

# THERM-O-FLOW<sup>®</sup>

## EC-20/40 Timer

310814 Rev.A

**For use with THERM-O-FLOW Hot Melt Tanks**

### **Model 118051**

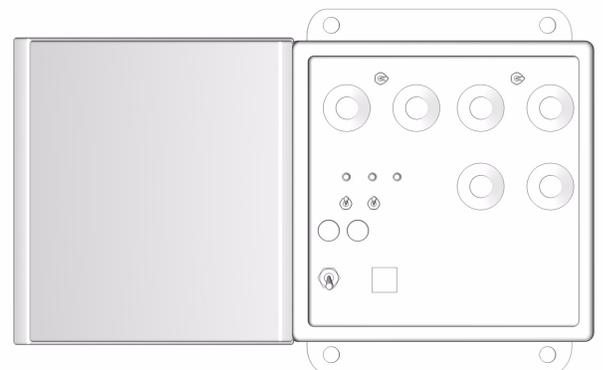
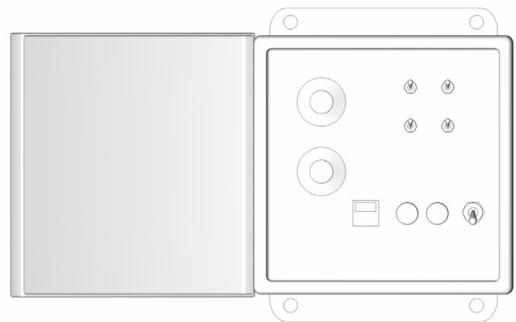
EC-20 two event timer for 115 VAC and 230 VAC

### **Model 118052**

EC-40 four event timer for 115 VAC and 230 VAC



**Read warnings and instructions.**  
See page 2 for table of contents.



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# Manual Conventions

**WARNING**

**WARNING:** a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Warnings in the instructions usually include a symbol indicating the hazard. Read the general **Warnings** section for additional safety information.

**CAUTION**

**CAUTION:** a potentially hazardous situation which, if not avoided, may result in property damage or destruction of equipment.

**Note**

Additional helpful information.

# Related Manuals

309831	THERM-O-FLOW Hot Melt Tank T5
309832	THERM-O-FLOW Hot Melt Tank T7
309833	THERM-O-FLOW Hot Melt Tank T18

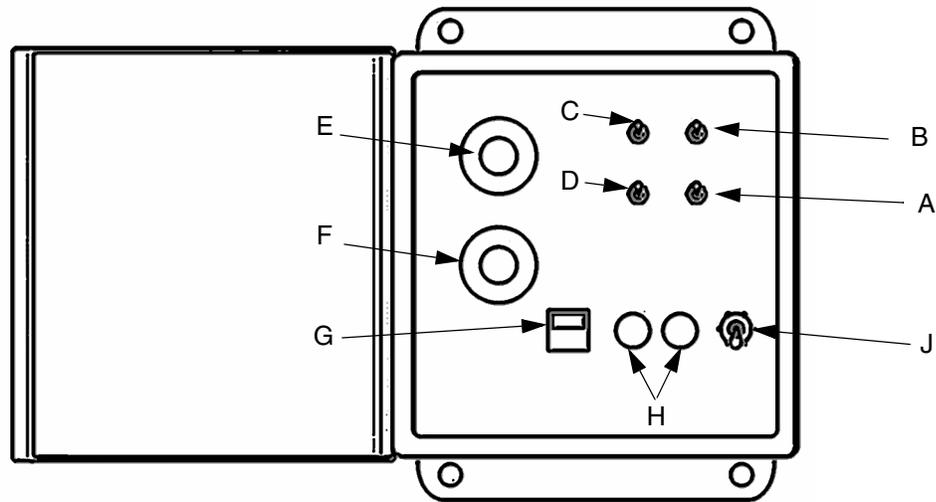
# Warnings

The following warnings include general safety information for this equipment. More specific warnings are included in the text where applicable.

