INSTRUCTIONS

This manual contains **IMPORTANT INSTRUCTIONS and WARNINGS.**
READ AND RETAIN FOR REFERENCE.

307–676

Rev E
Supersedes D

PRESSURE CONTROL

Part No. 220–455*
For all Ultra™ Sprayers, except the Ultra 1500

**Does not include circuit board.*

CIRCUIT BOARD

Part No. 218–405
For all Ultra™ Sprayers, except the Ultra 1500

MANUAL CHANGE SUMMARY

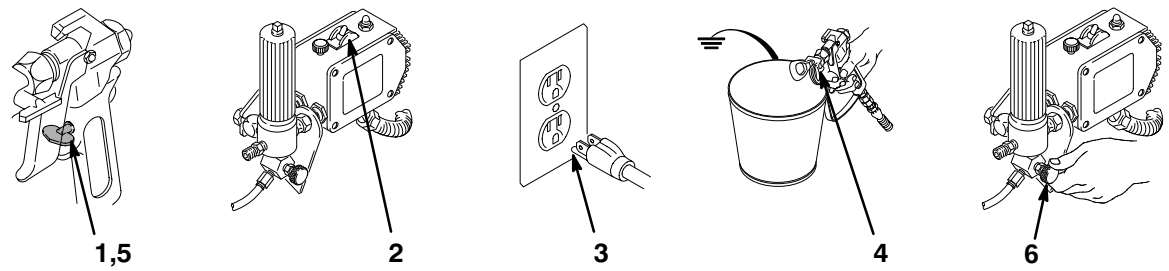
Circuit board flag position has changed. However, the part number did not change. Also, the wiring shown for the black and yellow wires (See Fig 2–2) has been corrected.

WARNING

Pressure Relief Procedure
To reduce the risk of serious bodily injury, including fluid injection, splashing fluid or solvent in the eyes or on the skin, or injury from moving parts or electric shock, always follow this procedure whenever you shut off the sprayer, when checking or servicing any part of the spray system, when installing, cleaning or changing spray tips, and whenever you stop spraying.

1. Engage the gun safety latch.
2. Turn the ON/OFF switch to OFF.
3. Unplug the power supply cord.
4. Disengage the gun safety latch. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure.
5. Engage the gun safety latch.
6. Open the pressure drain valve, having a container ready to catch the drainage. Leave the valve open until you are ready to spray again.

If you suspect that the spray tip or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, VERY SLOWLY loosen the tip guard retaining nut or hose coupling to relieve pressure gradually, then loosen completely. Now clear the tip or hose.



CIRCUIT BOARD REPLACEMENT

WARNING

To reduce the risk of serious injury, follow the illustrated **Pressure Relief Procedure** warning on page 1 whenever you are instructed to relieve pressure.

CAUTION

To reduce the risk of a pressure control malfunction:

- Always use needle nose pliers to disconnect a wire.
- Mate wire connectors properly. Be sure the flat blade of the insulated male connector is centered in the wrap-around blade of the female connector.
- Route wires carefully through the center of the U-shaped bourdon tube to avoid interference with the movement of the bourdon tube. Also avoid interference from the circuit board and between the pressure control and cover.

NOTE: Refer to Fig 2–1 and 2–2 for this procedure.

1. Relieve pressure.
2. Remove the pressure control cover.
3. Turn the pressure control knob to the minimum setting to release spring tension on the board. Check to be sure only three or four threads of the pressure control knob shaft are exposed below the pressure adjustment nut (B). Loosen the nut, if necessary.

CAUTION

Step 2 is essential to reduce the risk of damaging the circuit board while removing or installing it.

4. Disconnect all seven wires from the board. Pay close attention to where connections are made.
5. Pull out the plastic-tipped pin (B). Push the bottom of the circuit board (C) toward the wall of the pressure control and carefully slide the board out.
6. Reinstall the new board in the pressure control at the same angle as it was removed.
7. Reconnect all wires. Ease the pin (A) into the retainer.
8. Perform the **PRESSURE CONTROL ADJUSTMENT,** page 4, if you installed a new board.

