

PR70 and PR70v Integrated Heat

312761B

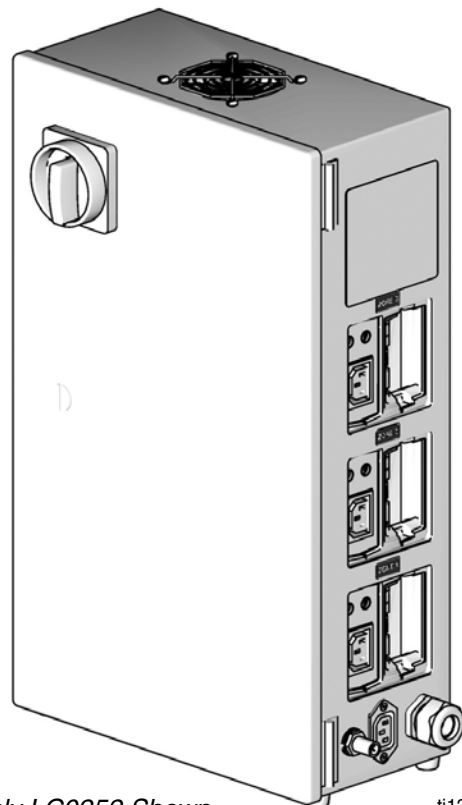
For controlling material temperature in heated tanks and hoses.

**Models LC0250, LC0251,
LC0252, LC0253**



Important Safety Instructions

Read all warnings and instructions in all supplied manuals. Save these instructions.



Assembly LC0252 Shown

ti12577a



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Supplied Manuals








Assemblies with a Standard Display Module include manual 312393. Assemblies with an Advanced Display Module include manuals 312759 and 312760.

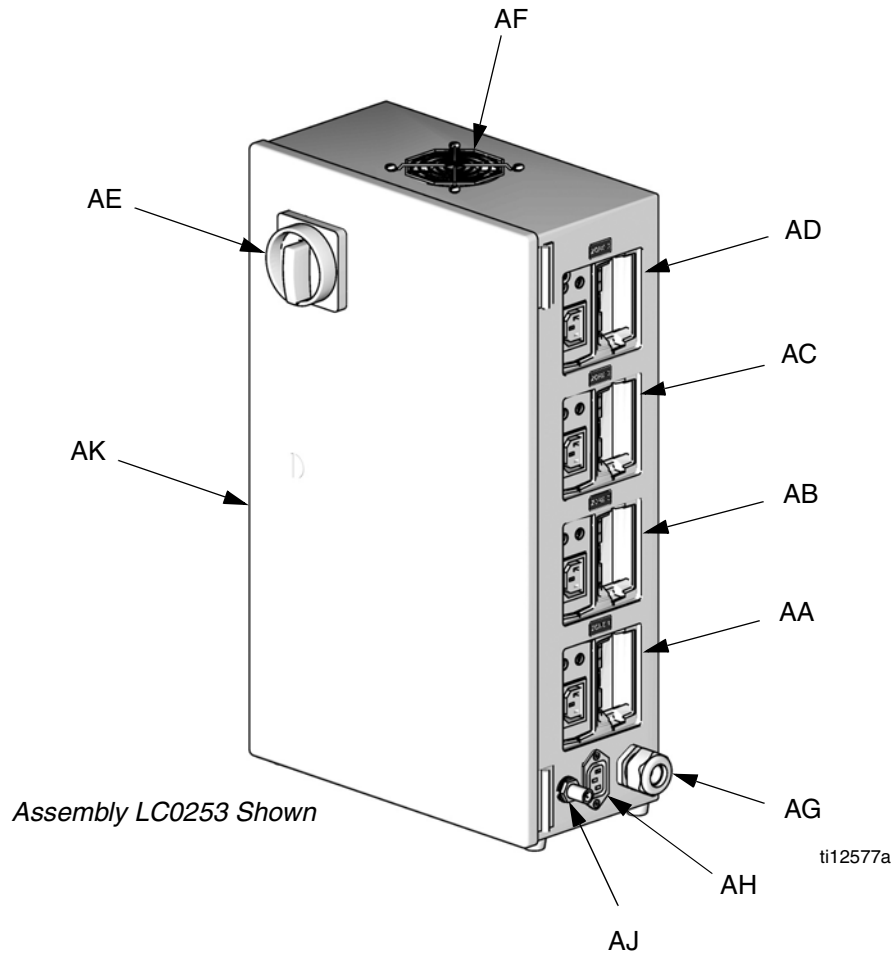
PR70 and PR70v Operation and Parts Manuals	
Part	Description
312393	PR70 with Standard Display Module Operation and Maintenance Manual
312759	PR70 and PR70v with Advanced Display Module Operation and Maintenance Manual
312760	PR70 and PR70v with Advanced Display Module Repair and Parts Manual
MD2 Dispense Valve Manual	
Part	Description
312185	MD2 Dispense Valve Instructions and Parts Manual
PR70 and PR70v Feed Systems Manual	
Part	Description
312394	PR70 and PR70v Feed Systems Manual
PR70 and PR70v Integrated Heat Manual	
Part	Description
312761	PR70v Integrated Heat Instructions - Parts Manual

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 symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

 WARNING	
  	<p>ELECTRIC SHOCK HAZARD</p> <p>This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.</p> <p>Equipment With Grounding Plug</p> <ul style="list-style-type: none"> • Turn off and disconnect power cord before servicing equipment. • Use only grounded electrical outlets. • Use only 3-wire extension cords. • Ensure ground prongs are intact on power and extension cords. • Do not expose to rain. Store indoors. <p>Hard-Wired Equipment</p> <ul style="list-style-type: none"> • Turn off and disconnect power at main switch before disconnecting any cables and before servicing equipment. • Connect only to grounded power source. • All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.
	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • 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. For complete information about your material, request MSDS forms from distributor or retailer. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. • Use equipment only for its intended purpose. Call your distributor for information. • Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. • Do not kink or over bend hoses or use hoses to pull equipment. • Keep children and animals away from work area. • Comply with all applicable safety regulations.

