



Thermal Leverage

COMMERCIAL & INDUSTRIAL
PLATE TYPE WATER HEATERS



*When you have
Leverage
use it!*



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DEVELOPED WITH OVER 20 YEARS OF ENGINEERING WORKING KNOWLEDGE

Thermal Leverage a new company having deep roots in Heat Exchanger design with forward looking Engineering and Innovation. The Thermal Leverage TL advantage is just that, superior engineering design paired with the highest grade materials manufactured, tested and stamped to ASME code standards is your answer to satisfying today's most demanding domestic hot water supply applications.

The solid all 316 Stainless Steel double wall plates coupled with the welded Stainless Steel flanged interconnecting recirculation pump assembly minimizes threaded connections along with the chances of leaks. MEP Engineers, Plumbing Contractors and Building Owners who require High Capacity and accurate domestic hot water heating in a reduced area will benefit from this upgraded long lasting TL design.

HOW IT WORKS

Since its inception in the early part of the last century the plate type heat exchanger has continued to evolve and grow in use over the more traditional shell and tube type heat exchangers. In the last 20 years with the advent of condensing lower boiler water temperature systems a greater advantage comes with the use of plate type heat exchangers for comfort and domestic water heating. The Thermal Leverage Pivot water heater incorporates a high surface area double wall plate pack design with a fast-acting electromagnetic three-way control valve. The cold-water flows to the inlet from the top of the unit through the plate section down to the bottom of the unit and is heated as it passes over the plate section in counter current heat transfer.

Most heaters use a feedback only signal that relies heavily on the changes that have already occurred not giving the controls the heads-up feed forward signal to anticipate the cold water that is entering the system cooling the return water which is already reduced in volume due to the increased draw on the system.

The Pivot fast-acting equal percentage control valve is closely modulated by the PI control which calculates the optimal setting after receiving both the feed forward and feedback thermocouple signals to solve for the most accurate output temperatures.

Features:

- Single Phase 110V/60Hz
- 255°F Boiler Water Max
- Low Flow up to 150 GPM
- 150 PSIG Design Pressure STD
- 300 PSIG Design Pressure Optional
- Single and Duplex Installations
- Compatible with All Water Boilers



- Pivot water heater can fit through most building doorway's while taking up minimal floor space.
- Developed over years of theoretical design improvements backed up with empirical real world operational testing.
- Pivot heaters are offered in two different configurations, Double Wall Brazed Plate & Gasketed Plate and Frame.
- The Thermal Leverage Pivot Double Wall heat exchanger has increased surface area due to a custom Chevron Corrugation stamped plate design that promotes higher heat transfer while minimizing pressure drop.
- Precise temperature control maintains unit outlet at +/-4 degrees F even under varied demand conditions.
- State of the art PI controls integrates feed forward and feedback signals BACNET READY.
- No storage in most cases and conditions.
- Easy to service heat exchanger which can be easily back flushed or chemically cleaned without disturbing building connections.
- Optional: Independently wired over temperature cut off switch senses temperatures above normal controller settings immediately closing the spring return control valve to a cold position.

