

INSTALLATION ADJUSTMENT SERVICE

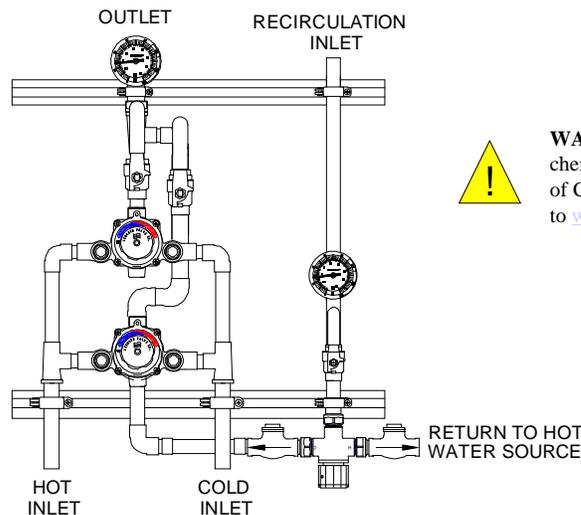
NEXT GENERATION

HIGH-LOW MANIFOLD SYSTEMS

TM-420B-LF-DT-RF-R34

IMPORTANT! Provide serial numbers for both valves when ordering parts!!

Top valve TM-26A manufactured after 1/1/2015 starting with serial # TM420001BLF



WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer. For more information, go to www.P65Warnings.Ca.gov

INSTALLATION

1. Type TM manifold systems are factory pre-assembled and tested and include large and small thermostatic water mixing valves which function as a system to meet both high and low demand for tempered water.
2. System should be installed at a location where it can easily be cleaned, adjusted or repaired.
3. System supplies must be connected as shown (Hot-left, Cold-right). Exercise caution when soldering.
4. Flush pipes thoroughly after system has been connected.
5. Refer to page 3 of this bulletin for correct Setup Instructions.

Maximum Operating Pressure 125PSI (860 KPA) for Hot and Cold Water.

CAUTION

All thermostatic water mixing valves have limitations. They will not provide the desired accuracy outside of their flow capacity range. Consult the capacity chart on page 9. Minimum flow must be no less than as shown.

REMEMBER! THIS IS A CONTROL SYSTEM WHICH MUST BE CLEANED AND MAINTAINED ON A REGULAR BASIS (SEE MAINTENANCE GUIDE AND RECORD MGR-1000).

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ADJUSTMENT AND SERVICE

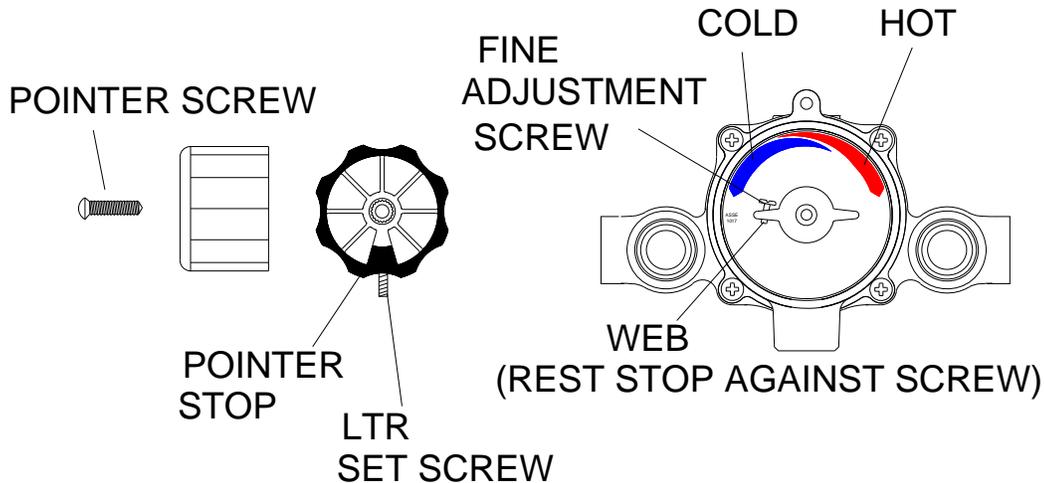
Leonard Type TM Thermostatic Water Mixing Valves are simple in design and may be easily cleaned, adjusted and repaired. If the installation is accessible, servicing may be completed without disconnecting the valves.

