

# GH™ Series Big Rig Sprayers

332157B  
EN

**Use with Architectural Coatings, Paints, Roof Coatings and Below Grade Coatings. Not approved for use in explosive atmospheres or hazardous (classified) locations. For professional use only.**

Model	Description	Maximum Working Pressure
16U277 / 16U277V	GH1017es Bare / Vanguard	1000 psi (6.9 MPa, 69 bar)
16U278 / 16U278V	GH2570es Bare / Vanguard	2500 psi (17.2 MPa, 172 bar)
16U279 / 16U279V	GH733es Bare / Vanguard	4000 psi (27.6 MPa, 276 bar)
16U280 / 16U280V	GH5040es Bare / Vanguard	5000 psi (34.5 MPa, 345 bar)
16U285 / 16U285V	GH933es Bare / Vanguard	7250 psi (50.0 MPa, 500 bar)
16U281 / 16U281V	GH933 Bare / Vanguard	7250 psi (50.0 MPa, 500 bar)



### Important Safety Instructions

Read all warnings and instructions in this manual. Save these instructions.

### Related Manuals:



311254  
312145



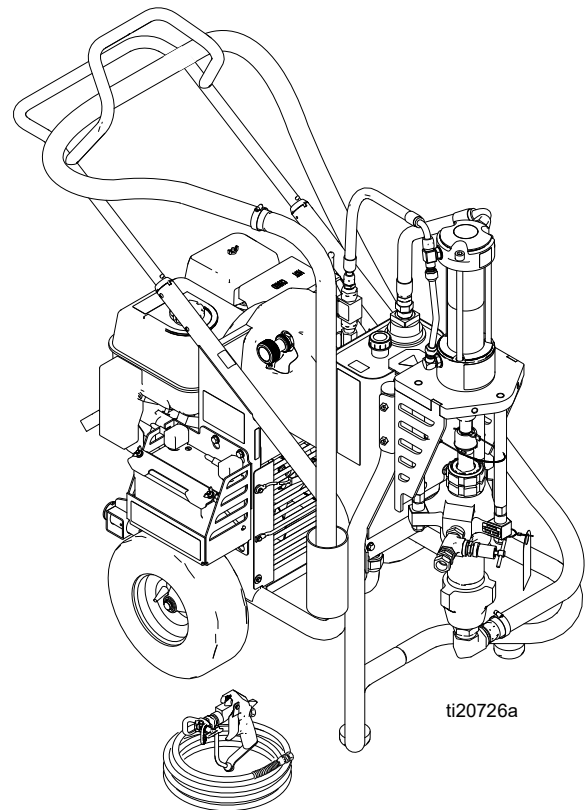
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332158



308043  
311825  
311762


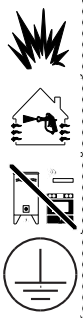












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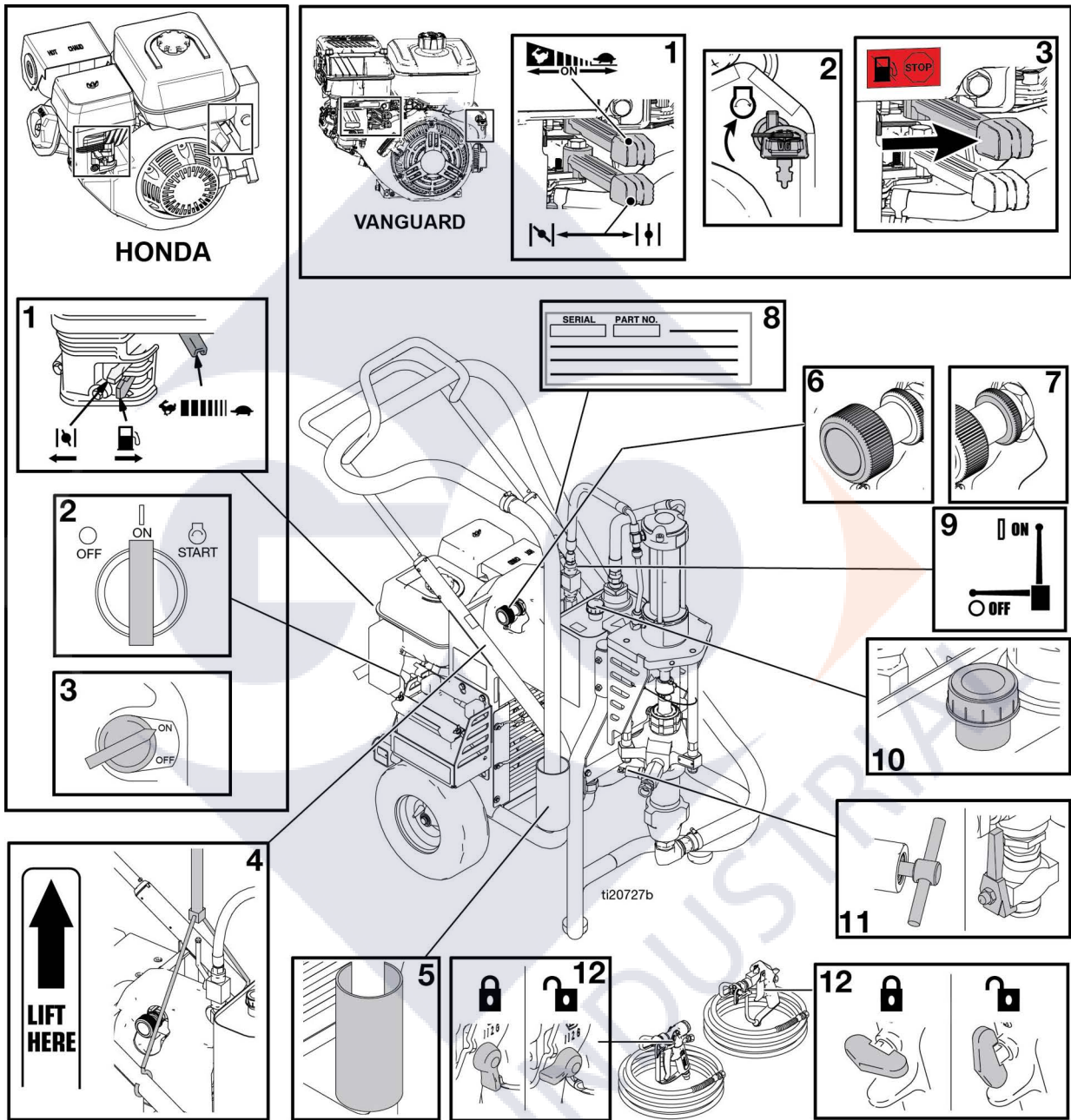
# Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual 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.

 <b>WARNING</b>	
	<p><b>FIRE AND EXPLOSION HAZARD</b></p> <p>Flammable fumes, such as solvent and paint fumes, in <b>work area</b> can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> <li>• Use equipment only in well ventilated area.</li> <li>• Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).</li> <li>• Keep work area free of debris, including solvent, rags and gasoline.</li> <li>• Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.</li> <li>• Ground all equipment in the work area. See <b>Grounding</b> instructions.</li> <li>• Use only grounded hoses.</li> <li>• Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are antistatic or conductive.</li> <li>• <b>Stop operation immediately</b> if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.</li> <li>• Keep a working fire extinguisher in the work area.</li> </ul>
	<p><b>SKIN INJECTION HAZARD</b></p> <p>High-pressure spray is able to inject toxins into the body and cause serious bodily injury. In the event that injection occurs, <b>get immediate surgical treatment.</b></p> <ul style="list-style-type: none"> <li>• Do not aim the gun at, or spray any person or animal.</li> <li>• Keep hands and other body parts away from the discharge. For example, do not try to stop leaks with any part of the body.</li> <li>• Always use the nozzle tip guard. Do not spray without nozzle tip guard in place.</li> <li>• Use Graco nozzle tips.</li> <li>• Use caution when cleaning and changing nozzle tips. In the case where the nozzle tip clogs while spraying, follow the <b>Pressure Relief Procedure</b> for turning off the unit and relieving the pressure before removing the nozzle tip to clean.</li> <li>• Do not leave the unit energized or under pressure while unattended. When the unit is not in use, turn off the unit and follow the <b>Pressure Relief Procedure</b> for turning off the unit.</li> <li>• Check hoses and parts for signs of damage. Replace any damaged hoses or parts.</li> <li>• This system is capable of producing 7250 psi (50.0 MPa, 500 bar). Use Graco replacement parts or accessories that are rated a minimum of 7250 psi (50.0 MPa, 500 bar).</li> <li>• Always engage the trigger lock when not spraying. Verify the trigger lock is functioning properly.</li> <li>• Verify that all connections are secure before operating the unit.</li> <li>• Know how to stop the unit and bleed pressure quickly. Be thoroughly familiar with the controls.</li> </ul>

 <b>WARNING</b>	
 	<p><b>MOVING PARTS HAZARD</b></p> <p>Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> <li>• Keep clear of moving parts.</li> <li>• Do not operate equipment with protective guards or covers removed.</li> <li>• Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the <b>Pressure Relief Procedure</b> and disconnect all power sources.</li> </ul>
	<p><b>SUCTION HAZARD</b></p> <p>Powerful suction could cause serious injury.</p> <ul style="list-style-type: none"> <li>• Never place hands near the pump fluid inlet when pump is operating or pressurized.</li> </ul>
	<p><b>CARBON MONOXIDE HAZARD</b></p> <p>Exhaust contains poisonous carbon monoxide, which is colorless and odorless. Breathing carbon monoxide can cause death.</p> <ul style="list-style-type: none"> <li>• Do not operate in an enclosed area.</li> </ul>
	<p><b>TOXIC FLUID OR FUMES HAZARD</b></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"> <li>• Read MSDSs to know the specific hazards of the fluids you are using.</li> <li>• Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.</li> </ul>
	<p><b>BATTERY SAFETY</b></p> <p>The battery may leak, explode, cause burns, or cause an explosion if mishandled.</p> <ul style="list-style-type: none"> <li>• Only use the battery type specified for use with the equipment. See <b>Technical Data</b>.</li> <li>• Battery maintenance must only be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from battery.</li> <li>• Do not dispose of battery in fire. The battery is capable of exploding.</li> <li>• Follow local ordinances and/or regulations for disposal.</li> <li>• Do not open or mutilate the battery. Released electrolyte has been known to be harmful to the skin and eyes and to be toxic.</li> <li>• Remove watches, rings, or other metal objects.</li> <li>• Only use tools with insulated handles. Do not lay tools or metal parts on top of battery.</li> </ul>
	<p><b>BURN HAZARD</b></p> <p>Equipment surfaces and fluids that are heated can become very hot during operation. To avoid severe burns:</p> <ul style="list-style-type: none"> <li>• Do not touch hot fluid or equipment.</li> </ul>
	<p><b>PERSONAL PROTECTIVE EQUIPMENT</b></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. This protective equipment includes but is not limited to:</p> <ul style="list-style-type: none"> <li>• Protective eyewear, and hearing protection.</li> <li>• Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.</li> </ul>

# Component Identification



1	Engine Controls
2	Ignition
3	Engine ON/OFF Switch (Pull-Start Units)
4	Lift Location
5	Suction Tube Holder
6	Pressure Control

7	Lock Ring
8	Serial Number ID Label
9	Hydraulic Pump Valve
10	Hydraulic Oil Fill
11	Pressure Bleed Valve, T handle
12	Trigger Lock

# Pressure Relief Procedure

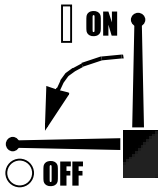


Follow the Pressure Relief Procedure whenever you see this symbol.

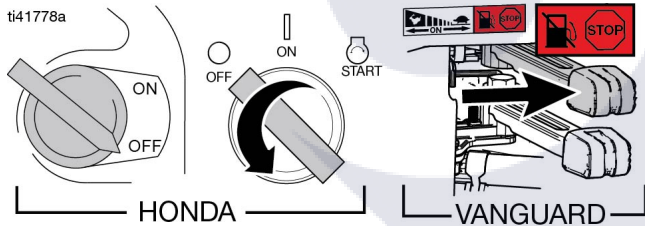


This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

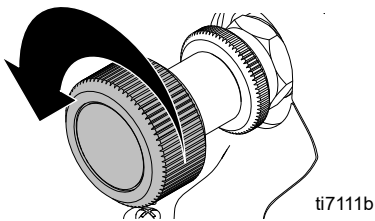
1. Set pump valve OFF.



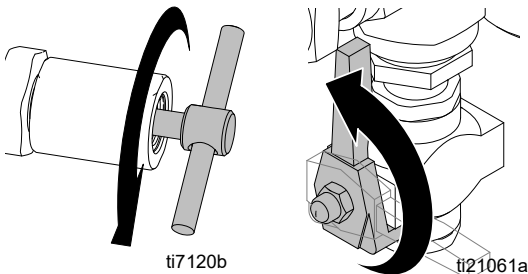
2. Turn engine OFF.



3. Turn pressure to lowest setting. Trigger gun into pail to relieve pressure.



4. Open prime valve (vertical).



# General Repair Information



Hydraulic system and engine may become very hot during operation and could burn skin if touched. Flammable materials spilled on hot, bare motor could cause fire or explosion. Have belt guard in place during operation to reduce risk of pinching or loss of fingers.

- Install belt guard before operation of sprayer and replace if damaged. Belt guard reduces risk of pinching and loss of fingers.



