not expose to rain. Store indoors.
- Wait five minutes after disconnecting power cord before servicing large capacitor units.

WARNING



EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Always wear appropriate gloves, eye protection, and a respirator or mask when painting.
- Do not operate or spray near children. Keep children away from equipment at all times.
- Do not overreach or stand on an unstable support. Keep effective footing and balance at all times.
- Stay alert and watch what you are doing.
- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not kink or over-bend the hose.
- Do not expose the hose to temperatures or to pressures in excess of those specified by Graco.
- Do not use the hose as a strength member to pull or lift the equipment.
- Do not spray with a hose shorter than 25 feet.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.



PRESSURIZED ALUMINUM PARTS HAZARD

Use of fluids that are incompatible with aluminum in pressurized equipment can cause serious chemical reaction and equipment rupture. Failure to follow this warning can result in death, serious injury, or property damage.

- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents.
- Do not use chlorine bleach.
- Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.








MOVING PARTS HAZARD

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

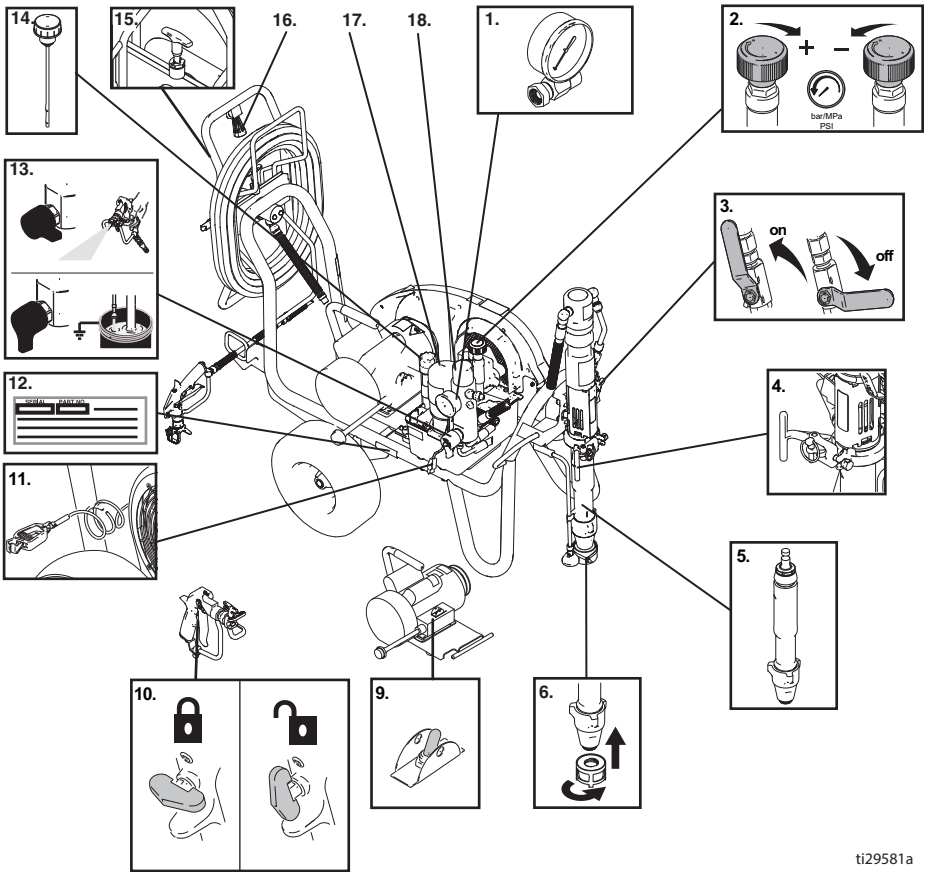


WARNING

 	<p>ENTANGLEMENT HAZARD</p> <p>Rotating parts can cause serious injury.</p> <ul style="list-style-type: none"> • Keep clear of moving parts. • Do not operate equipment with protective guards or covers removed. • Do not wear loose clothing, jewelry or long hair while operating equipment. • Equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure and disconnect all power sources.
	<p>TOXIC FLUID OR FUMES HAZARD</p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> • Read SDSs to know the specific hazards of the fluids you are using. • Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
	<p>RECOIL HAZARD</p> <p>Gun may recoil when triggered. If you are not standing securely, you could fall and be seriously injured.</p>
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:</p> <ul style="list-style-type: none"> • Protective eyewear, and hearing protection. • Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Component Identification

Component Identification



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1	Pressure Gauge
2	Pressure Control
3	Hydraulic Pump Valve
4	ProConnect
5	Displacement Pump
6	Inlet Strainer
9	Electric Motor On/Off Switch
10	Gun Trigger Lock
11	Grounding Clamp
12	Serial Number Tag
13	Prime/Drain Valve

14	Hydraulic Oil Cap / Dipstick
15	Hose Reel Lock
16	Hose Reel Handle
17	Hydraulic Oil Filter
18	Paint Filter

Grounding



The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.

The sprayer cord includes a grounding wire with an appropriate grounding contact.

The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Do not modify the plug provided; if it does not fit the outlet, have the proper outlet installed by a qualified electrician.

Air and fluid hoses: Use only electrically conductive hoses with a maximum of 500ft. (150 m) combined hose length to ensure grounding continuity. Check electrical resistance of hoses. If total resistance to ground exceeds 29 megohms, replace hose immediately.

Spray gun: Ground through connection to a properly grounded fluid hose and pump.

Power Requirements

230V units require 230 VAC, 50/60 Hz, 16A, 1 phase

Extension Cords

Use an extension cord with an undamaged ground contact. If an extension cord is necessary, use a 3-wire, 12 AWG (2.5 mm²) minimum.

NOTE: Smaller gauge or longer extension cords may reduce sprayer performance.

Grounding of Pails

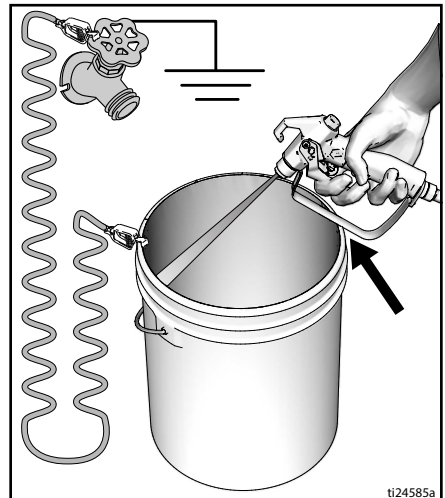
Solvent pails used when flushing: Follow local code. Use only conductive metal pails, placed on a grounded surface. Do not place

the pail on a non-conductive surface, such as paper or cardboard, which interrupts grounding continuity.



Always ground a metal pail: connect a ground wire to the pail. Clamp one end to the pail and the other end to a true earth ground such as a water pipe.

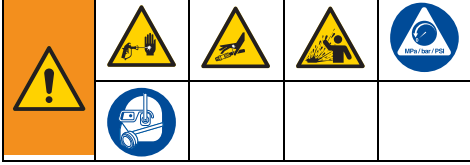
To maintain ground continuity when sprayer is flushed or pressure is relieved: hold metal part of spray gun firmly to the side of a grounded metal pail then trigger the gun.



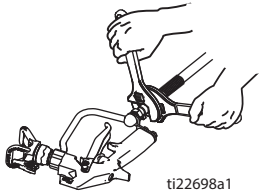
Circuit Protection

Connect sprayers only to circuits which have the properly sized circuit breaker and/or fuses (for unit power requirements see **Technical Specifications**, page 49.

Setup

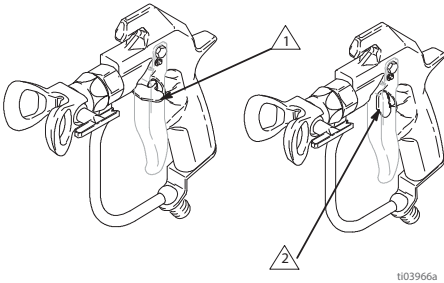


1. Install hose to spray gun and tighten securely.

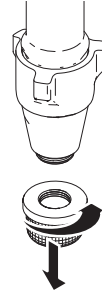


2. Engage trigger lock.

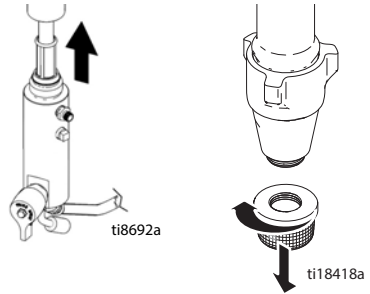
	Trigger lock engaged
	Trigger lock disengaged



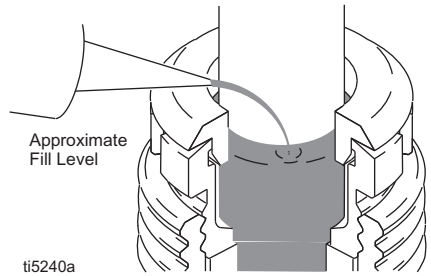
3. Remove Tip Guard.
4. Screw inlet strainer to bottom of suction hose and hand tighten securely.
7. Check hydraulic oil level. Add only Graco Hydraulic Oil, ISO Grade 46, 169236 (5 gallon/18.9 liter) or 207428 (1 gallon/3.8 liter). Hydraulic tank capacity is 1.25 gallon (4.75 liters).



5. When spraying texture, remove inlet strainer and filter bowl screen.



6. Fill throat packing nut with TSL to prevent premature packing wear. Do this each time you spray.

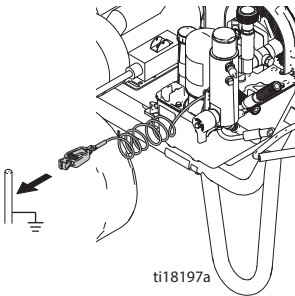




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Safe Range (cold)

8. Attach sprayer grounding clamp to earth ground.



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Pressure Relief Procedure



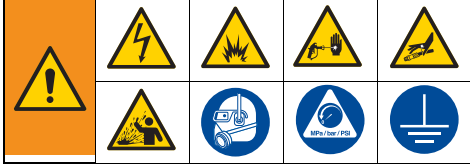
Follow the **Pressure Relief Procedure** whenever you see this symbol.

This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the **Pressure Relief Procedure** when you stop spraying and before cleaning, checking, or servicing the equipment.

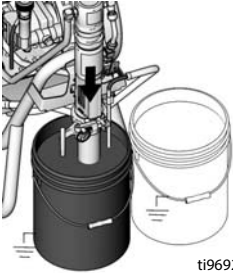
1. Engage trigger lock.
2. Turn sprayer OFF. Unplug power cord to electric motor.
3. Move pump valve to OFF and turn pressure control knob fully counterclockwise to lowest setting.
4. Disengage trigger lock. Hold metal part of gun firmly to side of grounded metal pail, and trigger gun to relieve pressure.
5. Engage trigger lock.
6. Turn prime valve down to DRAIN position. Leave prime valve down until ready to spray again.
7. If you suspect the spray tip or hose is clogged or that pressure has not been fully relieved:
 - a. VERY SLOWLY loosen tip guard retaining nut or hose end coupling to relieve pressure gradually.
 - b. Loosen nut or coupling completely.
 - c. Clear hose or tip obstruction.

Startup

Startup

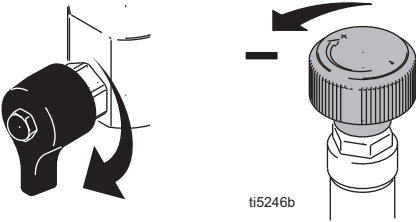


1. Place displacement pump in grounded metal pail partially filled with flushing fluid. Attach ground wire to pail and to earth ground.



