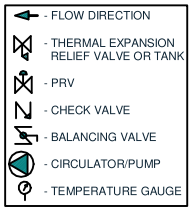
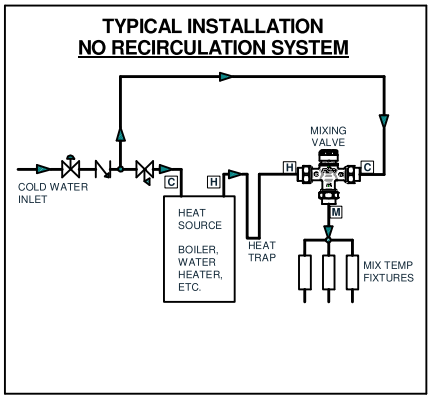
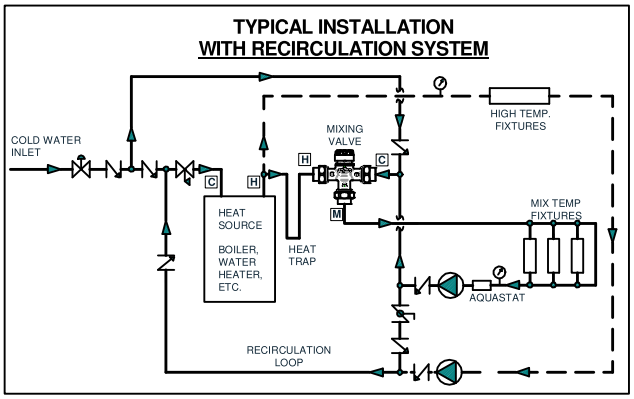
MODEL "MVBLF" (34BLF310 SERIES)
MULTI-PURPOSE THERMOSTATIC MIXING VALVE
ASSE 1017, 1070 & 1069

INSTALLATION

1. Unit must be installed by a licensed plumber/contractor in accordance with these instructions and state and local plumbing codes.
2. Proper piping alignment must be observed.
3. Flush all piping thoroughly before installation.
4. Mount the unit so that it is accessible for adjustment, cleaning and service.
5. Adequate mounting support is recommended.
6. The unit can be installed in any orientation. Make sure that cold water supply be connected to port "C", hot water supply to port "H", and mixed water discharge to port "M".
7. Cure times for CPVC joints shall be as recommended by the adhesive manufacturer or 1 hour minimum, whichever is greater. Exposure to temperature above 100 °F may require extended curing times.
8. MAKE SURE THAT WASHER-STRAINER IS ORIENTED TO ACHIEVE FLAT CONTACT WITH END FITTINGS.

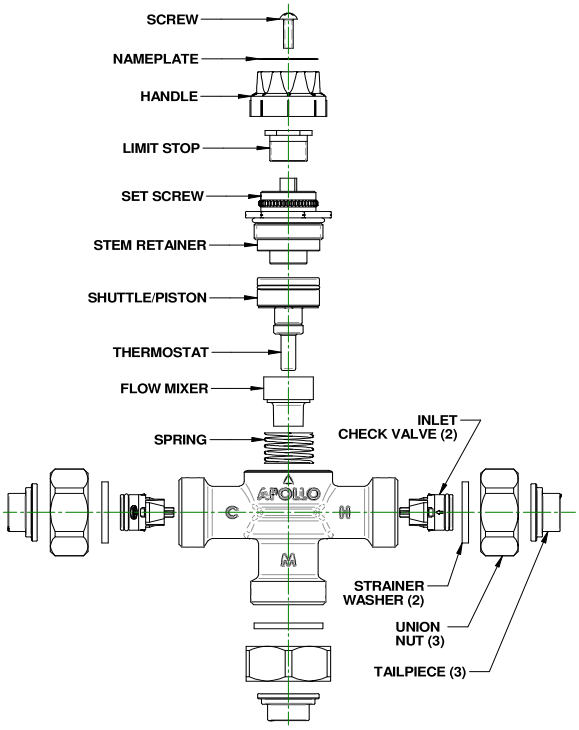






OPERATION

The Apollo "MVB" Series are designed to mix and regulate the amount of cold and hot water to produce a comfortable and safe outlet temperature at a predetermined setting, either from the "point of source" or "point of use" application for single or multiple fixtures.



The thermostatic element which is positioned in the mixing chamber is connected to an independently seated, balanced and spring-loaded shuttle/piston, which moves up and down in response to the expansion and contraction of the element. The spring force acting against the bottom side of the shuttle will enable the hot inlet port to be normally open, and the cold inlet port to be normally closed at no flow condition. When flow demand starts, the thermostatic element will sense the hot water temperature first, and will immediately expand to allow the shuttle to move down. This movement decreases the opening area of the hot water supply, and at the same time increases the opening of the cold water until certain outlet temperature is maintained. The mechanical balance of the forces in the shuttle and the sensitivity of the element determines the proper proportion of incoming hot or cold water to maintain required outlet temperature. In the event of complete failure of the cold water supply, the ensuing expansion of the element shuts-off the hot water supply.