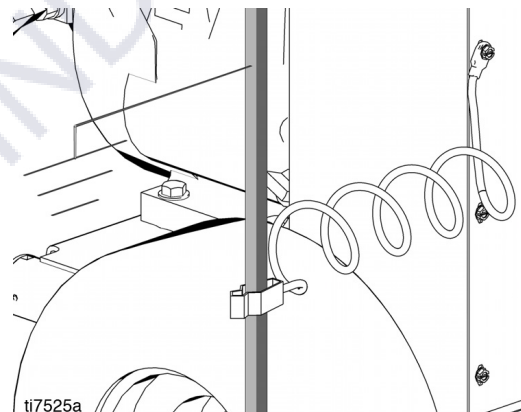
To reduce risk of serious injury, do not touch moving parts with fingers or tools while testing the repair.

- Keep all screws, nuts, washers, etc. removed during repair procedures. These parts usually are not provided with replacement kits.
- Test repairs after problems are corrected.
- If sprayer does not operate properly, review repair procedure to verify you did it correctly. See **Troubleshooting**, page 8.

# Grounding



Ground sprayer with grounding clamp to earth ground.



# Maintenance



For detailed engine maintenance and specifications, refer to separate Honda Engines Owner's Manual, supplied.

## Spark Plug:

- Use BPR6ES (NGK) or W20EPR-U (NIPPONDENSO) plug, only.
- Gap plug to 0.028 to 0.031 in. (0.7 to 0.8 mm).
- Use spark plug wrench when installing and removing plug.

Frequency	Procedure
Daily	Check engine oil level and fill as necessary.
Daily	Check hydraulic oil level and fill as necessary.
Daily	Check hose for wear and damage.
Daily	Check gun safety for proper operation.
Daily	Check pressure drain valve for proper operation.
Daily	Check and fill gas tank.
Daily	Check that displacement pump is tight.
Daily	Check level of TSL in displacement pump packing nut. Fill nut, if necessary. Keep TSL in nut to help prevent fluid build up on piston rod and premature wear of packings and pump corrosion.
After first 20 hours of operation	Drain engine oil and refill with clean oil. Reference Honda Engine or Vanguard Engine Owner's Manual for correct oil viscosity.
Weekly	Remove engine air filter cover and clean element. Replace element, if necessary. If operating in an unusually dusty environment; check filter daily and replace, if necessary. Replacement elements can be purchased from your local Honda dealer.
Weekly/Daily	Remove and debris or media from hydraulic rod.
After each 100 hours of operation	Change engine oil. Reference Honda Engine or Vanguard Engine Owner's Manual for correct oil viscosity.
Semi-annually	Check belt wear; replace if necessary.
Yearly or 2000 hours	Replace hydraulic oil and filter element with Graco ISO 46 Hydraulic Oil 169236; 5 gallon/20 liter or 207428; 1 gallon/3.8 liter) and filter element 287871.

# Troubleshooting

PROBLEM	CAUSE	SOLUTION
Gas engine pulls hard (will not start).	Hydraulic pressure is too high.	Turn hydraulic pressure knob counterclockwise to lowest setting.
Gas engine does not start.	Switch OFF, low oil, no gasoline or dead battery.	Consult engine manual, supplied. Change battery if necessary.
Gas engine doesn't work properly.	Faulty engine.	Consult engine manual, supplied.
Gas engine operates, but displacement pump doesn't operate.	Pump valve is OFF.	Set pump valve ON.
	Pressure setting too low.	Increase pressure.
	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*.
	Belt worn, 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 manuals 308043, 311825, 311762.
	Hydraulic motor not shifting.	Set pump valve OFF. Turn pressure down. Turn engine OFF. Pry rod up or down until hydraulic motor shifts.
Displacement pump operates, but output is low on upstroke.	Piston ball check not seating properly.	Service piston ball check. See manuals 308043, 311825, 311762.
	Piston packings worn or damaged.	Replace packings. See manuals 308043, 311825, 311762.
Displacement pump operates but output is low on downstroke and/or on both strokes.	Piston packings worn or damaged.	Tighten packing nut or replace packings. See manuals 308043, 311825, 311762.
	Intake valve ball check not seating properly.	Service intake valve ball check. See manuals 308043, 311825, 311762.
	Suction tube air leak.	
Paint leaks and runs over side of wet-cup.	Loose wet-cup.	Tighten wet-cup enough to stop leakage.
	Throat packings worn or damaged.	Replace packings. See manuals 308043, 311825, 311762.
Excessive leakage around hydraulic motor piston rod wiper.	Piston rod seal worn or damaged.	Replace these parts.
Fluid delivery is low.	Pressure setting too low.	Increase pressure.
	Displacement pump outlet filter (if used) is dirty or clogged.	Clean filter.
	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.	Use larger diameter or shorter hose.

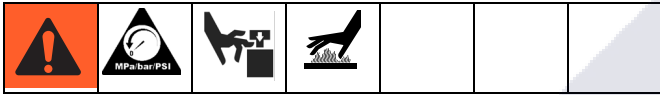


<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
The sprayer overheats.	Paint buildup on hydraulic components.	Clean hydraulic components.
	Oil level is low.	Fill with oil.
Spitting from gun.	Air in fluid pump or hose.	Check for loose connections on siphon assembly, tighten, then re-prime pump.
	Loose intake suction.	Tighten.
	Fluid supply is low or empty.	Refill supply container.
Excessive hydraulic pump noise.	Low hydraulic fluid level.	Turn sprayer OFF. Add fluid*.
*Check hydraulic fluid level often. Do not allow it to become too low. Use only Graco approved hydraulic fluid, page 27.		



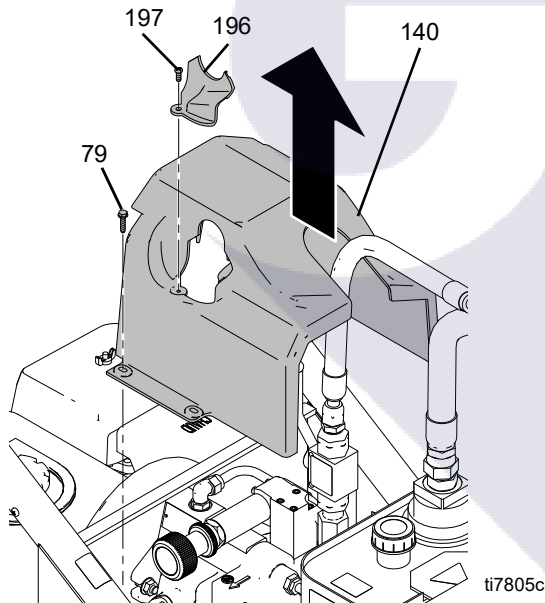
# Compensator Seal Replacement

## Removal



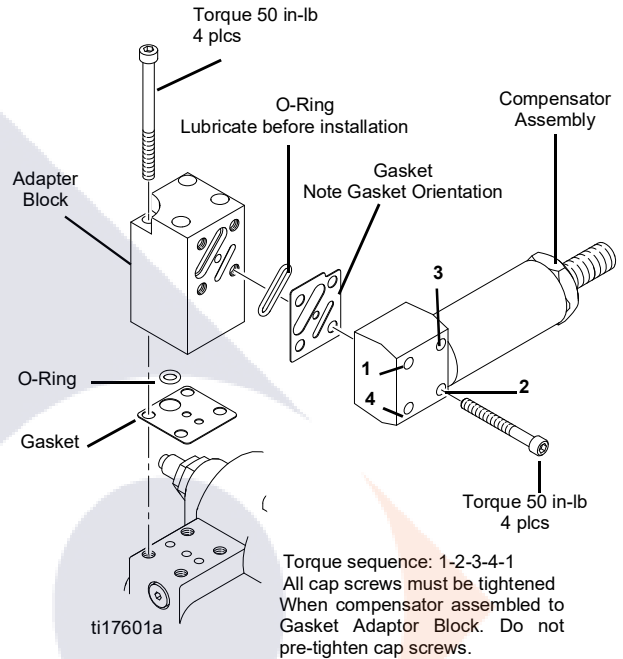
1. Perform **Pressure Relief Procedure**, page 6. Allow hydraulic system to cool before beginning the service procedure.
2. Remove screw (197) and pump handle cover (196). Remove four cover bolts (79) and cover (140).

**NOTE:** It is not necessary to remove the hydraulic lines before removing the cover. The cover is designed to provide ample room for the cover to fit over the hose.

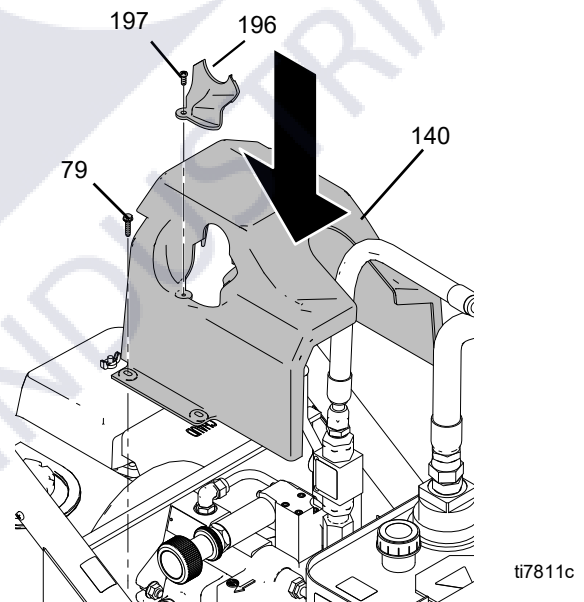


3. Remove compensator screws and separate compensator and adapter block.

4. Install new gaskets and torque screws.



5. Install cover (140) with four screws (79). Torque to 25-30 in-lb (2.8 - 3.4 N•m). Install pump handle cover (196) with screw (197).



# Displacement Pump Replacement

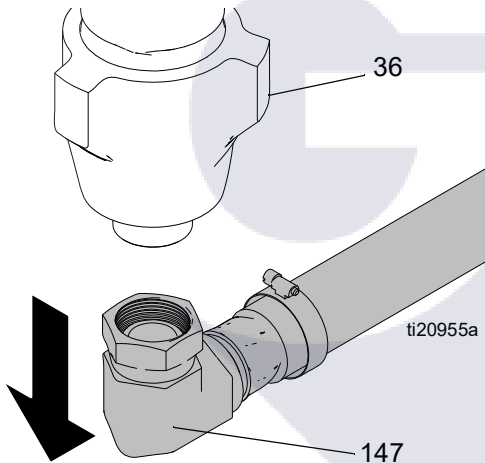
See manual 308043, 311825, or 311762 for pump repair instructions.

## Removal

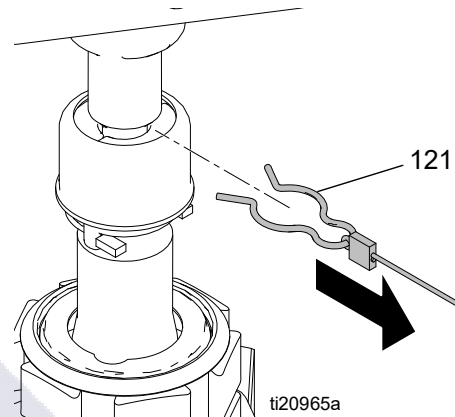
1. Flush pump (36). Stop pump on down stroke if possible.



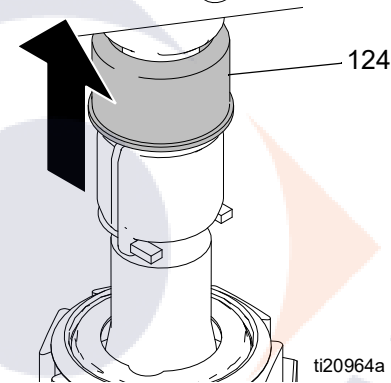
2. Perform **Pressure Relief Procedure**, page 6.
3. Remove suction set (147) from pump (36).



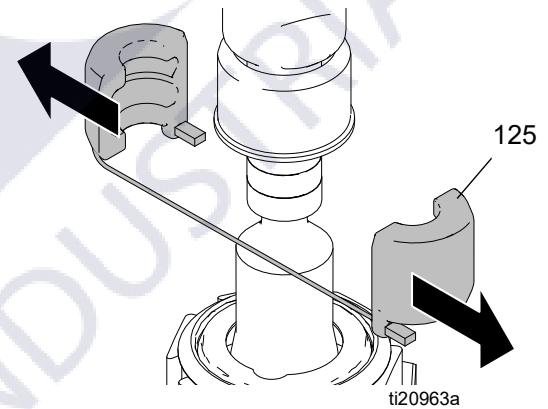
4. Remove clip (121).



