

UPZC

Single- and multiple-zone controls for zone pumps and zone valves
60 Hz



1. General description	3
2. Special features	3
Additional features, UPZCP-3, -4, -6	3
Additional features, UPZCV-3, -4, -6	4
3. Applications	4
4. Identification	4
Nameplate	4
Production code	4
5. Product range	4
6. Operation	5
LED diagnostics	5
DIP-switch settings	6
7. Installation	7
Mechanical installation	7
Electrical installation	7
Wiring guidelines	7
Wiring diagrams, pump controllers	9
Wiring diagrams, zone valve controllers	18
8. Technical data	30
9. Approvals	31
10. Service	31
Service parts	31
11. Further product documentation	32

1. General description

The Grundfos UPZC series of zone controls is the ideal choice for single- and multiple-zone hydronic heating systems using either zone pumps or low-voltage zone valves.



Fig. 1 UPZC zone controls

All Grundfos UPZC multiple-zone controls are expandable to handle any size of job. UPZC zone controls can control boiler pumps, domestic hot-water pumps, and system pumps and assign priority.

The side-mounted terminals provide easy access and ease in wiring. The front-facing, easy-to-read LEDs on the front panel provide essential operating status.

2. Special features

Grundfos UPZC zone controls offer these features:

- Compatibility with 2-, 3-, and 4-wire, low-voltage controllers or thermostats.
- Wiring ease with 120 VAC, ground and low-voltage screw terminal inputs.
- Front-facing LEDs on the front.
- Side-mounted terminal connections for ease of wiring and installation.

Additional features, UPZCP-3, -4, -6

Grundfos UPZCP-3, -4, -6 zone controls offer these additional features:

- Pump exercise, selectable for 72 hours or 14 days
 - The pumps are turned on for 30 seconds every 72 hours or 14 days in order to prevent the pumps from seizing up. This feature only works if there is a jumper connecting the ZR-ZC terminals on the pump controller.
- Post-purge for pump controllers. After the priority zone calls for heat, the priority pump will be allowed to run for an additional two minutes after the thermostat contacts open. This allows some of the residual heat in the boiler to be transferred to the water.
- Boiler demand terminals
 - The two terminals, labeled "XX MAIN", are wired to the boiler. When the contacts close, the boiler starts and reaches a preset temperature for hydronic heating.
- DHW terminal
 - The two terminals, labeled "XX PRIORITY", are wired to the boiler. When the contacts close, the boiler starts and reaches a preset temperature for domestic hot-water heating.
- ZR-ZC terminals
 - The terminals are available on the pump controllers only. These terminals are connected by a jumper at the factory. The ZR terminal is always powered with 120 VAC. When you remove the jumper, all 120 V power is removed from the pumps.

Additional features, UPZCV-3, -4, -6

Grundfos UPZCV-3, -4, -6 zone controls offer these additional features:

- Low-voltage, end-switch output terminals for the zone valves
- Replaceable, snap-fit 40 VA transformer for the zone valve controllers only
- Zone priority with selectable time-out feature
- Pump exercise, selectable for 72 hours or 14 days
 - The pumps are turned on for 30 seconds every 72 hours or 14 days in order to prevent the pumps from seizing up.
- Boiler demand terminals
 - The two terminals, labeled "XX MAIN", are wired to the boiler. When the contacts close, the boiler starts and reaches a preset temperature for hydronic heating.
- DHW terminal
 - The two terminals, labeled "XX PRIORITY", are wired to the boiler. When the contacts close, the boiler starts and reaches a preset temperature for domestic hot-water heating.

3. Applications

Grundfos UPZC zone controls are for single- and multiple-zone, domestic, hydronic heating systems:

UPZCP-1

- For single-zone pump control.

UPZCP-3, -4, -6

- For multiple-zone pump control.

UPZCV-3, -4, -6

- For multiple-zone valve control.

4. Identification

Nameplate

The nameplate on the front of the product shows the model, part number, and required electrical input.

The power indicator light and LEDs are located on the nameplate.

See figures 2, 3, and 4.

Production code

The production code represents the date of manufacture. You can find the production code on the circuit board and the carton label.

Example:

PC 1542 = year 2015, week 42.

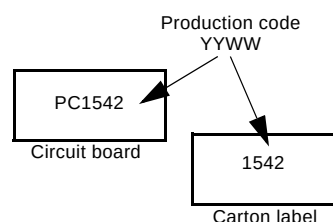


Fig. 1 Locating the production code

5. Product range

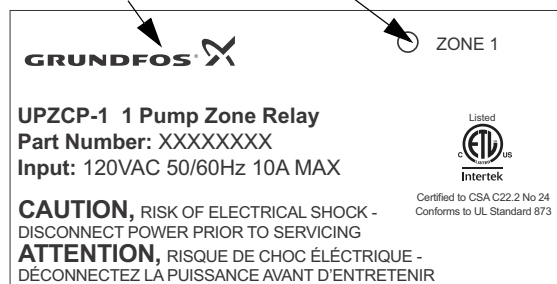
Model	Description
UPZCP-1	Single-pump zone control
UPZCP-3	Three-pump zone control
UPZCP-4	Four-pump zone control
UPZCP-6	Six-pump zone control
UPZCV-3	Three-valve zone control
UPZCV-4	Four-valve zone control
UPZCV-6	Six-valve zone control

6. Operation

LED diagnostics

The power indicator light "Grundfos" is lit when you power on the unit.

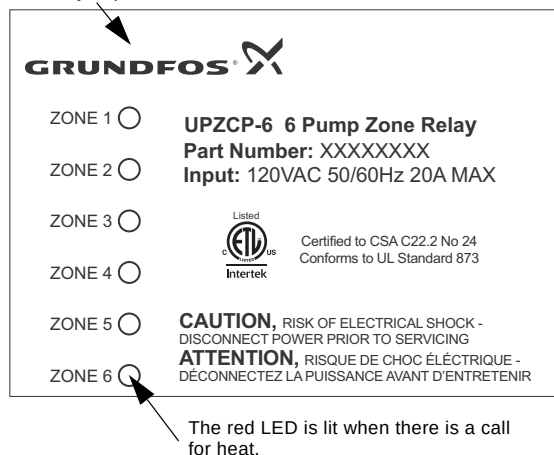
The red LED is lit when there is a call for heat.



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Fig. 2 UPZCP single-zone pump-relay LED

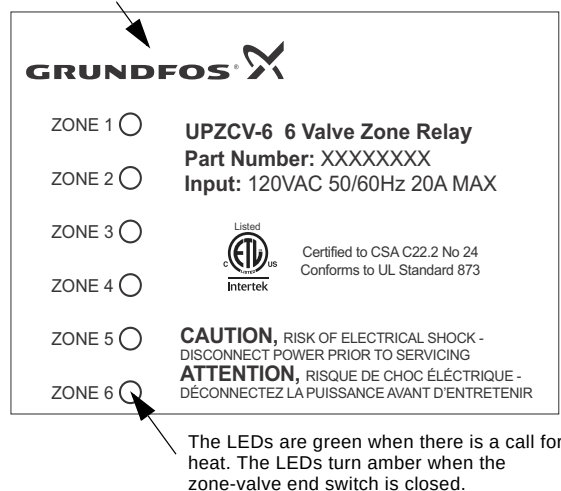
The power indicator light "Grundfos" is lit when you power on the unit.



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Fig. 3 UPZCP multiple-zone pump-relay LEDs

The power indicator light "Grundfos" is lit when you power on the unit.



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Fig. 4 UPZCV multiple-zone valve-relay LEDs

DIP-switch settings

UPZCP-3, -4, -6

Master/Slave

Allows expansion to additional Grundfos UPZC units.

Priority ON

Zone 1 operates as priority and the other zones are switched off for a selectable 30- or 60-minute time-out.

Post Purge ON

The boiler pump continues to run for two minutes after priority ends to remove residual heat from the boiler.

Pump Exercise ON

The pumps operate for 30 seconds every 72 hours or every 14 days.

Primary ON

During the priority demand, select whether the primary pump is ON or OFF.

Slave	☐	Master
Priority ON	☐	OFF
Priority 30 min.	☐	60 minutes
Post Purge ON	☐	OFF
Pump Exercise ON	☐	OFF
Exercise 30 sec./72 hrs.	☐	30 sec./14 days
Primary ON	☐	OFF

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UPZCV-3, -4, -6

Master/Slave

Allows expansion to additional Grundfos UPZC units.

Priority ON

Zone 1 operates as priority and the other zones are switched off for a selectable 30- or 60-minute time-out.

Pump Exercise ON

The pumps operate for 30 seconds every 72 hours or every 14 days.

Boiler Pump ON/Secondary Pump ON

You can control the boiler pump and secondary pump to ON or OFF during priority demand.

Slave	☐	Master
Priority ON	☐	OFF
Priority 30 min.	☐	60 minutes
Pump Exercise ON	☐	OFF
Exercise 30 sec./72 hrs.	☐	30 sec./14 days
Boiler Pump ON	☐	OFF
Secondary Pump ON	☐	OFF
During priority demand		

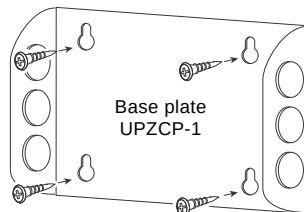
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7. Installation

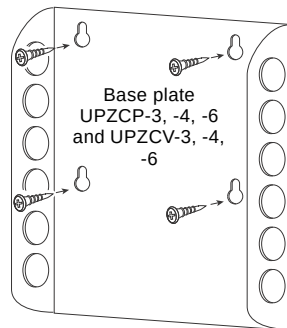
Mechanical installation

Installing the base plate

The base plate must be firmly attached to the wall surface with four screws and anchors using the key holes provided.