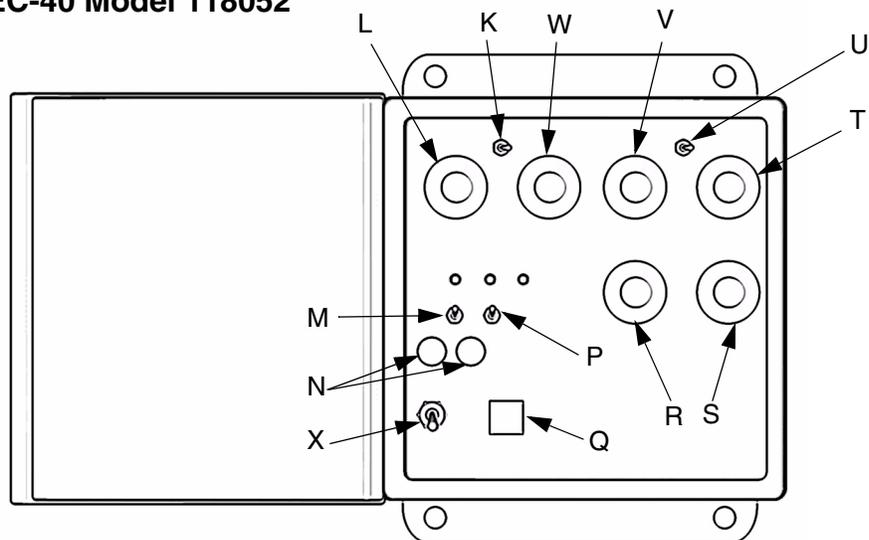
 <b>WARNING</b>	
	<p><b>ELECTRIC SHOCK HAZARD</b></p> <p>Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> <li>• Turn off and disconnect power cord before servicing equipment.</li> <li>• Use only grounded electrical outlets.</li> <li>• Use only 3-wire extension cords.</li> <li>• Ensure ground prongs are intact on sprayer and extension cords.</li> </ul>
	<p><b>EQUIPMENT MISUSE HAZARD</b></p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> <li>• Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See <b>Technical Data</b> in all equipment manuals.</li> <li>• Use fluids and solvents that are compatible with equipment wetted parts. See <b>Technical Data</b> in all equipment manuals. Read fluid and solvent manufacturer's warnings.</li> <li>• Check equipment daily. Repair or replace worn or damaged parts immediately.</li> <li>• Do not alter or modify equipment.</li> <li>• For professional use only.</li> <li>• Use equipment only for its intended purpose. Call your Graco distributor for information.</li> <li>• Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.</li> <li>• Do not use hoses to pull equipment.</li> <li>• Comply with all applicable safety regulations.</li> </ul>

# Installation

## EC-20 Model 118051



## EC-40 Model 118052



**FIG. 1: Typical Installation**

**Key:**

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| A Channel Two On/Off Switch       | N Fuses EC-40 (F1 and F2)         |
| B Channel One On/Off Switch       | P Channel Two Stitch/Seal Switch  |
| C Delay Switch                    | Q Line Voltage Select             |
| D Pattern Switch                  | R Stitch/Seal Length Dial         |
| E Pattern Delay Dial              | S Stitch/Seal Gap Dial            |
| F Pattern Length Dial             | T Pattern Two Length Dial         |
| G Voltage Select                  | U Pattern Two Delay/Length Switch |
| H Fuses (F1 and F2) EC-20         | V Pattern Two Delay Dial          |
| J On/Off Power Switch EC-20       | W Pattern One Length Dial         |
| K Pattern One Delay/Length Switch | X On/Off Power Switch EC-40       |
| L Pattern One Delay Dial          |                                   |
| M Channel One Stitch/Seal Switch  |                                   |

\* Free replacement of worn or damaged warning labels are available by ordering 189930.

