



PRESSURE TANKS



KS



VT Models



DVX Models

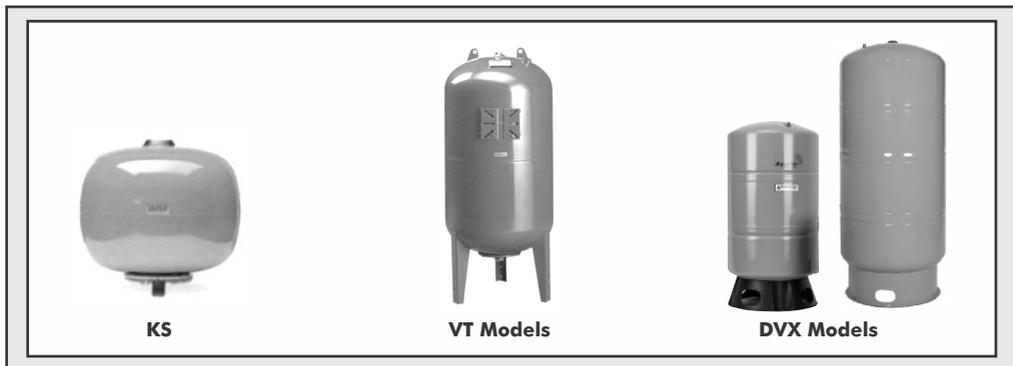
Installation & Operating Manual

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Congratulations on selecting a Dayliff Pressure Tanks. They are manufactured to the highest standards and if installed and operated correctly will give many years of efficient and trouble free service. Careful reading of this Installation Manual is therefore important, though should there be any queries they should be referred to the equipment supplier.

1. SPECIFICATIONS



Pressure tanks are important components of pressurised booster supply systems or inverter where automatic pumped water supply is provided by means of pressure switch or inverter controlled pumps. The tanks have two functions; to cushion pressure surges as the pump starts and stops and also to provide a drainage supply into the system to control pump cycling. Options are as follows:-

Dayliff VT series pressure tanks have been specially designed for pressurised booster installations and are also suitable for firefighting and irrigation systems. The design incorporates a replaceable butyl rubber membrane which offers the following features:-

- Suitable for all types, including corrosive and hard waters as the water only comes into contact with the membrane.
- Membrane design eliminates the necessity for constant air recharging.
- Horizontally collapsing membranes (except KS model) avoids contact with tank sides and therefore increases life.
- Membrane is simply replaceable.

Dayliff DVX series are higher specification diaphragm type tanks which are specially suited for medium to heavy duty pressure boosting and storage applications where value and reliability are demanded. Features include;

- Polypropylene liner and butyl diaphragm for long life and safety.
- Corrosion resistant baked epoxy coating finish.

- Leaf-free, O-ring sealed air valve cap dispensing the need for maintenance.
- AISI S/S 304 water connection to protect against corrosion

All Dayliff pressure tanks are thoroughly tested and conform to various international standards and when properly specified will provide many years of reliable maintenance free operation.

PRESSURE TANK SIZING GUIDE

Correct tank sizing is important and is determined by the system flow rate and pump start and stop pressure settings. Sizing must be based upon the system flow at which the maximum cycle frequency occurs. As a rule of thumb this can be taken as 65% of the flow at pump stop pressure.

Required draining volume is then the maximum cycle frequency flow divided by twice the specified maximum number of cycles per hour. Generally 60 cycles per hour is considered acceptable. Tank size selected is then that nearest to the volume required. Drainage volume is as follows:-

Tank Pre-charge (Bar)	1.35	1.65	1.85	2.35	2.35	2.83	3.85	4.85
Pump Start Pressure (Bar)	1.5	1.8	2.0	2.5	2.5	3.0	4.0	5.0
Pump Stop Pressure (Bar)	2.5	3.0	3.5	4.0	4.5	4.5	6	7.5
Drainage (%)	26	28	31	28	34	26	28	29
Tank Model	Drainage Volume (Litres)							
KS (24 Litres)	6	7	7	7	8	6	7	7
VT 60 / DVX58 (60 Litres)	15	17	19	17	21	16	17	17
VT 100/ DVX100 (100 Litres)	26	28	31	28	34	26	28	29
VT 300 / DVX305 (300 Litres)	77	83	93	85	103	78	83	86

