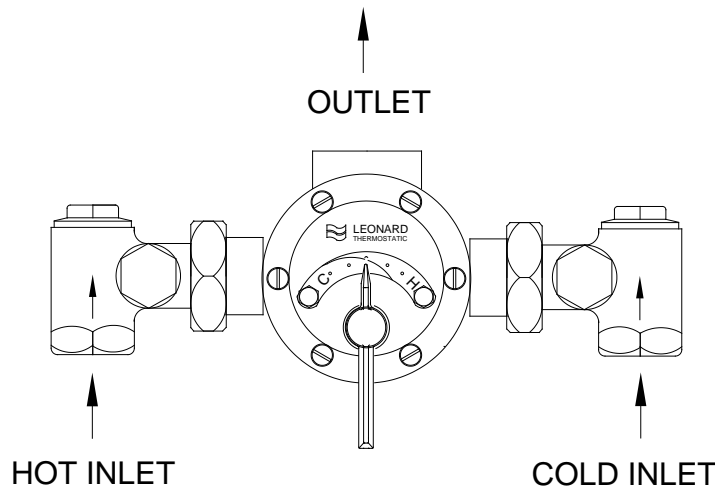


# INSTALLATION ADJUSTMENT SERVICE THERMOSTATIC WATER MIXING VALVES TYPE TM-30, 50, 80, 125, 150

**IMPORTANT!** Provide valve serial number, (stamped on cover of valve) when ordering parts!!



## INSTALLATION

1. Valve should be installed at a location where it can easily be cleaned, adjusted or repaired.
2. The inlets are clearly marked on the valve body casting. Connect the hot water into the inlet marked "H" and cold water into the inlet marked "C". These are **NOT** to be confused with the "C-H" markings on the front cover.
3. Union angle strainer checkstops furnished must be installed on both supply lines **as shown above**.
4. A shutoff valve must be installed on the outlet pipe. Type TM valves do not have a built-in shutoff.
5. Use solder, or thread sealant sparingly. Supply pipes should be flushed before the valve is connected. Flush outlet pipe and valve as soon as it is connected.

**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 6. Minimum flow must be no less than as shown.**

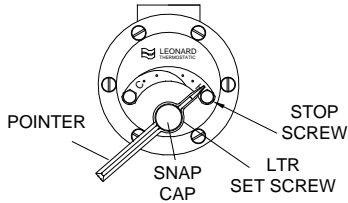
**REMEMBER! THIS IS A CONTROL SYSTEM WHICH MUST BE CLEANED AND MAINTAINED ON A REGULAR BASIS (SEE MAINTENANCE GUIDE AND RECORD MGR-1000).**

# 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 valve.

**NOTE:** Thermostatic Water Mixing Valves are REGULATING mechanisms, 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).

## TO RESET ADJUSTABLE HIGH TEMPERATURE LIMIT STOP:



1. Loosen LTR set screw.
2. Remove SNAP CAP, SCREW & WASHER. Remove POINTER.
3. Temporarily place POINTER on the spline rod, turn RIGHT for warmer temperature, turn LEFT for cooler temperature. When valve is delivering warmest temperature desired, remove the pointer.
4. Replace POINTER on the spline rod so that its RIGHT edge is resting against the STOP SCREW located on the RIGHT SIDE OF THE COVER.
5. 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.

### !! WARNING !!

**WARNING!** This Thermostatic Mixing Valve has an adjustable high temperature limit stop, which must be checked. If temperature is too high, the installer, **MUST RESET** stop immediately. Always check the temperature of the mixed water when the lever handle is turned to full **HOT**. Excessively hot water is **DANGEROUS AND MAY CAUSE SCALDING!**

The high temperature limit stop is factory set at approximately 120°F (49°C) with an incoming hot water supply temperature of 150°F (65°C). If the incoming hot water on the job is higher than 150°F, the valve when turned to full hot will deliver water in excess of 120°F and the high temperature limit stop, **MUST BE RESET BY THE INSTALLER.**

