

# Power Distribution Module

3A0239F

EN

For use with HFR, VRM, and VPM plural-component proportioners. For professional use only.

Not approved for use in European explosive atmosphere locations.

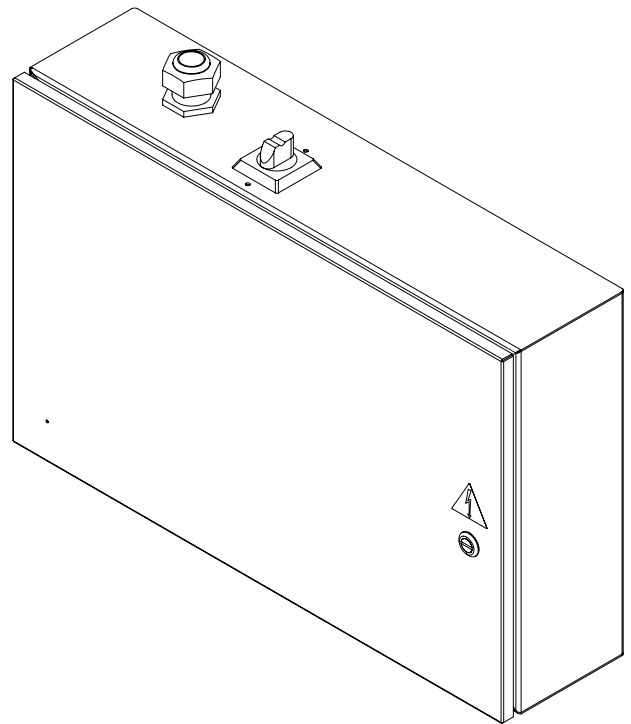


### Important Safety Instructions

Read all warnings and instructions in this manual. Save these instructions.

See page 3 for model information.

US Patent Pending



r\_24C860\_3A0239\_1a



# Contents

<b>Models</b> .....	<b>3</b>
<b>Warnings</b> .....	<b>4</b>
<b>Troubleshooting</b> .....	<b>5</b>
<b>Repair</b> .....	<b>6</b>
Replace Power Supply .....	6
Replace Circuit Breaker .....	6
<b>Electrical Schematics</b> .....	<b>7</b>
<b>Parts</b> .....	<b>20</b>
HFR Power Distribution Modules .....	20
VRM Power Distribution Modules .....	23
VPM Power Distribution Modules .....	26
<b>Graco Standard Warranty</b> .....	<b>30</b>
<b>Graco Information</b> .....	<b>30</b>

# Models

Description	Maximum Amperes	Description	CE
<b>HFR Power Distribution Modules</b>			
230V, 1 Phase, Basic	55 A	200-240VAC, 1 phase, 50/60 Hz 2 wire and PE ⊕	
230V, 1 Phase, Fully Loaded	116 A		
230V, 3 Phase, Basic	29 A	200-240VAC, 3 phase Δ, 50/60 Hz 3 wire and PE ⊕	
230V, 3 Phase, Fully Loaded	73 A		
400V, 3 Phase, Basic ✘	55 A	380-415VAC, 3 phase Y, 50/60 Hz 3 wire, neutral, and PE ⊕	✓
400V, 3 Phase, Fully Loaded ✘	63 A		✓
<b>VRM Power Distribution Modules</b>			
230V, 3 Phase, Basic	60 A	200-240VAC, 3 phase Δ, 50/60 Hz 3 wire and PE ⊕	
230V, 3 Phase, Fully Loaded	105 A		
400V, 3 Phase, Basic ✘	55 A	380-415VAC, 3 phase Y, 50/60 Hz 3 wire, neutral, and PE ⊕	✓
400V, 3 Phase, Fully Loaded ✘	75 A		✓
<b>VPM Power Distribution Modules</b>			
230V, 3 Phase	75 A	200-240VAC, 3 phase Δ, 50/60 Hz 3 wire and PE ⊕	
400V, 3 Phase ✘	55 A		
400V, 3 Phase ✘	55 A	3 wire, neutral, and PE ⊕	✓

\* The Residual Current Device (RCD) must be rated at 300 mA if it is installed.

Basic modules provide power to the control dispense system only.

Fully loaded modules provide power to the control dispense system, four heat zones, and two feed tanks.




✘ See 400 V Power Requirements.

## 400 V Power Requirements

- 400 V systems are intended for International voltage requirements. Not for voltage requirements in North America.
- If a 400 volt configuration is operated in North America, a special transformer rated for 400 V (“Y” configuration (4 wire)) may be required.
- North America mostly employs a 3 wire or Delta configuration. The two configurations are not interchangeable.

# 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.

 <b>WARNING</b>	
	<p><b>ELECTRIC SHOCK HAZARD</b></p> <p>This equipment must be grounded. 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 at main switch before disconnecting any cables and before servicing equipment.</li> <li>• Connect only to grounded power source.</li> <li>• All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.</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 operate the unit when fatigued or under the influence of drugs or alcohol.</li> <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>• Do not leave the work area while equipment is energized or under pressure. Turn off all equipment and follow the <b>Pressure Relief Procedure</b> in this manual when equipment is not in use.</li> <li>• Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.</li> <li>• Do not alter or modify equipment.</li> <li>• Use equipment only for its intended purpose. Call your distributor for information.</li> <li>• Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.</li> <li>• Do not kink or over bend hoses or use hoses to pull equipment.</li> <li>• Keep children and animals away from work area.</li> <li>• Comply with all applicable safety regulations.</li> </ul>

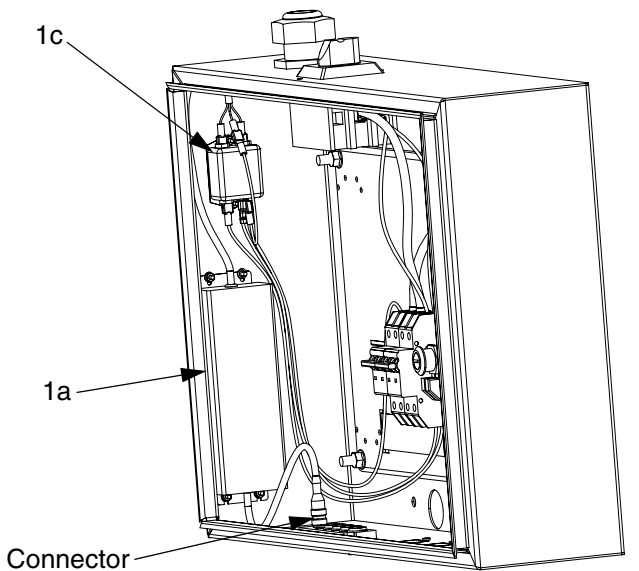
# Troubleshooting

Problem	Cause	Solution
No power received from DC power supply.	Defective power supply.	Check circuit breaker. Check power supply. Replace power supply.
No power to MCM, heat zones, or tanks.	Circuit breaker is tripping.	Check circuit breaker for tripping and defects. Diagnose cause of circuit breaker tripping before resetting it. Replace defective parts if required.

# Repair

## Replace Power Supply

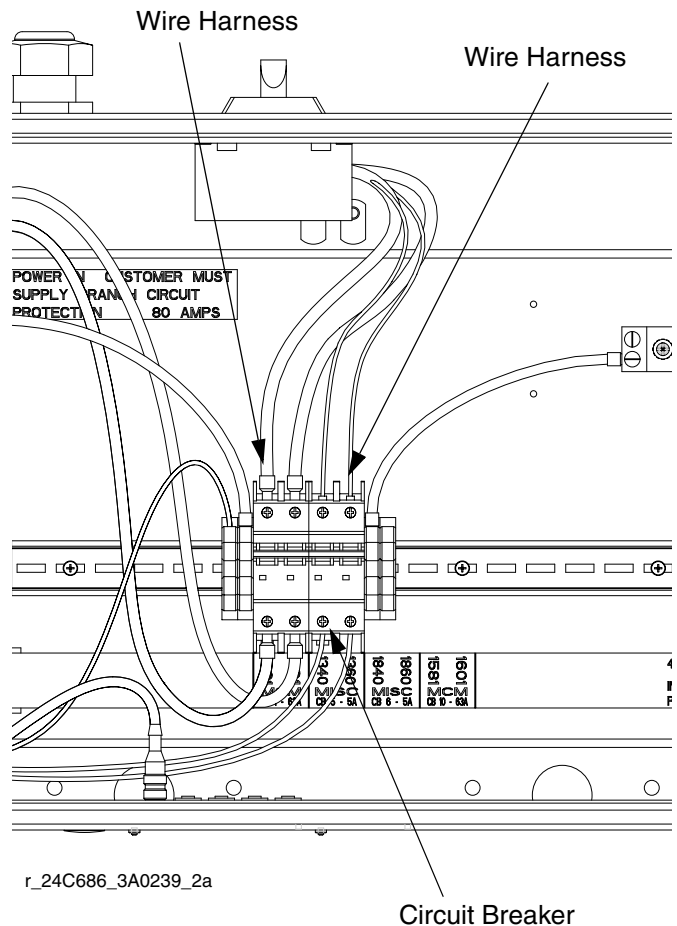
1. Turn off system power.
2. Open electrical enclosure door.
3. Disconnect power supply (1a) wires from the filter (1c) and the electrical enclosure connector.
4. Remove nuts and washers that secure power supply to electrical enclosure.
5. Install new power supply to electrical enclosure. Secure with nuts and washers.
6. Connect power supply wires to the filter and the electrical enclosure connector.
7. Close electrical enclosure door and turn on system power.



