

TM-2020B-2P







HIGH CAPACITY MANIFOLD SYSTEMS

LEONARD HIGH CAPACITY
MANIFOLD SYSTEMS regulate
water temperature over a wide
range of flows for large
commercial and institutional
applications.

Designed specifically for convention hotels, large apartments or condominiums and large prisons

Thermostatic water mixing valves, DURA-trol® solid bimetal thermostatic control (Seven-Year Limited Thermostat Warranty)

Adjustable high-temperature limit stops set for 120°F (49°C)

Mixed water capacities up to 453 GPM (1715 l/min)

Pilot-operated pressure regulators with low-pressure drops

Factory-preassembled and tested systems
Toll-free technical support



High Capacity Manifold Systems

All High Capacity Manifold Systems are furnished factory assembled and tested with:

Large and small TYPE TM thermostatic water mixing valves to meet extremely high and low demands for mixed water

TYPE TM valves, powered by the DURA-trol® solid bimetal thermostats with Leonard's exclusive Seven-Year Limited Thermostat Warranty

TM valves with integral hot and cold supply checkstops, wall supports and locked temperature regulators

Pilot-actuated outlet pressure regulator(s) open to allow flow from the large TYPE TM valve(s) as demand for mixed water increases

Outlet pressure gauge, dial thermometer, and ball valve shutoff, pre-piped inlet manifold

Full-time standby service eliminates downtime should one mixing valve require maintenance

High Capacity Systems are designed for large buildings with high mixed-water capacity requirements where large pressure drops cannot be tolerated. They are also ideal for installations planning for future expansion.

Selection/Specification Guide

NEW GENERATION SYSTEM - (MODEL#) - (MOUNTING#) - (OPTION#)

MODEL

TM-186-1508015-PRV	1-1/2" inlets, 2" outlet, 1-190 GPM (3.8-719 l/min)
TM-2020B-DT	2" inlets/outlet, 1-214 GPM (3.8-810 l/min)
TM-186-20050-PRV	2" inlets/outlet, 5-230 GPM (19-871 l/min)
TM-1520A-2P-PARALLEL	2" inlets/outlet, 2-237 GPM (7.6-897 l/min)
TM-2020B-2P-PARALLEL	3" inlets/outlet, 2-321 GPM (7.6-1215 l/min)
TM-186-20015020-PRV	3" inlets/outlet, 1-348 GPM (3.8-1317 l/min)
TM-186-30015050-PRV	4" inlets/outlet, 5-424 GPM (19-1609 l/min)
TM-2020B-3P-PARALLEL	4" inlets/outlet, 3-490 GPM (11-1855 l/min)



TM-2020B-2P STSL REC

MOUNTING

0	Exposed Assembly
STSTL REC	Stainless Steel Recessed Cabinet*
STSTL EXP	Stainless Steel Exposed Cabinet*
S	Mounted on strut (Parallel Models Only)

^{*}Available on selected models, contact Leonard

OPTIONS

тс	Test Connection Piping on Outlet (2" Models Only, contact Leonard)





High Capacity Manifold Systems

SAMPLE SPECIFICATION

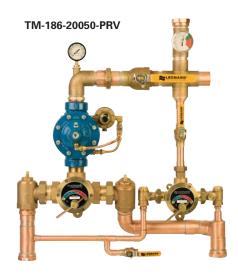
Leonard Model TM-	
" inlets, "outlet	
GPM minimum flow capacity (see chart, page 5))
GPM maximum flow capacity @ PSI system pressure drop	

Large TYPE TM thermostatic water mixing valve(s), small TYPE TM valve, DURA-trol® solid bimetal thermostat with Seven-Year Limited Warranty, color-coded dials, locking temperature regulator handles, adjustable limit stops set for 120°F (49°C), integral hot and cold supply checkstops

Outlet pilot actuated pressure regulator(s), ball valve shutoff, pressure gauge and dial thermometer, inlet piping manifold

Factory preassembled and tested, rough bronze finish

System shall provide full time standby service should one mixing valve require maintenance and shall be piped according to Leonard's required piping method



