

## Replacement Kits for HandHeld Airless Sprayers

3A4788B

EN



### IMPORTANT SAFETY INSTRUCTIONS

For detailed sprayer information and warnings, see the Owners manual included with your sprayer.

### Includes:

Enclosure Cover Replacement Kits	17P234, 17P235, 17P236
SmartControl Enclosure Replacement Kit	17P176, 17P178, 17P179, 17P181
Pump Assembly Replacement Kit	17P185, 17P186, 17P187
Motor Replacement Kits	17P099, 17P111, 17R307
Front Valve Replacement Kit	17P175
Outlet Valve Replacement Kit	17P183
Prime Pump/Spray Valve Replacement Kit	17P098, 17R420

## Pressure Relief Procedure



### WARNING

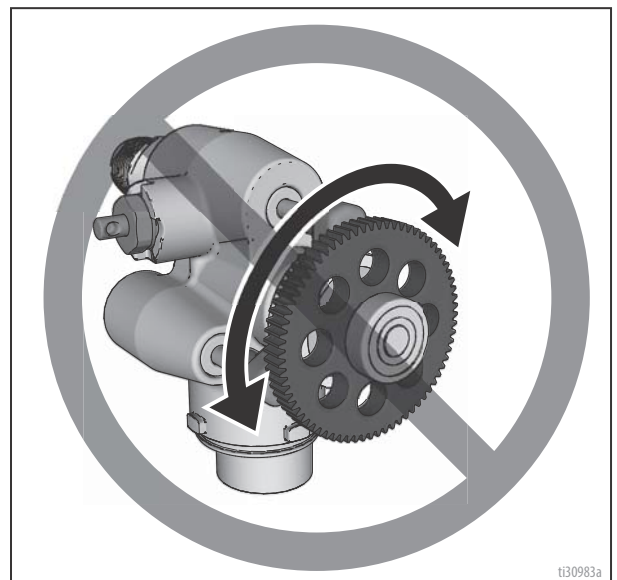
**SKIN INJECTION HAZARD:** This sprayer builds up an internal pressure of 2000 psi (14 MPa, 138 bar) during use. Follow this **Pressure Relief Procedure** whenever you stop spraying and before cleaning, checking, servicing, or transporting equipment to prevent serious injury.

**ELECTRIC SHOCK HAZARD:** AC powered equipment must be grounded. Improper grounding, setup, or usage of the equipment can cause electric shock. Turn off and disconnect power cord before servicing the equipment.

