TRIDENT

ULTRA

Diaphragm Tanks

www.hotwatercanada.ca

A.O. Smith®

TRIDENT ULTRA Diaphragm Tanks

- **Pre-pressurized Diaphragm Tanks**
- **For installation by Professional Dealers**
- **Lightweight drawn-steel construction**
- **125 psi maximum working pressure**

Features and Benefits

Protective Air Valve Cap with Seal
- Seals after installation
- Tamper resistant

Ultra-UV exterior Powder Coat
- Rated to automotive standards ASTM B117
- High gloss exterior finish

Pure Butyl Rubber Parabolic Diaphragm
- Strong and flexible for smooth operation, long life
- NSF approved
- Prevents rubbing on the tank wall or rolling over on itself

Positive-Lock Diaphragm Seal
- Seals diaphragm directly to shell
- Ensures permanent separation of air and water

Virgin Polypropylene Liner
- Proven protection against corrosion
- No water to metal contact

100% 304 Stainless Steel Water Connection
- Stainless steel acceptance collar and stainless steel elbow
- Assures no galvanic corrosion

Corrosion-Resistant Polymer Base
- High-impact corrosion-resistant material
- Strong and stable for long life
- Base rotates for easy alignment to pipe connection
- Slotted and notched for air flow, reduces condensation build-up

Warranty
- 5-year limited warranty

MADE IN CANADA
FABRIQUÉ AU CANADA

NSF
Certified to NSF/ANSI 61-G and 372

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SIZING

The charts below allow you to easily select the right Trident tank for standard size pumps between 5 and 30 gallons in capacity and for 20-40 PSI, 30-50 PSI and 40-60 PSI pressure ranges. Minimum run times shown (from start up) are 1 minute, 1-1/2 minutes and 2 minutes. ***Example: for a system that delivers 10 GPM at 30-50 PSI, with a minimum run time of 1-1/2 minutes, Chart 1 indicates that the proper tank is the TDU-45.***

Chart 1 TRIDENT ULTRA Free-Standing Tank Selection Guide

System Pressure Ranges (psi) →		20-40			30-50			40-60		
Minimum Run Time (minutes) →		1	1.5	2	1	1.5	2	1	1.5	2
Pump GPM:	5	TDU-14	TDU-20	TDU-20	TDU-20	TDU-20	TDU-32*	TDU-20	TDU-32*	TDU-45
	7	TDU-20	TDU-32*	TDU-45	TDU-32*	TDU-32*	TDU-45	TDU-32*	TDU-45	TDU-65
	10	TDU-32*	TDU-45	TDU-65	TDU-32*	TDU-45	TDU-65	TDU-45	TDU-65	TDU-86/85
	12	TDU-32*	TDU-65	TDU-65	TDU-45	TDU-65	TDU-86/85	TDU-45	TDU-65	TDU-86/85
	15	TDU-45	TDU-86/85	TDU-86/85	TDU-65	TDU-86/85	TDU-119	TDU-65	TDU-86/85	TDU-119
	20	TDU-65	TDU-86/85	TDU-119	TDU-65	2-TDU-65	2-TDU-65	TDU-86/85	TDU-119	2-TDU-86/85
	25	TDU-85/86	TDU-119	2-TDU-86/85	TDU-86/85	2-TDU-86/85	2-TDU-86/85	TDU-119	2-TDU-86/85	2-TDU-119
	30	TDU-86/85	TDU-119	2-TDU-86/85	TDU-119	2-TDU-86/85	2-TDU-86/85	TDU-119	2-TDU-86/85	2-TDU-119
	40	TDU-119	2-TDU-86/85	2-TDU-119	2-TDU-65	2-TDU-119	3-TDU-119	2-TDU-65	2-TDU-119	3-TDU-119

*TDU-35 is a better performing alternative to this tank due to the low profile design.

Chart 2 Pump Start-Up Pressure (psi)

Start Up →		10	20	30	40	50	60	70	80
Pump Shut-Off Pressure (PSI)	20	.26							
	30	.41	.22						
	40		.37	.18					
	50		.46	.31	.15				
	60			.40	.27	.13			
	70			.47	.35	.24	.12		
	80				.42	.32	.21	.11	
	90				.48	.38	.29	.19	.10
	100					.44	.35	.26	.17