NOTE: High Low Manifold Systems include Thermostatic Water Mixing Valves, which must be regularly maintained to provide best performance. Frequency of cleaning depends on quality of local water conditions and usage. See Maintenance Guide and Record MGR-1000.

WARNING

These mixing valves are equipped with an adjustable high temperature limit stop factory set at approximately 120°F (49°C) with an incoming hot water supply temperature of 150°F (65.5°C). If the hot water supply temperature of the job is greater than 150°F (65.5°C), the valves when turned to full HOT will deliver water in excess of 120°F (49°C) and the limit stops **MUST BE RESET BY THE INSTALLER!**

TO RESET ADJUSTABLE HIGH TEMPERATURE LIMIT STOP:



1. Loosen LTR Set Screw, remove POINTER SCREW.
2. Adjust POINTER to maximum desired temperature.
3. Remove POINTER, replace POINTER on spline rod with STOP (which is cast into the underside on the pointer), resting against the BOTTOM side of the WEB on the FINE ADJUSTMENT SCREW.
4. If fine adjustment is needed, adjust FINE ADJUSTMENT SCREW on the cover, loosen for hotter or tighten for cooler temperature.
5. Replace POINTER and check temperature, if set to desired temperature replace POINTER SCREW, and tighten LTR SET SCREW.
6. The new maximum temperature has now been set. Test this temperature by holding a thermometer under the flow of water to be certain it is as desired.

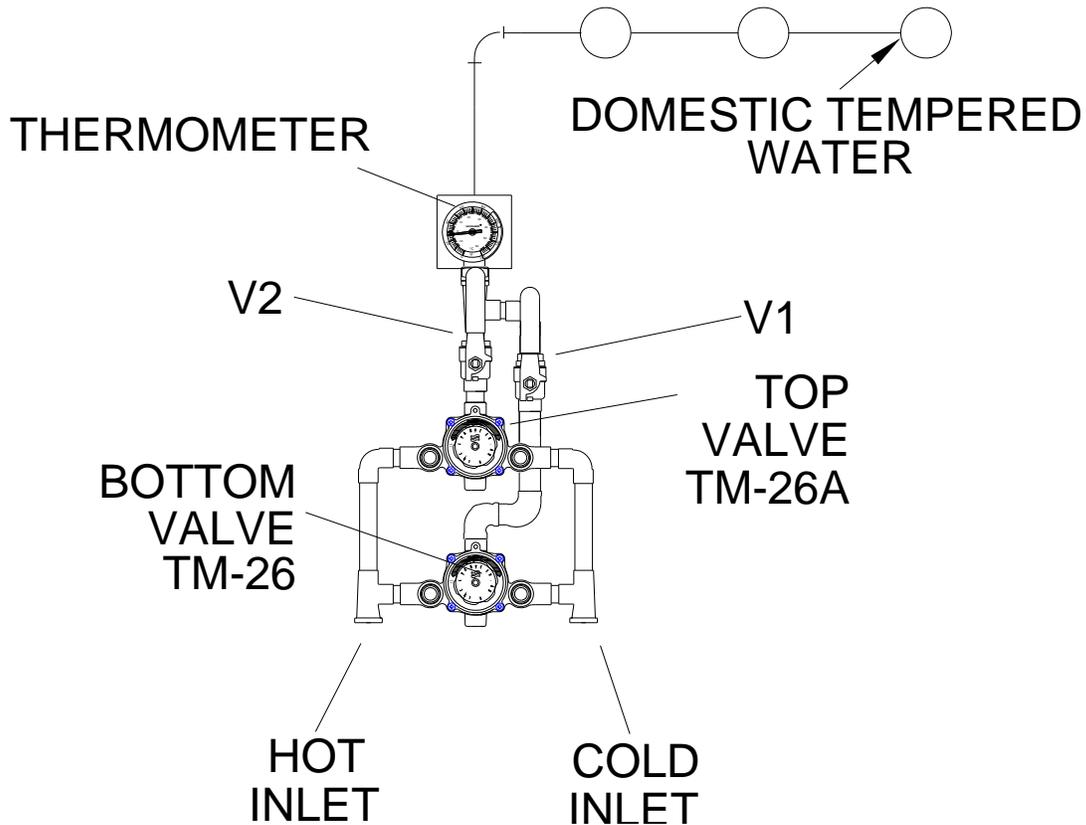
*** LIMIT STOP MUST BE RESET AND RECHECKED EACH TIME HANDLE IS REMOVED.**

**IMPORTANT! BOTH MIXING VALVES MUST BE SET AT THE SAME OPERATING TEMPERATURE.
SEE PAGES: 7 & 8 FOR COMPLETE PARTS BREAKDOWN**

Check for significant variations in outlet flow. Thermostatic valves will NOT provide the desired accuracy outside of their flow capacity range. Minimum flows must be no less than shown (see Flow Capacities, page 9).