r\_24C680\_3A0239\_10a

## Replace Circuit Breaker

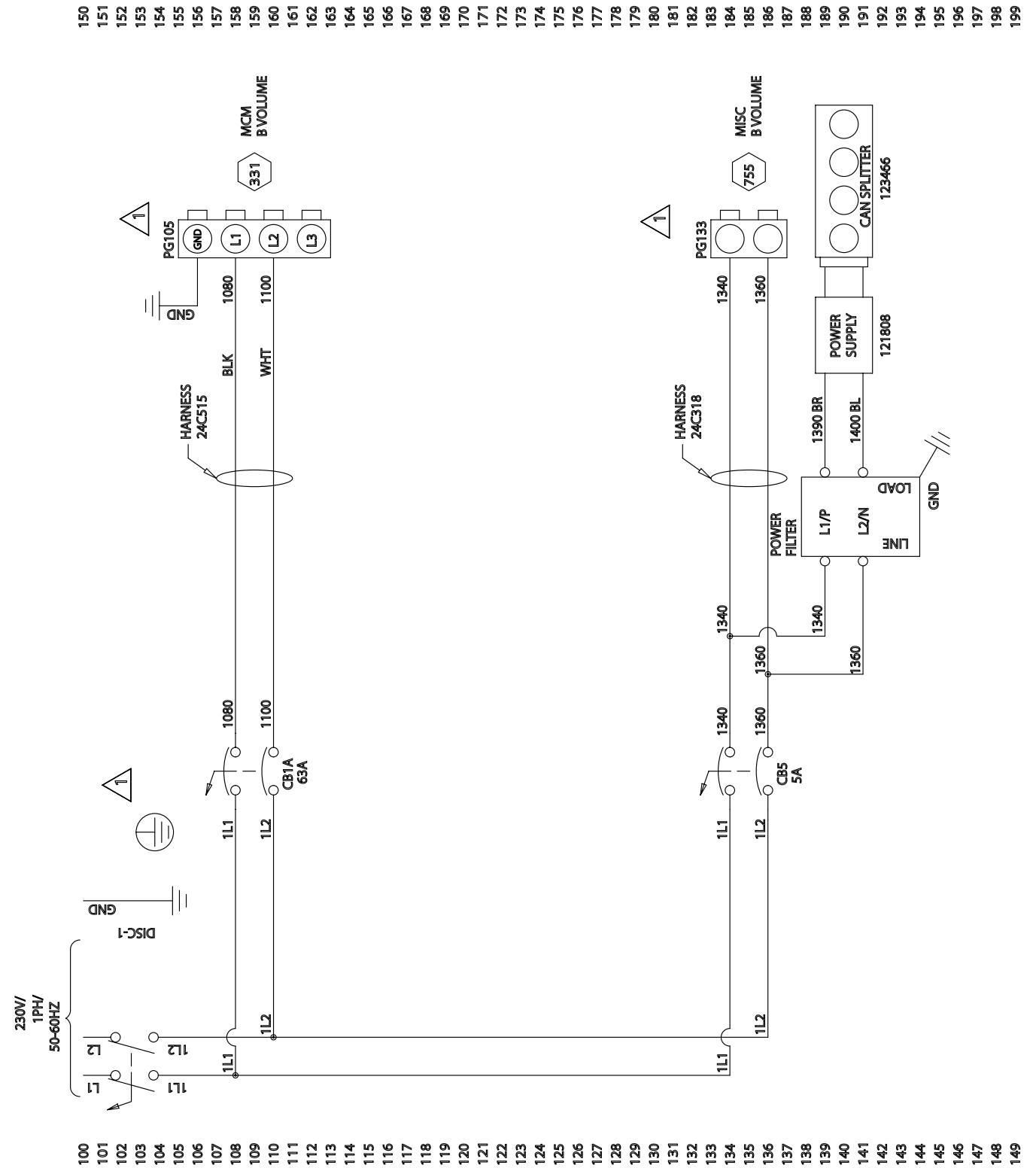
1. Turn off system power.
2. Open electrical enclosure door.
3. Disconnect wire harness from circuit breaker.
4. Remove circuit breaker.
5. Install new circuit breaker, and connect wire harness.
6. Close electrical enclosure door and turn on system power.



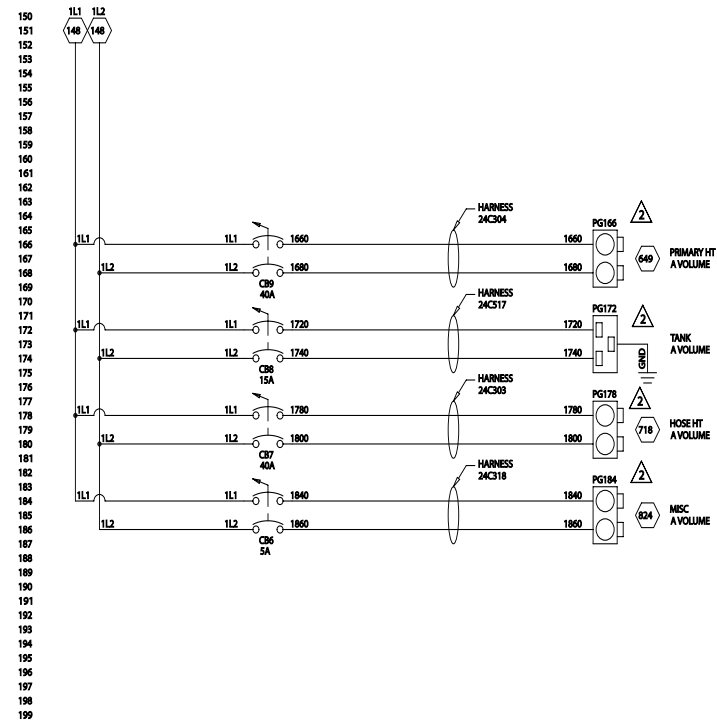
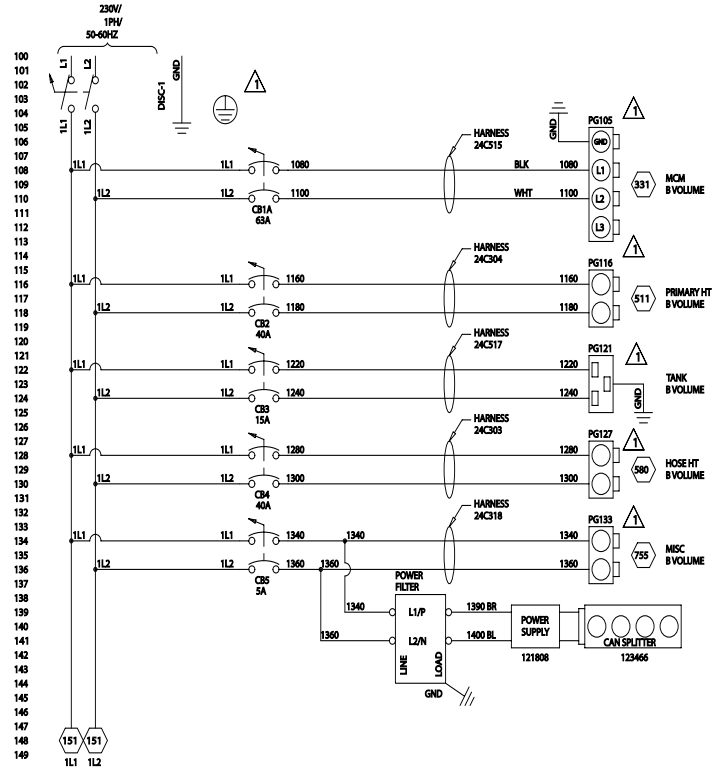
r\_24C686\_3A0239\_2a