Component Identification

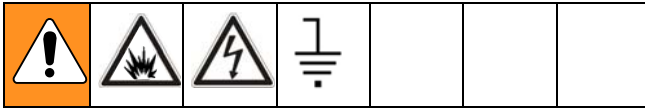


Key:

- | | |
|---------------------------------|--|
| AA Zone 1 | AG Integrated Heat Power Inlet |
| AB Zone 2 | AH Integrated Heat Power Outlet to Machine |
| AC Zone 3 | AJ CAN Connection Output to Machine |
| AD Zone 4 | AK Heat Control Box |
| AE Electrical Disconnect Switch | |
| AF Fan | |

FIG. 1: Heat Control Box

Grounding




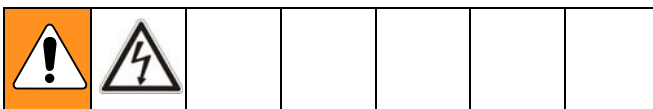
This product must be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This product is equipped with a chord having a grounding wire. A 3-blade grounding plug must be installed or the machine may be hard wired. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Improper installation of the grounding plug is able to result in a risk of electric shock. The wire with insulation having an outer surface that is green with or without yellow stripes is the grounding wire. Do not modify the plug provided; if it does not fit the outlet, have the proper outlet installed by a qualified electrician. Only connect the product to an outlet having the same configuration as the plug. Do not use an adapter with this product.

Installation

Connect Electrical Cord

 Machine may be hard-wired or installed using a plug.



Improper wiring may cause electric shock or other serious injury if work is not performed properly. Have a qualified electrician perform any electrical work. Be sure your installation complies with all National, State and Local safety and fire codes.

1. Each machine comes with a permanent 10 ft power cable without a plug. If a permanent extension cable must be installed onto the existing cable or if an extension cord is necessary, be sure to use the

appropriate gauge wire for the machine amperage. See the following table.

Number of Zones installed in Heat Control Box	Rating (Amps)	Gauge (mm ²) / Number of Wires
1	30	10 (2.59) / 3
2	30	10 (2.59) / 3
3	40	8 (3.26) / 3
4	40	8 (3.26) / 3

Install Plug



The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit. Improper installation of the grounding plug is able to result in a risk of electric shock. The wire with insulation having an outer surface that is green with or without yellow stripes is the grounding wire.

2. **For machines that will not be hard-wired**, install a 3-blade 240V, 1-phase grounding plug onto cord (129). The machine must use a receptacle that accepts the plug on the product. **For machines that will be hard-wired**, hard-wire the machine. The grounding wire must be used.

Install Low Power Temperature Control Modules

The low power temperature control modules are installed in the Heat Control box at the factory. If a low power temperature control module must be replaced, perform the following procedure.

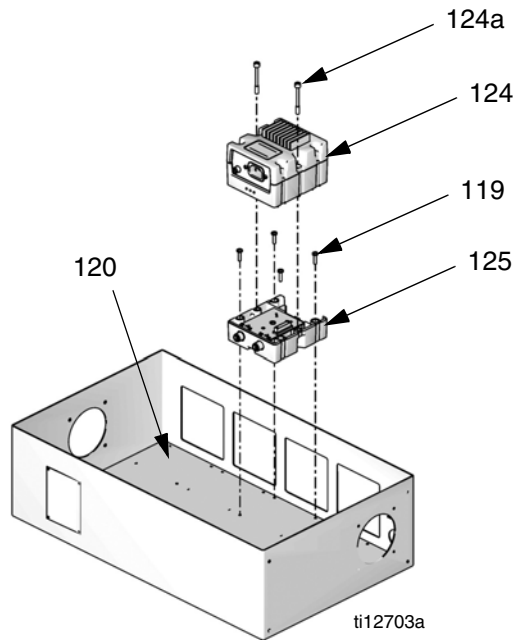


FIG. 2

Remove Old Low Power Temperature Control Module

1. **On units with a grounding plug**, unplug unit from wall.
On hard-wired units, use facility power switch to turn off incoming power.
2. Unplug data connection and power cables from low power temperature control modules. Do not disconnect other end of cables.
3. Remove hex head cap screws (124a) from low power temperature control module.
4. Remove low power module (124).
5. Remove four socket head cap screws (119).
6. Remove base module (125).

Install New Low Power Temperature Control Module

7. Use four socket head cap screws (119) to install base module (125) onto enclosure back panel (120).

8. Use two hex head cap screws (124a) to install low power module (124) onto base module (125).
9. Change rotary switch position on new low power temperature control module. See **Adjust Rotary Switch** on page 7.
10. Reconnect CAN cables (113, 130) and power cables.

Connect 3-wire Module Power

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Connecting the power must be performed by a qualified electrician. The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit. The wire with insulation having an outer surface that is green with or without yellow stripes is the grounding wire.

