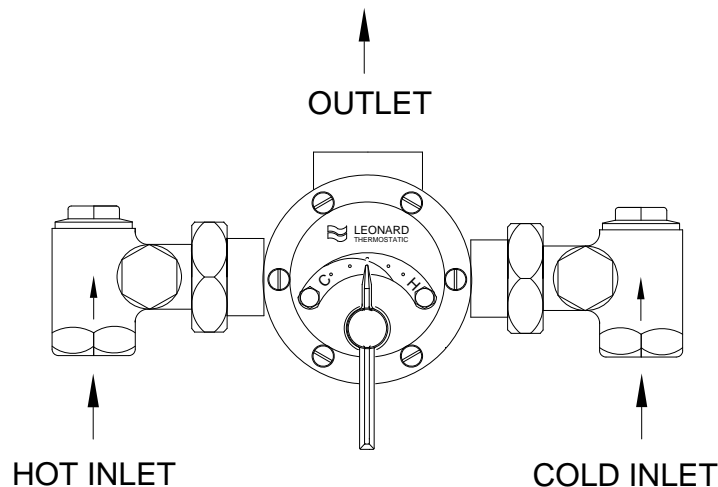


INSTALLATION ADJUSTMENT SERVICE ALLTERNATIVE TEMPERATURE THERMOSTATIC WATER MIXING VALVES TYPE TM-50-AT, 80-AT, 150-AT, 200-AT

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.

NOTE: Valve is not to be used for domestic hot water distribution. Please see Leonard Valves complete line of ASSE 1017 certified mixing valves for Domestic hot water.

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

1360 Elmwood Avenue, Cranston, RI 02910 USA

Phone: 401.461.1200 Fax: 401.941.5310

Email: info@leonardvalve.com

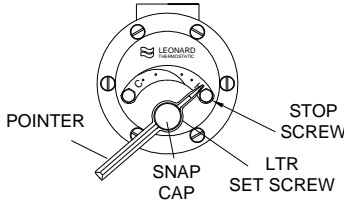
Web Site: <http://www.leonardvalve.com>

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:

	<p>!! WARNING !!</p> <p>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!</p>
<ol style="list-style-type: none"> 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. 	

TROUBLESHOOTING INSTRUCTIONS

		TM-50-AT, 80-AT	TM-150-AT	TM-200-AT
PACKINGS & GASKETS	<ol style="list-style-type: none"> 1. Leak at pointer rod. 2. Leak between valve cover and base. 	KIT 1/50	KIT 1/125	KIT 1/200C
PORT SLEEVE ASSEMBLY	<ol style="list-style-type: none"> 3. Valve delivers either all hot or all cold water, or will not mix consistently. 	TGM-1/50 KIT R/50 REBUILDING KIT	TGM-1/125 KIT R/125 REBUILDING KIT	TG-1/200 KIT R/200N REBUILDING KIT
THERMOSTAT GROUP	<ol style="list-style-type: none"> 4. After cleaning or replacing port sleeve assembly, valve will not hold temperature. 	TGM-2/50 KIT R/50 REBUILDING KIT	TGM-2/125 KIT R/125 REBUILDING KIT	TGM-2/125 KIT R/200N REBUILDING KIT
CHECKSTOPS	<ol style="list-style-type: none"> 5. Hot water bypass into cold line. 6. Supplies cannot be shut off completely. 7. Leak at checkstop bonnet. 	KIT 2/50	KIT 2/50	KIT 2/200C

