A-S-H® Hydrobin® Dewatering Bin

BABCOCK & WILCOX

ENERGY | ENVIRONMENTAL

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The Allen-Sherman-Hoff® Hydrobin® dewatering bin, available from Babcock & Wilcox (B&W), is designed to quickly and efficiently remove and drain water from solid materials. Available for a wide variety of applications, the Hydrobin dewatering bin is known industry-wide for its proven technology, reliability and durability.

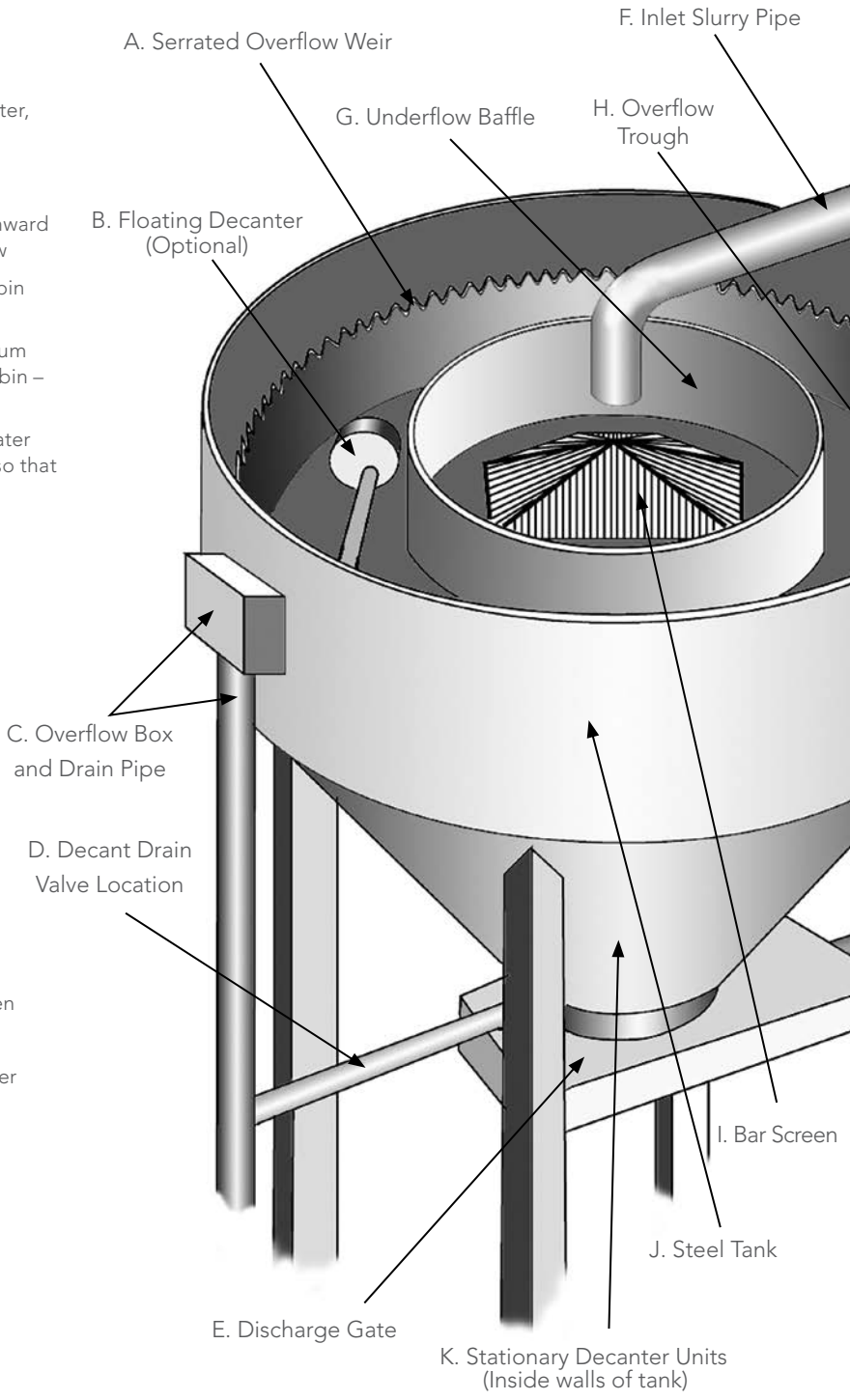
The Hydrobin dewatering bin is a cylindrical tank with a conical bottom terminating in a 3 ft (0.9 m) diameter discharge opening. The shell is typically constructed of 0.375 in. (9.5 mm) mild steel plate, although alternative materials may be used for exceptionally corrosive conditions. A pipe bridge and grating are provided to support the system discharge piping and to permit access to the top of the bin for visual inspection and maintenance.