5. Slide cover up (124).

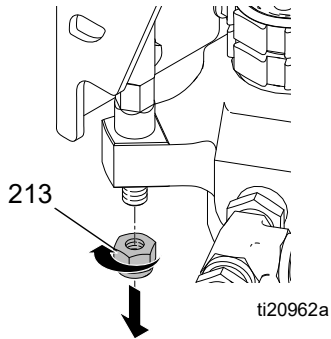


6. Separate coupling (125) and remove.

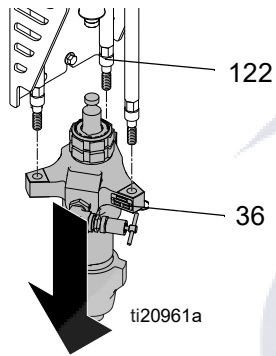


## Displacement Pump Replacement

7. Unscrew three tie rods locknuts (213).

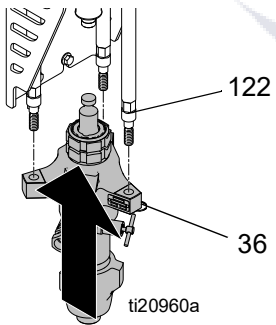


8. Pull pump (36) off of tie rods (122).

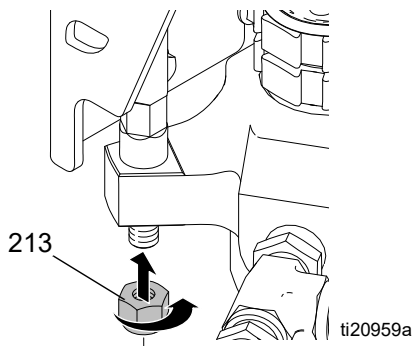


## Installation

1. Slide cover up over pump rod. Mount displacement pump (36) to tie rods (122).

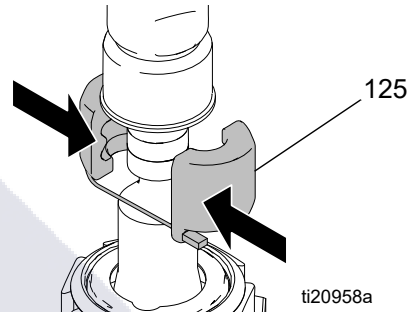


2. Screw tie rod locknuts (213) onto tie rods. Torque to 50 +/- 8 ft-lb (68 +/- 11 N•m)

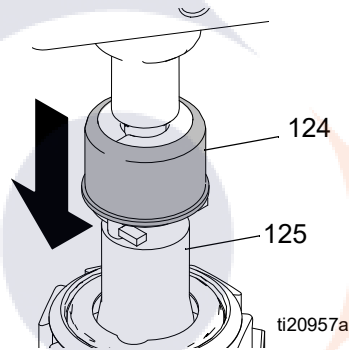


3. Slide cover (124) up over pump rod. With engine in OFF position and pump valve in ON position, pull recoil starter to move rod until it contacts pump rod.

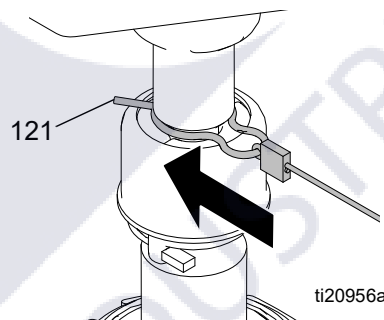
4. Install coupling (125) around pump rod.



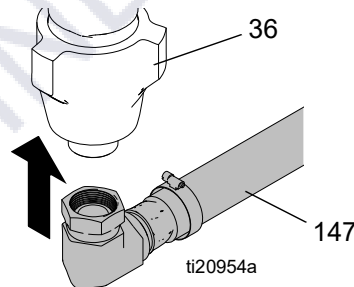
5. Slide cover (124) over coupling (125).



6. Install clip pin (121) to secure.



7. Connect suction hose (147) to pump outlet (36).



# Displacement Pump Replacement (2570 Pump Only)

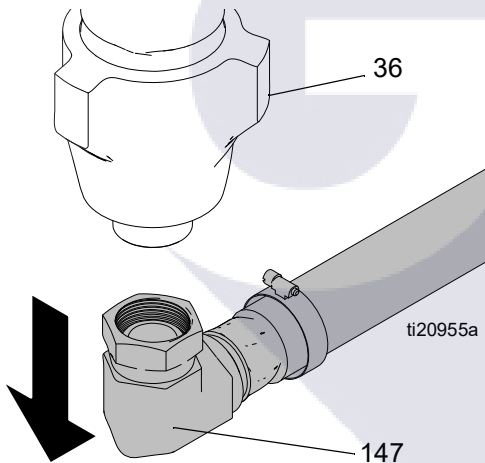
See manual 308043, 311825, or 311762 for pump repair instructions.

## Removal

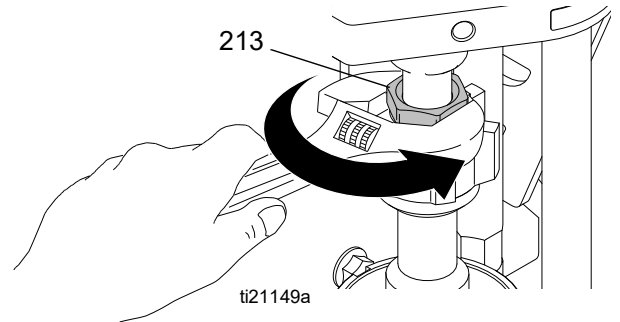
1. Flush pump (36). Stop pump on down stroke if possible.



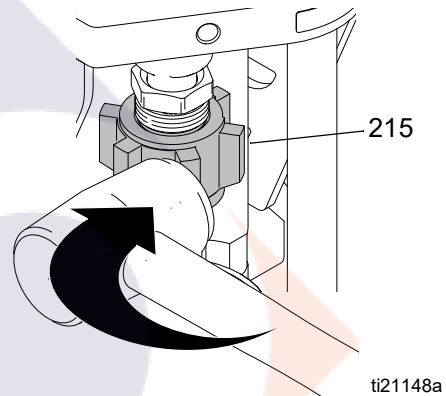
2. Perform **Pressure Relief Procedure**, page 6.
3. Remove suction set (147) from pump (36).



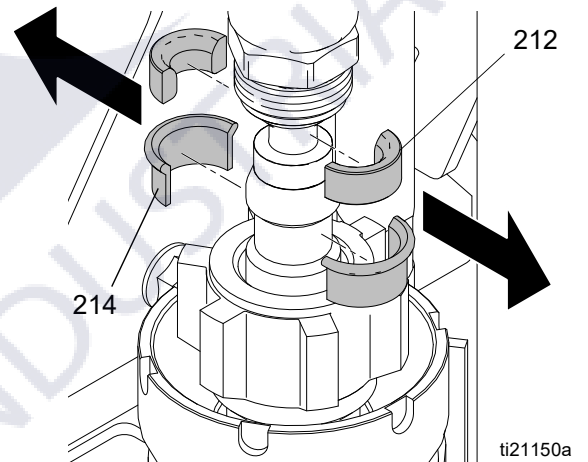
4. Use crescent wrench to loosen coupler (213).



5. Use hammer to loosen coupling nut (215).

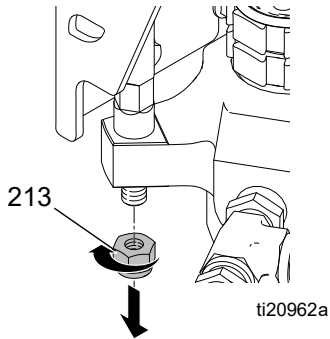


6. Remove collar couplings (212) and pump couplings (214).

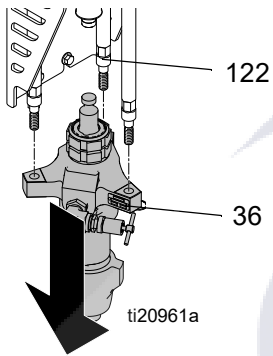


## Displacement Pump Replacement (2570 Pump Only)

7. Unscrew three tie rods locknuts (213).

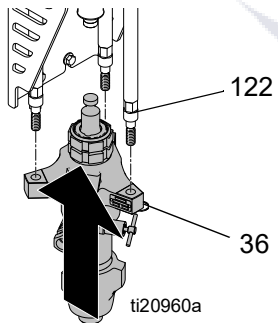


8. Pull pump (36) off of tie rods (122).

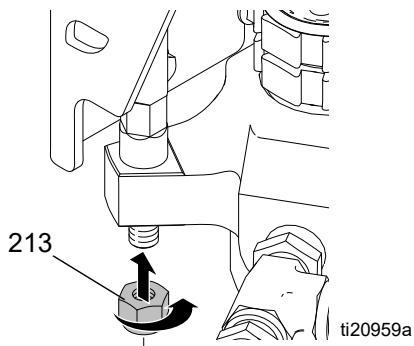


## Installation

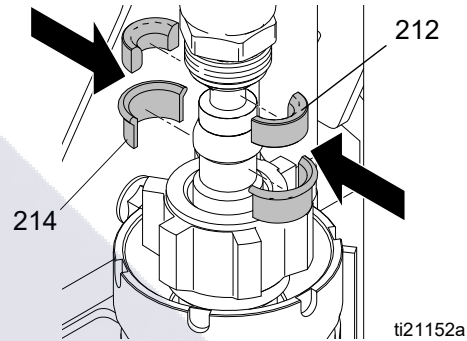
1. Slide cover up over pump rod. Mount displacement pump (36) to tie rods (122).



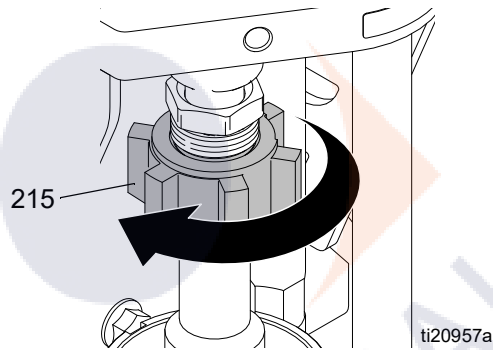
2. Screw tie rod locknuts (213) onto tie rods. Torque to 50 +/- 8 ft-lb (68 +/- 11 N•m)



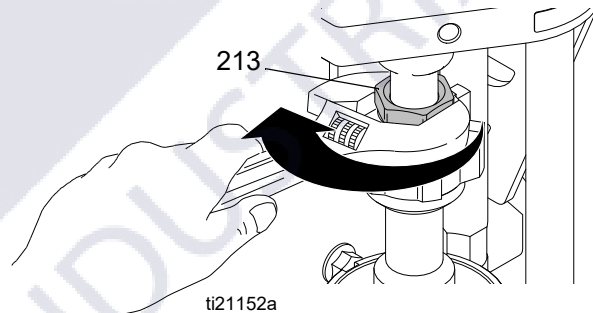
3. Slide cover (124) up over pump rod. With engine in OFF position and pump valve in ON position, pull recoil starter to move rod until it contacts pump rod.
4. Install collar couplings (212) and pump couplings (214).



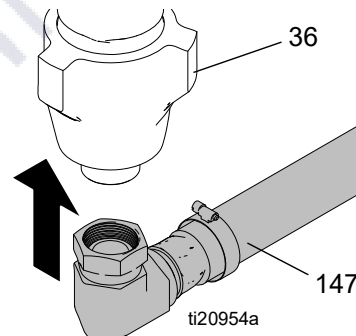
5. Tighten coupling nut (215).



6. Use crescent wrench to tighten coupler (213).



7. Connect suction hose (147) to pump outlet (36).



# Displacement Pump Service

## Disconnect Displacement Pump

1. Flush pump if possible. Stop pump on the down stroke.
2. Perform **Pressure Relief Procedure**, page 6.
3. Remove suction tube and fluid hose from displacement pump.
4. Unscrew three tie rod locknuts (48). See Parts manual.
5. Pull displacement pump (46) off tie rods (47).
6. Refer to manuals 311762, 308043, and 311825 for displacement pump repair instructions.

## Reconnect Displacement Pump

1. Mount displacement pump (46) onto tie rods (47). See Parts manual.
2. Screw tie rod locknuts (48) onto tie rods (47) and torque to 50 +/- 8 ft-lb (68 +/- 11 N•m).
3. Reattach hoses to displacement pump.
4. If grounding wire was disconnected before service, be sure to reconnect wire before operating sprayer.
5. Start pump and operate it slowly to check tie rods for binding. Adjust tie rod locknuts (if necessary) to eliminate binding.

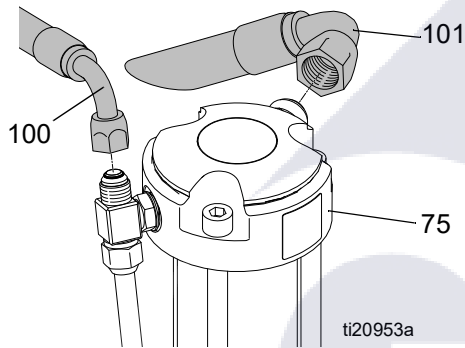


# Pump Power Head Replacement

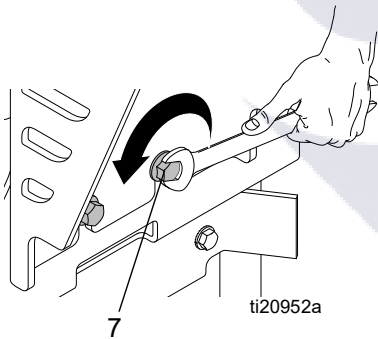


## Removal

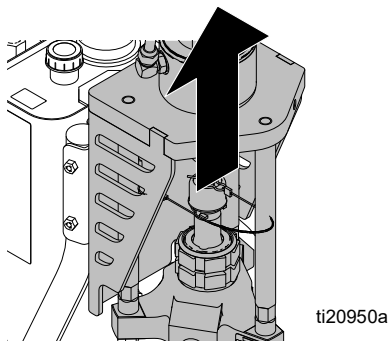
1. Perform **Pressure Relieve Procedure**, page 6.
2. Remove hydraulic lines (100, 101) from head (75).