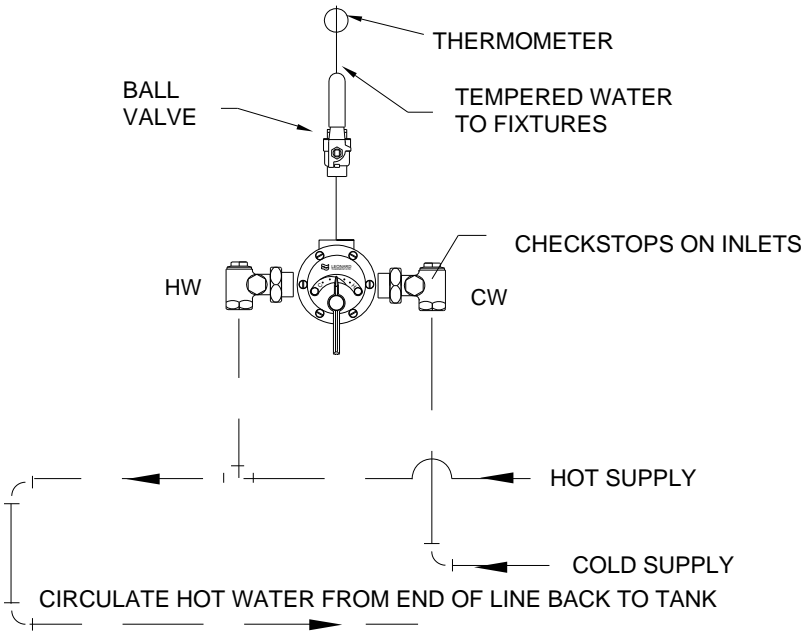
SEE PAGES 5, 6, 7 FOR COMPLETE PARTS BREAKDOWN, PARTS KIT

“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 8).

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

METHOD #1



(THIS PIPING IS NOT TO BE USED FOR AN ENTIRE BUILDING!)

METHOD #1

Note: The operating outlet temperature range of these valves is outside the normal operating range of a Domestic Hot Water Distribution Valve and therefore they are more suitable for Process Temperature Control applications. Please see Leonard’s complete line of ASSE 1017 Certified Valves for Domestic Hot Water Applications.

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.

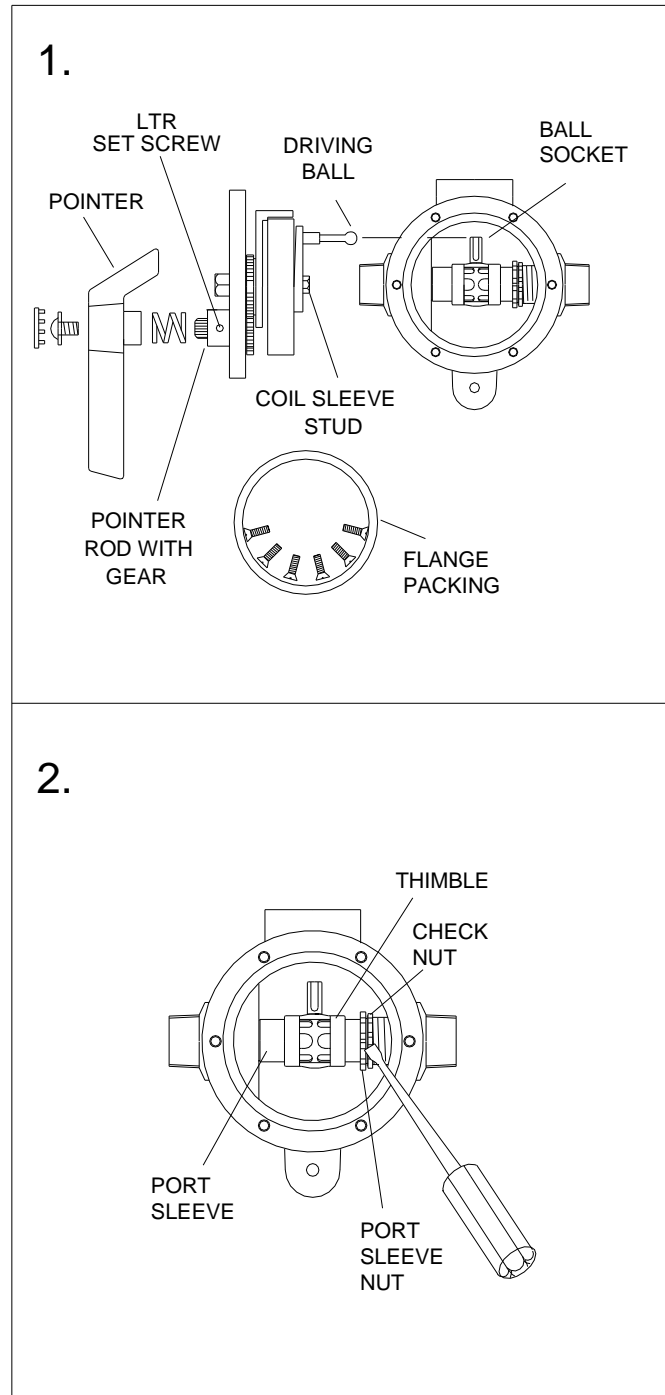
1. If a deposit of lime or sediment prevents free movement, use a nail set or other tapered tool to unscrew the CHECK NUT as far as it will go, then screw the PORT SLEEVE NUT into the base. This will release the PORT SLEEVE and THIMBLE so they can be lifted out. (Figure #2).
2. Clean with a NON-CORROSIVE 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.