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Fig. 5 Attach the base plate to the wall with screws and anchors

Electrical installation

All electrical connections must be made using copper wire only.

We recommend that you use these AWG wire sizes:

- 12-16 AWG wire for 120 VAC connections.
- 12-22 AWG wire for thermostat connections.
- 12-22 AWG wire for 24 VAC connections.

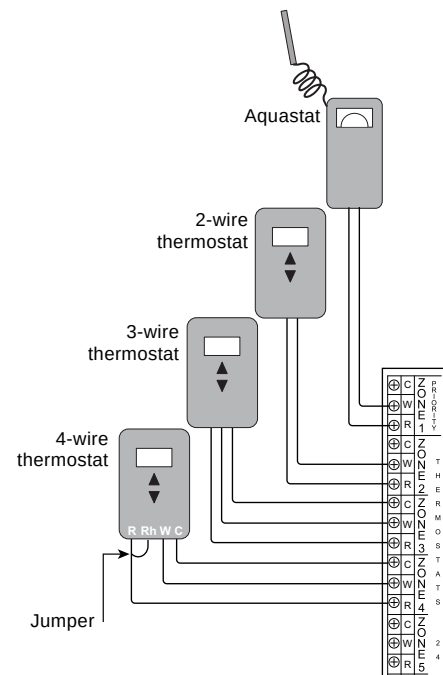
Use approved UL conduit fittings.

Additional wiring schematics, specs, and troubleshooting help is available online at www.grundfos.us/controls.

Wiring guidelines

Also see sections [Wiring diagrams, pump controllers](#) on page 9 and [Wiring diagrams, zone valve controllers](#) on page 18.

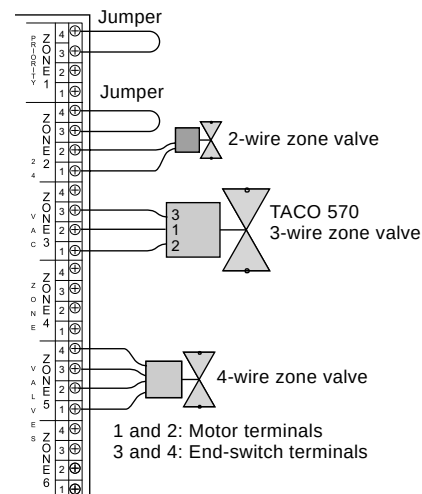
Wiring for thermostats



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Fig. 6 Example of thermostat wiring

Wiring for valves, UPZCV-3, -4, -6



1 and 2: Motor terminals
3 and 4: End-switch terminals

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Fig. 7 Example of wiring for zone valves

Wiring for pumps, UPZCP-3, -4, -6

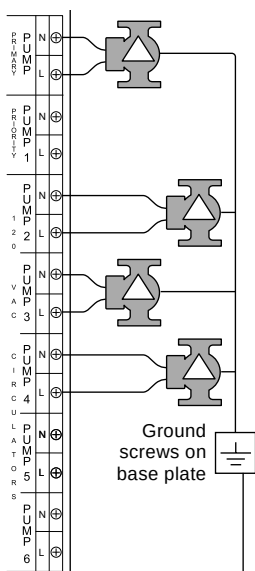


Fig. 8 Example of wiring for pumps

Wiring for two or more boards, expansion

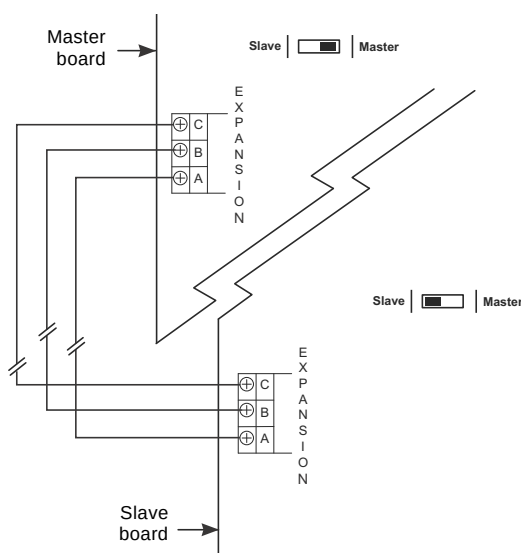


Fig. 9 Example of wiring for expansion controllers

Wiring for two or more controllers

See fig. 9 for example.

When connecting two or more controllers:

- You can only use the master controller with priority.
- When priority calls, the master board will produce 5 VDC between terminals B and C. This tells the slave board to turn off any zones that are calling for heat. This will also close the contacts "XX PRIORITY".
- When there is a demand for heat, the slave board will produce 5 VDC between terminals A and C. This tells the master board to activate any boiler or secondary pumps and close the contacts "XX MAIN".
- You can connect the pump and valve boards.
- When the slave board calls for heat, the secondary pump will be powered. If a boiler pump and secondary pump are to be used, they must be connected to the same terminals.
- You can use the low voltage wire to connect ABC terminals.
- The 120 VAC power supply must be connected to each board.
- The L and N terminals must be connected the same way on each board. If switched, a differential of 240 VAC can occur resulting in damage to the equipment.

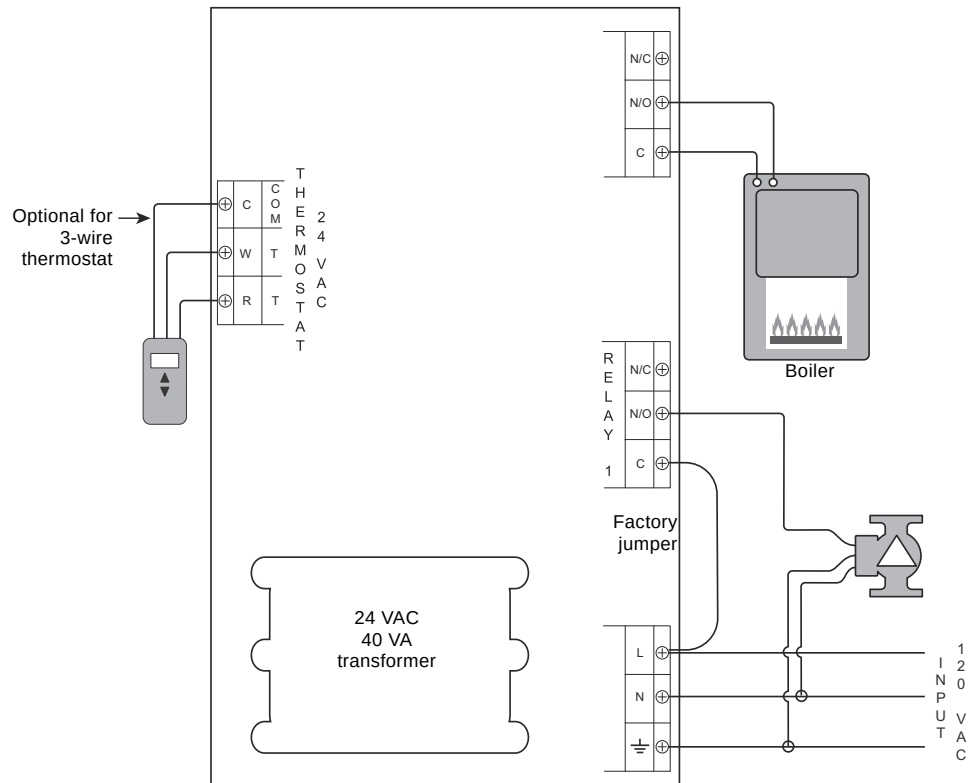
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Wiring diagrams, pump controllers

UPZCP-1 single-zone pump control

Setup with one thermostat



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Fig. 10 UPZCP-1 single-zone with one thermostat