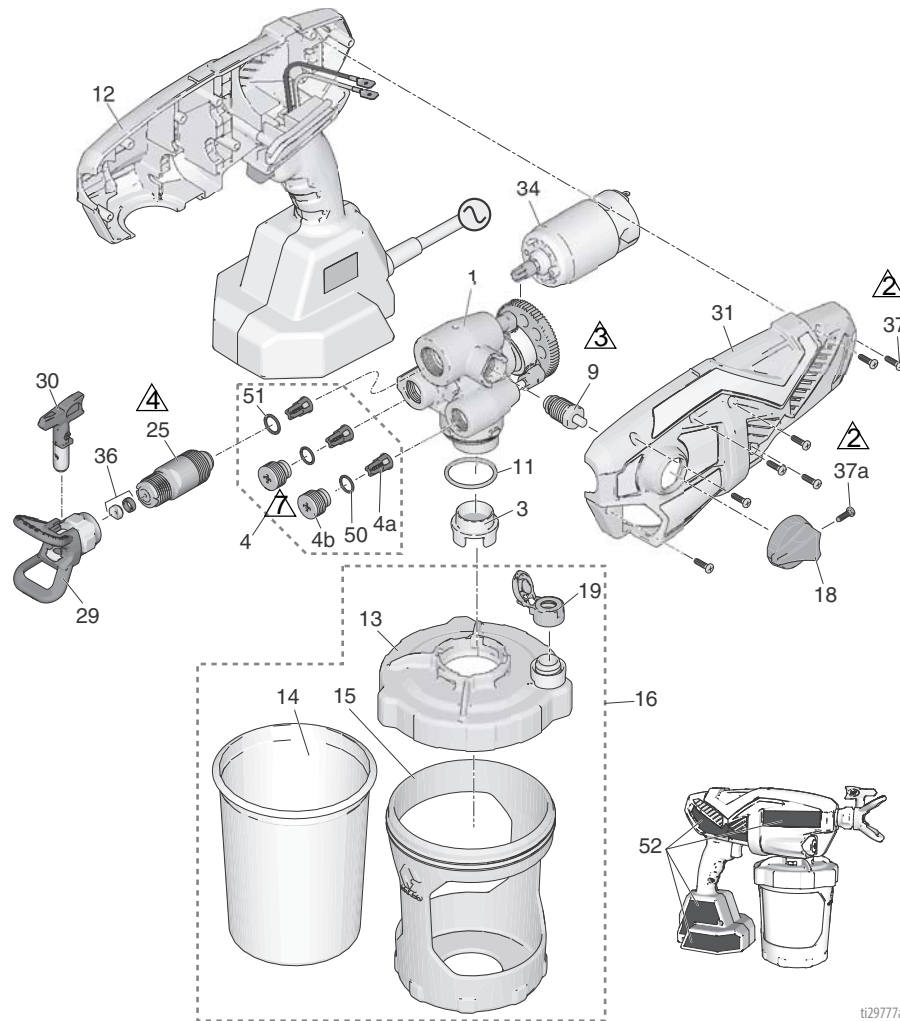
1. Disconnect power (remove battery or unplug power cord).
2. Turn Prime Pump/Spray Knob down to Prime Pump position to relieve pressure.

### NOTICE

Removing the pump locking device and or spinning the gear before installation will permanently damage the pump. Do not turn the pump gear, before installing the enclosure cover.



