SUBMITTAL DATA SHEET

DuraMAC™ Tanks

Pump Tanks | Expansion Tanks

Diaphragm Tanks

When pump and tank are in different locations, the pressure switch should be at the tank location. Or, compensating adjustment must be made for pressure loss due to head of water. For example, one PSI for every two feet of elevation.

FEATURES

- Free Standing and In-line Models
- Diaphragm Pump Tanks
- Sizes 2 thru 119 gallons
- Pressure to 100 PSI

AIR CHARGE VALVE

- Conveniently-located for easy pressure adjustment
- Metal in metal bases
  Flexible rubber in plastic bases (replaceable on plastic)

DESIGNER FINISH

- An attractive addition to any home
- Provides positive protection against corrosion
- Two-part electrostatic finish
- Ideal for outside use

INSIDE FINISH

- Two-layer epoxy coating inside to protect against corrosion

DURABLE BUTYL DIAPHRAGM

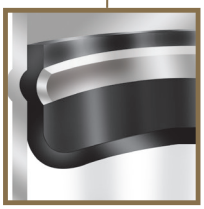
- Strong and flexible, for smooth operation and long life

PLASTIC LINING

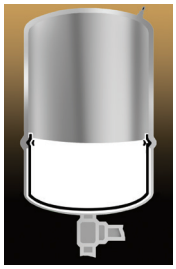
- Permanently bonded to the shell in two coat base on epoxy lining
- Proven protection against internal rust or corrosion

TANK CONSTRUCTION

- Pre-pressurized @ 38 PSI
- Lightweight drawn-steel construction
- Maximum working pressure 100 PSI
- Slotted and notched for air flow, reduces condensation build-up
- Gold Rolled drawing steel

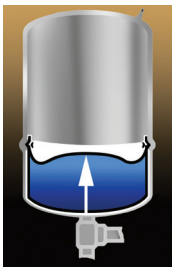


How McDonald Diaphragm Tanks Operate



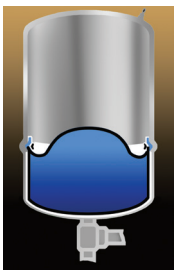
With water chamber empty, diaphragm is pressed against bottom of chamber.

Start-Up Cycle



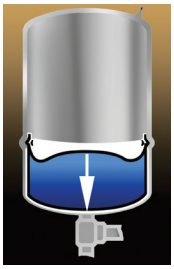
As water is pumped into water chamber, diaphragm is forced upward into air chamber.

Fill Cycle



When pressure in air chamber reaches pump cut-off point, diaphragm is in uppermost position, water chamber is filled to rated capacity.

Hold Cycle



When water is delivered to system, pump remains shut off. Air pressure in top chamber forces diaphragm downward.

Delivery Cycle

NO-LEAD: The weighted average of the wetted surface of this no-lead product contacted by consumable water contains less than one quarter of one percent (0.25%) lead.

EST. 1856 McDonald

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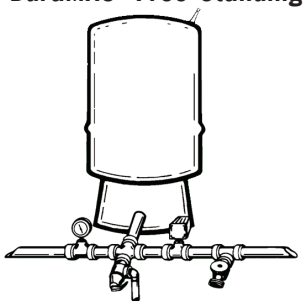
Diaphragm Tanks

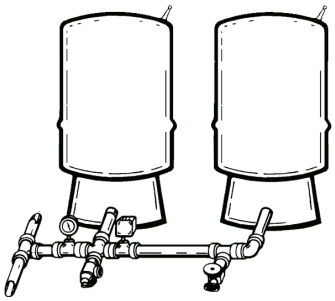
Installations

Typical Installations

DuraMAC™ Free-Standing Series

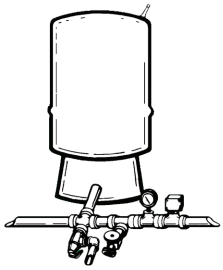


Single Installation

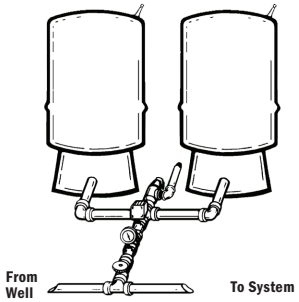


Multiple Installation

The standard rear-entry installation. Gauge, relief valve, and pressure switch are installed in rear of tank. The piping is run behind the tank and the connection is made to standard tee.