3. Loosen four mounting bolts (7) on the adapter enough to lift and remove assembly.

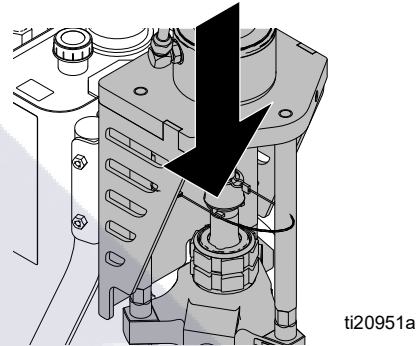


4. Remove power head from unit.

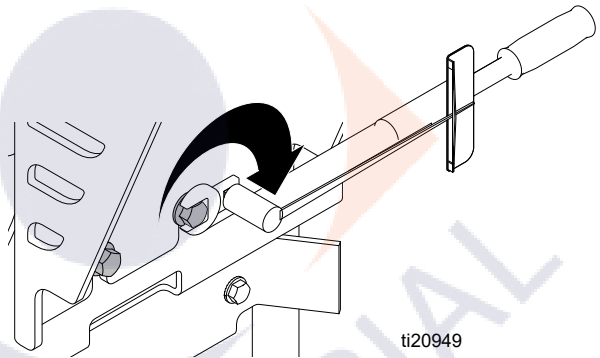


## Installation

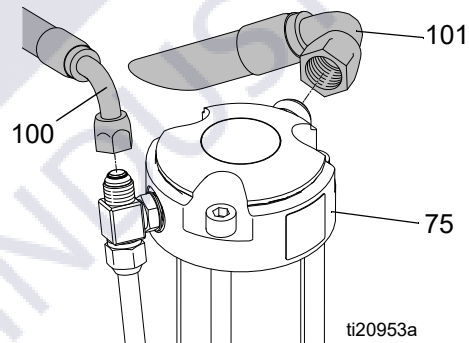
1. Install power head on unit.



2. Tighten power head bolts (7). Torque bolts to  $400 \pm 10$  in-lb ( $45 \pm 1$  N•m).



3. Attach hoses (100, 101) to head (75). Torque to  $450 \pm 10$  in-lb ( $50.84$  N•m).



4. To purge air from hydraulic lines, increase pressure enough to start hydraulic motor stroking and allow fluid to circulate for 15 seconds. Turn pressure down. Close prime valve.

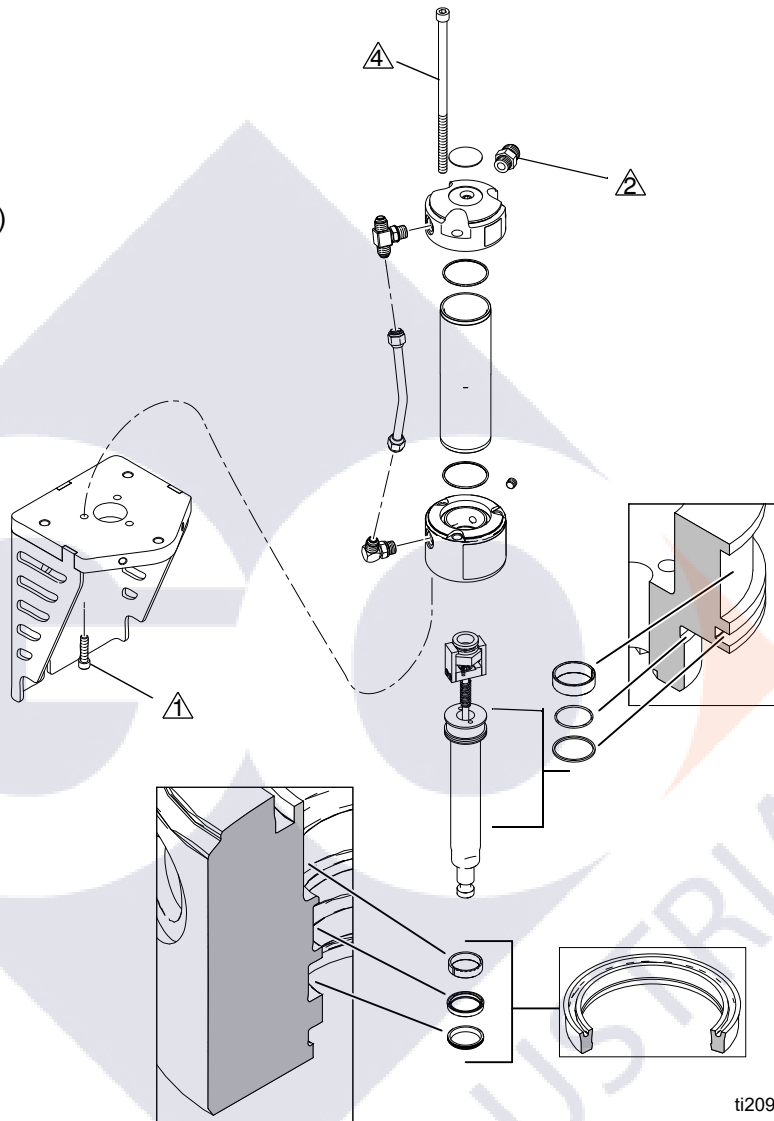


# Hydraulic Motor

⚠ 450 in-lb (51 N•m)

⚠ 600 in-lb (68 N•m)

⚠ 930 in-lb (105 N•m)  
Torqued in 3 steps



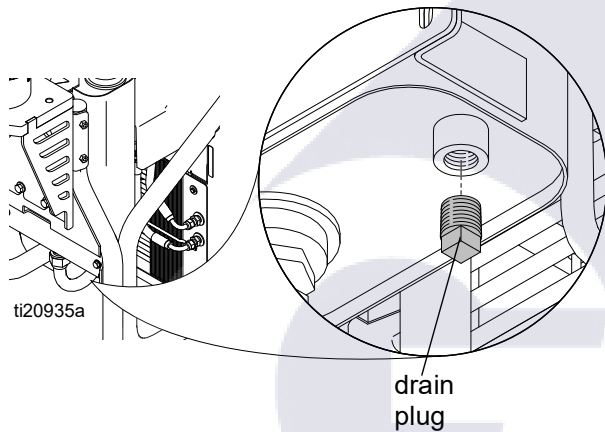
ti20948a

# Hydraulic Pump Replacement

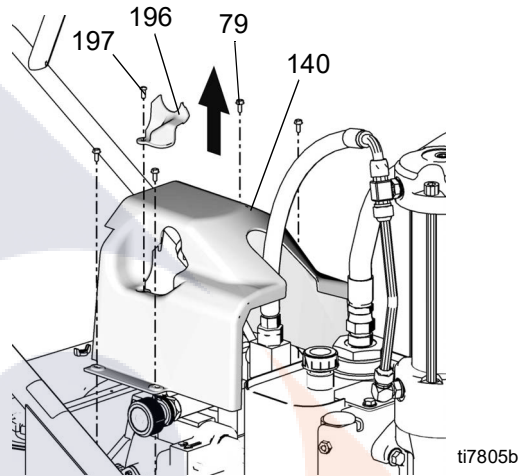
## Changing Hydraulic Oil

### Draining Oil

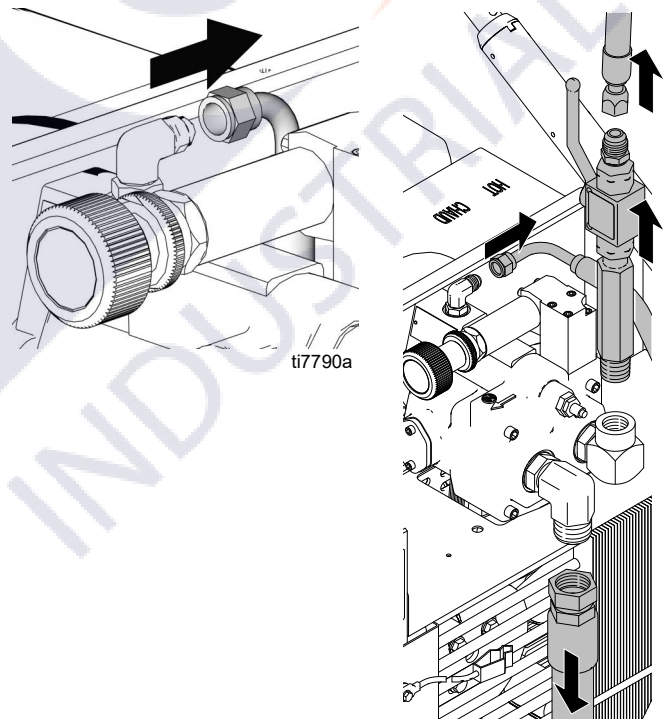
- Place drain pan under oil tank and drain plug.
- Unscrew reservoir (64) drain plug and drain oil from reservoir.



- Remove screw (197) and pump handle cover (196). Remove four cover bolts (79) and cover (140). (It is not necessary to remove the hydraulic lines before removing cover. The cover is designed to provide ample room for the cover to fit over the hose.)



- Unscrew suction line connections to hydraulic pump. Place a container under hoses to catch any dripping oil.



### Refilling Oil

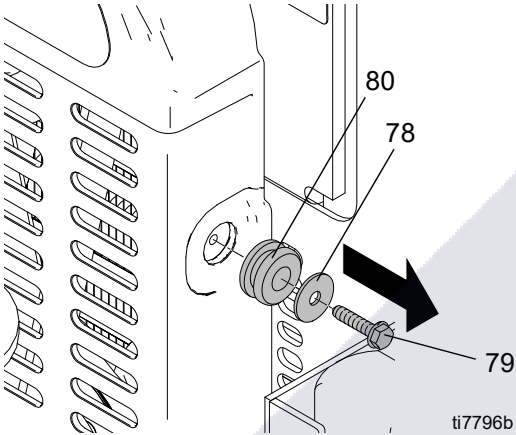
- Replace drain plug.
- Fill tank with Graco Hydraulic Oil, ISO 46. Tank holds approximately 4 gallons.

### Removal



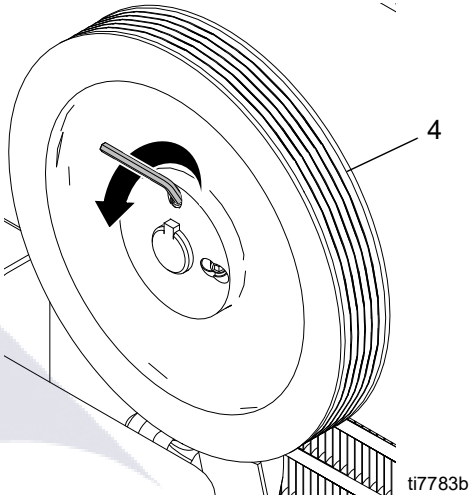
- Perform **Pressure Relief Procedure**, page 6. Allow hydraulic system to cool before beginning the service procedure.
- Drain oil, **Changing Hydraulic Oil** procedure, page 18.

5. Remove belt cover screws (79), washers (78) and grommets (80) (2 each side).

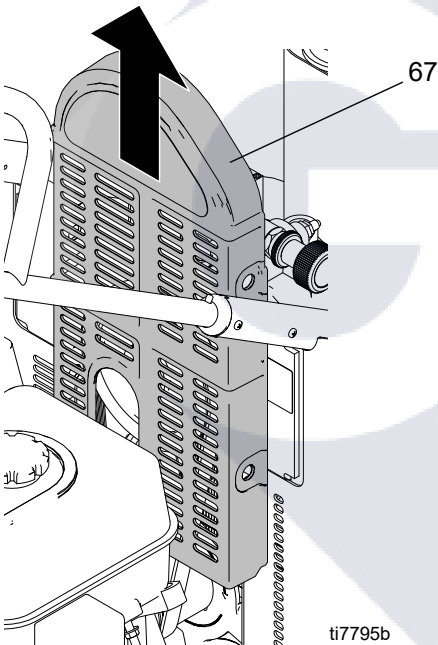


7. Remove belt (19), page 22.

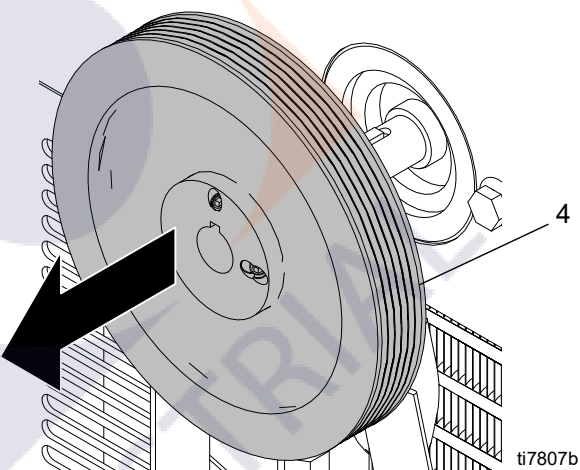
8. Loosen set-screws (87) on front of large pulley (4).



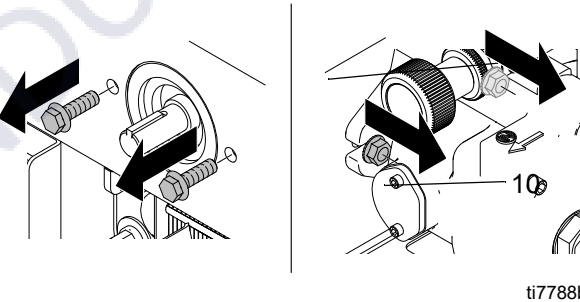
6. Remove belt cover (67).



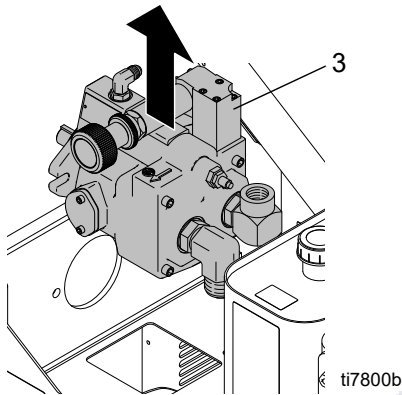
9. Remove pulley (4) from hydraulic pump shaft.



