Instructions/Parts

Therm-O-Flow® Cross Over Kit

3A3463B

EN

For connecting a Therm-O-Flow with ADM to either an older model Therm-O-Flow without ADM or to a non-Graco hot melt unit to enable the units to operate in tandem.

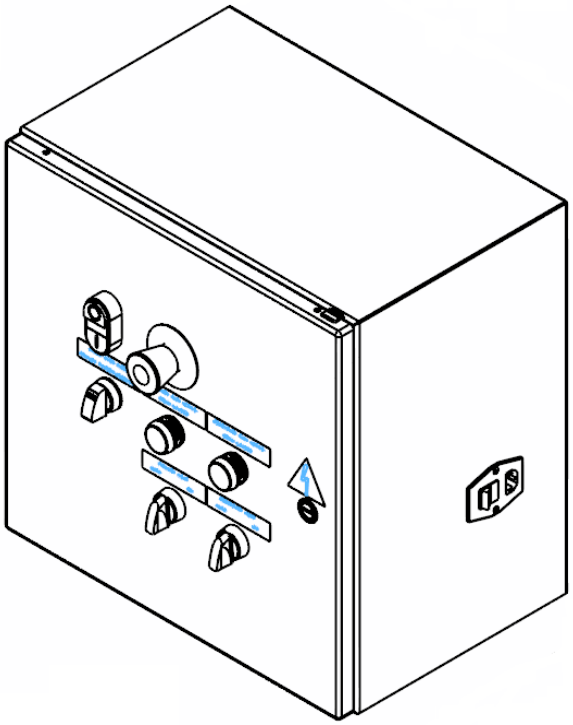
For professional use only.

Not approved for use in explosive atmospheres or hazardous locations.

Important Safety Instructions

Read all warnings and instructions in this manual and in all related manuals. Save all instructions.

See page 3 for model information.



Contents

Models

Part Number	Description	Used To:
U82189	KIT, tof crossover	Connect to an old model Graco Therm-O-Flow.
U82211	KIT, tof crossover, ng	Connect to a hot melt unit not manufactured by Graco.

Related Manuals

Manuals	
Part	**Description**
334130	Therm-O-Flow 200 (ADM Controller)
311208	Therm-O-Flow 200 (EasyKey™ Controller)
309085	Therm-O-Flow Plus Installation (Individual Temperature Controllers)
309180	Therm-O-Flow Plus Operation (Individual Temperature Controllers)
3A1244	GCA Programming Module Instructions

Component Identification

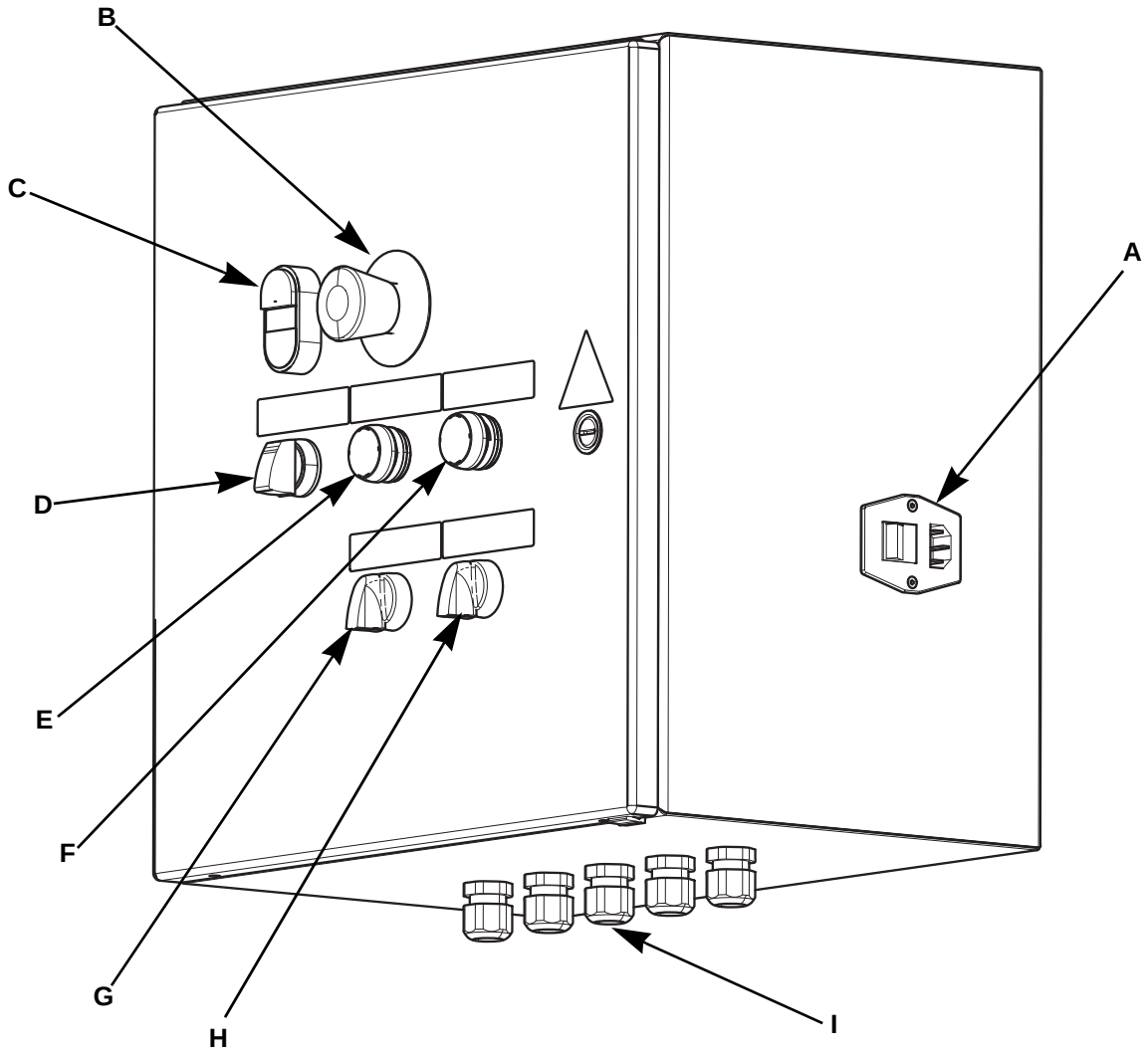


FIG. 1: Control Box Components

Key:

A Power Inlet/Fuse
B Emergency Stop Push Button
C Power Off/On Push Button
D Cross Over Mode Selector Switch
E Primary Priming Push Button (Use to Prime)
F Secondary Priming Push Button (Use to Prime)
G Primary Heat Over Ride Selector Switch
H Secondary Heat Over Ride Selector Switch
I Cable Cord Grips

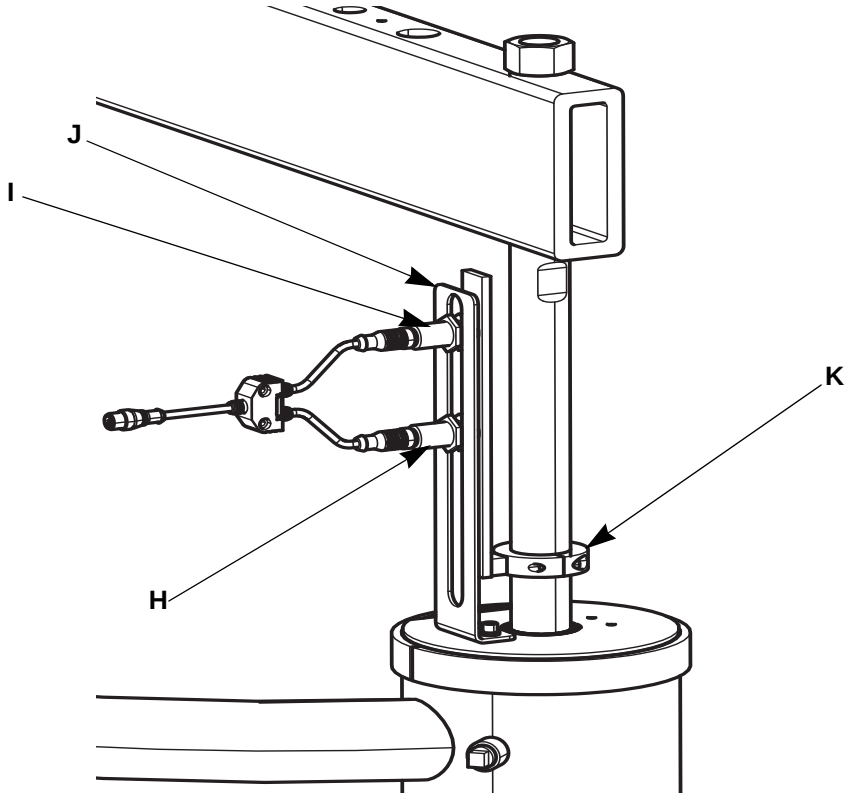


FIG. 2: Low / Empty Prox Switch Assembly

Key:

J Drum Empty Prox Switch
K Drum Low Prox Switch
L Prox Switch Bracket
M Prox Switch Actuator

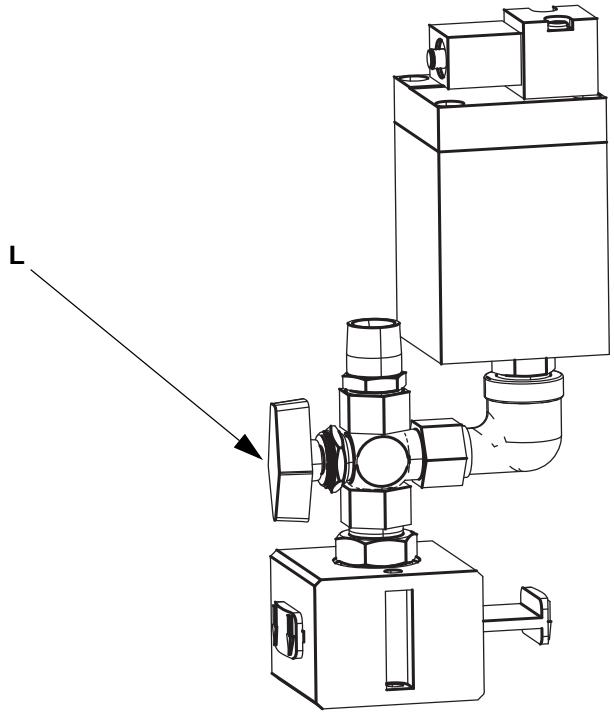


FIG. 3: Priming Bypass Valve Assembly

Key:
N Priming bypass valve

Setup

NOTE: Disconnect power before installing this kit.

