

INSTALLATION INSTRUCTIONS



E-Z Zone Pack 3+1 And 5+1 Boiler Manifold System

Keep these instructions with the boiler at all times

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Be Aware of Hazard Definitions

Danger

Denotes presence of a hazard which, if ignored, will result in severe personal injury, death or property damage

Warning

Denotes presence of a hazard which, if ignored could result in severe personal injury, death or substantial property damage.

Caution

Denotes the presence of a hazard, which if ignored, could result in minor personal injury or property damage

Notice

Intended to bring attention to information, but not related to personal injury or property damage.

Danger

This equipment must be installed, adjusted, serviced and started only by a qualified service agency – an individual or agency, licensed and experienced with all codes and ordinances, and who is responsible for the installation and adjustment of the equipment. The installation must comply with all local codes and ordinances and with the latest revision of the National Fire Protection Standard for Oil Burning Equipment, NFPA 31.

Read all instructions before proceeding. Follow all instructions completely. Failure to follow these instructions could result in equipment malfunction causing severe personal injury, death or substantial property damage.

Do not alter this kit or the boiler in any way. The manufacturer will not be liable for any damage resulting from changes made in the field to the boiler or its components or from improper installation. Failure to comply could result in severe personal injury, death, or substantial property damage.

Your oil fired boiler is designed to burn No. 1 and No. 2 heating oil only. Never use gasoline or a mixture of gasoline and oil.

Do not store gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

The area around the boiler should be kept free and clear of combustible materials.

Never burn garbage or refuse in your boiler.

Never try to ignite oil by tossing burning papers or other material into your boiler.

Do not attempt to start the burner when excess oil has accumulated or the boiler is full of vapors.

Do not operate boiler if the heat exchanger is damaged.

Do not jumper, attempt to bypass or override any of the safety limit controls.

Do not use this boiler if any part has been under water. Immediately call a qualified service technician to inspect the boiler and replace any part of the boiler, control system or burner that has been under water.

All installations must conform to the requirements of the authority having jurisdiction. Such applicable requirements take precedence over the general instructions of this manual.

Where required by the authority having jurisdiction, the installation must conform to the American Society of Mechanical Engineers Safety Code for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1.

Notice

Concealed Damage- If you discover damage during unpacking, notify the carrier at once and file the appropriate claim.

Electrical Wiring

Danger Electrical Wiring Must Conform to The National Electrical Code, ANSI/NFPA and Local Codes.

The boiler must be electrically grounded and on a separate fused disconnect switch.

Electrical shock is hazardous. Turn off all power supplies before starting to make any wiring connections or repairs.

Refer to wiring diagrams in this manual for electrical connections. The boiler should be connected to a separate, electrical supply circuit with a minimum 15 amp fused rating. Use No. 14 AWG wires rated for at least 90° C. Install a separate fused disconnect or safety switch near the boiler so all power can be shut off for servicing.

Caution: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

System Components 3+1

The EZ-Zone Pack 3+1 boiler manifold system includes the following items:

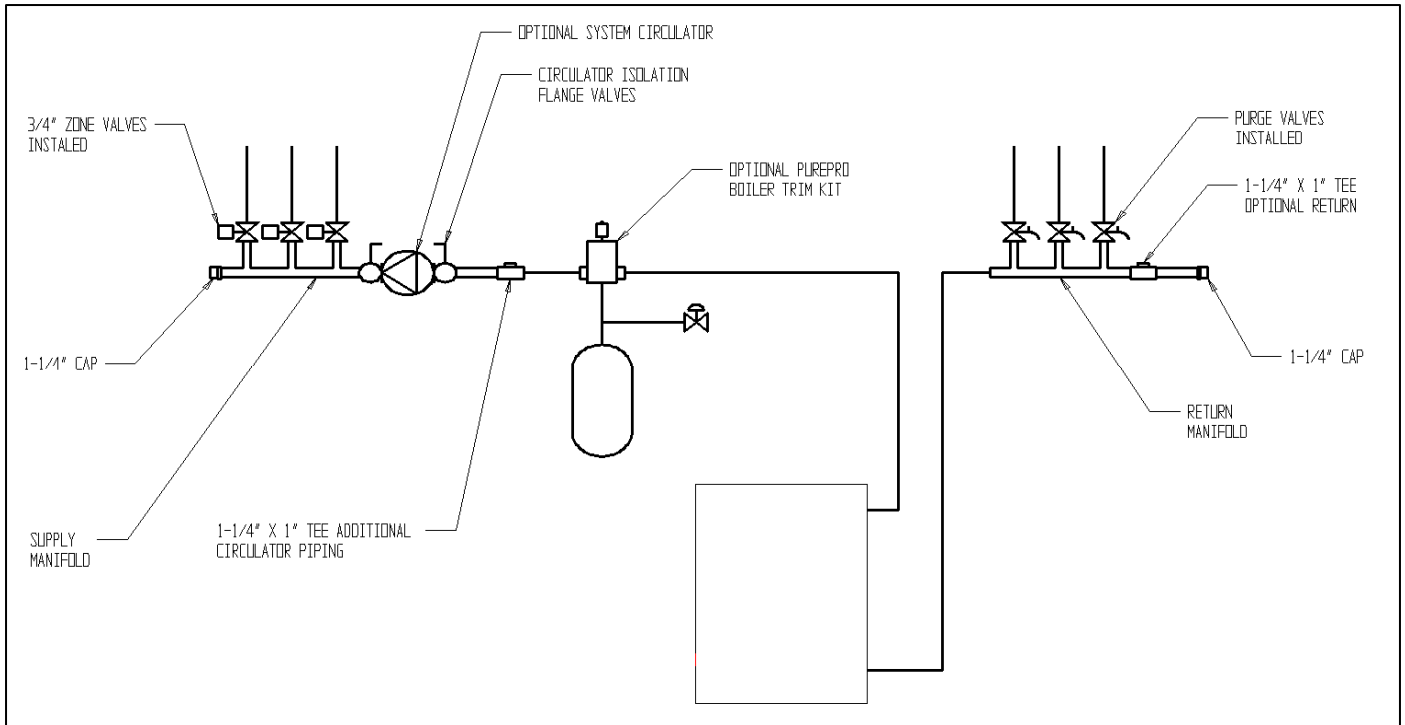
- (1) Supply Manifold with 3 Zone Valve Bodies installed
- (1) Return Manifold with 3 Purge Valves installed
- (3) Zone Valve Operators with End Switch
- (2) 1-1/4" Circulator Isolation Flange Valves
- (2) 1-1/4" x 6" Nipples
- (2) 1-1/4 x 1" Tees
- (2) 1-1/4" Pipe Caps