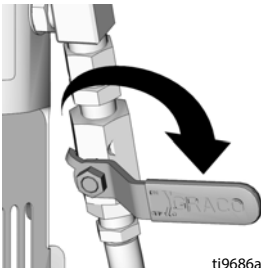
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2. Turn prime valve down. Turn pressure control counterclockwise to lowest pressure.



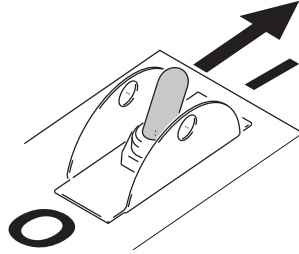
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3. Set hydraulic pump valve OFF.



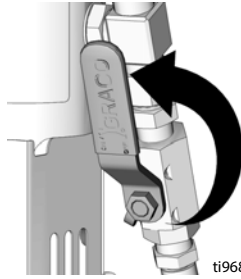
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4. Plug cord into outlet.
5. Turn motor ON.



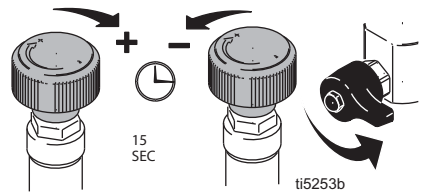
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6. Set hydraulic pump valve ON (hydraulic motor is now active).





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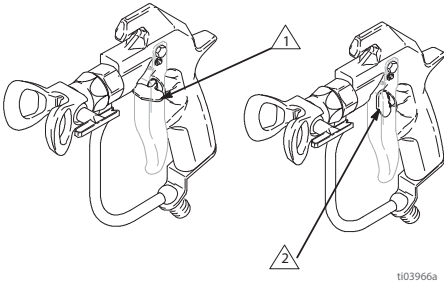
7. Increase pressure enough to start hydraulic motor stroking and allow fluid to circulate for 15 seconds; turn pressure down, turn prime valve horizontal.



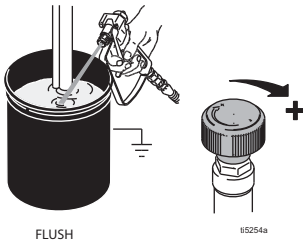
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8. Disengage trigger lock.

	Trigger lock engaged
	Trigger lock disengaged

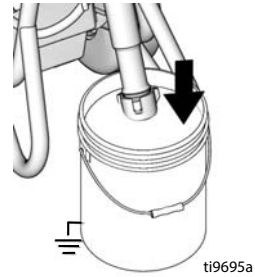


9. Hold gun against grounded metal flushing pail. Trigger gun and increase fluid pressure slowly until pump runs smoothly.

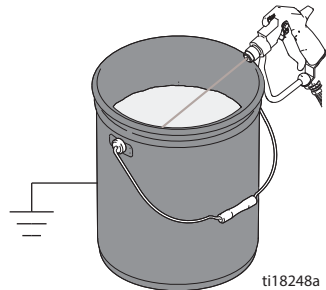


10. Inspect fittings for leaks. If leaks occur, turn sprayer OFF immediately. Perform **Pressure Relief Procedure**, page 11. Tighten leaky fittings. Repeat **Startup** procedure steps 2-8. If no leaks, continue to trigger gun until system is thoroughly flushed.

11. Place displacement pump in paint pail.



12. Trigger gun again into flushing fluid pail until paint appears.



13. Assemble Tip and Guard, page 14.

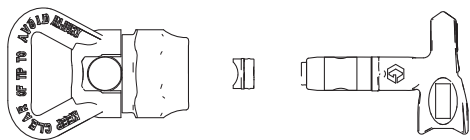
				
<p>High-pressure spray is able to inject toxins into the body and cause serious bodily injury. Do not stop leaks with hand or rag.</p>				

How to Spray

Switch Tip™ and Guard Assembly

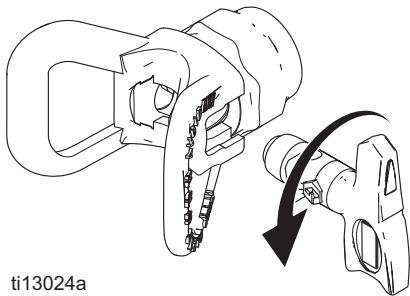


1. Perform **Pressure Relief Procedure**, page 11.
2. Engage trigger lock. Insert Switch Tip. Insert seat and OneSeal™.



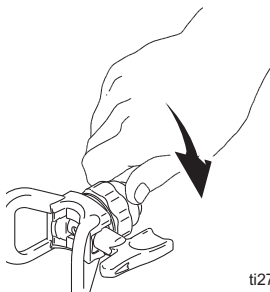
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3. Insert Switch Tip and face forward.



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4. Screw assembly onto gun. Tighten.



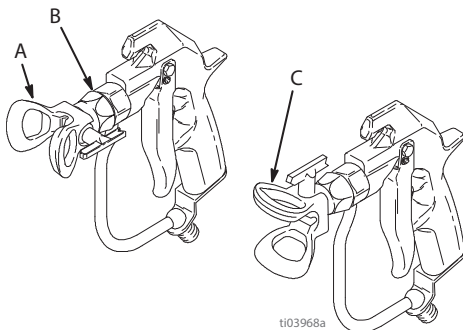
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How to Adjust the Spray Pattern

1. To adjust the spray pattern direction, relieve pressure. Loosen the tip guard retaining nut (B). Turn the tip guard/tip groove horizontally (C) for a horizontal pattern and vertically (A) for a vertical pattern. Tighten the nut.
2. The spray tip orifice and spray angle determines the coverage and size of pattern. When more coverage is needed, use a larger spray tip rather than increasing fluid pressure.

NOTICE

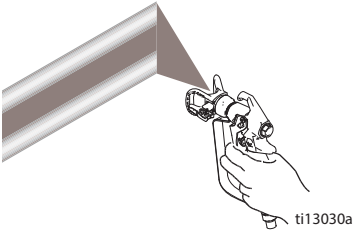
Openings in the tip guard reduce paint buildup on the guard while spraying. Damage to the sharp edges of the openings causes paint to collect at that area. Never hang the gun by the tip guard.



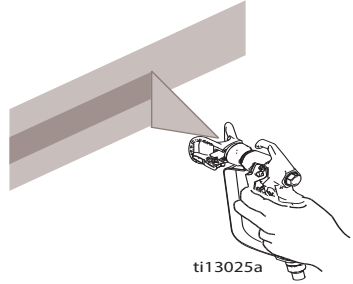
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Spray

1. Spray test pattern. Increase pressure to eliminate heavy edges. Use smaller tip size if pressure adjustment can not eliminate heavy edges.



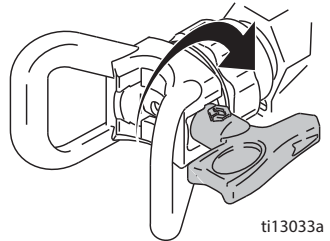
2. Hold gun perpendicular, 10-12 in. (25-30 cm) from surface. Spray back and forth. Overlap by 50%. Trigger gun after moving and release before stopping.



Clear Tip Clogs




1. Release trigger, engage trigger lock. Rotate Switch Tip. Disengage trigger lock. Trigger gun to clear clog.



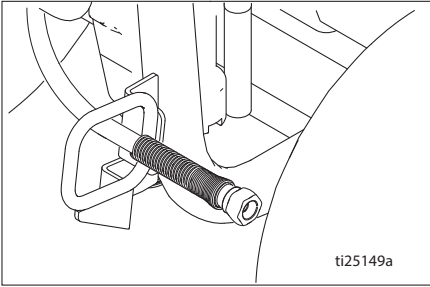
2. Engage trigger lock. Return Switch Tip to original position. Disengage trigger lock

How to Spray

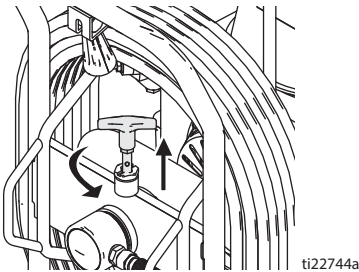
Hose Reel

				
<p>To avoid injury, keep your head clear of hose reel while winding up hose.</p>				

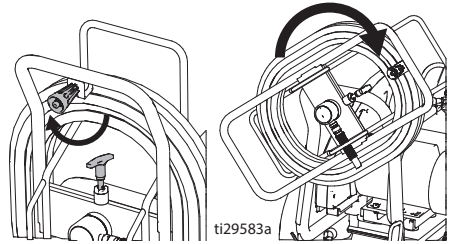
1. Make sure hose is routed through hose guide.



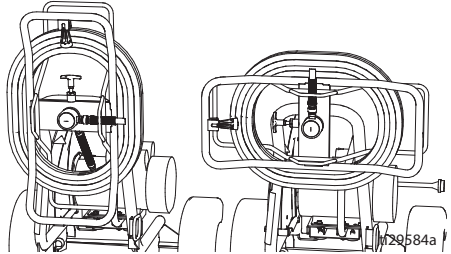
2. Lift and turn pivot lock 90° to unlock hose reel. Pull on hose to remove it from hose reel.



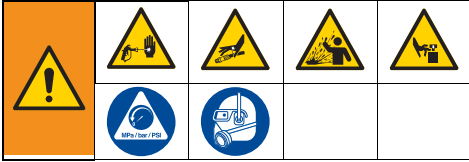
3. Pull reel handle up and turn clockwise to reel in hose.



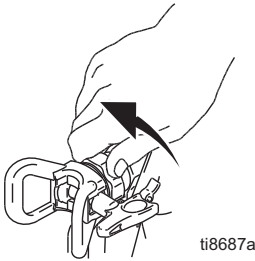
4. **NOTE:** The hose reel can be locked into two positions: Usage and Storage.



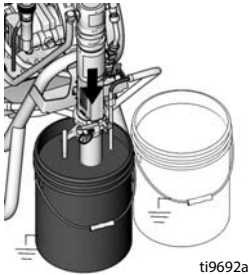
Clean Up



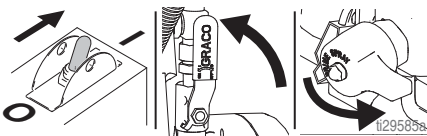
1. Perform **Pressure Relief Procedure**, page 11.
2. Remove Guard and SwitchTip.



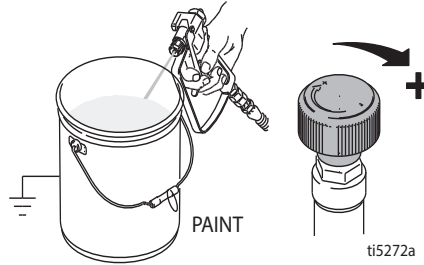
3. Remove displacement pump from paint and place in flushing fluid. Use water for water-based paint and mineral spirits for oil based paint.



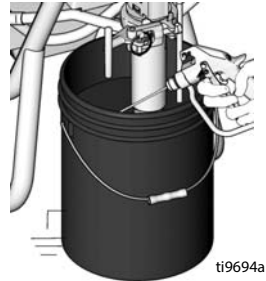
4. Turn motor switch ON. Turn hydraulic pump valve ON. Turn prime valve forward to SPRAY position.



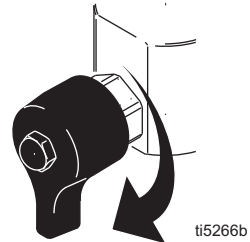
5. Hold gun against pail. Disengage trigger lock. Turn pressure control up until motor begins to drive pump. Trigger gun until flushing fluid appears.