# Assembly Drawing Ultra, Ultimate, and TC PRO (DC/AC)

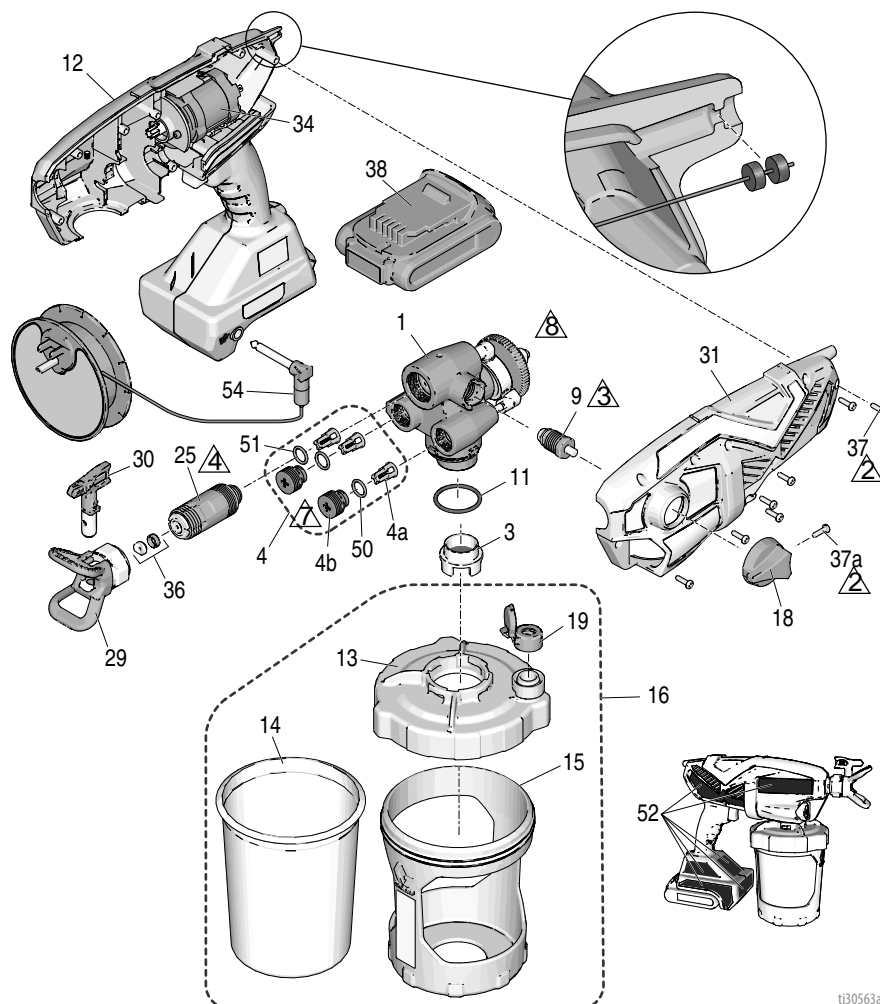


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Ref.	Description
1	Kit, pump assembly <i>includes 4, 9, 11, 25</i>
3	Filter. pump
4	Kit, outlet valve repair <i>includes 3 of 4a, 2 of 4b, 2 of 50, 1 of 51</i>
4a	Outlet valve assembly
4b	Outlet valve plug
9	Prime Pump/Spray valve <i>includes 18, 1 of 37a</i>
11	O-ring
12	Kit, SmartControl with enclosure <i>includes 31, 34, 7 of 37, 52</i>
13	Lid, cup <i>includes 19</i>
14	FlexLiner
15	Support, cup, 32 oz.
16	Kit, cup support, lid and plug 32 oz. <i>includes 13, 1 of 14, 15, 1 of 19</i>
18	Prime Pump/Spray knob
19	VacuValve cap
25	Kit, front valve <i>includes 51</i>

Ref.	Description
29	Guard, spray tip
30	Spray tip
31	Kit, enclosure, cover <i>includes 7 of 37</i>
34	Motor
36	Kit, tip seat and seal (5-pack)
37	Screw, cross-head
37a	Screw, cross-head
50	O-ring
51	O-ring
52	KIT, warning labels
<b>Torques</b>	
Ⓐ	8-10 in-lb (0.9 - 1.1 N•m)
Ⓑ	10-15 in-lb (1.1 - 1.7 N•m)
Ⓒ	55-65 in-lb (6.2 - 7.3 N•m)
Ⓓ	5-7 in-lb (0.6 - 0.8 N•m)

## Assembly Drawing Ultra MAX, Ultimate MX, and TC PRO PLUS (Brushless DC)



Ref.	Description
1	Kit, pump assembly <i>includes 4, 9, 11, 25</i>
3	Filter. pump
4	Kit, outlet valve repair <i>includes 3 of 4a, 2 of 4b, 2 of 50, 1 of 51</i>
4a	Outlet valve assembly
4b	Outlet valve plug
9	Prime Pump/Spray valve <i>includes 18, 1 of 37a</i>
11	O-ring
12	Kit, SmartControl with enclosure <i>includes 31, 34, 7 of 37, 52</i>
13	Lid, cup <i>includes 19</i>
14	FlexLiner
15	Support, cup, 32 oz.
16	Kit, cup support, lid and plug 32 oz. <i>includes 13, 1 of 14, 15, 1 of 19</i>
18	Prime Pump/Spray knob
19	VacuValve cap
25	Kit, front valve <i>includes 51</i>
29	Guard, spray tip
30	Spray tip

Ref.	Description
31	Kit, enclosure, cover <i>includes 7 of 37</i>
34	Motor
36	Kit, tip seat and seal (5-pack)
37	Screw, cross-head
37a	Screw, cross-head
38	Battery
50	O-ring
51	O-ring
52	KIT, warning labels
54	Reel, grounding
	<b>Torques</b>
②	8-10 in-lb (0.9 - 1.1 N•m)
③	10-15 in-lb (1.1 - 1.7 N•m)
④	55-65 in-lb (6.2 - 7.3 N•m)
⑦	5-7 in-lb (0.6 - 0.8 N•m)
⑧	19-21 in-lb (2.2 - 2.4 N•m)