Features

- **Bar Screen Material Classifier** Diverts coarser material to the sides of the bin where it acts as a filter, trapping the finer particles which drop out in the center of the bin before they reach the stationary decanting elements
- **Underflow Baffle** Directs incoming material downward helping to prevent fines from reaching the overflow
- **Serrated Weir** Provides a uniform flow out of the bin into the outer trough
- **Floating Decanter** Consists of a stainless steel drum supporting a movable drain pipe at the top of the bin – quickly siphons off standing water
- **Stationary Decanter** Designed to drain off the water retained in the body of the material at a slow rate so that fine material is not pulled into the drains
- **Optional Back-flushing Nozzles** Designed for efficient cleaning and to prevent material build-up on screens
- **Gate** Horizontal gate design provides easy access for routine maintenance; rollers mounted on eccentric axles permit gate adjustment

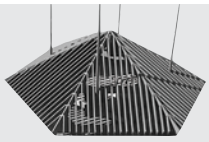
Benefits

- Engineered for efficiency, durability and reliable operation
- Self cleaning decanter screens provide ease of maintenance
- Decanting is automatically sequenced and controlled
- Inflatable seal tube prevents water leakage between gate and frame
- Floating decanter quickly siphons off standing water above the material
- Gates can be fitted to other manufacturer's dewatering bins



Dewatering Process

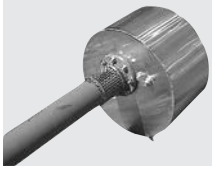
The Allen-Sherman-Hoff Hydrobin dewatering bin is the industry standard for efficiency and reliability. This proven design is known for its effectiveness in quickly removing drain water from solid materials in slurry form.



As the slurry enters the Hydrobin dewatering bin, the bar screen classifier **(I)** diverts coarser material towards the sides of the bin where it acts as a filter to trap the finer particles which drop into the center of the bin, thereby helping to prevent them from reaching the decanting elements.

Next, the underflow baffle **(G)** directs the flow of incoming material downward. All material is forced to change direction before reaching the overflow weirs **(A)** and is trapped in the body of the tank **(J)**. A quiet zone is created between the underflow baffle **(G)** and the overflow weirs **(A)**. This further deters the carry-over of fines to the overflow. When a high percentage of floaters is anticipated, special overflow troughs **(H)** with bottom self-cleaning screens are used.

The overflow from the bins is passed over a continuous serrated weir **(A)** into a sloping drain trough. Serrated weirs are used because they produce a uniform flow pattern and are more easily leveled during construction than other types. The drain trough is sloped toward a flanged connection with a schedule 40 steel drain pipe which serves all of the drain and decanting lines from the Hydrobin dewatering bin.



The floating decanter **(B)** consists of a stainless steel drum which supports a movable drain pipe at the top of the bin. The drum is provided with an inlet scoop so that water above the solid material level may be siphoned off without having to be drawn down through the material. A swing joint permits movement of the decanter unit, and a solenoid-controlled valve **(C)** initiates the siphoning operation which discharges all of the water over the solids level in the Hydrobin dewatering bin to the drain pipe **(C)**.

The stationary decanters **(K)**, located in the lower part of the Hydrobin dewatering bin, are designed to drain off the water retained in the body of the material. This is done at a slow rate so that fine material is not pulled into the drains. The decanters are faced with self-cleaning stainless steel screens. Screen openings are usually 0.06 in. (1.5 mm).

The decanters terminate in drain manifolds in the bottom of the Hydrobin dewatering bin immediately above the discharge gate **(E)**. The number of decanters varies from 4 to 12 in proportion to the diameter of the Hydrobin dewatering bin, and decanting is automatically controlled in the proper sequence from a panel usually mounted on one of the supporting columns.

After a dewatering cycle has been completed, material is discharged from the Hydrobin dewatering bin through a 3 ft (0.9 m) diameter bottom opening. The opening is controlled by means of a cylinder-operated cast iron gate **(E)** moving on a series of rollers mounted on eccentric axles which can be adjusted to maintain close clearance between the gate and the cast iron gate frame. To prevent leakage between the gate and frame, an inflatable seal tube is mounted in a channel in the frame. When the gate is in a closed position, the tube is inflated to provide a leak-tight closure. The gate is designed in such a manner that any water leakage is contained in the gates which are provided with three high sides; the fourth side is open to direct leakage to a trough which has a bell-end connection for attachments to a 4 in. (102 mm) cast iron drain pipe. Gate positioning is accomplished by means of a hydraulic cylinder operator and four-way valve, which may be manually or electrically operated.

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Babcock & Wilcox supplies Diamond Power boiler cleaning and Allen-Sherman-Hoff ash handling equipment and systems.

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