## Control cords used

Depending on your system setup, you will need the appropriate control cord. Use the chart below, to order the appropriate cord for the EC-20/40 timers

<b>Part number</b>	<b>Used with</b>	<b>Plugs into</b>	<b>Applicators</b>	<b>AC or DC</b>
118242	EC-20 or EC-40	T5 or T7	1 EG, AG, or Com-pak	DC
118029	EC-20 or EC-40	T7	2 EG, AG, or Com-pak	DC
118243	Customer supplied pattern control	T5 or T7	1 EG, AG, or Com-pak	AC or DC
118244	EC-20 or EC-40	T5 or T7	1 EG, AG, or Com-pak	AC
118245	EC-20 or EC-40	T5 or T7	1 VEA	AC
118030	EC-20 or EC-40	T7	2 EG, AG, or Com-pak	AC
118031	EC-20 or EC-40	T18	Up to 4 EG, AG, or Com-pak	230 VAC
118032	EC-20 or EC-40	T18	Up to 4 EG, AG, or Com-pak	DC
118033	Optical or proximity sensor	T5, T7, or T18	10 ft (3 m) sensor extension cord	n/a
118034	Customer supplied pattern control	T5 or T7	1 EG, AG, or Com-pak	AC or DC
118035	Customer supplied pattern control	T18	Up to 4 EG, AG, or Com-pak	AC or DC
118224	EC-20 or EC-40	T5, T7, or T18	Auxiliary controller (air saver control)	AC

# Setup

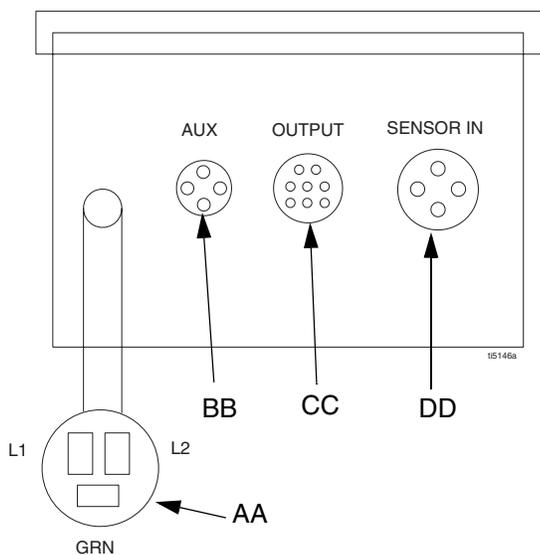
**WARNING**



To avoid electrical shock, disconnect all power from the timer. See **Warnings**, page 3.

## Connecting Timer

When connecting control cords to the timer, use FIG. 2.



- AA *Power Connection* (Attach power cord from tank)  
 BB *Auxiliary Connection* (Attach power cord from Air Saver Control)  
 CC *Output Connection* (Attach power cord from tank)  
 DD *Sensor In Connection* (Attach power cord from Foot Switch or Optical Sensor)

**FIG. 2: EC-20/40 Pinout**

## EC-20/40

1. From the hot melt tank, remove cover on auxiliary connector.
2. Using the appropriate control cord, plug in auxiliary cable to the tank auxiliary connector. Properly line up pins. See **Control cords used**, page 5.
3. Connect control cord to the power (AA) and output (CC) connection on the timer box. Properly line up pins.

## Connecting Sensor, Foot Switch, or Air Saver Control

The sensor connection on the EC-20 and EC-40 allows for either a foot switch or optical sensor.

1. From the foot switch or sensor, connect the control cord auxiliary connector to the sensor in connection (DD) on the timer. Properly align pins.
2. From the air saver control, connect the control cord auxiliary connector to the appropriate timer to air saver cable.
3. Connect the timer to air saver cable auxiliary connection to the auxiliary connection (BB) on the timer.

## Setting timers and controllers

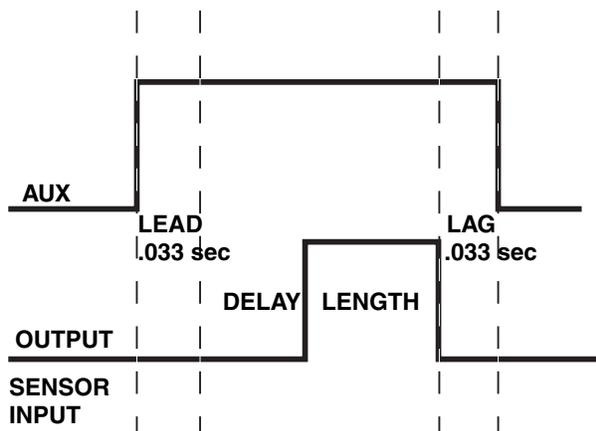


All zone heating indicators must flash green before pump can operate.

