

# Thermal Expansion Sizing and Installation for Domestic Water Heating Systems

Information required:

- 1. Total system water content or Water Heater size x 1.1 \_\_\_\_\_ liters/gal
- 2. Initial fill water temperature \_\_\_\_\_ °C/°F
- 3. Maximum fill water temperature \_\_\_\_\_ °C/°F
- 4. System fill pressure \_\_\_\_\_ BAR/psig
- 5. Maximum pressure (10% below relief valve) \_\_\_\_\_ BAR/psig

Tank selection

- 6. Enter total system water content (line 1) \_\_\_\_\_ liters/gal
- 7. Enter expansion factor from Table 1 \_\_\_\_\_
- 8. Expanded water volume (line 6 x line 7) \_\_\_\_\_ liters/gal
- 9. Acceptance factor from Table 2 \_\_\_\_\_
- 10. Total tank volume required (divide line 8 by line 9) \_\_\_\_\_ liters/gal
- Line 10 \_\_\_\_\_ liter total tank volume

Select Challenger™ or PressureWave™ model which satisfies the volume of line 10.

Table 1 Expansion Factors				Table 2 Acceptance Factors Hydronic & Thermal Tanks														
Final Temp. °C/°F	Initial Temperature °C/°F			Po Maximum Operating Pressure (BAR/PSIG)	Pf—Minimum Operating Pressure at tank (BAR/PSIG)													
	4.4/40	10/50	15.6/60		.8/12	1.4/20	1.7/25	2.7/40	3.4/50	4.1/60	4.8/70	5.5/80	6.2/90					
37.8/100	.00575	.00569	.00520	1.85/27	.360	.168												
43.3/110	.00771	.00765	.00716	2.1/30	.403	.224	.112											
48.9/120	.01004	.00998	.00949	3.4/50	.587	.464	.386	.155										
54.4/130	.01236	.01230	.01181	4.8/70	.685	.590	.531	.354	.236	.118								
60/140	.01501	.01495	.01446	6.2/90	.745	.669	.621	.478	.382	.287	.191	.096						
65.6/150	.01787	.01779	.01730	7.5/110	.786	.723	.682	.561	.481	.401	.321	.241	.160					
71.1/160	.02092	.02086	.02037	8.9/130	.815	.760	.726	.622	.553	.484	.415	.346	.277					
76.7/170	.02418	.02412	.02363	10.3/150	.838	.789	.759	.668	.608	.547	.486	.426	.365					
82.2/180	.02763	.02757	.02708															
87.2/190	.03127	.03121	.03072															
93.3/200	.03510	.03504	.03455															
98.9/210	.03911	.03905	.03856															

