

### Operation Notes

A permanent bed of salt at least 150mm thick must be maintained to ensure that fully saturated brine is produced and this bed acts as an efficient filter removing dirt or dust which may have arrived with the water supply or from the atmosphere. If the permanent salt bed becomes very dirty – indicated by discoloured brine or reduced flow – the installation must be thoroughly cleaned.

The constant head pressure behind the discharge is equal to the normal level of water in the saturator. Brine should not be pumped at a rate exceeding the nominal continuous output of the unit (see table) as 'tracking' may occur through the salt bed, allowing partially saturated brine to pass. If there is a need for large volumes of brine to be available more quickly than the normal output of the saturator provides, a separate collection tank or 'break tank' should be employed. This will allow the saturator to operate smoothly and at maximum efficiency.

### Deliveries

Road deliveries of PDV salt by air discharge through 4"NB pipe are most common. The pipework is normally NT3 or NT4 grade aluminium and as corrosion can take place under wet conditions the pipes should be examined regularly. Plastic pipes are not recommended in view of potential static electricity build up.

Your Forbes saturator is normally provided with a fill pipe terminating, complete with tanker coupling, against its vertical wall to within 1.3 metres of ground level. If the standard fill pipe is not required, care should be taken in the design of the fill line and reference should be made to the salt supplier's recommendations regarding radius of bends and other considerations.

In determining the correct specification for your salt saturator it will be important to consider the bulk delivery quantities available from your supplier – commonly 7, 10, 14, 18, 22 and 24 tonnes.

### Considerations When Specifying

- Salt usage, including predicted brine draw-off requirements
- Available bulk delivery quantities from salt suppliers
- Location of saturator indoors or outdoors
- Vehicle access and salt fill line requirements
- Orientation of all nozzles ● Type of dust control

### Important

Each Forbes Salt Saturator is provided as standard with a detailed manual including offloading and general handling instructions, installation and commissioning instructions and assembly drawings.

All tanks and salt saturators need a firm, flat and level concrete base.

### Useful Data

- The density of PVD salt (either in air or submerged) is 1,200 kg per cubic metre — 75 lbs per cubic foot
- The specific gravity of saturated brine is 1.2
- Saturated brine at 20 degrees centigrade contains 26.45% salt by weight.

## PRODUCT RANGE

- ◆ Thermoplastics Tanks
- ◆ Tanks, Vessels & Fabrications  
GRP/THERMOPLASTICS DUAL LAMINATES
- ◆ Tanks, Vessels & Silos  
GRP COMPOSITES
- ◆ MINIBULK® Chemical Storage Systems
- ◆ Sectional Tanks
- ◆ Silos FOR SOLIDS & LIQUIDS
- ◆ Salt Saturators
- ◆ Pressure and Vacuum Vessels

- ◆ Fume and Odour Scrubbing Systems
- ◆ Vent Scrubbers
- ◆ CO<sub>2</sub> Degassers
- ◆ Stripping Towers
- ◆ Carbon Adsorption Units
- ◆ Bio Treatment Systems

- ◆ Ancillary Steelwork
- ◆ Skid Mounted Modules
- ◆ Turnkey Projects

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# FORBES



PLASTICS TANKS AND ENVIRONMENTAL TECHNOLOGIES

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## Salt Saturators



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# Salt Saturators

## A CONTINUOUS SUPPLY OF SATURATED BRINE

Brine is necessary for many applications in the food and chemical industries and for water treatment. Forbes salt saturators provide a constant controllable supply of saturated brine solution. They are fabricated on advanced, largely automatic, machinery using GRP materials fully approved to the stringent requirements of the Water Research Council (Wrc).

The saturator vessel contains layers of graded gravel on which rests a bed of salt covered by a constant head of water. The water dissolves the salt and, filtering through the gravel, emerges as clean, saturated brine in an automatic process needing only a water supply and refilling with salt from time to time.

The saturator accepts bulk deliveries of PDV salt and avoids the need for separate storage of dry salt. If bagged deliveries are required for smaller capacity saturators, cones/hoppers and grids can be supplied.

Our standard range of salt saturators has been designed for an optimal operating water head pressure while allowing for the normal increase in the water level after a full recharge of salt. Custom-designed 'low head' models are available to help customers with site limitations, but the implications for managing such units should be discussed with our technical sales staff.

The extensive range of sizes listed is further complimented by a new small range fabricated from natural or black pigmented polypropylene materials with capacities of 100, 300, 550 and 1800 kilogrammes. These small units are designed for manual recharge with 25kg bags of PDV salt.

All units are built from corrosion free materials and can be sited outdoors where most convenient for delivery vehicles. Maintenance is limited to checking the operation of the water level control system, visual monitoring of the salt stock level through a translucent strip (GRP and natural PP models) and very occasional thorough cleaning. All steel parts, including nuts, bolt and washers are protected from corrosion by hot dip galvanising. The water inlet control float valve is housed within a protective chamber to avoid obstruction by salt.