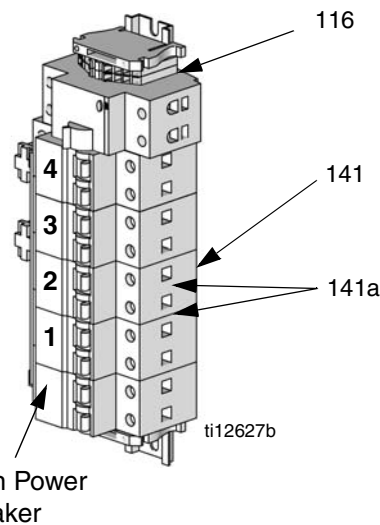



FIG. 3: Breaker Numbering

There is one breaker for each heated hose or heated tank. The lower number breakers are used for the heated tanks if installed. See FIG. 3. For example, if there are two heated tanks installed and two heated hoses, breakers #1 and #2 are used for the heated tanks and breakers #3 and #4 are used for the heated hoses. If there is one heated tank and one heated hose, then breaker #1 is used for the heated tank and breaker #2 is used for the heated hose. Each breaker has a different rating so it is important that the correct breaker is used.

The 3-wire module power is connected in the Heat Control box at the factory. The power cord (118) for each low power temperature control module has a connector on one end and three power leads on the other. The three power leads must be connected to the appropriate breaker (114) and ground terminal (116).

1. Connect the power cord connector to the low power temperature control module.
2. Connect the green wire to any unused ground terminal block (116).
3. Find the breaker with the same number as the module as shown in FIG. 3 on page 6 and FIG. 6 on page 9.
4. Connect the black and white wires to the breaker (141) labeled with the same number as the module. The black and white wires can connect to either terminal (141a) in the same breaker (141).

Adjust Rotary Switch

 The rotary switch setting must only be adjusted on new low power temperature control modules after installation.

The rotary switch setting indicates which zone number the low power temperature control module will control in the system. The low power temperature control module uses a 16-position rotary switch.

Set the rotary switch (S) to the specific selection according to the settings listed in the following table.

Low Power Temperature Control Module Rotary Switch Location

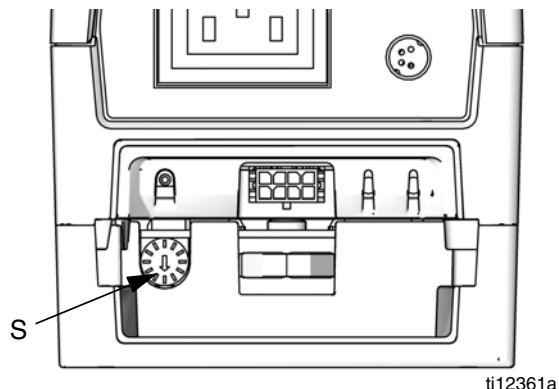



FIG. 4

Low Power Temperature Control Module Rotary Switch Settings

 The modules must always be set to the zone number shown on the label above the module.

Switch Setting	Zone
1	1
2	2
3	3
4	4

Setup

Cable Connections

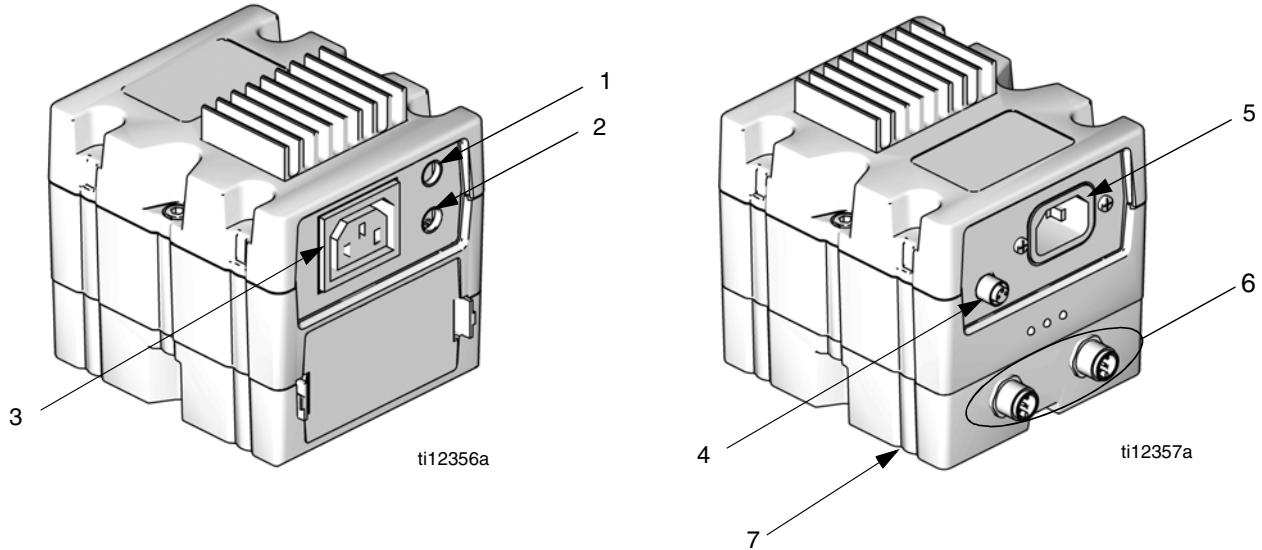


FIG. 5: Low Power Temperature Control Module Cable Connections

- | | | | |
|---|-----------------------------------|---|------------------------|
| 1 | Overtemperature Switch Connection | 4 | DC Output Connection |
| 2 | RTD Temperature Sensor Connection | 5 | Input Power Connection |
| 3 | Output Power Connection | 6 | CAN Connections |
| | | 7 | Base |

The overtemperature switch connection (1), RTD temperature sensor connection (2), and output power connection (3) connect to the respective components of a temperature control option. The display module must be updated to specify which zone number is used with which temperature control option. See the PR70 and PR70v Operation manual referenced at the beginning of this manual for more information.