Overview

This kit is used to connect a Therm-O-Flow with an Advanced Display Module (ADM) to either an older model Therm-O-Flow without an ADM, or to a non-Graco hot melt unit, creating a tandem crossover set up. The Therm-O-Flow with an ADM will be referred to as the “Primary” unit, and the non-ADM unit will be referred to as the “Secondary” unit. When connected using this kit, one unit will pump while the other is being loaded. When the material in the active drum reaches a low level, the inactive drum will begin to heat. When the active drum is empty, the inactive drum will become active and pumping will switch to this drum, eliminating downtime due to reloading, heating and priming an empty drum.

Unpack

1. Inspect the shipping box carefully for damage. Contact the carrier promptly if there is damage.
2. Open the box and inspect the contents carefully. There should not be any loose or damaged parts in the box.
3. Compare the packing slip against all items in the box. Report any shortages or other inspection problems immediately.
4. Remove the unit from the skid and place it in the desired location. See **Location Requirements**.

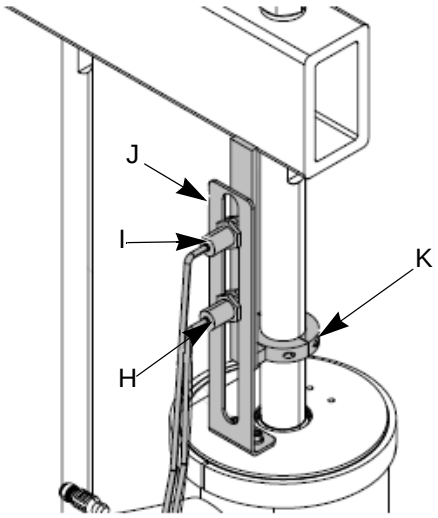
Location Requirements

1. Mount control box in a location that is accessible to the operator. The hook up cables are 30’ long, so the control box must be mounted such that the cables reach both units.
2. Make sure there is easy access to an appropriate electrical power source. The National Electrical Code requires 3 ft. (0.9 m) of open space in front of the electrical panel. Comply with all local codes and regulations.

Install Drum Low and Empty Sensors

1. Ensure drum low and empty sensors (I, H) are mounted as shown.

NOTE: The Drum Low and Empty Sensors are used to indicate that a drum is empty. This kit contains a sensor mounting bracket (J), prox switch actuator (K), sensors (I, H), and a cable for connecting to the panel inside the electrical enclosure.



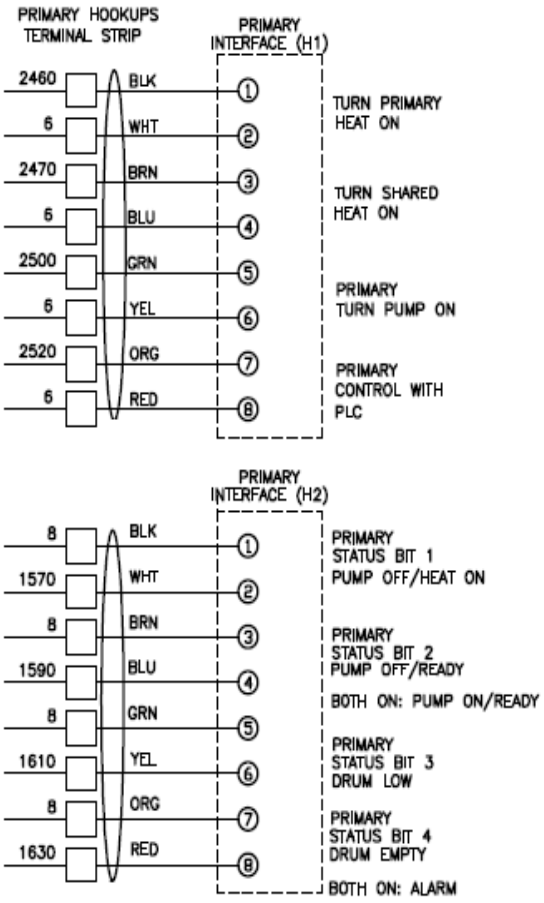
2. Increase the distance between the low (I) and empty (H) sensors to increase the heat up time for the tandem secondary system. Lower the drum empty sensor (H) to force the heated platen lower into the drum. If empty sensor is set too low, the pump could cavitate and cause an alarm.

Connect the Input/Output Cables to the Primary Therm-O-Flow

1. Locate the cables (P/N 17K717) in the crossover kit and the two (2) eight pin connectors that come with the primary Therm-O-Flow.

2. Feed the cables through the cord grips/strain reliefs on the bottom of the crossover control box.

3. Connect to the primary Therm-O-Flow as shown:



4. Plug the connectors into the H1 and H2 interface spots on the MZLP circuit board inside the Therm-O-Flow. See “Connect PLC” info in Therm-O-Flow manual 334130.

Connect the Cables to the Secondary Unit

1. Feed the cables through the cord grips/strain reliefs on the bottom of the crossover control box.

2. The connections vary depending on the type of Therm-O-Flow (or other hot melt unit) the crossover kit is being connected to. In addition to the low and empty signals from the ram, the other signals between the crossover kit and primary Therm-O-Flow are:

   a. Output from the secondary unit that the unit is up to temperature.
   b. Input to the secondary unit to turn on the heat.
   c. Input to the secondary unit to turn on the pump.

3. Drawing 24Y188 (page 18) shows examples of various connections, however a qualified electrician should verify the secondary unit’s terminals and wiring.

Install the Air Valves for Priming

To prime the inactive pump while the other pump is running, the air source to the pump will need to be switched. This is especially true if the air pressure for the active pump is controlled by an off board signal, which would make the pressure too low for priming.

All fittings needed to install this valve are included.

1. Install the three-way ball valve on the primary Therm-O-Flow air control assembly as shown below.

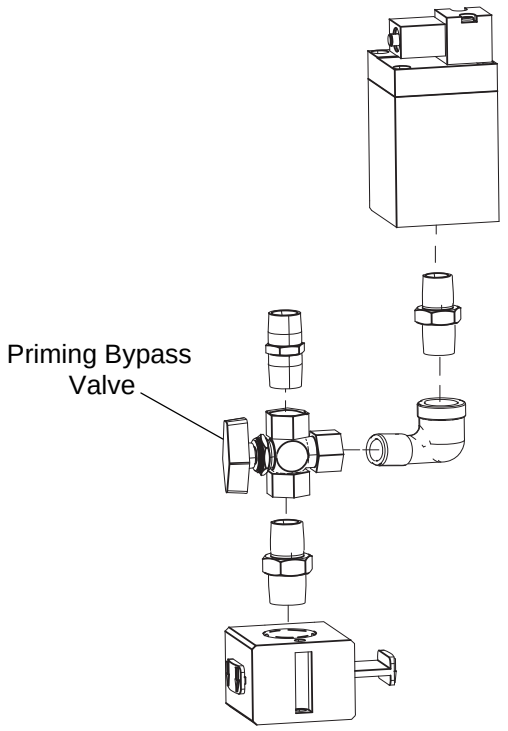


FIG. 4

2. On the secondary unit, install the three-way ball valve as shown in the pneumatic schematic for the regulated air ball valve kit on page 22.

3. Connect the other fittings and hoses as shown on page 22.

Install the Fluid Manifold

1. The hoses from each pump need to be tee'd together into a heated manifold 243697:

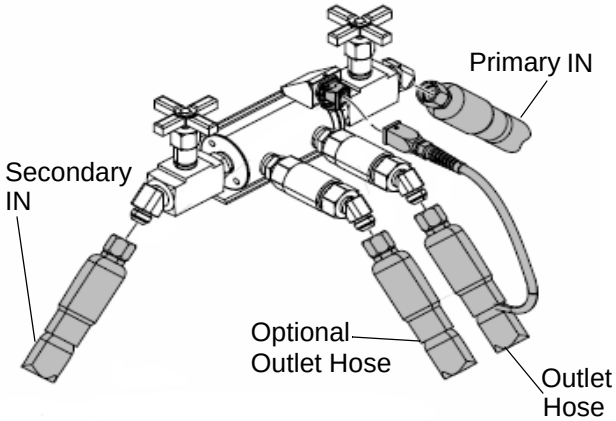


FIG. 5: Heated Manifold 243697

2. All heated components (hoses, manifolds, dispense valves, etc.) that "share" the heat when either unit is active need to be plugged into the primary Therm-O-Flow.

Ground the Systems

The kit is grounded through the AC power plug.

See system manuals for information on how to ground other system components.

Update the Primary Therm-O-Flow's Software

The primary Therm-O-Flow will need special software to run in tandem mode with the secondary unit. This software is on a token included with the kit.

1. Locate the token.

2. Follow instructions in manual 3A1244, Graco Control Architecture™ Module Programming.

Operation

Sequence of Events

1. Load both the primary Therm-O-Flow and secondary unit with drums.
2. Set both Primary and Secondary Heat selector switches to manual.
3. When either unit reaches temperature, press the Drum Loaded pushbutton to prime the pump.

NOTE: The pump won't prime if it isn't up to temperature.

4. The first unit to be primed becomes the active unit.
5. The second unit to be primed is the inactive unit.
6. Turn both of the Primary and Secondary heat selector switches to Auto.
7. The active unit's heat stays on and the inactive unit's heat turns off.
8. The active unit can dispense.
9. When the active unit reaches the drum low level switch, the pump and platen heat on the inactive unit turns on.
10. When the active unit reaches the drum empty switch and the inactive unit is up to temperature, the active unit's pump shuts off and becomes inactive. The inactive unit's pump turns on and becomes the active unit.
11. The empty drum in the now inactive unit is removed and a fresh drum is loaded.
12. Push the drum reloaded pushbutton to prime the inactive unit.
13. When the new active unit reaches the low level switch, the pump and platen heat on the inactive unit turns on.
14. The procedure then is repeated.

Description of Panel Controls

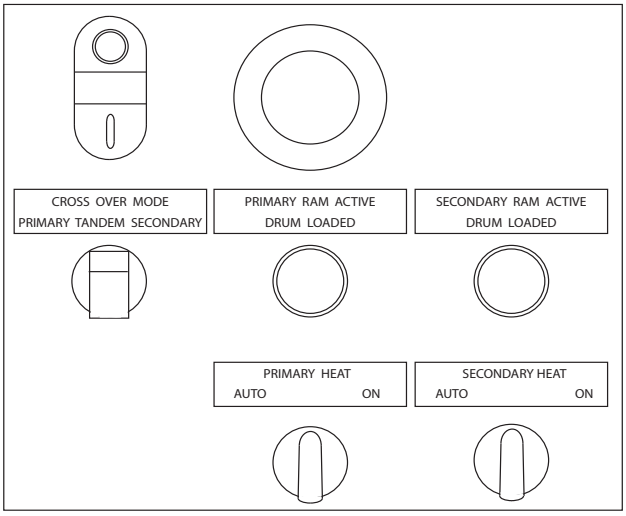


FIG. 6

NOTE: See page 4 for **Component Identification**.