Note that when specifying pressure systems the following is important:

- Correct tank pre-charge is critical and must be 0.15 Bar below the pump start pressure. Efficiency is greatly reduced if pre-charge is either too high or too low.
- Ensure that the difference between start and stop pressure is as high as possible as the larger the differential the greater the tank drainage capacity.
- Ensure the pump start pressure is higher than the system static pressure or else the pump will not start.
- Adjust pump stop pressure to be about 90% of the pumps closed head pressure.

SELECTION EXAMPLE

System Parameters

Pump Stop Pressure = 4.5 Bar

Stop Flow = 11 m³/hr

Pump Start Pressure = 2.5 Bar

Start Flow = 16 m³/hr

System flow at maximum cycle frequency = 65% of Pump Stop Flow = 0.65x11 = 7.2 m³/hr or 7200l/hr

Max Cycle frequency = 60 cycles/hr therefore required drainage volume = 7200/60x2 = 60 litres

From table: 100 litre tank has drainage volume of 34 litres at defined pressures.

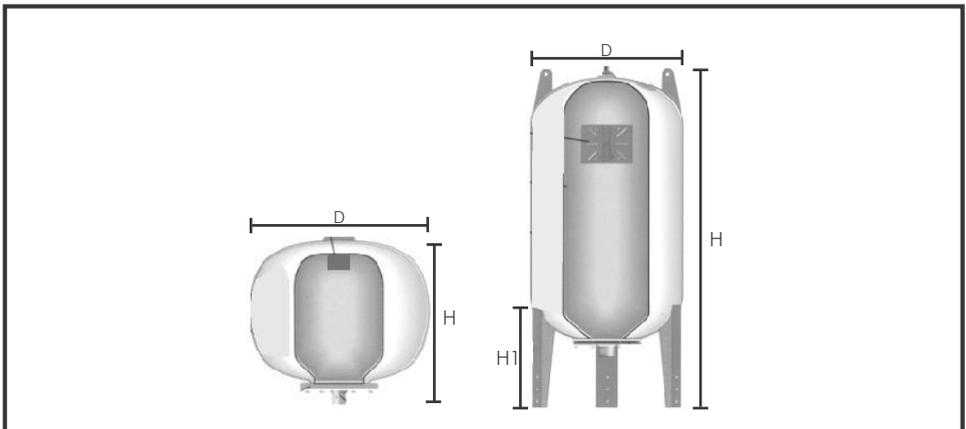
300 litre tank has drainage volume of 103 litres at defined pressures.

Therefore select either 2x100litre tanks (68 litres drainage volume) or 1x300 litre tank (103 litres drainage volume).

TANK DATA

Model	Volume (Litres)	Max Pressure (Bar)	Outlet DN	Dimensions (mm)			Gross Wt (kg)	Packed Volume (m ³)
				D	H	H1		
KS	24	8	1"	360	335	-	6	0.047
VT60	60	8	1"	380	850	165	17	0.150
VT100	100	10	1"	450	965	170	26	0.240
VT300	300	10	1½"	630	1400	160	59	0.600
DVX58	60	10	1"	381	620	130	10	0.108
DVX100	100	10	1"	381	985	130	16	0.170
DVX305	300	10	1¼"	559	1450	130	47	0.462

Max Temperature Range -10°C - +100°C **Test Pressure** - 1.5 times the max. working pressure



2. WARNINGS AND SYMBOLS



Do not exceed the max. working pressure and temperature of the tank, provide suitable controls to avoid any damage.



In order to avoid leaks from the tank it is necessary to use a drainage system.



During installation appropriate discharging of vent valves should be provided.