Data Cable Connections

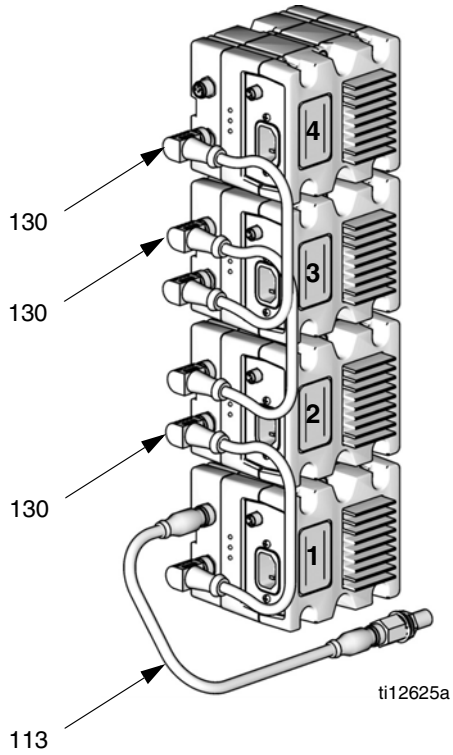


FIG. 6: Data Cable Connections

The low power temperate control modules must be connected together using the female-female CAN cables (130) as shown in FIG. 6. Then they must be connected to the display module using the female-male CAN cable (113).

Operation

See the PR70 and PR70v Operation manual referenced at the beginning of this manual for operating instructions.

Maintenance

Install Upgrade Token

1. Ensure system is inactive and control power is on.
2. Remove access cover (C).

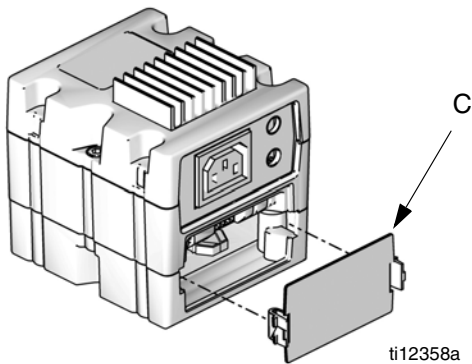


FIG. 7: Remove Access Cover

3. Insert and press token (T) firmly into slot.

 There is no preferred orientation of token.

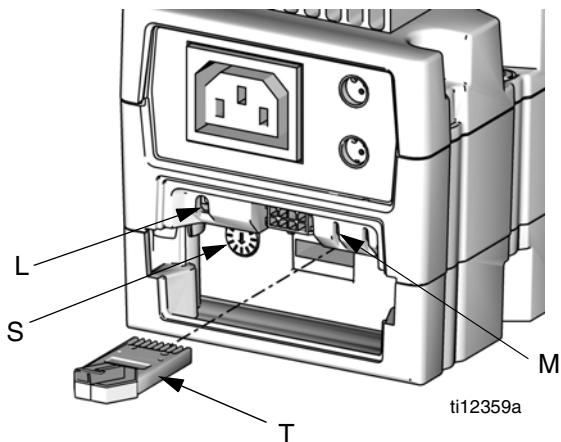



FIG. 8: Install Token

4. Press and hold the left red token upload button (M) for three seconds. The red indicator light (L) will flash up to three seconds after the software is uploaded.
5. Remove token (T).
6. Replace access cover (C).
7. Repeat procedure for all low power temperature control modules.
8. Turn machine power off then on after all modules are upgraded.

Clean

Keep heat sink fins clean at all times. Wipe the fins clean with a dry cloth or clean them using compressed air.

 Do not use conductive cleaning solvents on the low power temperature control modules.

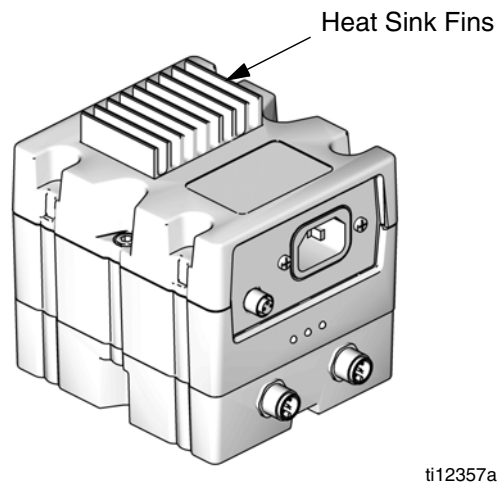
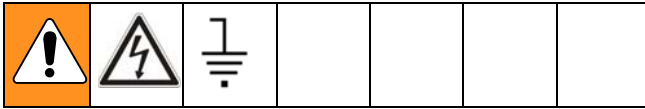


FIG. 9: Clean Heat Sink Fins

Troubleshooting



Circuit Breaker

If the circuit breaker is tripped, manually flip the breaker back to the “on” position. Find and correct the problem before continuing operation.