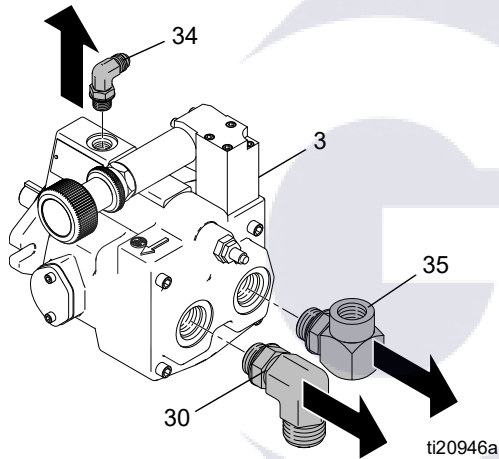
10. Remove nuts (10) and screws (9) holding pump to frame.



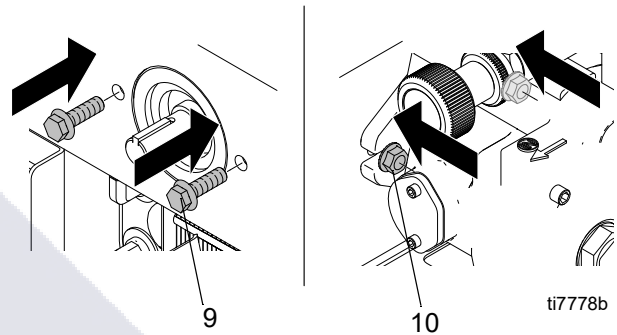
- Remove hydraulic pump (3).



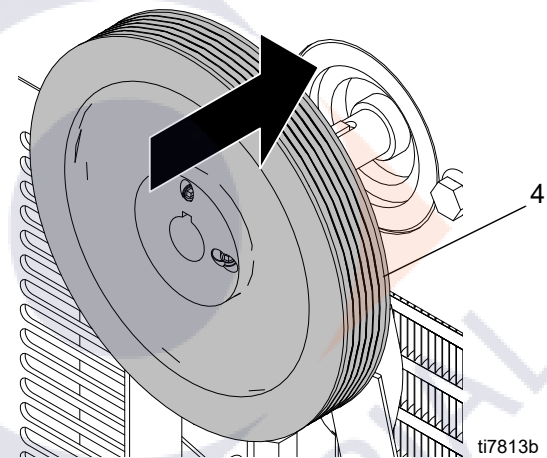
- Remove fittings (30, 34, 35) from pump (3) and set aside to use on the new pump.



- Install new pump (3) in frame.
- Install screws (9) and nuts (10). Torque to  $225 \pm 10$  in-lb (25.42 N•m).

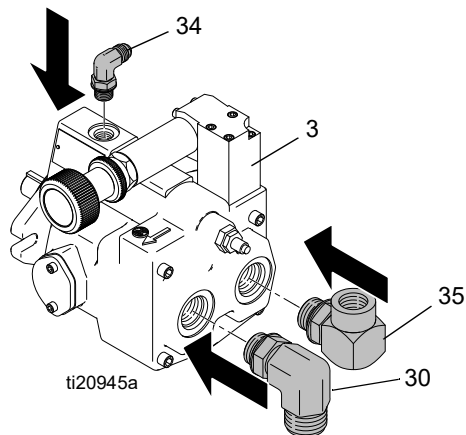


- Replace large pulley (4) on hydraulic pump shaft.

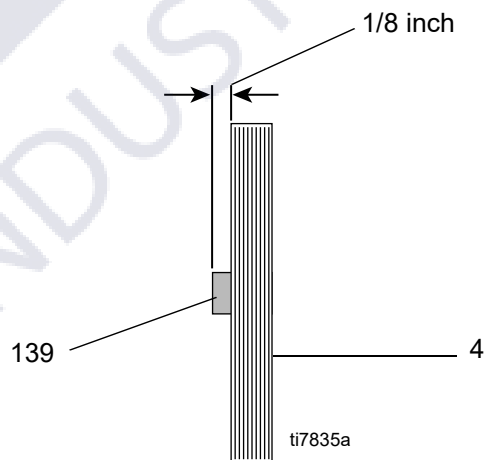


## Installation

- Install fittings (30, 34, 35) from old pump on new pump. Torque fitting 30 and 35 to  $600 \pm 10$  in-lb (67.8 N•m). Torque fitting 34 to 450 in-lb (50.8 N•m).



- Align pulley (4) on shaft. When properly positioned approximately 1/8 inch of shaft (139) will protrude.

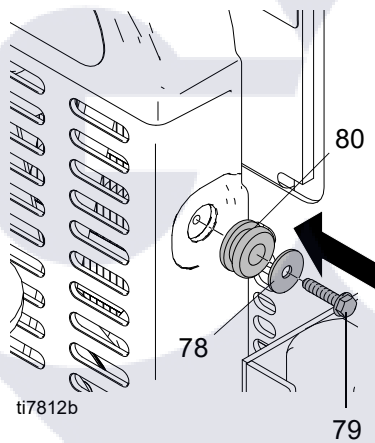
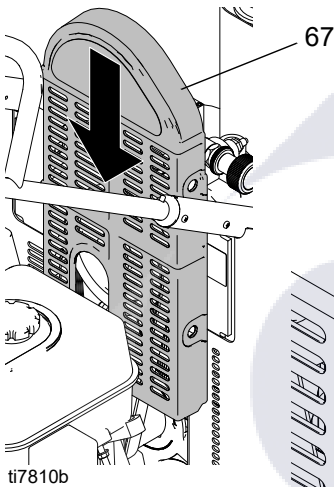


**NOTE:** Fill pump casing with hydraulic oil before installing fitting (34).

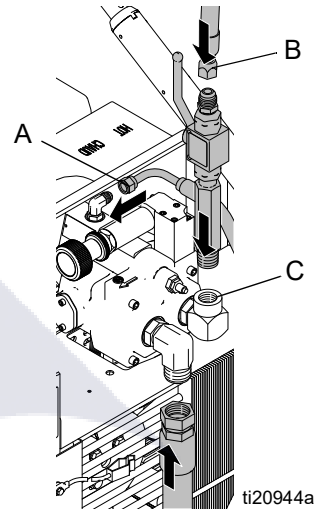
- Replace set-screws (87). Tighten and torque to  $60 \pm 2$  in-lb ( $6.8 \pm 0.2$  N•m).

**NOTE:** Tighten set-screw on shaft before tightening set-screw on pump shaft.

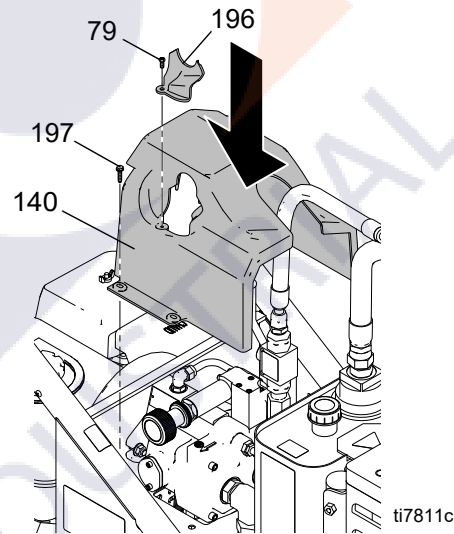
- Position belt (19) over pulleys (4, 6); Installing Belt, page 22.
- Replace belt cover (67) and grommets (80), washers (78) and screws (79), (2 each side). Torque screws to 25-30 in-lb ( $2.8 - 3.4$  N•m).



- Install suction lines. Tighten fittings. Torque fitting A to  $225 \pm 10$  in-lb ( $25.4 \pm 1.1$  N•m). Fitting B to  $450 \pm 10$  in-lb ( $50.1 \pm 1.1$  N•m). Fitting C to 225 in-lb ( $25.4$  N•m).



- Install cover (140) and with four screws (79). Torque to 25-30 in-lb ( $2.8 - 3.4$  N•m). Install pump handle cover (196) with screw (197).

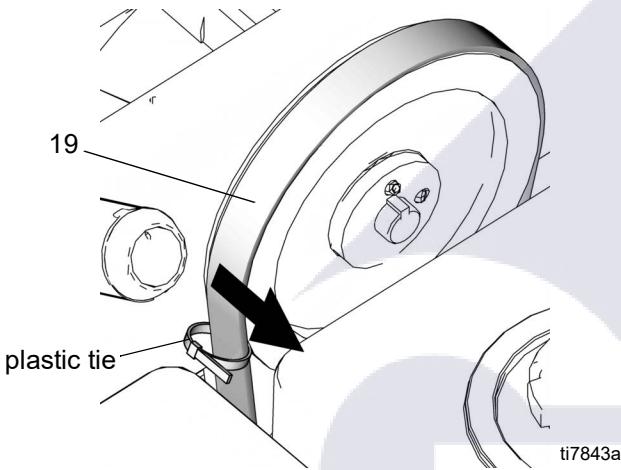


- Fill oil tank following Refilling Oil procedure on page 18.

# Belt Removal and Replacement (recommended method)

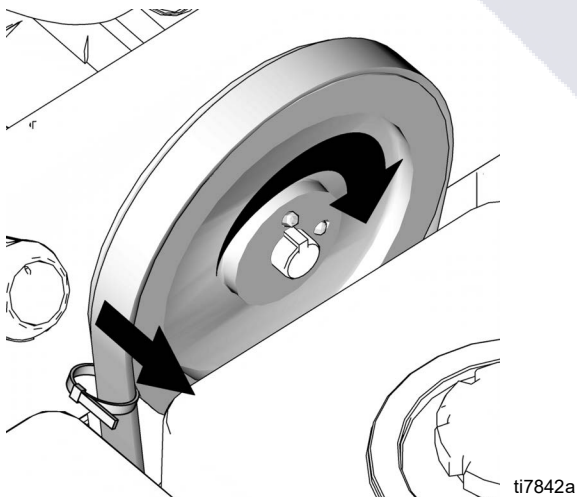
## Removing Belt

- a. Place a plastic tie around belt (19).



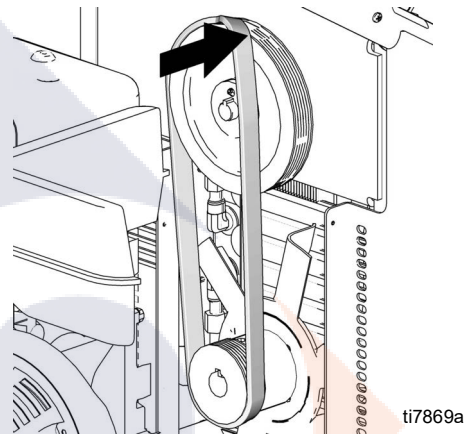
Moving parts can pinch or amputate fingers and other body parts. To avoid serious injury be sure engine is in OFF position before pulling engine recoil.					

- b. Slowly pull plastic tie toward you while at the same time slowly pulling engine recoil to rotate pulleys. It may be necessary to reposition zip tie and repeat this procedure a few times to completely remove belt from pulley.

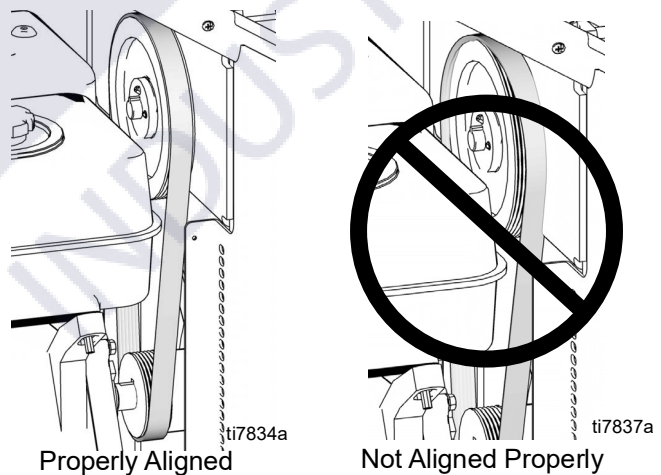


## Installing Belt

- a. Put belt over lower pulley (6) and align correctly.
- b. Line up belt over top left side of large pulley (4).



- c. With the palm of your hand, hold the belt snug to large pulley while at the same time slowly pull engine recoil to rotate pulleys.
- d. Check belt (19) alignment on both large (4) and small pulley (6). When properly positioned over pulleys, belt is centered on pulleys and completely over all grooves.



**NOTE:** If belt is not aligned properly, to adjust belt, slowly pull engine recoil while at the same time pushing or pulling belt to reposition over pulley.

## Alternate Belt Removal and Installation

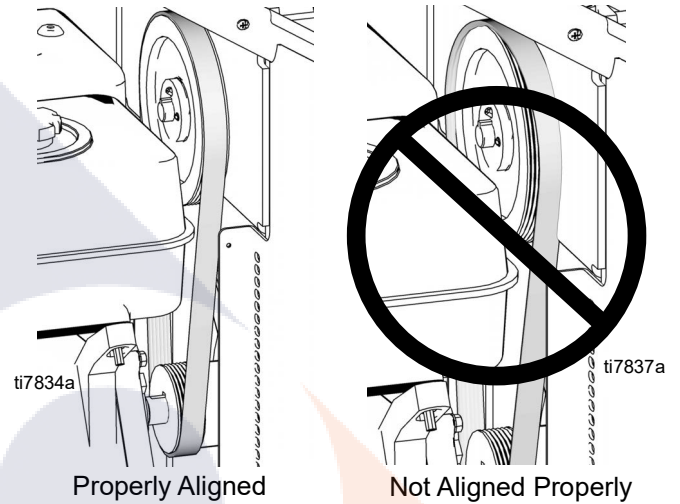
### Removing Belt

- a. Loosen engine bolts (21) to relieve tension on belt.
- b. Slide belt off pulleys.