Setting both timers will take some adjusting until you get the appropriate dispensing pattern. Using the instructions below, dispense material into a waste receptacle until your settings are adjusted accordingly.

### Setting EC-20

See FIG. 3. The EC-20 is a two event timer. Event one is the delay or period of time when the applicator is not dispensing. Event two is pattern length or period of time when the applicator is dispensing. Both events are variable but are also cumulative. For example, when you adjust event one you must also adjust event two.



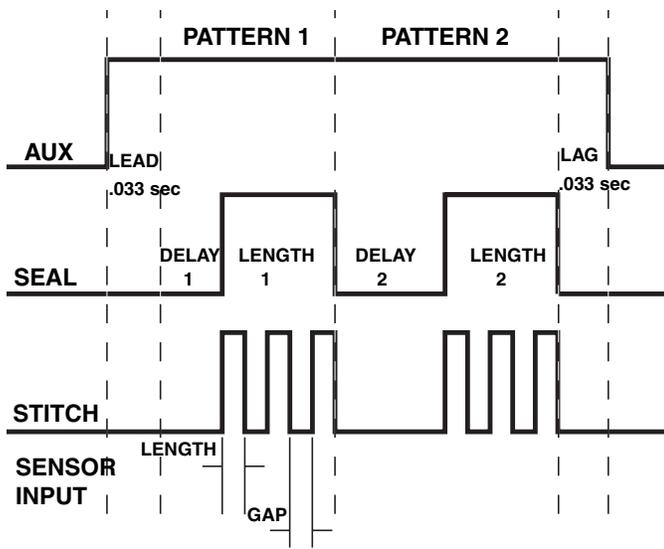
**FIG. 3: EC-20 Output timing diagram**

For the following instruction, use FIG. 1, page 4.

1. Start up and adjust hot melt tank settings. See appropriate hot melt tank manual.  
T5-see manual 309831  
T7-see manual 309832  
T18-see manual 309833
2. Set line voltage switch (G) to appropriate voltage.
3. Turn On/Off power switch (J) ON.
4. Adjust pattern delay dial (E). Dial setting "0" is shortest duration, dial setting "10" longest duration.
5. Turn delay switch (C) to HI or LO for shorter or longer delay time.
6. Adjust pattern length dial (F). Dial setting "0" is shortest duration, dial setting "10" longest duration.
7. Turn pattern switch (D) to HI or LO for shorter or longer pattern delay time.

## Setting EC-40

See FIG. 4. The EC-40 is a four event timer. Event one and three are the delay or periods of time when the applicator is not dispensing. Event two and four are pattern length or periods of time when the applicator is dispensing. Both events are variable but are also cumulative.



**FIG. 4: EC-40 Output timing diagram**

For the following instruction, use FIG. 1, page 4.

1. Start up and adjust hot melt tank settings. See appropriate hot melt tank manual.  
T5-see manual 309831  
T7-see manual 309832  
T18-see manual 309833
2. Set line voltage switch (Q) to appropriate voltage.
3. Turn On/Off power switch (X) ON.
4. Adjust pattern one and two delay dials (L,V). Dial setting "0" is shortest duration, dial setting "10" longest duration.
5. Turn pattern one and two delay switches (K, U) to HI or LO speed for shorter or longer pattern delay.
6. Adjust pattern one and two length dials (W, T). Dial setting "0" is shortest duration, dial setting "10" longest duration.
7. Turn pattern one and two switches (K, U) to HI or LO speed for shorter or longer pattern length.

## Setting stitching on EC-40

See FIG. 4, page 8. The EC-40 has the capability to stitch or seal. Stitching is repetitive dispenses of material. Seal is one long dispense. Adjust the length and gap with your stitch and seal settings to meet your specific needs.

