

# Standard Trays

## AlphaTRAY™ STANDARD TRAY TYPES

### Sieve Trays



**AlphaTRAY™ ST  
Standard Sieve Tray**

Widely used throughout industry the sieve tray is manufactured by perforating the tray deck with one size of hole. The **AlphaTRAY ST** standard sieve tray offers:

- 2:1 turndown.
- Good overall efficiency in clean services.
- Tried and tested performance.
- Low cost.

A complete ST sieve tray specification will include:

- Hole diameter
- Hole pitch or % open area
- Tray diameter and thickness
- Downcomer type and size
- Weir details
- Materials of construction

### Fixed Valve Trays



**AlphaTRAY™ FXV  
Standard Fixed Valve Tray**

These are stationary valves pressed up from the tray deck. Compared to sieve trays and standard movable valve trays, our **AlphaTRAY FXV** valve tray can offer higher capacity. Turndown is greater than sieve trays but less than movable valve trays. The FXV valve trays are particularly suitable for fouling services. In addition, compared to sieve trays they are longer lasting in service and mechanically stronger. This design of tray gives the following benefits over the standard sieve and float valve trays.

- Wide range of efficient turndown.
- Anti fouling across the tray deck and walls of the vessel.

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- Up to three times stronger decks.
- Higher jet flood characteristics.
- Steady liquid movement across the tray deck.
- Enhanced vapour and liquid contact.
- No moving or separate parts
- Low cost.
- Easy tray retrofits

In addition to the **FXV** standard valve, the **AlphaTRAY** range includes the **SFV** small fixed valve and the **MFV** mini fixed valve for lower flowrates or higher efficiency applications.

### **Movable Valve Trays**



**AlphaTRAY™ FF  
Fast Fit Moving Valve Tray**

Manufactured by punching large holes in the tray deck and inserting moving valves, the Movable Valve tray offers stable operation with high turndown over a wide range of flow rates. Available in several different valve types and sizes the **AlphaTRAY** Movable Valve Tray provides:

- Wide range of efficient turndown (10 : 1)
- Mixed weight valves for stable operation

### **FF Type Valve**

These trays are based on the unique FF (fast fit) Valve design shown above. Whilst in principle, the FF valve functions as a movable disc that adjusts the tray open area to accommodate vapour load variation, just as conventional 3 legged valves, it offers the following additional benefits:

- Incorporates an anti-rotation feature.
- Extra robust legs to reduce valve losses in service.
- Easy-fit design for quick replacement of missing valves without requiring special tools.

When the trays are designed for maximum approach to the entrainment limit at design vapour load, design efficiency will be maintained with turndown to around 10% of design loads. Alternatively, where low tray pressure drop is a design limitation, the trays can be designed to operate close to the minimum orifice velocity providing that high turndown is not required.



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If operation at low vapour rates is anticipated, trays are fitted with two different gauges of valves. As the vapour rate is reduced, the heavy valve units will close first with the light gauge valves fully open. This avoids instability and valve wear by reducing the tendency of the valves to operate in the half open position. Generally, the light gauge valves are installed in the rows closest to the downcomer inlet to take advantage of the complete flow path length for contact at turndown operation.

### **STA and STB Type Valves**

These are industry standard movable valves, the STA being circular and the STB rectangular.

The STA valve is made in one piece with three integral legs and guide stops and normally supplied with dimples to limit contact with the tray deck to three points when shut. These valves are used for general applications, except where there are fouling problems due to polymers or coke.

The normal valve thickness used is 1.5mm. Alternate rows of light (1.5 mm) and heavy (2.0 mm) valves are be used to maximise turndown. Alternatively, to minimise dry pressure drop, very light valves (1.25mm) may be used.

### **NCD Caged Disc Type Valve**

These are two-piece valves, where a four-legged hold-down cage attached securely to the tray deck contains a moving valve disc. These valves are used for general applications like industry standard valves, to give similar performance with the following advantages:

- Longer lasting in service, since there is no friction between the valve and tray deck.
- Less risk of sticking shut or open. The streamlined design of the hold-down cage eliminates dead zones on the tray deck.
- Self cleaning.
- Better turndown due to less liquid weeping.

The normal valve disc thickness used is 1.5mm. Alternate rows of light (1.5 mm) and heavy (2.0mm) valve discs can be used to maximise turndown.

### **LCD and VCD Type Valves**

The LCD is a NCD type valve with a light disc (1.25 mm) to reduce dry pressure drop. The VCD is a NCD type valve with a light disc (1.25 mm) plus a venturi hole, to minimise dry pressure drop.

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### **Bubble Cap Trays**



**AlphaTRAY™ SBC  
Slotted Bubble Cap Tray**

Designed to be used in high turndown or with low liquid rates the bubble cap tray is available in several sizes depending on the specific tray loading. The cap assembly is mechanically fixed into the tray deck and forms a seal which enhances the vapour liquid contacting. The bubble cap tray provides:

- High operational turn down.
- Low liquid/vapour flow rates.

The **AlphaTRAY FBC** bubble caps are based on the FRI (Fractionation Research Institute) standard plain cap design. The **SBC** bubble caps are a higher efficiency type using slots to improve the gas bubble dispersion.