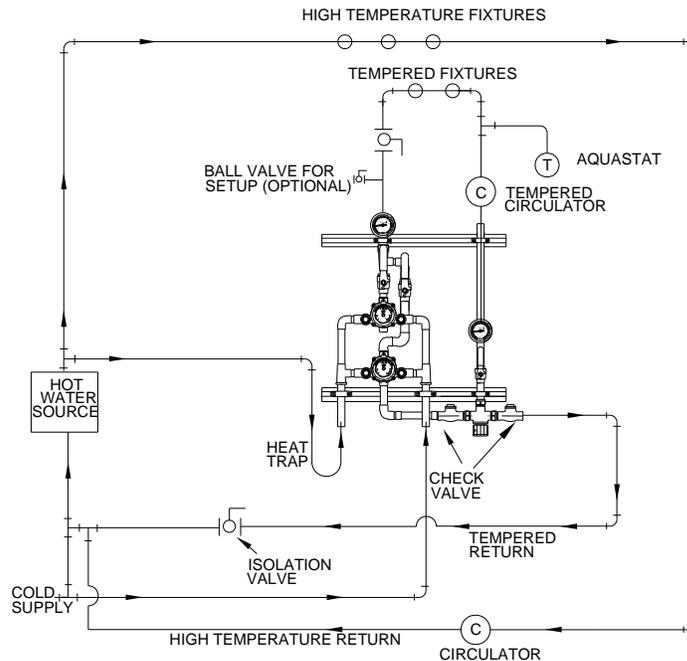
REMEMBER! THIS IS A CONTROL DEVICE WHICH MUST BE CLEANED AND MAINTAINED ON A REGULAR BASIS. (SEE MAINTENANCE GUIDE AND RECORD, MGR-1000).

SETUP INSTRUCTIONS



1. Make sure full hot and cold supplies to this assembly are operating. The temperature of the hot water source must be properly set and maintained
2. The circulator (if used) must be turned OFF before setup.
3. Turn on enough fixtures for a flow of at least 2 GPM downstream from this system. Make sure each fixture is set to deliver full "HOT" water.
4. Close outlet Valve V1 for the bottom Type TM Valve.
5. Make sure Valve V2 for the top Type TM Valve is in the full open position.
6. Set outlet temperature of the top Type TM Valve to the required temperature.
7. Open outlet Valve V1 for the bottom TM Valve.
8. Shut outlet Valve V2 for the top TM valve.
9. Turn on enough fixtures for a flow of at least 2 GPM downstream from this system. Make sure each fixture is set to deliver full "HOT" water.
10. Set outlet temperature of the bottom TM valve to the same temperature as the top TM Valve.
11. Open outlet Valve V2. System is operational.
12. **IMPORTANT!!** See page 4 to balance recirculation system.

REQUIRED METHODS OF PIPING TM VALVES (RECIRCULATED HOT WATER SYSTEMS)



METHOD #2

Required when **TEMPERED** water is to be circulated through the entire building, to maintain tempered water at each fixture. The function of the 1/2" by-pass is to allow the recirculated water to pass through the mixing valve during periods of no draw without entering the hot water source to avoid being reheated. The 370ARV valve allows the system to be properly balanced. See set-up instructions below.