# Electrical Schematics

## 230V, 1 Phase, Basic HFR Module Schematic

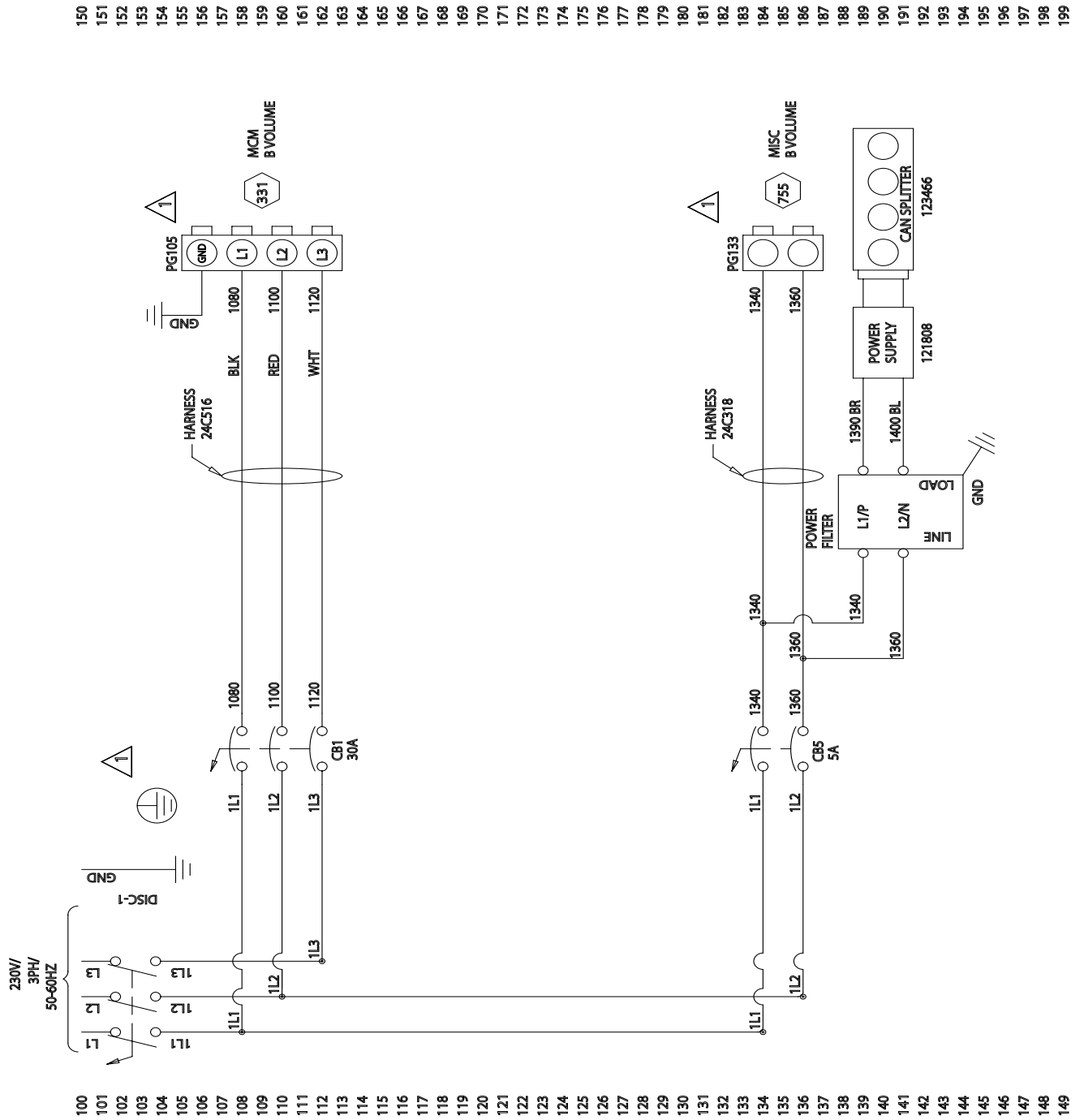


## 230V, 1 Phase, Loaded HFR Module Schematic





### 230V, 3 Phase, Basic HFR Module Schematic

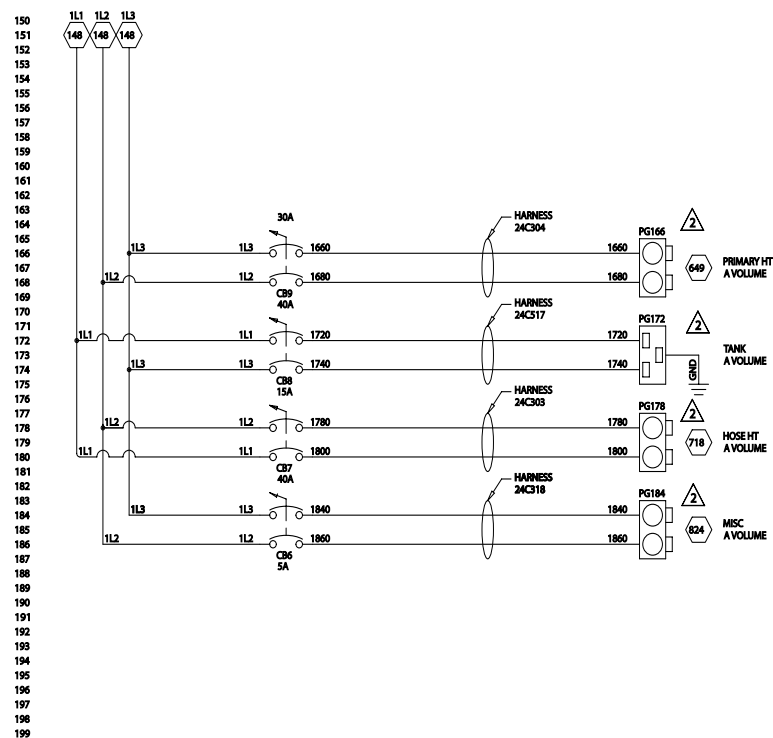
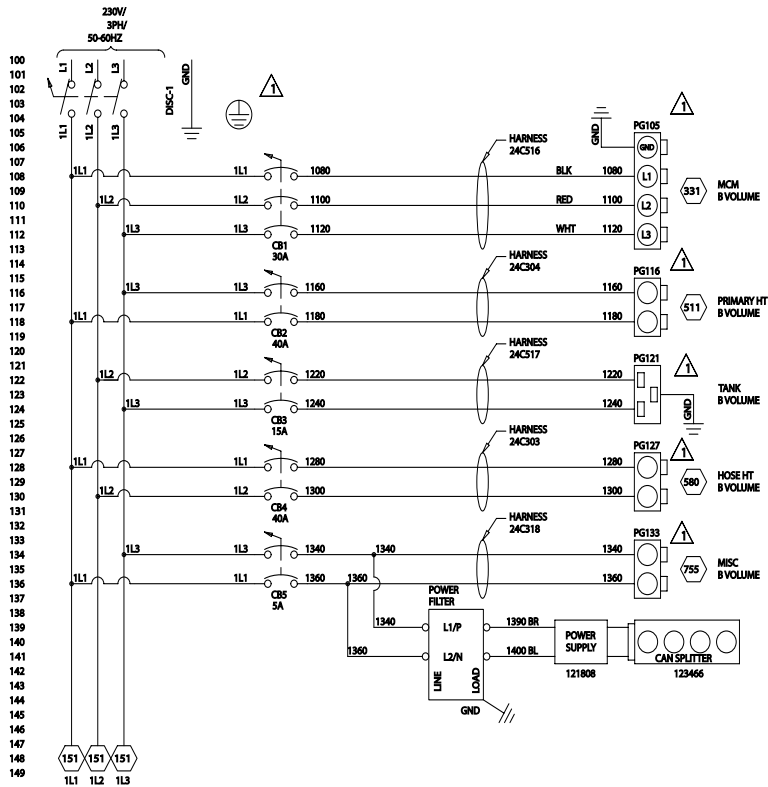


150  
151  
152  
153  
154  
155  
156  
157  
158  
159  
160  
161  
162  
163  
164  
165  
166  
167  
168  
169  
170  
171  
172  
173  
174  
175  
176  
177  
178  
179  
180  
181  
182  
183  
184  
185  
186  
187  
188  
189  
190  
191  
192  
193  
194  
195  
196  
197  
198  
199

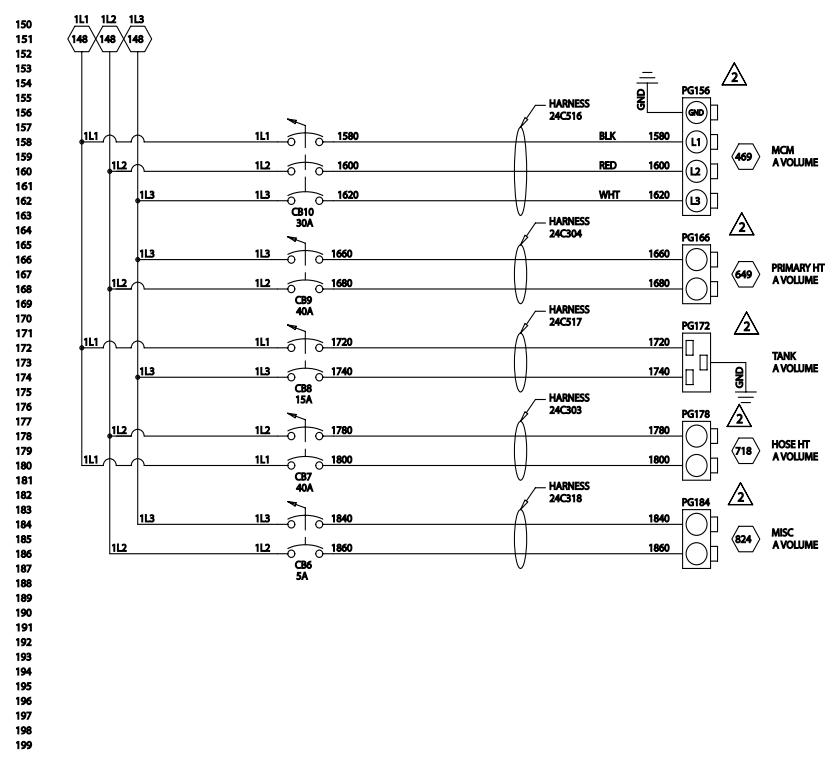
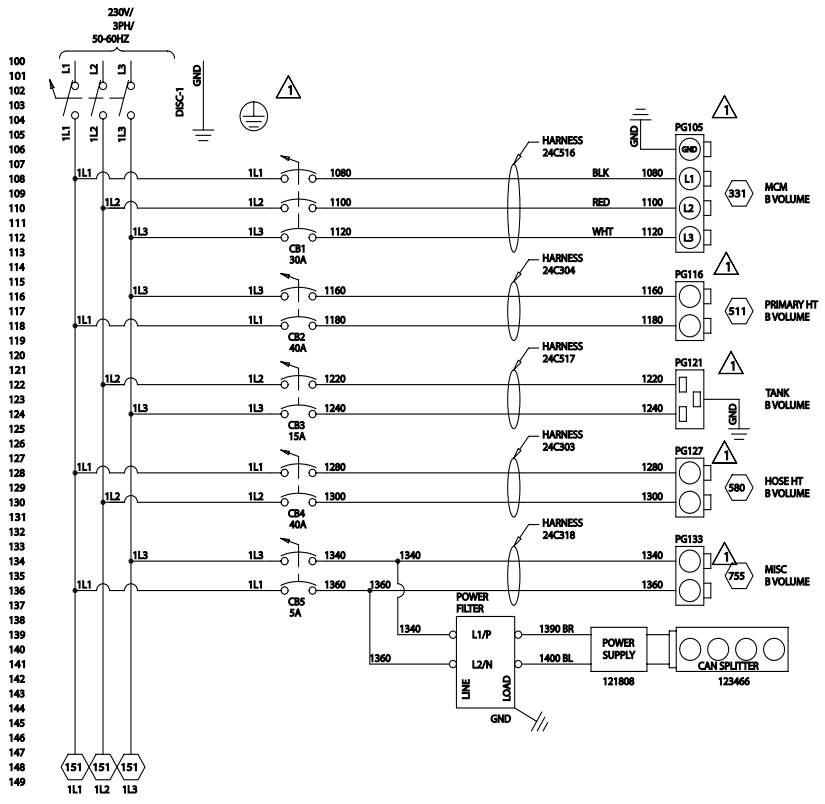
100  
101  
102  
103  
104  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123  
124  
125  
126  
127  
128  
129  
130  
131  
132  
133  
134  
135  
136  
137  
138  
139  
140  
141  
142  
143  
144  
145  
146  
147  
148  
149



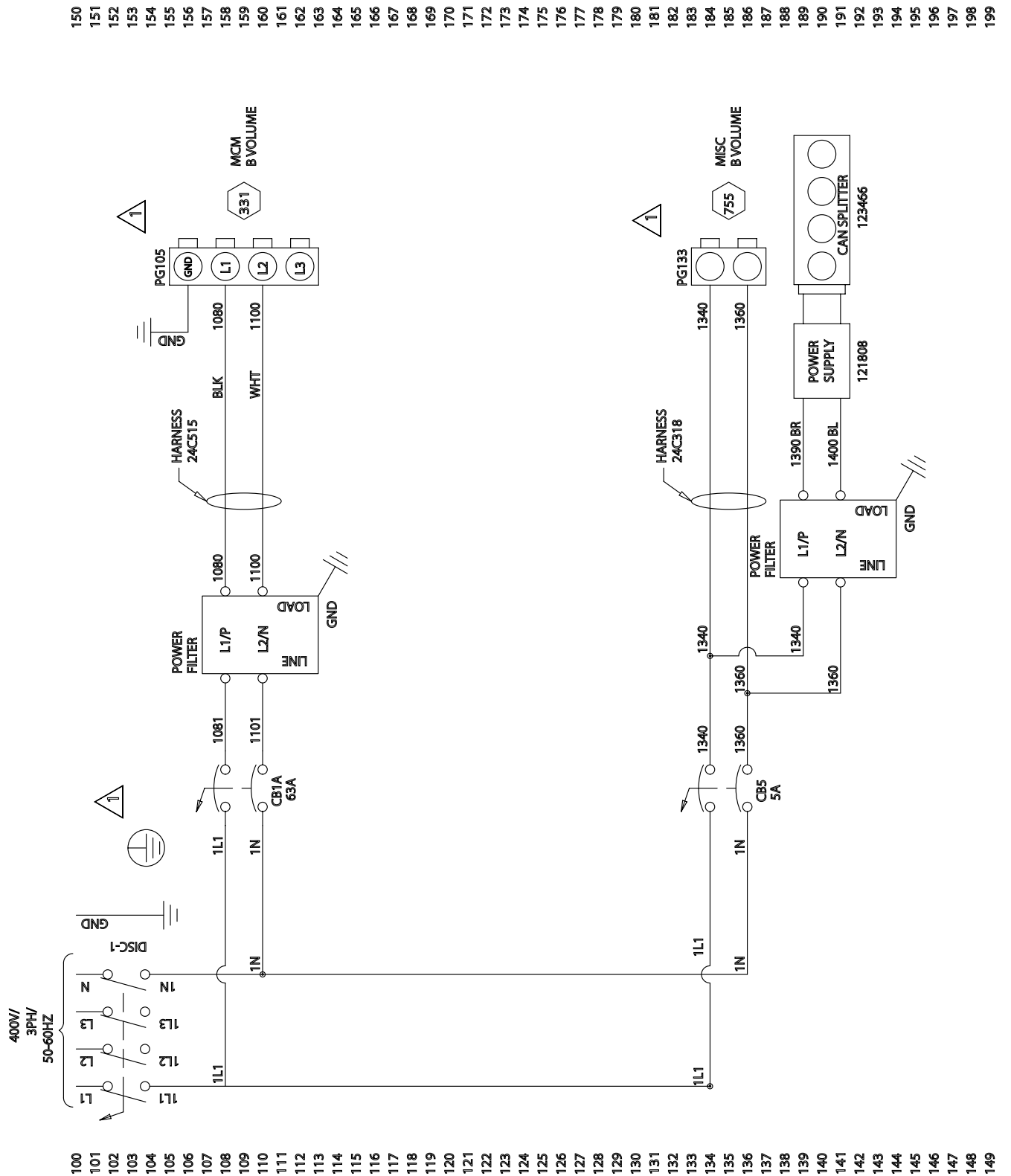
### 230V, 3 Phase, Loaded HFR Module Schematic