Red Emergency Stop Pushbutton (B): This cuts power to the control box only. Each unit will remain powered up.

Red/Green Power On/Off Pushbuttons (C): The green button turns on the control power. The red button turns off control power. The white pilot light in between the two indicates the power is on when it is illuminated.

Crossover Mode Selector Switch (D): In primary mode the primary Therm-O-Flow functions alone. In tandem mode both units work as described in the sequence of events. In secondary mode the secondary unit functions alone.

Primary/Secondary Ram Active/Drum Loaded Pushbutton/Pilot Light (E, F): When the active unit is empty it becomes the inactive unit. A drum of fresh material is loaded into the ram, pushing the button will actuate the pump for priming.

NOTE: The inactive unit must be up to temperature in order for the pump to cycle. When the pump is primed, the Drum Loaded pilot light illuminates. This indicates the fresh drum is ready to go when the active drum becomes low.

Primary/Secondary Heat Auto/On Selector Switch (G, H): Turning this switch to the on position allows a cold, inactive drum to be heated for removal or an inactive fresh drum to heat. When the switch is in auto mode the heat of the inactive pump turns on when the active pump reaches the low level switch.

Setting the Controls on the ADM

NOTE: The Therm-O-Flow with ADM accepts custom software for the ADM. Verify on the Advanced 4 screen the Advanced Display software is some version of U82192. See appendix A of the Therm-O-Flow manual 334130 for more information. The following ADM screens are different from the standard Therm-O-Flow ADM screens.

1. On the System 1 screen, uncheck the External Pump Control box and check the Enable Pump Autostart as shown below.

2. Choose Enable Diagnostic Screen and Enable Temp Adjustments as needed.

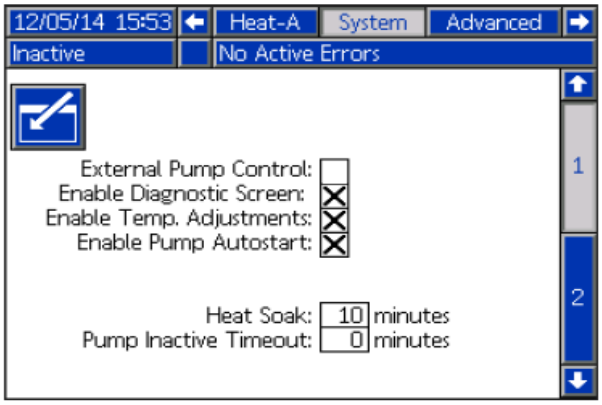


FIG. 7

On the ADM Heat-A screens, the primary Therm-O-Flow controls the heating for “A” zone and “B” zone components. “A” zone components are heated only when the primary Therm-O-Flow is active. “B” zone components are heated when either unit is active. Components which are heated only when the secondary unit is active are controlled by a separate heat controller.

In the example in FIG. 8, the pump and platen on the primary Therm-O-Flow are “A.” Choose the Zone Type for heat load 1 on Heat-A screen as “hose” and “A.” Choose the Zone Types for heat load 2, 3, and 4 as Manifold, Hose, and Gun which are all “B.”

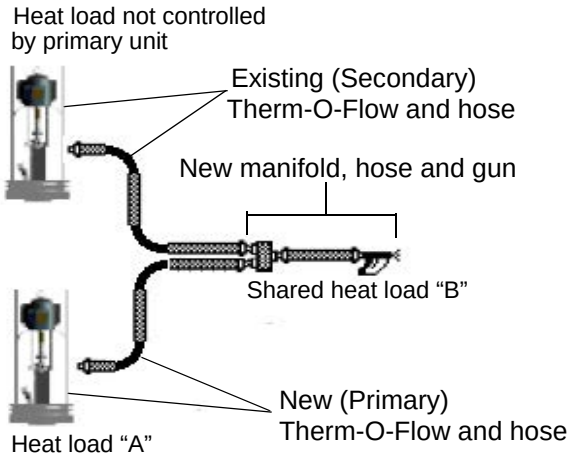


FIG. 8

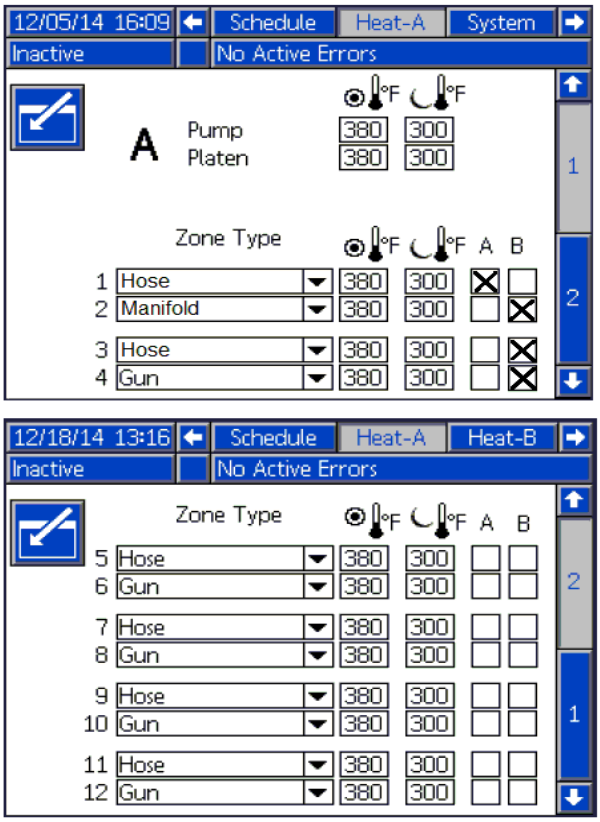


FIG. 9

The Heat-A screen shows the target and actual temperatures for all zones and the zone assigned.

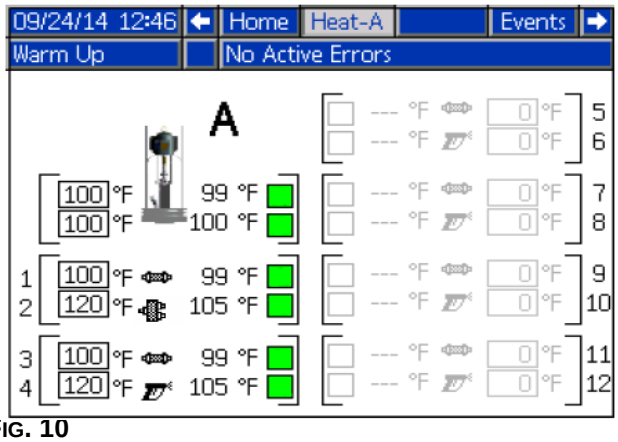


FIG. 10

Prime

⚠WARNING

BURN HAZARD
Equipment surfaces and fluid that is heated can become very hot during operation. Wear appropriate PPE while priming to reduce the risk of injury.

To prime either drum, load the unit with a fresh drum, lower the platen into the drum, and turn the Heat Selector switch to the “ON” position. Let the platen and pump get up to temperature. The pump will not work until the pump and platen are up to temperature. When the pump and platen are up to temperature, turn the three way ball valve such that the air is directed to the pump from the regulator on the ram, not the proportional regulator (if the secondary unit has this installed on the pump air motor). Prime as described in the Therm-O-Flow manual. Use the “Primary Drum Loaded” or “Secondary Drum Loaded” pushbutton to actuate the pump.

NOTE: This pushbutton must be pressed at some point; this gives the crossover kit the signal a fresh drum is loaded and primed.

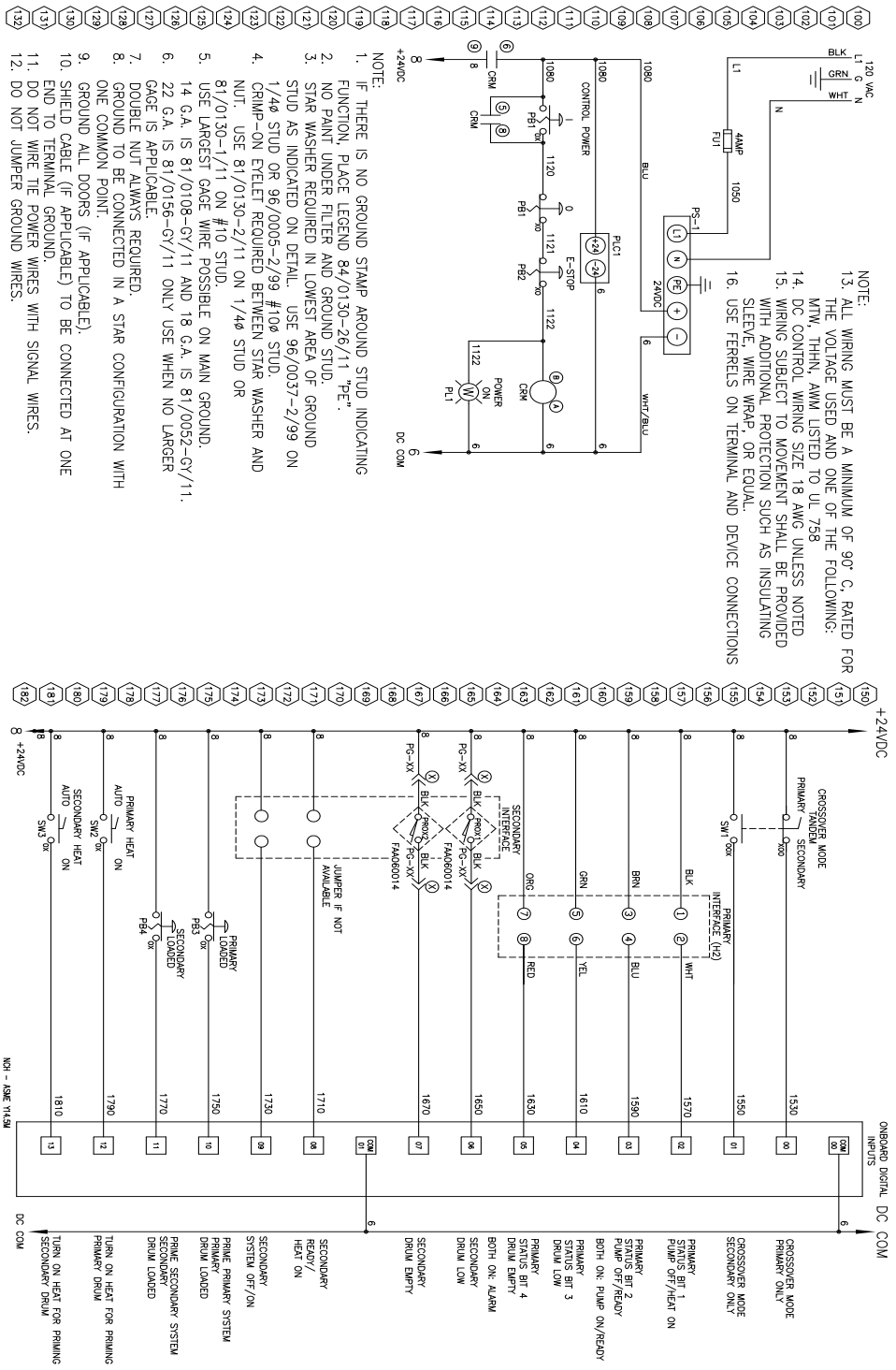
When the priming is done, turn the three way ball valve back to the position that air is directed to the pump from the proportional regulator. Turn the Heat Selector switch back to the “AUTO” position.

