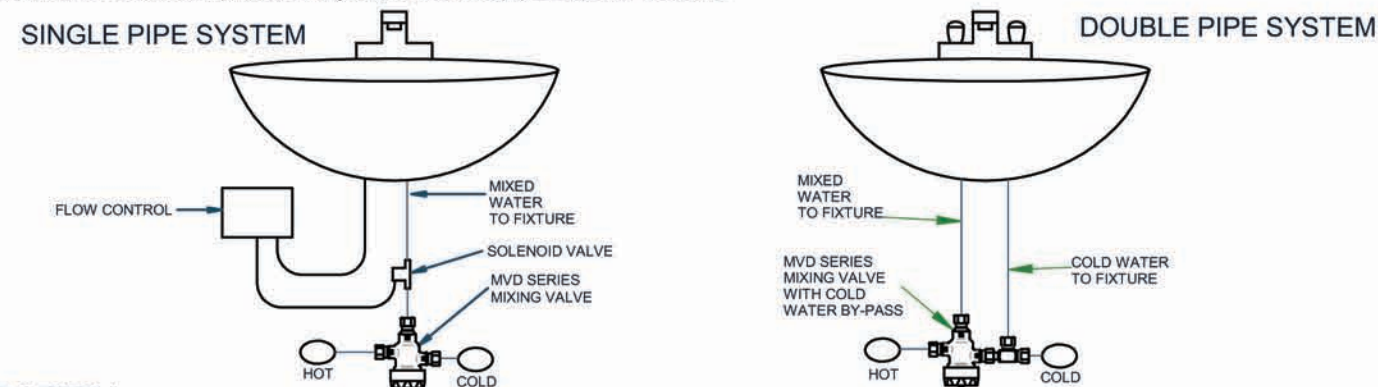




## MODEL MVD (34D SERIES) "MINI" MIXING VALVE

### INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

- Unit must be installed by a licensed plumber in accordance with these instructions and local plumbing codes.
- Flush all piping thoroughly before installation.
- Mount the unit as close as possible to the "POINT OF USE" as shown below.
- The unit can be installed with the mixed water discharge connection flowing either up or down.
- Refer to diagrams below for recommended installations. Connect cold water supply to "C", hot water supply to "H", and mixed water discharge to "M".
- When the unit is installed in a single pipe system, or where a quick closing solenoid valve is on the discharge side, an arrestor is recommended to protect the unit and the end-fixture from pressure surges as well as premature water line failures.
- The unit is provided with mounting accessory. It is highly recommended to properly secure and support the unit to prevent from vibrations and movement due to thermal and hydrostatic expansion. This movement will eventually cause fitting leakage.
- End connections are compression style, do not use pipe dope or sealant.



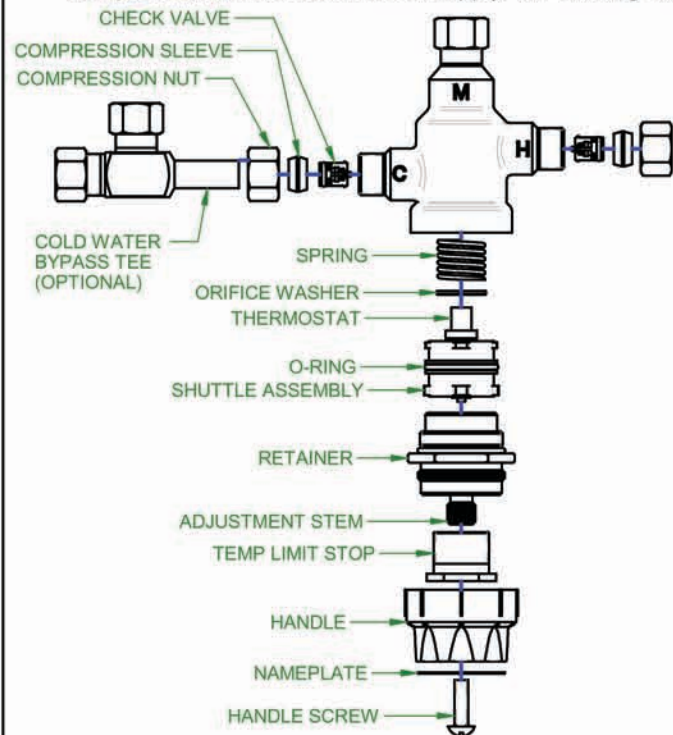
### OPERATION

The Apollo "MVD" 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.

Conversely, if the water temperature decreases, the thermostatic element contracts in response, which increases the hot water supply and decreases the cold water supply, again in the correct proportions, maintaining a constant mixed temperature.

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

The Apollo "MVD" Series has a mixed water adjustment range of 85° - 120°F. For optimum performance it is imperative that the inlet hot water temperature is a minimum of 15°F above the desired outlet temperature. A minimum of 120°F hot water inlet temperature is recommended. The unit is equipped with a maximum temperature limit stop so that outlet temperature cannot be accidentally adjusted above 120°F.

- 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 in order to avoid sudden temperature change increase on the mixing chamber.
- When the unit is pressurized, check for leaks at the fittings and unit.
- Open end-fixture establishing flow. In a double pipe system installation, open fixture with mixed water supply only.
- Temperature adjustment:
  - Remove the handle screw and nameplate.
  - Pull the handle from the retainer spline approximately a 1/2". (NOTE: Adjustment cannot be made if the handle and retainer splines are engaged.) Facing top of the handle, turn clockwise to decrease the mixed temperature, or counter-clockwise to increase the mixed temperature. Allow the mixed temperature to stabilize (at least one minute) before making another adjustment. Adjustment must be performed at flowing condition.

### TEMPERATURE LIMIT STOP ADJUSTMENT

- After the maximum mixed temperature has been set (not to exceed 120 °F), mount the 13/16" hex limit stop (shipped loose ) by hand until it stops against the stem. Do not overtighten the limit stop.
- Locate the temperature lock screw on the 1-1/4" brass hex stem retainer. Tighten the set screw with 1/16" allen wrench (provided) to lock the maximum allowable temperature setting.

### FINAL SETTING

- The unit can now be adjusted to any desired mixed temperature between 85-120 °F. Again, adjustment must be performed at flowing conditions.
- After the desired mixed temperature is set, push down and engage the handle against the retainer spline to lock the adjustment. Re-install the nameplate and handle screw.

### 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 assembly O-ring is required and recommended.

### TROUBLE SHOOTING

| PROBLEM  | CAUSE   | SOLUTION  |
|--|---|---|
| Mixed temperature fluctuating or erratic                 | Cold and Hot water inlet pressure differential too high (greater than 30 psid)  | Install pressure reducing valve or pressure limiting device to maintain equal and consistent pressures. |
|  | Shuttle assembly damaged or worn  | Replace shuttle assembly  |
|  | Setpoint adjustment at maximum setting  | Increase inlet water temperature setting allowing valve to mix  |
| Mixed temperature will not adjust to desired temperature | Hot water temp within 15°F of outlet setting  | Increase hot water inlet temperature to more than 15°F above outlet setting                             |
|  | Cold and hot water inlet temperature differential exceed acceptable limit   | Check water heater temperature<br>Check with licensed plumber and cold water piping and demand          |
|  | Inlet check valves defective 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  |
|  | 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. 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 more information visit [www.apollovalves.com](http://www.apollovalves.com).



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