ADJUSTMENT

For optimum performance, it is imperative that the hot water inlet temperature has a minimum of 15 °F above the desired outlet temperature. The unit is equipped with a maximum temperature limit stop and handle locking mechanism to prevent inadvertent adjustment of the outlet temperature above 120 °F.

1) After the unit is completely installed, turn on the cold water supply. It is recommended to open the cold side first to avoid sudden temperature increase in the mixing chamber.
2) When the unit is at no flow condition and pressurized, check Open end-fixture to establish flow. Observe lock-out/tag-out procedures when unit is remotely installed from end-fixture.

MIXED TEMPERATURE ADJUSTMENT

1) Remove the handle screw, nameplate and handle.
2) Loosen set screw (1/16" allen wrench) located on the stem retainer and loosen limit stop (13/16" hex).
3) Slide handle to engage stem and approximately ¼" above retainer spline.
   NOTE: Adjustment cannot be made if the handle and retainer spline are engaged.

TEMPERATURE LIMIT STOP ADJUSTMENT

1) Once the mixed temperature is adjusted to a desired setting (not exceeding 120 °F), tighten the limit stop by hand until it stops against the stem. Do not over-tighten.
2) Tighten set screw to lock the limit stop.
3) In some conditions, the outlet temperature setting is adjusted above 120 °F. This can be done by loosening the 1/16" set screw to relieve the lock to the limit stop. Loosen limit stop and make adjustment to desired setting. Once temperature stabilized, tighten limit stop and lock set screw.

SETTING MIXING VALVE WITH RECIRCULATING SYSTEM

1) After installation is complete (refer to installation instructions), close and tag all fixtures not used in this procedure.
2) Turn off recirculating pump.
3) Open fixture/fixtures to flow greater than the minimum flow rate of the mixing valve. Tag open fixture/fixtures to prevent any possible usage of untempered water.
4) Allow water to flow through the mixing valve until water temperature is stable. If necessary, re-adjust the valve according to "ADJUSTMENT" instructions.
5) Once the temperature is set, start recirculating pump and allow the system to reach set temperature.
6) Measure water temperature downstream of the recirculating pump and adjust aquastat to shut-off the pump when the return water exceed the set point by 2 °F. Set the aquastat to restart the pump when the return water drops 5 °F below set temperature.
7) Set the balancing valve in the full open position.
8) Close all fixtures and make sure no demand is allowed. The cold inlet temperature to the mixing valve should be warm.
9) Allow the system to run without demand for at least 30 minutes. In some cases, an increase in water temperature may occur during a no load period. If this occurs, slowly regulate balancing valve until water temperature is back to the original set temperature.

MAINTENANCE

Periodic inspection and maintenance by a licensed plumber is required to insure proper and efficient performance of the unit. Frequent cleaning and/or replacement of shuttle O-ring is required and recommended. Shuttle O-ring requires periodic lubrication using silicone based lubricant only. PTFE or petroleum based lubricant may cause O-ring swelling.

REPAIR KIT INFORMATION

MODEL NO.	QTY	PART NO.	DESCRIPTION
MVBLF-RK (34BLF300RK)	1	A179500	SPRING
	1	E307800	FLOW MIXER
	1	W434805	SHUTTLE SUB- ASSY
		F326400	SHUTTLE
		I637800	THERMOSTAT
		D492300	O-RING, -024
	1	I998100	IOM

TROUBLE SHOOTING

PROBLEM	CAUSE	SOLUTION
Mixed temperature fluctuating or erratic	Cold and Hot water inlet pressure differential greater than 30 psid	Install pressure reducing valve or pressure limiting device to maintain equal and consistent pressures.
	Shuttle assembly damaged or worn	Replace with repair kit.
	Setpoint adjustment at maximum setting	Increase inlet water temperature setting allowing valve to mix.
Mixed temperature will not adjust to desired temperature	Hot water inlet temperature within 15°F of outlet mix setpoint.	Increase hot water inlet to more than 15°F above outlet setting.
	Hot water temperature above 180°F	Adjust water heater temperature
	Inlet check valves clogged or damaged	Replace inlet check valves
No flow	Supply valves closed	Check cold and hot water supply valves
	Inlet check valves clogged or damaged	Clean or replace
	Strainers completely clogged	Clean or replace
	Loss of supply pressure	Check with licensed plumber
Hot water backing-up in cold water supply	Cold water inlet check valve defective, clogged or damaged and cold water pressure is less than hot water supply pressure	Inspect, clean or replace cold water check valve
Cold water backing-up in hot water supply	Hot water inlet check valve defective, clogged or damaged and hot water pressure is less than cold water supply pressure	Inspect, clean or replace hot water check valve

WARNING: FAILURE TO FOLLOW ABOVE INSTRUCTIONS COULD RESULT IN UNSAFE DISCHARGE TEMPERATURE, WHICH MAY CAUSE INJURY OR DEATH.

CALIFORNIA PROP 65: WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

This product complies with U.S. Safe Drinking Water Act (SDWA). Suitable for potable water applications intended for human consumption.