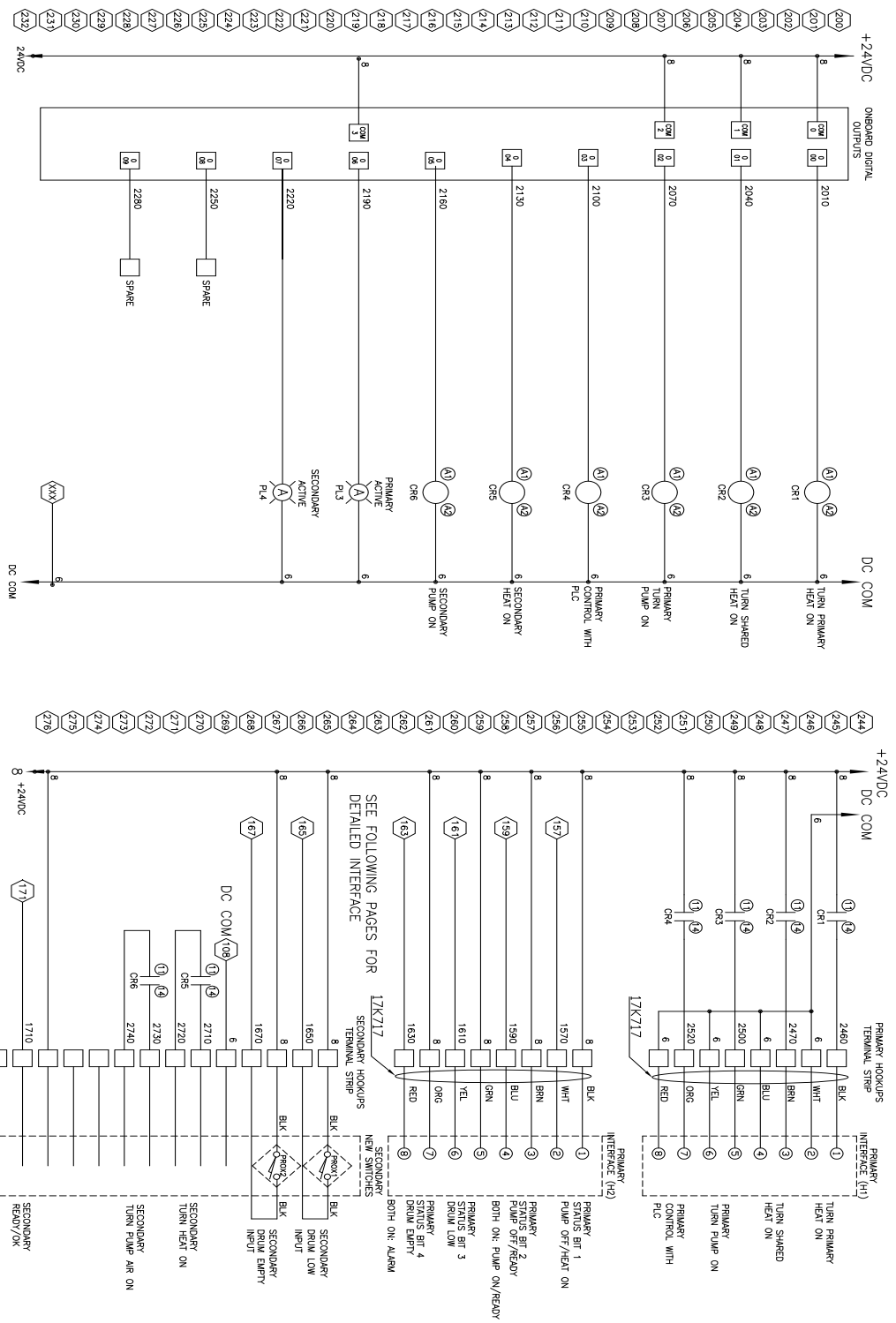
Pressure Relief Procedure

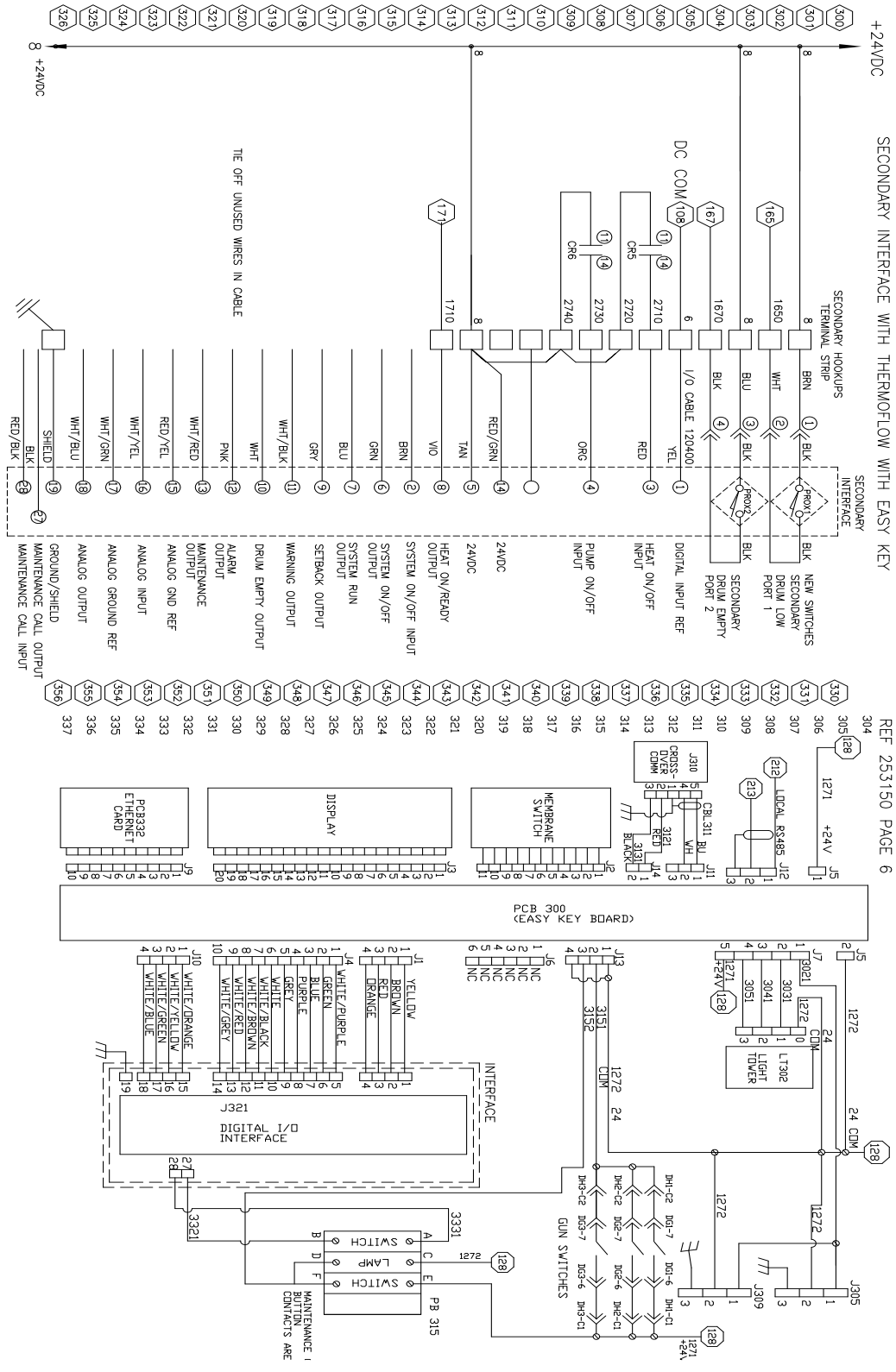
See system manuals for instructions on how to perform the Pressure Relief Procedure.