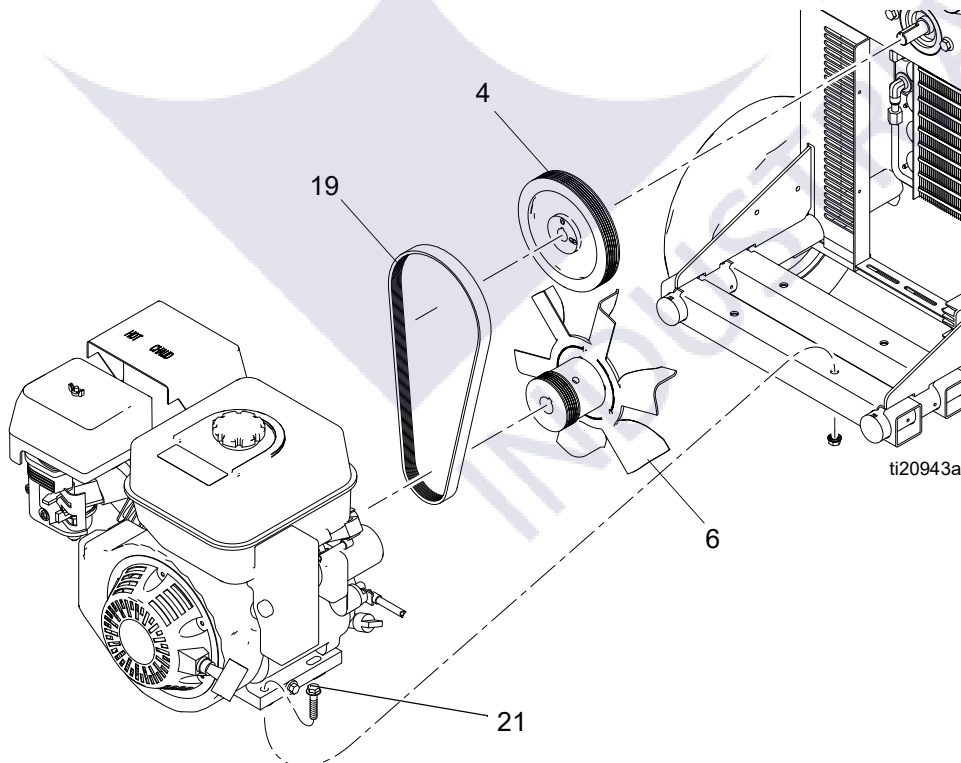
### Installing Belt

- a. Install belt (19) over small (6) and large (4) pulleys.

- b. Tighten engine bolts (21). Torque to  $225 \pm 10$  in-lb ( $25.4 \pm 1.1$  N•m).
- c. Check belt (19) alignment on both large (4) and small pulley (6). When properly positioned over pulleys, belt should be centered on pulleys and completely over all grooves.



**NOTE:** If belt is not aligned properly, to adjust belt, slowly pull engine recoil while at the same time pushing or pulling belt to reposition over pulley.

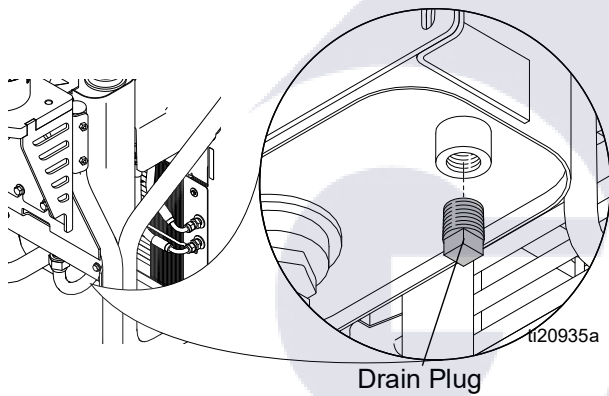


# Replacing Oil Reservoir

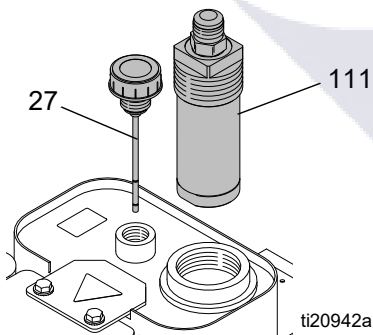
## Removal



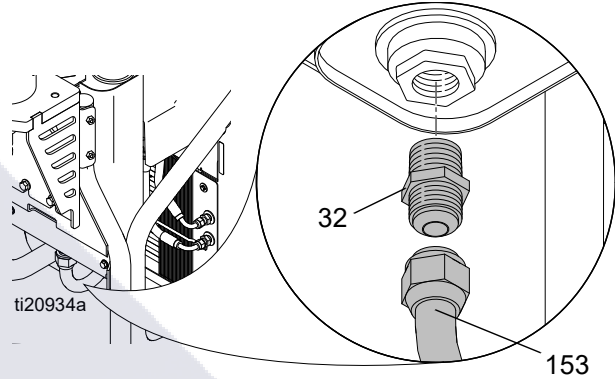
1. Perform **Pressure Relieve Procedure**, page 6.
2. Drain oil from reservoir (64) following **Draining Oil** procedure, page 18. Keep plug for use on new reservoir.



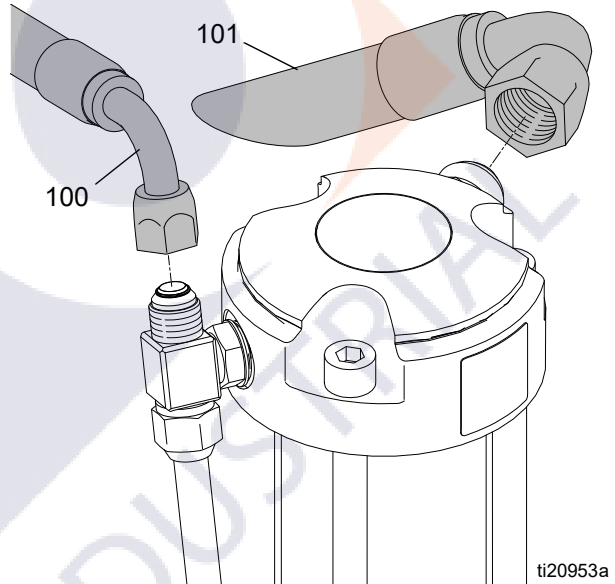
3. Remove fill cap (27) and filter assembly (111). Keep for use on new reservoir.



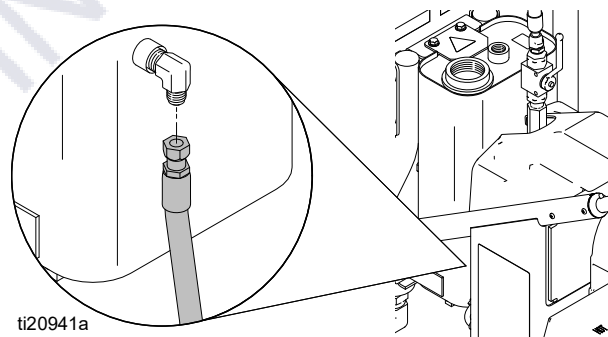
4. Loosen and remove suction hose (153).



5. Remove and keep suction fitting (32) for use on new reservoir.
6. Loosen and remove return lines (100, 101).

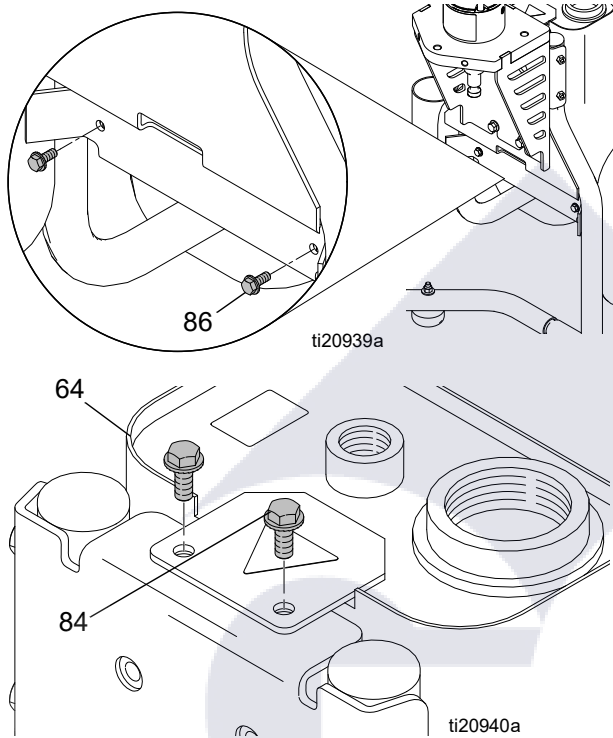


7. Remove cooler line from reservoir (64).

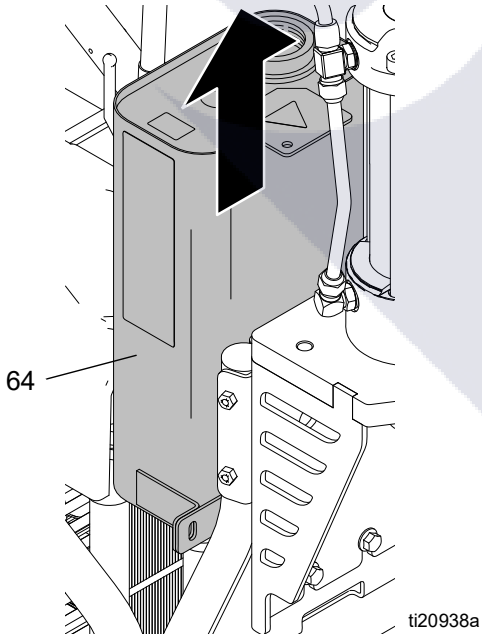




- Remove two top bolts (86) and two bottom nuts (84) securing reservoir (64) to frame.

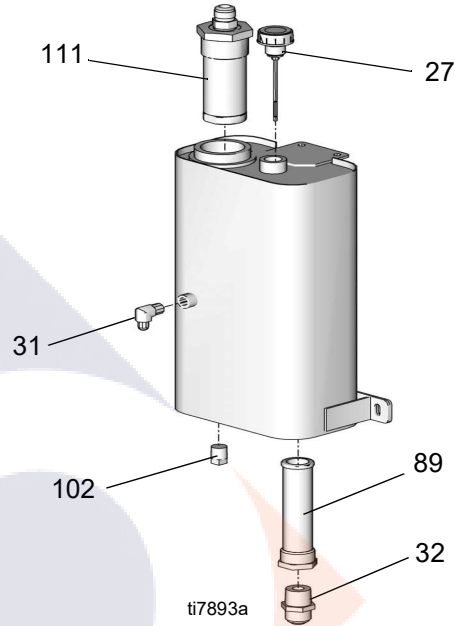


- Lift reservoir (64) out of frame.

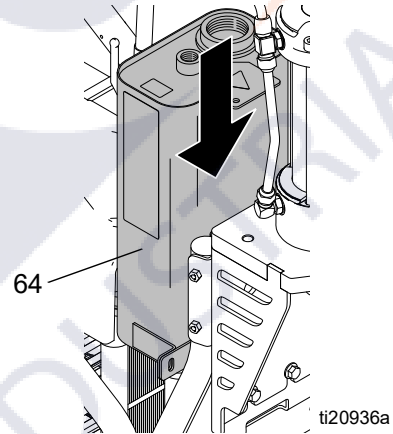


## Installation

- Install plug (102), return elbow (31), suction fitting (32), inlet screen (89) and filter assembly (111) in new reservoir (64).

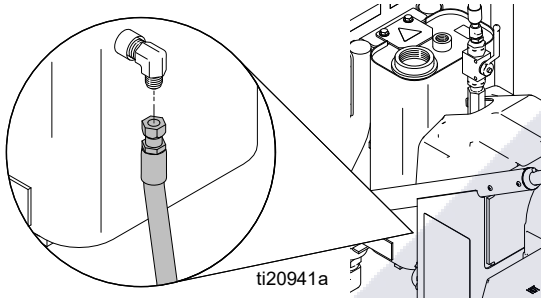


- Install new reservoir (64) in frame.

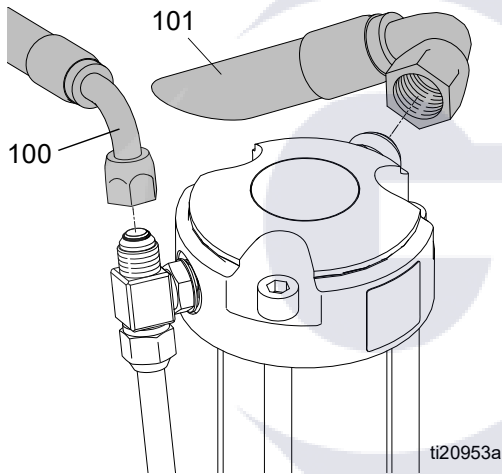


## Replacing Oil Reservoir

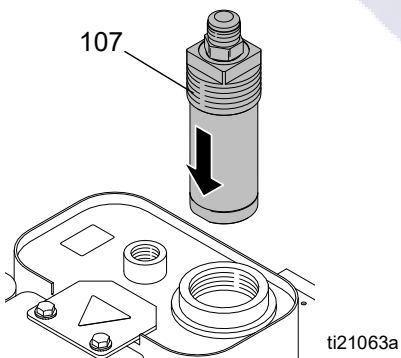
3. Replace bolts (86) and nuts (84). Tighten bolts. Torque to  $125 \pm 10$  in-lb ( $14 \pm 1.1$  N•m).
4. Connect coolant line to reservoir (64). Torque to 225 in-lb ( $14.1$  N•m).