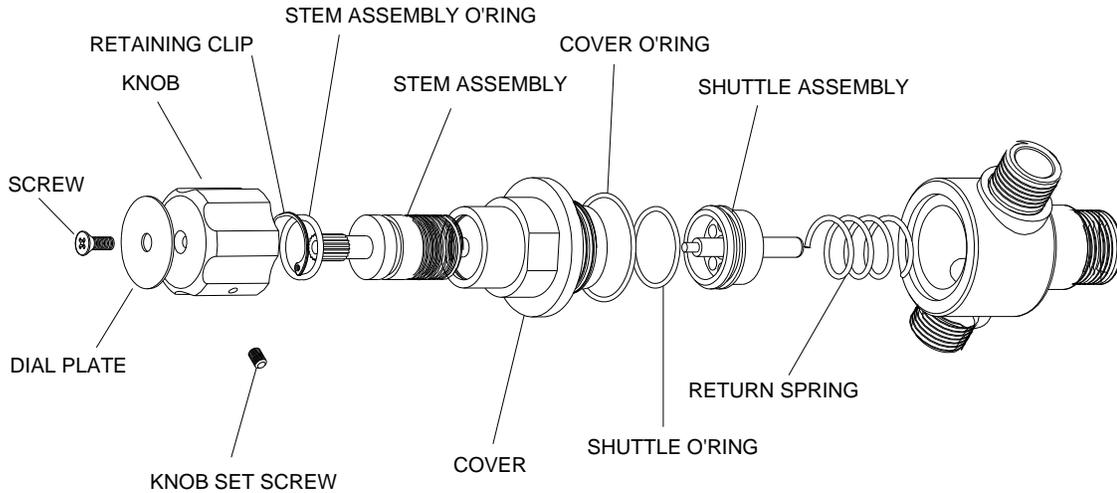
METHOD #2 SET-UP INSTRUCTIONS

1. Before any attempt is made to adjust this system, be sure the temperature of the hot water at the source is properly set and maintained.
2. Be sure system is piped correctly.
3. Turn circulator off, set mixing valve to the desired temperature, (See page 3).
4. Shut off all fixtures. Note: At this point, be sure **NO** water is being drawn through any fixture until the temperature in the recirculated line has been set.
5. Open the ball valve fully and start the circulator.
6. Observe the temperature until it stabilizes.
7. Adjust 370 ARV counter clockwise (coming out of valve body) slightly if warmer temperature is desired or clockwise (going into valve body) if cooler water is desired. Allow to stabilize. Repeat until the desired recirculated temperature is set.

WARNING: THIS PIPING METHOD WILL NOT PERFORM EFFECTIVELY IF THE VALVE IS OVERSIZED. MINIMUM FLOWS ARE SHOWN ON FLOW CAPACITIES CHART, PAGE 9. FOR ESTIMATING MAXIMUM HOT WATER DEMAND, CONSULT LEONARD CASPAK SIZING PROGRAM.

DO NOT CONFUSE THE MINIMUM FLOW REQUIREMENTS OF THE MIXING VALVE WITH PROPER SIZING OF THE CIRCULATOR.

MODEL 370ARV



DISMANTLING & CLEANING

1. Shut off hot and cold water to the valve as well as the valve outlet port.
2. Loosen lock screw on side of knob with 5/64" allen wrench.
3. Remove the knob screw on top of knob.
4. Remove temperature adjustment knob.
5. Remove valve cover, which includes the stem assembly.
6. The shuttle assembly can now be removed, cleaned and inspected. Be sure to check the condition of the shuttle o-ring and replace if necessary.
7. Lubricate the shuttle o-ring before installing the shuttle assembly.
8. Install the cover assembly including o-ring back onto valve and tighten.
9. Replace knob and knob screw.
10. **Valve temperature must be reset after any repairs or cleaning!!**