6. Move gun to waste pail, hold gun against pail, trigger gun to thoroughly flush system. Release trigger and engage trigger lock.

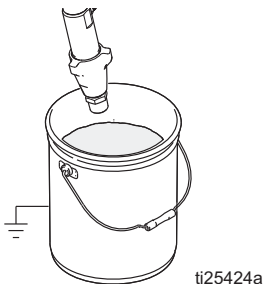


7. While continuing to trigger gun, turn prime valve down. Then release gun trigger. Allow flushing fluid to circulate until fluid comes out of drain tube clear.

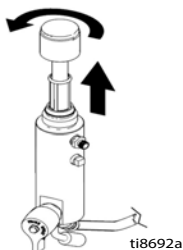


Clean Up

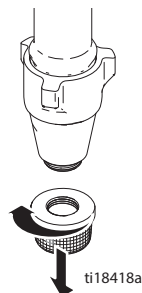
8. Raise displacement pump above flushing fluid and run sprayer for 15 to 30 seconds to drain fluid. Turn hydraulic valve OFF. Turn engine OFF or turn electric motor OFF and unplug.



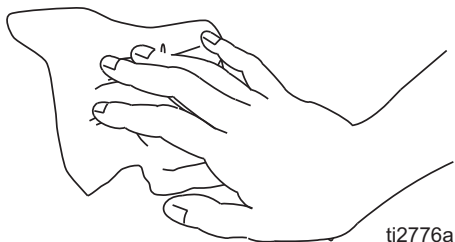
9. Engage trigger lock.



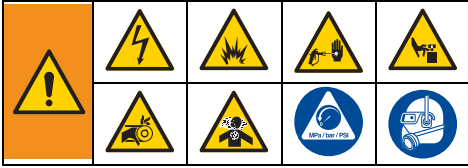
10. Unscrew and remove inlet strainer. Clean and replace strainer if necessary.



11. If flushing with water, flush again with mineral spirits, or Pump Armor, to leave a protective coating to prevent freezing or corrosion.
12. Wipe sprayer, hose and gun with a rag soaked in water or mineral spirits.



Maintenance



DAILY: Check hydraulic oil level and fill as necessary.

DAILY: Check hose for wear and damage.

DAILY: Check trigger lock for proper operation.

DAILY: Check prime/drain valve for proper operation.

DAILY: Check that displacement pump is tight.

DAILY: Check level of Throat Seal Liquid (TSL) in displacement pump packing nut. Fill nut, if necessary. Keep TSL in nut to help prevent fluid buildup on piston rod and premature wear of packings and pump corrosion.

WEEKLY/DAILY: Remove any debris or
SEMI-ANNUALLY: Check belt wear.
Replace if necessary.

AFTER EACH 500 HOURS OR 3 MONTHS OF OPERATION: Replace hydraulic oil and filter with Graco hydraulic oil 169236 (5 gallon/20 liter) or 207428 (1 gallon/3.8 liter) and filter 246173. Oil change interval dependent on environmental conditions.

YEARLY OR 2000 HOURS: Replace belt.

Troubleshooting



Problem	Cause	Solution
Motor operates, but displacement pump does not operate	Hydraulic pump valve is OFF	Set hydraulic pump valve ON
	Pressure setting too low	Increase pressure, page 13
	Displacement pump outlet filter (if used) is dirty or clogged	Clean the filter
	Tip or tip filter (if used) is clogged	Remove tip and/or filter and clean
	Hydraulic fluid too low	Shut off sprayer. Add fluid*. See page 10
	Belt worn or broken or off	Replace belt
	Hydraulic pump worn or damaged	Bring sprayer to Graco distributor for repair
	Dried paint seized paint pump rod	Service pump. See Pump , page 41
Displacement pump operates, but output is low on upstroke	Hydraulic motor not shifting	Set pump valve OFF. Turn pressure down. Turn engine OFF. Pry rod up or down until hydraulic motor shifts.
	Piston ball check not seating properly	Service piston ball check. See Pump , page 41
Displacement pump operates, but output is low on down stroke and/or on both strokes	Piston packings worn or damaged	Replace packings. See Pump , page 41
	Intake valve ball check not seating properly	Tighten packing nut or replace packings. See Pump , page 41
	Suction tube air leak	
	Hydraulic oil filter is dirty	Replace filter.
Paint leaks and runs over side of wet cup	Piston packings worn or damaged	Tighten wet cup enough to stop leakage
	Loose wet cup	Replace packings. See Pump , page 41
Excessive leakage around hydraulic motor piston rod wiper	Throat packings worn or damaged	Replace these parts. See Pump , page 41

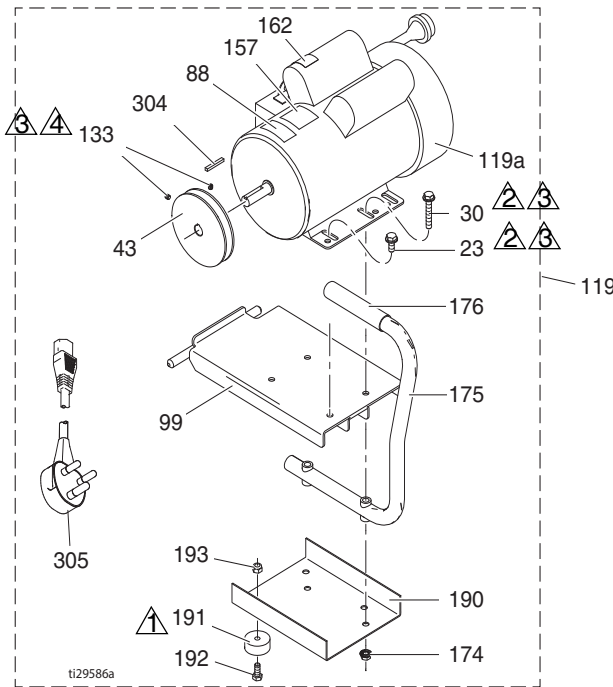
Problem	Cause	Solution
Fluid delivery is low	Pressure setting too low	Increase pressure, page 13
	Displacement pump outlet filter (if used) is dirty or clogged	Clean or replace.
	Contractor gun filter (if used) is dirty or clogged	Clean or replace.
	Intake line to pump inlet is not tight	Tighten.
	Hydraulic motor is worn or damaged	Bring sprayer to Graco distributor for repair.
	Large pressure drop in fluid hose	Reduce length or increase diameter.
The sprayer overheats	Paint buildup on hydraulic components	Clean
	Oil level is low	Fill with oil. See page 10
Spitting from gun	Air in fluid pump or hose	Check for loose connections on siphon assembly, tighten, then reprime pump
	Loose intake suction	Tighten
	Fluid supply is low or empty	Refill supply container
Pump noise	Low hydraulic fluid level	Turn sprayer OFF. Add fluid*. See page 10
Electric motor does not operate	Power switch is not ON	Turn power switch ON
	Tripped circuit breaker	Check circuit breaker at power source. Reset motor switch
*Check hydraulic fluid level often. Do not allow it to become too low. Use only Graco hydraulic fluid, page 10.		

DutyMax EH230DI ProContractor Series Parts

DutyMax EH230DI ProContractor Series Parts

DutyMax EH230DI Electric Motor Parts

Ref.	Torque	Ref.	Torque
▲1	26-30 in-lb (2.9 - 3.4 N•m)	▲3	Apply Loctite 242
▲2	215-235 in-lb (24.3 - 26.6 N•m)	▲4	55-62 in-lb (6.7 - 7.0N•m)



Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
23	110963	SCREW, cap, flange head	2	162▲	189930	LABEL, warning	1
30	114653	SCREW, cap, flange head	2	174	110996	NUT, hex, flange head	4
43	15E588	PULLEY	1	175	246214	HANDLE, conversion	1
44	116914	BELT, V-Grip-notch (not shown)	1	176	111700	GRIP, handle	1
88▲	15K616	LABEL, caution	1	190	15F217	PLATE, isolator, bottom	1
99	15E585	BRACKET, mounting, elec. motor	1	191	113817	BUMPER	4
119	248946	KIT, electric motor 3.0 hp (includes all parts listed on this page)	1	192	100057	SCREW, cap, hex hd	4
119a	15E669	MOTOR, electric 3 HP, 230V AC	1	193	111040	NUT, lock, insert, nylock, 5/16	4
133	100002	SCREW, set	2	304	117632	KEY, square 3/16 x 1.25	1
157	15B804	LABEL, Graco	2	305	17N231	CORDSET, adapter, India	1

▲ Danger and Warning labels are available at no cost

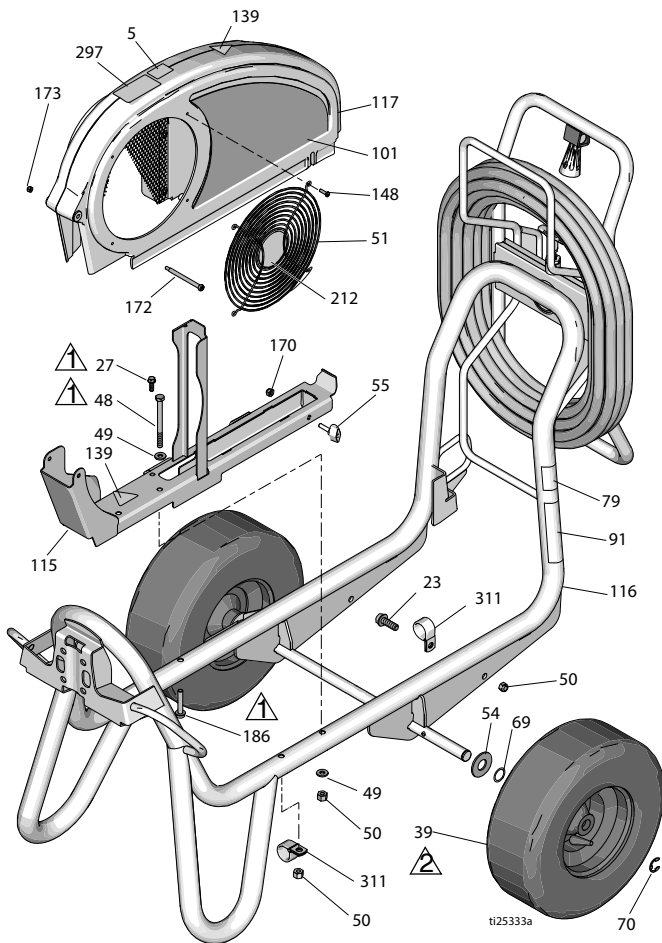
DutyMax EH230DI ProContractor Series Parts

Notes

DutyMax EH230DI ProContractor Series Parts

EH230DI Frame and Belt Guard Parts

Ref.	Torque	Ref.	Torque
⚠1	120-130 in-lb (13.6 - 14.7 N•m)	⚠2	Inflate tires to 25-35 psi (1.7-2.4 bar)