System Components 5+1

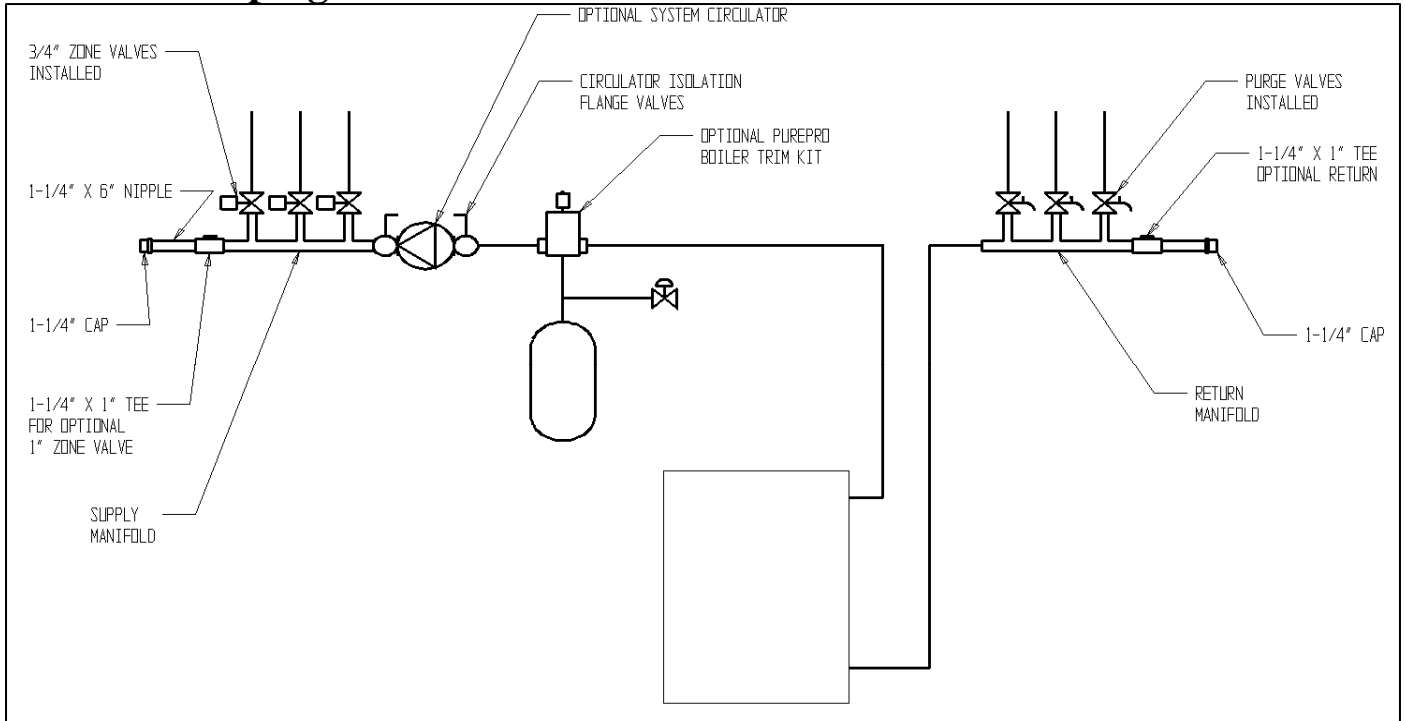
The EZ-Zone Pack 5+1 boiler manifold system includes the following items:

- (1) Supply Manifold with 5 Zone Valve Bodies installed
- (1) Return Manifold with 5 Purge Valves installed
- (5) Zone Valve Operators with End Switch
- (2) 1-1/4" Circulator Isolation Flange Valves
- (2) 1-1/4" x 6" Nipples
- (2) 1-1/4 x 1" Tees
- (2) 1-1/4" Pipe Caps

Manifold Piping with Auxiliary Circulator



Manifold Piping all Zone Valves



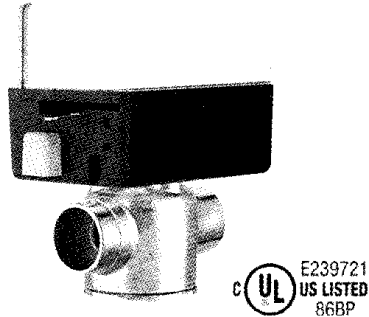


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NA10073

Z-one™

Z1, Z2, Z3 Series



Function

The Z-one, a two-position spring return zone valve, is used in heating and air-conditioning systems. The Z-one series consist of a Z1 actuator which is easily attached to a Z2 (2-way) or Z3 (3-way) valve body. Z1 actuator is equipped with or without auxiliary switch.

The Z-one actuator has a synchronous motor that winds the return spring and moves the valve paddle to the desired position. When power is removed the actuator spring returns the valve paddle.

US Patent 7,048,251

Technical Characteristics of Body

Material:	- body:	forged brass
	- seat:	machined brass
	- stem:	stainless steel
	- two o-ring seals	EPDM
	- paddle	EPDM
Medium:		water and glycol
Maximum percent of glycol:		50%
Temperature range:		32 to 240°F (0 – 115°C)
Max. static pressure:		15 psi (1 bar) steam 300 psi (20 bar)
Connection:	- sweat	½", ¾" 1" & 1 ¼"
	- NPT	½", ¾" & 1"
	- BSP	½", ¾" & 1"
	- inverted flare	½", ¾" & 1" sweat fittings