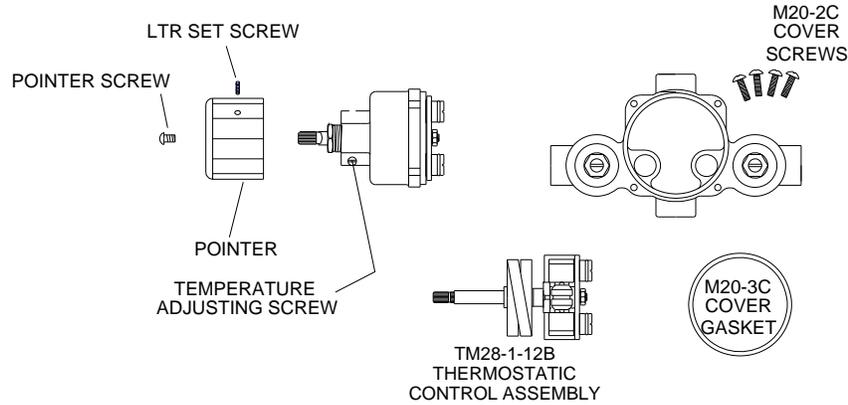
TROUBLESHOOTING

1. Leaking water under knob, order gasket kit, replace stem assembly o-ring. Remove knob screw and knob, remove retaining clip, thread out the stem assembly and replace o-ring. Lubricate o-ring, thread stem into cover, replace retaining ring, knob and screw. **Valve temperature must be reset after any repairs or cleaning!!**
2. Leaking water between cover and body, order gasket kit, replace cover o-ring. Remove knob screw and knob and remove valve cover and replace o-ring. Replace valve cover, knob and knob screw. **Valve temperature must be reset after any repairs or cleaning!!**
3. Valve not controlling temperature even after cleaning, order complete rebuild kit. Remove knob screw and knob and remove valve cover. Replace shuttle assembly and return spring being sure to lubricate shuttle o-ring. Replace valve cover, knob and knob screw. **Valve temperature must be reset after any repairs or cleaning!!**

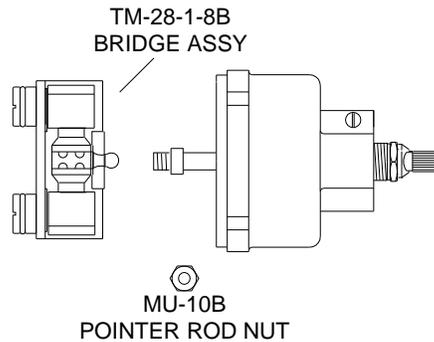
REPAIR KITS

MODEL 370 ARV	
Leaking water under knob.	1/ WX Gasket Kit Shuttle o'ring Stem assembly o'ring Cover o'ring
Leaking water between valve cover and body.	R/ 270/370 Complete Rebuild Kit Return spring Shuttle assembly Shuttle o'ring Stem assembly o'ring Cover o'ring
Valve will not control temperature after cleaning.	R/ 270/370 Complete Rebuild Kit Return spring Shuttle assembly Shuttle o'ring Stem assembly o'ring Cover o'ring

INSTRUCTIONS FOR SERVICING



1. Loosen LTR set screw.
2. Remove pointer screw, and pointer.
3. Turn off hot and cold supplies at screwdriver checkstops. Remove M20-2C cover screws to release cover and thermostatic control assembly.
4. To remove bridge assembly, TM28-1-8B, remove pointer rod nut (MU-10B) and pull bridge assembly off control rod.



5. To clean, submerge bridge in clean water or non-corrosive cleaning solution. **DO NOT USE ABRASIVES!** Be certain thimble moves freely on port sleeve. Note! Driving ball must engage slot in coil bracket when reassembling.
6. To clean thermostat coil, loosen gland nut. Push rod through cover. Be careful not to pull coil out of shape.
7. Clean with a non-corrosive cleaning solution. **DO NOT USE ABRASIVES!**