DutyMax EH230DI ProContractor Series Parts

Parts List

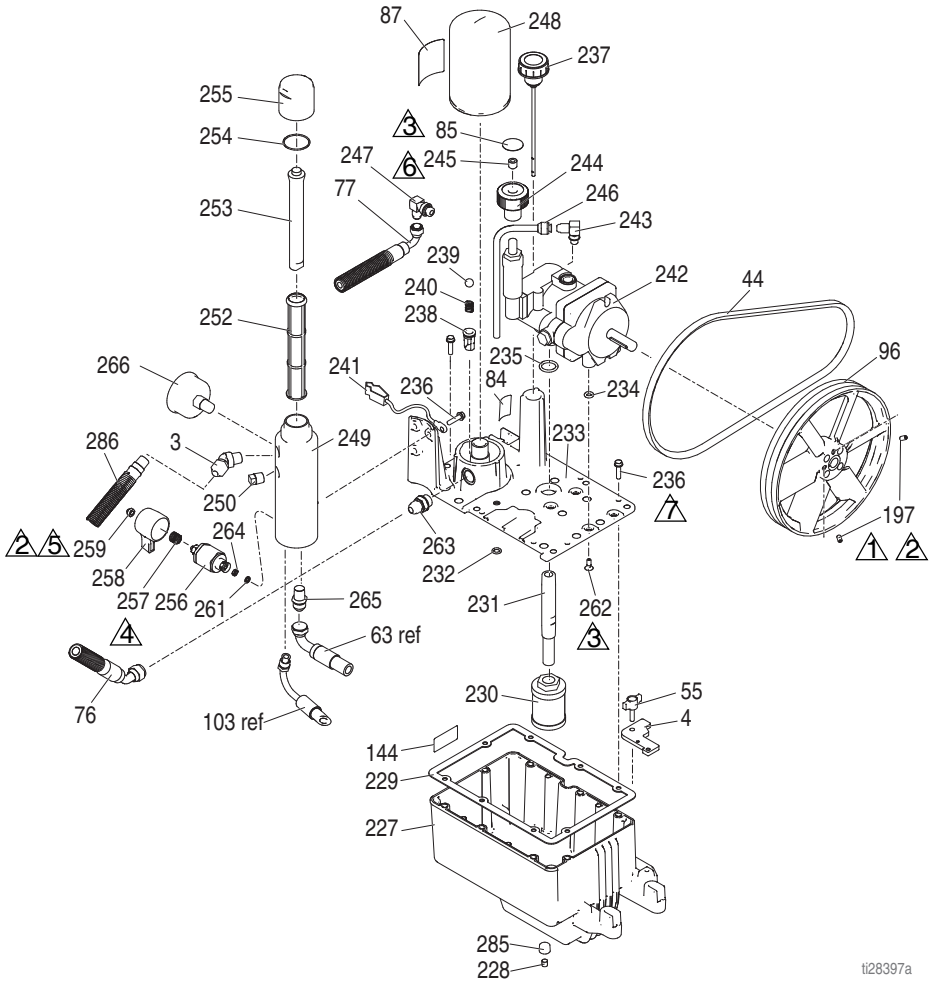
Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
5	16D576	LABEL, made in USA with global component	1	101	17N233	LABEL, brand, side (EH230DI)	1
23	110963	SCREW, cap, flange head	1	115	24M086	RAIL, belt guard, assy	1
27	260212	SCREW, hex washer hd, thd form	1	116	17D108	FRAME, cart, weldment	1
39	119509	WHEEL, pneumatic	2	117	248973	GUARD, belt assembly, painted	1
48	867539	SCREW, cap, hex hd	2	139▲	16M768	LABEL, warning	2
49	100527	WASHER, plain	3	148	115477	SCREW, mach, torx pan hd	4
50	110838	NUT, lock	2	170	102040	NUT, lock, hex	1
51	117284	GRILL, fan guard	1	172	119434	SCRWE, shoulder, skt hd	1
54	156306	WASHER, flat	2	173	116969	NUT, lock	1
55	17D813	NUT, hand	1	186	17D142	SCREW, hex washer hd	2
69	116038	WASHER, wave spring	2	297	17D033	LABEL, ProContractor	1
70	120211	RING, retaining, e-ring	2	311	128051	CLAMP	2
79▲	189246	LABEL, warning	1				
91▲	194317	LABEL, warning, EN	1				
	16N948	LABEL, warning, ISO	1				
	17D947	LABEL, warning, multi-languages	1				

▲Danger and Warning labels are available at no cost

DutyMax EH230DI ProContractor Series Parts

DutyMax Reservoir & Filter Parts

Ref.	Torque	Ref.	Torque
①	58-62 in-lb (6.6 - 7.0 N•m)	⑤	15-25 in-lb (1.7 - 2.8 N•m)
②	Apply Loctite 242	⑥	Apply Loctite 277
③	90-110 in-lb (10.2 - 12.4 N•m)	⑦	110-120 in-lb (12.4 - 13.6 N•m)
④	355-395 in-lb (40.1 - 44.6 N•m)		



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DutyMax EH230DI ProContractor Series Parts

DutyMax Reservoir & Filter Parts List

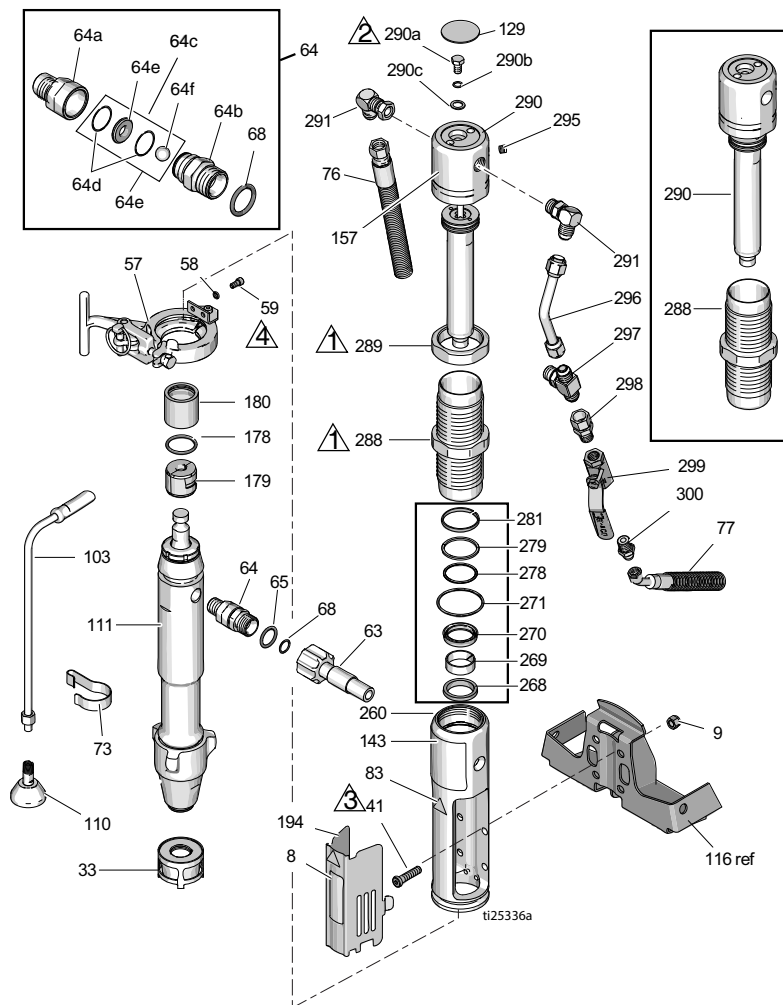
Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
3	161889	FITTING, outlet	1	244	15B438	KNOB, pressure	1
4	15E476	BRACKET, retainer, motor	1	245	117560	SCREW, set, socket head	1
44	116914	BELT, V, AX42 (EH230DI)	1	246	246167	TUBE, hydraulic, case drain	1
55	17D813	NUT, hand	1	247	116829	FITTING, elbow, hydraulic	1
84	198585	LABEL, hydraulic fluid, GH	1	248	246173	FILTER, oil, spin on	1
85	15A464	LABEL, control	1	249	15E599	HOUSING, filter	1
87	189892	LABEL, Graco	1	250	15G331	PLUG, pipe	1
96	15E410	PULLEY, fan	1	252	244067	FILTER, fluid	1
144	15K440	LABEL, brand, EH cooling	1	253	15C766	TUBE, diffusion	1
197	120087	SCREW, set, 1/4 x 1/2	2	254	117285	PACKING, o-ring	1
227	15J513	TANK, reservoir, blue	1	255	15C765	CAP, filter	1
228	101754	PLUG, pipe	1	256*	287879	VAVLE, drain, assy	1
229	120604	GASKET, reservoir	1	257*	114708	SPRING, comp	1
230	116919	FILTER	1	258*	15G563	HANDLE, valve	1
231	15E587	TUBE, suction	1	259*	116424	NUT, cap	1
232	154594	PACKING, o-ring	1	261*	193710	SEAL, seat, valve	1
233	15M056	COVER, reservoir	1	262	117471	SCREW, mach, hex flat head	4
234	107188	PACKING, o-ring	4	263	120184	FITTING, hydraulic	1
235	156401	PACKING, o-ring	1	264*	193709	SEAT, valve	1
236	119426	SCREW, mach, hex washer hd	11	265	121311	FITTING, connector	1
237	120726	CAP, breather, filter	1	266	868015	GAUGE	1
238	198841	RETAINER, ball, pressure bypass	1	285	116618	MAGNET	1
239	100084	BALL, metallic	1	286	17D266	HOSE, coupled, 3/8 x 73.5	1
240	116967	SPRING, compression	1	299	290079	LABEL, ground warning, English	1
241	237686	WIRE, ground assembly w clamp	1		16Y633	LABEL, ground warning, Chinese	1
242	249003	PUMP, hydraulic	1				
243	110792	FITTING, elbow, male, 90°	1				

* Included in Drain Valve Kit 245103

DutyMax EH230DI ProContractor Series Parts

Hydraulic Motor & Displacement Pump Parts

Ref.	Torque	Ref.	Torque
	145-155 ft-lb (196.6 - 210.2 N•m)		140-160 in-lb (15.8 - 18.1 N•m)
	12-18 ft-lb (16.3 - 24.4 N•m)		90-110 in-lb (10.2 - 12.4 N•m)



DutyMax EH230DI ProContractor Series Parts

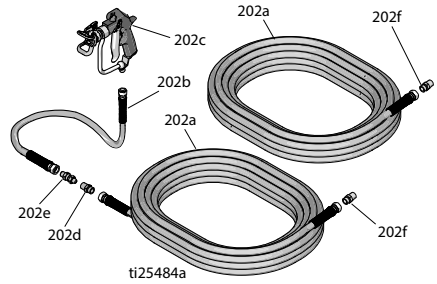
Hydraulic Motor & Displacement Pump Parts List