UPZCP-1 single-zone pump control

Setup with multiple zones

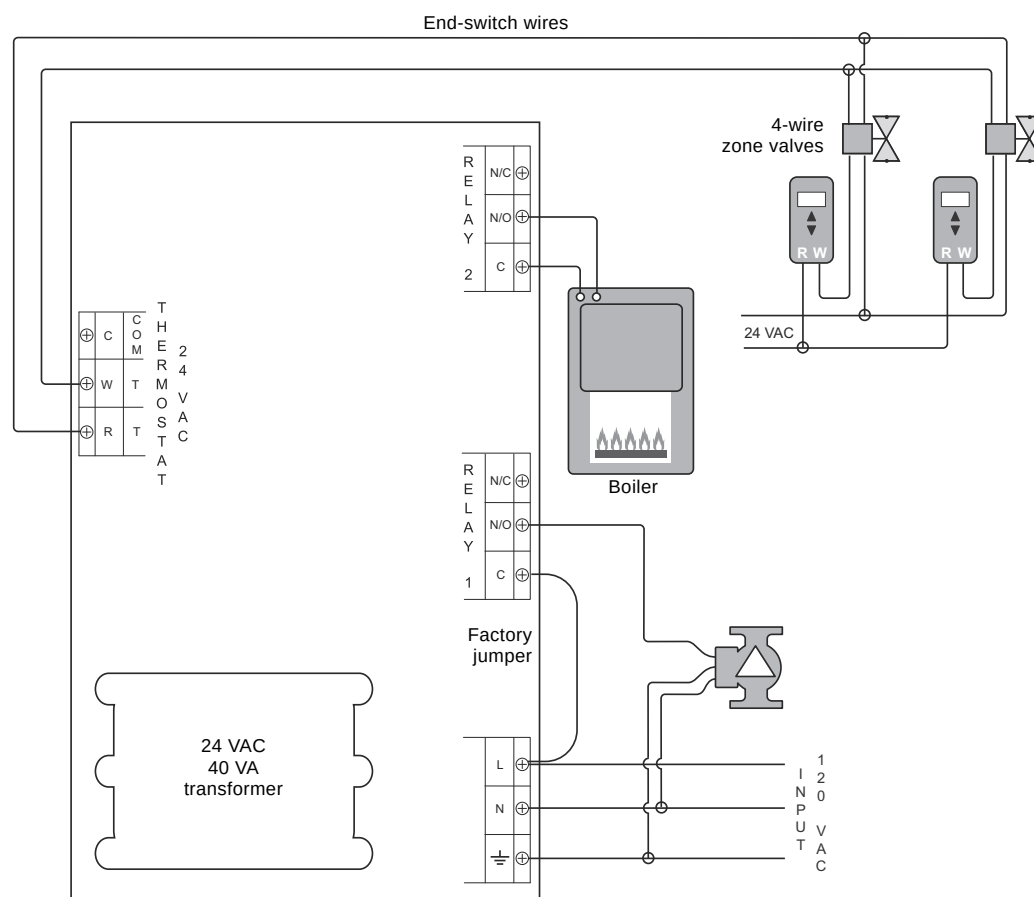
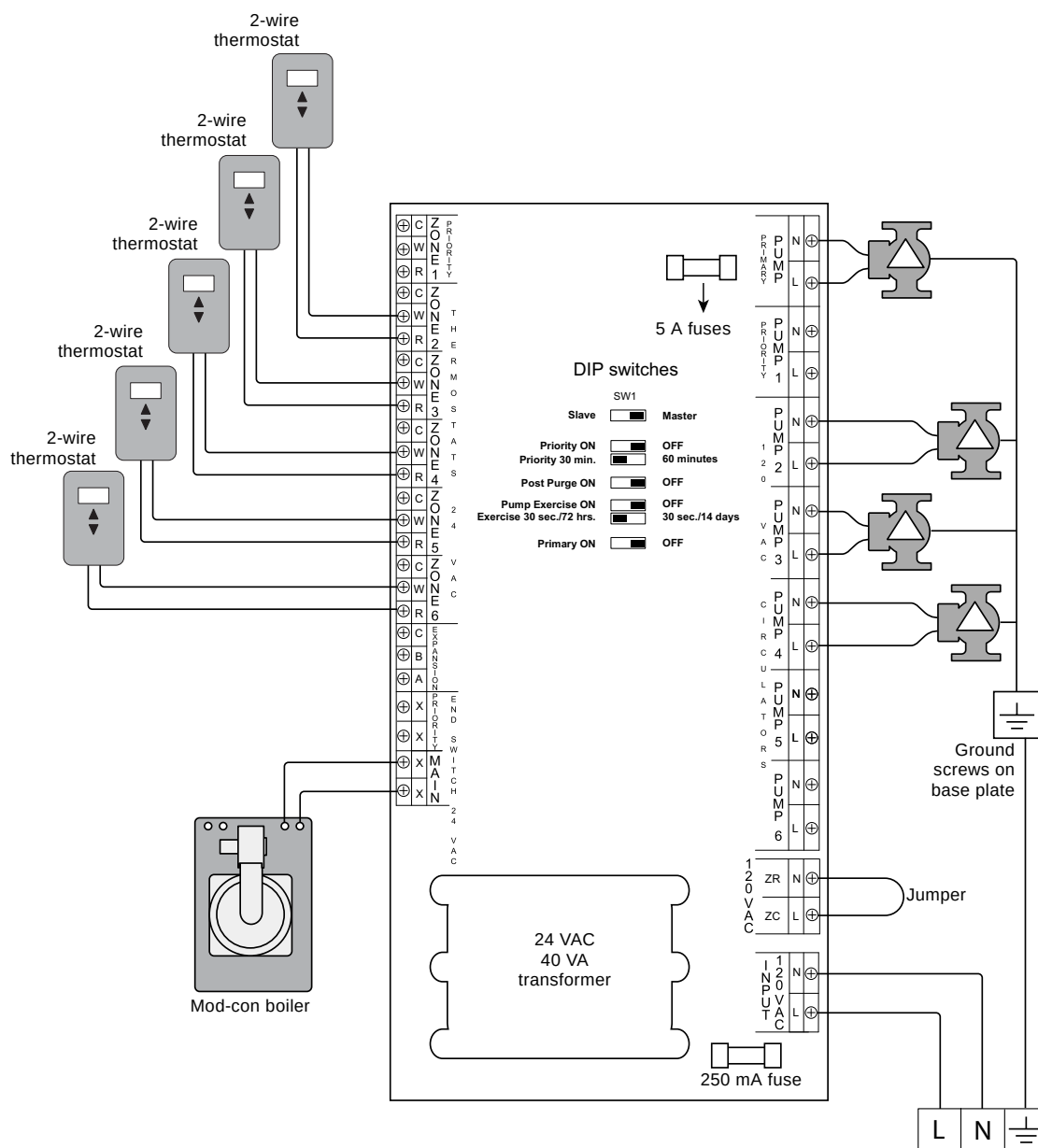


Fig. 11 UPZCP-1 with multiple zones

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UPZCP-3, -4, -6 multiple-zone pump control