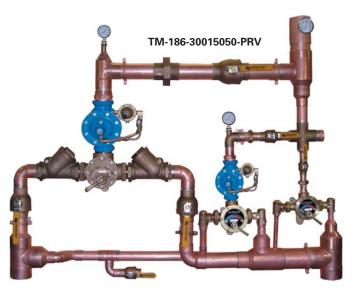
High Capacity Systems are not dependent upon a circulating pump for minimum flow performance

System can be installed at any location in the domestic water system

TM-186-1508015-PRV	1-190 GPM (3.8-719 l/min) 1-1/2" inlets, 2" outlet
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TM-2020B-2P

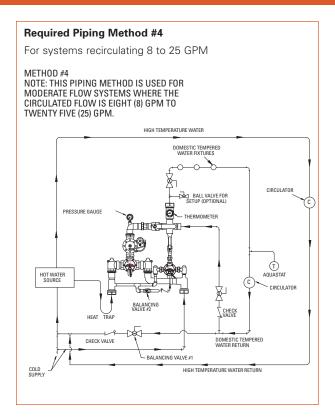




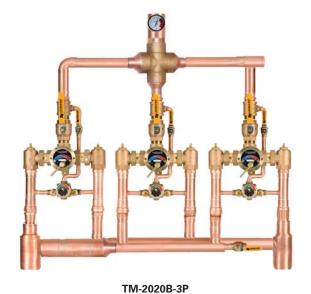
Required Piping Methods

Required Piping Method #2 For systems recirculating up to 8 GPM METHOD #2 NOTE: THIS PIPING METHOD IS USED FOR MODERATE FLOW SYSTEMS WHERE THE CIRCULATED FLOW IS EIGHT (8) GPM OR LESS. HIGH TEMPERATURE WATER DOMESTIC TEMPERED WATER FIXTURES DOMESTIC TEMPERED WATER FIXTURES THERMOMETER OCHECK VALVE DOMESTIC TEMPERED WATER FETURN CHECK VALVE DOMESTIC TEMPERED WATER FETURN CHECK VALVE DOMESTIC TEMPERED WATER FETURN DOMESTIC TEMPERED DOMESTIC TEMPERED WATER FETURN DOMESTIC TEMPERED DOMESTIC TEMPERED DOMESTIC TEMPERED DOMESTIC TEMPERED WATER FETURN DOMESTIC TEMPERED DOM

HIGH TEMPERATURE WATER RETURN



Required Piping Method #5 For systems recirculating over 25 GPM METHOD #5 NOTE: THIS PIPING METHOD IS USED FOR HIGH FLOW SYSTEMS WHERE THE CIRCULATED FLOW IS TWENTY FIVE (25) GPM OR GREATER. MIGH TEMPERATURE WATER DOMESTIC TEMPERED WATER RITURES PRESSURE GAUGE HOT WATER GUILLATOR COLD SUPPLY HIGH TEMPERATURE WATER RETURN HIGH TEMPERATURE WATER RETURN HIGH TEMPERATURE WATER RETURN



See page 6 for calculating the size of the hot water bypass line.