Diagnostic Information

Module Status LEDs

Table 1: LED Status Signal

Signal	Description
Green on	Low power temperature control module is powered up.
Yellow	Internal communication in progress.
Red solid	Low power temperature control module failure.
Red flashing	Software is updating.

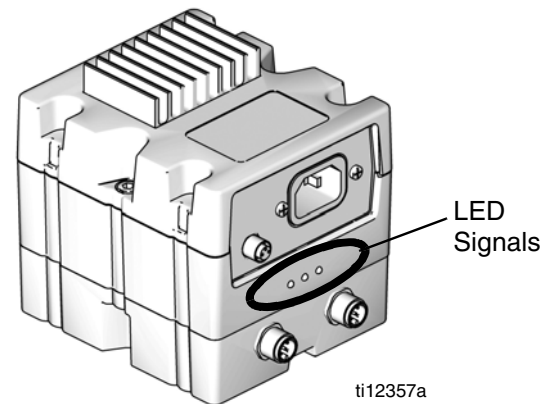
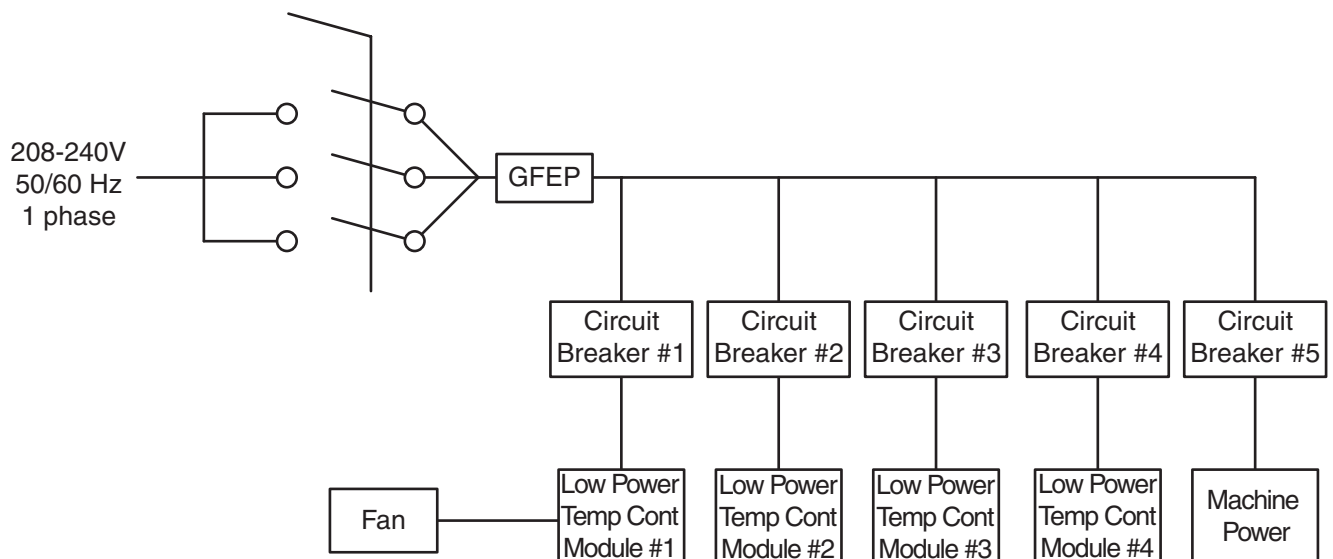


