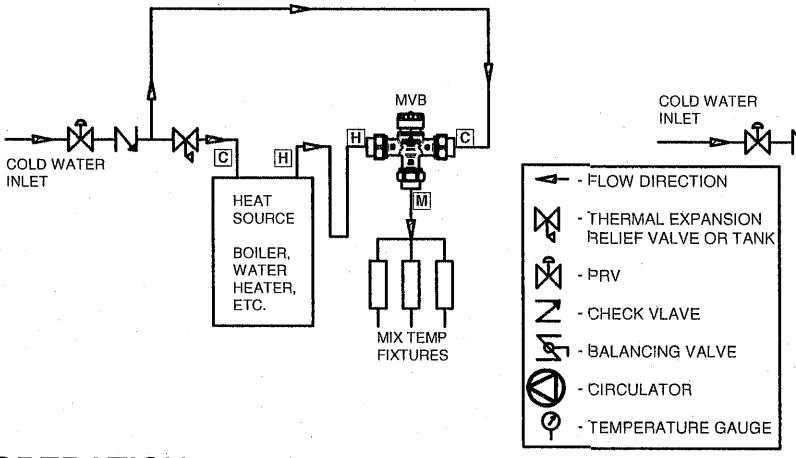
MODEL MVB & MVBLF (34B & 34BLF SERIES) DUAL PURPOSE THERMOSTATIC MIXING VALVE

ASSE 1017 POINT OF SOURCE & ASSE 1070 POINT OF USE

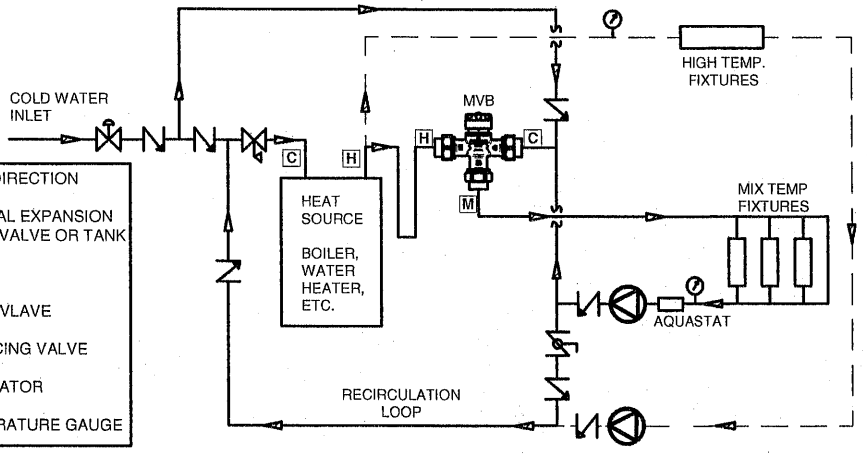
INSTALLATION

1. Unit must be installed by a licensed plumber in accordance with these instructions and state and local plumbing codes.
2. Flush all piping thoroughly before installation.
3. Mount the unit so that it is accessible for adjustment, cleaning and service.
4. Adequate mounting support is recommended.
5. 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".
6. Cure times for CPVC joints shall be as recommended by the adhesive manufacture or 1 hour minimum, whichever is longer. Exposure to temperatures above 100 °F may require extended curing times.
7. MAKE SURE THAT WASHER-STRAINER IS ORIENTED TO ACHIEVE FLAT CONTACT WITH END FITTINGS.