## Enclosure Cover Removal/Replacement

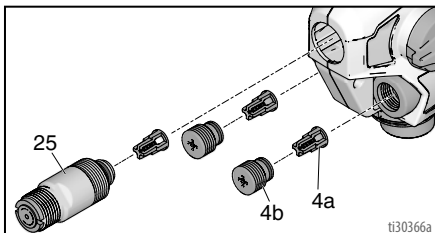
Before servicing the sprayer the enclosure cover must be removed. See assembly drawings.

1. Perform **Pressure Relief Procedure**, on page 1.
2. Disconnect power (remove battery or unplug power cord).
3. Remove cup assembly.
4. Turn Prime Pump/Spray knob forward to spray position
5. Remove cross-head screw (37a) from Prime Pump/Spray knob and remove knob.
6. Remove seven cross-head screws (37) from sprayer enclosure and remove enclosure cover (31).
7. Install new enclosure cover (31). Secure with seven cross-head screws (37). See Assembly Drawing for torques.
8. Rotate prime valve stem so the valve stem pocket is pointed towards the rear of the sprayer.
9. Install Prime Pump/Spray knob (18) so the knob is pointing forward. Install cross-head screw (37a). See assembly drawings for torque.
10. Knob will only rotate forward and down.
11. After assembly is complete, perform **Assembly Verification**, on page 7.

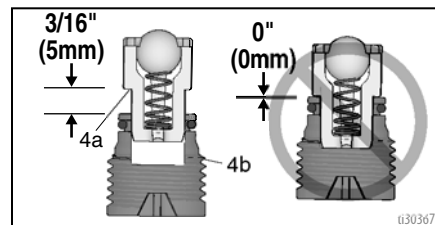
## Outlet Valve Replacement

Worn outlet valves are easily replaced without removing the enclosure cover. Before servicing the sprayer, pump pressure must be relieved.

1. Perform **Pressure Relief Procedure**, on page 1.
2. Disconnect power (remove battery or unplug power cord).



3. To remove the three outlet valves, remove two pump plugs (4b) and front valve (25). On the Ultra MAX, Ultimate MX, and TC PRO PLUS (Brushless) sprayers use the removal/installation tool provided to remove the front valve.
4. Separate the outlet valve from the front valve. Save front valve for reuse.
5. Replace o-ring (51) on front valve (25).
6. Make certain new o-rings (50) are on the new pump plugs (4b).
7. Assemble new outlet valves, as shown. Leave a space between the end of the plug or front valve and shoulder on the outlet valve assemblies.

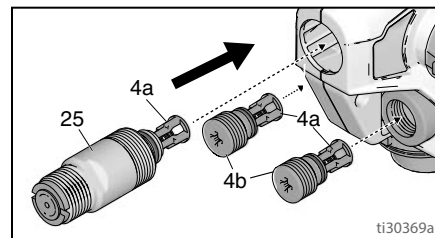


8. Check ball should move freely against the spring in the retainer.

### NOTICE

Do not push outlet valves all the way into the valve plugs or front valve. If outlet valves are pushed all the way into the valve plugs or front valve the sprayer will spray with reduced performance.

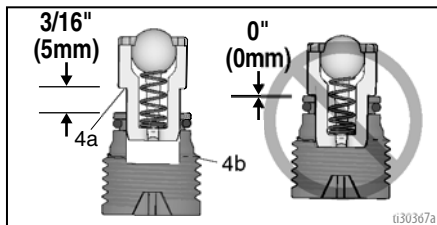
9. Install two pump plugs and front valve. On the Ultra MAX, Ultimate MX, and TC PRO PLUS (Brushless) sprayers use the removal/installation tool provided to install the front valve. Torque front valve and pump plugs, see Assembly Drawing for torques.



## Front Valve Replacement

Replacement of the front valve can be accomplished without removing the enclosure cover.