## TROUBLESHOOTING INSTRUCTIONS

|                               |   | TM-30                                    | TM-50, 80                              | TM-125, 150                              |
|-------------------------------|---|--|--|--|
| <b>PACKINGS &amp; GASKETS</b> | <ol style="list-style-type: none"> <li>1. Leak at pointer rod.</li> <li>2. Leak between valve cover and base.</li> </ol>  | KIT 1/50                                 | KIT 1/50                               | KIT 1/125                                |
| <b>PORT SLEEVE ASSEMBLY</b>   | <ol style="list-style-type: none"> <li>3. Valve delivers either all hot or all cold water, or will not mix consistently.</li> </ol>   | TGM-1/30<br>KIT R/TM30<br>REBUILDING KIT | TGM-1/50<br>KIT R/50<br>REBUILDING KIT | TGM-1/125<br>KIT R/125<br>REBUILDING KIT |
| <b>THERMOSTAT GROUP</b>       | <ol style="list-style-type: none"> <li>4. After cleaning or replacing port sleeve assembly, valve will not hold temperature.</li> </ol>   | TGM-2/50<br>KIT R/TM30<br>REBUILDING KIT | TGM-2/50<br>KIT R/50<br>REBUILDING KIT | TGM-2/125<br>KIT R/125<br>REBUILDING KIT |
| <b>CHECKSTOPS</b>             | <ol style="list-style-type: none"> <li>5. Hot water bypass into cold line.</li> <li>6. Supplies cannot be shut off completely.</li> <li>7. Leak at checkstop bonnet.</li> </ol> | KIT 2/50                                 | KIT 2/50                               | KIT 2/50                                 |

### SEE PAGE 5 FOR COMPLETE PARTS BREAKDOWN, PARTS KIT

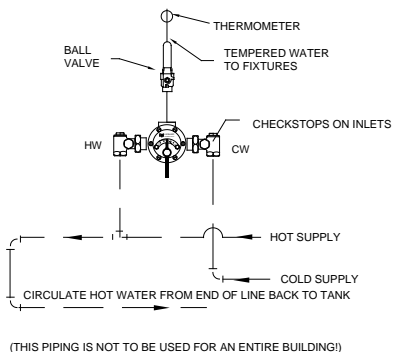
“Check for significant variations in outlet flow. Thermostatic valves will NOT provide the desired accuracy outside of their flow capacity range. Minimum flows must be no less than shown (see Flow Capacities, page 6).

If installed on a circulated hot water system, make certain the valve is piped according to Leonard Required Methods of Piping (see page 3).

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

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

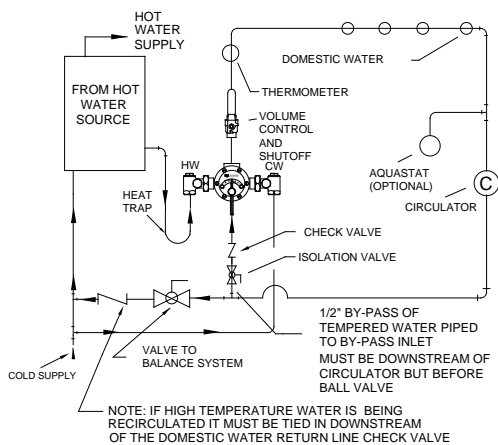
## METHOD #1



## METHOD #1

Required when **HOT WATER** is to be circulated to a master mixer or individual thermostatic mixing valves which are a substantial distance from the hot water source. It is used primarily in a building with several risers, with tempered water in each riser controlled by a separate master mixer. **NOTE:** The engineer must determine maximum distance which can be run, i.e. maximum allowable time for hot water to reach user with one shower head operating, based upon code requirements and/or good practice.