Setup with modcon boiler, primary and secondary loops



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Fig. 12 Wiring diagram, P1

UPZCP-3, -4, -6 multiple-zone pump control

Setup with conventional boiler, two-pipe direct return, and indirect DHW

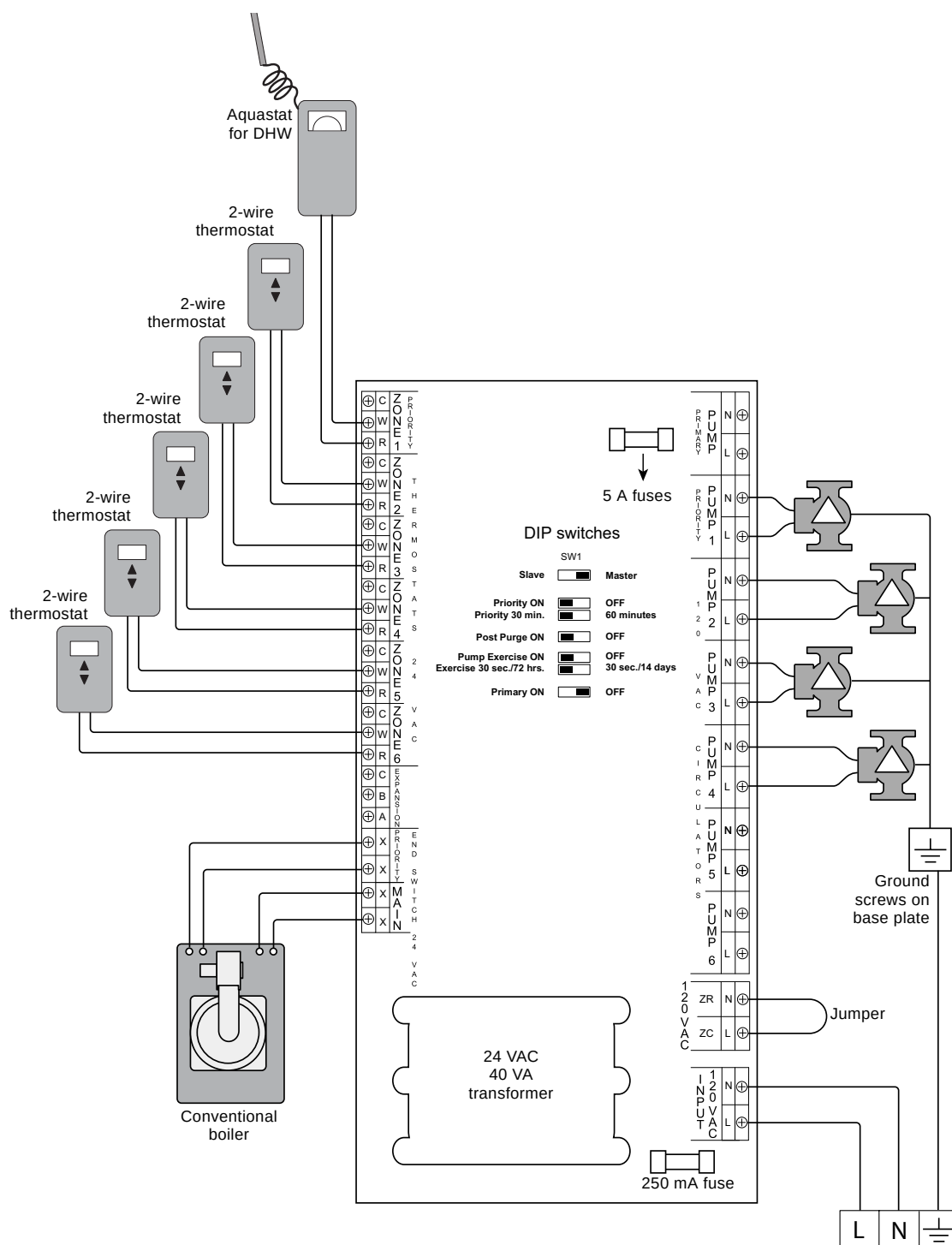
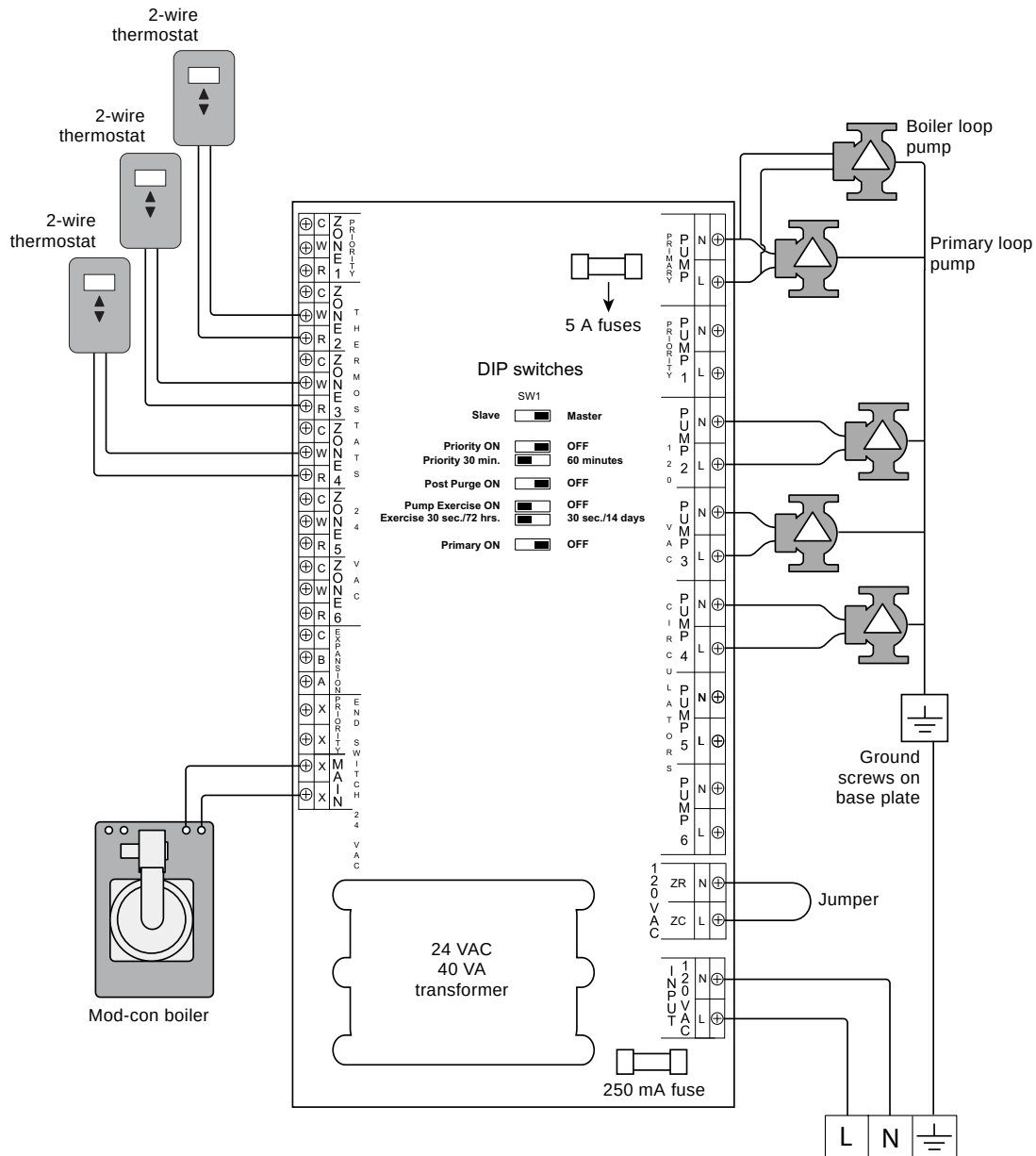


Fig. 13 Wiring diagram, P2

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UPZCP-3, -4, -6 multiple-zone pump control

Setup with mod-con boiler, primary loop



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Fig. 14 Wiring diagram, P3

Setup with modified wiring: Boiler activates zone pumps using ZR/ZC control; primary and DHW pumps connect directly to boiler.

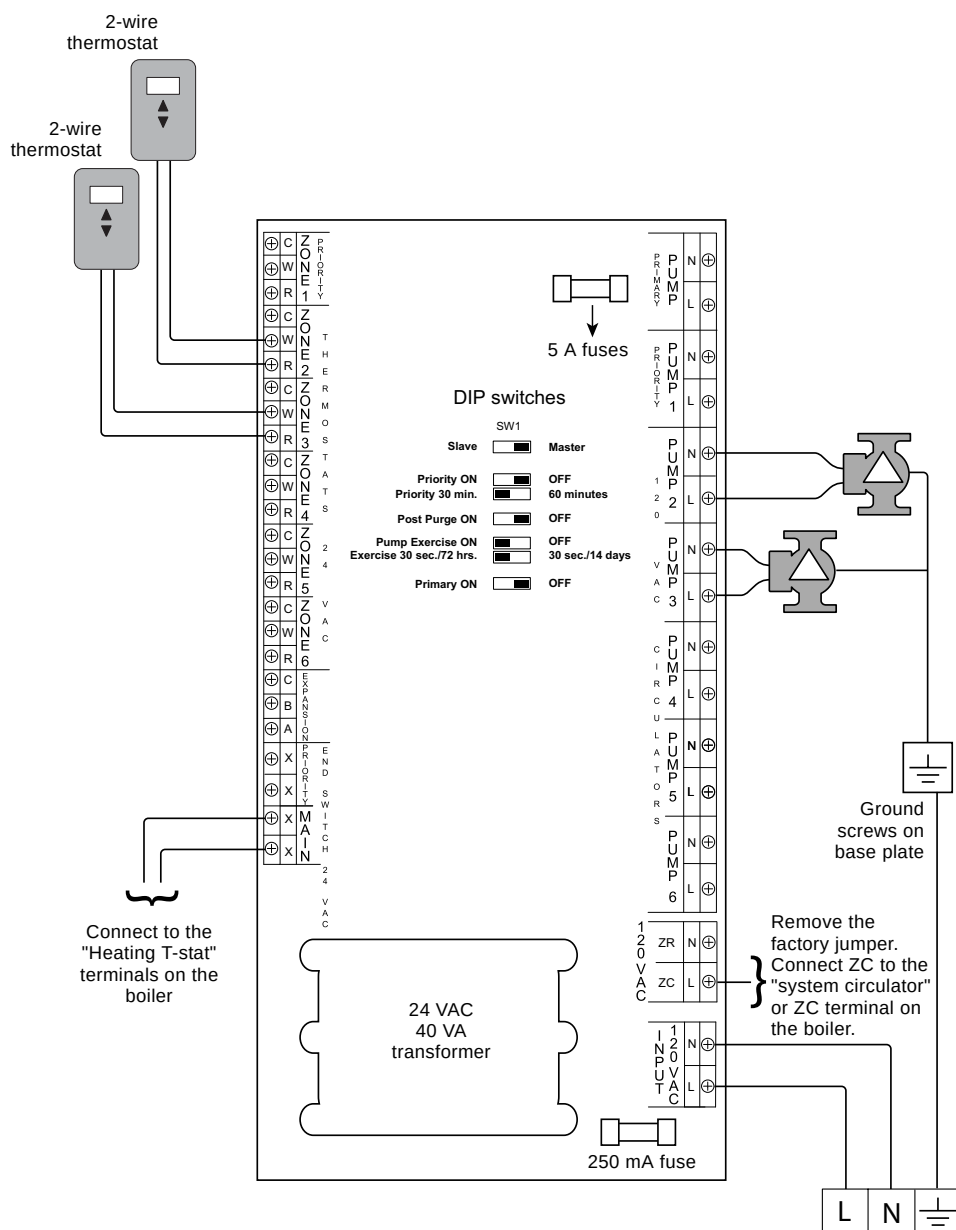


Fig. 15 Wiring diagram, P4

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Setup with mod-con boiler, two-pipe direct return, indirect DHW, two controllers connected, master controller