1. Perform **Pressure Relief Procedure**, on page 1.
2. Disconnect power (remove battery or unplug power cord).
3. Remove front valve (25). On the Ultra MAX, Ultimate MX, and TC PRO PLUS (Brushless) sprayers use the removal/installation tool provided to remove the front valve.
4. Separate the outlet valve (4a) from the front valve (25). Save outlet valve (4a) for reuse.
5. Assemble outlet valve (4a) into new front valve (25), as shown. Leave a space between the end of the front valve and shoulder on the outlet valve assembly.



6. Check ball should move freely against the spring in the retainer.

### NOTICE

Do not push outlet valve all the way into the front valve. If outlet valve is pushed all the way into the front valve the sprayer will spray with reduced performance.

7. Make certain o-ring is on the front valve.
8. Install front valve. On the Ultra MAX, Ultimate MX, and TC PRO PLUS (Brushless) sprayers use the removal/installation tool provided to install the front valve. See Assembly Drawing for torques.

## Motor Replacement

To replace the motor you must first remove the enclosure cover.

### NOTICE

Do not turn or spin the pump gear, permanent damage to the pump will occur.

1. Perform **Pressure Relief Procedure**, on page 1.
2. Disconnect power (remove battery or unplug power cord).
3. Remove the enclosure cover (31). See **Enclosure Cover Removal/Replacement**, on page 4

### Ultra MAX, Ultimate MX, and TC PRO PLUS (Brushless DC)

On the Ultra MAX, Ultimate MX, and TC PRO PLUS (Brushless DC) models the enclosure and SmartControl also comes with the motor pre-wired and installed in the enclosure. See **SmartControl Enclosure Replacement**, on page 7.

### Ultra, Ultimate, and TCPRO (DC/AC)

1. Remove the motor.
2. Place new motor into enclosure, aligning the motor screw at the gear end with the enclosure slot. When properly installed, motor gear should mesh with pump gear.
3. On corded models, verify that green wire from power cord is plugged into male ground spade on motor. Make sure terminal is pushed all the way onto the ground spade.
4. Plug red and white wires from SmartControl assembly onto male spades on motor.
  - Make sure red wire is plugged into male spade with red dot on end of motor.
  - Make sure female connector on white wire is plugged into male spade on end of motor.
5. Install enclosure cover (31) using seven screws. See assembly drawings for torques.

**NOTE: Make sure motor wires are not pinched when enclosure is assembled.**

6. Rotate prime valve stem so the valve stem pocket is pointed towards the rear of the sprayer.
7. Install Prime Pump/Spray knob (18) so the knob is pointing forward. Install cross-head screw (37a).
8. Knob will only rotate forward and down. See assembly drawings for torques.
9. After assembly is complete, perform **Assembly Verification**, on page 7.

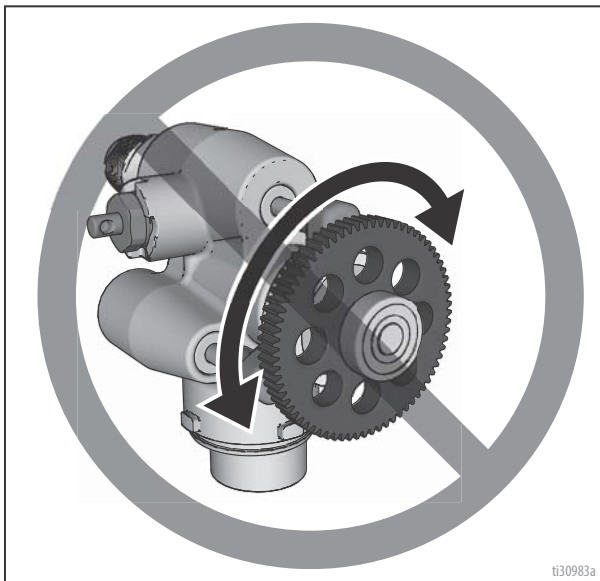
## Prime Pump/Spray Valve and Knob Replacement

Replacement of the Prime Pump/Spray valve or the Prime Pump/Spray knob can be accomplished without removing enclosure cover.