Fig. 10: LED Signals

Simplified Wiring Schematic



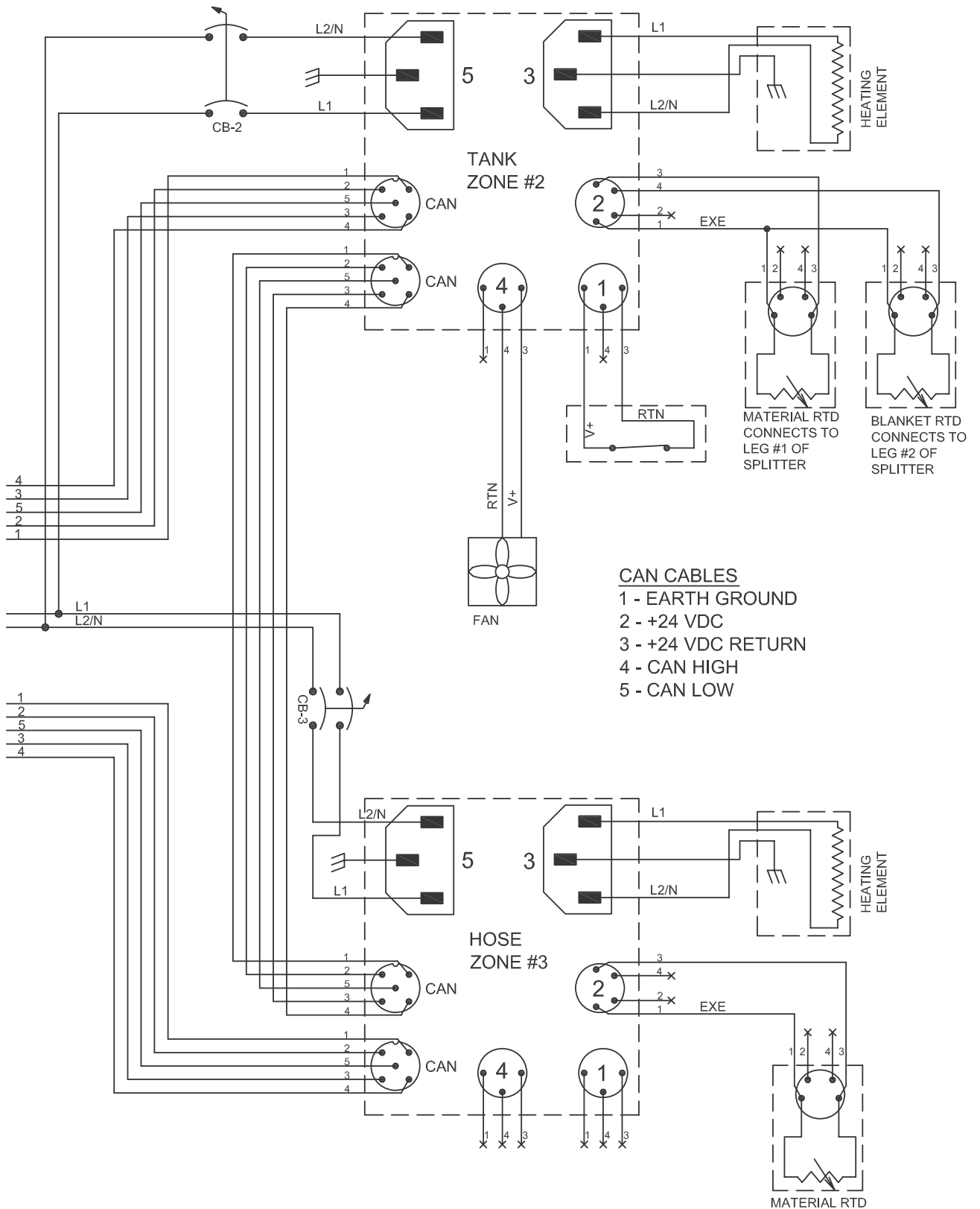
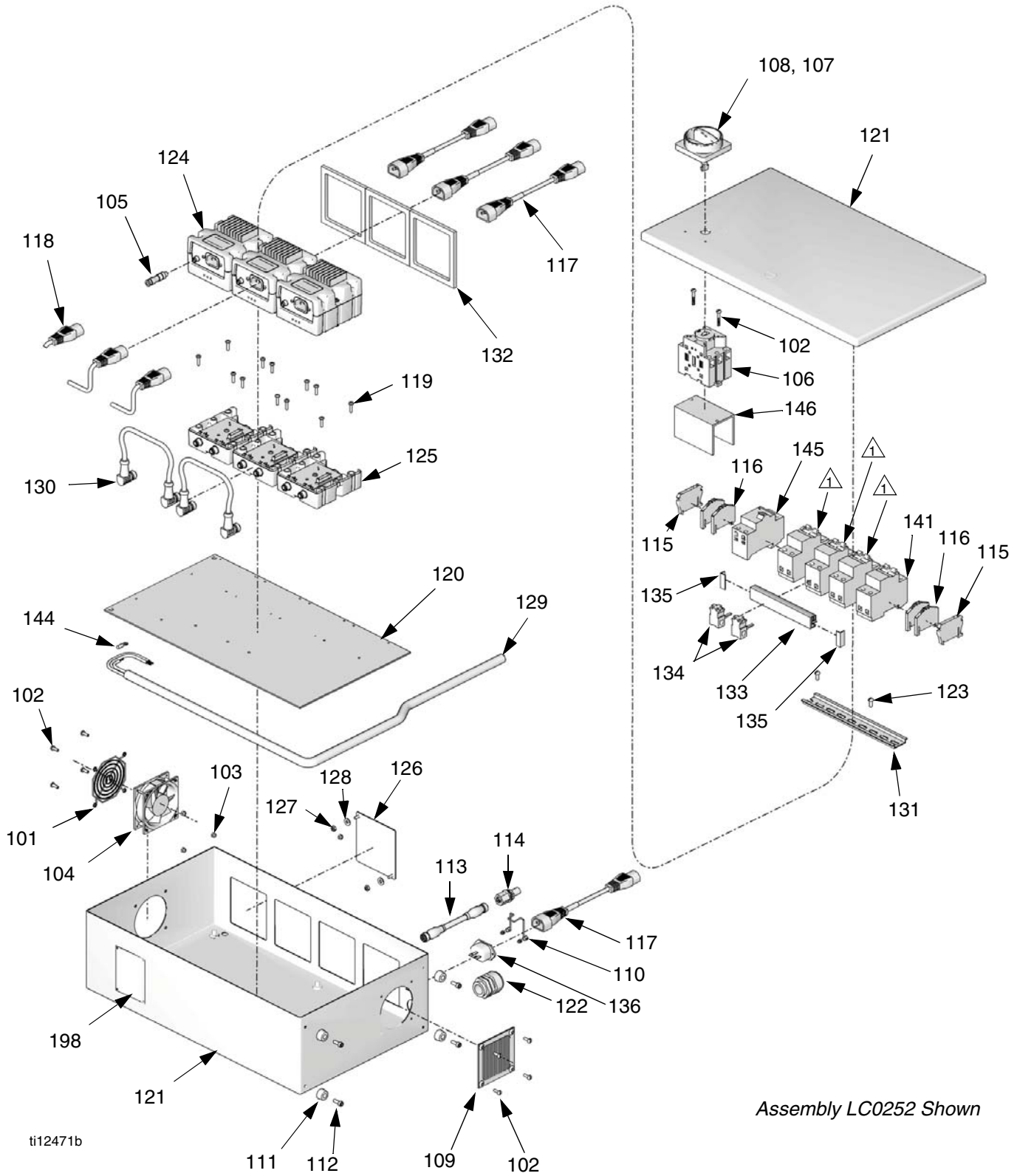


FIG. 12: Wiring Schematic, Page 2 of 2

Parts



ti12471b

Heated hose and heated tank circuit breakers shown for reference only. See **Circuit Breakers** on page 17 for part numbers.