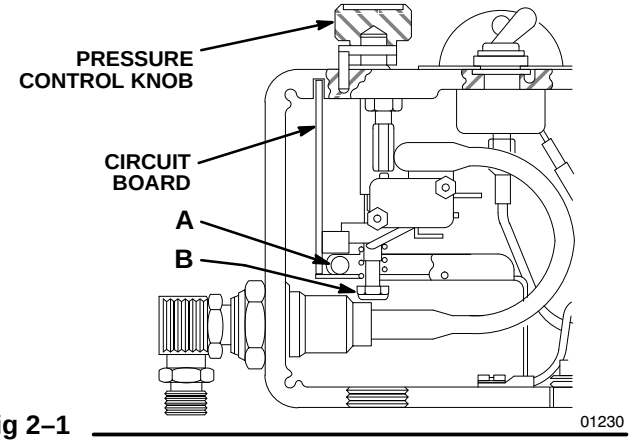


Fig 2–1

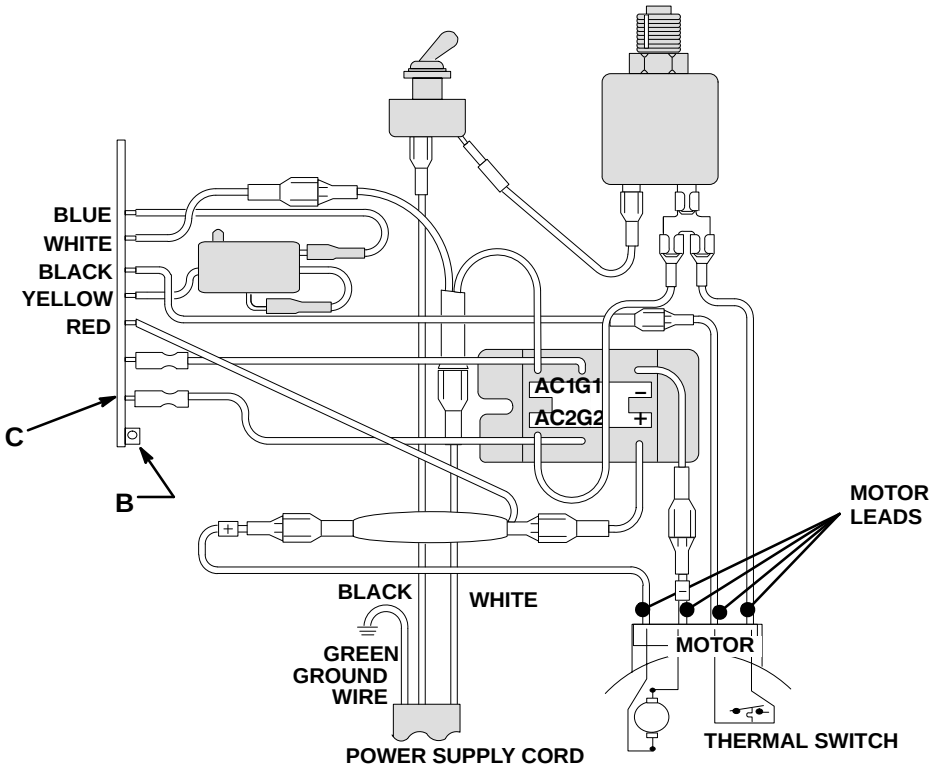


Fig 2–2

PRESSURE CONTROL REPLACEMENT

WARNING

To reduce the risk of serious injury, follow the illustrated **Pressure Relief Procedure** warning on page 1 whenever you are instructed to relieve pressure.

NOTE: Refer to Fig 3–1 for this procedure.

1. Relieve pressure.
2. Disconnect the fluid outlet hoses. Disconnect the hose (D) between the pump and pressure control.
3. Loosen the filter bracket nut (E).
4. Hold the hex of the pressure control adapter (F) firmly with a 3/4” open end wrench. Use an adjustable wrench to unscrew the swivel union (G), and then remove the fluid filter (H).
5. Remove the pressure control cover. Disconnect the four motor leads. See Fig 2–2.
6. Remove the circuit board and retain it. See page 2.
7. Remove the conduit (J).
8. Remove the three pressure control mounting screws (K). Remove the pressure control.
9. Remove the screws (L) and back mounting bracket (M).

CAUTION

Do not allow the adapter (F) to turn while installing the new pressure control assembly. Turning it can damage the sensitive bourdon tube. Hold the adapter firmly with a 3/4” open end wrench while screwing in the swivel union (G).

10. Install the new pressure control assembly in the reverse order of disassembly. Reinstall the conduit seal (N) around the wires in the conduit connector (P) to prevent motor contamination from entering the control. See the DETAIL below.
11. Perform the **PRESSURE CONTROL ADJUSTMENT,** page 4, before regular operation of the sprayer.