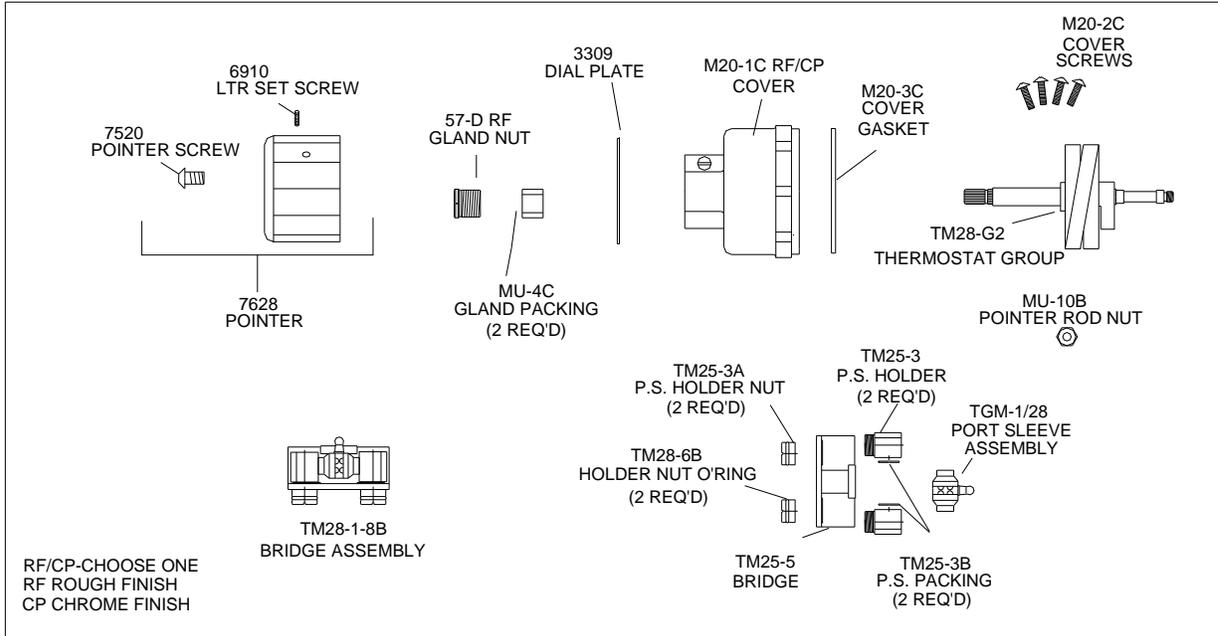
TROUBLESHOOTING INSTRUCTIONS

Note: Provide valve serial number when ordering parts for either valve!

		TOP VALVE TM-26A	BOTTOM VALVE TM-26
Packing & gasket	1. Leak at stem. Leak between valve cover and base.	Repair Kit # 1/26Y (Packings & Gaskets)	Repair Kit # 1/26 (Packings & Gaskets)
Rebuild / Bridge	2. Valve delivers either all hot or all cold water, or will not mix consistently.	Repair Kit #R/28 (Rebuilding Kit) or TM28-1-8B Bridge Assembly	Repair Kit #R/28 (Rebuilding Kit) or TM28-1-8B Bridge Assembly
Rebuild / thermostat	3. After cleaning or replacing port sleeve/ bridge assembly, valve performance is not consistent.	Repair Kit #R/28 (Rebuilding Kit) or TM28-G2 Thermostat group	Repair Kit #R/28 (Rebuilding Kit) or TM28-G2 Thermostat group
Checkstop	4. Hot water by-pass into cold line (or cold into hot). Supplies cannot be shut off completely. Supplies leak at checkstop bonnets.	Repair Kit #4/26Y (Checkstop Kit)	Repair Kit #4/M20 (Checkstop Kit)

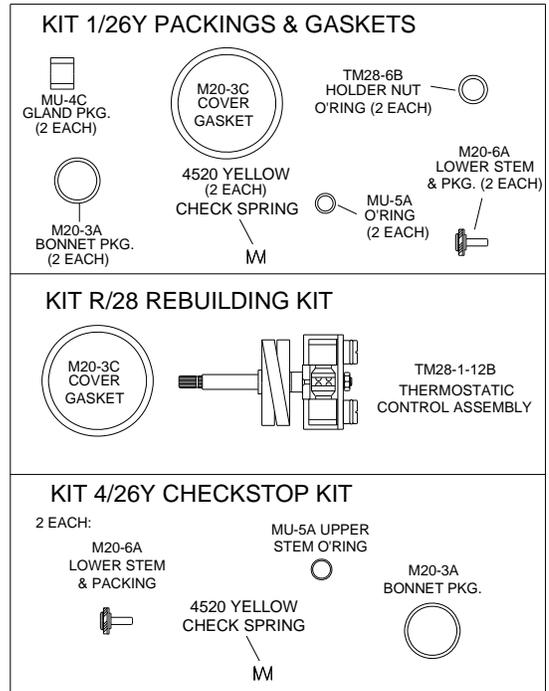
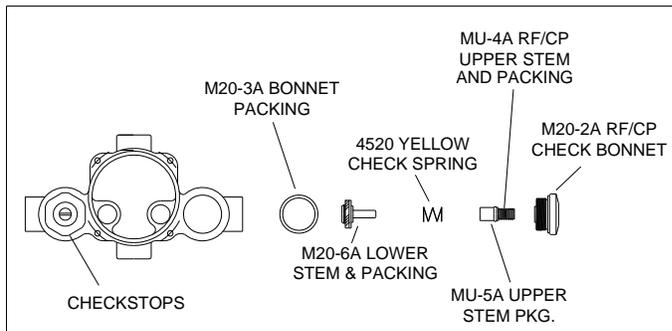
See pages 7 & 8 for Parts Breakdowns