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
8	15F584	LABEL, ProConnect	1	178	156698	PACKING, o-ring	1
9	101566	NUT, lock	4	179	277377	COUPLER, pump	2
33	15V573	STRAINER		180	15H957	COVER, coupler	1
41◆	107210	SCREW	4	194	16M749	COVER, shield	1
57	288344	CLAMP, pump	1	260◆	15J279	MANIFOLD, adapter	1
58	105510	WASHER, lock, spring (hi-collar)	2	268◆+	117739	WIPER, rod	1
				269◆+	112342	BEARING, rod	1
59	101550	SCREW, cap	2	270◆+	112561	BEARING, block	1
63	257908	HOSE, coupled	1	271◆+	117283	PACKING, o-ring	1
64	24M611	KIT, check valve <i>includes 64a -64f</i>	1	278◆+	108014	PACKING, o-ring	1
64a	16N461	HOUSING, seat, check valve	1	279◆+	178226	SEAL, piston	1
64b	16N462	HOUSING, ball, check valve	1	281◆+	178207	BEARING, piston	1
64c	24M725	KIT, repair, check valve <i>includes 64d, 64e, 64f, 68</i>	1	288◆	248991	SLEEVE, hydraulic, cylinder	1
64d*		O-RING	2	289◆	15A726	NUT, jam	1
64e*		SEAT, valve	1	290◆	288737	KIT, repair, Trip Rod <i>includes 129, 278, 279, 281, 282, 295</i>	1
64f*		BALL, ceramic	1	290a◆	106276	SCREW, cap, hex head	1
65	109450	PACKING, o-ring	1	290b◆	155685	PACKING, o-ring	1
68*	C20195	PACKING, o-ring	1	290c◆	178179	WASHER, sealing	1
73	198542	CLIP, spring	1	291◆	117607	FITTING, elbow std thd	2
76	15K642	HOSE, hydraulic, return	1	295◆	100139	PLUG, pipe	1
77	15K641	HOSE, hydraulic, supply	1	296◆	15E596	TUBE, hydraulic, supply	1
83▲◆	15H108	LABEL, warning	1	297◆	117609	FITTING, tee, branch, str thd	1
103	243993	HOSE, drain, Ultra hi-boy	1	298	117328	FITTING, nipple, straight	1
110	241920	DEFLECTOR, threaded	1	299	117441	VALVE, ball	1
111	24X001	PUMP, displacement, see Pump Parts , page 34 for parts	1	300	116813	FITTING, nipple, hydraulic	1
129◆▲	15B063	LABEL, warning, hot surface	1	▲ <i>Danger and Warning labels are available at no cost</i>			
143	17D061	LABEL, brand, front	1	◆ <i>Included in Hydraulic Motor Repair Kit, 288760 + Included in Seal Kit 246174</i>			
157◆	15B804	LABEL, Graco	2	* <i>Included in Check Valve Repair Kit 24M725</i>			

DutyMax EH230DI ProContractor Series Parts





DutyMax EH230DI Sprayer - Spray Gun & Hose

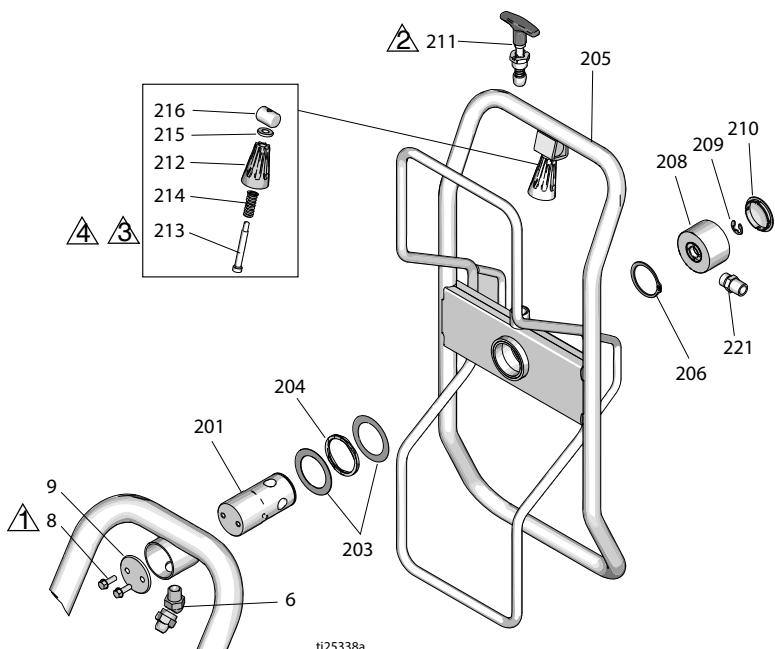
Ref.	Part No.	Description	Qty.
202a	240797	HOSE, grounded, nylon; 3/8 in. ID; cpld 3/8-18 npsm; 50 ft (15 m); spring guards both ends	2
202b	241735	HOSE, grounded, nylon; 1/4 in. ID; cpld 1/4 npt(m) x 1/4 npsm(f); 3 ft (0.9m); spring guards both ends 3300 psi (227 bar, 22.7 MPa)	1
202c	241705	GUN, spray, texture, Includes RAC [®] Tip Guard and LTX531 Spray Tip Cylinder, See Spray Gun Parts , page 32 for parts	1
202d	159841	ADAPTER, 3/8 x 1/4 in. npt	1
202e	189018	SWIVEL, straight	1
202f	162485	ADAPTER, nipple	2



DutyMax EH230DI ProContractor Series Parts

ProContractor Series Hose Reel Parts

Ref.	Torque	Ref.	Torque
	120-130 in-lb (13.6 - 14.7 N•m)		130-150 in-lb (14.7 - 16.9 N•m)
	25-35 ft-lb (33.9 - 47.5 N•m)		Apply Loctite 277

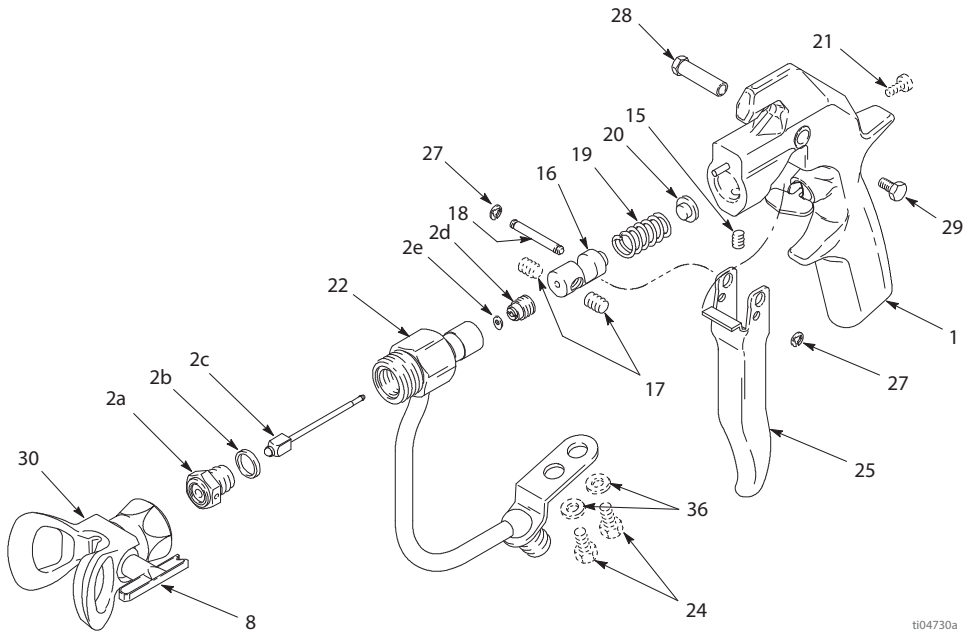


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Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
6	161889	FITTING, union swivel 45°	1	211	24E400	PIN, pop, lock out	1
8	260212	SCREW, hex washer hd	2	212	278085	HANDLE, swivel	1
9	16C975	PLATE, pivot mount	1	213	122518	SCREW, shoulder, sch	1
201	24E016	TUBE, hose reel, pivot	1	214	122542	SPRING	1
203	122607	WASHER, flat	2	215	122669	WASHER, flat	1
204	122534	SPRING, wave	1	216	15X618	NUT, swivel, handle	1
205	24B691	REEL, hose	1	221	162485	ADAPTER (models 24W942, 24W962, DH230DI)	1
206	122524	RING, retaining, external	1	116756	ADAPTER (models 24W966, 24W968)	1	
208	24B248	CAP, swivel, complete	1	159239	ADAPTER (models 24W966, 24W968)	1	
209	122347	RING, retaining, external	1				
210	122787	CAP	1				

Spray Gun Parts

Spray Gun Parts

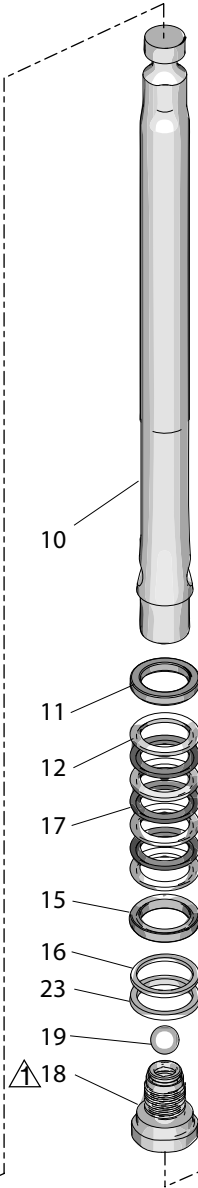
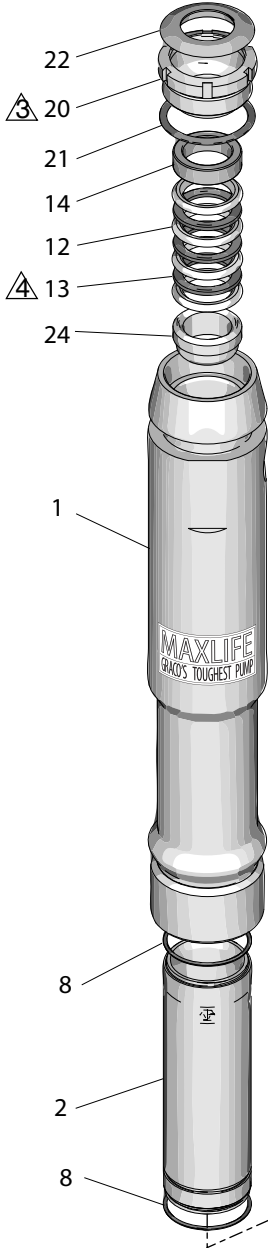






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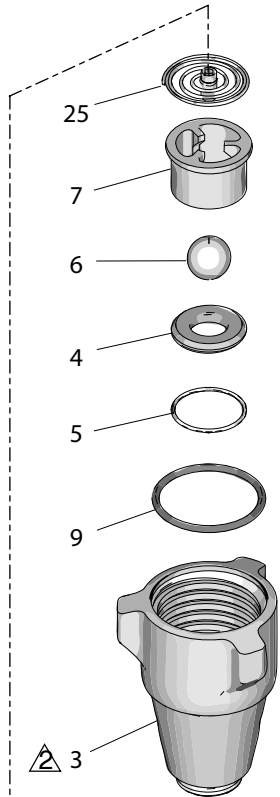
Ref. Part	Description	Qty.	Ref. Part	Description	Qty.
1	237680 TEXTURE GUN BODY	1	19	102924 SPRING	1
2	237260 NEEDLE AND SEAL KIT (parts not sold separately)	1	20	189990 SPRING ADJUSTER	1
2a	VALVE SEAT	1	21	110637 ADJUSTING SCREW	1
2b	GASKET	1	22	24R913 FLUID HOUSING	1
2c	NEEDLE	1	24	112774 SCREW, 1/4-20	2
2d	SEAL RETAINER	1	25	189974 GUN TRIGGER	1
2e	SEAL	1	27	112410 E-CLIP	2
8	LTX531 Switch Tip, size 531	1	28	187965 PIVOT PIN	1
15	102207 SETSCREW, 1/4-20	1	29	203953 SCREW, HWH, 10-24	1
16	189960 SPRING GUIDE	1	30	246215 KIT, TIP GUARD	1
17	112729 SETSCREW, socket head	2	35▲	222385 WARNING CARD not shown	1
18	189958 TRIGGER PIN	1	36	110755 WASHER, FLAT	2

▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.