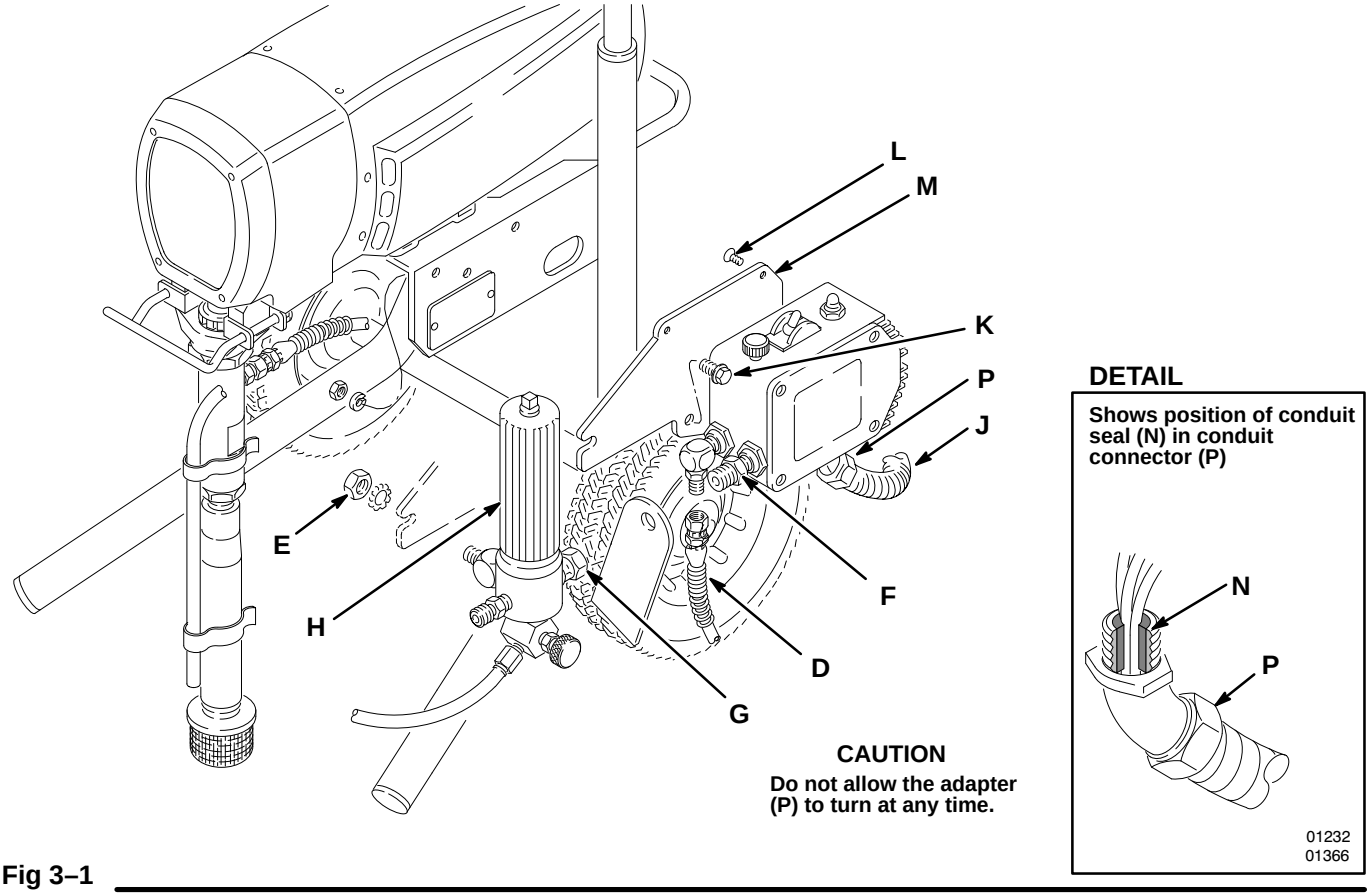


Fig 3–1

PRESSURE CONTROL ADJUSTMENT

WARNING

USE EXTREME CAUTION WHEN PERFORMING THIS ADJUSTMENT PROCEDURE to reduce the risk of a fluid injection injury or other serious bodily injury which can result from component rupture, electric shock, fire, explosion, or moving parts.

This procedure sets the sprayer to3000 psi (210 bar) MAXIMUM WORKING PRESSURE and sets the overpressurization switch (microswitch) to approximately 3600 psi (242 bar).

Perform this procedure whenever the pressure control assembly is removed and reinstalled or replaced, or a new circuit board is installed.