**DOUBLE WALL
BRAZED PLATE TYPE**



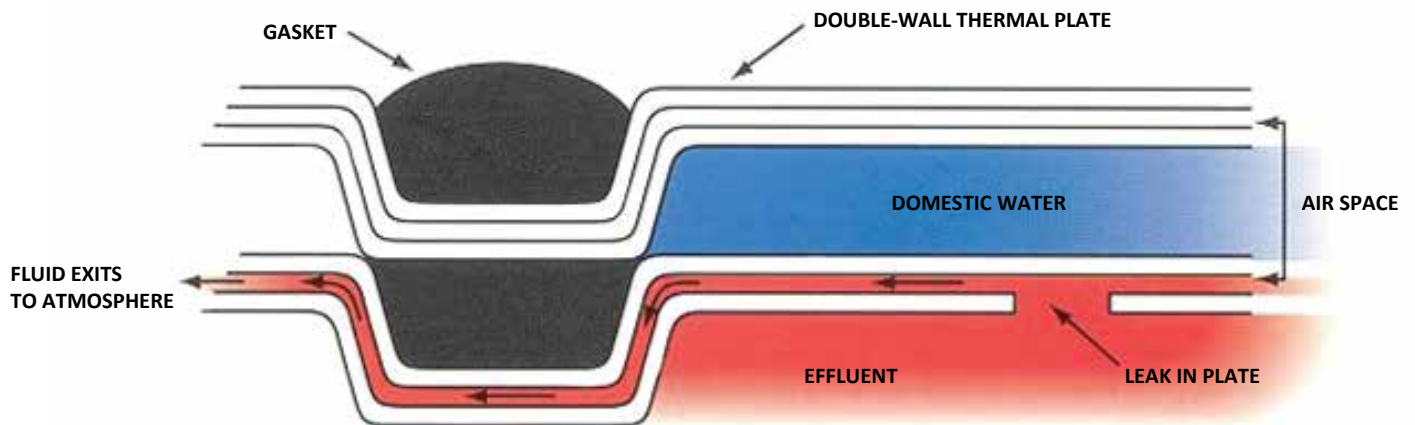
**DOUBLE WALL
PLATE AND FRAME TYPE**



**THREE-WAY ELECTROMAGNETIC
CONTROL VALVE**

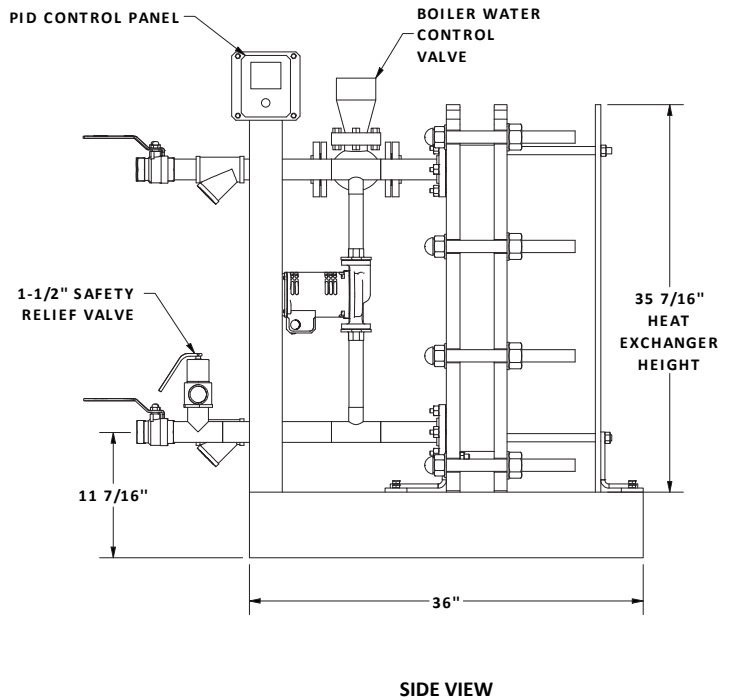