Chart 3 Drawdown in Gallons

Model No.	Volume (In Gallons)	20-40	30-50	40-60
TDU-14	13.9	5.1	4.3	3.7
TDU-20	19.9	7.3	6.1	5.3
TDU-26	25.9	9.6	8.0	7.0
TDU-32	31.8	11.8	9.9	8.6
TDU-35	31.8	11.8	9.9	8.6
TDU-45	45.2	16.5	13.9	12.1
TDU-65	65.1	23.9	20	17.4
TDU-85	84.9	31.2	26.2	22.8
TDU-86	83.5	30.9	25.9	22.5
TDU-119	115.9	42.9	35.9	31.3

If proper tank selection cannot be made using Chart 1, follow this procedure: First, find the "drawdown" multiplier by matching the pump start-up and shut-off pressures on Chart 2. For example, the multiplier for a 30-50 psi pressure range is .31. Next, insert the pump GPM capacity and desired minimum run time into this formula: ***$\frac{\text{Pump GPM x Minimum Run Time}}{\text{Multiplier}}$ = Minimum Tank Volume Required***

To assume dependable drawdown volumes, and in keeping with present industry practice, drawdowns are based on Boyle's Law. For example, using a 12 GPM pump, a one-minute minimum run time, and a 30-50 psi pressure range, the formula is as follows: ***$\frac{12 \times 1}{.31}$ = 38.70 Minimum Tank Volume***

Then, using Chart 3, select the tank that has a minimum volume that meets or exceeds your minimum volume requirement and supplies adequate drawdown at the required pressure range. Minimum drawdown equals Pump GPM x Minimum Run Time. ***Therefore, in the above example, select the TDU-45, 45.2-gallon tank. It provides adequate drawdown at 30-50 psi.***

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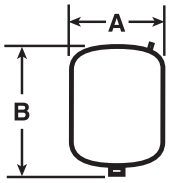
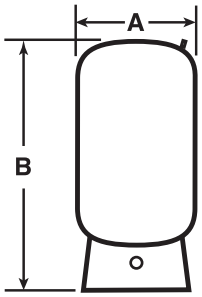
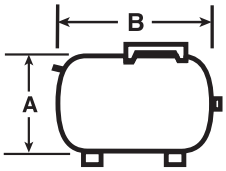
SPECIFICATIONS



IN-LINE



FREE-STANDING



HORIZONTAL

Tank Model	Tank Volume	Acceptance Volume*	Connection	Dimensions (inches)		Weight (lbs.)
				A	B	
IN-LINE						
+TDUI-2	2.0	1.2	3/4" NPTM	8	11-15/16	5
+TDUI-5	4.6	2.7	3/4" NPTM	11	13-15/16	9
+TDUI-7	7.3	4.5	3/4" NPTM	11	21-1/16	14
TDUI-14	13.9	8.4	1" NPTM	15-3/8	21-1/16	24
FREE-STANDING						
TDU-14	13.9	8.4	1" NPTF	15-3/8	24-15/16	23
TDU-20	19.9	12.1	1" NPTF	15-3/8	32-3/8	34
TDU-26	25.9	13.9	1" NPTF	15-3/8	39-9/16	43
TDU-32	31.8	13.8	1" NPTF	15-3/8	47-1/4	52
TDU-35	34.8	22.8	1" NPTF	22	28	56
TDU-45	45.2	27.3	1-1/4" NPTF	22	36-9/16	64
TDU-65	65.1	39.3	1-1/4" NPTF	22	48-5/8	89
TDU-85	84.9	44.7	1-1/4" NPTF	22	60-11/16	113
TDU-86	83.5	50.8	1-1/4" NPTF	26	46	116
TDU-119	115.9	70.5	1-1/4" NPTF	26	61-5/16	161
HORIZONTAL						
+TDUH-7	7.3	4.5	3/4" NPTM	11	23-1/16	16
TDUH-14	13.9	8.4	1" NPTM	15-3/8	24-15/16	25
TDUH-20	19.9	12.1	1" NPTM	15-3/8	28-1/2	36

*Acceptance volume is the actual amount of water the tank will hold when the diaphragm is at its uppermost position.
+Powder coated interior and acceptance fitting.

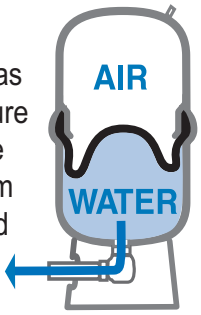
How Trident Tanks Work..

1. Tank is pre-charged with air at factory.

2. Water is pumped into tank, forces diaphragm upward into air chamber.

3. Pump reaches cut-off pressure, water is stored until needed.

4. Pump stays off as air pressure forces the diaphragm downward to deliver water.



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A. O. Smith | www.hotwatercanada.ca | 888-599-2837 Toll-free Canada | 599 Hill Street West | Fergus, ON N1M 2X1