Technical Characteristics of Actuator

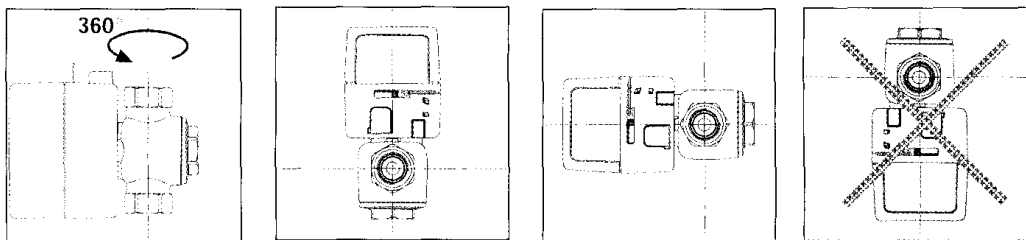
Material:	- base and cover:	polycarbonate
	- base plate:	aluminum
Motor:	- voltage:	24 VAC 50/60 Hz Class 2 120 VAC 50/60 Hz 208 VAC 50/60 Hz 230 VAC 50/60 Hz 277 VAC 50/60 Hz
Wire lead length:		6" (15cm), 24V only -18" (45cm)
Power requirements:		6.5 W, 7 VA
Ambient temperature range:		32 - 104°F (170°F optional)
Auxiliary switch:		24 VAC: 0.4 A, 24 V 120-277 VAC: 5 A, 250 V
Humidity:		95% non-condensing
Approvals:		UL, cUL Listed & CE

Flow Characteristics

Connection size	Flow Coefficient	Max. Close-off ΔP
1/2"	1.0 Cv (0.9 kv)	75 PSI (517 kPa)
1/2" 3/4"	2.5 Cv (2.2 kv)	50 PSI (345 kPa)
1/2" 3/4"	3.5 Cv (3.0 kv)	30 PSI (207 kPa)
3/4" 1"	5.0 Cv (4.3 kv)	25 PSI (172 kPa)
3/4" 1"	7.5 Cv (6.5 kv)	20 PSI (138 kPa)
1" 1 1/4"	7.5 Cv (6.5 kv)	20 PSI (138 kPa)

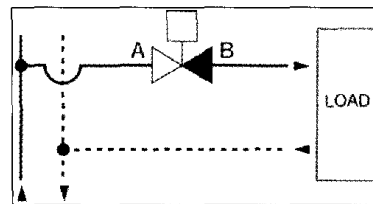
Installation

The valve can be installed vertically or horizontally, but not turned upside down.

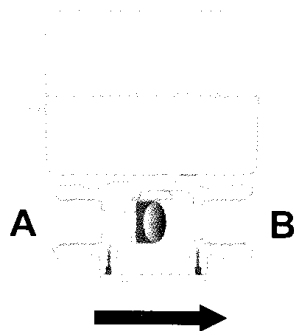
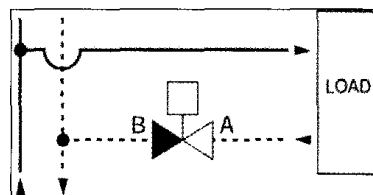


- A 3-way valve cannot be transformed into a 2-way valve and vice versa.
- The flow is from A to B (see diagram below) and must be installed so the paddle closes against the direction of flow as indicated in the following diagrams.
- The 2-way valves can be installed on the supply or on the return; for correct installation it is necessary to respect the direction of flow indicated from the arrow on the body valve.

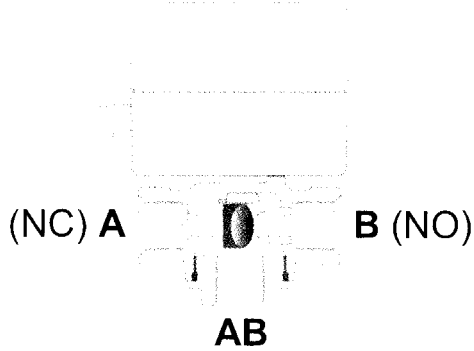
2-way installed on the supply



2-way installed on the return

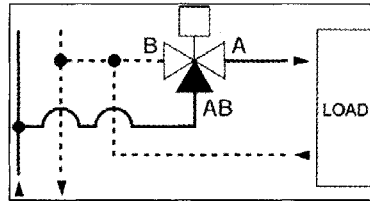


2-way valve with normally closed actuator

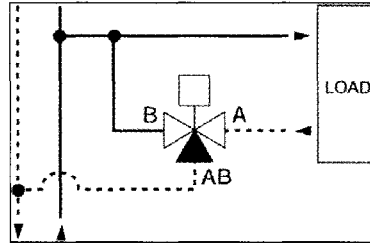


3-way valve with normally closed actuator
 (Note: 3-way uses only normally closed actuator)

