

# Therma-Trol™

## Heated Hoses and Controls

For Graco Hydra-Cat® Plural Component Systems. 307105 rev.F

*3000 psi (207 bar) Maximum Working Pressure*

*160°F (71°C) Maximum Operating Temperature*



**Read warnings and instructions.**

## Control Box for Heated Hose Sets

### Model 208789

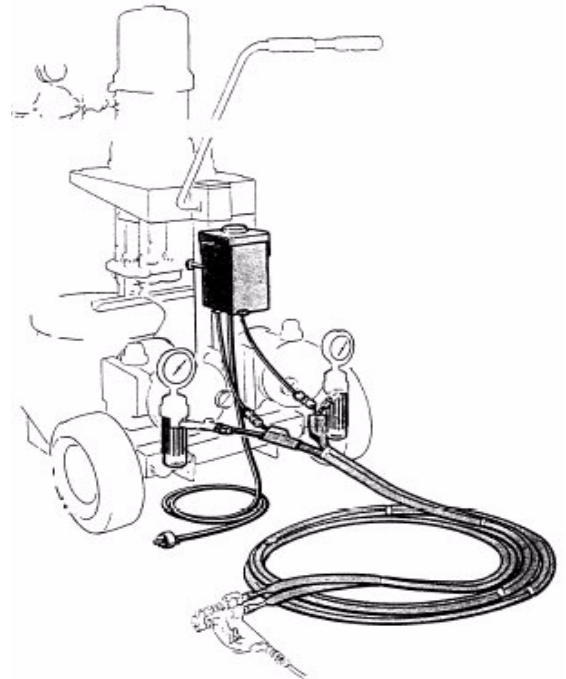
Has a Ground Fault Interrupter which senses current leakage as small as 5 milliamps and shuts off current immediately to protect both operator and equipment.

The Solid State Circuit provides close temperature control. The control box has two separate temperature controls; one for each hose. Indicator lights show when the hoses are turned on.

The 0-ohm conductive air hose connects directly to the gun, which adds extra protection for the operator by ensuring the gun is grounded at all times.

A 1/4 nipple is used when connecting both the 50 ft and the 10 ft air hoses together.

See page 2 for a listing of heated hoses with polyurethane cover and conductive air hoses with polyurethane cover.



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# Hose Models

## Heated Hoses with polyurethane cover

**50 ft (15.2 m) lg; 3/8" (10 mm) ID; 3/4" (19 mm) OD**

- Model 214707 - 3/8" npt (m) inlet; 3/8" npsm (f) outlet
- Model 214708 - 3/8" npsm (f) inlet; 3/8" npt (m) outlet

**50 ft (15.2 m) lg; 1/4" (6 mm) ID; 11/16" (17 mm) OD**

- Model 214642 - 3/8" npt (m) inlet; 1/4" npsm (f) outlet
- Model 214641 - 3/8" npsm (f) inlet; 3/8" npt (m) outlet; includes 1/4" npt (m) x 3/8" npsm (f) swivel

**8 ft (2.4 m) lg; 1/4" (6 mm) ID; 11/16" (17 mm) OD**

- Model 214640 - 3/8" npt (m) inlet; 1/4" npsm (f) outlet
- Model 214639 - 3/8" npsm (f) inlet; 3/8" npt (m) outlet; includes 1/4" npt (m) x 3/8" npsm (f) swivel

## Conductive Air Hoses with polyurethane cover

*WPR 100 psi (7 bar) (.7MPa)*

**50 ft (15.2 m) lg; 5/16" (8 mm) ID; 21/40" (13.5 mm) OD**

- Model 234673 - 1 1/4" npsm (f) inlet; 1/4" npsm (f) outlet

**10 ft (3 m) lg; 5/16" (8 mm) ID; 21/40" (13.5 mm) OD**

- Model 234674 - 4 1/4" npsm (f) inlet; 1/4" npsm (f) outlet

**1/4" Nipple**

- Model 162453 - 1/4" npsm (m) x 1/4" npt (m) nipple

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# Manual Conventions

## Warning

**WARNING**



A warning alerts you to possible serious injury or death if you do not follow instructions.

Symbols, such as fire and explosion (shown), alert you to a specific hazard and direct you to read the indicated hazard warnings beginning on page 4.

## Caution

**CAUTION**

A caution alerts you to possible equipment damage or destruction if you do not follow instructions.

## Note



A note indicates additional helpful information.

The following warnings include general safety information for this equipment. More specific warnings are included in the text 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 equipment and conductive objects in 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.</li> <li>• If there is static sparking or you feel a shock, <b>stop operation immediately</b>. Do not use equipment until you identify and correct the problem.</li> </ul> |
|                 | <p><b>ELECTRIC SHOCK HAZARD</b></p> <p>Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> <li>• Turn off and disconnect power cord before servicing equipment.</li> <li>• Use only grounded electrical outlets.</li> <li>• Use only 3-wire extension cords.</li> <li>• Ensure ground prongs are intact on sprayer and extension cords.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|               | <p><b>INJECTION HAZARD</b></p> <p>High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. <b>Get immediate medical attention.</b></p> <ul style="list-style-type: none"> <li>• Do not point gun at anyone or at any part of the body.</li> <li>• Do not put your hand over the spray tip.</li> <li>• Do not stop or deflect leaks with your hand, body, glove, or rag.</li> <li>• Do not spray without tip guard and trigger guard installed.</li> <li>• Engage trigger lock when not spraying.</li> <li>• Follow <b>Pressure Relief Procedure</b> in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.</li> </ul>                                                                                                                                                                                                                                                        |

 **WARNING**
**EQUIPMENT MISUSE HAZARD**

Misuse can cause death or serious injury.

- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not alter or modify equipment.
- For professional use only.
- Use equipment only for its intended purpose. Call your Graco distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not use hoses to pull equipment.
- Comply with all applicable safety regulations.

**BURN HAZARD**

Equipment surfaces and fluid that's heated can become very hot during operation. To avoid severe burns, do not touch hot fluid or equipment. Wait until equipment/fluid has cooled completely.

## Hose Information

Hoses within each size group are coupled oppositely to reduce the chance of switching part A and part B hoses at some later date. Order one of each and connect as explained under installation on page 6.

The 3/8" ID hoses have electrical connectors at both ends for connecting additional lengths. The 1/4" ID hoses have only one connector because only one pair of 1/4" ID hoses is used in a system.

The 3/8" ID hoses have a non-adjustable thermostat set at 160°F (71°C). The 1/4" ID hoses provide more accurate temperature control by means of a feedback circuit which keeps the hose temperature near a selected level regardless of changes in ambient temperature.

One pair of 1/4" ID hoses must be used. Use additional pairs of 3/8" ID hoses as needed, from a minimum 58 ft (17.7 m) to a maximum total length of 208 ft (63 m). The 1/4" ID hoses must be connected to the gun.

# Installation

**WARNING**



Do not attempt to remove the control box output cords from box for any reason. Read warnings, page 4.

**CAUTION**

Check polarity of supply circuit before plugging in the control box. For proper control box operation, polarity of supply circuit and control box must agree.

Mount the control box on the Hydra-Cat's mounting stand frame, using the clamp provided. Available extension cord permits mounting up to 10 ft (3.1 m) from unit - See Accessories on page 9.

Electric service for the control box must be 110V, 60 Hz, AC, fused for 20 amp. The unit's plug will only fit a standard 20 amp outlet. The ON-OFF switch on the control box should be turned off before plugging in.

Connect the male end of one of the 3/8" ID hoses to the part "B" outlet of the supply unit. Connect the female end of the other 3/8" ID hose to the part "A" outlet of the supply unit. If, at some later time, hoses must be disconnected at both ends, clearly mark the pump end to avoid switching them when reconnecting.

You can add as many as three more pairs of 50 ft (15.2 m), 3/8" ID heated hoses and an 8 ft (2.4 m) 1/4" ID hose for a maximum total length of 208 ft (63 m). See FIG. 1.

The control box has two short cords with electrical connectors. Connect the hose electric cords to these connectors. Be sure connector ring is turned all the way on to the connector.

Connect hoses to the gun or dispensing equipment. Prime the material hoses - be sure no air is left in the hoses.

## PART A HOSES



214708 (50' x 3/8 id)



214641 (50' x 1/4 id)

214639 (8' x 1/4 id)

## PART B HOSES



214707 (50' x 3/8 id)



214642 (50' x 1/4 id)

214640 (8' x 1/4 id)

FIG. 1

# Operation



## WARNING



**Don't exceed 3000 psi (207 bar) working pressure.**  
**Don't exceed 160°F (71°C) material temperature.**

Be sure that the entire spray unit is properly grounded. The control box is grounded through the three pronged plug of the control box. The heated hose sets are grounded through the three pronged plug of the fluid heaters. If operating without the heaters plugged in, the gun and hoses must be grounded by some other means such as using a grounded air supply hose connected to a grounded air supply.

Use only in a well-ventilated area. This unit is designed for normal use applications and must not be used in hazardous atmosphere.

The control box has a ground fault interrupt circuit breaker. Test the ground fault interrupter each day before starting, by pressing the yellow "PRESS TO TEST" button. If pressing the button does not trip the circuit breaker, the unit is faulty and should not be used until it is repaired. Read warnings, page 4.

1. Turn the circuit breaker switch to "ON".
2. Turn the control knob to 5 for an initial setting.

3. Let hoses warm up for about 20 minutes. Check the spray characteristics and quality of mixing at the dispensing outlet. Adjust the control knob as necessary. When using more than 150 ft (46 m) of hose, do not turn control knobs past 7.



## WARNING



Material in the hoses will expand during warm-up, causing increased fluid pressure. To avoid excess pressure buildup, start with pressures relieved and relieve pressure again when they approach 3000 psi (207 bar). Read warnings, page 4.



Current draw with control knobs turned all the way to 10 is 3 amps ( $\pm 0.5$ ) for each of the 50 ft (15.2 m) hoses and 0.5 amp ( $\pm 0.1$ ) for each of the 8 ft (2.4 m) hoses in system.