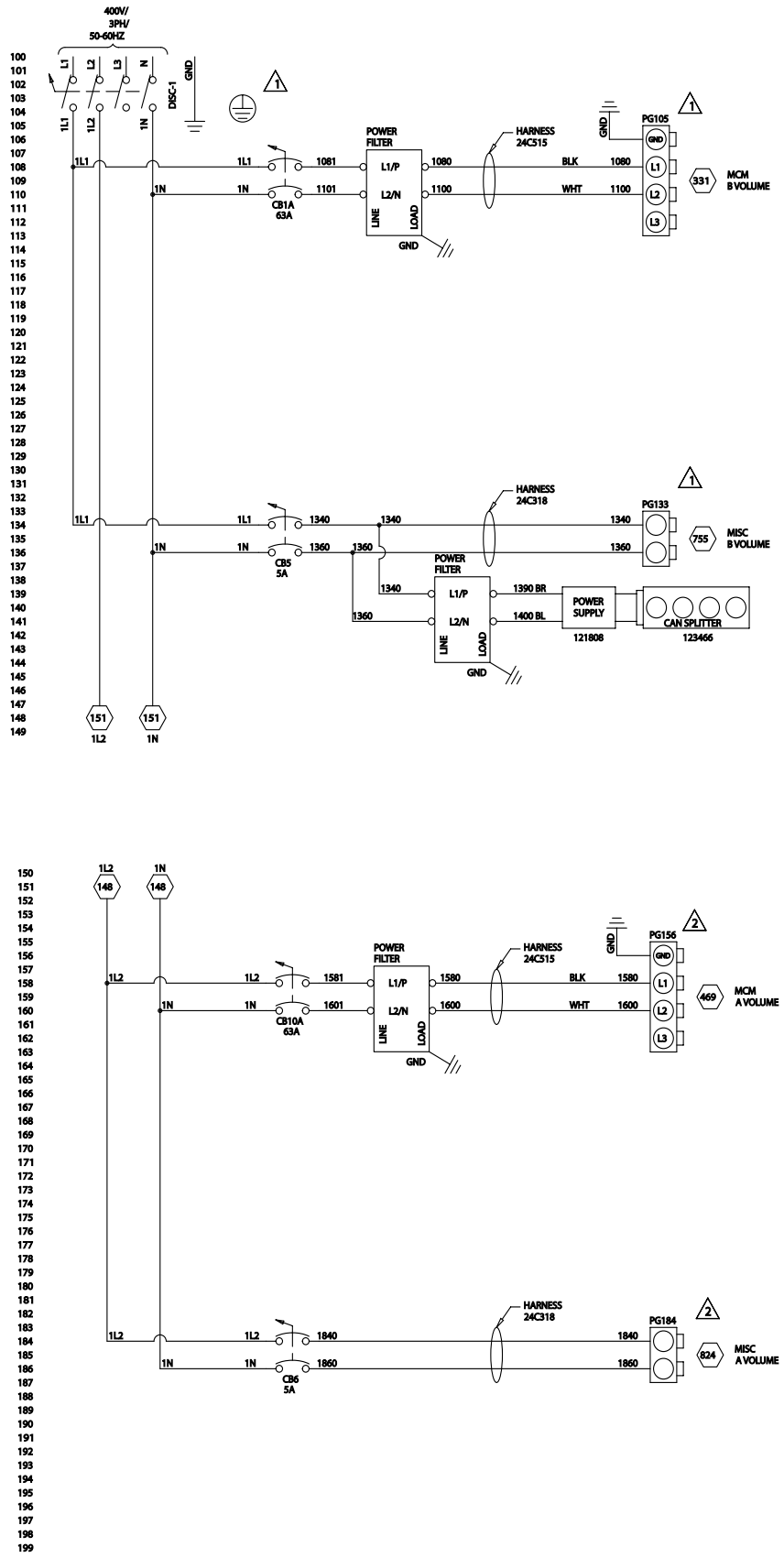
### 230V, 3 Phase, Loaded VRM Module Schematic



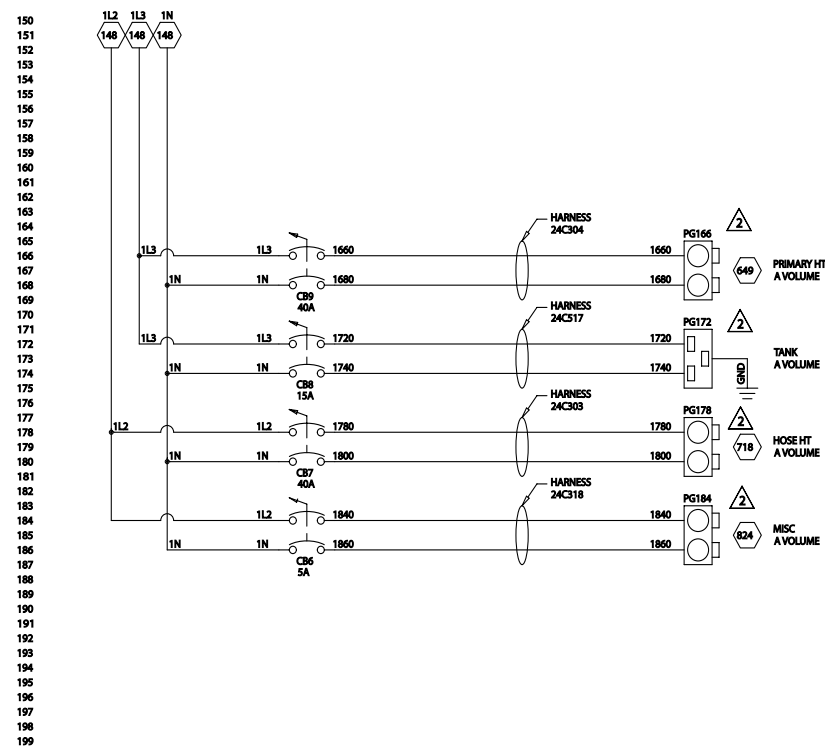
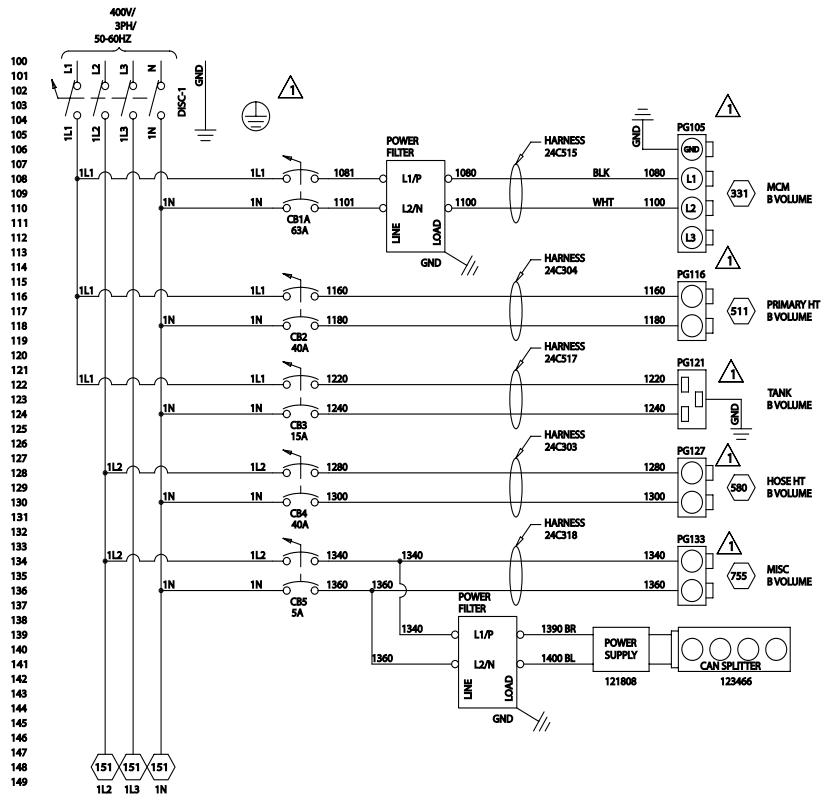
### 400V, 3 Phase, Basic HFR Module Schematic