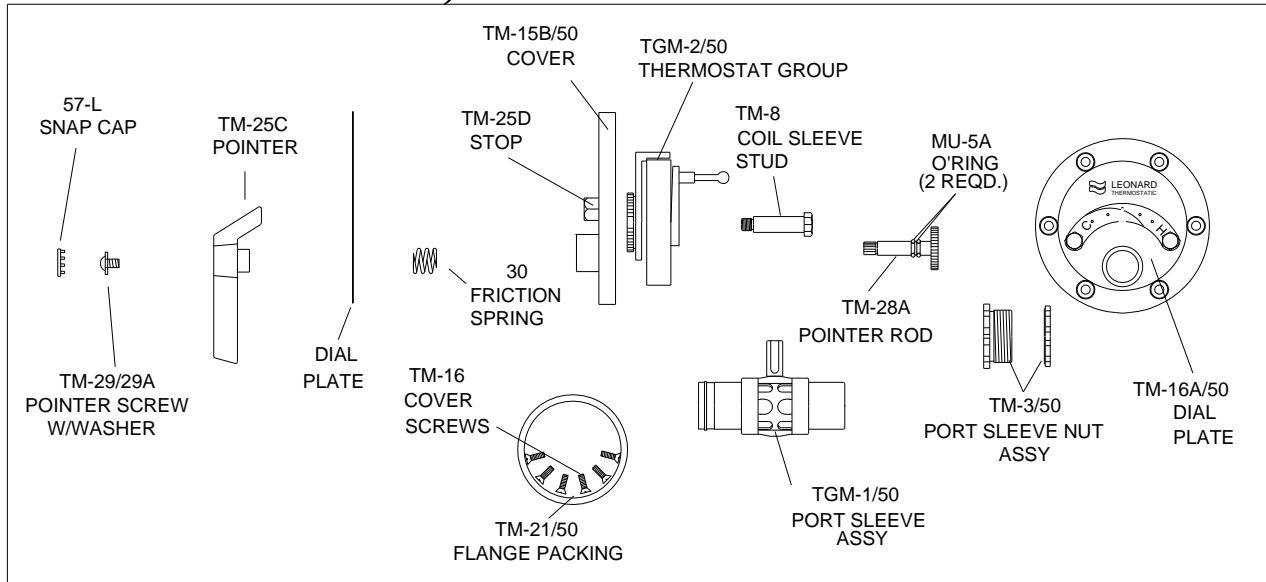
TO REPLACE (OR CLEAN) THERMOSTAT GROUP

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.

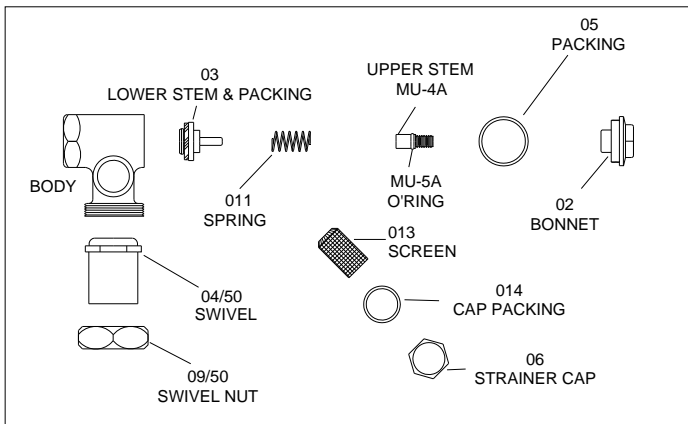


REMEMBER! THIS IS A CONTROL DEVICE WHICH MUST BE CLEANED AND MAINTAINED ON A REGULAR BASIS. (SEE MAINTENANCE GUIDE AND RECORD, MGR-1000).