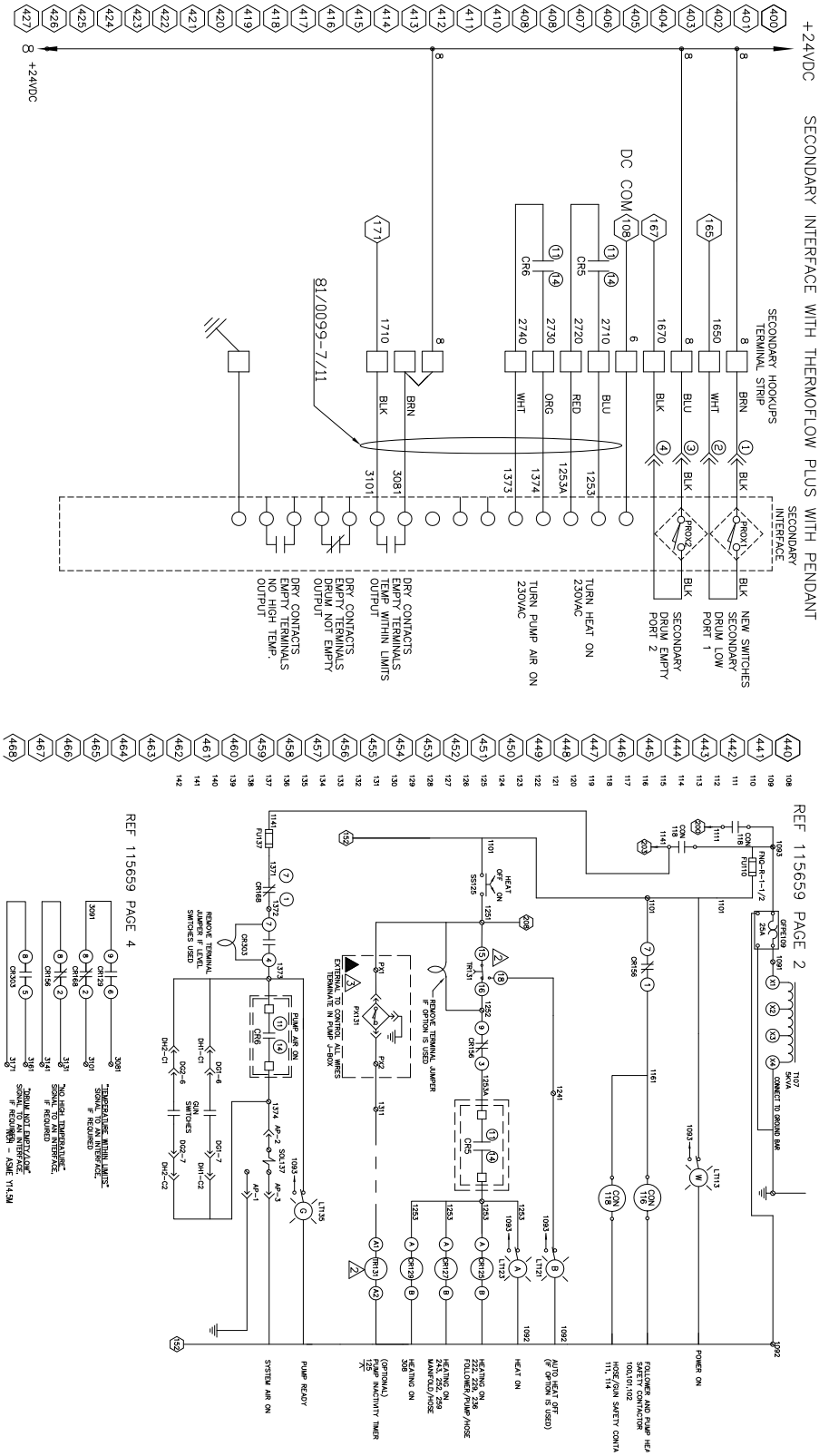
Electrical Schematics

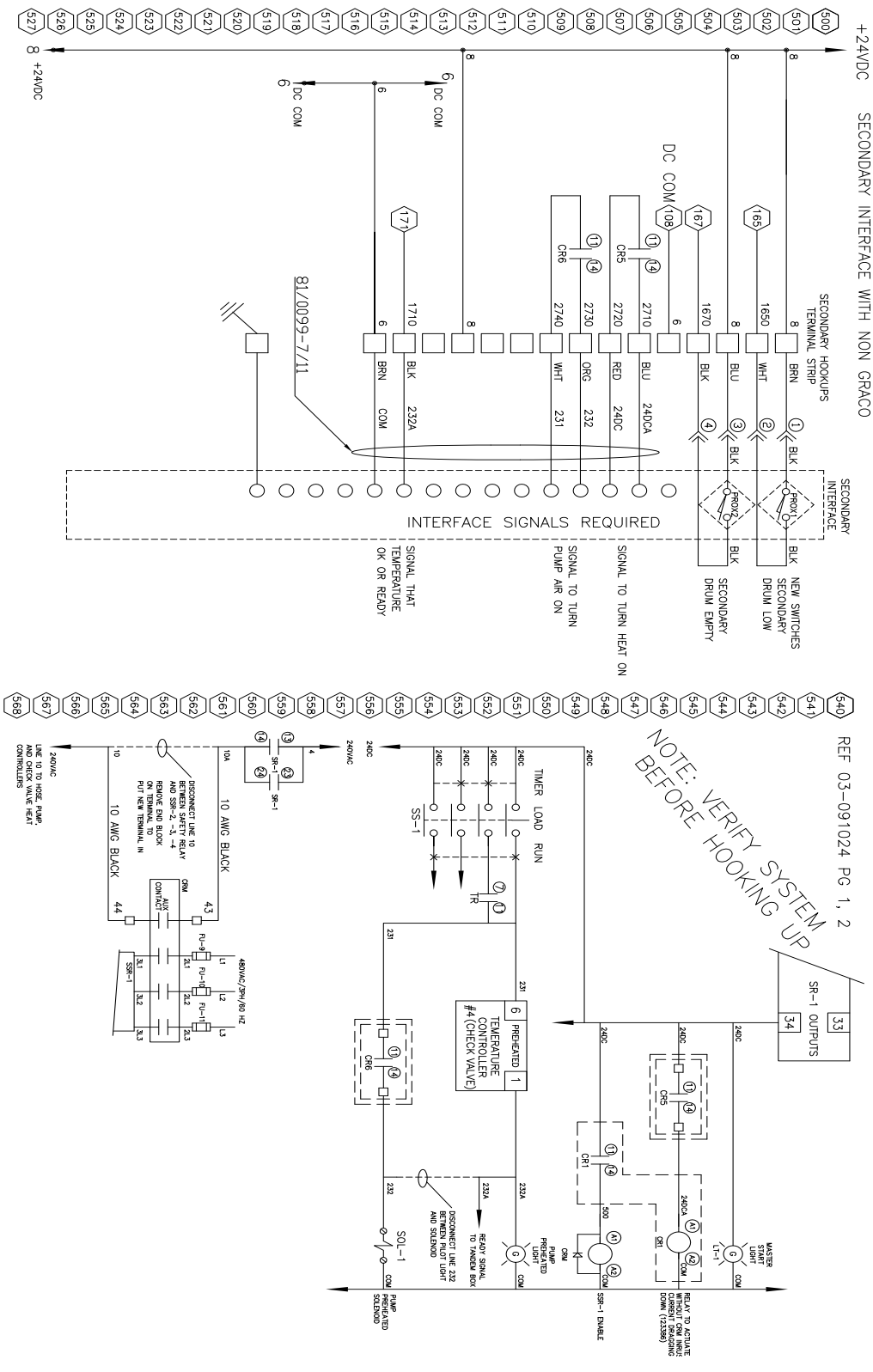
The following schematics represent various models of Therm-O-Flows as a reference only. Consult your Therm-O-Flow or other hot melt unit manual for actual wiring diagrams.




+24VDC
DC COM
ONBOARD DIGITAL OUTPUTS
2010
2040
2070
2100
2130
2160
2190
2220
2250
2280
SPARE
SPARE
CR1
CR2
CR3
CR4
CR5
CR6
PL3
PL4
PRIMARY ACTIVE
SECONDARY ACTIVE
TURN PRIMARY HEAT ON
TURN SHARED HEAT ON
PRIMARY TURN PUMP ON
PRIMARY CONTROL WITH PLC
SECONDARY HEAT ON
SECONDARY PUMP ON
PRIMARY HOOKUPS TERMINAL STRIP
PRIMARY INTERFACE (H1)
17K717
SECONDARY HOOKUPS TERMINAL STRIP
PRIMARY INTERFACE (H2)
SEE FOLLOWING PAGES FOR DETAILED INTERFACE
NEW SWITCHES
PROX
BOTH ON: ALARM
PRIMARY STATUS BIT 4 DRUM EMPTY
PRIMARY STATUS BIT 3 DRUM LOW
BOTH ON: PUMP ON/READY
PRIMARY STATUS BIT 2 PUMP OFF/READY
PRIMARY STATUS BIT 1 PUMP OFF/HEAT ON
SECONDARY DRUM LOW INPUT
SECONDARY DRUM EMPTY INPUT
SECONDARY TURN PUMP AIR ON
SECONDARY TURN HEAT ON
SECONDARY READY/OK

