

Thermal Expansion Absorber For Potable Water

TX SERIES TANKS

PRODUCT DATA



GENERAL

The Honeywell Thermal Expansion Absorber is a pre-pressurized Expansion tank with a butyl diaphragm designed to control excess pressure in potable hot water systems. Its use for household as well as small commercial hot water heaters will save energy and operating problems by preventing relief valve operation due to excessive system pressure.

SPECIFICATIONS

Maximum Pressure: 150 psi (1034 kPa).

Maximum Temperature: 200° F (93° C).

Standard Factory Air Charge: 40 psi (276 kPa).

NOTE: Relief valve must be set to 150 psi (1034 kPa) maximum.

Materials:

Diaphragm: Butyl Rubber.

Liner: Polypropylene.

Connection: Brass.

Approvals: SBCCI, NSF61, City of Los Angeles and others.
IAPMO listed.

INSTALLATION

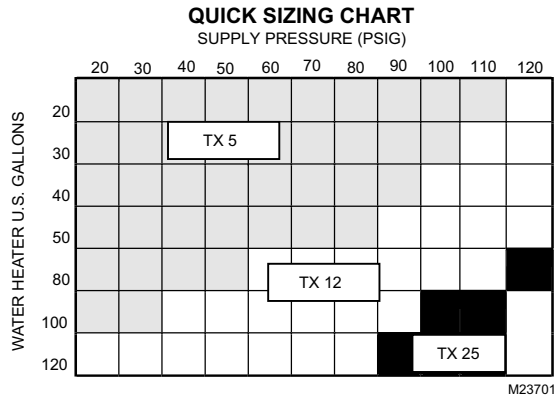
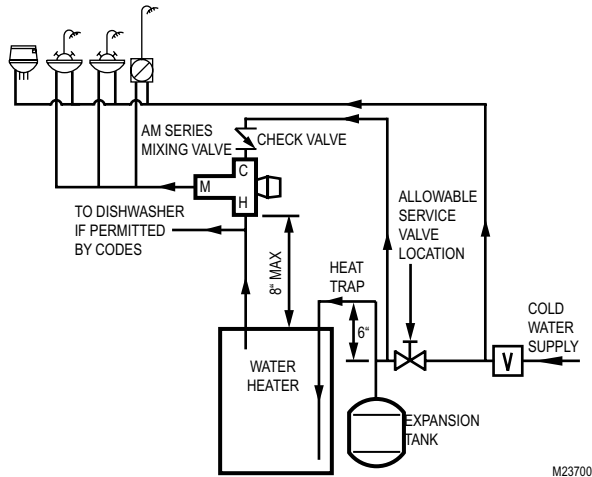
Connect the Honeywell Thermal Expansion Absorber tank to the cold water inlet line to the water heater. The Honeywell tank connection must be between the water heater and any valve or backflow preventer. Adjust the Honeywell tank air pressure to the minimum cold water pressure by adding or releasing air from the tank. Fill tank and piping with cold water, open hot water faucet to allow a small trickle of water. Turn on water heater and allow it to reach normal operating temperature. Close hot water faucet.

Contents

General	1
Specifications	1
Installation	1
Ordering Information	2
Thermal Expansion Commercial & ASME Tanks	3
Product Information	4



THERMAL EXPANSION ABSORBER FOR POTABLE WATER



- Based on:
- Heating water from 70° to 140° F (21° to 60° C).
 - Maximum pressure maintained at least 10% below relief valve setting of 150 psi (1034 kPa).
 - Factory pre-charge of 40 psi (276 kPa) - no need to change when selected according to this chart.

SYMBOLS

V = Any device which turns the domestic water system into a closed system such as: backflow preventers, check valves or pressure reducing valves.

“V” is optional depending on local codes. If a “V” type valve is used, it is mandatory that a thermal expansion tank be installed as shown. Otherwise dangerously high pressures could result or water heater safety relief valve will frequently expel water. If no “V” device is used, the thermal expansion tank is not required.

Product Number	Total Volume in gal. (L)	Max. Acceptable volume in gal. (L)	Dia. in inches (mm)	Length in inches (mm)	NPT System Conn.
TX-5	2.0 (7.6)	.09 (3.4)	8 (203)	12-5/8 (321)	3/4 in. male
TX-12	4.4 (16.7)	3.2 (12.1)	11 (279)	15 (381)	3/4 in. male
TX-25V	10.3 (39)	10.3 (39)	15 3/8 (391)	19 1/4 (489)	1 in. female

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
1885 Douglas Drive North
Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Toronto, Ontario M1V 4Z9.

