LAWLER
MANUFACTURING CO., INC.

INSTALLATION & MAINTENANCE MANUAL

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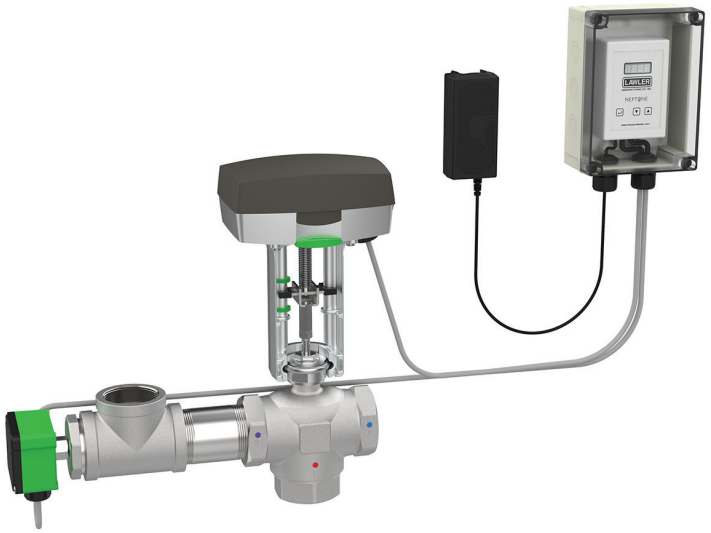
NOTICE! No mixing valve will work satisfactorily if improperly installed. We suggest, therefore, that you read these instructions carefully before installing and follow directions as outlined. Handle the mixing valve with care.



CAUTION: When maintaining and adjusting the mixing valve, all fixtures should be isolated from use. Lawler Manufacturing Co., Inc. recommends that you work safely at all times and in a manner consistent with the OSHA Lock/Tagout standard, 29 CFR 1910.147 and other applicable standards.

Each system consists of

PI Controller with LED Readout

Fast Immersion Sensor 1/2" NPT

Stainless Steel 3-Way Valve

NEMA 4 Enclosure

WARNING: The EMX is not a safety device. It should not be installed as an anti-scald device. It is only a temperature control system.

Only professional installers with working knowledge of plumbing and electrical systems should install the EMX system. Incorrectly installed or sized systems will result in improper function of the control system

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

(Installer: California law requires that this warning be given to the consumer.)

For more information: www.oehha.org/prop65

Neptune EMX Electronic Mixing Valve

Description

EMX is an ASSE 1017 Listed Electronic Tempering Valve System used to control domestic hot water temperature. The EMX is designed to work in domestic hot water systems a return line and a continuously running recirculation pump.

The EMX valve should not be used in a gang shower application. Use an ASSE 1069 approved valve for those applications.

Features

- Easy setup, simple 3 button interface
- Low demand dead zone with adjustable activation point
- High temperature alarm function
- Fast sampling rate of sensor input
- Two valves can be installed in parallel with one controller
- ModBus communication standard
- Lead Free valve conforms to NSF/ ANSI 372-2011 requirements

Model	Size
EMX-075	3/4"
EMX-100	1"
EMX-125	1-1/4"
EMX-150	1-1/2"
EMX-200	2"

Selection

Valves should be selected based on a 5 to 10 PSI pressure drop. The valve is typically smaller than the system piping for most applications.

Pressure Drop PSI		5	10	20	30
Valve	Inlet Size	CAPACITY GPM			
NEPTUNE EMX 075	3/4	17	24.3	34	43
NEPTUNE EMX 100	1	25.5	37	52	64
NEPTUNE EMX 125	1-1/4	41.4	58.6	83	101
NEPTUNE EMX 150	1-1/2	64.4	91	128	157
NEPTUNE EMX 200	2	102	145	205	252

Minimum flowrate 1/4 gpm in properly recirculated system.
5 gpm minimum recirculation flow rate.

Technical Data

Water Temperature Ranges	
Cold Inlet	39° F to 80° F
Hot Inlet	120° F to 200° F
Outlet	95° F to 140° F
Maximum Pressure	150 PSI

ASSE 1017 Approved
NST 372 Certified Lead Free

Certified to CSA B125.3

Design and specifications subject to change without notice.
Please refer to **temperedwater.com** to ensure most current data sheet and other design solutions.

temperedwater.com/patents

In menu:

Limit temperature	L OFF
Alarm time delay	d 10

The Neptune controller features a High Temperature Limit Alarm. The limit can be set at 15-40 °F over setpoint with an adjustable time delay of 3 to 300 seconds. If this limit is triggered, the state of the SPDT relay changes and the LED readout will read HL A.

Example:
Setpoint = 125 °F, L= 15°F, d = 10 seconds. The alarm is triggered at 140°F after 10 seconds

Installation

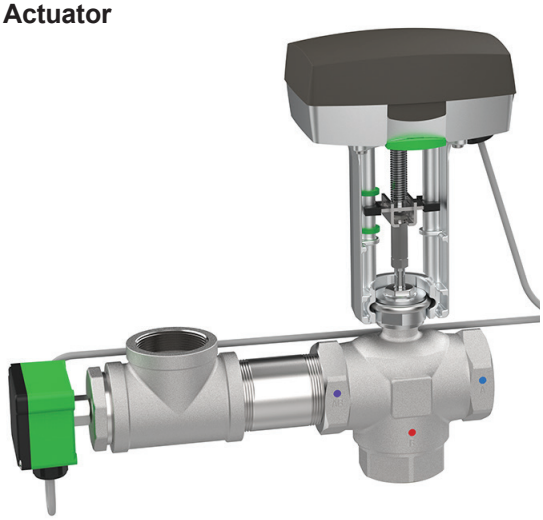
Valve
The EMX valve is connected to the hot water supply, cold water supply, and mixed outlet. The valve should be piped per the diagram on the following page.