Pump Parts



-  Torque to 55 ± 3 ft/lbs
(75 ± 4 N•m)
-  Torque to 200 ± 10 ft/lbs
(271 ± 20 N•m)
-  Torque to 140 ± 10 in/lbs
(16 ± 1 N•m)
-  Soak in SAE 30W oil for 1 hour
prior to assembly



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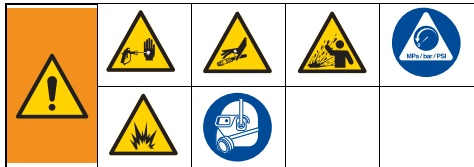
Pump Parts List

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	17D125	CYLINDER, pump	1	15*	189588	GLAND, packing, female	1
2	287817	SLEEVE, cylinder	1	16*	119636	WIPER, piston	1
3	15A303	HOUSING, intake	1	17*	15F875	PACKING, vee	3
4+	15J038	SEAT, carbide	1	18	287388	VALVE, piston	1
5*+	107098	PACKING, o-ring	1	19*	118601	BALL, ceramic	1
6*+	118602	BALL, ceramic	1	20	15J792	NUT, packing	1
7	193391	GUIDE, ball	8	21*	157195	PACKING, o-ring	1
8*	108822	PACKING, o-ring, ptfе	2	22*	112590	PLUG, throat seal	1
9*	160325	PACKING, o-ring	1	23*	15F183	WASHER, back-up	1
10	288821	ROD, piston	1	24*	15G658	GLAND, male	1
11*	189585	GLAND, packing, male	1	25+	24E027	SPRING, intake ball	1
12*	198701	PACKING, vee	8				
13*	198718	PACKING, vee	3				
14*	15G657	GLAND, female	1				

* Included in Repair Kit 24X096

+ Included in Repair Kit 24N013

Repair



Gun

The needle and seat are available only as a kit which includes the valve seat, gasket, needle, seal retainer, and seal.

The Standard Needle and Seat Kit, 237398, has the number **090** stamped on the needle and the seat.

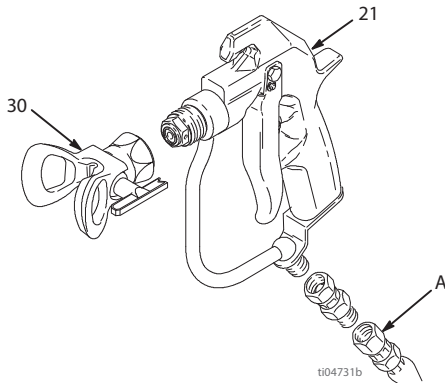
A Non-diffused Needle and Seat Kit, 237260, has the number **125** stamped on the needle and seat. It is recommended only for use with mastics, sealers and other high viscosity materials which have fillers that cannot pass through the standard seat's diffuser.

Use high quality, general purpose grease where grease is indicated.

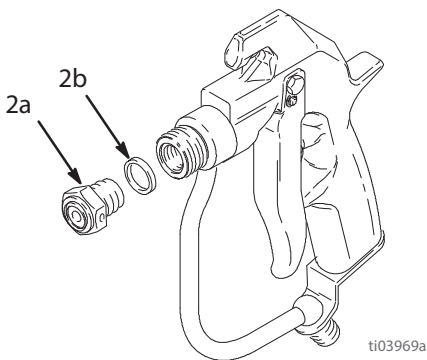
Disassembly

NOTE: If replacing only the needle and seat, Step 4 and 5 are not required. However, removing them allows you to clean the gun more thoroughly.

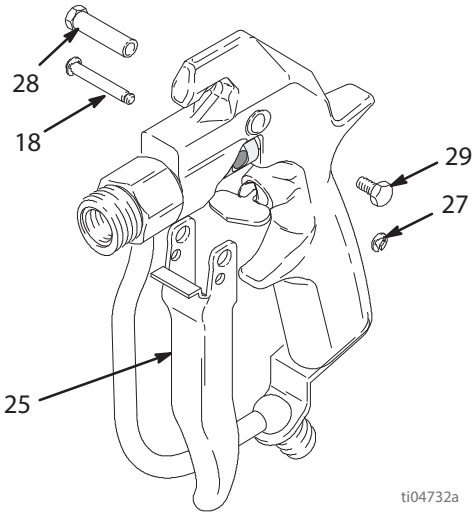
1. Perform **Pressure Relief Procedure**, page 11.
2. Disconnect the fluid hose (A). Remove the tip guard (30). Unscrew the spring screw (21) about 1/4 in. (7 mm) to release spring tension.



3. Unscrew the valve seat (2a). Remove the gasket (2b).

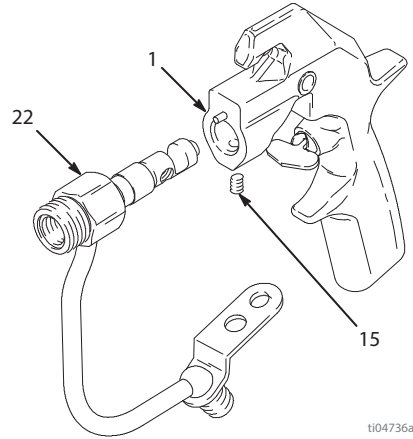


4. Remove one e-clip (27). Push out the pin (18). Remove the screw (29), pivot pin (28), and trigger (25).



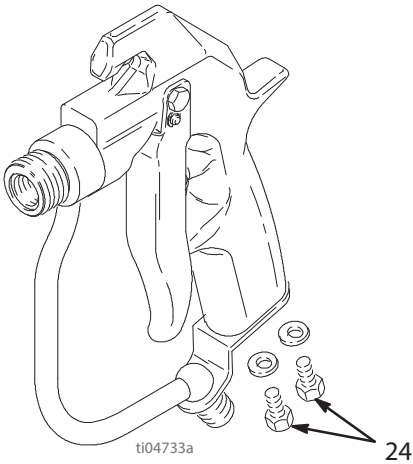
ti04732a

5. Remove the screws (24).



ti04736a

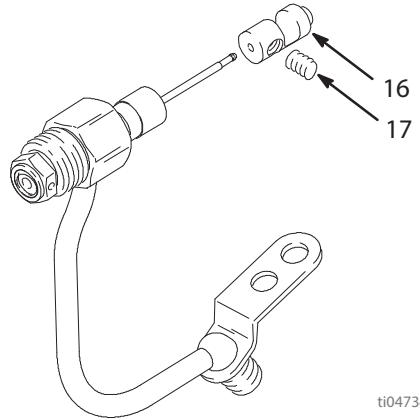
7. While supporting the spring guide (16) to prevent bending the needle, loosen the setscrews (17). Remove the spring guide (16).



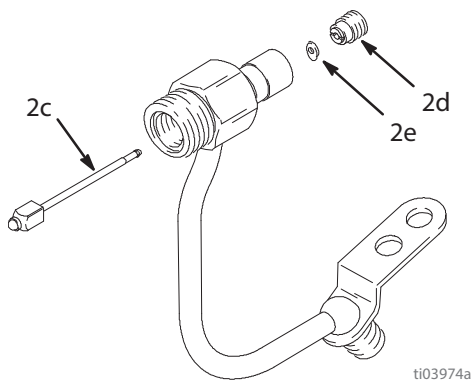
ti04733a

6. Loosen the setscrew (15). Pull the fluid housing (22) away from the gun body (1).

8. Remove the needle (2c). Unscrew the seal retainer (2d). Remove the seal (2e).



ti04734a



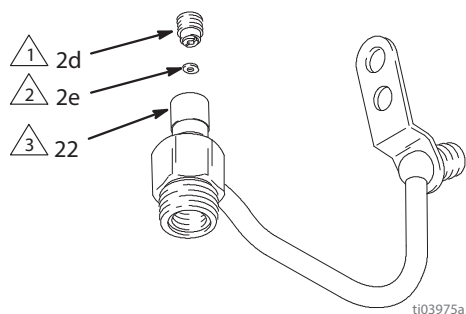
Cleaning

Clean all parts and cavities thoroughly with a compatible solvent. Dry with a rag or compressed air. Replace any parts that are worn or damaged.

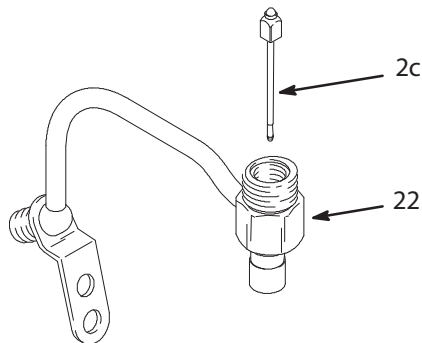
Reassembly

1. Lightly grease the inner cavities of the fluid housing (22). Install the small seal (2e) so the lips face into the fluid housing cavity. Install the seal retainer (2d) and torque to 30--40 in-lb (3.4--4.5 N•m).

Ref.	Action
1	Torque to 30-40 in-lb (3.4 - 4.5 N•m)
2	Lips of seal must face into housing
3	Grease inner cavity of housing

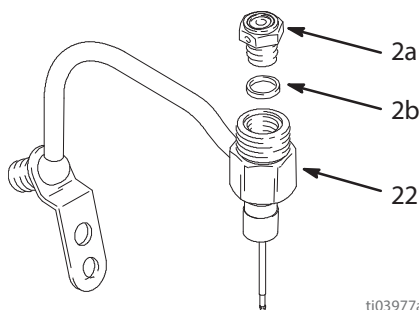


2. Lightly grease the small end of the needle (2c) and then guide it into the large end of the fluid housing (22).



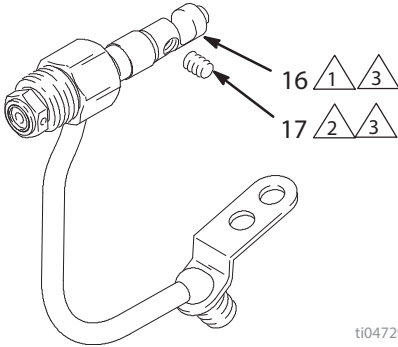
3. Place the gasket (2b) on the valve seat (2a). Grease the threads of the valve seat (2a). Screw the valve seat into the fluid housing (22). Torque to 20--25 ft-lb (27--34 N•m).

Ref.	Action
1	Grease the threads
2	Torque to 20-25 ft-lb (27 - 35 N•m)



4. Install the spring guide (16) and seat it against the needle. Loosely thread both setscrews (17) into the spring guide, then alternately and evenly tighten the setscrews to 10--15 in-lb (1.1--1.6 N•m). Fill the setscrew cavities with petroleum jelly.

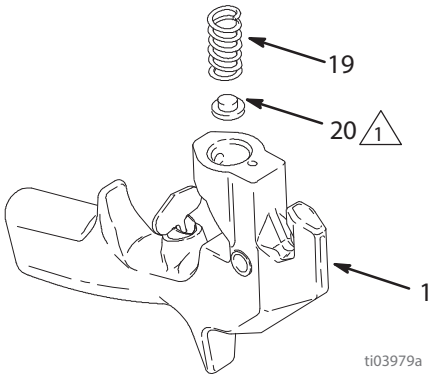
Ref.	Action
①	Seat against needle stem
②	Apply light strength Loctite; Torque alternately and evenly to 25-30 in-lb (2.8 - 3.4N•m)
③	Fill cavity with petroleum jelly



ti04729a

5. If the spring (19) was removed, grease the spring adjuster (20) and place the spring. Drop this assembly into the gun body (1).