Ref	Description	LC0250 Control Box, Heat, 1 Load, 240V	LC0251 Control Box, Heat, 2 Load, 240V	LC0252 Control Box, Heat, 3 Load, 240V	LC0253 Control Box, Heat, 4 Load, 240V	Qty
101	GUARD, fan, 80 mm x 80 mm	121560	121560	121560	121560	1
102	SCREW, panhead machined	105676	105676	105676	105676	10
103	NUT, lock, hex	105334	105334	105334	105334	4
104	FAN, brushless, 80 x 80 x 25, 24 VDC	121556	121556	121556	121556	1
105	CONNECTOR, straight, M8, 3-PIN, solder	121590	121590	121590	121590	1
106	SWITCH, disconnect, 3-pole, 40A	121568	121568	121568	121568	1
107	SHAFT, disconnect, elec- tric	121149	121149	121149	121149	1
108	HANDLE, disconnect, electric	121148	121148	121148	121148	1
109	FILTER, screen, fan, 80 mm x 80 mm	121559	121559	121559	121559	1
110	SCREW	120916	120916	120916	120916	2
111	FOOT, BUMPER	123698	123698	123698	123698	4
112	SCREW	120885	120885	120885	120885	4
113	CABLE, CAN, male / female, 0.4 m	121226	121226	121226	121226	1
114	CONNECTOR, thru, M12, male / female	121612	121612	121612	121612	1
115	BLOCK, end stop, termi- nal, tan, 35 mm RA	123384	123384	123384	123384	2
116	BLOCK, terminal, spg, 4P, ground, 600V/20A	123686 (Qty 3)	123686 (Qty 3)	123686 (Qty 4)	123686 (Qty 4)	
117	CORD, power, v-lock, C14/C13, 10A	121599 (Qty 2)	121599 (Qty 3)	121599 (Qty 4)	121599 (Qty 5)	
118	CORD, power, v-lock, 15P/C13, 10A	121598 (Qty 1)	121598 (Qty 2)	121598 (Qty 3)	121598 (Qty 4)	
119	SCREW, socket head cap, 10-32 x 0.62, stain- less steel	113003 (Qty 4)	113003 (Qty 8)	113003 (Qty 12)	113003 (Qty 16)	
120	PANEL, back, enclosure, 12 in.	121584	121584			1
	PANEL, back, enclosure, 20 in.			121585	121585	1
121	ENCLOSURE, 12 x 12 x 6, 2 load	121563	121563			1
	ENCLOSURE, 20 x 12 x 6, 4 load			121565	121565	1
122	GRIP, cord, 0.51 - 0.71, 3/4	121603	121603			1
	GRIP, cord, 0.35 - 0.63, 3/4			121171	121171	1
123	SCREW, pan head machined, M5 - 0.8 x 12 mm	121725	121725	121725	121725	2
124	MODULE, low power, Graco Control Architec- ture	256270 (Qty 1)	256270 (Qty 2)	256270 (Qty 3)	256270 (Qty 4)	
125	MODULE, Graco Control Architecture, base	289697 (Qty 1)	289697 (Qty 2)	289697 (Qty 3)	289697 (Qty 4)	

Parts

Ref	Description	LC0250 Control Box, Heat, 1 Load, 240V	LC0251 Control Box, Heat, 2 Load, 240V	LC0252 Control Box, Heat, 3 Load, 240V	LC0253 Control Box, Heat, 4 Load, 240V	Qty
126 †	COVER, heat box	15U672		15U672		1
127	NUT, hex	110911		110911		2
128	WASHER, plain #10	120907		120907		2
129	CORD, 10/3, 40A, SOOW, CU, 600V	065054	065054			12
	CORD, 8/3, 30A, SOOW, CU, 600V			121158	121158	12
130	CABLE, CAN, 90 female / 90 female		121597 (Qty 1)	121597 (Qty 2)	121597 (Qty 3)	
131	RAIL, DIN	514014 (Qty 0.6)	514014 (Qty 0.83)	514014 (Qty 0.83)	514014 (Qty 0.83)	
132	GASKET, enclosure, heat, Graco Control Architecture	121566 (Qty 1)	121566 (Qty 2)	121566 (Qty 3)	121566 (Qty 4)	
133	CONNECTOR, bus bar, 2 phase, 4 poles	15U740				1
	CONNECTOR, bus bar, 2 phase, 6 poles		15U741			1
	CONNECTOR, bus bar, 2 phase, 8 poles			15U742		1
	CONNECTOR, bus bar, 2 phase, 10 poles				15U743	1
134	TERMINAL	121648	121648	121648	121648	2
135	CAP	121649	121649	121649	121649	2
136	CONNECTOR, power, panel mount	121558	121558	121558	121558	1
137	LABEL, zone1	15V283	15V283	15V283	15V283	1
138	LABEL, zone2		15V284	15V284	15V284	1
139	LABEL, zone3			15V285	15V285	1
140	LABEL, zone4				15V286	1
141	CIRCUIT, breaker, 2-pole, 10A, C type	121634	121634	121634	121634	1
142 †	ENCLOSURE, Graco Control Architecture, door	277674 (Qty 1)	277674 (Qty 2)	277674 (Qty 3)	277674 (Qty 4)	
143	CABLE, CAN, M12 x M12, 5P, female / female, straight x right angle	121685	121685	121685	121685	1
144	TERMINAL, ring, #8 AWG, 1/4 in. stud	123421	123421	123421	123421	1
145	CIRCUIT, breaker, 63A, GFI	123687	123687	123687	123687	1
146	BRACKET, disconnect, 40A	16C235	16C235	16C235	16C235	1
197 †▲	LABEL, electric shock	XXXXX	XXXXX	XXXXX	XXXXX	1
198	PLATE, legend, serial number	293564	293564	293564	293564	1
199 †	PLUG, retainer	123699	123699	123699	123699	1