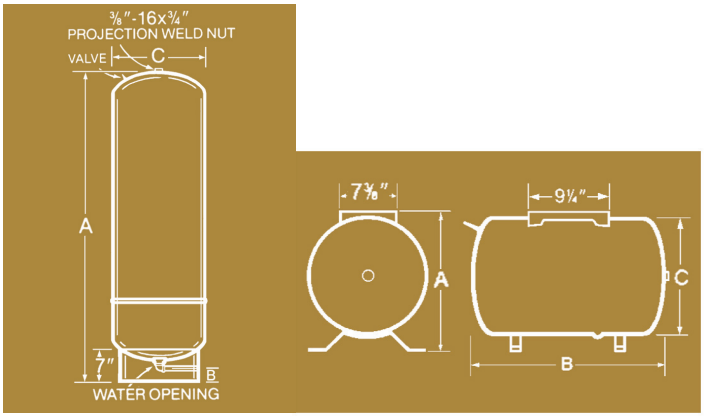


Single Installation



Multiple Installation

The standard front-entry installation. Gauge, relief valve, and pressure switch are installed in front of tank.

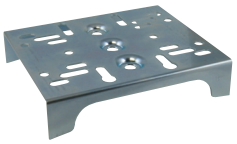


Universal pump mounting bracket

16000BRKT

Two Pipe

Part No.	Wt.
6127-365	2



Standard on DuraMAC™ Horizontal models and optional on DuraMAC™ In-Line Series and DuraMAC™ Vertical models.

Volume, Dimension and Weight Specifications

Model Number	Volume Gallons	"A" Overall Height (IN.)	"B" to Center of Water Inlet (IN.)	"C" Diameter (IN.)	Weight (LBS.)
DuraMAC™ Series (Free-Standing)					
16020MV4F	20.0	32-3/4	2-1/4	15-3/8	30
16032MV4F	32.0	45-1/2	2-1/4	15-3/8	40
16036MV4F	36.0	32-5/8	2-1/4	20	45
16052MV5F	52.0	38-5/8	2-1/4	23-3/8	77
16086MV5F	86.0	59	2-1/4	23-3/8	105
16096MV5F	96.0	63-3/8	2-1/4	23-3/8	111
16119MV5F	119.5	61-1/4	2-1/4	26	165
DuraMAC™ Series (In-Line) No Base					
16002-V3M	2.0	12-9/16	–	8-3/8	4.5
16005-V3M	4.6	14-11/16	–	11-3/8	7.5
16007-V3M	7.3	21-1/8	–	11-3/8	10.5
DuraMAC™ Series Horizontal					
16014-H4M	14.0	17-3/8	21-3/4	15-3/8	23
16020-H4M	20.0	17-3/8	27-1/8	15-3/8	30

16020-H3M, 16020MV4F, 16032MV4F and 16036MV4F—connection is 1" Female.
16052MV5F, 16086MV5F, 16096MV5F, 16119MV5F—connection is 1-1/4" Female.
16002-V3M, 16005-V3M, 16007-V3M — connection is 3/4" Male.
16014-H4M, 16020-H4M—connection is 1" Male.

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The charts below allow you to easily select the right DuraMAC™ Series tank for standard-size pumps between 2 1/2 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 one minute, one and a half minutes and two minutes. For example, for a system that delivers ten gpm at 30-50 PSI, with a minimum run time of one minute, Chart 1 indicates that the proper tank is the 16036MV4F.