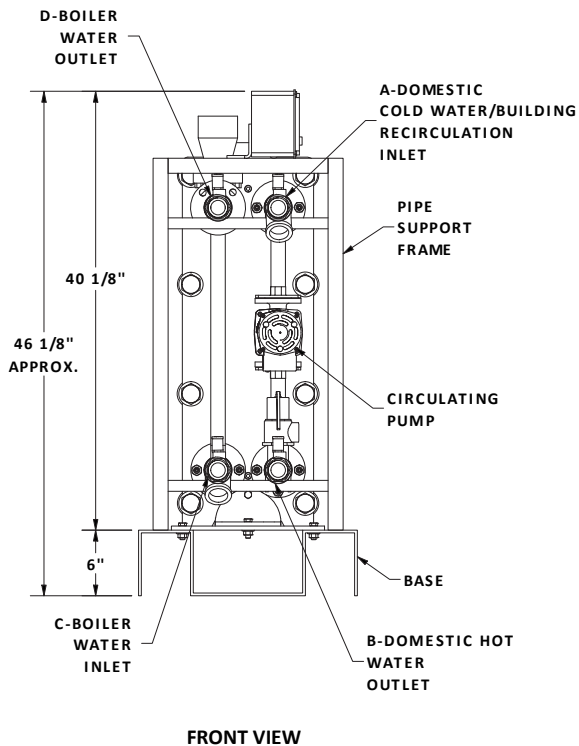
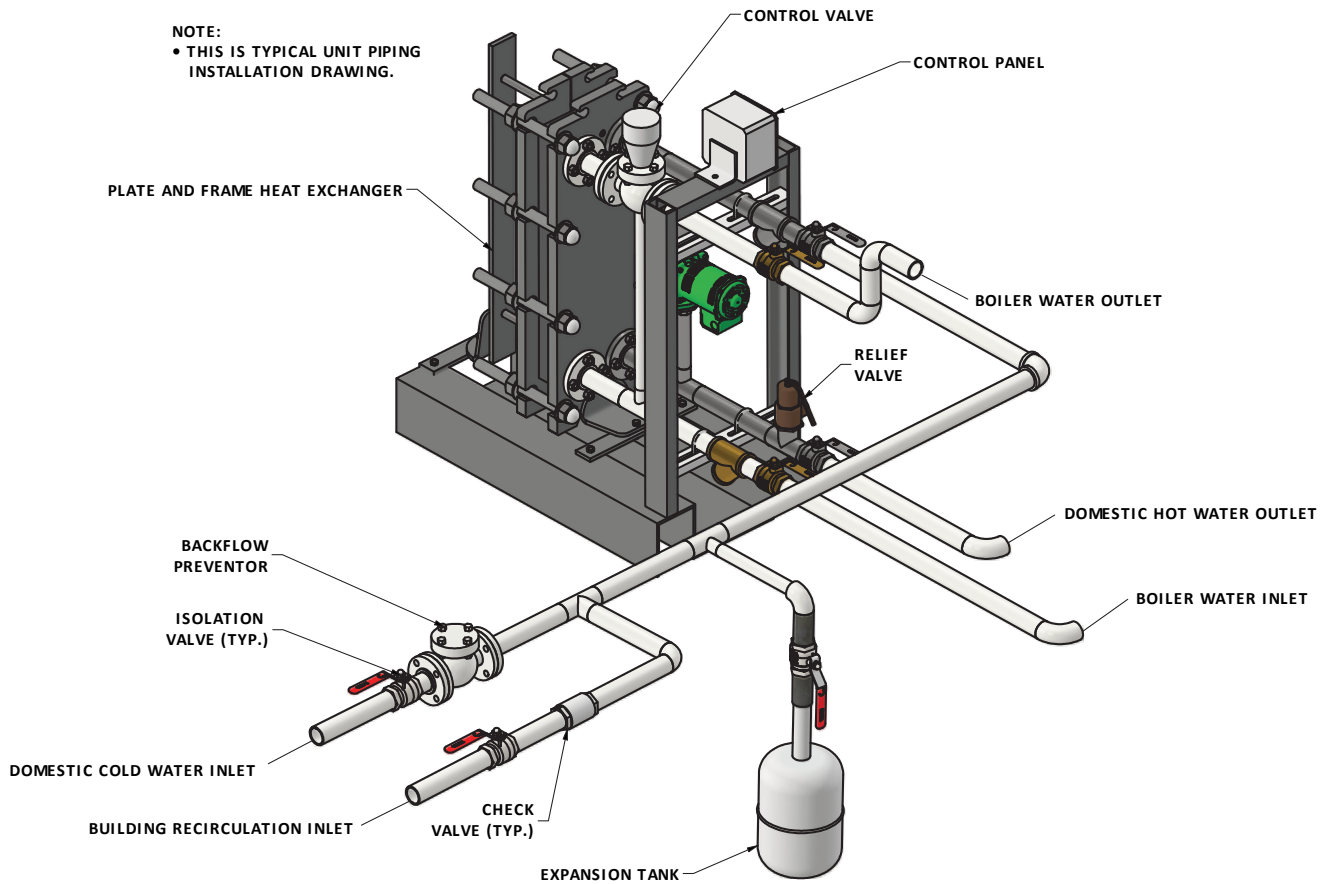


**CONTROL
PANEL**



THE PLATES ARE LASER-WELDED TOGETHER AROUND THE FOUR PORTHOLES TO PREVENT MIXING OF MEDIA IN THE EVENT OF LEAKAGE.