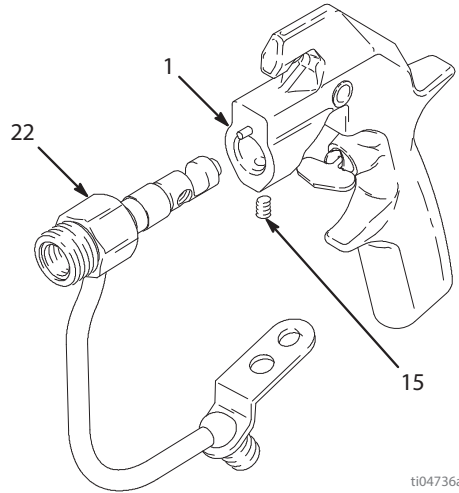
Ref.	Action
①	Grease this side



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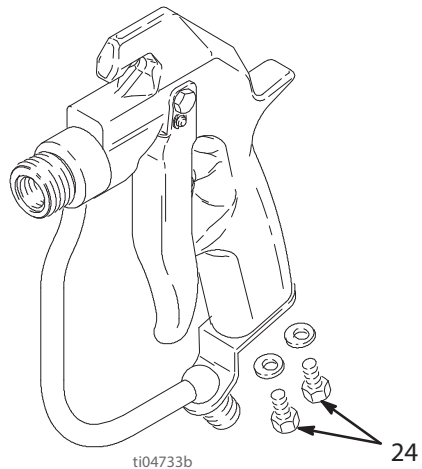
6. Push the fluid housing (22) onto the gun body (1) until fully seated. Tighten the setscrew (15) to 30--40 in--lb (3.4--4.5 N•m). Fill the setscrew cavity with petroleum jelly.

Ref.	Action
①	Torque to 30-40 in-lb (3.4 - 4.5 N•m)
②	Fill cavity with petroleum jelly



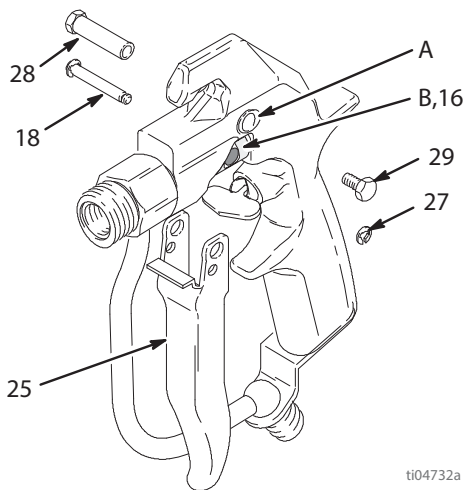
ti04736a

7. Install the screws (24).



ti04733b

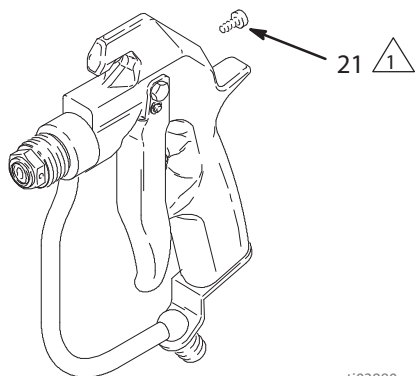
- Position the trigger (25) on the gun body. Insert the pivot pin (28) into the top hole (A) and secure with the screw (29) on the other side. Place an e-clip (27) on one end of the trigger pin (18). Slide the pin through lower trigger holes and through the slot (B) in the spring guide (16) (turn the spring guide to align, as needed). Install the other e-clip (27).



ti04732a

- If it was removed, install the spring tension screw (21) at the rear of the gun. Then, turn the screw in until it stops.

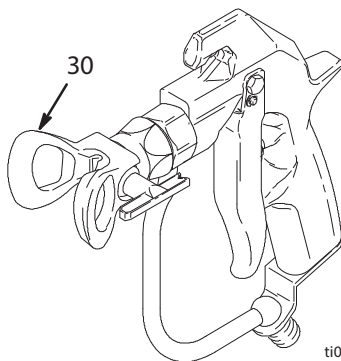
Ref.	Action
	Turn in until screw stops



ti03980a

Test the Gun Before Regular Use

- Engage trigger lock. Connect a hose to the gun. Start and prime the pump.
- Disengage trigger lock. Trigger the gun into a waste container. Release the trigger to be sure the gun immediately stops spraying and that there are no leaks.
- If the gun has a diffuser, check the diffuser using the procedure on page 20.
- Install the tip guard (30) before regular use.



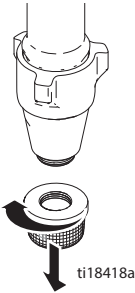
ti03965c

Pump

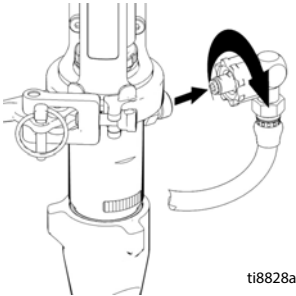
Removal



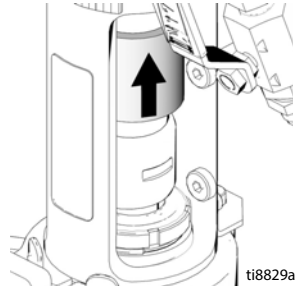
1. Flush pump.
2. Perform **Pressure Relief Procedure**, page 11.



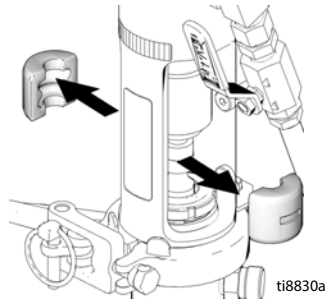
3. Remove paint hose fitting and paint hose from pump fitting.



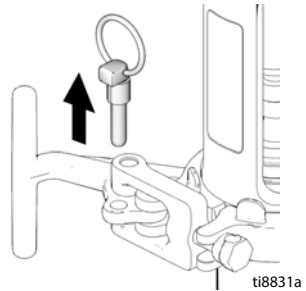
4. Slide coupler cover up to fully expose rod couplers.



5. Remove rod couplers.



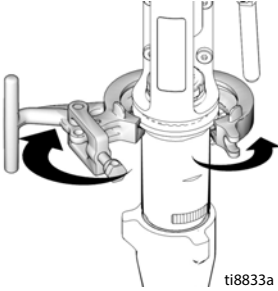
6. Remove pin.



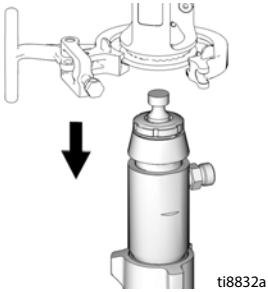
NOTE: Support pump with your hand before opening t-handle.

Repair

7. Open clamp.

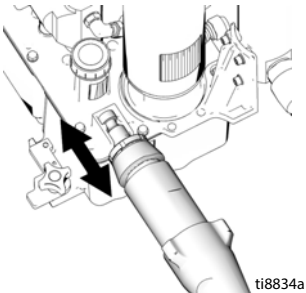


8. Remove pump from unit.



Installation

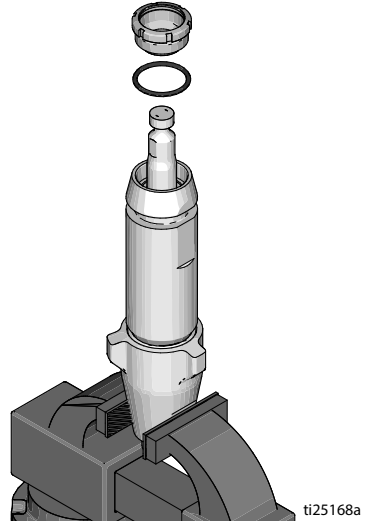
1. If needed, place pump rod in adjustment casting and pull pump to extend rod.



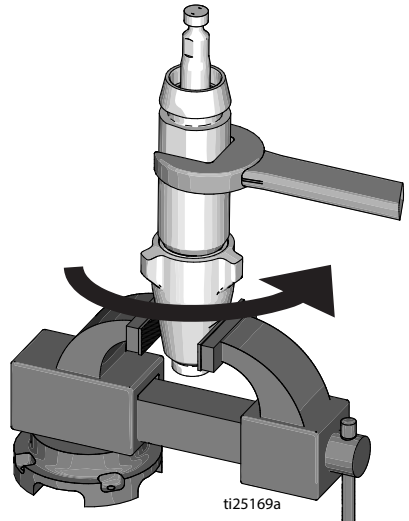
2. Reverse removal steps to reassemble pump.

Disassemble Pump

1. Remove packing nut and throat adjustment spacer.



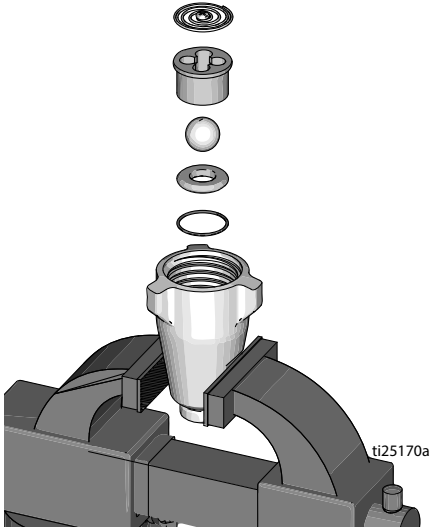
2. Unscrew cylinder from intake valve.



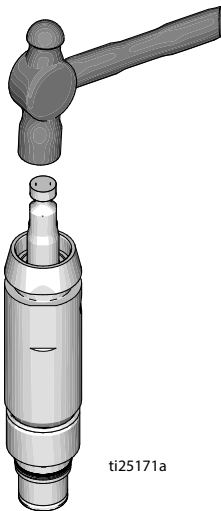
3. Disassemble intake valve. Clean and inspect. O-ring may require a pick for removal.

NOTICE

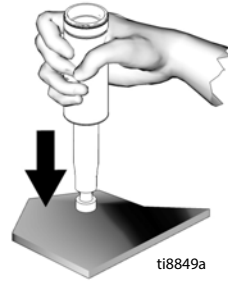
If using a pick to remove the O-ring use care to avoid damage to the machined surfaces.



4. Tap piston rod out of cylinder with a hammer or flip over and tap piston rod out against a bench.

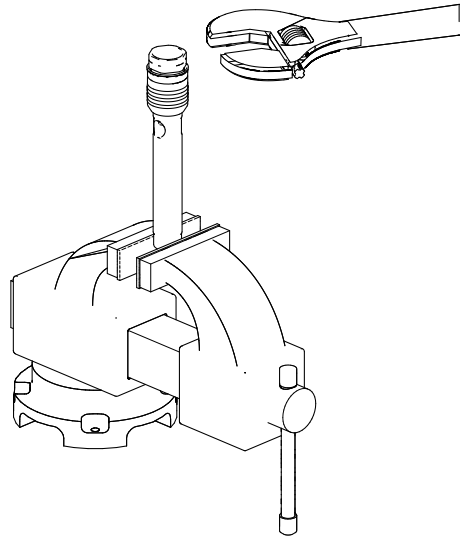


5. Remove piston rod from sleeve.



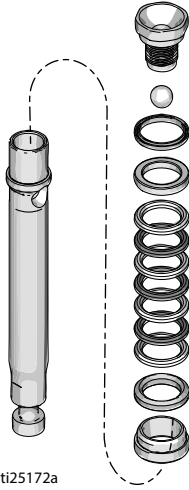
<p>Do not clean or wipe the piston valve threads. Cleaning the piston valve threads could destroy the special sealing patch and cause the piston valve to come loose during operation, possibly causing a pump burst and personal injury.</p>				

6. Unscrew piston valve from piston rod.



Repair

7. Clean and inspect parts. (The piston has a special thread locking/sealing patch. Do not remove the patch. The patch allows for disassembly/assembly procedures before it is necessary to apply thread sealant to the threads. On fifth assembly apply thread sealant to threads.