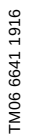
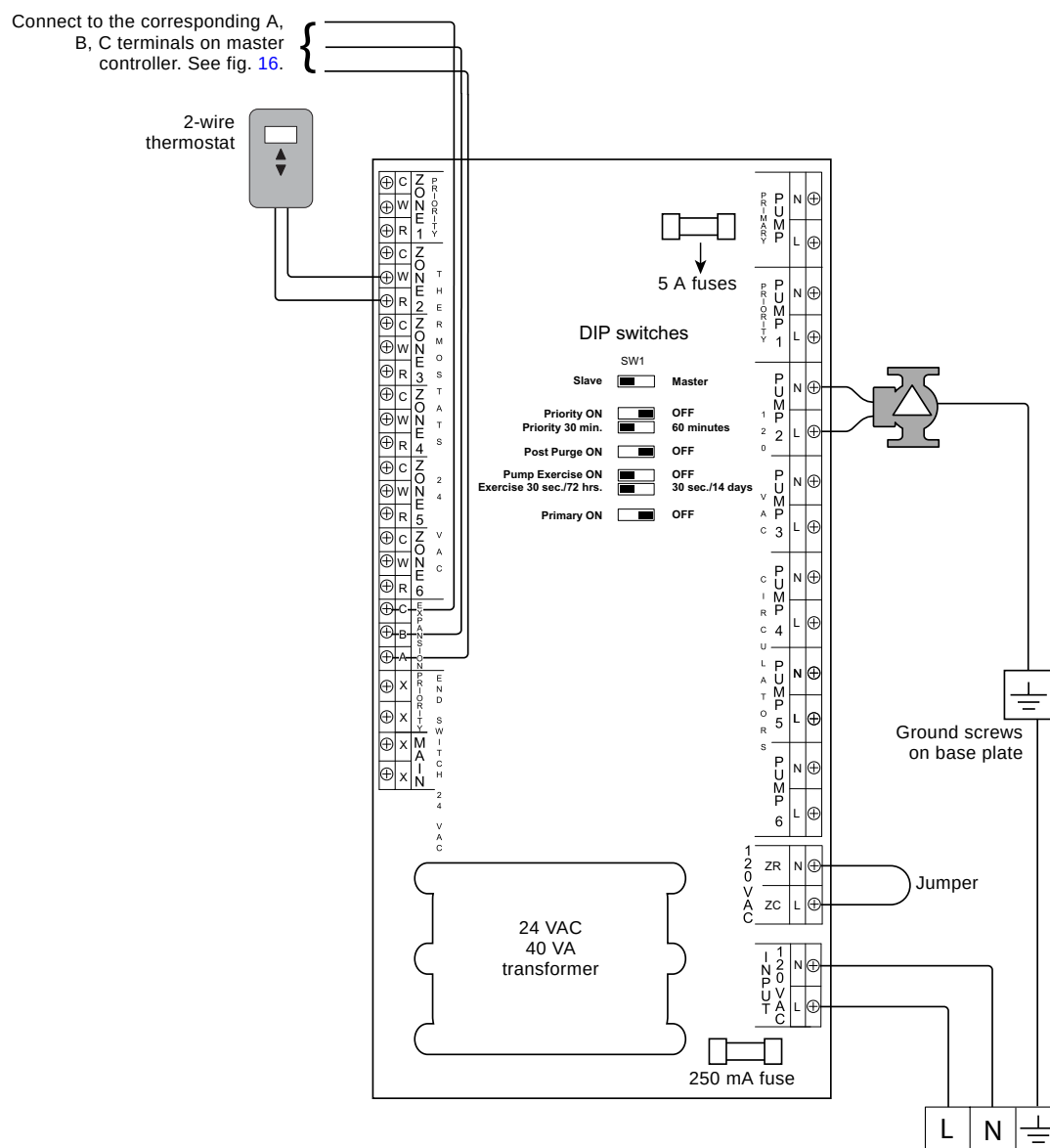


Fig. 16 Wiring diagram, P5, master.

See fig. 17 for corresponding diagram for slave controller.

UPZCP-3, 4, 6 multiple-zone pump control

Setup with mod-con boiler, two-pipe direct return, indirect DHW, two controllers connected, slave controller



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Fig. 17 Wiring diagram, P5, slave controller.

See fig. 16 for corresponding diagram for master controller.

Wiring diagrams, zone valve controllers

UPZCV-3, -4, -6 multiple-zone valve control

Setup with mod-con boiler, primary and secondary loops

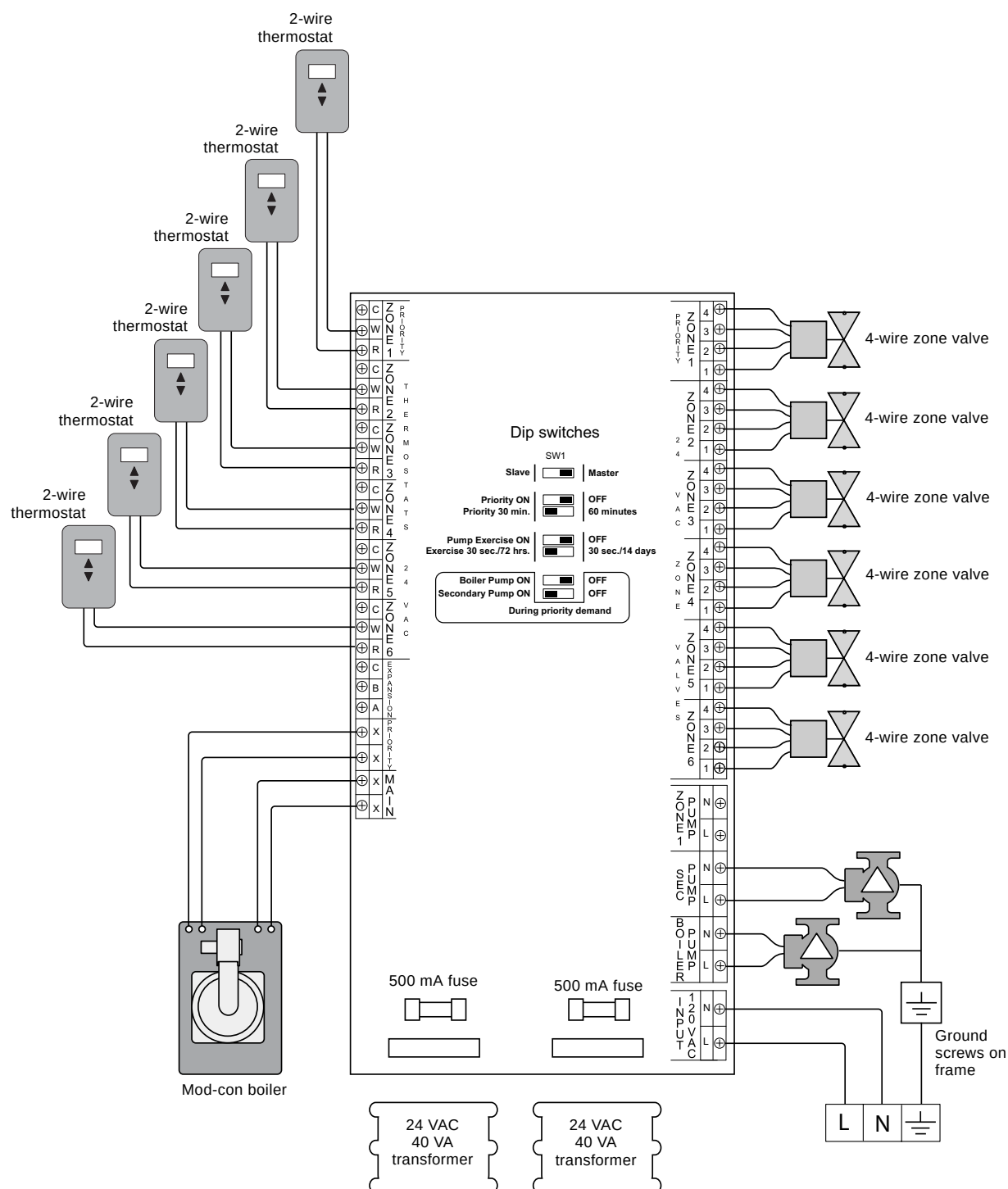
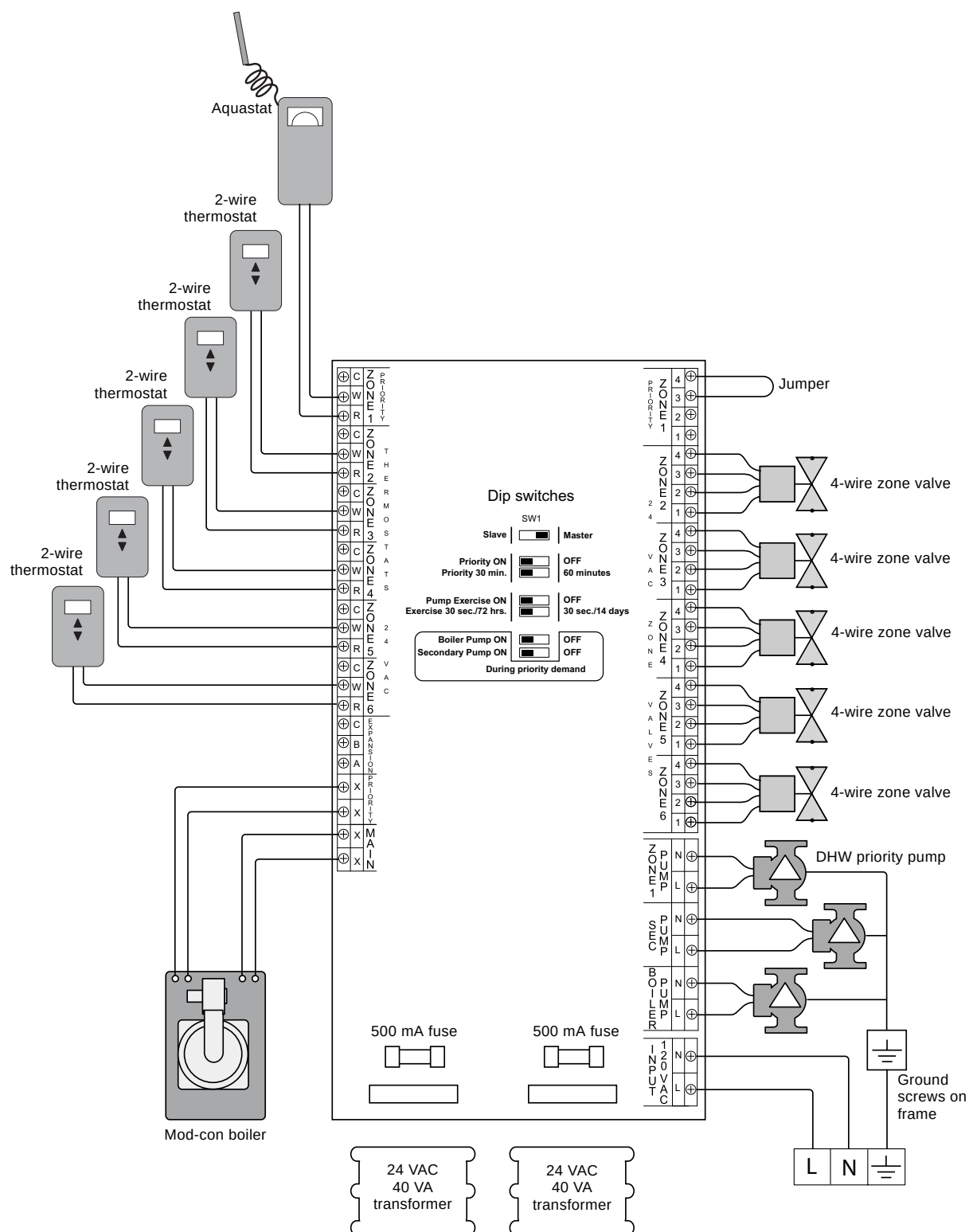