Improper adjustment can cause the sprayer to overpressurize and result in component rupture, fire or explosion. It may also prevent the sprayer from obtaining the maximum working pressure, resulting in poor sprayer performance.

NEVER try to increase the sprayer's maximum working pressure of 3000 psi (210 bar) by performing these adjustments in any other way. Normal operation of the sprayer at higher pressures may result in component rupture, fire or explosion. To perform this adjustment, however, the sprayer pressure must be *temporarily* increased above the normal working pressure.

Use a *new* 50 ft (15.2 m) spray hose rated for at least 3000 psi (210 bar) MAXIMUM WORKING PRESSURE. A used, under–rated hose could develop a high pressure leak or rupture.

WARNING

To reduce the risk of serious injury, follow the illustrated **Pressure Relief Procedure** warning on page 1 whenever you are instructed to relieve pressure.

Required tools for adjustment procedure

3/8 in. nut driver or 3/8 in. socket wrench

1/4 in. open end wrench

7/16 in. open end wrench

0 – 5000 psi, oil-filled test gauge, Part No. 102–814

Pail of clean water

Mineral spirits

NEW 3000 psi (210 bar) high pressure spray hose, Part No. 223–541

1. Relieve pressure.
2. See the above list of tools and equipment needed. Remove the plug (R) from the top of the fluid filter and install the fluid-filled pressure gauge. See Fig 4–1. Connect the gun to the **new** test hose and connect the hose to the sprayer outlet.
3. Remove the pressure control cover.
4. Place the pump suction tube in a pail of clean water.
5. Be sure the gun safety latch is engaged.

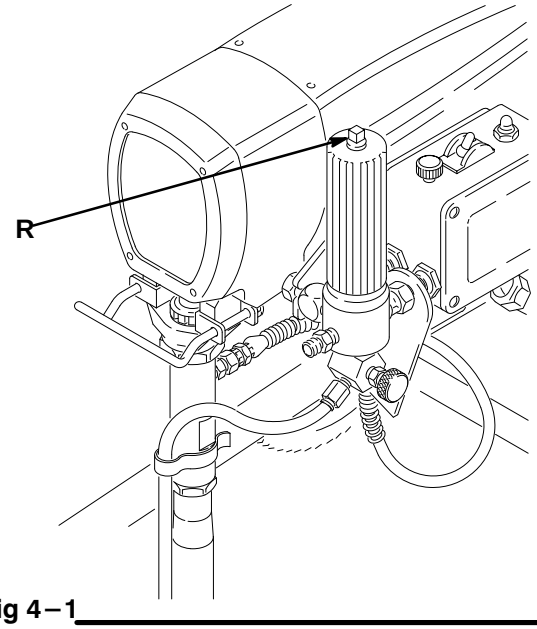


Fig 4 – 1 01367

6. Plug in the sprayer.

7. Turn the pressure control knob (S) to the *minimum* setting (fully counterclockwise), and turn the sprayer ON. **THE DISPLACEMENT PUMP SHOULD NOT CYCLE**

   If it does cycle**,** remove the plug (T) from the bottom of the pressure control. Insert a 3/8 in. nut driver through the opening, and unscrew the pressure adjustment nut (U) just until the sprayer stops running.

Adjust the Overpressurization Switch

8. With the spray gun triggered, ***slowly*** turn the pressure control knob clockwise just until the sprayer starts. Prime the pump and hose.

9. Slowly turn the pressure control knob to the maximum setting. While watching the red light on the circuit board and the pressure gauge, turn the nut (U) ***slowly*** to increase pressure until the red light goes out **and** the gauge reads between 3400 –3800 psi (238 – 266 bar).

   If the red light does not go out by 3800 psi (266 bar), loosen the nut (P) and adjust the stud (Q) until the light goes out.

   If the red light goes out before 3400 psi (238 bar), loosen the nut (P) and adjust the stud (Q) until the light goes out between 3400 – 3800 psi (238 – 266 bar).

10. Tighten the nut (V) if it was loosened in Step 9.

11. Trigger the gun to relieve pressure. Release the trigger and engage the safety latch. Repeat Step 9 to verify your results.

12. Install the pressure control cover.

Maximum Working Pressure Adjustment

13. Turn the sprayer OFF. Disengage the gun safety latch. Trigger the gun into a grounded waste container until pressure is relieved. Engage the gun safety latch.