3-way installed on the supply in diverting configuration



3-way installed on the return

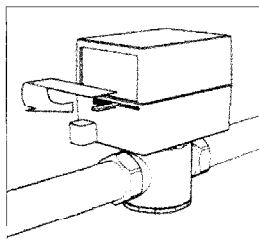


Operation of Normally Closed Valve

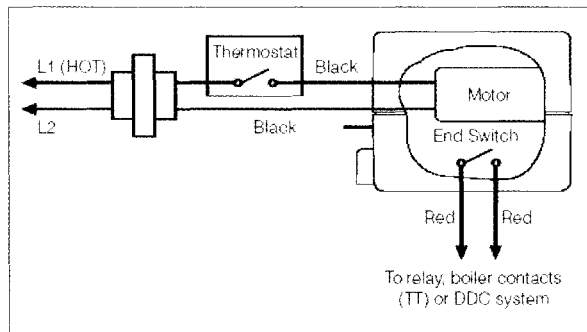
	2-way	3-way
N.C. without power	Port "A" closed	Port "A" closed Port "B" opened Port "AB" opened
N.C. opened with power	Port "A" opened	Port "A" opened Port "B" closed Port "AB" opened
N.C. manually opened	Port "A" opened	Port "A" opened Port "B" opened Port "AB" opened

Manual Open

The manual opening is achieved by moving the manual opening lever to the locked position. When power is applied, the manual lever unlocks automatically.

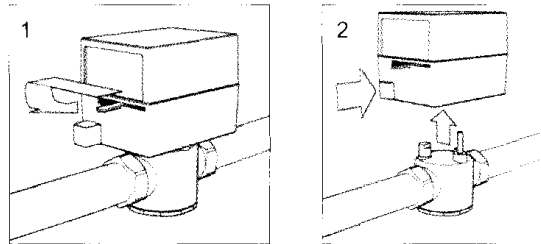


Wiring Diagram



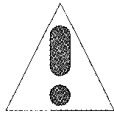
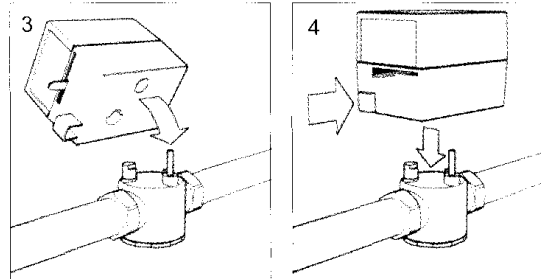
Removing the Actuator

1. Move the manual open lever to the lock open position.
2. Press the push button in and pull the actuator up.



Installing the Actuator

1. Move the manual open lever to the lock open position.
3. Verify the correct position of the valve stem into the mating actuator hole. Rotate stem if required to align.
4. Press the push button in and slide the actuator onto the valve body, release the push button.



SAFETY INSTRUCTION

This safety alert symbol will be used in this manual to draw attention to safety related instructions. When used, the safety alert symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.**



CAUTION: All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of systems in accordance with all applicable codes and ordinances.



CAUTION: Over-tightening and breakage can occur with the use of Teflon pipe joint compounds. Teflon provides lubricity so that care must be exercised not to over-tighten joints. Failure to follow these instructions could result in property damage and /or personal injury.



WARNING: System fluids are under pressure or temperature can be hazardous. Be sure the pressure has been reduced to zero and the system temperature is below 100°F (38°C). Failure to follow these instructions could result in property damage and/or personal injury.



CAUTION: Avoid locations with excessive moisture, explosive vapors, corrosive fumes or vibration. Failure to follow these instructions could result in stress corrosion resulting in property damage and/or personal injury.

Caleffi shall not be liable for damages resulting from stress corrosion, misapplication or misuse of its products.

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