TM-50-AT, 80-AT VALVE PARTS

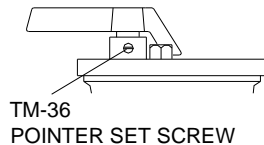


CHECKSTOP PARTS



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).

REPAIR KITS

KIT 1/50 PACKING & GASKET KITS

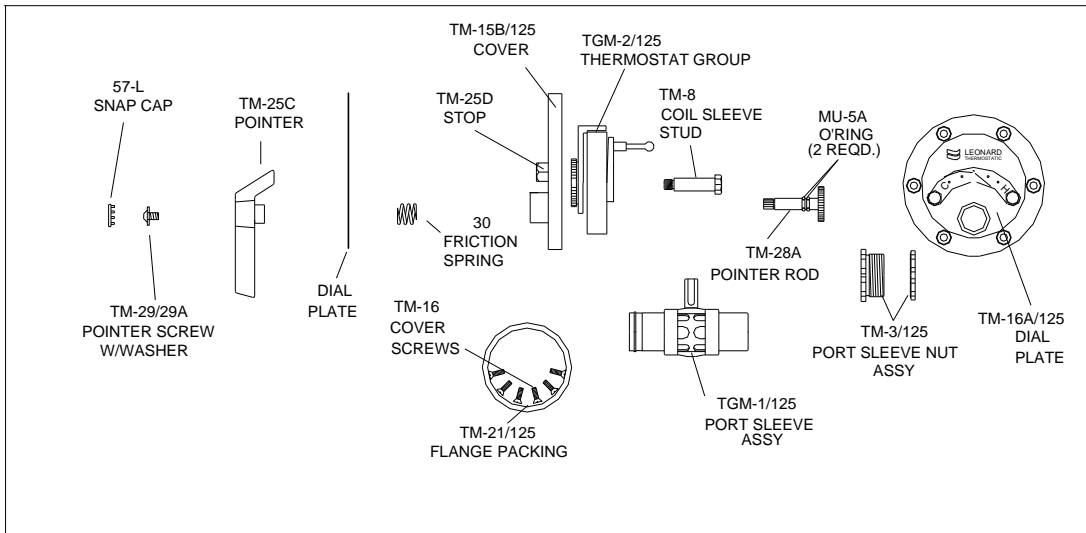
2 each **

KIT R/50 REBUILDING KITS

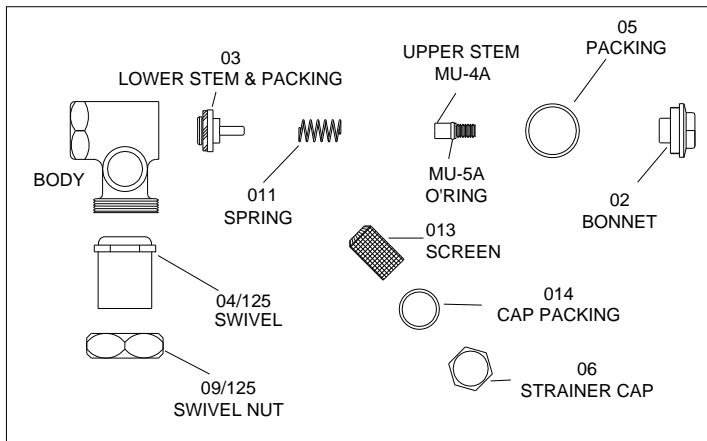
KIT 2/50 CHECKSTOP KITS

2 each

TM-150-AT VALVE PARTS

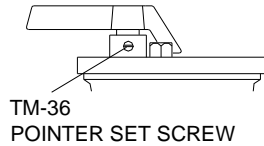


CHECKSTOP PARTS



LOCK TYPE POINTER

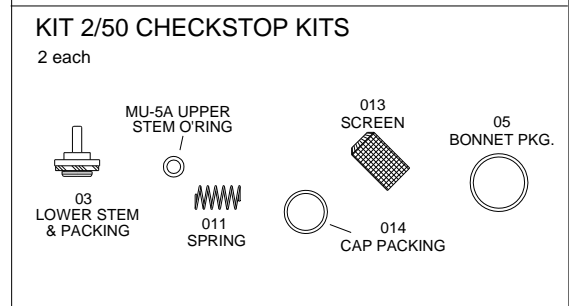