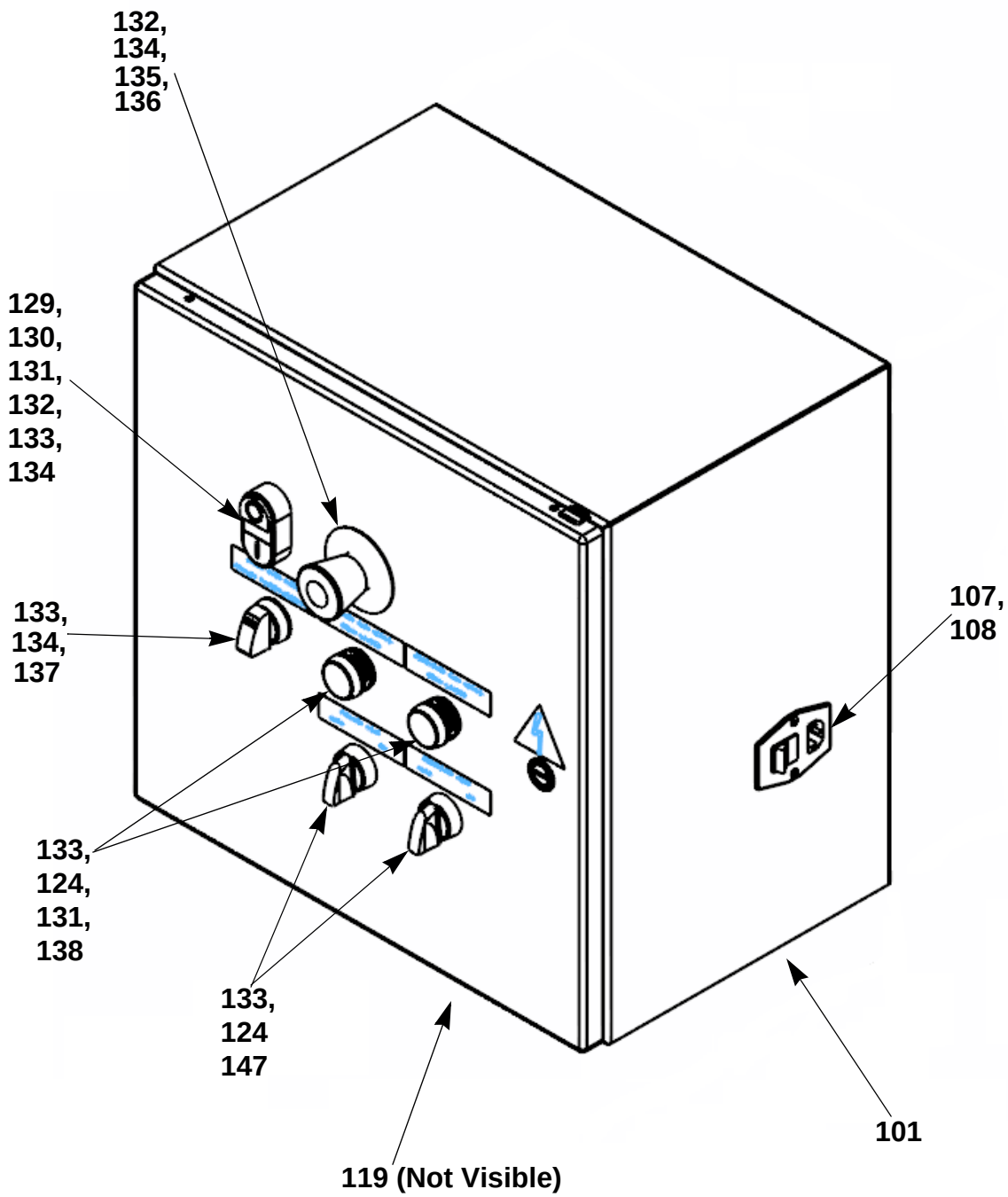

SECONDARY INTERFACE WITH THERMOFLOW WITH EASY KEY
REF 253150 PAGE 6
+24VDC
SECONDARY HOOKUPS TERMINAL STRIP
SECONDARY INTERFACE
I/O CABLE 120400
DC COM
TIE OFF UNUSED WIRES IN CABLE
NEW SWITCHES
SECONDARY DRUM LOW PORT 1
SECONDARY DRUM EMPTY PORT 2
DIGITAL INPUT REF
HEAT ON/OFF INPUT
PUMP ON/OFF INPUT
24VDC
HEAT ON/READY OUTPUT
SYSTEM ON/OFF INPUT
SYSTEM ON/OFF OUTPUT
SYSTEM RUN OUTPUT
SETBACK OUTPUT
WARNING OUTPUT
DRUM EMPTY OUTPUT
ALARM OUTPUT
MAINTENANCE OUTPUT
ANALOG GND REF
ANALOG INPUT
ANALOG GROUND REF
ANALOG OUTPUT
GROUND/SHIELD
MAINTENANCE CALL OUTPUT
MAINTENANCE CALL INPUT
PCB 300
(EASY KEY BOARD)
MEMBRANE SWITCH
DISPLAY
PCB332 ETHERNET CARD
CROSS-OVER CDMM
LOCAL RS485
LIGHT TOWER
GUN SWITCHES
INTERFACE
DIGITAL I/O INTERFACE
SWITCH
LAMP
SWITCH
PB 315
MAINTENANCE BUTTON CONTACTS ARE

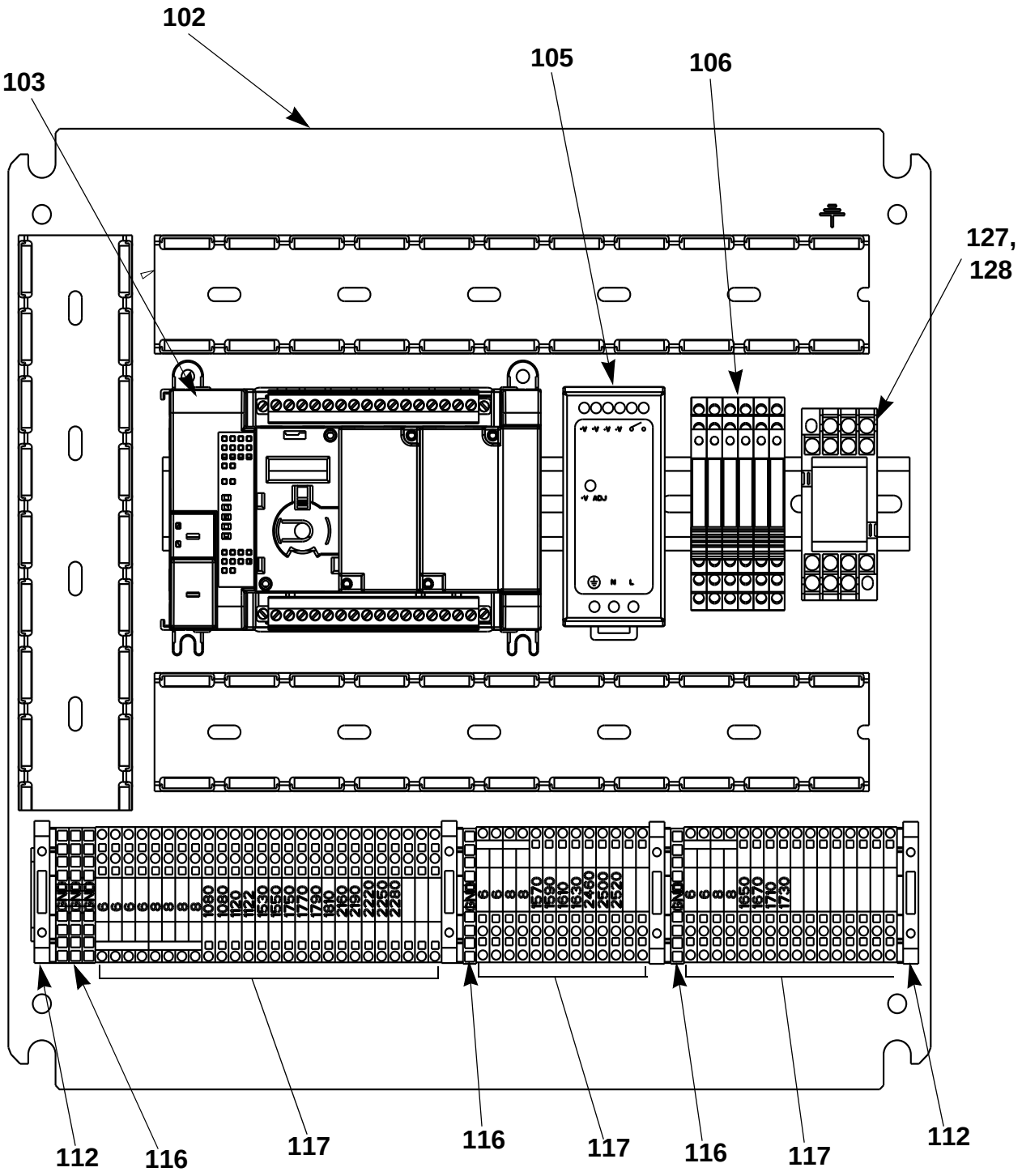

SECONDARY INTERFACE WITH THERMOFLOW PLUS WITH PENDANT
+24VDC
SECONDARY HOOKUPS TERMINAL STRIP
SECONDARY INTERFACE
NEW SWITCHES SECONDARY DRUM LOW PORT 1
SECONDARY DRUM EMPTY PORT 2
DC COM
TURN HEAT ON 230VAC
TURN PUMP AIR ON 230VAC
DRY CONTACTS EMPTY TERMINALS TEMP WITHIN LIMITS OUTPUT
DRY CONTACTS EMPTY TERMINALS LOW/AM NOT EMPTY OUTPUT
DRY CONTACTS EMPTY TERMINALS NO HIGH TEMP. OUTPUT
81/0099-7/11
REF 115659 PAGE 2
REF 115659 PAGE 4
POWER ON
HEAT ON
PUMP READY
SYSTEM AIR ON


+24VDC SECONDARY INTERFACE WITH NON GRACO
SECONDARY HOOKUPS TERMINAL STRIP
SECONDARY INTERFACE
INTERFACE SIGNALS REQUIRED
81/0099-7/11
SIGNAL THAT TEMPERATURE OK OR READY
SIGNAL TO TURN PUMP AIR ON
SIGNAL TO TURN HEAT ON
SECONDARY DRUM EMPTY
NEW SWITCHES SECONDARY DRUM LOW
REF 03-091024 PG 1, 2
NOTE: VERIFY SYSTEM BEFORE HOOKING UP
SR-1 OUTPUTS
TIMER LOAD RUN
TEMERATURE CONTROLLER #4 (CHECK VALVE)
PREHEATED
READY SIGNAL TO TANDEM BOX
PUMP PREHEATED LIGHT
MASTER START LIGHT
SSR-1 ENABLE
PUMP PREHEATED SOLENOID
10 AWG BLACK
240VAC
480VAC/3PH/60 HZ