## METHOD #2



## 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 ball valve allows the system to be properly balanced. The by-pass loop helps reduce the buildup of undesirable hot water in the primary system, and **MUST NOT** be omitted. 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 to correct method.
3. Open enough fixtures to exceed the minimum requirements of the mixing valve installed (see Flow Capacities, page 6). **Note:** The minimum flow requirements apply only to the mixing valve and not to the flow of the circulator.
4. Turn circulator off, set mixing valve to the desired temperature, (note Warning Tag attached to the pointer of the valve).
5. 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.
6. Open the ball valve to balance system approximately 1/2 way and start the circulator.
7. Observe the temperature until it stabilizes.
8. Close the ball valve slightly if the temperature is too hot, or open if it is too cold and again let the temperature 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 6. 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.**

## INSTRUCTIONS FOR

### DISMANTLING VALVE

1. Shut off hot and cold supplies to valve.
2. Loosen LTR set screw.
3. Remove SNAP CAP, SCREW and WASHER, POINTER and FRICTION SPRING. (FIGURE #1).
4. Remove the 6 COVER SCREWS, then take off cover to which the Thermostat and Gears are attached.

**WHEN RE-ASSEMBLING VALVE**, making sure driving ball engages ball socket, insert new Flange Packing in base; replace COVER, tightening COVER SCREWS in rotation; put FRICTION SPRING in place; then replace POINTER and POINTER ROD SCREW, WASHER and CAP.

After installing new parts, it will probably be necessary to reset Pointer to obtain correct temperature range from Cold to Hot. See page 2 instructions "TO RESET ADJUSTABLE HIGH TEMPERATURE LIMIT STOP."

### TO CLEAN PORT SLEEVE ASSEMBLY

Failure to properly blend the water may be caused by a sticking condition in the PORT SLEEVE ASSEMBLY. The THIMBLE should slide freely on the PORT SLEEVE.

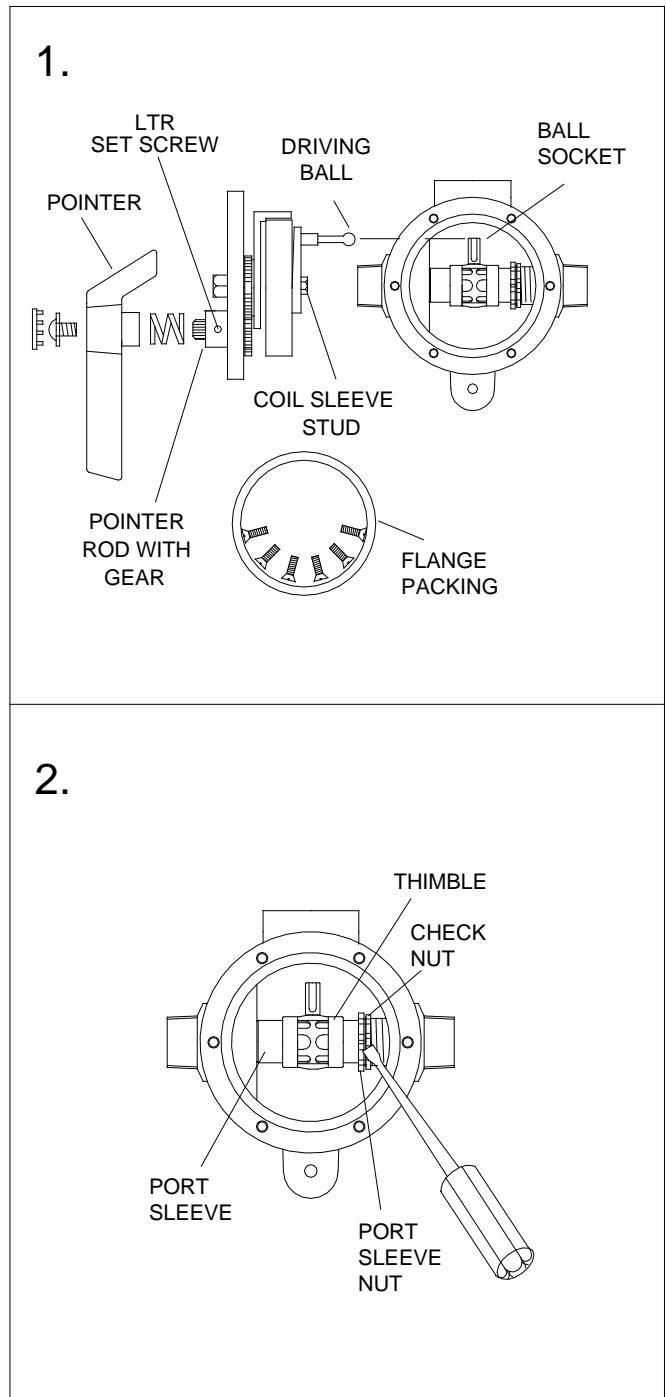
1. If a deposit of lime or sediment prevents free movement, use a nail set or other tapered tool to unscrew the CHECK NUT as far as it will go, then screw the PORT SLEEVE NUT into the base. This will release the PORT SLEEVE and THIMBLE so they can be lifted out, (Figure #2).
2. Clean with a NON-CORROSIVE CLEANING AGENT AND SOFT CLOTH - DO NOT USE ABRASIVES - then wash parts thoroughly, wipe with a dry cloth and re-assemble. The PORT SLEEVE should be assembled with the SHOULDER to the LEFT. Tighten PORT SLEEVE NUT against end of PORT SLEEVE but be careful not to cramp sleeve in place. Tighten CHECK NUT.
3. When replacing front be sure DRIVING BALL is inserted in Ball Socket as shown in Figure #1.