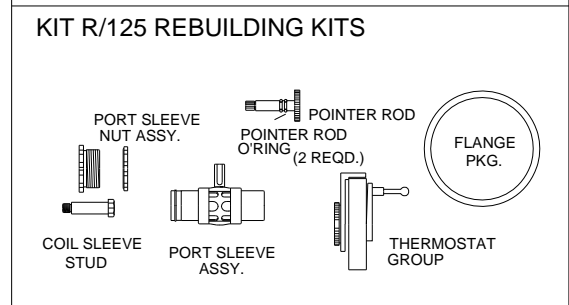
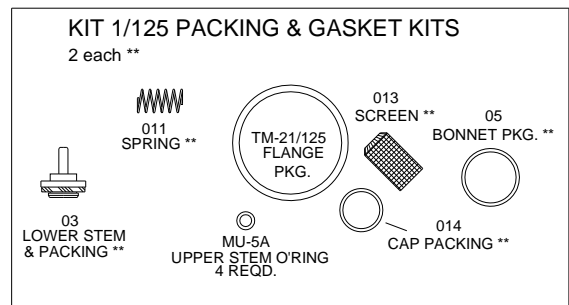
TM valves are furnished with lockable pointers



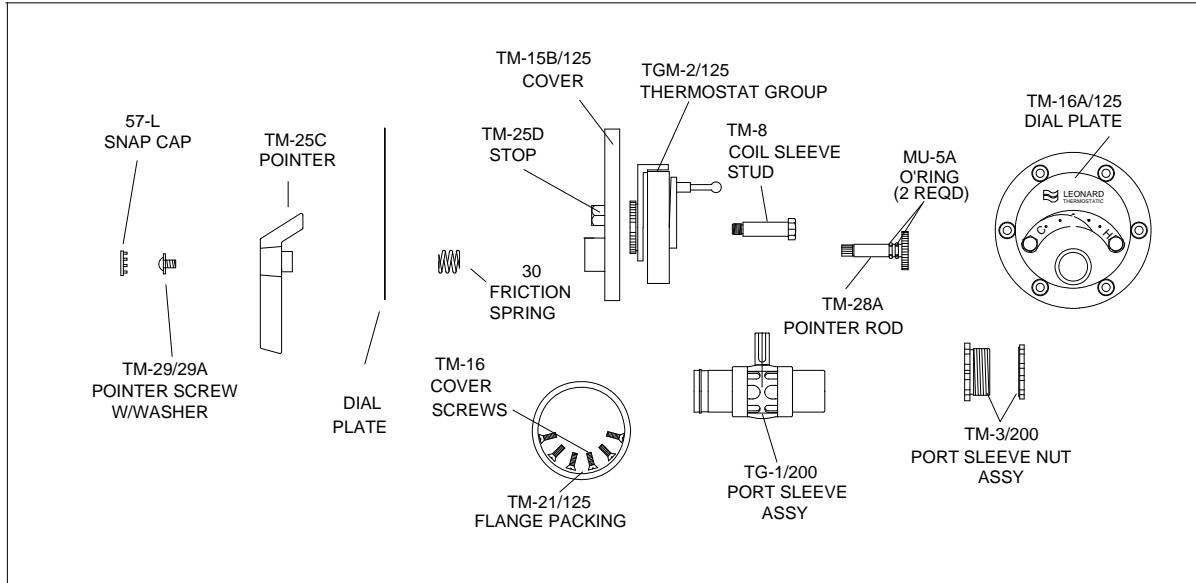
REMEMBER! THIS IS A CONTROL DEVICE WHICH MUST BE CLEANED AND MAINTAINED ON A REGULAR BASIS (SEE MAINTENANCE GUIDE AND RECORD (MGR-1000)).

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

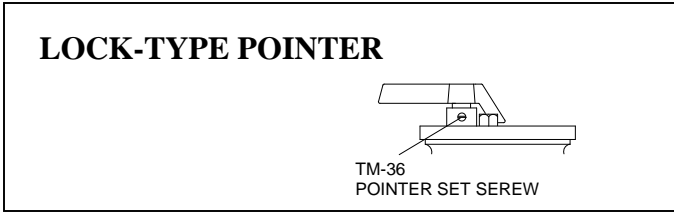
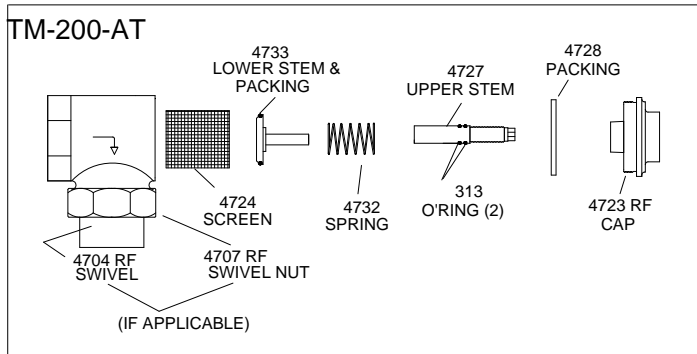
REPAIR KITS