Parts

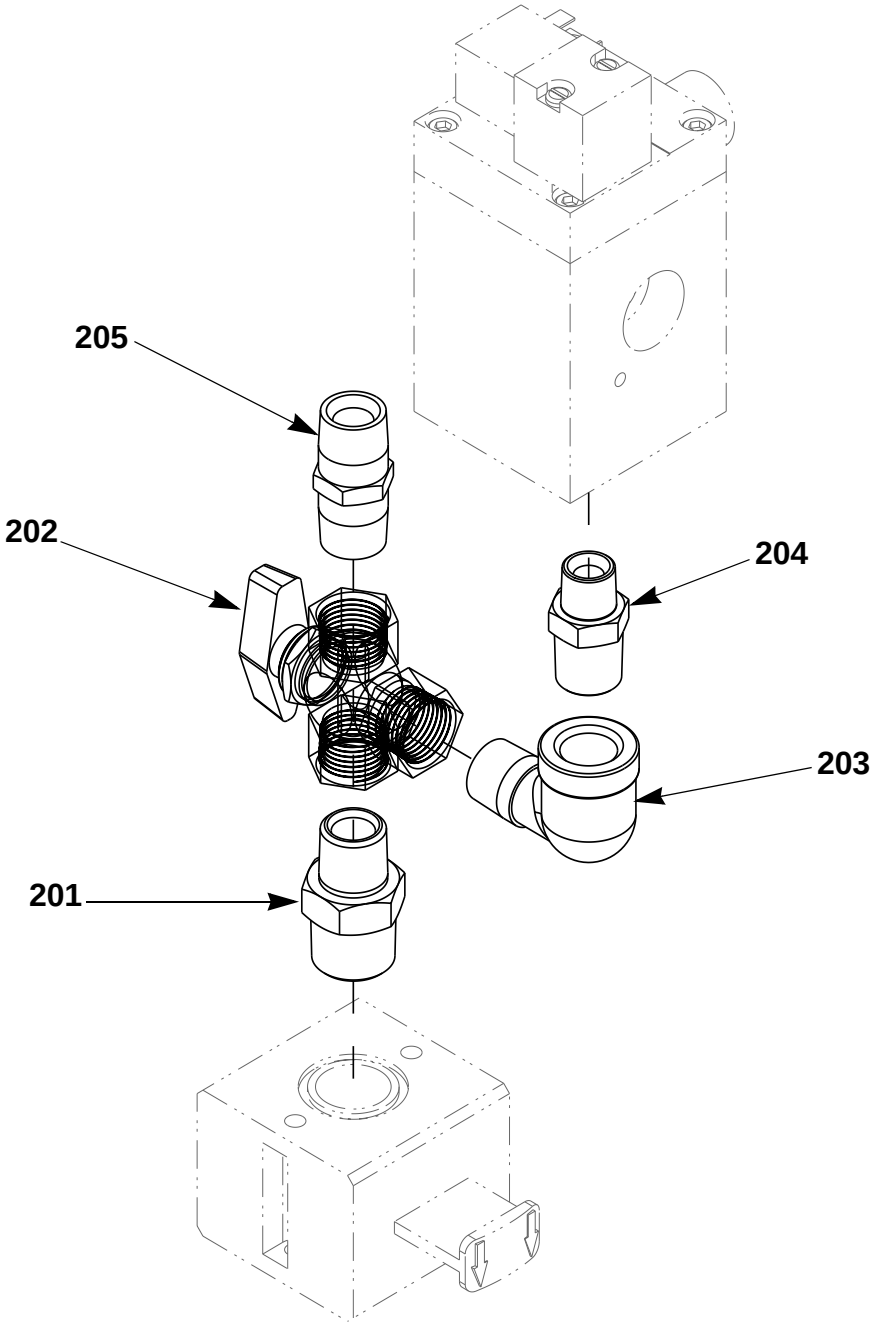
Control Panel 24Y189

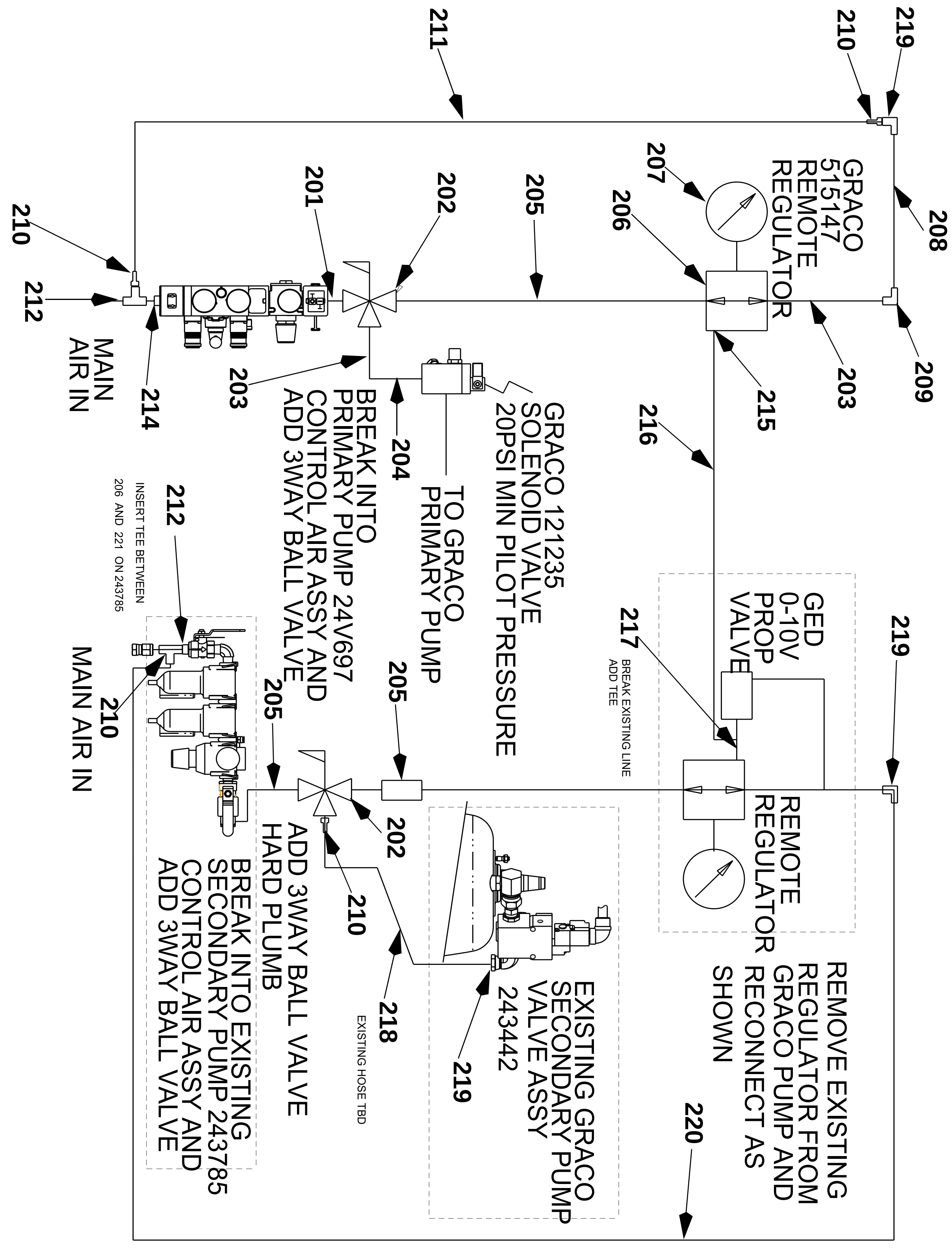



102
103
105
106
127,
128
112
116
117
116
117
116
117
112

F/N	Item Identifier	Description	Qty.
101	17J404	ENCLOSURE,16 X 16 X 10 Painted	1
102	17J401	PANEL, back	1
103	17G159	CONTROL, plc	1
105	126453	POWER SUPPLY, 24v	1
106	123386	RELAY, 24Vdc coil, spdt	6
107	120910	SOCKET, electrical, w/emi filter	1
108	114835	FUSE, 4.0amp, 250v	1
112	123384	BLOCK, end stop	4
113	81/0730-EP/11	BARRIER, end plate	4
116	81/0730-TG4/11	BLOCK, terminal	5
117	81/0730-TT3/11	BLOCK, terminal	55
119	60122	GRIP, cord	5
126	121055	CORD SET, us, 115v, 10a	1
127	60153	RELAY, 3pdt, 24vd, 10a	1
128	60121	RELAY, base, 11 pin	1
129	81/2060-P/11	BUTTON, dual, grn/red, w/pl-wht	1
130	81/2072-1/11	LATCH, light module, 24vac/vdc	1
131	81/2072-2/11	LIGHT, led, white	3
132	81/2081-1/11	CONTACT, block, no	2
133	81/2080-1/11	CONTACT, block, nc	7
134	81/2070/11	LATCH, operator	7
135	81/2060-E/11	BUTTON, maint, twist, red	1
136	81/2060-EL/11	LABEL	1
137	81/2064/11	BUTTON, operator, sel, 3p	1
138	81/2060-G/11	BUTTON, operator, pb, flush, green	2
139	196548	LABEL, shock	1
147	81/2063/11	SWITCH, operator, 2p	2
156	81/0099-7/11	CORD, 20/7	30
157	17K717	CABLE, 8cond	60

Regulated Air Ball Valve Kit
U82191

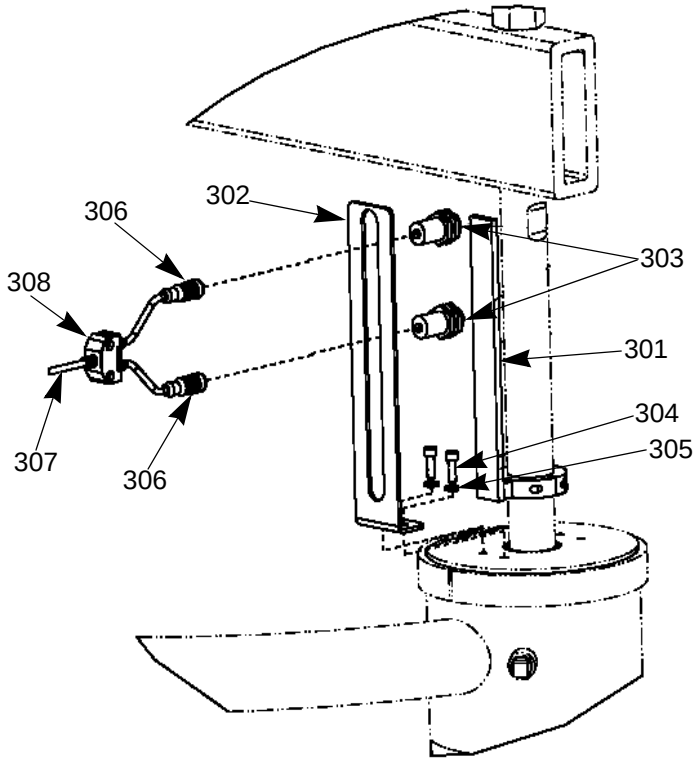



ONE NEW THERMOFLOW HOOKED UP TO THERMOFLOW 2000
219
210
211
208
GRACO
515147
REMOTE
REGULATOR
207
206
205
202
201
210
212
MAIN
AIR IN
214
203
209
215
216
GRACO 121235
SOLENOID VALVE
20PSI MIN PILOT PRESSURE
TO GRACO
PRIMARY PUMP
204
BREAK INTO
PRIMARY PUMP 24V697
CONTROL AIR ASSY AND
ADD 3WAY BALL VALVE
203
212
INSERT TEE BETWEEN
206 AND 221 ON 243785
210
MAIN AIR IN
205
205
217
BREAK EXISTING LINE
ADD TEE
GED
0-10V
PROP
VALVE
219
REMOTE
REGULATOR
202
210
ADD 3WAY BALL VALVE
HARD PLUMB
BREAK INTO EXISTING
SECONDARY PUMP 243785
CONTROL AIR ASSY AND
ADD 3WAY BALL VALVE
218
EXISTING HOSE TBD
219
EXISTING GRACO
SECONDARY PUMP
VALVE ASSY
243442
REMOVE EXISTING
REGULATOR FROM
GRACO PUMP AND
RECONNECT AS
SHOWN
220