### TO REPLACE POINTER ROD WITH GEAR

1. Remove POINTER ROD SNAP CAP, SCREW, WASHER, POINTER, and FRICTION SPRING. (FIGURE #1)
2. Remove COVER with parts attached, from the front of valve.
3. Remove COIL SLEEVE STUD and take off THERMOSTAT GROUP.
4. Replace POINTER ROD with GEAR and re-assemble.

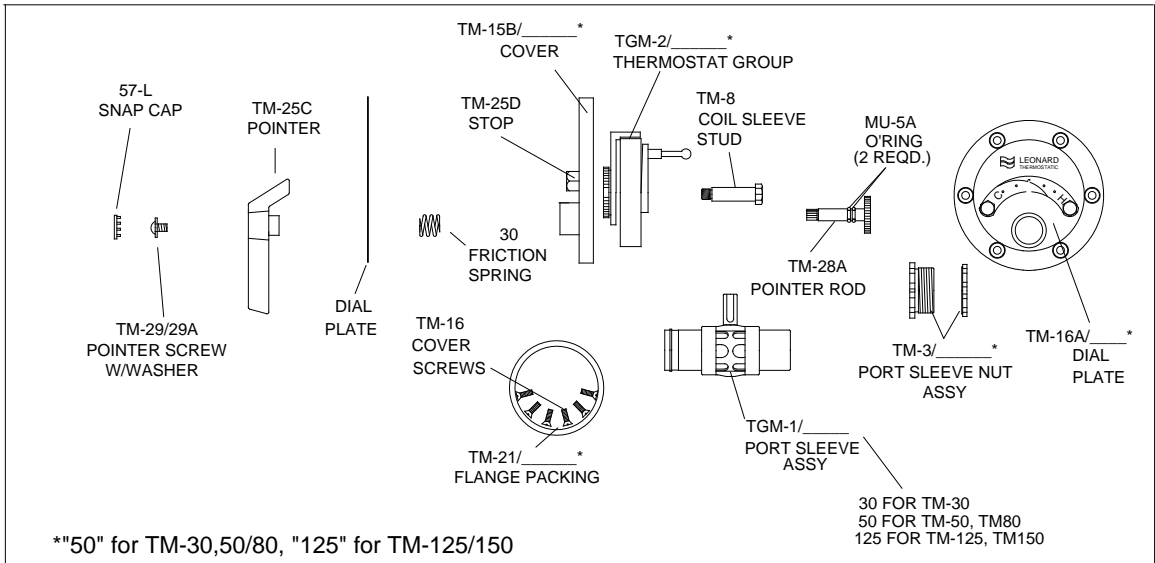
### TO REPLACE (OR CLEAN) THERMOSTAT GROUP

Follow instruction for replacing POINTER ROD with GEAR above. If a deposit has collected on the Thermostatic Coil, clean it off with a brush in a non-corrosive grit-free cleaning solution.