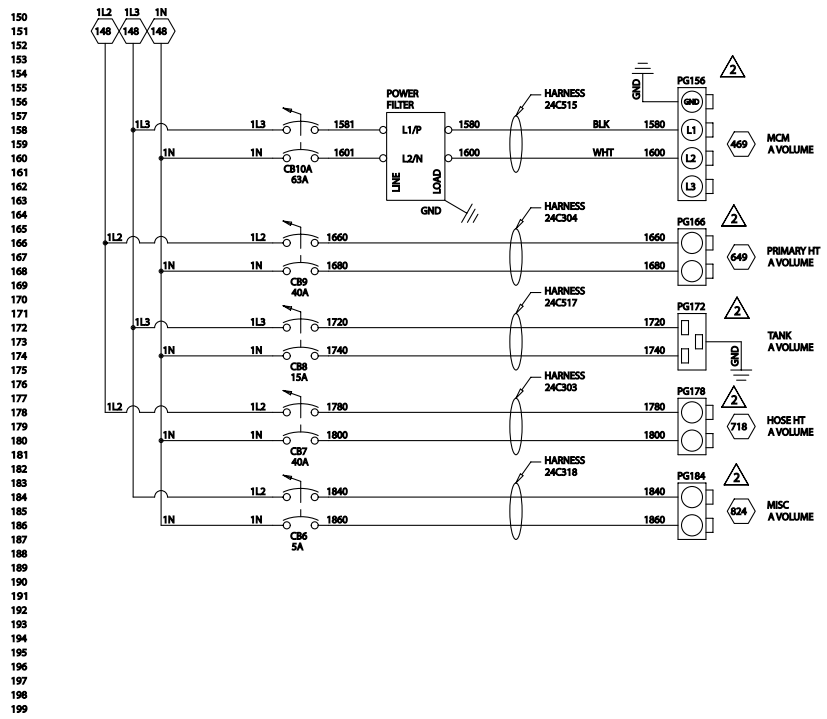
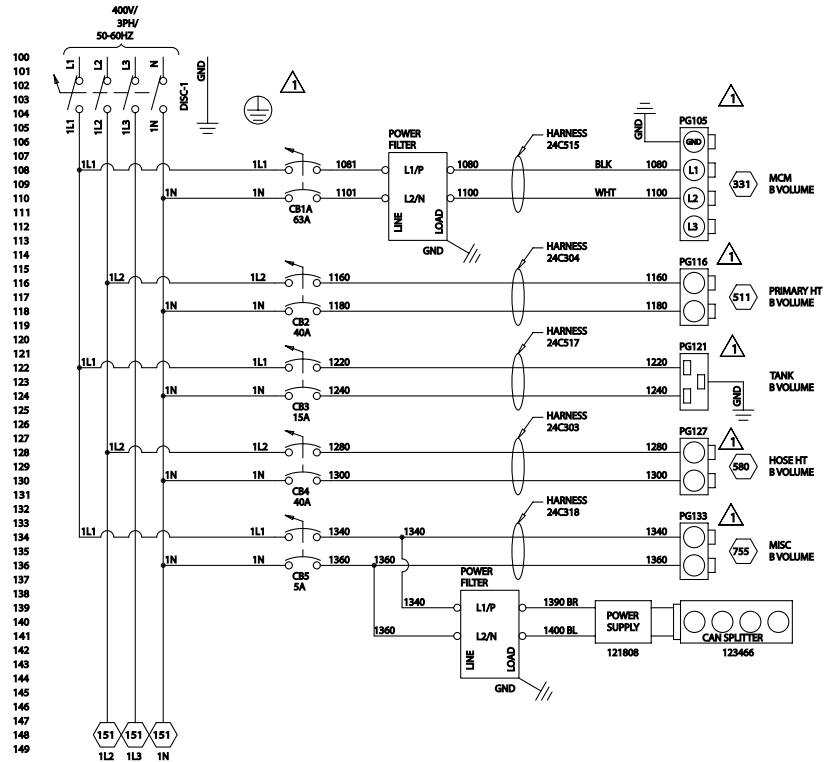
### 400V, 3 Phase, Basic VRM Module Schematic