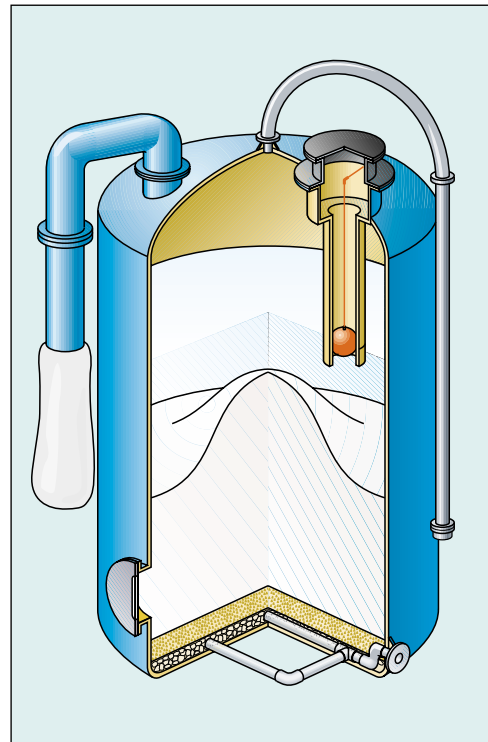
### Salt Dust Control

Our salt saturators are supplied as standard with a simple cowled vent. With an outdoor installation, the small amount of dust expelled during deliveries may present no hazard or nuisance. Indoors or in sensitive areas dust control options should be considered.

A pair of sock or bag filters fitted to a branched vent pipe should normally control the problem. The socks must be kept dry at all times, cleaned of salt and stored in a dry place between deliveries.

For outdoor installations only, a salt dust arrestor pot can be used. It will not usually trap all dust from a high volume air discharge system but may be acceptable if a moderate escape of dust can be tolerated.

A mechanical filter unit can provide a high level of protection.

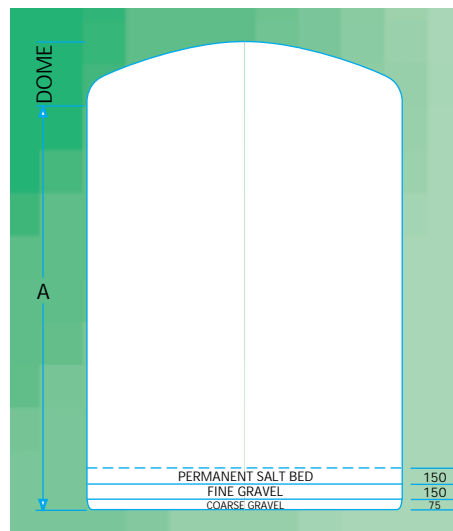


#### Standard features include :

- Side access manway ● Top access manway
- Salt inlet flange with aluminium fill pipe and tanker connection ● Brine outlet with internal collector pipe system ● Water inlet with ball float valve ● Air vent with weather cowl
- Visual salt level indication ● Flange for overflow ● Lifting lugs ● Two layer gravel bed

#### Options include :

- Dust control ● Level alarm ● Overflow pipework ● Access steelwork ● Installation



	2.4 SERIES	3.0 SERIES	3.5 SERIES	4.0 SERIES
Nominal internal diameter (mm)	2400	3050	3500	4100
Nominal dome height (mm)	600	600	700	800
12-20mm gravel (tonnes)	0.6	1.0	1.3	1.8
3-6mm gravel (tonnes)	1.2	2.0	2.6	3.6
Continuous output (litres/hr)	2400	3700	4900	6800
Short term high demand (litres/hr)	3500	5500	7200	9500

	MODEL NUMBER	MAXIMUM SALT CAPACITY	SALT RECHARGE	MAXIMUM BEFORE RECHARGE	NOMINAL HEIGHT 'A'(mm)	
2.4 Series	7/5	7	5	2	2100	
	8/6	8	6	2	2400	
	10/8	10	8	2	3000	
	12/10	12	10	2	3600	
	15/12	15	12	3	4500	
	18/15	18	15	3	5400	
3.0 Series	20/17	20	17	3	6000	
	10/7	10	7	3	2000	
	17/14	17	14	3	3250	
	21/18	21	18	3	4000	
	23/18	23	18	5	4250	
	25/20	25	20	5	4600	
	27/20	27	20	7	4850	
	30/20	30	20	10	5200	
	38/28	38	28	10	6600	
	40/28	40	28	12	6750	
3.5 Series	30/20	30	20	10	4200	
	40/30	40	30	10	5050	
	50/40	50	40	10	5900	
	60/50	60	50	10	6800	
	70/60	70	60	10	7650	
	80/70	80	70	10	8500	
	90/80	90	80	10	9400	
	100/90	100	90	10	10250	
	4.0 Series	40/30	40	30	10	3900
		50/40	50	40	10	4550
60/50		60	50	10	5200	
70/60		70	60	10	5800	
80/70		80	70	10	6450	
90/80		90	80	10	7050	
100/90		100	90	10	7700	
110/100		110	100	10	8300	
120/110	120	110	10	8950		
130/120	130	120	10	9600		
140/130	140	130	10	10200		

ALL ABOVE IN TONNES