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

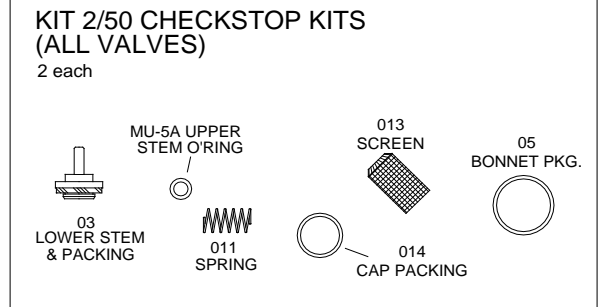
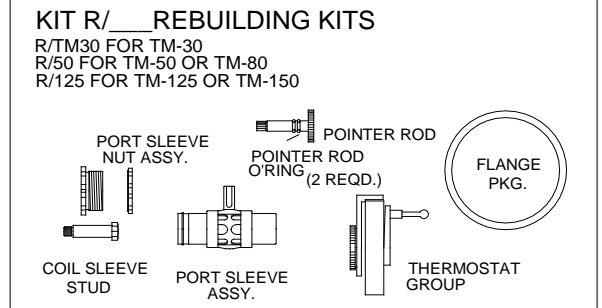
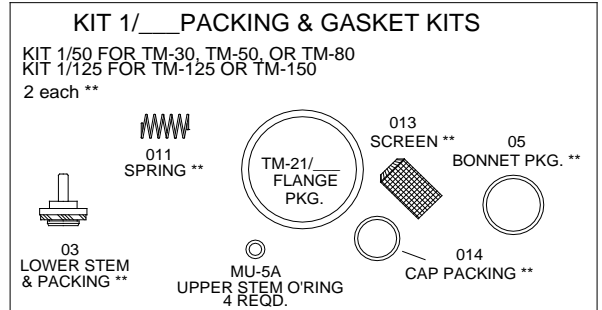
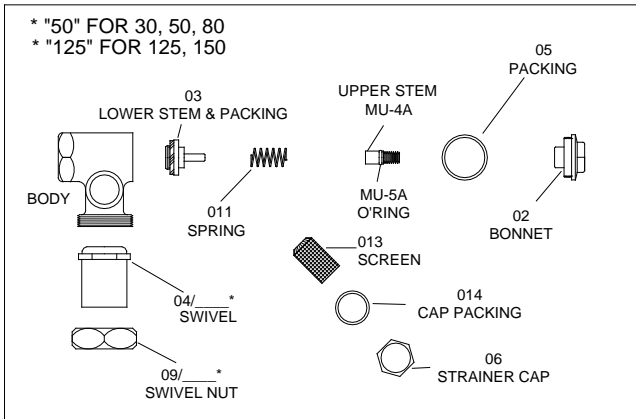
# TM VALVE PARTS