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THERMAL EXPANSION COMMERCIAL & ASME TANKS

Sizing Procedure

The procedure for sizing Thermal Expansion Tanks depends on four (4) vital pieces of information.

1. ASME or non-ASME requirement.
2. Calculated thermally expanded water volume.
3. Minimum water pressure experienced at the tank location.
4. Maximum water pressure allowable at the tank location.

The tank required for any application can be sized by the following equation:

TV = Design Pressure Factor x expanded water, where TV is the total tank volume required in gallons.

Sizing Example

A 240 gallon (908.5 L) water heater with a 150° F (65.5° C) aquasat setting is installed with a 125 psi (862 kPa) maximum pressure requirement. For a static supply line pressure of 60 psi (414 kPa), what tank model is required for critical protection?

EXAMPLE		
1.	Total Water Heater Volume in gallons.	240
2.	Water Expansion Factor (see Table 1).	0.0179
3.	Calculate Expanded Water in gallons (Line 1 x Line 2 = 240 x 0.0179).	4.3
4.	Design Pressure Factor (see Table 2)	2.1
5.	Tank Volume Required in gallons (Line 3 x Line 4 = 4.3 x 2.1).	9.0
6.	Select Tank Model.	TX-25V or TX30V-C

Table 1. Expansion Factor (Water).

Operating Temperature of Water Heater in °F (°C)	Expansion Factor
100 (38)	0.0062
120 (49)	0.100
130 (54)	0.0124
140 (60)	0.0150
150 (66)	0.0179
160 (71)	0.0209
170 (77)	0.0242
180 (82)	0.0276

Based on initial temperature of 40° F (4° C). For glycol solution expansion factors contact factory.

Table 2. Design Pressure Factor (DPF).

Line pressure in psi (kPa)	Maximum Pressure in psi (kPa)		
	100 (689)	125 (862)	150 (1034)
40 (276)	1.9	1.6	1.5
50 (345)	2.3	1.9	1.6
60 (414)	2.9	2.1	1.8
70 (483)	3.8	2.5	2.1
80 (552)	5.7	3.1	2.4

For conditions not shown in table, use equation:

$$DPF = \frac{\text{Maximum Allowable Pressure} + 14.7}{\text{Maximum Allowable Pressure} - \text{Line Pressure}}$$

PRODUCT INFORMATION

Table 3. Non-ASME Construction

Product Number	Tank Volume in gal. (L)	Maximum Acceptable Volume in gal. (L)	Connection Size NPT	Dimensions		Shipping Weight in lbs (kg)
				Diameter in inches (mm)	Height in inches (mm)	
TX-5	2.0 (7.5)	0.9 (3.4)	3/4 in. M	8 (203)	15 5/8 (321)	5 (2.3)
TX-12	4.4 (16.7)	3.2 (12.1)	3/4 in. M	11 (279)	15 (381)	9 (4.1)
TX-25V	10.3 (39)	10.3 (39)	3/4 in. F	15 3/8 (391)	19 1/4 (489)	23 (10.4)
TX-30V	14.0 (53.0)	11.3 (42.8)	3/4 in. F	15 3/8 (391)	27 7/8 (606)	25 (11.3)
TX-42V	20.0 (75.0)	11.4 (43.2)	3/4 in. F	15 3/8 (391)	31 5/8 (803)	33 (15.0)
TX-60V	34.0 (128.7)	34.0 (128.7)	1 1/4 in. F	22 (559)	29 5/8 (752)	61 (27.7)
TX-80V	44.0 (166.6)	33.9 (128.3)	1 1/4 in. F	22 (559)	36 (914)	69 (31.3)
TX-180	62.0 (234.7)	34.1(129.1)	1 1/4 in. F	22 (559)	46 5/8 (1184)	92 (41.7)
TX-210	86.0 (333.1)	46.4 (175.6)	1 1/4 in. F	26 (660)	47 1/4 (1200)	123 (55.8)
Materials: Steel shell, polypropylene liner, butyl diaphragm. Connection: TX-5, TX-12: brass. TX25 - TX210 stainless steel.				Max. operating temperature: 200° F (93° C). Max. operating pressure: 150 psi (1034 kPa). Precharge is 40 psi (276 kPa).		
TX-451	158.0 (598.1)	103 (389.7)	2 in. F	30 (762)	74 1/2 (1892)	626 (283.9)
TX-452	211.0 (798.7)	107 (405.0)	2 in. F	30 (762)	92 1/2 (2350)	760 (344.7)
TX-453	264.0 (999.3)	172 (651.1)	3 in. F	36 (914)	85 5/8 (2175)	810 (267.4)
TX-454	317.0 (1200.0)	206 (779.8)	3 in. F	36 (914)	98 (2489)	914 (414.6)
TX-455	370.0 (1400.6)	241 (912)	3 in. F	36 (914)	110 3/8 (2804)	1018 (461.8)
TX-456	422.0 (1577.4)	275 (1041.0)	3 in. F	48 (1219)	81 7/8 (2680)	1655 (750.7)
TX-457	528.0 (1998.2)	344 (1302.2)	3 in. F	48 (1219)	95 3/4 (2432)	1925 (873.2)
Materials: Steel shell, butyl bladder. Connection: Bronze.				Max. operating temperature: 240° F (115° C). Max. operating pressure: 150 psi (1034 kPa). Precharge is 40 psi (276 kPa).		