For the following instruction, use FIG. 1, page 4.

1. After setting the delay and length, adjust the stitch/seal switch (M, P) to STITCH or SEAL per channel. Each channel represents each applicator.
2. If you wish to not use this function, turn the stitch/seal switch OFF.

3. Adjust the stitch length dial (R). Dial setting "0" is shortest duration, dial setting "10" longest duration.
4. Adjust the stitch gap dial (S). Dial setting "0" is shortest duration, dial setting "10" longest duration.

## Starting up dispense

To start up your EC-20/40 settings for dispensing material, an optical sensor or foot switch will have to be activated. Once activated, material will start dispensing according to the specific settings on the timer units. If the dispense pattern does not meet your specific needs, repeat instructions for **Setting EC-20** and/or **Setting EC-40**.

# Troubleshooting

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
No pilot light	Not properly connected to line power.	Check F1
Pilot light is dim. Aux circuit does not work. 24 VDC outputs are 12 VDC	Line voltage switch not properly set	Check line voltage switch for proper setting.
Light on sensor works, but channel activity indicators including aux indicator show no response to sensor input.	Sensor cable not properly connected.	For proximity sensor, check F2, check sensor cable and its connections, and check circuit board.
Light on sensor and aux indicator work but channel activity indicators show no response to sensor input.	Channel switches not properly set.	Check channel switches on/off.
Channel activity indicators show pattern in progress and auxiliary circuit board works, but applicators don't respond.	Applicator voltage to output cable incorrect.	Set applicators to proper voltage for output cable.
	Output cable and/or connection error.	Check integrity of output cable and connections.
	Material not flowing to applicator.	Check fluid system for blockage and proper fluid pressure.
	Applicator error.	Install a known working applicator.
	Relay not properly set.	Check relay if applicators are line voltage type.

# Repair

## WARNING



To avoid electrical shock, disconnect all power from timer. See **Warnings**, page 3.

## Replacing fuses

Replace timer fuses (H) or (N) by pulling out old fuse and inserting new fuses from fuse kit 118182. See FIG. 1, page 4.