Double Wall Plate & Frame Type Heat Exchanger Assembly



DOUBLE WALL PLATE & FRAME TYPE WATER HEATER PERFORMANCE TABLE

Model	Boiler Water In Temp F°	Boiler Water Out Temp F°	GPM	Pressure Drop PSI	Domestic Water In Temp F°	Domestic Water Out Temp F°	GPM	Pressure Drop PSI
TLPFDW-21	145	105	25	5	40	140	10	2
TLPFDW-21	145	105	50	5	40	140	20	2
TLPFDW-51	145	105	75	5	40	140	30	2
TLPFDW-51	145	105	100	6	40	140	40	2
TLPFDW-51	145	105	125	7	40	140	50	2
TLPFDW-81	145	105	150	6	40	140	60	2
TLPFDW-81	145	105	175	7	40	140	70	2
TLPFDW-81	145	105	200	7	40	140	80	2
TLPFDW-121	145	105	225	6	40	140	90	2
TLPFDW-121	145	105	250	7	40	140	100	2
TLPFDW-121	145	105	275	8	40	140	110	2
TLPFDW-121	145	105	300	6	40	140	120	2
TLPFDW-121	145	105	325	7	40	140	130	2
TLPFDW-121	145	105	350	8	40	140	140	2
TLPFDW-121	145	105	375	8	40	140	150	2
Model	Boiler Water In Temp F°	Boiler Water Out Temp F°	GPM	Pressure Drop PSI	Domestic Water In Temp F°	Domestic Water Out Temp F°	GPM	Pressure Drop PSI
TLPFDW-21	160	105	18	5	40	140	10	2
TLPFDW-21	160	105	36	5	40	140	20	2
TLPFDW-21	160	105	55	5	40	140	30	2
TLPFDW-41	160	105	75	5	40	140	40	2
TLPFDW-41	160	105	92	5	40	140	50	2
TLPFDW-41	160	105	110	6	40	140	60	2
TLPFDW-61	160	105	128	7	40	140	70	2
TLPFDW-61	160	105	146	8	40	140	80	2
TLPFDW-61	160	105	165	8	40	140	90	2
TLPFDW-61	160	105	183	8	40	140	100	2
TLPFDW-61	160	105	201	9	40	140	110	2
TLPFDW-81	160	105	220	8	40	140	120	2
TLPFDW-81	160	105	238	8	40	140	130	2
TLPFDW-121	160	105	256	8	40	140	140	2
TLPFDW-121	160	105	275	8	40	140	150	2
Model	Boiler Water In Temp F°	Boiler Water Out Temp F°	GPM	Pressure Drop PSI	Domestic Water In Temp F°	Domestic Water Out Temp F°	GPM	Pressure Drop PSI
TLPFDW-21	180	110	14	5	40	140	10	3
TLPFDW-21	180	110	28	5	40	140	20	3
TLPFDW-21	180	110	43	5	40	140	30	3
TLPFDW-21	180	110	57	5	40	140	40	3
TLPFDW-21	180	110	72	6	40	140	50	3
TLPFDW-21	180	110	86	7	40	140	60	3
TLPFDW-41	180	110	101	5	40	140	70	3
TLPFDW-41	180	110	115	5	40	140	80	3
TLPFDW-61	180	110	130	5	40	140	90	3
TLPFDW-61	180	110	144	6	40	140	100	3
TLPFDW-61	180	110	159	7	40	140	110	3
TLPFDW-61	180	110	173	9	40	140	120	3
TLPFDW-61	180	110	187	8	40	140	130	3
TLPFDW-81	180	110	202	8	40	140	140	3
TLPFDW-81	180	110	216	8	40	140	150	3