TM-200-AT VALVE PARTS



CHECKSTOP PARTS



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).

REPAIR KITS

KIT 1/200/C PACKINGS & GASKETS

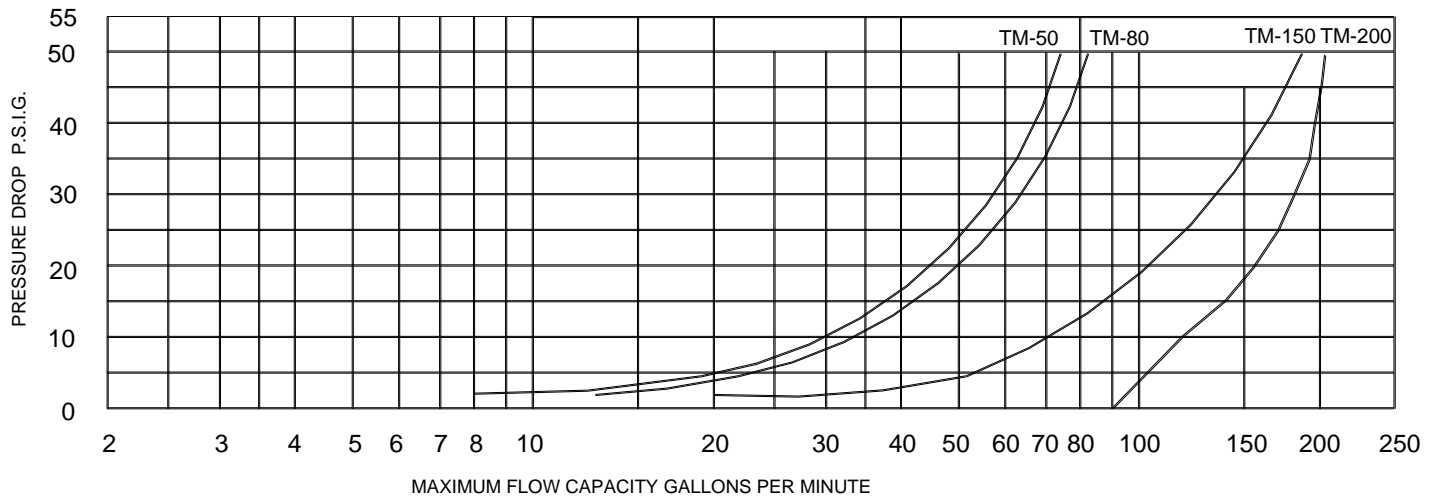
**=2 EA.

KIT R/200/N REBUILDING KIT

KIT 2/200/C CHECKSTOP KIT

2 EA:

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) (l/min)	SYSTEM PRESSURE DROP (PSIG)										PSI	BAR	GPM	l/min								
				5	10	15	20	25	30	35	40	45	50												
				,3	.7	.97	1.4	1.7	2.1	2.4	2.8	3.1	3.4												
TM-50-AT	3/4"	1"	8.0 (30)	19	29	38	45	51	56	62	67	71	74	72	109	143	170	193	212	235	254	269	280	GPM	l/min
TM-80-AT	1"	1 1/4"	13.0 (49)	22	34	42	50	56	62	68	73	78	80	83	129	160	189	212	235	257	276	295	302	GPM	l/min
TM-150-AT	1 1/4"	1 1/2"	18.0 (68)	53	72	88	103	117	133	147	161	175	177	200	273	333	382	443	503	556	609	662	670	GPM	l/min
TM-200-AT	2"	2"	30 (114)	90	120	140	155	170	180	190	195	200	205	341	454	530	587	644	681	719	738	757	776	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.

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