### 400V, 3 Phase, Loaded HFR Module Schematic

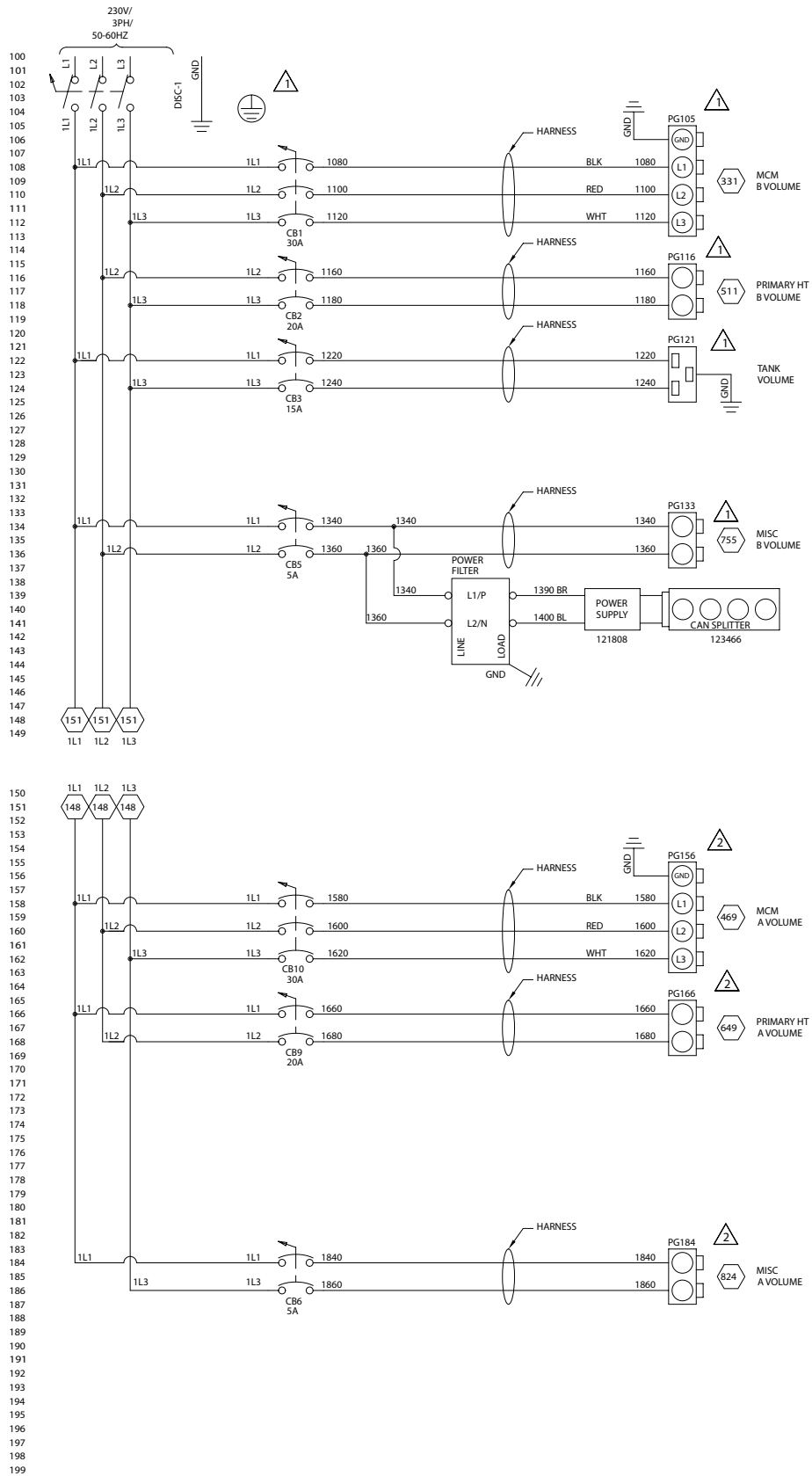


### 400V, 3 Phase, Loaded VRM Module Schematic

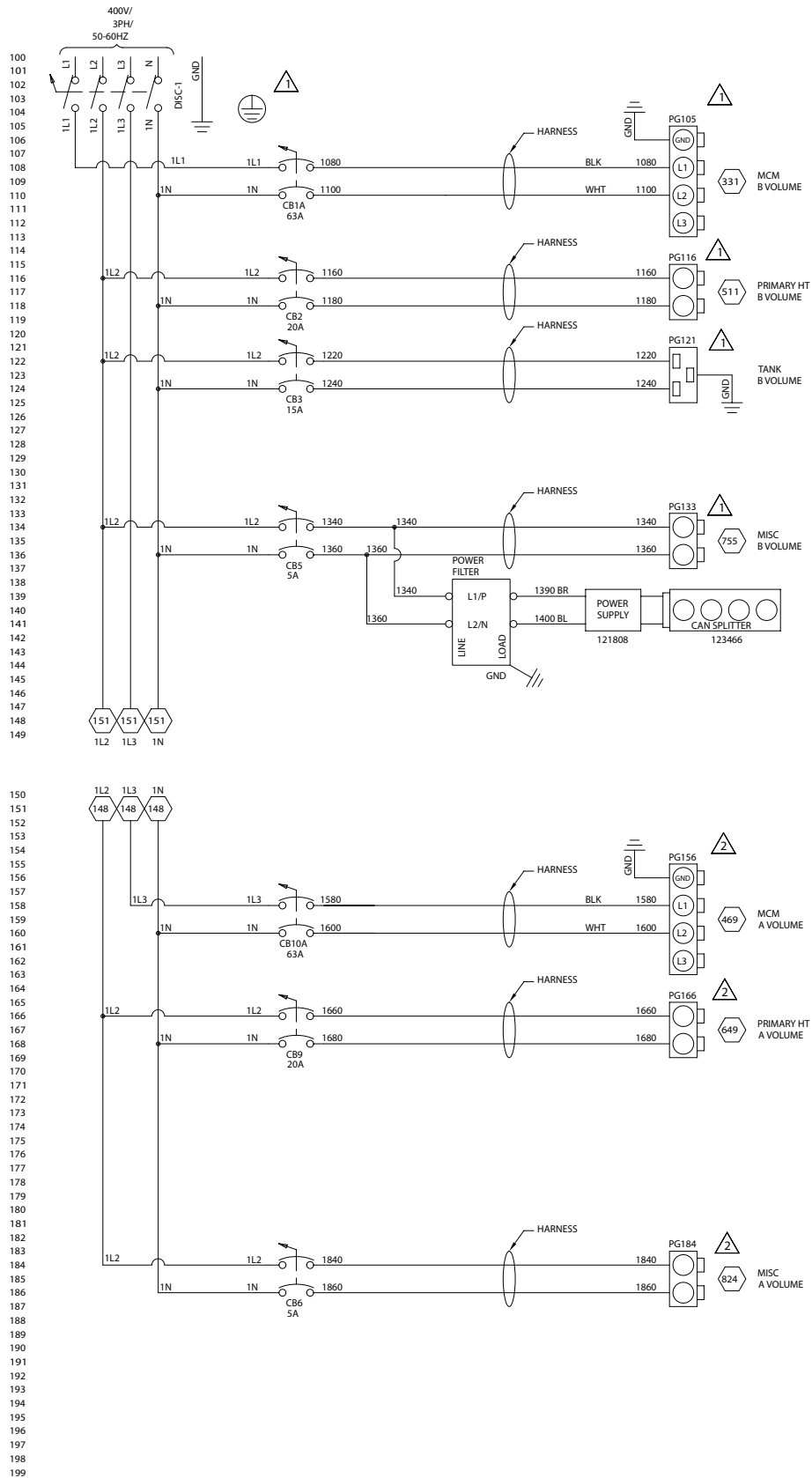




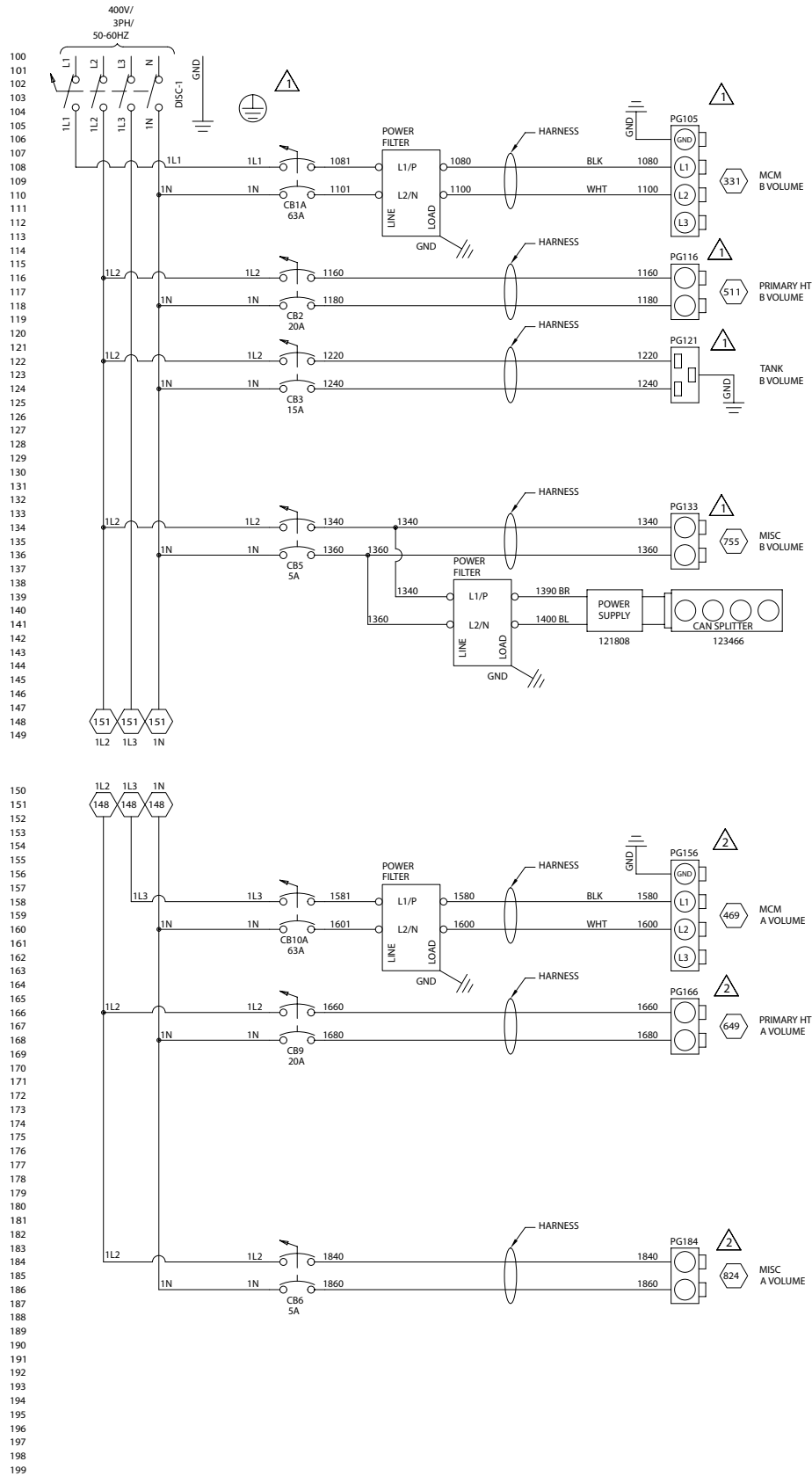
### 230V, 3 Phase, Loaded VPM Module Schematic



### 400V, 3 Phase, Loaded, Non-CE, VPM Module Schematic



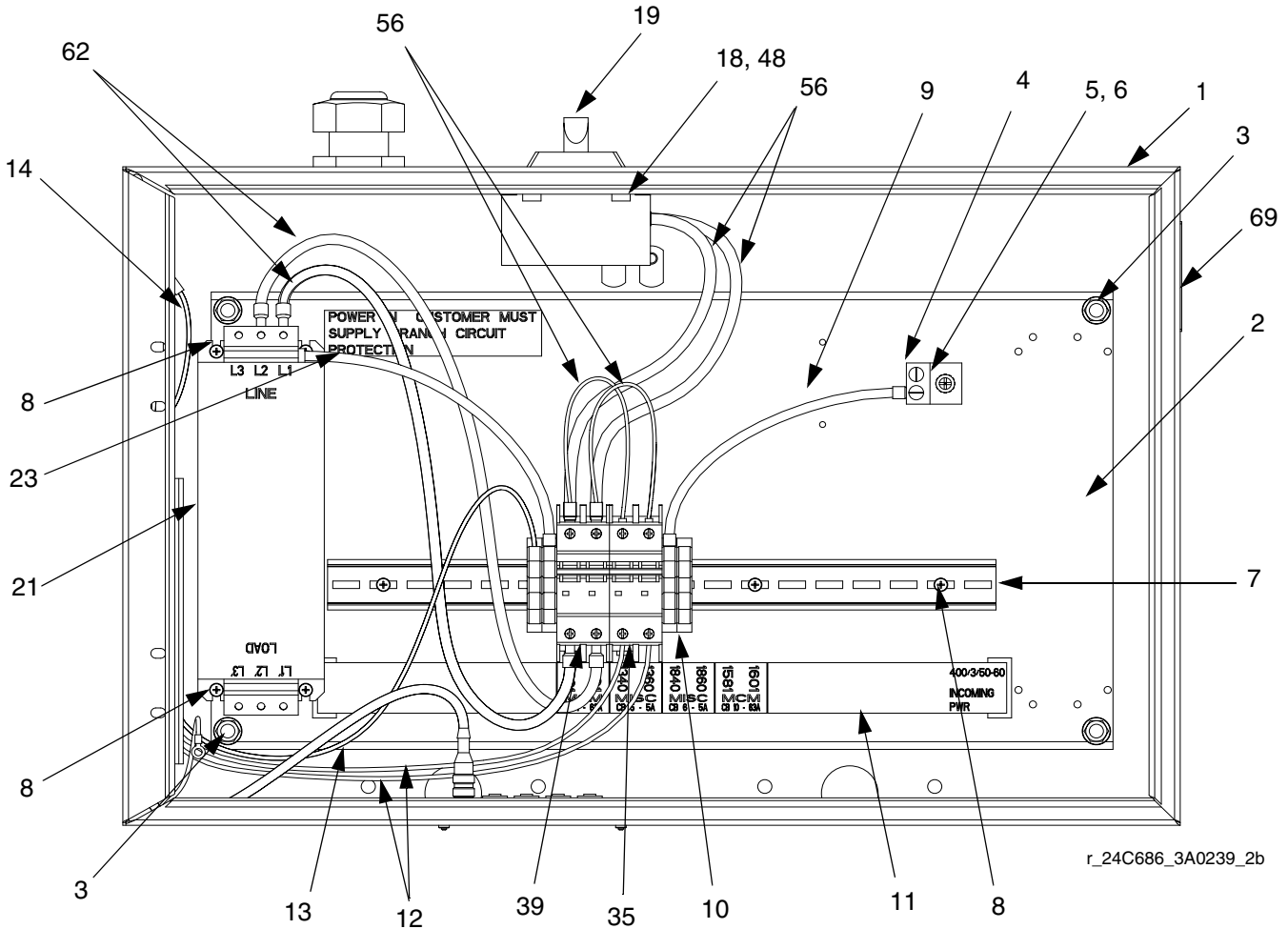
### 400V, 3 Phase, Loaded, CE approved, VPM Module Schematic