Fig. 18 Wiring diagram, V1

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UPZCV-3, -4, -6 multiple-zone valve control

Setup with mod-con boiler, primary and secondary loops, indirect DHW on secondary loop



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UPZCV-3, -4, -6 multiple-zone valve control

Setup with mod-con boiler, primary and secondary loops, indirect DHW on primary loop, two controllers connected, master controller

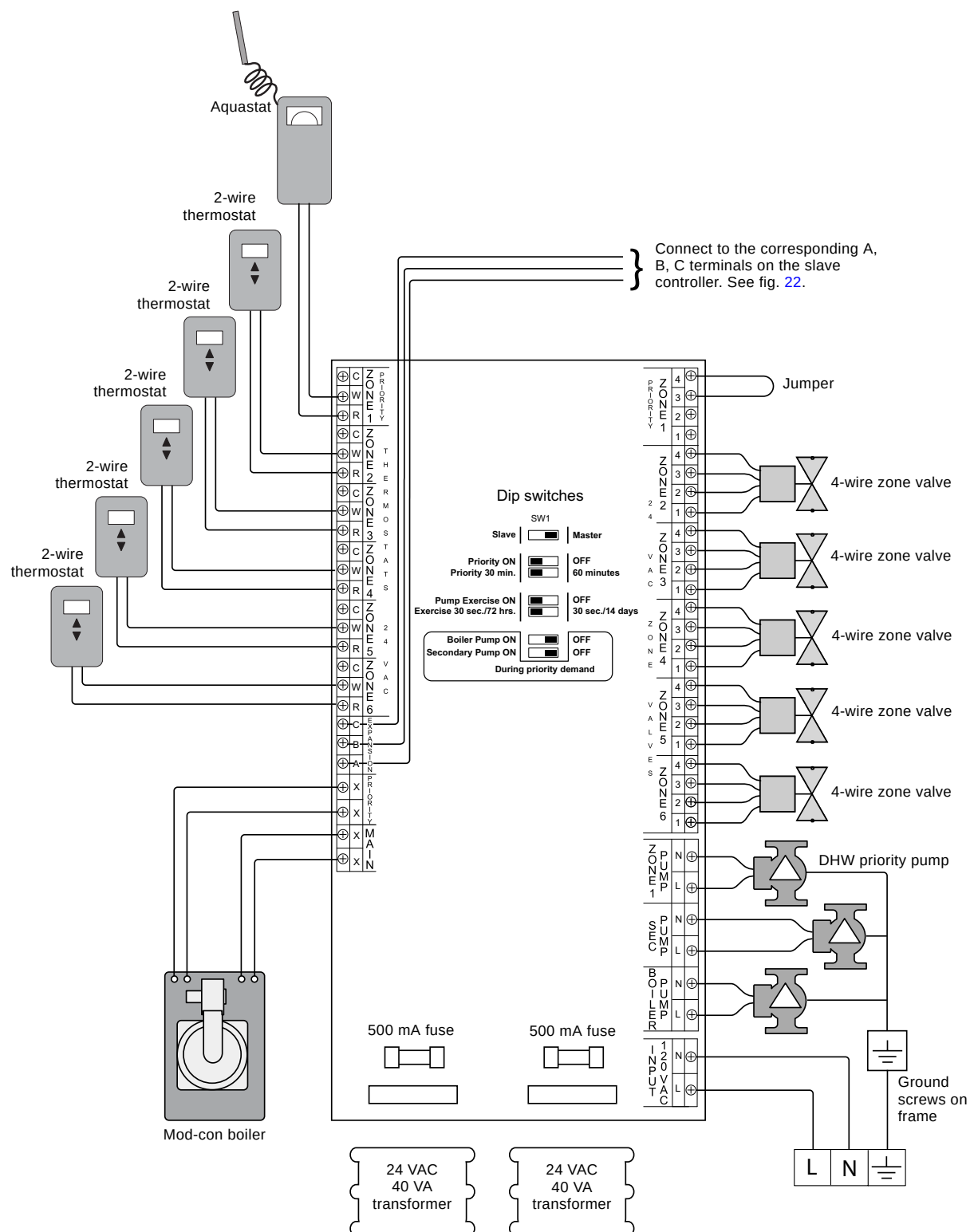
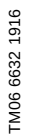


Fig. 21 Wiring diagram, V4, master controller.

See fig. 22 for corresponding diagram for slave controller.

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Setup with conventional boiler, two-pipe direct return with indirect DHW*



* This setup can also be used with priority. Set the priority DIP switch to ON, and connect the "XX PRIORITY" contacts to the boiler.

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UPZCV-3, -4, -6 multiple-zone valve control

Setup with mod-con boiler, primary and secondary loops, two secondary pumps, two controllers connected, master controller