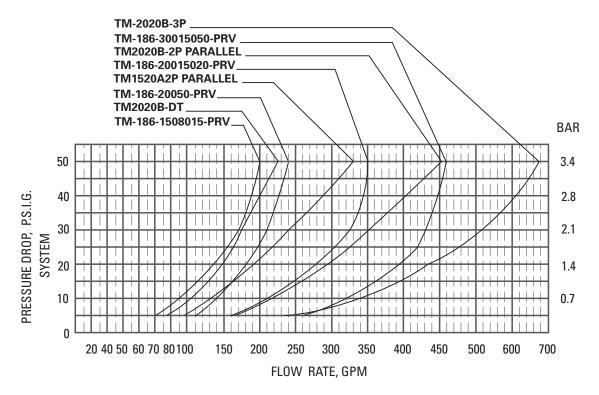
Flow Capacities

			MINIMUM	SYSTEM PRESSURE DROP										
MODEL	IN	OUT	FLOW GPM L/MIN	5 .3	10 .7	1.0	1.4	25 1.7	30 2.1	35 2.4	40 2.8	45 3.1	50 3.4	PSI BAR
TM-186-	1 1/2"	2"	1.0	70	90	120	130	150	170	180	185	190	200	GPM
1508015-PRV	38mm	51mm	3.8	265	340	453	491	567	643	680	700	719	757	L/MIN
TM2020B-DT**	2"	2"	1.0	78	113	129	145	163	172	188	197	214	226	GPM
	51mm	51mm	3.8	295	428	488	549	617	651	712	746	810	856	L/MIN
TM-186-	2"	2"	5.0	110	135	160	180	200	210	215	225	230	240	GPM
20050-PRV	51mm	51mm	19	416	511	606	681	757	795	814	852	871	908	L/MIN
TM1520A-2P**	2"	2"	2.0	96	130	160	190	224	240	260	280	316	330	GPM
PARALLEL	51mm	51mm	8	364	546	666	720	848	908	984	1060	1196	1250	L/MIN
TM2020B-2P**	3"	3"	2.0	156	226	258	290	326	344	376	394	428	452	GPM
PARALLEL	76mm	76mm	8	591	856	977	1098	1234	1302	1423	1491	1620	1711	L/MIN
TM-186-	3"	3"	1.0	160	210	250	275	305	325	340	345	348	350	GPM
20015020-PRV	76mm	76mm	3.8	606	795	946	1041	1154	1230	1287	1306	1317	1325	L/MIN
TM-186-	4"	4"	5.0	260	310	360	400	420	430	440	447	453	460	GPM
30015050-PRV	101mm	101mm	19	984	1173	1363	1514	1590	1628	1666	1692	1715	1741	L/MIN
TM-2020B-3P**	4"	4"	3.0	234	339	400	435	489	516	564	591	642	678	GPM
	101mm	101mm	11	886	1283	1514	1647	1851	1953	2135	2237	2430	2567	L/MIN
**Valve Assemblies are ASSE 1017 and CUPC listed Maximum Flow Capacity														

Note: The High Capacity model must be selected based upon the following:

- Maximum system demand for mixed water
- System pressure drop*
- Designer's estimated minimum mixed water flow requirement

^{*} System pressure drop = the pressure available at the inlet of the mixing valve minus the pressure required to operate the farthest fixture, i.e., shower valve, in the building



Caution: All thermostatic water mixing valves have limitations. They will not provide the desired accuracy outside of their flow capacity range. Consult the above chart and graph and make certain minimum flow is greater than as shown above.

High Capacity Manifold Systems



Special Applications

High Capacity Systems are designed for existing hotels or apartments which have a quantity of large whirlpool tubs.

High Capacity Systems are effective in special washdown applications where large volumes of mixed water are required to wash equipment during one period and a small volume is required, i.e., for human showering, during alternative periods.

Sizing the Hot Water Bypass Line For Required Piping Method #5

The following information is needed to size this line properly:

- 1. Flow of the recirculated water (Flow)
- 2. Temperature of the hot water (T hot)
- 3. Return temperature (T return)
- 4. Outlet temperature of the mixing valve (T outlet)

Calculate the amount of hot water needed to restore the outlet recirculated water temperature to the original setting and select the line size needed to accomplish this using the formula below. Use the Type "L" table to determine the size. A properly sized Hot Water Bypass Line will prevent the possibility of the system reaching full hot water at any time.

Toutlet - T return
T hot - T return
X Flow = Gallons of Hot Water Required

GPH hot water req'd	Type "L" line size
5	1/2"
8	3/4"
14	1"
20	1-1/4"
30	1-1/2"

Note: This chart is based upon flow at 5 ft/sec max.

This hot water bypass line will be needed when more than 8 GPM of additional hot water is needed to maintain the recirculated water temperature.

WARNING! No two piping systems are alike! The Piping Methods detailed in this bulletin serve only as a guide to assist the specifier in the design of a hot water piping system. The specific characteristics of each installation must be considered by the design professional.

Note: All specifications are subject to change without notice!





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