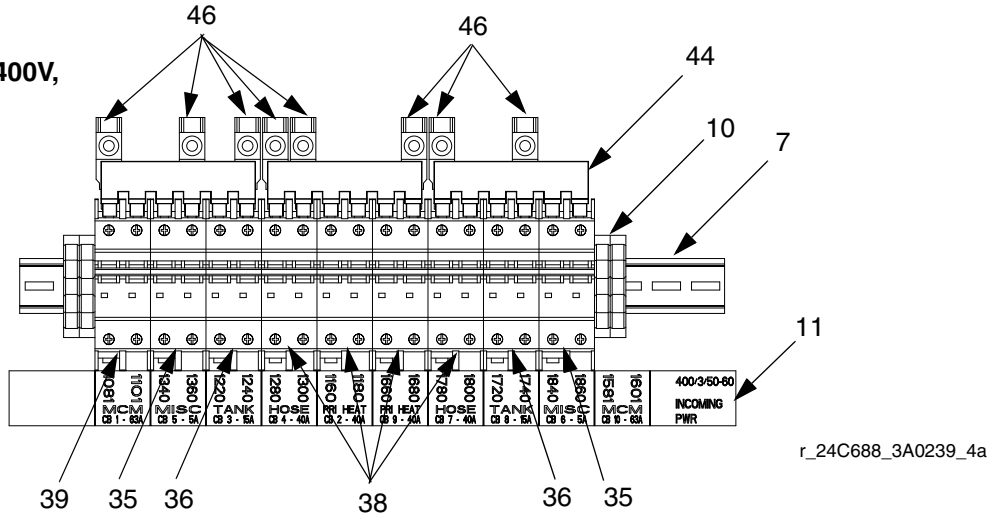
# Parts

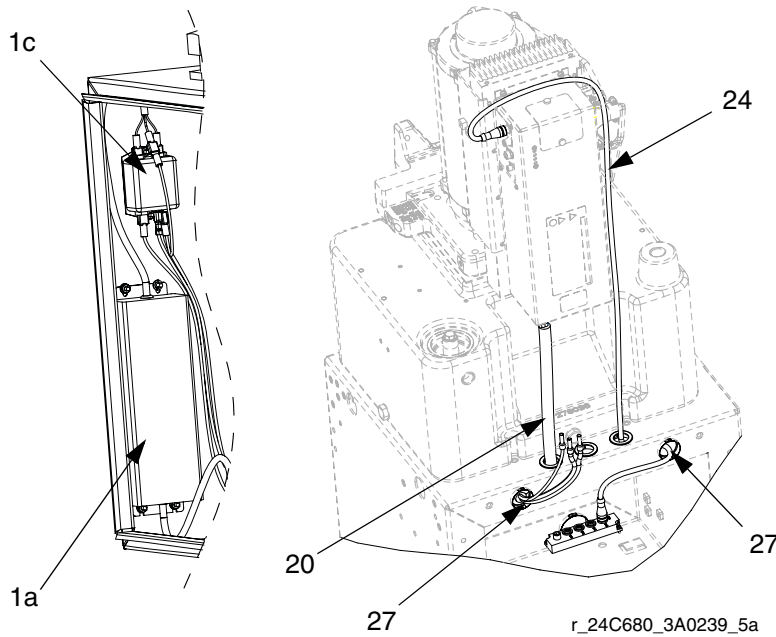
## HFR Power Distribution Modules

400V, 3 Phase, Basic Module Shown

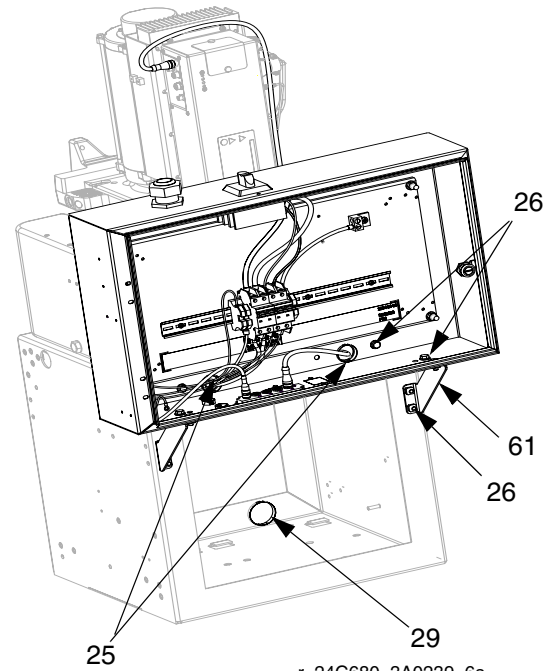


Circuit Breaker Detail for 400V, 3 Phase, Loaded Module





r\_24C680\_3A0239\_5a



r\_24C680\_3A0239\_6a

**Parts Used on All HFR Modules**

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	---	ENCLOSURE	1	24	122487	CABLE, CAN, male-female, 1.5 m	1
1a	24D207	SUPPLY, power; 24 Vdc, 4A, 100W, 230 Vac	1	25	123589	BUSHING, wire protector, snap-in	2
★▲1b	196548	LABEL, caution (on enclosure door)	1	26	111800	SCREW, cap, hex head	10
1c	123718	FILTER	1	27	123679	BUSHING, wire protector; 1 3/8 OD	3
2	---	PANEL, electrical	1	29	123590	PLUG, hole; 2 in. diameter	2
3	123396	NUT, flange, serrated; 3/8-16	4	61	---	BRACKET, support, electric	2
4	117666	TERMINAL, ground	1	69	---	LABEL, identification	1
5	113783	SCREW, mach, pan hd	1				
6	100985	WASHER, lock ext	1				
7	16A647	RAIL, din, 17.7 in.	1				
9	16A649	HARNESS, ground wire; 8 awg	1				
10	123363	BLOCK, terminal, ground, 10mm	4				
11	---	LABEL, identification	1				
12	24D217	HARNESS, wire, 16 awg, ferrule	2				
13	24D218	HARNESS, wire, 16 awg, ferrule, terminal ground	1				
14	24D220	HARNESS, wire, 18 awg, ring, terminal, ground	1				

★ Not shown.

--- Not for sale.

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

## Parts that Vary by HFR Module

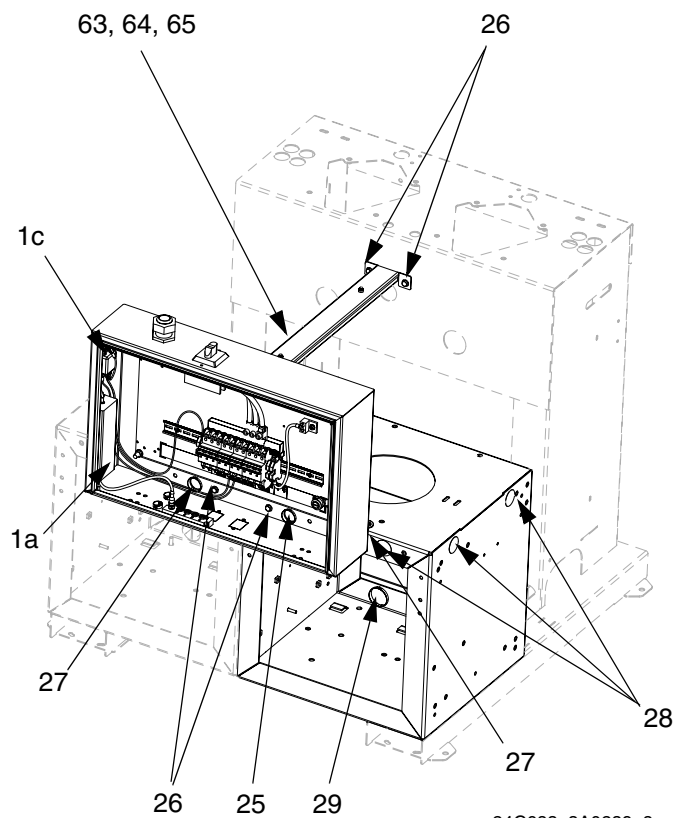
Use the following table to locate parts that vary by module. See **Parts Used on All HFR Modules**, page 21, for parts used on all HFR modules.

Ref.	Description	230V, 1 phase, basic	230V, 1 phase, loaded	230V, 3 phase, basic	230V, 3 phase, loaded	400V, 3 phase, basic	4000V, 3 phase, loaded	Qty.
8	SCREW, machine	103833(4)	103833(4)	103833(4)	103833(4)	103833(8)	103833(8)	-
18	SWITCH, disconnect	123969	123360	123969	123969	123969	123969	1
19	KNOB, operator disconnect	123967	123362	123967	123967	123967	123967	1
20	HARNESS, wire, MCM; 6/3	24C515	24C515			24C515	24C515	1
	HARNESS, wire, MCM; 10/4			24C516	24C516			1
21	FILTER, 55A, 3P					123785	123785	1
23	HARNESS, wire, 8 awg, ground					24D216	24D216	1
35	CIRCUIT, breaker, 2P, 5A	123296 (1)	123296 (2)	123296 (1)	123296 (2)	123296 (1)	123296 (2)	-
36	CIRCUIT, breaker, 2P, 15A		123350		123350		123350	2
38	CIRCUIT, breaker, 2P, 40A		123455		123455		123455	4
39	CIRCUIT, breaker, 2P, 63A	123668	123668			123668	123668	1
40★	CIRCUIT, breaker, 3P, 30A			123302	123302			1
41★	BUSS BAR, 3P, 6 PIN, 115A							1
43★	BUSS BAR, 3P, 18 PIN, 115A							1
44	BUSS BAR, 2P, 6 PIN, 115A		123310 (1)				123310 (3)	-
45★	BUSS BAR, 2P, 12 PIN, 115A		123474					1
46	CONNECTOR, lug, power, 115A		123306 (2)	123306 (3)	123306 (3)		123306 (8)	-
47★	CAP, lug, power			---				1
48	SWITCH, disconnect, ph exp 100A					123968	123968	1
56	HARNESS, wire 6 awg, 14 awg	16A650				16A650		2
57★	HARNESS, wire 6 awg			16A694 (3)				-
58★	HARNESS, wire 4 awg, ferruled		24D221 (4)		24D221 (3)		24D221 (6)	-
59★	HARNESS, wire, plug, tanks		24C517		24C517		24C517	2
62	HARNESS, wire, 6 awg, ferruled					16D536	16D536	2
72★	LATCH, plug, 30A		24E823		24E823		24E823	2

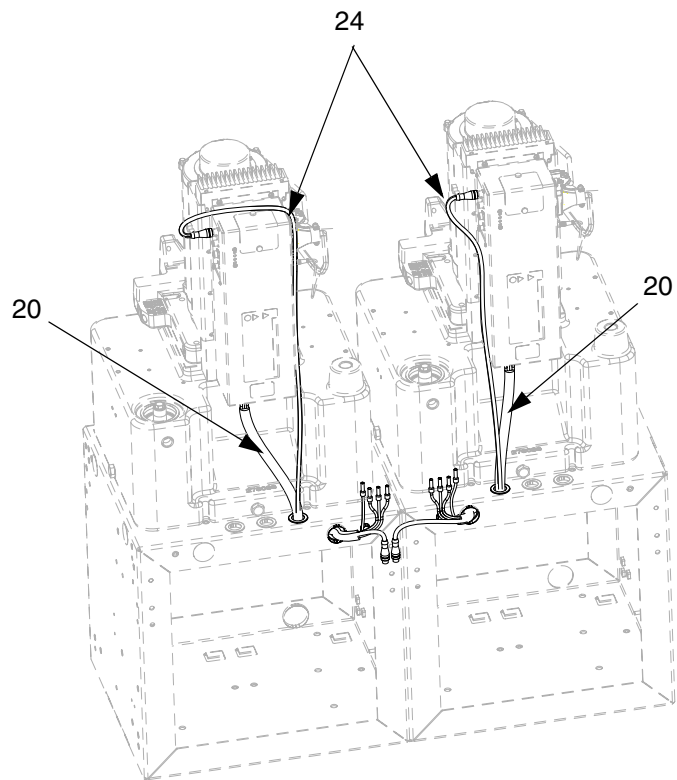
★ Not shown.