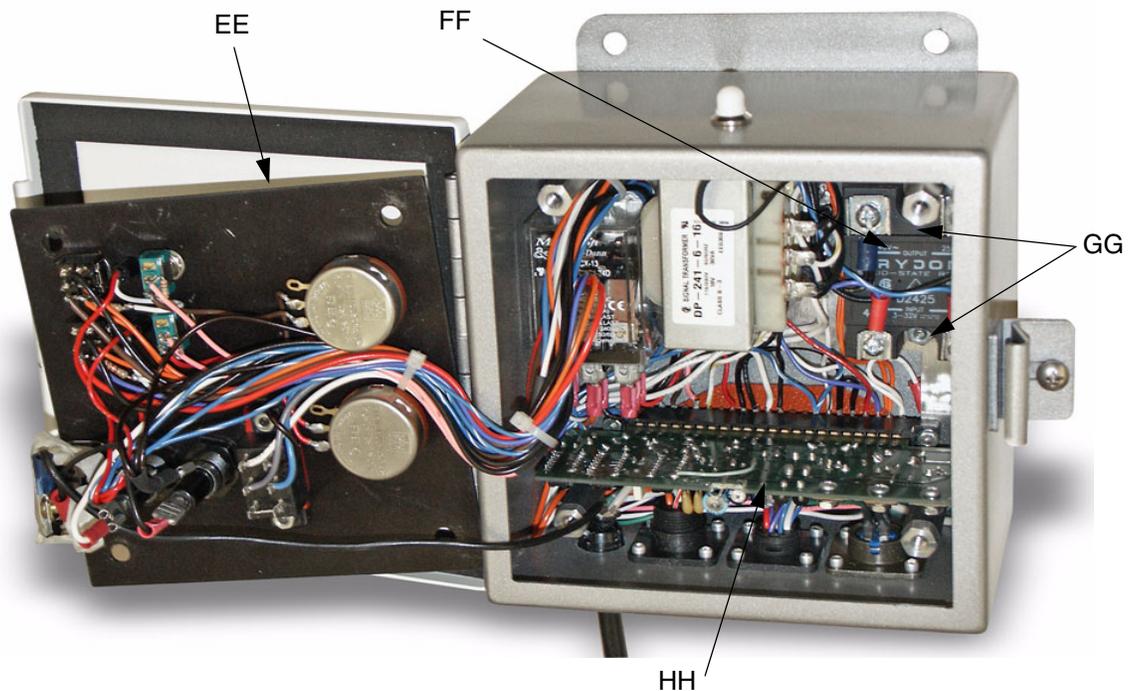


FIG. 5: Timer repair

## Replacing 15 amp relay

1. See FIG. 5. Remove four screws holding front panel (EE) onto timer. Remove front panel.
2. Remove two screws (GG). Remove relay (FF). Replace with 15 amp relay 118261.

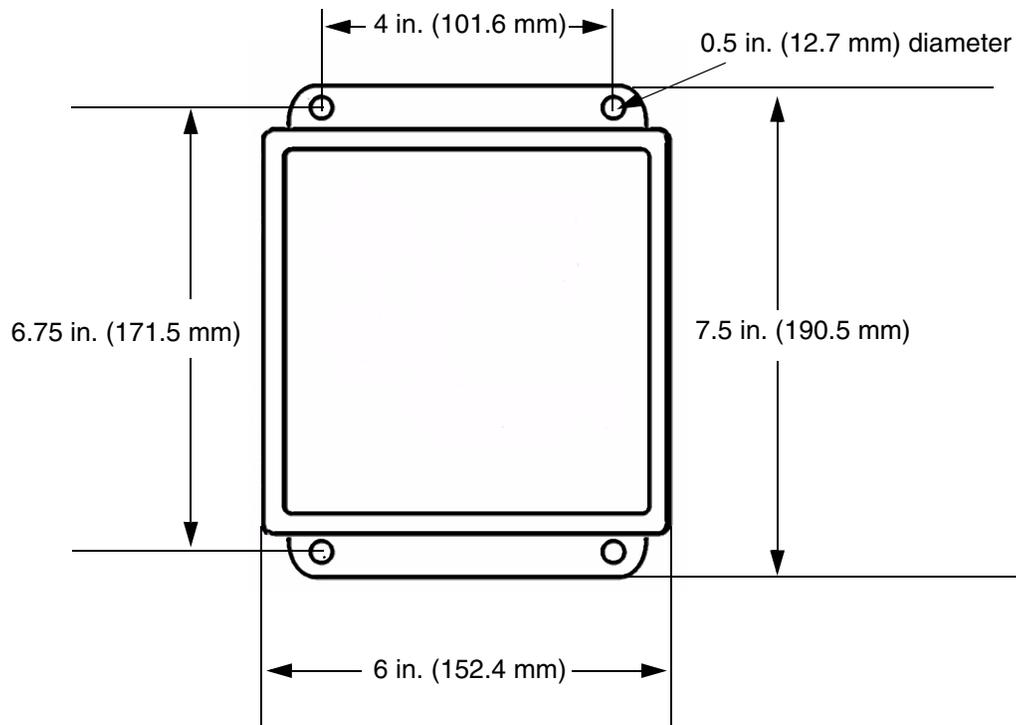
## Replacing control board

1. See FIG. 5. Remove four screws holding front panel (EE) onto timer. Remove front panel.
2. Pull out control board (HH) and replace. For replacement, order repair kit 118182.

# Replacement Parts

Part No.	Description	Qty.
189930	LABLES, warning	1
118182	REPAIR KIT, fuses and motor control board	1
118261	RELAY, 15 amp	1

# Dimensions



# Technical Data

Input voltage	Grounded 115 or 230 VAC
Output voltage	115/230 VAC, 24 VDC
Weight	6.5 lbs (2.95 kg)



A series of horizontal lines spanning the width of the page, providing a template for technical data entry.

# 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.

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.

**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 Information

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

**Phone:** 612-623-6928 or **Toll Free:** 1-800-328-0211, **Fax:** 612-378-3590

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Printed in USA 310814A

11/2004