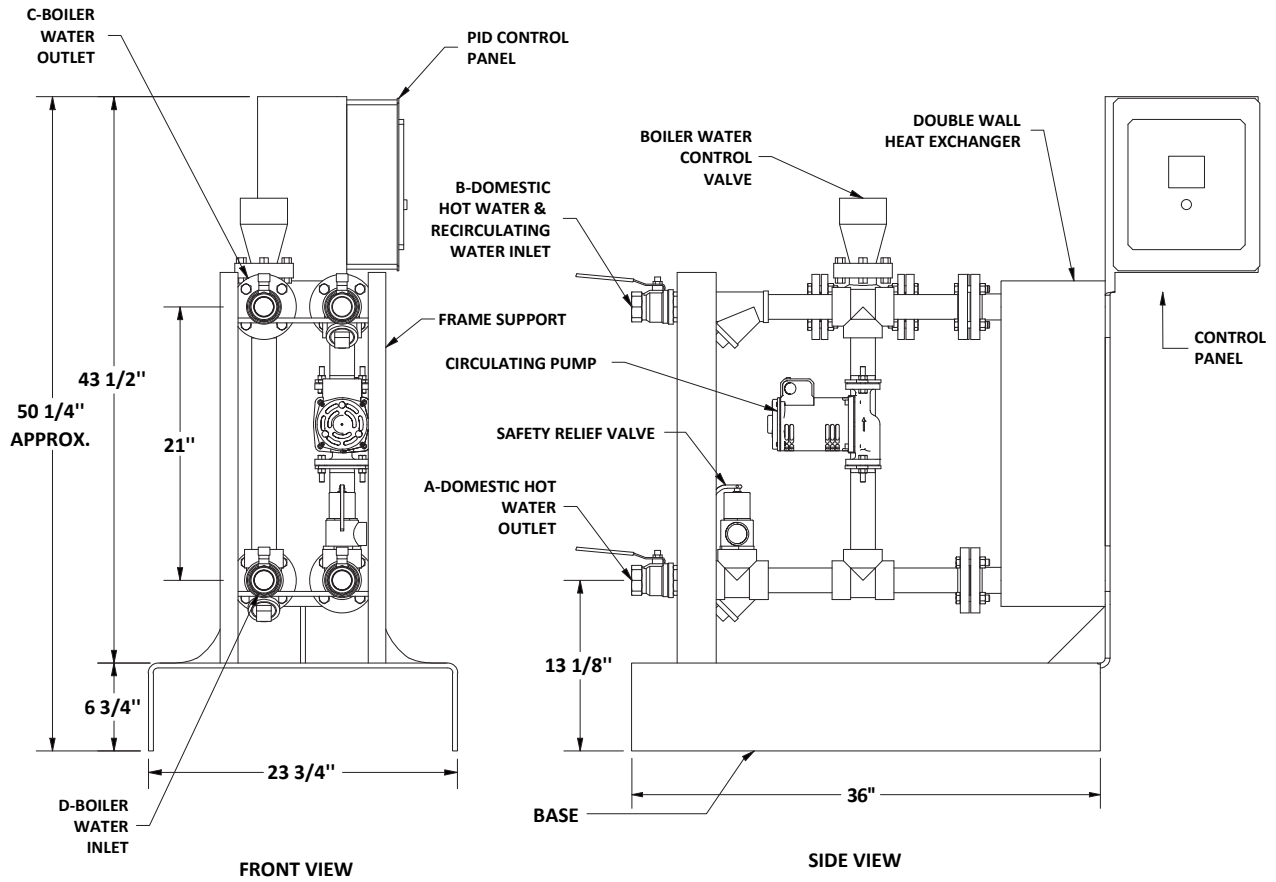
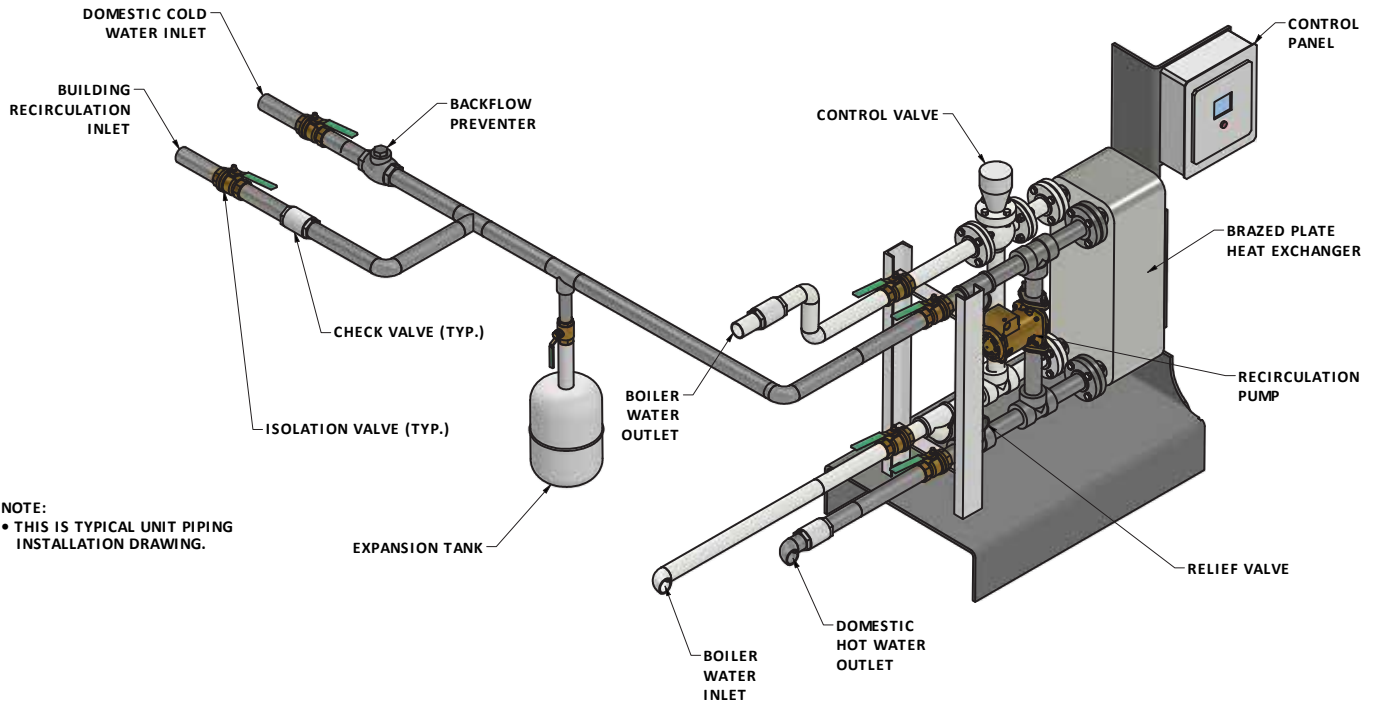
NOTE: Pressure drops listed are total for heat exchanger, piping and control valve.