1. Perform **Pressure Relief Procedure**, on page 1.
2. Disconnect power (remove battery or unplug power cord).
3. Remove cross-head screw (37a) from Prime Pump/Spray knob (18).
4. Using a 5/8 in. (16mm) deep socket, remove Prime Pump/Spray valve (9) from pump assembly (1).
5. Thread new Prime Pump/Spray valve (9) into pump assembly (1). See assembly drawings for torques.
6. Rotate prime valve stem so the valve stem pocket is pointed towards the rear of the sprayer.
7. Install Prime Pump/Spray knob (18) so the knob is pointing forward. Install cross-head screw (37a).
8. Knob will only rotate forward and down. See assembly drawings for torques.
9. After assembly is complete, perform **Assembly Verification**, on page 7.

## Pump Assembly Replacement

Removal and replacement of the pump assembly can be accomplished without removing the motor.

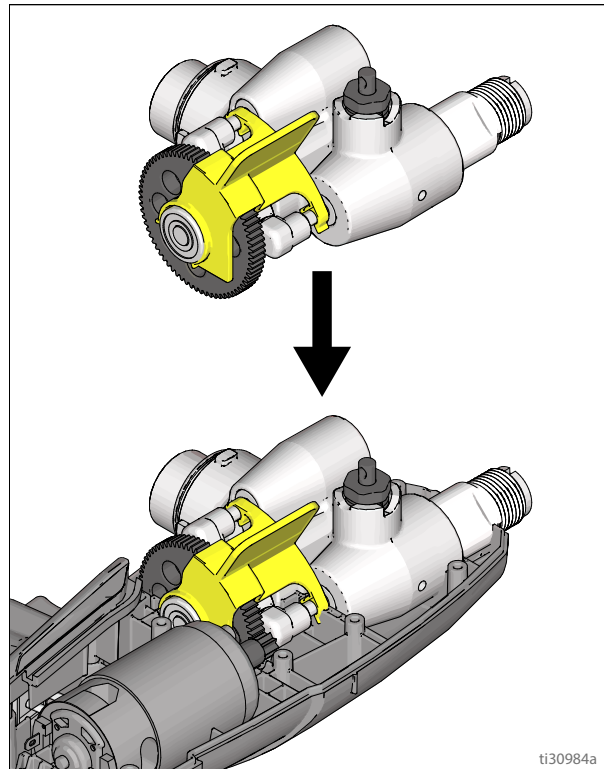


1. Perform **Pressure Relief Procedure**, on page 1.
2. Disconnect power (remove battery or unplug power cord).

3. To replace the pump assembly (1) you must first remove the enclosure cover (31). See **Enclosure Cover Removal/Replacement**, on page 4.
4. Remove pump assembly (1) from SmartControl enclosure (12).
5. On a brushless sprayer, use a wrench to hold the pump bearing. Remove the screw that retains the static dissipation wire. Save the screw.
6. Locate new pump assembly (1). Do not remove the yellow pump locking device until the new pump is installed in the SmartControl enclosure housing (12).