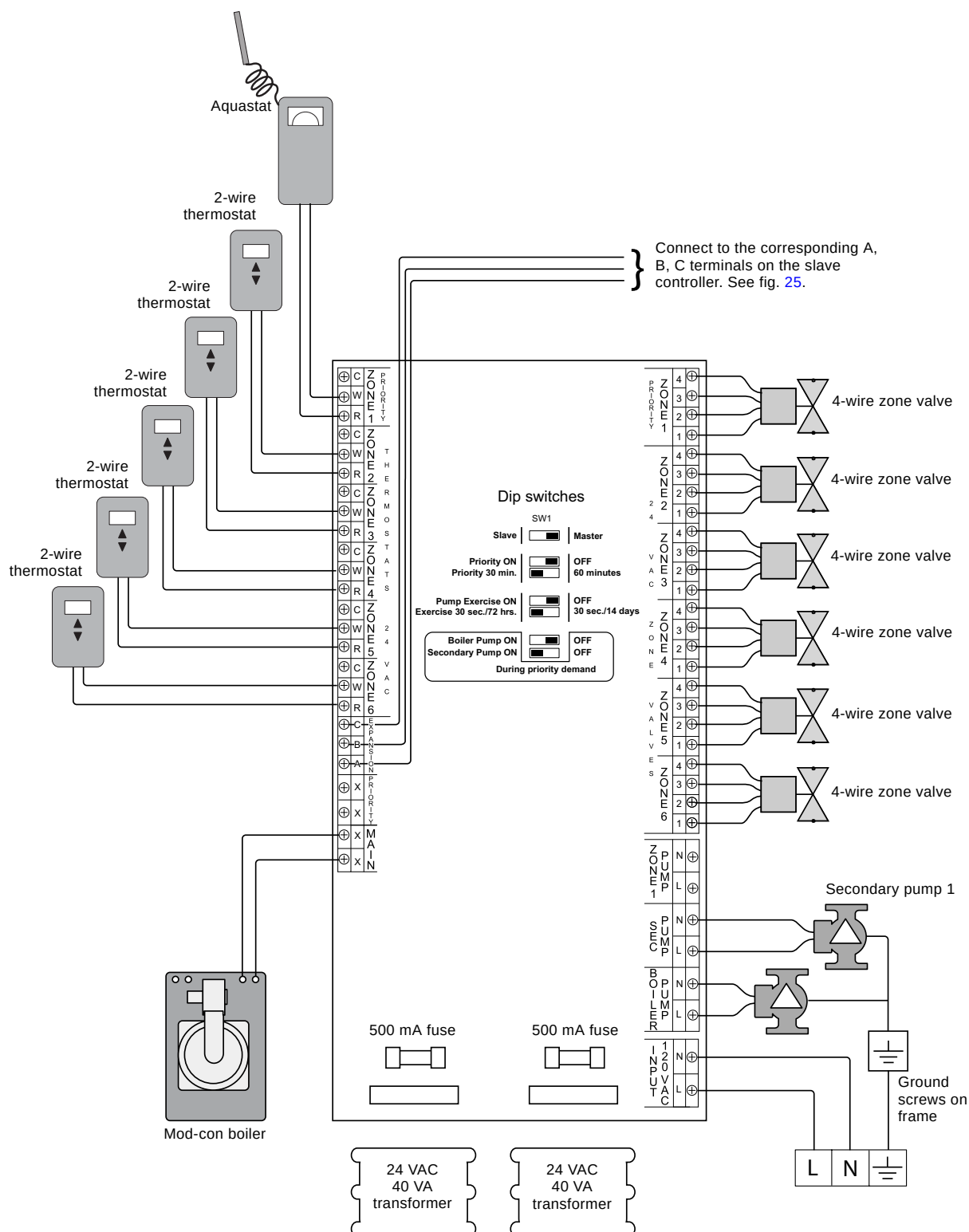
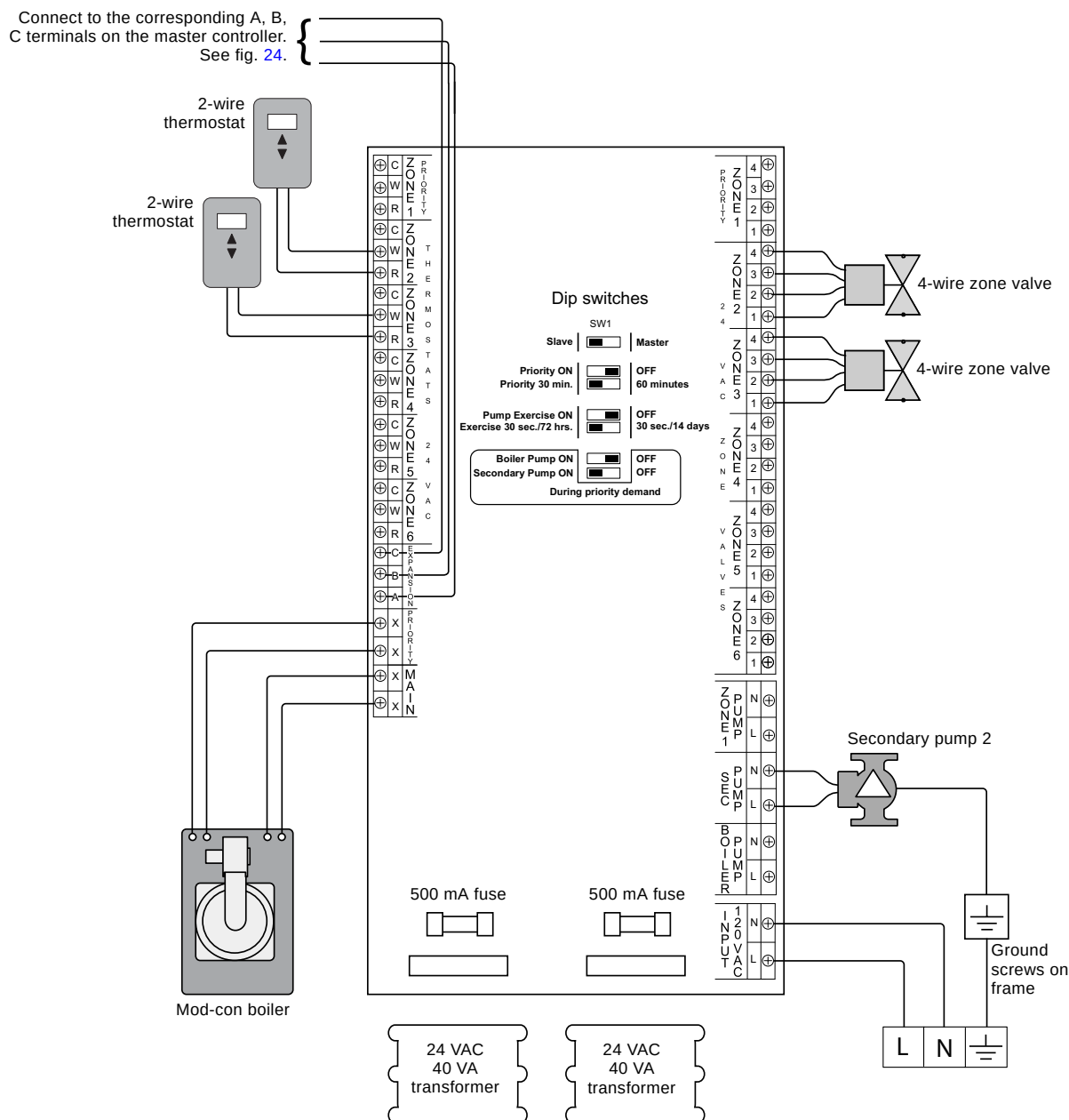


Fig. 24 Wiring diagram, V6, master controller.

See fig. 25 for corresponding diagram for slave controller.

UPZCV-3, -4, -6 multiple-zone valve control

Setup with mod-con boiler, primary and secondary loops, two secondary pumps, two controllers connected, slave controller



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Fig. 25 Wiring diagram, V6, slave controller.

See fig. 24 for corresponding diagram for master controller.

UPZCV-3, -4, -6 multiple-zone valve control

Setup with conventional boiler, two-pipe direct return, indirect DHW

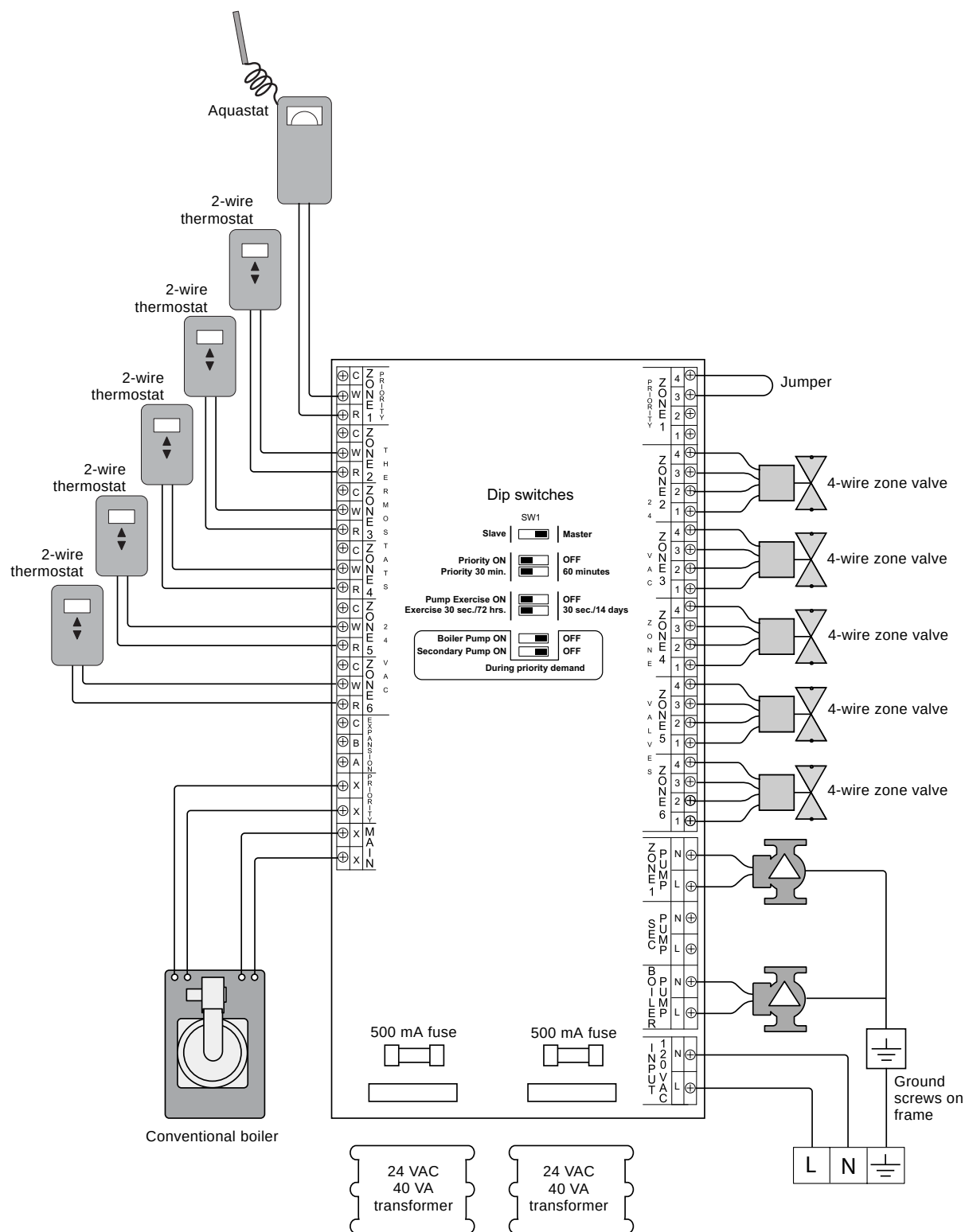


Fig. 26 Wiring diagram, V7

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UPZCV-3, -4, -6 multiple-zone valve control