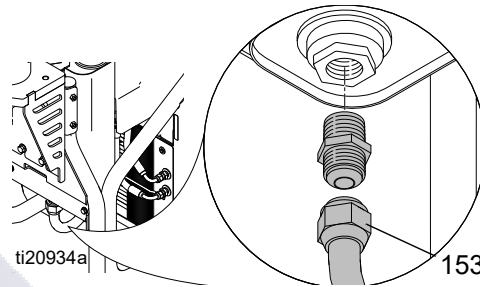
5. Reattach return lines (100, 101). Torque three times to  $450 \pm 10$  in-lb ( $51 \pm 1.1$  N•m).



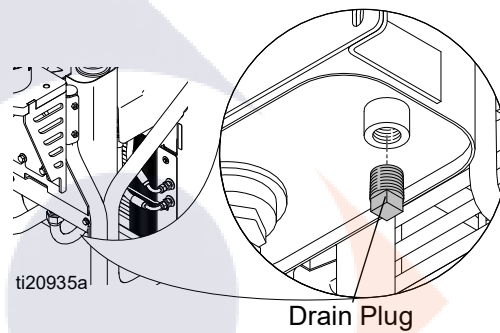
6. Install filter (107).



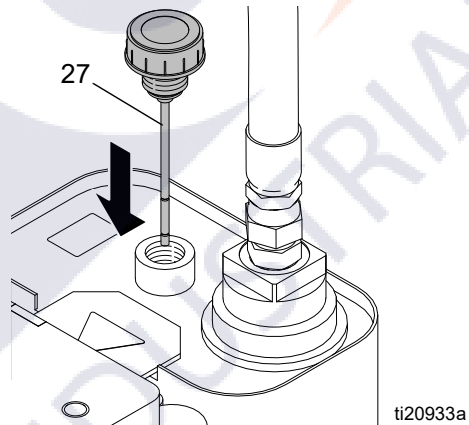
7. Reattach suction hose (153). Torque to  $600 \pm 10$  in-lb ( $68 \pm 1.1$  N•m).



8. Verify drain plug has been replaced. Fill oil reservoir with oil to high mark on dip stick (approximately 3.5 gallons).



9. Replace cap (27).



# Changing Hydraulic Fluid Filter

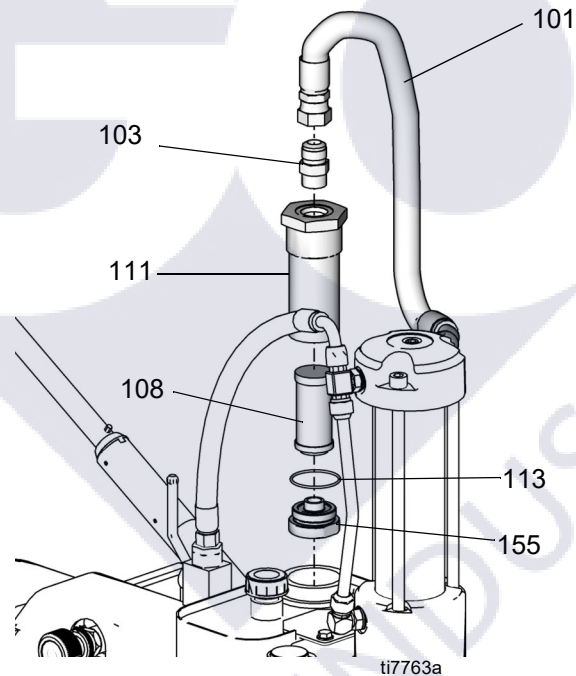
## Removal



1. Perform **Pressure Relieve Procedure**, page 6.
2. Loosen and remove hose (101) from fitting (103).
3. Remove filter housing (111) from reservoir (64).
4. Remove bottom filter cap (155) from housing (111).
5. Pull filter (108) off cap (155).

## Installation

1. Install new o-ring (113) from kit.
2. Install new filter (108) over cap (155).
3. Install cap (155) and filter (108) in filter housing (111). Hand tighten cap till snug. Then torque to  $375 \pm 10$  in-lb ( $42 \pm 1.1$  N•m).
4. Install filter housing (111) into reservoir.
5. Install fitting (103) in filter housing (111). Torque to  $600 \pm 10$  in-lb ( $67.8 \pm 1.1$  N•m).
6. Reattach hose (101) to fitting (103). Torque to  $450 \pm 10$  in-lb ( $51 \pm 1.1$  N•m).

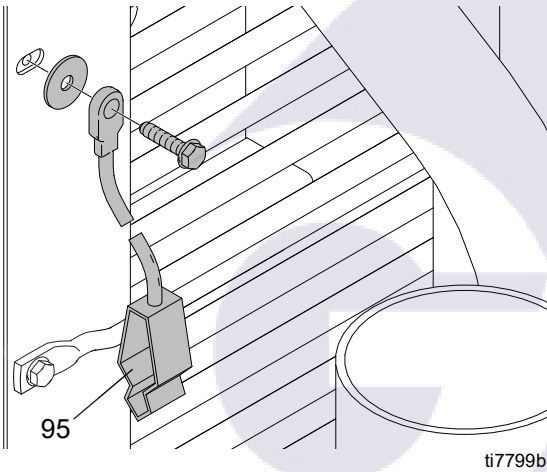


# Cooler Replacement

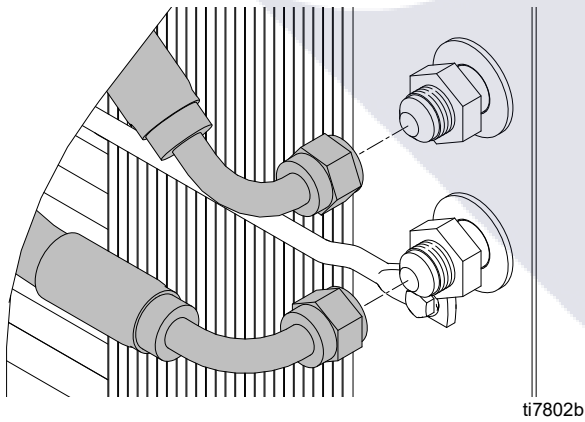


## Removal

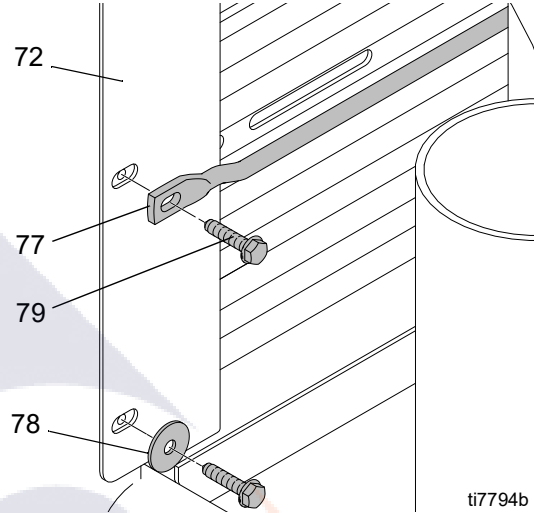
1. Perform **Pressure Relieve Procedure**, page 6.
2. Loosen ground screw and remove ground clamp (95) from sprayer.



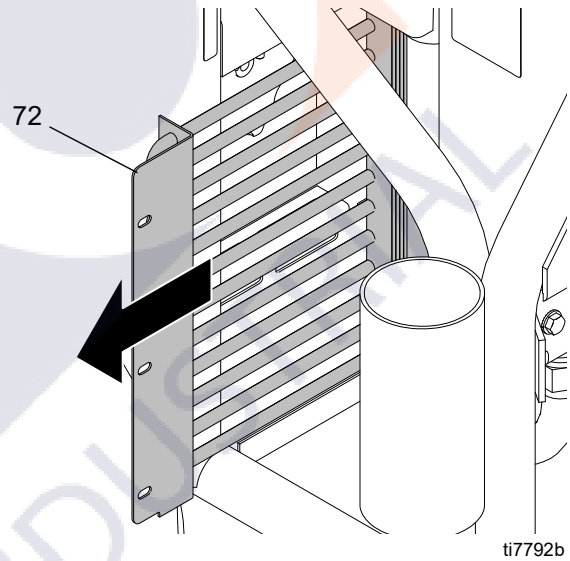
3. Loosen and remove return line to oil tank and hydraulic line to cooler.



4. Remove screws (79), washers (78) and support bar (77) from cooling coil (72).

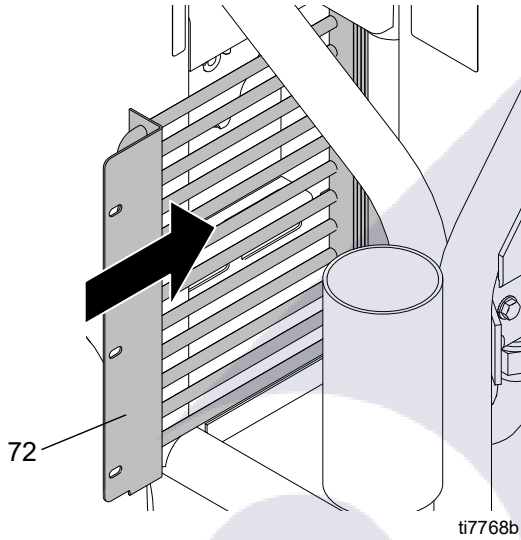


5. Remove coil (72) from sprayer frame.

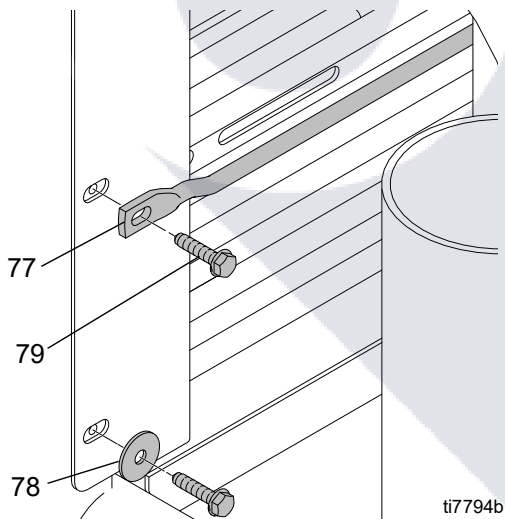


## Installation

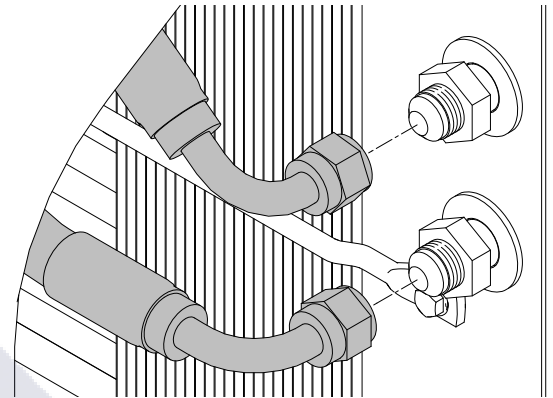
1. Install new coil (72). Replace support bar (77), washers (78) and screws (79). Tighten screws.



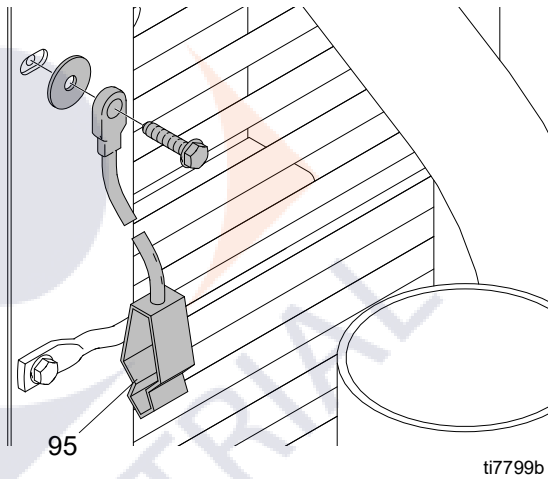
2. Replace bar and screws. Torque to 25-30 in-lb (2.8-3.4 N•m).



3. Reconnect return line to oil tank and hydraulic line to cooler. Torque to 225 in-lb (25.4 N•m).



4. Replace ground wire (95) and tighten screw. Torque to 25-30 in-lb (2.8 - 3.4 N•m).

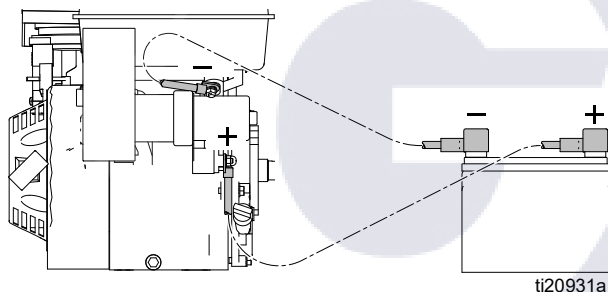


# Engine Replacement



## Removal

1. Perform **Pressure Relieve Procedure**, page 6.
2. Remove screws (79) and washers (78) and belt cover (67).
3. Remove belt (19), page 22.
4. Remove screws (21), washers (70) and nuts (10) securing motor (5) to frame.
5. **Electric start models only:** Disconnect battery cables and voltage regulator.



6. Remove motor (5) from frame.

## Replacing Motor Fan

### Removal

- a. Loosen and remove bolts (86) on front of fan (14).
- b. Pull fan (14) off small pulley (6).

### Installation

- a. Position new fan (14) over small pulley (6).
- b. Replace bolts (86) and tighten securely. Torque to  $125 \pm 10$  in-lb ( $14.1 \pm 1.1$  N•m).

## Removing Pulley

**NOTE:** This procedure is only necessary if you are replacing the motor. When you install a new motor you reuse the existing pulley.