### NOTICE

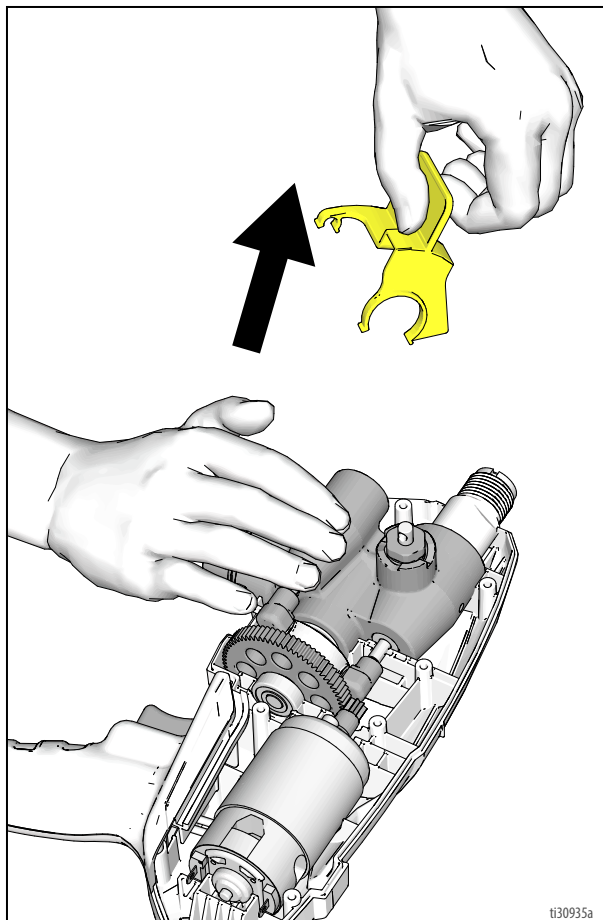
Removing the pump locking device and or spinning the gear before installation will permanently damage the pump.



7. On a brushless sprayer, use a wrench to hold the pump bearing. Install the static dissipation wire screw. See assembly drawings for torques.
8. Place pump assembly (1) into SmartControl enclosure (12), while making sure the bearing is in the enclosure boss and the gear meshes with the motor gear.



9. Push the pump assembly (1) down into the SmartControl enclosure (12). The pump locking device will partially snap away from the pump assembly (1). To complete removal of the pump locking device, hold the pump assembly (1) in place while pulling on the pump locking device tab.



10. Install enclosure cover (31) onto SmartControl enclosure housing (12). Secure with seven screws. See assembly drawings for torques.

**NOTE: Make sure wires are not pinched when enclosure halves are put together.**

11. Rotate prime valve stem so the valve stem pocket is pointed towards the rear of the sprayer.
12. Install Prime Pump/Spray knob (18) so the knob is pointing forward. Install cross-head screw (37a).
13. Knob will only rotate forward and down. See assembly drawings for torques.
14. After assembly is complete, perform **Assembly Verification**, on page 7.

## SmartControl Enclosure Replacement

To replace the SmartControl assembly you must first remove the enclosure cover.

1. Perform **Pressure Relief Procedure**, on page 1.
2. Remove enclosure cover (31). See **Enclosure Cover Removal/Replacement**, on page 4.

### NOTICE

Do not turn or spin the pump gear, permanent damage to the pump will occur.

3. Remove pump assembly (1) from SmartControl enclosure (12). See **Pump Assembly Replacement**, on page 6.
4. Place pump assembly (1) into new SmartControl enclosure (12), while making sure the bearing is in the enclosure boss and the gear meshes with the motor gear.
5. Make certain the pump assembly (1) is in place in the SmartControl enclosure (12).
6. Install enclosure cover (31) onto SmartControl enclosure housing (12). Secure with seven screws. See assembly drawings for torques.

**NOTE: Make sure wires are not pinched when enclosure halves are put together.**

7. Rotate prime valve stem so the valve stem pocket is pointed towards the rear of the sprayer.
8. Install Prime Pump/Spray knob (18) so the knob is pointing forward. Install cross-head screw (37a).
9. Knob will only rotate forward and down. See assembly drawings for torques.
10. After assembly is complete, perform **Assembly Verification**, on page 7.

## Assembly Verification

After assembly is complete, perform the following steps to verify proper operation. If sprayer fails one of the steps, repeat sprayer repair procedures.

- Rotate Prime Pump/Spray knob to make sure it rotates forward to the spray position and down to the prime pump position.
- Fill cup assembly with water and verify sprayer primes and sprays. Follow setup instructions in sprayer operation manual for proper priming and spraying procedure.

# Graco Information

For the latest information about Graco products, visit [www.graco.com](http://www.graco.com).

For patent information, see [www.graco.com/patents](http://www.graco.com/patents).

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Original instructions. This manual contains English. MM 3A4788

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