TM-26A VALVE PARTS (TOP VALVE)



CHECKSTOP PARTS

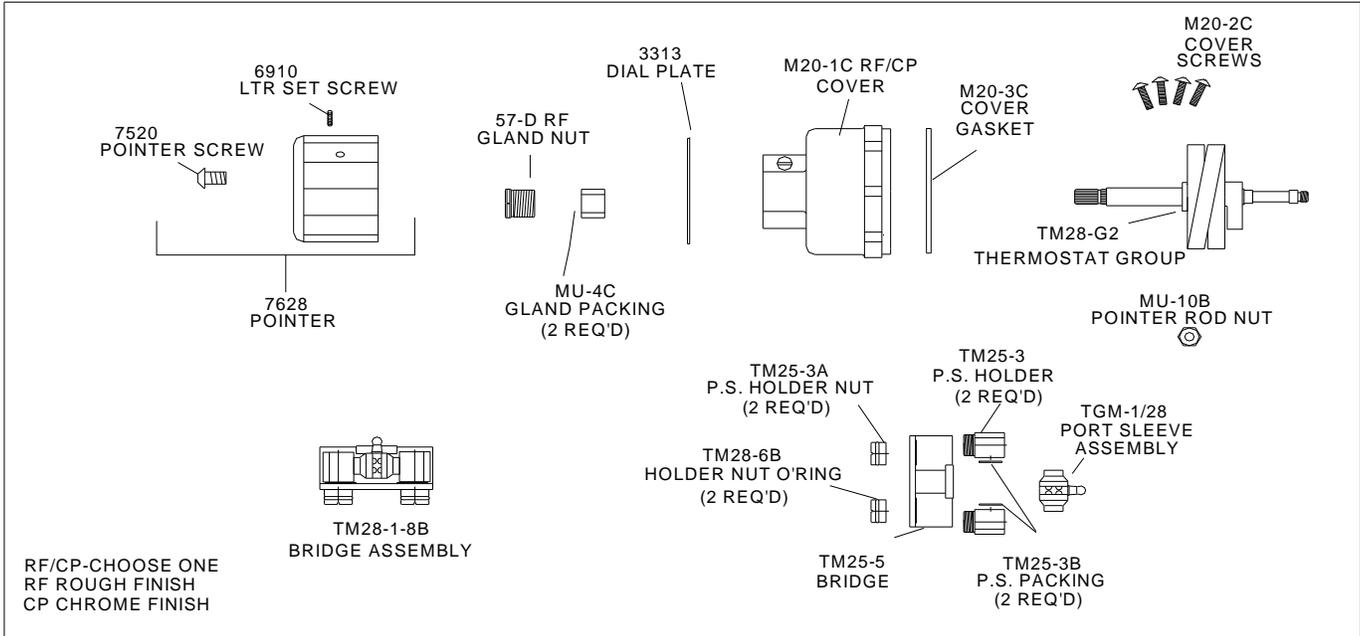
REPAIR KITS



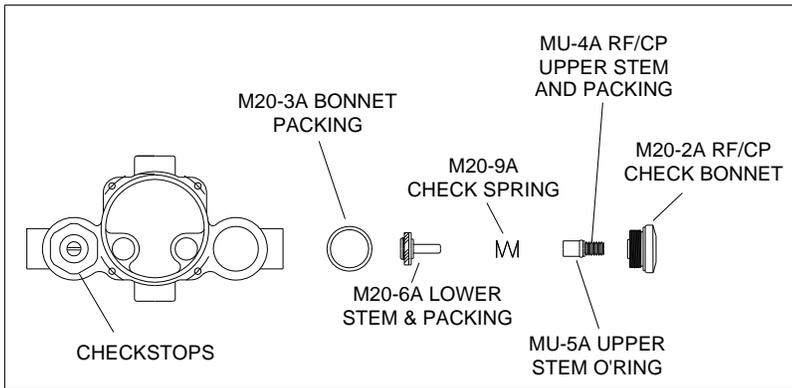
REMEMBER! THIS IS A CONTROL DEVICE WHICH MUST BE CLEANED AND MAINTAINED ON A REGULAR BASIS (SEE MAINTENANCE GUIDE AND RECORD).

