



**GENERAL SPECIFICATIONS FLOW AND PIPING
RAYPAK UNITEMP 80 HOT WATER SUPPLY SYSTEMS**

CATALOG NO. 8100.12-L
Effective: 01-01-03
Replaces: 07-01-01

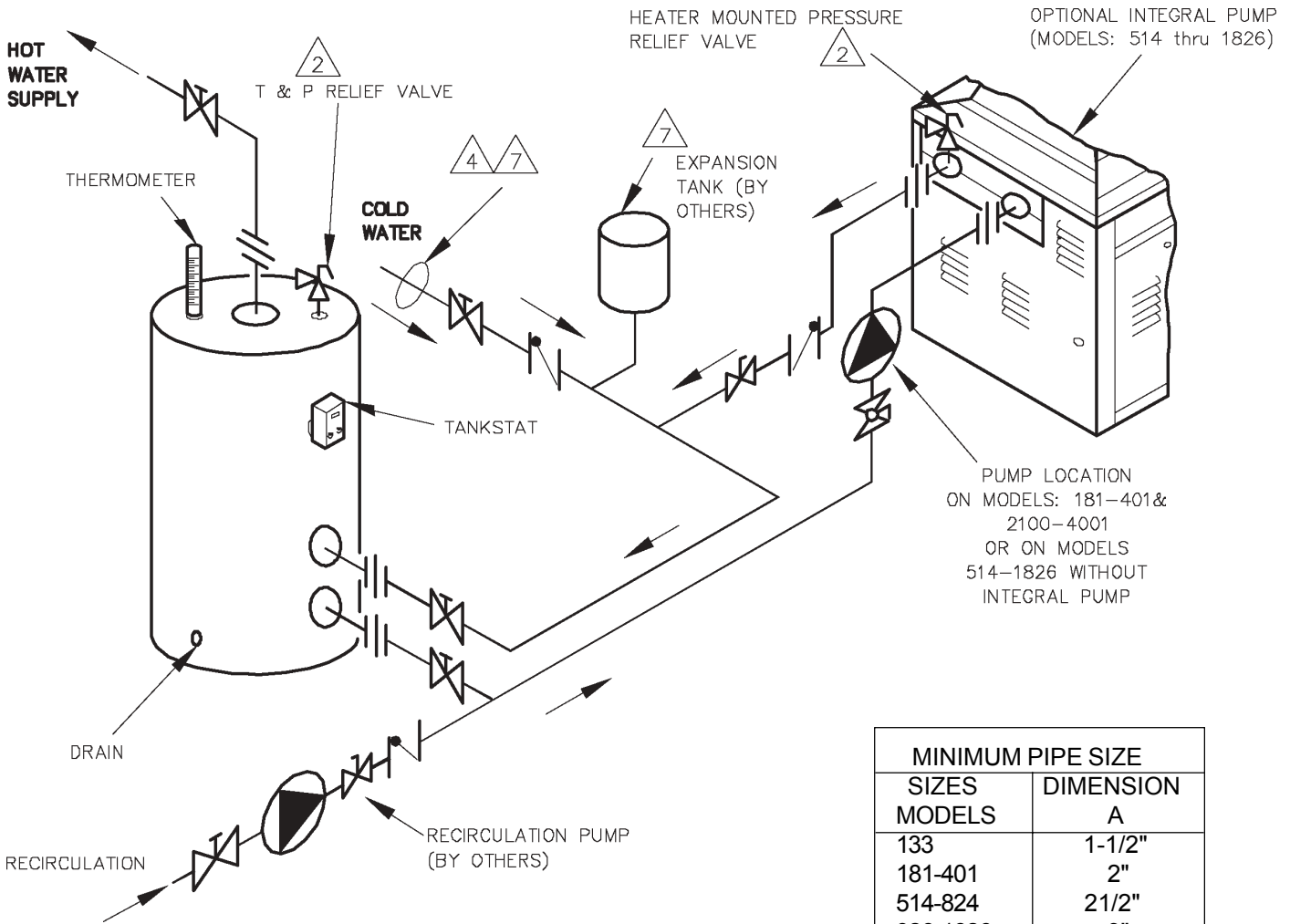
MODELS		WATER HARDNESS														
		SOFT					MEDIUM					HARD				
		0-4 Grains Per Gallon					5-15 Grains Per Gallon					16 & Over Grains Per Gallon				
Indoor	Outdoor	DT	GPM	DP	MPS	SHL	DT	GPM	DP	MPS	SHL	DT	GPM	DP	MPS	SHL
133	133	23	10	3.3	1-1/4	5.0	17	13	5.4	1-1/4	8.1	10	23	16.3	1-1/4	23.6
182/181	182/181	15	20	1.8	1-1/2	4.6	12	26	3.1	1-1/2	7.5	7	45	9.2	1-1/2	20.8
260/261	260/261	22	20	1.9	1-1/2	4.6	17	26	3.1	1-1/2	7.6	10	45	9.4	1-1/2	21.0
330/331	330/331	27	20	1.9	1-1/2	4.7	21	26	3.2	1-1/2	7.7	12	45	9.6	1-1/2	21.2
400/401	400/401	30	22	2.3	1-1/2	5.6	25	26	3.3	1-1/2	7.8	15	45	9.8	1-1/2	21.3
514	514	20	42	2.0	2	4.8	16	52	3.0	2	7.1	9	90	9.0	2	19.1
624	624	25	41	2.0	2	4.7	19	54	3.4	2	7.9	11	90	9.5	2	20.9
724	724	29	41	2.1	2	4.9	20	60	4.4	2	9.8	13	90	10.0	2	21.4
824	824	30	45	2.6	2	5.9	20	68	6.0	2	12.8	15	90	10.5	2	21.9
962	926	30	53	3.8	2-1/2	5.3	20	79	8.5	2-1/2	11.5	18	90	11.0	2-1/2	15.2
1125	1083	30	61	5.5	2-1/2	7.5	20	90	12.0	2-1/2	16.2	20	90	12.0	2-1/2	16.2
1223	1178	30	67	7.0	2-1/2	9.3	22	90	12.5	2-1/2	16.7	22	90	12.5	2-1/2	16.7
1336	1287	30	73	8.7	2-1/2	11.5	24	90	13.3	2-1/2	17.5	24	90	13.3	2-1/2	17.5
1468	1414	30	80	11.0	2-1/2	14.4	27	90	14.0	2-1/2	18.2	27	90	14.0	2-1/2	18.2
1631	1571	30	90	14.8	2-1/2	19.0	30	90	14.8	2-1/2	19.0	30	90	14.8	2-1/2	19.0
1826	1758	33	90	15.4	2-1/2	19.6	33	90	15.4	2-1/2	19.6	33	90	15.4	2-1/2	19.6
2100	-	30	115	5.0	3	7.9	20	172	11.0	3	17.2	17	200	14.8	3	22.9
2500	-	30	137	7.5	3	11.4	20	200	15.8	3	23.9	20	200	15.8	3	23.9
3001	-	30	164	11.2	3	17.0	25	200	16.7	3	24.8	25	200	16.7	3	24.8
3500	-	30	191	16.2	3	23.7	29	200	17.5	3	25.6	29	200	17.5	3	25.6
4001	-	33	200	18.7	3	26.8	33	200	18.7	3	26.8	33	200	18.7	3	26.8