\*"50" for TM-30,50/80, "125" for TM-125/150

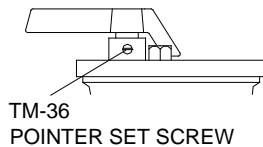
## CHECKSTOP PARTS

## REPAIR KITS



## LOCK TYPE POINTER

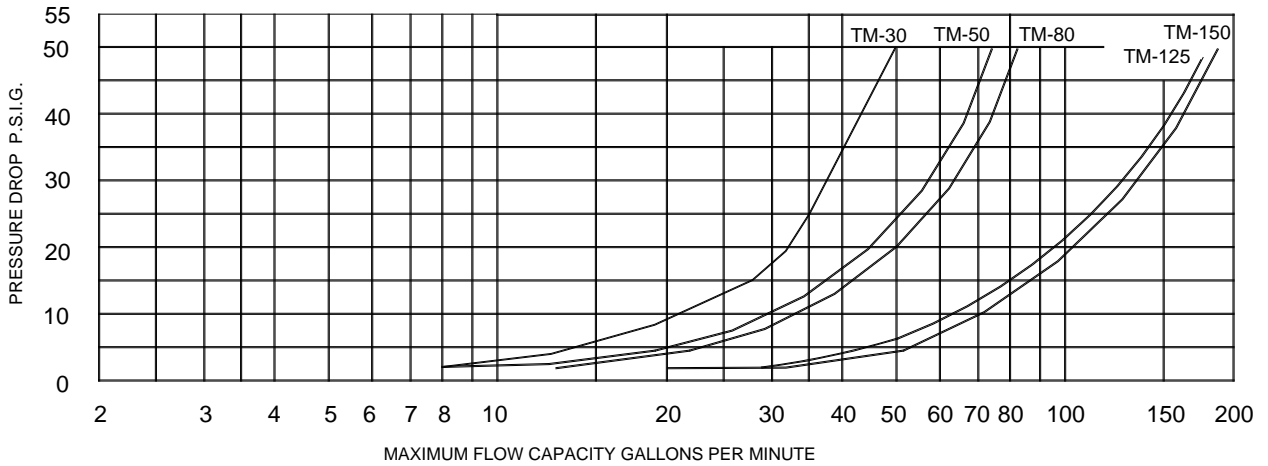
TM valves are furnished with lockable pointers



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

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

# FLOW CAPACITIES



**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 and **DO NOT OVERSIZE**. Minimum flow must be no less than shown below.

| MODEL    | IN     | OUT    | MINIMUM FLOW (GPM)<br>(l/min) | SYSTEM PRESSURE DROP (PSIG) |           |           |            |            |            |            |            |            |            |              |
|----------|--------|--------|-------------------------------|-----------------------------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|--------------|
|          |        |        |                               | 5                           | (10)      | (15)      | (20)       | 25         | 30         | 35         | 40         | 45         | 50         | PSI          |
|          |        |        |                               | ,3                          | .7        | .97       | 1.4        | 1.7        | 2.1        | 2.4        | 2.8        | 3.1        | 3.4        | BAR          |
| TM-30-E  | 3/4"   | 3/4"   | 5.0<br>(19)                   | 13<br>49                    | 19<br>72  | 25<br>95  | 30<br>114  | 34<br>129  | 37<br>140  | 41<br>155  | 45<br>170  | 47<br>182  | 49<br>185  | GPM<br>l/min |
| TM-50-E  | 3/4"   | 1"     | 8.0<br>(30)                   | 19<br>72                    | 29<br>109 | 38<br>143 | 45<br>170  | 51<br>193  | 56<br>212  | 62<br>235  | 67<br>254  | 71<br>269  | 74<br>280  | GPM<br>l/min |
| TM-80-E  | 1"     | 1 1/4" | 13.0<br>(49)                  | 22<br>83                    | 34<br>129 | 42<br>160 | 50<br>189  | 56<br>212  | 62<br>235  | 68<br>257  | 73<br>276  | 78<br>295  | 80<br>302  | GPM<br>l/min |
| TM-125-E | 1 1/4" | 1 1/4" | 18.0<br>(68)                  | 48<br>182                   | 65<br>246 | 80<br>303 | 95<br>360  | 112<br>424 | 120<br>454 | 130<br>492 | 140<br>530 | 158<br>598 | 165<br>626 | GPM<br>l/min |
| TM-150-E | 1 1/4" | 1 1/2" | 18.0<br>(68)                  | 53<br>200                   | 72<br>273 | 88<br>333 | 103<br>382 | 117<br>443 | 133<br>503 | 147<br>556 | 161<br>609 | 175<br>662 | 177<br>670 | GPM<br>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.

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