Setup with conventional boiler, primary and secondary loops, indirect DHW

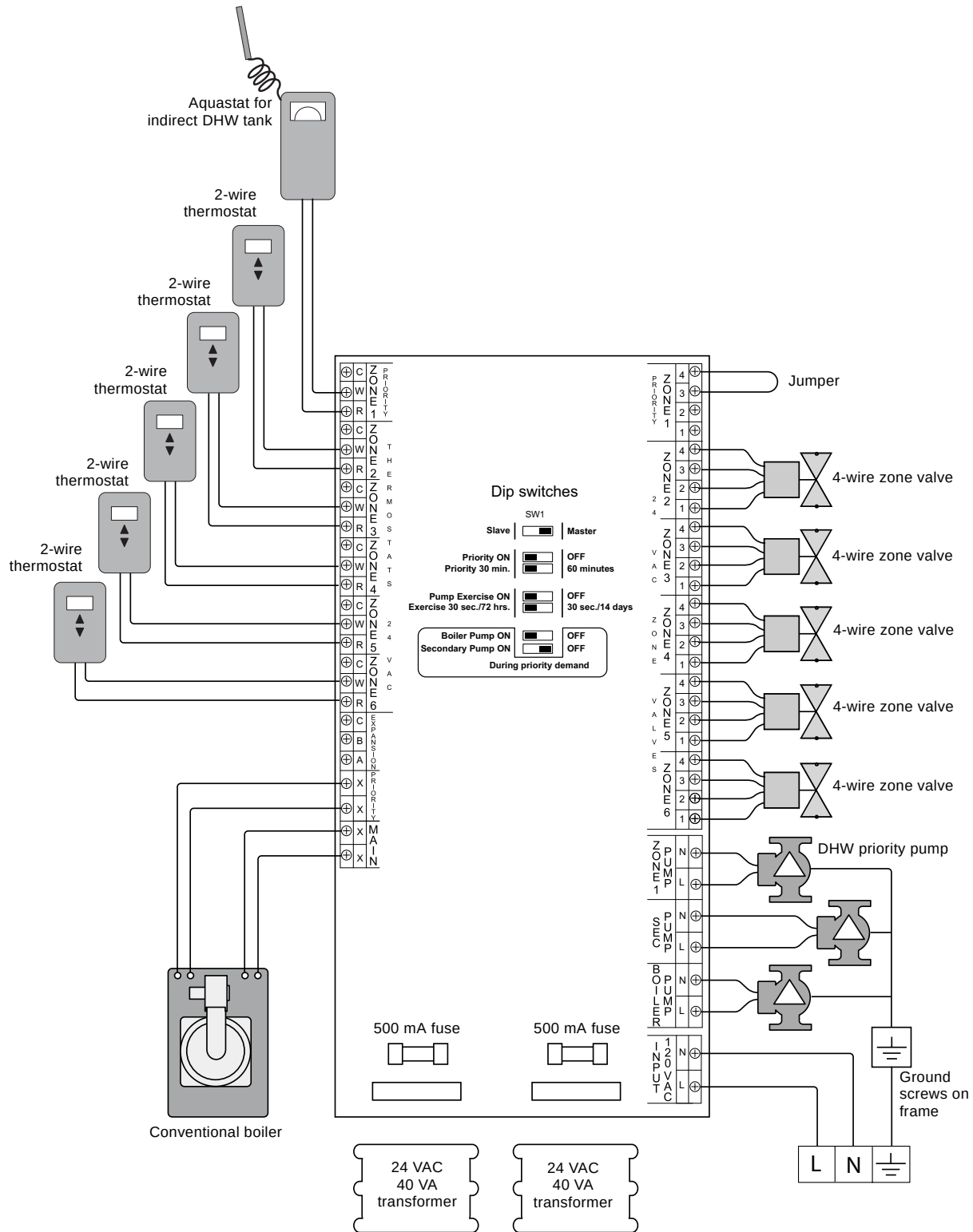


Fig. 27 Wiring diagram, V8

8. Technical data

UPZCP-1 single-zone pump control relay

UPZCP-1 Single-zone pump control relay	
Input power, 60 Hz	120 VAC
Transformer voltage	24 VAC, 40 VA, Class 2
Thermostat output [A]	0.125
Maximum single-phase motor rating, per zone [A]	5
Maximum combined load rating: output @120 VAC [A]	10
Temperature range, storage [°F (°C)]	50-100 (10-38)
Temperature range, maximum operation [°F (°C)]	0-100 (-18 to +38)
Maximum operating humidity range [%] RH	90
Number of knockouts	6
Size of knockouts [in. (mm)]	0.875 (22)
Dimensions, W x H x D [in. (mm)]	5.93 x 4.80 x 2.36 (151 x 122 x 60)
Approvals	CSA 22.2 No. 24/UL Standard 873
Relay type	Sealed
Cover panel	ABS - fire rated
Base plate material	Galvanized steel
Terminal block, side-mounted	PA66
Front indicator lights	LED

UPZCP- 3, 4, 6 multiple zone pump control relay

	Model		
	UPZCP-3 Three-zone pump control relay	UPZCP-4 Four-zone pump control relay	UPZCP-6 Six-zone pump control relay
Input power, 60 Hz		120 VAC	
Transformer voltage		24 VAC, 40 VA, Class 2	
Thermostat output [A]	0.375	0.5	0.75
Maximum single-phase motor rating, per zone [A]		5	
Maximum combined load rating: output @ 120 VAC [A]		20	
Temperature range, storage [°F (°C)]		50-100 (10-38)	
Temperature range, maximum operation [°F (°C)]		0-100 (-18 to +38)	
Maximum operating humidity range [%] RH		90	
Number of knockouts		12	
Size of knockouts [in. (mm)]		0.875 (22)	
Dimensions, W x H x D [in. (mm)]		8.15 x 10.67 x 2.72 (208 x 272 x 70)	
Approvals		CSA 22.2 No. 24/UL Standard 873	
Relay type		Sealed	
Cover panel		ABS - fire rated	
Base plate material		Galvanized steel	
Terminal block, side-mounted		PA66	
Front indicator lights		LED	

UPZCV- 3, 4, 6 multiple-zone valve control relay

	Model		
	UPZCV-3 Three-zone valve control relay	UPZCV-4 Four-zone valve control relay	UPZCV-6 Six-zone valve control relay
Input power, 60 Hz	120 VAC		
Transformer voltage	24 VAC 40 VA, Class 2	24 VAC 40 VA, Class 2	24 VAC 80 VA (40 VA x 2), Class 2
Thermostat output [A]	0.375	0.5	0.75
Maximum single-phase motor rating, per zone [A]	5		
Maximum combined load rating: output @ 120 VAC [A]	20		
Temperature range, storage [°F (°C)]	50-100 (10-38)		
Temperature range, maximum operation [°F (°C)]	0-100 (-18 to +38)		
Maximum operating humidity range [%] RH	90		
Number of knockouts	12		
Size of knockouts [in. (mm)]	0.875 (22)		
Dimensions, W x H x D [in. (mm)]	8.15 x 10.67 x 2.72 (208 x 272 x 70)		
Approvals	CSA 22.2 No. 24/UL Standard 873		
Relay type	Sealed		
Cover panel	ABS - fire rated		
Base plate material	Galvanized steel		
Terminal block, side-fitted	PA66		
Front indicator lights	LED		

9. Approvals

- The product conforms to UL Standard 873.
- The product is certified to CSA C22.2 No 24.

10. Service

Service parts

Part	Description
5 A fuse	Kit, UPZC pump fuse, 5-pack
250 mA fuse	Kit, UPZC transformer fuse, pump board 250 mA, 5-pack
500 mA fuse	Kit, UPZC transformer fuse, pump board 500 mA, 5-pack
24 VAC transformer	Kit, UPZC transformer, 24 VAC, 40 VA

11. Further product documentation

Grundfos Product Center is an online search and sizing tool to help you make the right choice.

<http://product-selection.grundfos.com>



SIZING enables you to size a pump based on entered data and selection choices.

REPLACEMENT enables you to find a replacement product. Search results will include information on

- the lowest purchase price
- the lowest energy consumption
- the lowest total life cycle cost.

The screenshot shows the Grundfos Product Center website. At the top is a navigation bar with the Grundfos logo and 'PRODUCT CENTER'. Below this is a search bar with the placeholder text 'Input product number or a whole or partial product name' and a 'SEARCH' button. Below the search bar are four main sections: 'SIZING' (Enter pump sizing), 'CATALOG' (Product and services), 'REPLACEMENT' (Replace an old pump with a new), and 'LIQUIDS' (Find liquid pump). Below these sections is a 'QUICK SIZING' section with input fields for 'Enter duty point' (Flow (Q)* and Head (H)*) and 'Select what to size by' (Size by application, Size by pump design, Size by pump family). There is a 'START SIZING' button. At the bottom, there is an 'ADVANCED SIZING' section with checkboxes for 'Advanced sizing by application' and 'Guided selection'.

CATALOG gives you access to the Grundfos product catalog.

LIQUIDS enables you to find pumps designed for aggressive, flammable or other special liquids.

All the information you need in one place

Performance curves, technical specifications, pictures, dimensional drawings, motor curves, wiring diagrams, spare parts, service kits, 3D drawings, documents, system parts. The Product Center displays any recent and saved items - including complete projects - right on the main page.

Downloads

On the product pages, you can download installation and Operating Instructions, data booklets, service instructions, etc. in PDF format.

Subject to alterations.

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ECM: 1185372

Grundfos Kansas City

17100 West 118th Terrace
Olathe, Kansas 66061
Phone: 913-227-3400
Fax: 913-227-3500
www.grundfos.us

Grundfos Canada

2941 Brighton Road
Oakville, Ontario L6H 6C9 Canada
Phone: +1-905-829-9533
Fax: +1-905-829-9512
www.grundfos.ca

Grundfos México

Boulevard TLC No. 15
Parque Industrial Stiva Aeropuerto
C.P. 66600 Apodaca, N.L. Mexico
Phone: 011-52-81-8144 4000
Fax: 011-52-81-8144 4010
www.grundfos.mx