*Because we are always striving to make TL water heater products more accurate, efficient and long lasting our published information is subject to change without notice.

Contact your local Thermal Leverage manufacturers representative for the most up-to-date information and product support.

Model Number	Connection			
	A	B	C	D
TLPFDW-21	1.25"	1.25"	1.5"	1.5"
TLPFDW-41	1.5"	1.5"	2.5"	2.5"
TLPFDW-51	1.5"	1.5"	2.5"	2.5"
TLPFDW-61	2.0"	2.0"	2.5"	2.5"
TLPFDW-81	2.5"	2.5"	3.0"	3.0"
TLPFDW-121	3.0"	3.0"	3.0"	3.0"

Double Wall Brazed Plate Type Heat Exchanger Assembly



DOUBLE WALL BRAZED PLATE TYPE WATER HEATER PERFORMANCE TABLE

Model	Boiler Water In Temp F°	Boiler Water Out Temp F°	GPM	Pressure Drop PSI	Domestic Water In Temp F°	Domestic Water Out Temp F°	GPM	Pressure Drop PSI
TLBPDW-90	145	110	32	5	40	140	10	3
TLBPDW-90	145	110	58	5	40	140	20	3
TLBPDW-90	145	110	87	5	40	140	30	3
TLBPDW-190	145	110	116	5	40	140	40	3
TLBPDW-190	145	110	148	5	40	140	50	3
TLBPDW-190	145	110	174	5	40	140	60	3
TLBPDW-200	145	110	201	5	40	140	70	3
TLBPDW-200	145	110	229	5	40	140	80	3
Model	Boiler Water In Temp F°	Boiler Water Out Temp F°	GPM	Pressure Drop PSI	Domestic Water In Temp F°	Domestic Water Out Temp F°	GPM	Pressure Drop PSI
TLBPDW-50	160	110	21	5	40	140	10	3
TLBPDW-50	160	110	40	5	40	140	20	3
TLBPDW-50	160	110	61	5	40	140	30	3
TLBPDW-120	160	110	81	5	40	140	40	3
TLBPDW-120	160	110	102	5	40	140	50	3
TLBPDW-120	160	110	122	5	40	140	60	3
TLBPDW-120	160	110	140	5	40	140	70	3
TLBPDW-200	160	110	161	5	40	140	80	3
TLBPDW-200	160	110	183	5	40	140	90	3
TLBPDW-200	160	110	201	5	40	140	100	3
Model	Boiler Water In Temp F°	Boiler Water Out Temp F°	GPM	Pressure Drop PSI	Domestic Water In Temp F°	Domestic Water Out Temp F°	GPM	Pressure Drop PSI
TLBPDW-50	180	110	14	5	40	140	10	3
TLBPDW-50	180	110	30	5	40	140	20	3
TLBPDW-50	180	110	44	5	40	140	30	3
TLBPDW-50	180	110	58	5	40	140	40	3
TLBPDW-90	180	110	62	5	40	140	50	3
TLBPDW-90	180	110	86	5	40	140	60	3
TLBPDW-90	180	110	102	5	40	140	70	3
TLBPDW-140	180	110	117	5	40	140	80	3
TLBPDW-140	180	110	132	5	40	140	90	3
TLBPDW-140	180	110	146	5	40	140	100	3

NOTE: Pressure drops listed are total for heat exchanger, piping and control valve.

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Model Number	Connection			
	A	B	C	D
TLBPDW-50	1.25"	1.25"	1.5"	1.5"
TLBPDW-90	1.5"	1.5"	2.0"	2.0"
TLBPDW-120	1.5"	1.5"	2.5"	2.5"
TLBPDW-140	2.0"	2.0"	2.5"	2.5"
TLBPDW-190	2.5"	2.5"	3.0"	3.0"
TLBPDW-200	2.5"	2.5"	3.0"	3.0"

THERMAL LEVERAGE WATER HEATERS

Sample Specifications:

When specifying TL Thermal Leverage Pivot Water Heaters Select Model from charts and use specification below. TL has Representation in most Major Cities, contact factory for assistance.

Semi Instantaneous water heater shall be a TL Thermal Leverage Pivot Series factory assembled and wired water heater. The heat exchanger shall be designed and fabricated in accordance with ASME Code Section VIII Division 1 for 150 PSIG. The heat exchanger can either be a double wall gasketed plate and frame or double wall brazed plate type unit.

Boiler Water Units

Unit should be skid mounted on a steel base. Water heater shall be factory assembled and piped with incoming strainer, electronic control valve and an integral bronze circulator pump to flow domestic water over the plate pack to preclude stacking.

The water heater shall be equipped with a solid-state PI NEMA 4 control panel with LCD display, alarm with silence button, ON/OFF switch, primary high limit and secondary high limit. The control module shall be supplied with a field programmable digital PI controller which can be adjusted to set the outlet temperature limit on the display screen. The panel screen shall indicate a red alarm display and horn with silence relay button. The panel shall be supplied with dry contact closure outputs to indicate to BAS the occurrence of power on, primary high temperature and secondary high temperature alarms. The control shall allow the BAS to turn the heater on or off through a remote relay suitable for 24 VAC, 1 amp. The control shall also allow the BAS to remotely set the temperature of the water heater using a 4-20mA input signal. The unit shall have its own separate ON/OFF switch and shall be mounted on a wall. All solenoids and limits shall be 24 VAC.

The heater shall be equipped with a Temperature Gauge and a ASME T&P Relief Valve suitable to relieve the BTU input of the unit.

Manufacturer assumes all responsibility for correct sizing of components to guarantee performance.

Heater shall be a Pivot TL Model _____.

Boiler Water to Heat ____ GPM of Domestic Water from ____ Deg F to ____

Deg F with ____ GPM of ____ Deg F of Boiler Water to Valve.