Table 4. ASME Construction

Product Number	Tank Volume in gal. (L)	Maximum Acceptable Volume in gal. (L)	Connection Size NPT	Dimensions		Shipping Weight in lbs (kg)
				Diameter in inches (mm)	Height in inches (mm)	
TX-5-C	2.1 (7.9)	0.86 (3.3)	3/4 in. M	10 (254)	10 3/8 (264)	21 (9.8)
TX-12-C	4.7 (17.8)	2.6 (9.8)	3/4 in. M	12 (305)	12 1/2 (318)	34 (15.4)
TX-20V-C	7.6 (28.8)	2.6 (9.8)	3/4 in. F	12 (305)	20 3/4 (527)	49 (22.2)
TX-30V-C	12.5 (47.3)	10.0 (37.9)	3/4 in. F	16 1/4 (413)	17 1/4 (438)	84 (38.1)
TX-42V-C	17.5 (47.3)	11.4 (43.2)	3/4 in. F	16 1/4 (413)	24 1/4 (616)	98 (44.5)
TX-60V-C	25.0 (94.6)	11.3 (42.8)	3/4 in. F	16 1/4 (413)	34 (864)	125 (56.7)
TX-80V-C	53.0 (200.6)	34.5 (130.6)	1 1/4 in. F	24 (610)	40 1/2 (1029)	190 (86.2)
TX-180-C	77.0 (291.5)	33.9 (128.3)	1 1/4 in. F	24 (610)	52 5/8 (1337)	255 (115.7)
TX-210-C	88.0 (333.1)	34.3 (129.8)	1 1/4 in. F	24 (610)	60 (1524)	295 (133.8)
Materials: Steel shell, polypropylene liner, butyl diaphragm. Connection: Stainless steel.				Max. operating temperature: 200° F (93° C). Max. operating pressure: 150 psi (1034 kPa). Precharge is 40 psi (276 kPa).		
TX-451-C	158.0 (598.1)	103 (389.7)	2 in. F	30 (762)	74 1/2 (1892)	626 (283.9)
TX-452-C	211.0 (798.7)	107 (405.0)	2 in. F	30 (762)	92 1/2 (2350)	760 (344.7)
TX-453-C	264.0 (999.3)	172 (651.1)	3 in. F	36 (914)	85 5/8 (2175)	810 (267.4)
TX-454-C	317.0 (1200.0)	206 (779.8)	3 in. F	36 (914)	98 (2489)	914 (414.6)
TX-455-C	370.0 (1400.6)	241 (912)	3 in. F	36 (914)	110 3/8 (2804)	1018 (461.8)
TX-456-C	422.0 (1577.4)	275 (1041.0)	3 in. F	48 (1219)	81 7/8 (2680)	1655 (750.7)
TX-457-C	528.0 (1998.2)	344 (1302.2)	3 in. F	48 (1219)	95 3/4 (2432)	1925 (873.2)
Materials: Steel shell, butyl bladder. Connection: Bronze.				Max. operating temperature: 240° F (115° C). Max. operating pressure: 150 psi (1034 kPa). Precharge is 40 psi (276 kPa).		

Automation and Control Solutions

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62-3082 J.I. 01-07



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