14. Use the 3/8 in. nut driver to turn the pressure adjustment nut (U) counterclockwise one full turn.

15. With the pressure control knob at the *minimum* setting, turn the sprayer ON.

16. ***Slowly*** turn the pressure control knob (S) clockwise to the maximum setting and hold it there. Use a 3/8 in. nut driver or socket wrench to slowly turn the pressure adjustment nut (U) clockwise until the gauge reads EXACTLY 3000 psi (210 bar).

17. Turn the pressure control knob to the minimum setting. Release the gun safety latch and trigger the gun into a grounded waste container until pressure is relieved. Engage the gun safety latch. Slowly increase the pressure to verify that the maximum working pressure is set at 3000 psi (210 bar).

CAUTION

To prevent pump corrosion, flush the water out of the pump, hose and gun with mineral spirits. Be sure to close the drain valve, first. Use the lowest pressure necessary to flush. Relieve pressure. Leave the mineral spirits in the pump to protect it until you are ready to spray again.

18. Install the plug (T) in the bottom of the pressure control. Remove the gauge assembly and reinstall the plug. Flush out the water with mineral spirits.

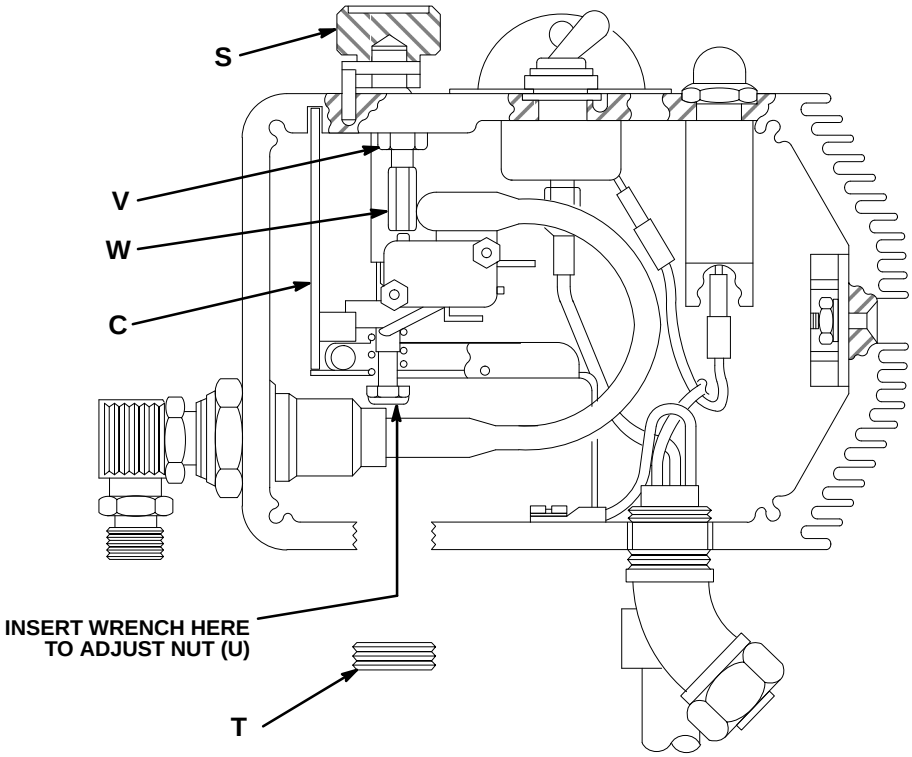


Fig 5–1

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THE GRACO ULTRA ™ -LINE WARRANTY AND DISCLAIMERS

WARRANTY

Graco warrants all equipment manufactured by it and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. As purchaser's sole remedy for breach of this warranty, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment proven defective, with the exception of defects in parts on the drive train/gear box, which will be repaired or replaced for twenty–four months from the date of sale and the electric motor (excluding brush replacement, which is routine maintenance) or pressure control assembly which will be repaired or replaced for twenty-four months from the date of sale. 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, 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 with Graco equipment of 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 claim. 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.

DISCLAIMERS AND LIMITATIONS

The terms of this warranty constitute purchaser's sole and exclusive remedy and are in lieu of any other warranties (express or implied), including warranty of merchantability or warranty of fitness for a particular purpose, and of any non-contractual liabilities, including product liabilities, based on negligence or strict liability. Every form of liability for direct, special or consequential damages or loss is expressly excluded and denied. In no case shall Graco's liability exceed the amount of the purchase price. Any action for breach of warranty must be brought within two (2) years of the date of sale.

EQUIPMENT NOT COVERED BY GRACO WARRANTY

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

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

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