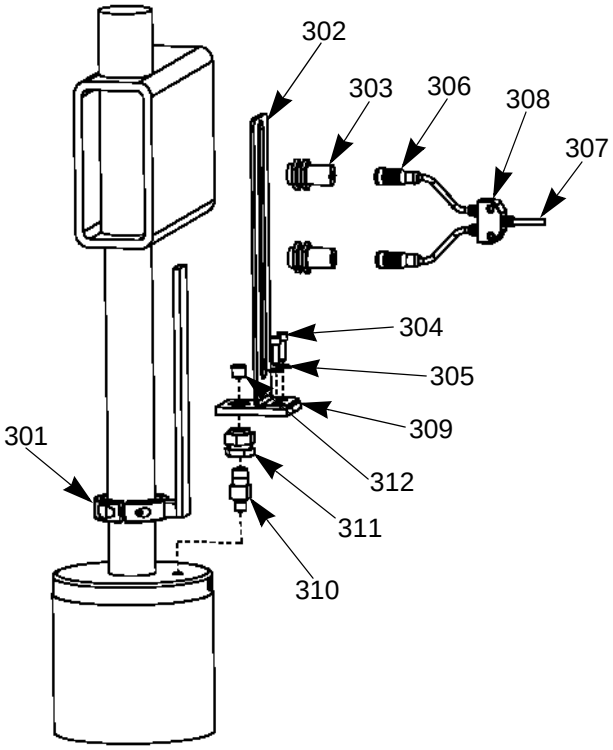
F/N	Item Identifier	Description	Qty.
201	196142	FITTING, adapter 1/2 npt X 3/4 npt	1
202	U70856	VALVE, ball, 3w, brass, 500psi	2
203	94/0301-1/99	FITTING, elbow, strt90, 1/2npt, mf, ms, 3k	2
204	159239	FITTING, nipple, pipe	1
205	94/0321-1/99	FITTING, nipple, hex, 1/2npt, ms, 3k	3
206	515147	REGULATOR, air, 1/2p, g515-147	1
207	124432	GAUGE, 160 psi	1
208	C19587	FITTING, nipple, pipe, long	1
209	94/0671/99	FITTING, elbow, 90, 1/2npt, ff, ms, 3k	1
210	190451	UNION, adapter	4
211	218093	HOSE, coupled	1
212	124844	FITTING, tee, 1/2npt X 1/2npt X 1/2npt	2
214	C19685	BUSHING, reducer, 3/4 X 1/2	1
215	94/0701/96	CONNECTOR, 1/4tube X 1/4npt, m, brs	1
216	61/2904-BK/11	HOSE, .160id X .250Od, pu	40
217	94/0708/96	FITTING, tee, run, 1/4tube X 1/8nptm	1
219	C19024	FITTING, elbow, swivel	2
220	110046	HOSE, coupled, 61209, 48"	1

Secondary Low and Empty Sensor Kit for Graco Therm-O-Flow (24Y190) or Non Graco Heated Drum Unloader (U82209)

24Y190

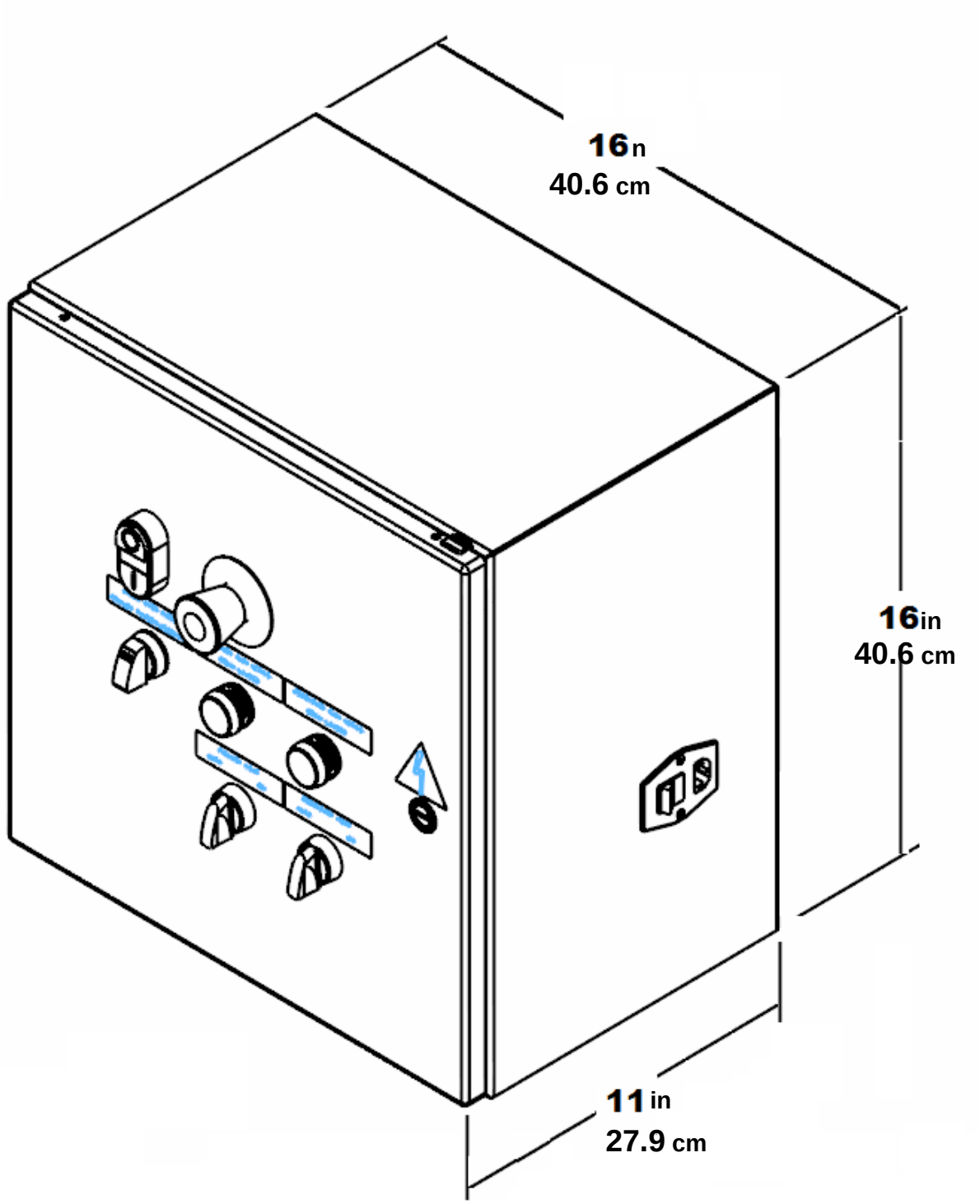


U82209 (Non Graco RAM)

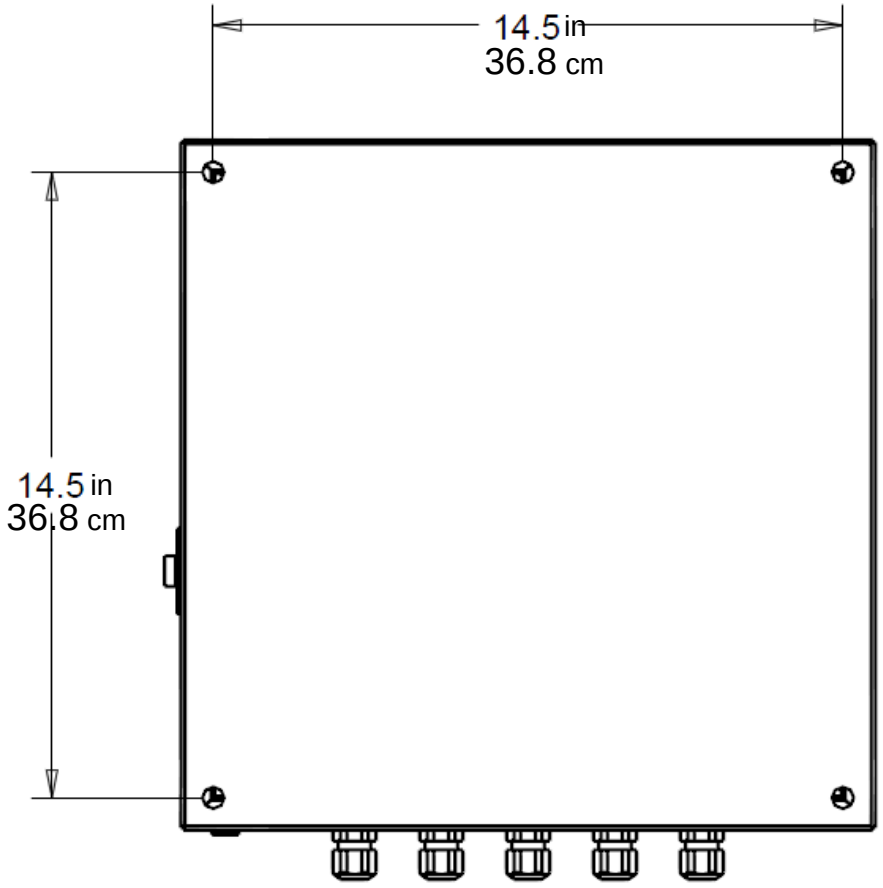


Item Identifier	F/N	24Y190 Qty	U82209 QTY	Description
253199	301	1	-	ACTUATOR, limit switch
U82210	301	-	1	ACTUATOR, sensor, 1-3/4 id shaft, ng
24V747	302	1	1	BRACKET, mtg, prox, tof200, painted
FAA060014	303	2	2	SWITCH, prox, 18mm, pnp/npn
112166	304	2	2	SCREW, cap, sch
100016	305	2	2	WASHER, lock
81/0398/11	306	2	2	CONNECTOR, straight, male, micro, 4pin
128082	307	1	1	CABLE, m12, 4-pin, 10.0m
126520	308	1	1	CONNECTOR, splinter, m12, 5p
U60752	309	-	1	BRACKET, adapter, low, empty, ram, ng
181107	310	-	1	FITTING, tee
94/0508/96	311	-	1	FITTING, bulkhead, 1/4npt, f, brs
100721	312	-	1	PLUG, pipe

Dimensions



Control Box Mounting: Four (4) 0.28” Diameter Holes



Specifications

Cross Over kit Power Requirements	
Voltage	100-264VAC
Frequency	47-63 Hz
Power	500 watts

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.

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.

FOR GRACO CANADA CUSTOMERS
The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

Graco Information

For the latest information about Graco products, visit www.graco.com.

For patent information, see www.graco.com/patents.

TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.
Phone: 612-623-6921 or Toll Free: 1-800-746-1334 Fax: 330-966-3006

All written and visual data contained in this document reflects the latest product information available at the time of publication.
Graco reserves the right to make changes at any time without notice.

Original instructions. This manual contains English. MM 3A3463
Graco Headquarters: Minneapolis
International Offices: Belgium, China, Japan, Korea

GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA

www.graco.com
Revision B, February 2016