- DT = Temperature Rise, Degree F @ GPM Flow
- GPM = Gallons per Minute Flow
- DP = Pressure Drop, Ft. thru Heat Exchanger
- MPS = Minimum Pipe Size, NPT
- SHL = System Head Loss

Table above provides data for selecting in-line pumps for use in a typical Raypak Uni-Temp 80 system for a single heater and tank according to the following.

1. Flow rates are based on water hardness as measured in grains per gallon.
 - Soft 0-4 grains per gallon.
 - Medium 5-15 grains per gallon.
 - Hard over 15 grains per gallon. Consult factory when over 20 grains.
2. Maximum Flow Rates
 - Size 133 22 GPM
 - Sizes 183 to 403 45 GPM
 - Sizes 514 to 1826 90 GPM
 - Sizes 2100 to 4001 200 GPM
3. Pressure drop values (DP and SHL) and minimum pipe sizes are for two pass heaters, except, Model 133 which is four pass.
4. Sizing based on heater and tank being placed 5 feet apart. System head loss based on 25 feet equivalent length of pipe/fittings. Additional pipe and/or fittings will increase the system head loss. Consult factory.
5. Select a pump based on the water hardness, flow and system head loss.
6. If heater is more than two stories above the tank consult the factory.

NOTE: 1. GPM flow rates are limited by maximum acceptable velocity through heat exchanger tubes. Heater Sizes 514 through 1826 may be provided with an integral rear mounted pump. This must be specified at time of order. The integral pump will provide sufficient flow to meet the conditions listed in the table.



MINIMUM PIPE SIZE	
SIZES MODELS	DIMENSION A
133	1-1/2"
181-401	2"
514-824	2 1/2"
926-1826	3"
2100-4001	4"

KEY	
	PRESSURE RELIEF VALVE
	PUMP
	UNION
	GATE VALVE
	CHECK VALVE
	BALL VALVE
	THERMOMETER

NOTES:

1. PLUMB SWING CHECK VALVE IN GRAVITY CLOSED POSITION.
2. MINIMUM PIPE EQUAL TO HEATER INLET/OUTLET CONNECTION SIZE BETWEEN HEATER AND TANK(S).
3. PIPE ALL RELIEF VALVES TO DRAIN, OR AS LOCAL CODES REQUIRE.

HEATER SHOWN REPRESENTS VARIOUS MODELS. BECAUSE MODELS WILL VARY IN DRAFT HOOD DESIGN AND SIZE, SEE SPECIFIC WATER HEATER INFORMATION FOR DETAILS.

GUARANTEED 80% DRAW WITHOUT TEMPERATURE DROP, USING RAYPAK HOT WATER HEATERS TANKS, SIZING TABLES AND HOOK-UP DATA.

Fig. #8054 REV 8