Provide three full port ball valves, one on each connection for isolation and servicing the valve.

Instructions

1. Flush pipes prior to installing mixing valve.
2. Install isolation valves at inlets and outlet (not included) to comply with applicable codes.
3. Connect inlets and outlet and check for leaks. See piping diagram for details.
4. Connect the power supply.
5. Open isolation valves to start the flow of water to and through the Neptune EMX mixing valve.
6. The factory default set temperature is 120˚F (50˚C)
7. To adjust temperature refer to the “Settings” section of this manual.

Actuator



Sensor Mounting

Piping Diagram

The recirculation pump should run continuously at a minimum flow of 5 gpm.

Ensure supply pressures are equal.

The return must be piped as shown; connecting into both the cold side of the mixing valve and hot water source.

Almost all technical issues stem from improper piping.

ATTENTION! The installer must follow all local codes for installation and provide check valve to prevent flow between lines.

***Note:** the ball valve installed on the return line going to the mixing valve may be throttled to account for an oversized system return. This will help stabilize a system with an oversized return ensuring the cold water inlet is not too hot for mixing. The ball valve going back to the hot water source should not be throttled. A balancing valve may be installed in place of ball valve for more accurate control.

Settings

With the simple 3 button interface, select temperature scale and change control parameters to match system requirements. The factory defaults are typical for a tempering valve system.

The simple 3 key operator interface performs all the functions needed to adjust and set the operating parameters for the control loop.

Keep recirculation pump running at minimum of 5 gpm.

Press and hold the ↵ enter key for 3 seconds to place the interface in adjustment mode.

Use the ▼ ▲ keys to move between functions.

Once at the default set temperature (120°F) press ↵ then make temperature changes with ▼ ▲

When finished, confirm the change with ↵ then select the next function with ▼ ▲

When all changes have been made, hold down ↵ for 3 seconds to exit adjustment mode.

The main display shows the current system temperature.

See separate documentation for:
- Piping and wiring two valves in parallel
- ModBus connection and register
- Neptune EMX Domestic Tempering System with fail safe actuator

Figure 1

When used in a single temperature recirculating system

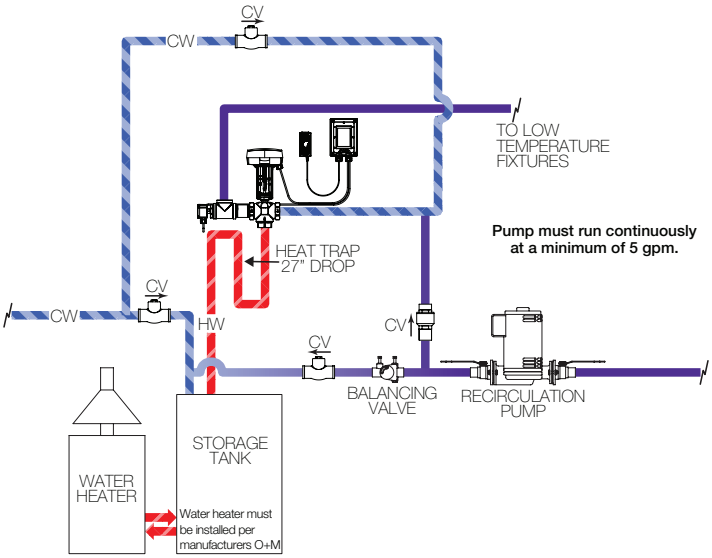
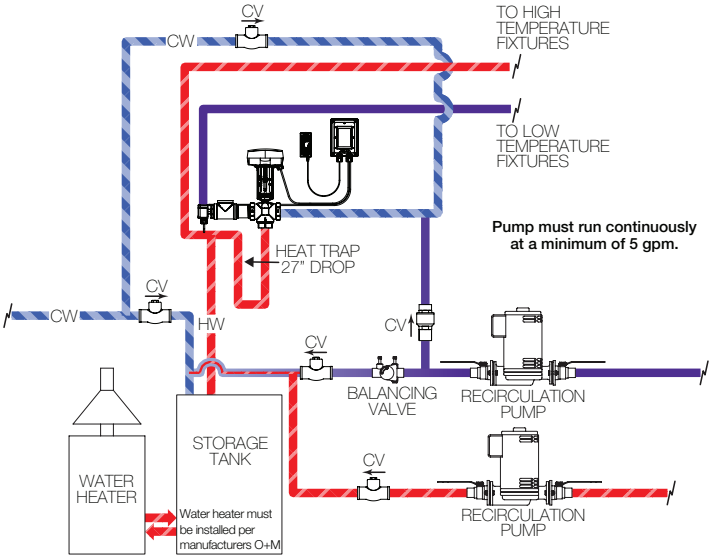


Figure 2

When used in a dual temperature recirculating system



GUARANTEE

We guarantee the Lawler Mixing Valve to be free from defects in workmanship and material, and for a period of one year from date of purchase, will replace any parts found by us to be defective. We will not be held responsible, however, for any labor incidental to, or for any damages caused by defective material. Each mixing valve is thoroughly inspected and tested under actual conditions at our factory.

Notes