Chart 1 | DuraMAC™ Series Free-Standing Tank Selection Chart

Pump GPM	System Pressure Ranges-PSI								
	20-40			30-50			40-60		
	Minimum Run Times (Minutes)								
	1	1 1/2	2	1	1 1/2	2	1	1 1/2	2
2.5	16020MV4F	16020MV4F	16020MV4F	16020MV4F	16020MV4F	16020MV4F	16020MV4F	16020MV4F	16020MV4F
5	16020MV4F	16020MV4F	16036MV4F	16020MV4F	16036MV4F	16036MV4F	16020MV4F	16036MV4F	16052MV5F
7	16020MV4F	16036MV4F	16052MV5F	16036MV4F	16036MV4F	16052MV5F	16036MV4F	16052MV5F	16086MV5F
10	16036MV4F	16052MV5F	16086MV5F	16036MV4F	16052MV5F	16086MV5F	16052MV5F	16086MV5F	16086MV5F
12	16036MV4F	16052MV5F	16086MV5F	16052MV5F	16086MV5F	16086MV5F	16052MV5F	16086MV5F	16096MV5F
15	16052MV5F	16086MV5F	16086MV5F	16052MV5F	16086MV5F	16119MV5F	16086MV5F	16096MV5F	16119MV5F
20	16086MV5F	16086MV5F	16119MV5F	16086MV5F	16119MV5F	(2)16086MV5F	16086MV5F	16119MV5F	(2)16086MV5F
25	16086MV5F	16119MV5F	(2)16086MV5F	16086MV5F	(2)16086MV5F	(2)16086MV5F	16096MV5F	(2)16086MV5F	(2)16096MV5F
30	16086MV5F	(2)16086MV5F	(2)16086MV5F	16119MV5F	(2)16086MV5F	(2)16119MV5F	16119MV5F	(2)16096MV5F	(2)16119MV5F

Chart 2 | Drawdown Volume Multiplier (Approximate)

Pump Shut-Off Pressure-PSI	Pump Start-Up Pressure-PSI							
	10	20	30	40	50	60	70	80
20	0.26							
30	0.41	0.22						
40		0.37	0.18					
50		0.46	0.31	0.15				
60			0.40	0.27	0.13			
70			0.47	0.35	0.24	0.12		
80				0.42	0.32	0.21	0.11	
90				0.48	0.38	0.29	0.19	0.10
100					0.44	0.35	0.26	0.17

Pressure above those listed, exceed maximum tank acceptance volumes.

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:

$$\frac{\text{PUMP GPM x Min. Run Time}}{\text{Multiplier}} = \text{Minimum Tank Volume Required}$$

To assume dependable drawdown volumes, and in keeping with present industry practice, drawdowns are based on Boyle's Law.

Chart 3 | Drawdown in Gallons

Model No.	Vol. in Gals.	20-40	30-50	40-60
16002-V3M	2.0	0.7	0.6	–
16005-V3M	4.6	1.7	1.4	–
16007-V3M	7.3	2.7	2.3	–
16020MV4F	20.0	7.4	6.2	5.4
16032MV4F	32.0	11.5	9.6	8.4
16036MV4F	36.0	13.3	11.2	9.7
16052MV5F	52.0	19.2	16.1	14.0
16086MV5F	86.0	31.8	26.7	23.2
16096MV5F	96.0	35.5	29.8	25.9
16119MV5F	119.5	44.2	37.0	32.3

Horizontal Series has the same drawdown as the In-Line Series.

For example, using a 10 GPM pump, a one-minute minimum run time, and a 30-50 PSI pressure range, the formula is as follows:

$$\frac{10 \times 1}{.31} = 32.26 \text{ Minimum Tank Volume}$$

Then, using Chart 3, select the tank that has a minimum volume that meets or exceed 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 16036MV4F 36-gallon tank. It provides adequate drawdown at 30-50 PSI. For questions about proper tank sizing, contact the Factory.

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