NOTE: AFTER INSTALLING NEW PARTS IT WILL BE NECESSARY TO RESET THE ADJUSTABLE HIGH TEMPERATURE LIMIT STOP ON EACH VALVE (SEE PAGE 2).

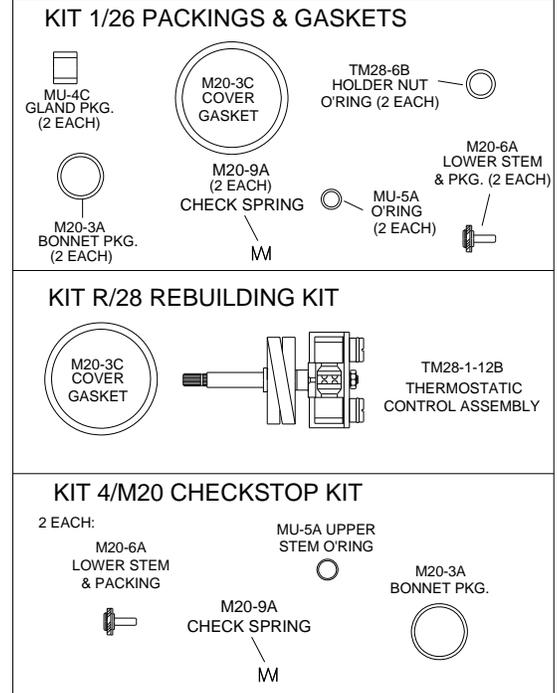
TM-26 VALVE PARTS (BOTTOM VALVE)



CHECKSTOP PARTS



REPAIR KITS

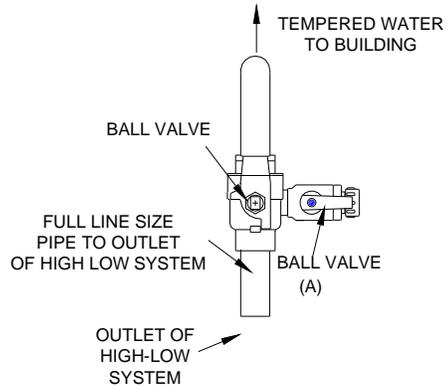


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**OPTIONAL OUTLET SETUP PIPING
(BY OTHERS)**

The addition of this piping arrangement (extra tee and ball valve) eliminates the need to turn showers on and off throughout the building at setup. The flows required in the setup instructions (page 3) are set by using Ball Valve A. (make sure main outlet ball valve is closed).



CAUTION! ALL THERMOSTATIC WATER MIXING VALVES AND SYSTEMS HAVE LIMITATIONS! THEY WILL NOT PROVIDE THE DESIRED PERFORMANCE OUTSIDE OF THEIR FLOW CAPACITY RANGE! CONSULT THE CAPACITY CHART BELOW AND OBSERVE MINIMUM FLOWS SHOWN.

FLOW CAPACITIES

MODEL	IN	OUT	MINIMUM FLOW (GPM) (l/min)	SYSTEM PRESSURE DROP (PSIG)										PSI BAR
				5	10	15	20	25	30	35	40	45	50	
TM-420B	3/4"	1"	1.0 (3.8)	12 45	18 68	22 83	26 98	30 114	33 125	36 136	39 148	42 159	44 167	GPM l/min

LIMITED WARRANTY

Leonard Valve Company (hereinafter, "Leonard") warrants the original purchaser that products manufactured by Leonard will be free from defects in material or workmanship under normal conditions of use, when properly installed and maintained in accordance with Leonard's instructions, for a period of one year from the date of shipment. During this period, Leonard will at its option repair or replace any product, or part thereof, which shall be returned, freight prepaid, to the Leonard factory and determined by Leonard to be defective in materials or workmanship. Leonard provides no warranty, express or implied, which extends beyond the description contained herein. LEONARD SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. Nonetheless, some jurisdictions may not allow the disclaimer of certain implied warranties, in which case Leonard hereby limits such implied warranties to the duration of the limited warranty period contained herein. Some jurisdictions may not allow limitations on how long an implied warranty lasts, so the foregoing durational limitation may not apply to you. In no event will Leonard be liable for labor or incidental or consequential damages. Any alteration or improper installation or use of this product will void this limited warranty. If any provision of this limited warranty is prohibited by law in the applicable jurisdiction, such provision shall be null and void, but the remainder of this limited warranty shall continue in full force and effect.