### Removal

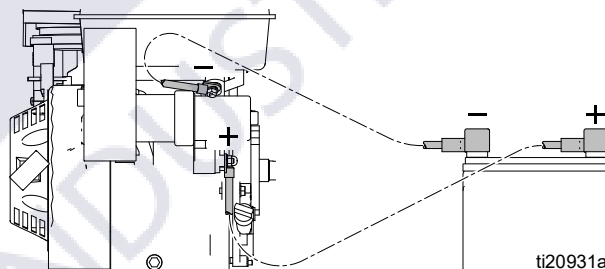
- a. Loosen set screw (87) located on the side of the pulley (6).
- b. Remove large bolt (24) in the center of pulley (6).
- c. Pull pulley (6) off motor (5).

### Installation

- a. Position new pulley (6) on motor (5).
- b. Install large bolt (24) and washer (65) in center of pulley (6). Torque to  $125 \pm 10$  in-lb ( $14.1 \pm 1.1$  N•m).
- c. Tighten set screw (87). Torque to  $60 \pm 2$  in-lb ( $25.4$  N•m).

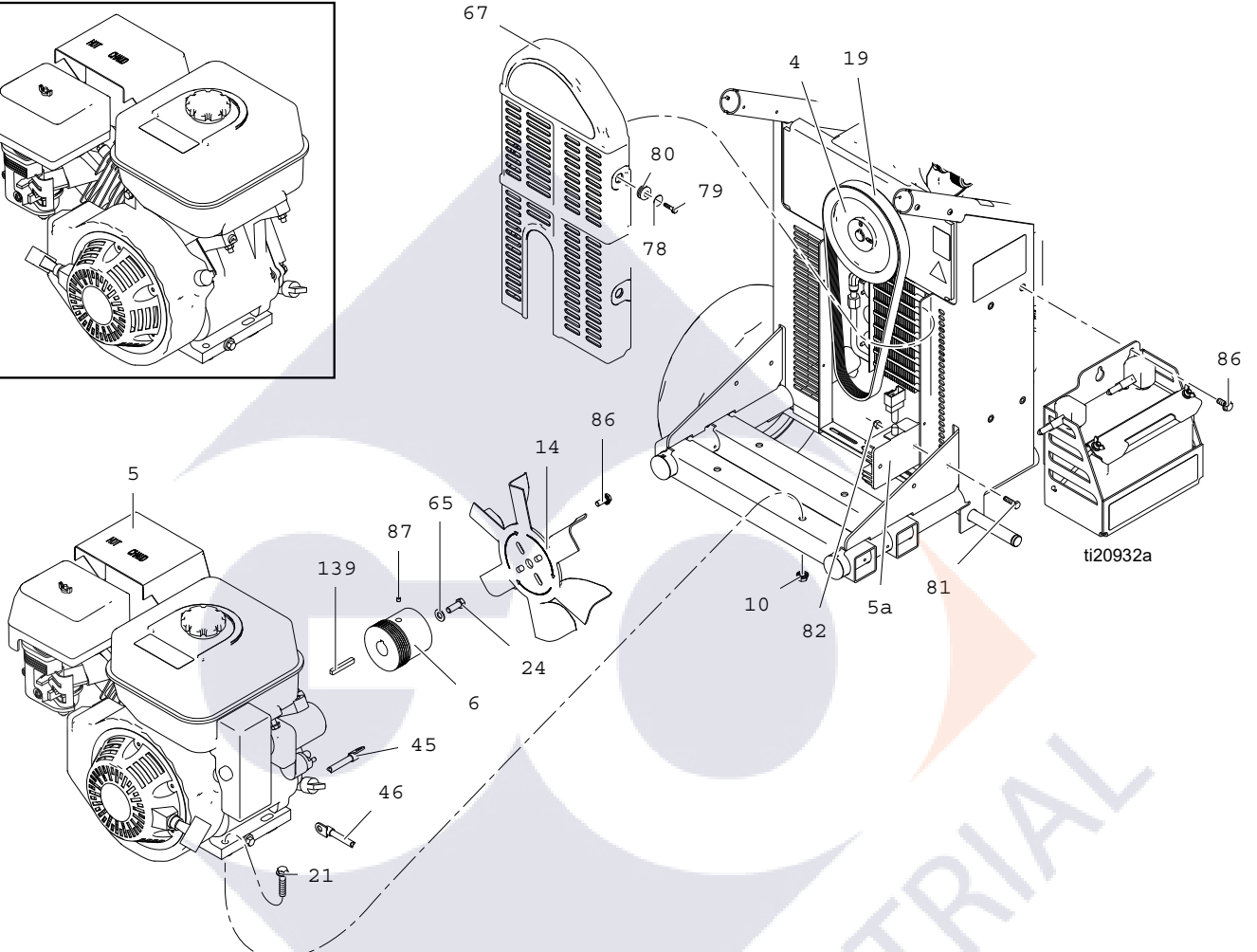
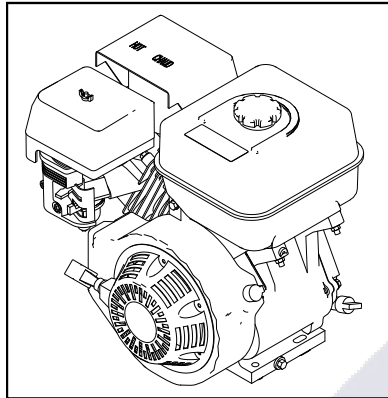
## Installation

1. Install motor (5) in frame.
2. Reconnect battery cables and voltage regulator connection.



3. Replace all screws (21), washers (70) and nuts (10). Tighten securely.
4. Install belt (19) over pulleys (4, 6), page 22.
5. Replace belt cover (67) and screws (79) and washers (78) (2 each side). Using a wrench tighten bolts. Torque to 25-30 in-lb ( $2.8$ - $3.4$  N•m).

# Engine Replacement



# Removing Handle



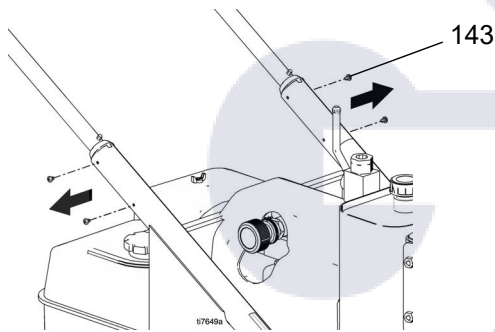
## Fixed Mounting (optional)

To prevent damaging the unit when transporting it in a truck or on a trailer, Graco recommends fixed mounting to the vehicle.

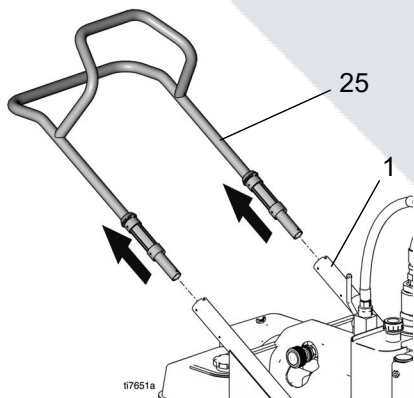
## Repositioning Handle

Before you can secure the unit to a truck or trailer bed, you must reposition the handle.

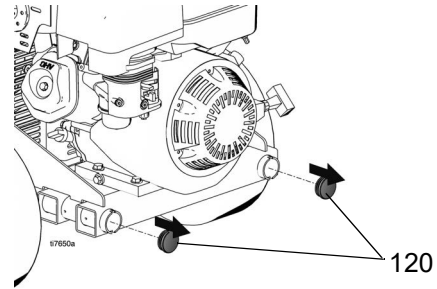
1. Remove the 4 handle sleeve screws (143).



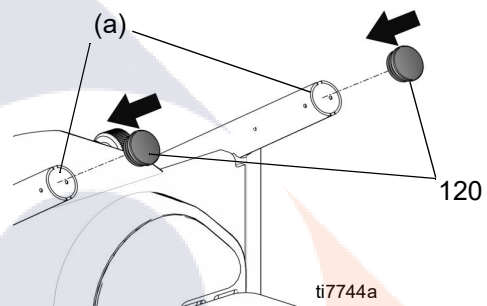
2. Remove handle assembly (25) by pulling it out of upper frame tubes (1).



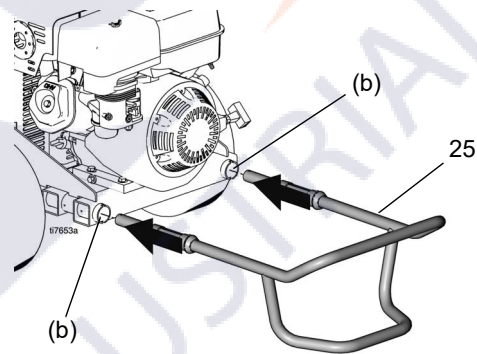
3. Remove frame tube plugs (120) located behind the wheels.



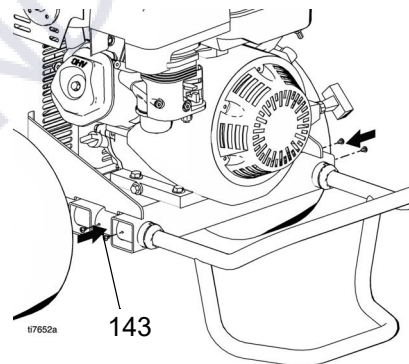
4. Insert plugs (120) in upper frame handle tubes (a).



5. Insert handle assembly (25) into lower frame tubes (b). The hose bracket should face down. Adjust to appropriate in/out location.



6. Install sleeve screws (143) in lower frame tubes.

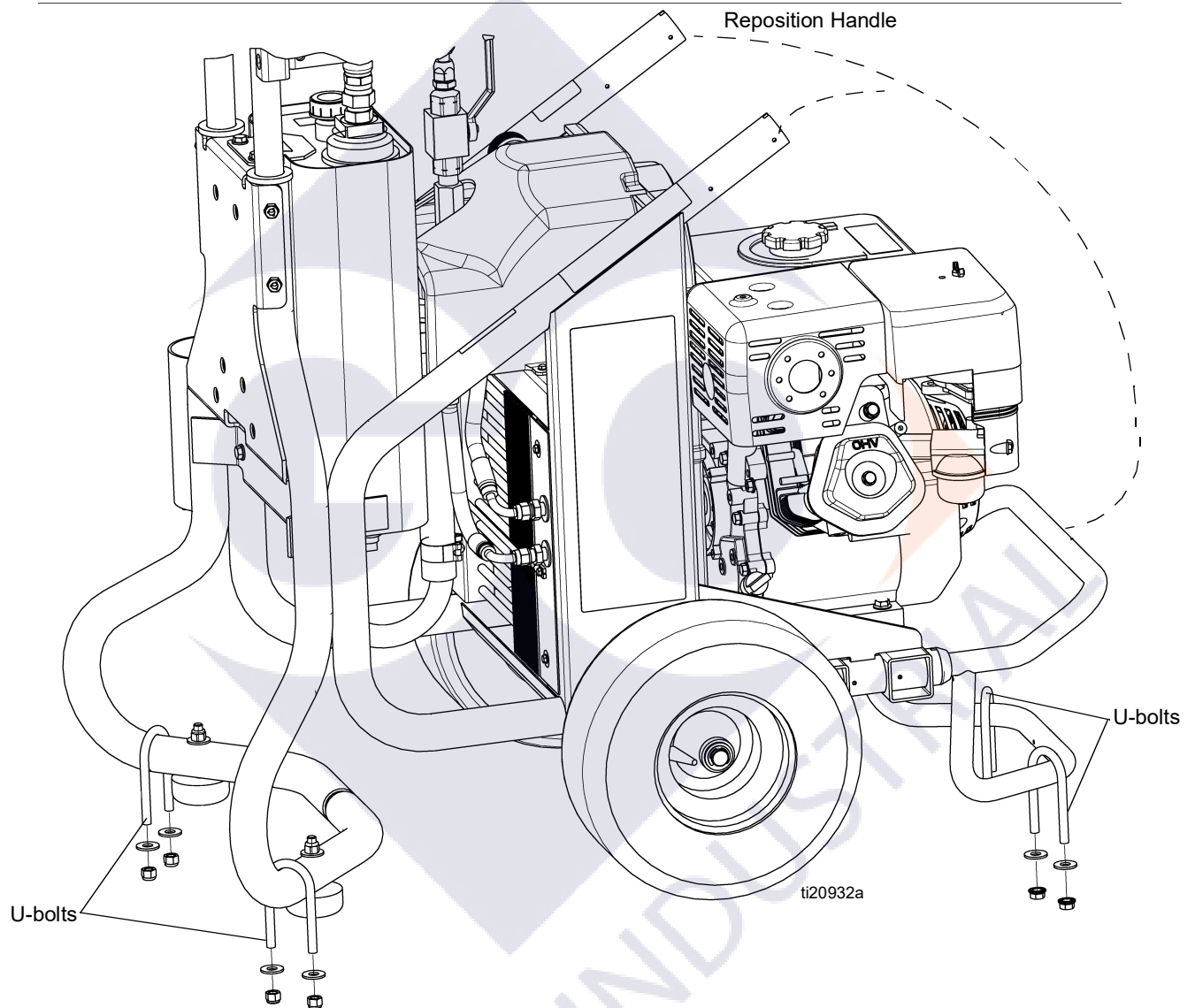




## Securing Unit to Vehicle Bed

For fixed mounting, fasten U-bolts over sprayer frame as indicated in the following illustration.

1. Reposition handle, steps 1-5, page 32.
2. Place U-bolts over sprayer frame and through holes in vehicle bed. Place a washer and nut over bolt end. Using a wrench, tighten nut securely.





**Notes**


# Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

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Original instructions. This manual contains English. MM 332157

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