TYPICAL INSTALLATION - NO RECIRCULATION SYSTEM

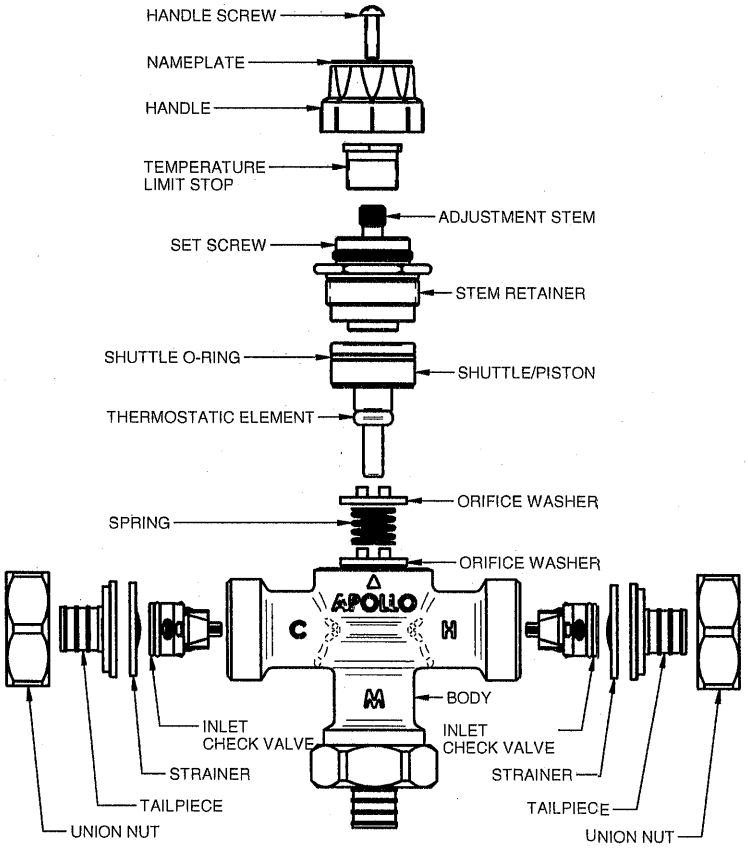


TYPICAL INSTALLATION - WITH RECIRCULATION SYSTEM



OPERATION

The Apollo "MVB" & "MVBLF" Series uses a shuttle/piston to control the volumes of cold and hot water required to deliver water at a predetermined temperature. Cold water enters the mixing chamber above the top face of the shuttle, and hot water enters below the lower face of the shuttle. The thermostatic element which is positioned in the mixing chamber, is connected to the spring-loaded shuttle, which moves up and down in response to expansion and contraction of the element. In the event of an increase in the temperature of either the hot or cold water supply, as the change commences to alter the temperature of the water in the mixing chamber, the thermostatic element immediately reacts by expanding. This expansion moves the shuttle downward decreasing the opening area of the hot water supply, and increasing the opening for the cold water. This change in the volumes of the respective water supplies in the correct proportions, compensates for the change of temperature of the water in the mixing chamber, and a constant mixed water is maintained. The sensitivity of the thermostatic element ensures instantaneous movement of expansion and contraction as necessary. In the event of complete failure of the cold water supply, the ensuing expansion of the element shuts-off the hot water supply completely.



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, then hot 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 pressurized, check for leaks at the fittings and unit.
3) Open end-fixture to establish flow. Observe lock-out/tag-out procedures.
4) **MIXED TEMPERATURE ADJUSTMENT:**
   a) Remove the handle screw, nameplate and handle.
   b) Loosen limit stop (13/16" hex).
   c) Slide the handle to engage the stem and approximately 1/4" above retainer spline.
   NOTE: Adjustment cannot be made if the handle and retainer splines are engaged.
   d) Facing top of the valve, turn handle clockwise to decrease the mixed temperature, or counter-clockwise to increase mixed temperature. Allow the mixed temperature to stabilize at least one minute before making another adjustment.
5) **TEMPERATURE LIMIT STOP ADJUSTMENT:**
   a) Once the mixed temperature is adjusted to a desired setting (not exceeding 120°F), tighten the 13/16" hex limit stop by hand until it stops against the stem. Do not overtighten.
   b) Locate the set screw on the 1-1/4"brass hex stem retainer and tighten it with a 1/16" allen wrench to lock the limit stop to maintain maximum mixed temperature.

c) 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 mixed temperature (above 120°F). Once temperature is stabilized, tighten the limit stop and lock it with the set-screw.