† Part not shown.

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

Circuit Breakers

See the PR70 and PR70v Repair - Parts manual referenced at the beginning of this manual to find the heated hose and heated tank assembly numbers for your system.

Heated Hose Circuit Breakers

Installed Heated Hose Package	Circuit Breaker
LC0881	121630
LC0882	121631
LC0883	121632
LC0884	121630
LC0885	121631
LC0886	121632
LC0887	121630
LC0888	121631
LC0889	121632
LC0890	121632
LC0891	121633
LC0190	121630
LC0191	121631
LC0192	121632
LC0193	121630
LC0194	121631
LC0195	121632
LC0196	121630
LC0197	121631
LC0198	121632
LC0199	121632
LC0200	121633
LC0201	121630
LC0202	121631
LC0203	121632
LC0204	121630
LC0205	121631
LC0206	121632
LC0207	121630
LC0208	121631
LC0209	121632
LC0210	121632
LC0211	121633

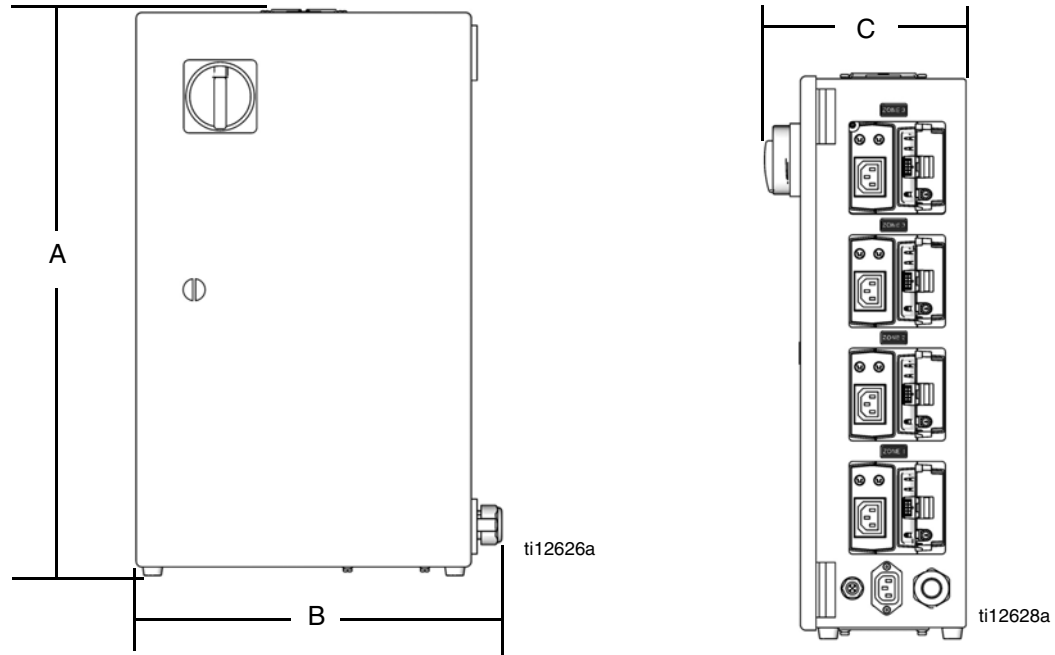
Heated Tank Assembly Circuit Breakers

Installed Heated Tank Assembly	Circuit Breaker
LC0237	121633
LC0238	
LC0254	
LC0255	
LC0259	121635
LC0260	

Technical Data

Electrical Power 208-240V 50/60 Hz, 1 phase for heat - 10 kW max.
 (Qty 4) 2500W outputs
 Weight 30 lb (13.6 kg) - 1 and 2 Zone Models
 50 lb (22.7 kg) - 3 and 4 Zone Models

Dimensions



Assembly LC0253 Shown

FIG. 13: Dimensions

Ref	1 and 2 Zone Assemblies in. (mm)	3 and 4 Zone Assemblies in. (mm)
A (height)	12 (305)	20 (508)
B (width)	12 (305)	12 (305)
C (depth)	6 (152)	6 (152)

Graco Ohio 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.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

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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.

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Graco Headquarters: Minneapolis

International Offices: Belgium, China, Japan, Korea

GRACO OHIO INC. 8400 PORT JACKSON AVE NW, NORTH CANTON, OH 44720

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