--- Not for sale.





r\_24C683\_3A0239\_8a



r\_24C683\_3A0239\_9a

**Parts Used on All VRM Modules**

Ref.	Part	Description	Qty.
1	---	ENCLOSURE	1
1a	24D207	SUPPLY, power; 24 Vdc, 4A, 100W, 230 Vac	1
★▲1b	196548	LABEL, caution (on enclosure door)	1
1c	123718	FILTER	1
2	---	PANEL, electrical	1
3	123396	NUT, flange, serrated; 3/8-16	4
4	117666	TERMINAL, ground	1
5	113783	SCREW, mach, pan hd	1
6	100985	WASHER, lock ext	1
7	16A647	RAIL, din, 17.7 in.	1
9	16A649	HARNESS, ground wire; 8 awg	1
10	123363	BLOCK, terminal, ground, 10mm	4
11	---	LABEL, identification	1
12	24D217	HARNESS, wire, 16 awg, ferrule	2
13	24D218	HARNESS, wire, 16 awg, ferrule, terminal ground	1
14	24D220	HARNESS, wire, 18 awg, ring, terminal, ground	1
24	122487	CABLE, CAN, male-female; 1.5 m	2
25	123589	BUSHING, wire protector, snap-in	2

Ref.	Part	Description	Qty.
26	111800	SCREW, cap, hex head	10
27	123679	BUSHING, wire protector; 1 3/8 OD	3
28	123398	PLUG, hole, 1.5 in. diameter	2
29	123590	PLUG, hole; 2 in. diameter	2
35	123296	CIRCUIT, breaker, 2P, 5A	2
63	24C477	BRACE, wireway, divided	1
64	24C478	COVER, wireway	1
65	102040	NUT, lock, hex	2
66★	124128	BUSHING, wire protector	1
69	---	LABEL, identification	1

★ Not shown.

--- Not for sale.

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



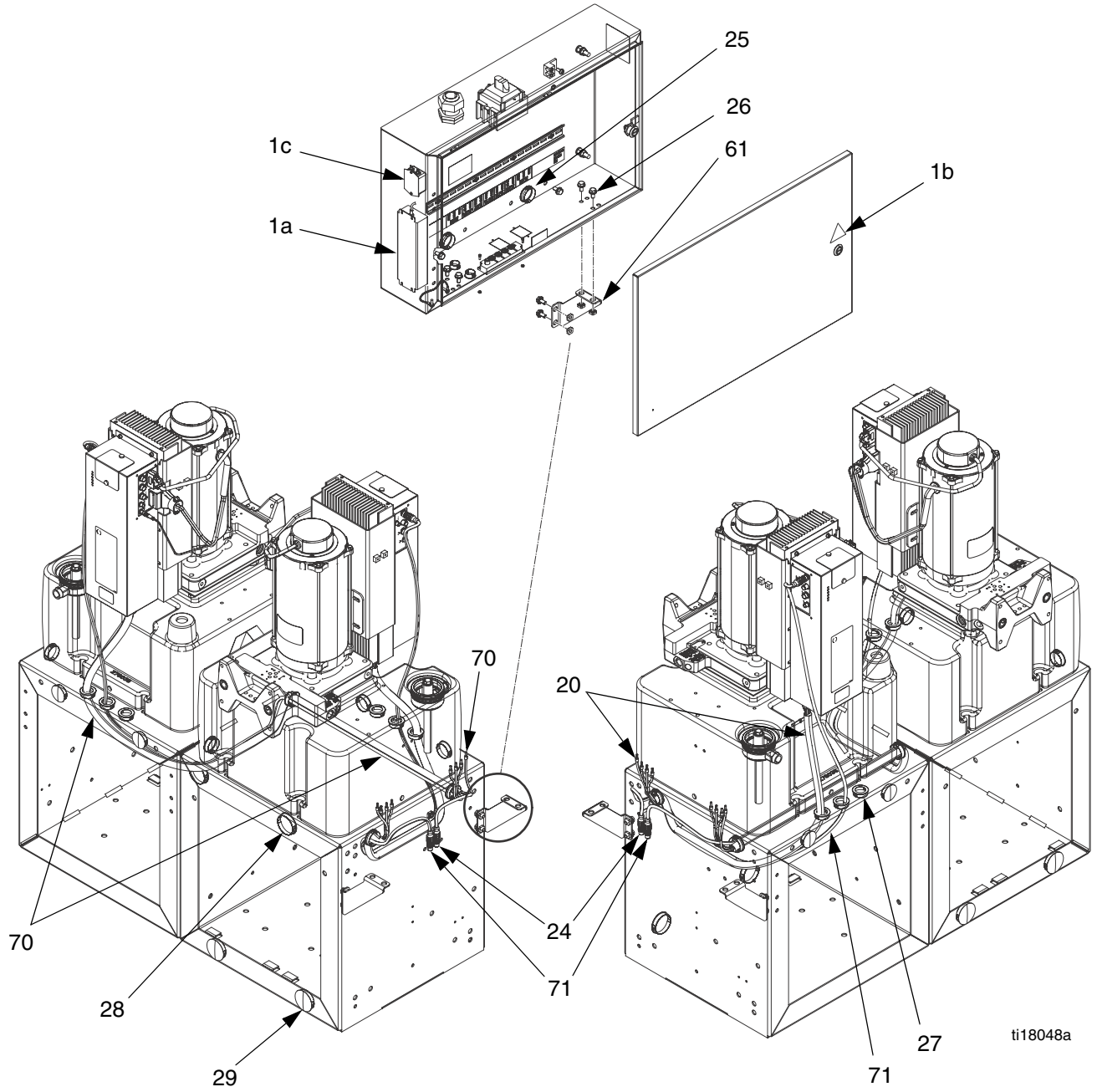
## Parts that Vary by VRM Module

Use the following table to locate parts that vary by module. See **Parts Used on All VRM Modules**, page 24, for parts used on all VRM modules.

Ref	Description	230V,3 phase, basic	230V, 3 phase, loaded	400V, 3 phase, basic	400V, 3 phase, loaded	Qty
8	SCREW, machine	103833 (4)	103833 (4)	103833 (14)	103833 (12)	-
18	SWITCH, disconnect	123969	123360	123969	123969	1
19	KNOB, operator disconnect	123967	123362	123967	123967	1
20	HARNESS, wire, MCM; 6/3			24C515	24C515	2
	HARNESS, wire, MCM; 10/4	24C516	24C516			2
21	FILTER, 55A, 3P			123785	123785	2
23	HARNESS, wire, 8 awg, ground			24D216	24D216	2
36	CIRCUIT, breaker, 2P, 15A		123350		123350	2
38	CIRCUIT, breaker, 2P, 40A		123455		123455	4
39	CIRCUIT, breaker, 2P, 63A			123668	123668	2
40★	CIRCUIT, breaker, 3P, 30A	123302	123302			2
42★	BUSS BAR, 2P, 6 PIN, 115A	123308	123308			1
43★	BUSS BAR, 3P, 12 PIN, 115A		123309			1
44	BUSS BAR, 2P, 6 PIN, 115A				123310	4
46	CONNECTOR, lug, power, 115A	123306 (3)	123306 (3)		123306 (8)	-
47★	CAP, lug, power	123311				1
48	SWITCH, disconnect, ph exp 100A			123968	123968	1
49	BLOCK, power distribution, 1 pole, 4 wire			123489		1
50	COVER, power distribution block			123490		1
55	HARNESS, wire, 2 awg		16A646 (3)	16A646 (1)		-
56	HARNESS, wire, 6 awg, 14 awg			16A650		4
57	HARNESS, wire, 6 awg	16A694 (3)				-
58★	HARNESS, wire, 4 awg				24D221	6
59★	HARNESS, wire, plug, tanks		24C517		24C517	2
62★	HARNESS, wire, 4 awg; 23 in.			16D536	16D536	4
72★	LATCH, plug, 30A		24E823		24E823	2

★ Not shown.





## Parts Used on All VPM Modules

Ref.	Part	Description	Qty	Ref.	Part	Description	Qty
				18	123969	SWITCH, disconnect	1
1	---	ENCLOSURE	1	19	123967	KNOB, operator disconnect	1
1a	24D207	SUPPLY, power; 24Vdc, 4A, 100W, 230 Vac	1	24	122487	CABLE, can, male-female, 1.5 m	1
★▲1b	196548	LABEL, caution (on enclosure door)	1	25	123589	BUSHING, wire protector, snap-in	4
1c	123718	FILTER	1	26	111800	SCREW, cap, hex hd	10
2	16A360	PANEL, electrical	1	27	123679	BUSHING, wire protector, snap-in	6
3	123396	NUT, flange, serrated; 3/8-16	1	28	123398	PLUG, hole, 1 1/2 diameter	6
4	117666	TERMINAL, ground	1	29	123590	PLUG, hole, 2 in. diameter	4
5	113783	SCREW, mach, pan hd	1	35	123296	CIRCUIT, breaker, 2P, 5A	2
6	100985	WASHER, lock ext	1	36	123350	CIRCUIT, breaker, 2P, 15A	1
7	16A647	RAIL, din, 17.7 in.	1	37	123298	CIRCUIT, breaker, 2P, 20A	2
8	103833	SCREW, mach, crbh	1	46	123306	CONNECTOR, lug, power, 115A	3
9	16A649	HARNESS, ground wire; 8 awg	1	61	---	BRACKET, support, electric	2
10	123363	BLOCK, terminal, ground, 10mm	1	69	---	LABEL, identification	1
12	24D217	HARNESS, wire, 16 awg, ferrule	6	71	123652	CABLE, can, male / female 3.5m	1
13	24D218	HARNESS, wire, 16 awg, ferrule, terminal ground	1				
14	24D220	HARNESS, wire, 18 awg, ring, terminal, ground	1				
				5	★	Not shown.	
				2	---	Not for sale.	
				1	▲	Replacement Danger and Warning labels, tags, and cards are available at no cost.	

## Parts that Vary by VPM Module

Use the following table to locate parts that vary by module. See **Parts Used on All VPM Modules**, page 28, for parts used on all VPM modules.

Ref.	Description	400V, 3 phase, non-CE	230V, 3 phase	400v, 3 phase, CE	Qty.
20	HARNESS, wire, MCM	24E624	24E625	24E624	1
21	FILTER, 55A, 3P			123785	2
23	HARNESS, wire, 8 awg, ground			24D216	2
39	CIRCUIT, breaker, 2P, 63A	123688		123668	2
	CIRCUIT, breaker, 3P, 30A		123302		2
42	BUSS BAR, 3P, 12 PIN, 115A		123308		1
44	BUSS BAR, 3P, 18 PIN, 115A		123309		1
	BUSS BAR, 2P, 6 PIN, 115A	123310		123310	2
47	CAP, lug, power (not shown)		123311		1
48	SWITCH, disconnect, ph exp 100A	123968		123968	1
49	BLOCK, power distribution, 1 pole, 4 wire	123489		123489	1
50	COVER, power distribution block	123490		123490	1
55	HARNESS, wire, 2 awg	16A646		16A646	1
57	HARNESS, wire, 6 awg	16A694		16A694	6
	HARNESS, wire, 4 awg, ferruled		24D221		3
62	HARNESS, wire, 6 awg, ferruled			16D536	4
70	HARNESS, wire, MCM	24E620	24E621	24E620	1



# 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](http://www.graco.com).

**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