6) **SETTING MIXING VALVE TO RECIRCULATING SYSTEM:**
a) After installation is complete (refer installation instructions), close and tag all fixtures not used in this procedure.
b) Turn off recirculating pump.
c) Open fixture/s to flow greater than the minimum flowrate of the mixing valve. Tag open fixture/s to prevent any possible usage of untampered water.
d) Allow water to flow through the mixing valve until water temperature is stable. If necessary, re-adjust the valve according to "ADJUSTMENT" instructions.
e) Once the temperature is set, start recirculating pump and allow the system to reach set temperature.
f) Measure water temperature downstream of the recirculating pump and adjust the 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.
g) Set the balancing valve in the full open position.
h) Close all fixture/s and make sure no demand is allowed. The cold inlet temperature to the mixing valve should be warm.
i) 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 close 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 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
MVB-RK (34B200RK)	1	A115000		SPRING
	2	E289300		WASHER,ORIFICE
	1	W434805		SHUTTLE SUB-ASSY
			F326400	SHUTTLE
			I637800	THERMAL ACTUATOR
			D492300	O-RING, -024
	1	I917500		INSTRUCTION SHEET

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

THIS PRODUCT MEETS THE REQUIREMENTS OF THE EPA SAFE DRINKING WATER ACT

WARNING:
Corrosive water conditions, water temperatures in excess of 210°F, and improper repair or adjustment may result in valve damage or failure. This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. (California law requires that this warning be given to the consumers in the State of California).
FOR NON-LEAD FREE VALVES, it is illegal to use this product in any plumbing system providing water for consumption in CA, MD, VT and LA now, and everywhere in the United States after 1/4/14.
For more information, visit www.apollovalves.com

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

Manufactured by: Conbraco Industries, Inc., 1418 S. Pearl St., Pageland, SC 29728 Telephone: (704) 841-6000

WARRANTY INFORMATION

WARRANTY AND LIMITATIONS OF LIABILITY

Conbraco Industries, Inc. warrants, to its initial purchaser only, that its products which are delivered to this initial purchaser will be of the kind described in the order or price list and will be free of defects in workmanship or material for a period of FIVE years from the date of delivery to you, our initial purchaser. This warranty applies to Apollo brand product with "Made in the USA" markings only.

Should any failure to conform to this warranty appear within **FIVE** years after the date of the initial delivery to our initial purchaser, Conbraco will, upon written notification thereof and substantiation that the goods have been stored, installed, maintained and operated in accordance with Conbraco's recommendations and standard industry practice, correct such defects by suitable repair or replacement at Conbraco's own expense.

APOLLO INTERNATIONAL PRODUCTS: Conbraco Industries, Inc. warrants its International products, to its initial purchaser only, that its international products which are delivered to this initial purchaser will be of the kind described in the order or price list and will be free of defects in workmanship or material for a period of **TWO** years from the date of delivery to you, our initial purchaser.

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHER WARRANTY OF QUALITY, WHETHER EXPRESSED OR IMPLIED, EXCEPT THE WARRANTY OF TITLE AND AGAINST PATENT INFRINGEMENT. Correction of non-conformities, in the manner and for the period of time provided above, shall constitute fulfillment of all liabilities of Conbraco to our initial purchaser, with respect to the goods, whether based on contract, negligence, strict tort or otherwise. It is the intention of Conbraco Industries, Inc. that no warranty of any kind, whether expressed or implied shall pass through our initial purchaser to any other person or corporation.

LIMITATION OF LIABILITY: Conbraco Industries, inc. SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE FOR SPECIAL OR CONSEQUENTIAL DAMAGES SUCH AS, BUT NOT LIMITED TO, DAMAGES OR TO LOSS OF OTHER PROPERTY OR EQUIPMENT, LOSS OF PROFITS OR REVENUE, COST OF CAPITAL, COST OF PURCHASED OR REPLACEMENT GOODS, OR CLAIMS OF CUSTOMERS OF OUR INITIAL PURCHASER. THE REMEDIES OF OUR INITIAL PURCHASER, AND ALL OTHERS, SET FORTH HEREIN, ARE EXCLUSIVE, AND THE LIABILITY OF CONBRACO WITH RESPECT TO SAME SHALL NOT, EXCEPT AS EXPRESSLY PROVIDED HEREIN, EXCEED THE PRICE OF THE GOODS UPON WHICH SUCH LIABILITY IS BASED.

* It is the end user's responsibility to confirm that items intended for use satisfy local codes and standards.