At shutdown, turn the circuit breaker to off and turn off the air supply to pump. Trigger the spray gun, engage the trigger safety, and open the drain valve to release pressure.

When storing the hoses, plug the ends to keep clean and dry.

# Service

## WARNING



Always disconnect electric power to heaters, shut off power to pump, trigger spray gun and open drain valve to relieve pressure in the system before removing hoses. Read warnings, page 4.

Attempting to service the control box and hoses will void the warranty. For any service, contact your Graco Distributor or call the number listed on the back of this manual.

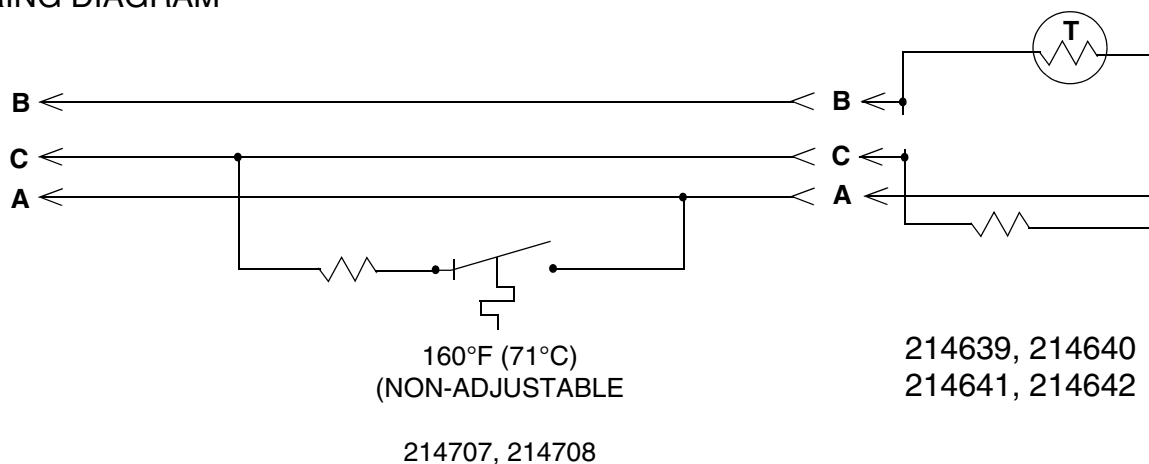
## If Material Sprayed is not Properly Atomized or is Charred

Disconnect hoses from heaters and spray gun. Then disconnect hoses, one from the other and check each for proper resistance(s) within the hose. Use an OHM meter at connector contacts as designated in the Resistance Requirement table, see table 1. Chart to see if reading agrees with chart figures. Replace hose(s) as necessary.

RESISTANCE REQUIREMENT, TABLE 1

| Part Number | ID In. | Hose Inlet and Outlet Thread Sizes and Lengths | Resistance (OHMS) |        |        |          |              |
|-------------|--------|------------------------------------------------|-------------------|--------|--------|----------|--------------|
|             |        |                                                | A-A               | B-B    | C-C    | A-C      | A-B          |
| 214639      | 1/4    | 3/8(f) x 3/8(m) x 8'                           |                   |        |        | 189 ± 25 | 18 - 28,000  |
| 214640      | 1/4    | 3/8(m) x 1/4(f) x 8'                           |                   |        |        | 189 ± 25 | 18 - 28,000  |
| 214641      | 1/4    | 3/8(f) x 3/8(m) x 50'                          |                   |        |        | 35 ± 5   | 18 - 28,000  |
| 214642      | 1/4    | 3/8(m) x 1/4(f) x 50'                          |                   |        |        | 35 ± 5   | 18 - 28,000  |
| 214707      | 3/8    | 3/8(m) x 3/8(f) x 50'                          | 2 Max.            | 2 Max. | 2 Max. | 35 ± 5   | 100,000 Min. |
| 214708      | 3/8    | 3/8(f) x 3/8(m) x 50'                          | 2 Max.            | 2 Max. | 2 Max. | 35 ± 5   | 100,000 Min. |

## WIRING DIAGRAM



# Accessories

## Insulated Hose Case

**3/8 in. (10 mm) wall thickness. For one pair of hoses.**

- 171460 - 50 ft (15.2 m) length; 2.3 in. (58 mm) ID
- 171875 - 6 ft (1.8 m) length; 2.0 in. (50 mm) ID

## Bulk Air Hose and Couplings

**For air trigger Foam Gun.**

- 061132 - 1/4 ID synflex hose; order by foot.
- 205437 - coupling, 1/8 npsm.

## Electric Cord Set 214694

10 ft (3.1 m) 9/16 OD, 600 V, 75°C (167°F), copper. Permits control box mounting up to 10 ft. (3.1 m) from the heated Hydra-Cat unit.

# 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 by an authorized Graco distributor. 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.

**THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

**GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO.** These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

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# Graco Phone Numbers

**TO PLACE AN ORDER**, contact your Graco distributor or call to identify the nearest distributor.

**Phone:** 612-623-6921 **or Toll Free:** 1-800-328-0211, **Fax:** 612-378-3505

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Printed in USA 5/2004 307105F