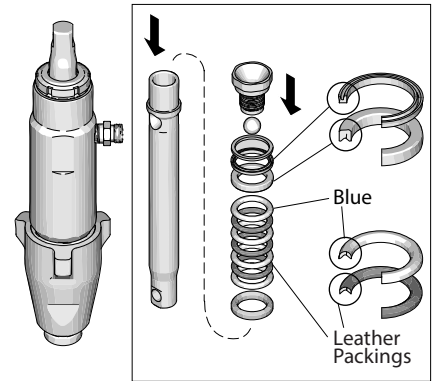
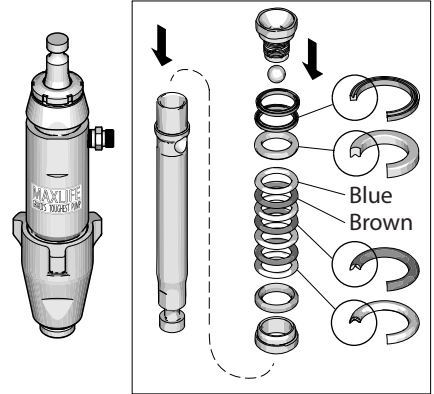


8. Remove and discard throat packing and glands from the cylinder.

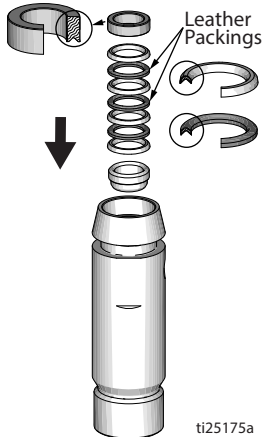


Assemble Pump

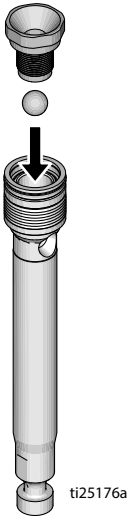
1. If applicable, soak leather packings in SAE 30W oil for one hour before assembly.



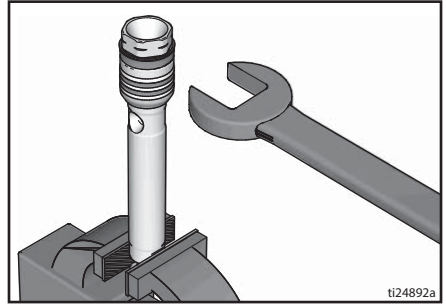
ti25174a



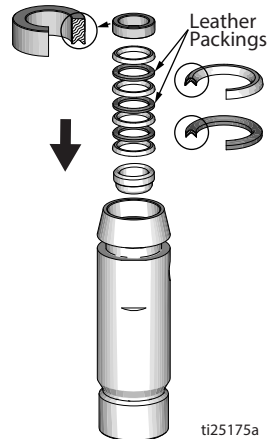
2. Install ball in piston rod. Apply thread sealant to piston valve threads; ensure that none gets on the ball.



3. Torque to 55 ± 3 ft-lb (75 ± 4 N•m).



4. Assemble leather throat packings soaked earlier.

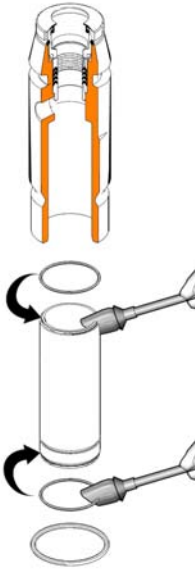


5. Loosely install packing nut with o-ring onto cylinder.



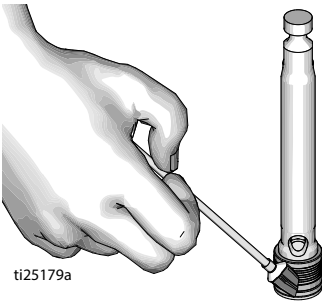
Repair

6. Install o-rings inside cylinder and on sleeve. Slide sleeve into bottom of cylinder. Replace o-ring if necessary.



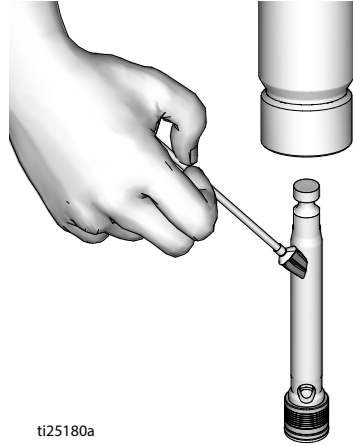
ti8859a

7. Apply liberal amounts of grease or oil to piston packings.



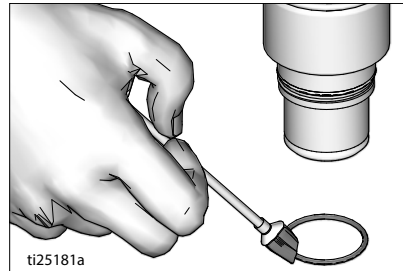
ti25179a

8. Grease top inch or two of piston rod that will go through the cylinder throat packings. Gently guide displacement rod up through throat packings. Tap bottom of piston valve as necessary with a leather or plastic hammer.



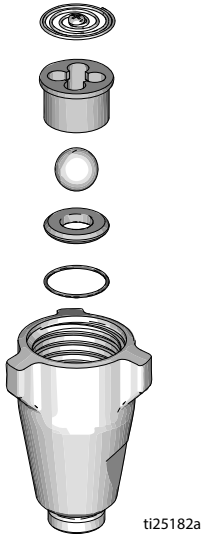
ti25180a

9. Grease o-ring and place on outside diameter ring groove.

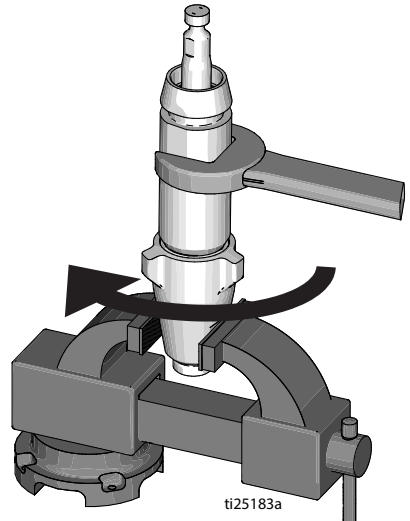


ti25181a

10. Clean seat thoroughly. Reassemble intake valve with a seat, ball, and new o-ring. Seat may be flipped over and used on other side.

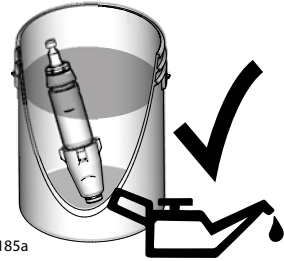
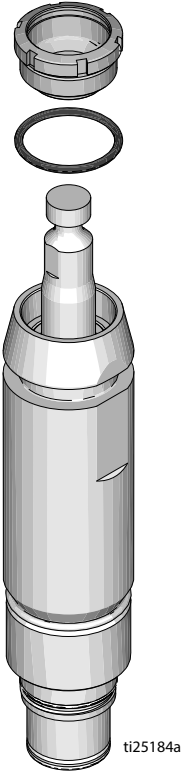


11. Torque foot valve to 200 ± 15 ft-lb (271 ± 20 N•m).



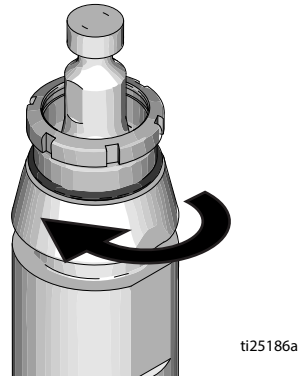
12. Torque packing nut to 140 ± 10 in-lbs (16 ± 1 N•m).

13. Storage



Throat Packing Adjustment

When pump packings begin to leak after much use, perform **Pressure Relief Procedure**, page 11, and tighten packing nut down until leakage stops or lessens. This allows approximately 100 gallons of additional operation before a repacking is required. Packing nut can be tightened without o-ring removal.



Technical Specifications

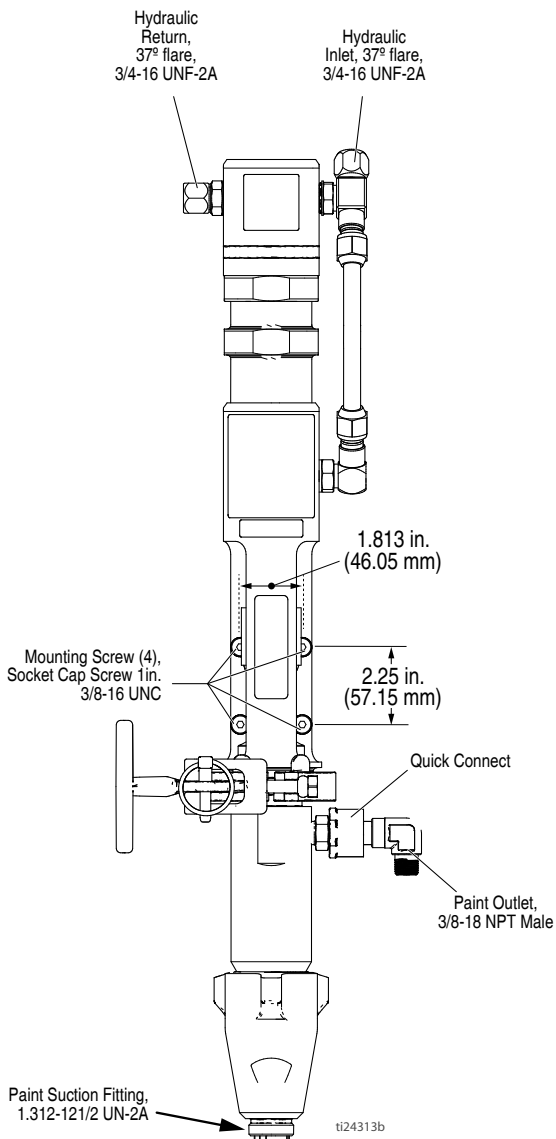
DutyMax EH230DI ProContractor Series		
	US	Metric
Maximum fluid working pressure	3300 psi	22.8 MPa, 228 bar
Hydraulic reservoir capacity	1.25 gallons	4.75 liters
Engine	3.0 HP	2.2 kW
Voltage, Amperage Frequency Phase	220 VAC, 15.0 A, 50 Hz, 1 phase	220 VAC, 15.0 A 50 Hz, 1 phase
Maximum tip size	0.039	
Maximum free-flow delivery	1.56 gpm	5.9 l/min
Hose connection	3/8 npsm (f)	
Cycles per gallon	80	21.1
Sound Levels (Measured at maximum normal load conditions)		
Engine HP	3.0	
Sound pressure	80 dBa	
Sound power	95	
Inlet/Outlet Sizes		
Fluid inlet size in.	1 npt (m)	
Fluid outlet size in.	3/8 npt (m)	
Weight		
	227 lbs.	103 kg
Width		
	26.5 in.	67 cm
Length		
	52 in.	132 cm
Height		
	39 in.	99 cm

All Models:

Basic Sprayer Wetted Parts:

Zinc and nickel-plated carbon steel, stainless steel, PTFE, acetal, chrome plating, leather, V-Max UHMWPE, aluminum, tungsten carbide, ceramic, nylon

EH230 OEM



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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.

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Original instructions. This manual contains English. MM 3A4401

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