A qualified technician must inspect the system periodically.



No responsibility will be accepted for material or personal damages due to wrong installation of the vessel.



If the temperature and pressure limits are exceeded, no liability and warranty claims will be accepted.



The installation and maintenance should be carried out by qualified technician.

3. INSTALLATION

- Before replacing a tank in an existing system, ensure that electrical input to the pump control panel is disconnected.
- Take the tank out of its package, remove the protection plug from the air valve and check the pre-loading pressure making sure that it is approx 0.15 Bar below the set start pressure. If not add or remove air as required and then screw the protection plug back on.
- Position the tank as close as possible to the pressure switch in order to avoid pressure losses due to friction.
- Connect the tank to the pump outlet point, making sure to adhere to all local installation regulations.

- It is recommend that a safety valve set at the system maximum working pressure is installed.
- Restore the power supply to the pump control panel after completing the installation of the tank.
- Fill the system again by starting up the pump until the pressure switch shuts the pump automatically.
- Open and close the tap furthest from the tank repeatedly in order to eliminate all the air inside the piping.
- Open one or more taps in order to empty the tank, if a pause is observed between emptying of the tank and starting of the pump adjust the pressure switch upwards or decrease the tank pre-loading pressure.
- Check all connections and make sure that there is no water leakage.
- Regularly check the tank pre-loading pressure during the use of the system and top up whenever required.

4. MAINTENANCE

REPLACEMENT OF THE BLADDER

- Disconnect the power supply to the pump control panel and either shut off the water supply or completely drain the system off water.
- Remove the tank from the system and remove all the pre charged air by using valve.
- Position the tank horizontally in order to facilitate the operations that follow.
- Remove the bolts from the counter flange and then remove the counter flange.
- Remove the old bladder from the tank and replace with a new one.
- Reassemble the counter flange.
- Recharge with air and check for leakages on the counter flange.
- Reconnect the tank to the system and follow the instruction prescribed above for the verification of correct system operation.



Pump Cycling; The most common operating problem with pressure controlled water supplies is excessive pump cycling. There are two reasons:-

Insufficient Pre-Charge Pressure - Setting the control pre-charge pressure is essential. See Section 1.

System Leakages - Small leakages in the distribution piping will result in system pressure losses and hence pump starting as the cutting pressure is reached. Leak free distribution piping is therefore essential.



Before starting any maintenance disconnect all the electric devices and take care of the pressure and temperature of the system.

5. TERMS OF WARRANTY

i) General Liability

- In lieu of any warranty, condition or liability implied by law, the liability of Dayliff in respect of any defect or failure of equipment supplied **is limited to making good by replacement or repair** (at the Company's discretion) defects which under proper use appear therein and arise solely from faulty design, materials or workmanship within a specified period. This period commences **immediately after the equipment has been delivered to the customer** and at its termination all liability ceases. Also the warranty period will be assessed **on the basis of the date that the Company is informed of the failure.**
- This warranty applies solely to equipment supplied and **no claim for consequential damages**, however arising, will be entertained. Also the warranty specifically excludes defects caused by fair wear and tear, the effects of careless handling, lack of maintenance, faulty installation, incompetence on the part of the equipment user, Acts of God or any other cause beyond the Company's reasonable control. Also, any repair or attempt at repair carried out by any other party **invalidates all warranties.**

ii) Standard Warranty

General Terms

If equipment failure occurs in the normal course of service having been competently installed and when operating within its specified duty limits warranty will be provided as follows:-

- **Up to six months - The item will be replaced or repaired at no charge.**
- **Over 6 months, less than one year - The item will be replaced or repaired at a cost to the customer of 50% of the Davis & Shirtliff market price.**

The warranty on equipment supplied or installed by others is conditional upon the defective unit **being promptly returned free to product supplier** and collected thereafter when repaired. No element of site repair is included in the warranty and any site attendance costs will be payable in full at standard chargeout rates. Also proof of purchase including the purchase invoice must be provided for a warranty claim to be considered.

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