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Episode 17 Show Notes You're Only as Good as Your Guts!

The least expensive component of a water system is the most critical component. The distributor tube system plays a vital role in the filtration and softening process. Using a poorly designed distributor system is like trying to drink through a cocktail straw rather than a standard size you might get with a cold drink.

Types

Distributor tubes have many names – riser pipe, manifold, d-tube, and spear to name a few. The most common distributor tube is PVC pipe with a threaded or slotted strainer attached to the bottom. These are used on systems with smaller tanks. Systems with tanks 14 inch and above should have hub and lateral type designs.

Distribution Tubes

As noted above, distributor tubes can have different designs. We have seen something as crude as a pipe with slots cut into the side. More commonly the tube is ¾" to 1.050" in diameter with a strainer or basket attached at the bottom. The slots in the strainer are specific to the application and media being used. If greater flow rates and low-pressure drop are needed, we recommend a distributor with a cylindrical or pointed strainer with beveled slots. Gravel bedding in the tank acts like a lateral and diffuses the water, which will prevent clogging of the distributor slots and enhance distributor performance.

An upper screen (similar to the distributor tube basket) is used to diffuse the water as it enters the bed. It acts like an umbrella with holes. Use of an upper screen prevents the water from coming in at a high flow rate and drilling the bed causing the media to flip to one side of the tank. It generally isn't used in iron removal applications as the water is untreated and will clog the screen.

Hub & Lateral

This design looks like a wagon wheel – a hub with thick spokes. They are used in larger vessels where higher flow demands greater water diffusion through the media bed. The standard designs are plastic and are available from several manufacturers – Clack & Structural. Be careful to order according to the vessel size. Using a gravel sub-fill is recommended as it will support the laterals.

Industrial applications with steel tanks may have PVC or stainless internals. In most cases these are custom designs. Using the proper design is critical to successful operation.

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Bottom "Plate" Distributor

This is a proprietary high flow, high efficiency type distributor which uses the entire tank bottom rather than a tube type with a strainer at the bottom. It's only available as part of a complete system. Because you're using the entire tank bottom the flow rate potential increases. The water is distributed evenly throughout the bed allowing for improved efficiency.

Common Problems

- Decreased flow due to pressure drop. This usually happens in a commercial industrial setting but may occur in a residence. It's important to know the peak flow rate for all applications.
    - **Clogged slots/screens** – slot size may be too small or too large for media.
    - **Fouled media bed** due to lack of good backwash – The water goes down the tube, out the strainer slots, up through the bed and down the drain. If the distribution system isn't properly sized there isn't enough water volume and pressure to lift the bed.
    - In a commercial industrial setting:
        - **Pressure drop increase** may gradually occur. Enough crud builds up to reduce the flow rate or affect water quality. Service companies need to evaluate the internals prior to replacing the media. At the very least the hub and laterals should be cleaned but it's a good idea to contact an experienced equipment design company to determine whether the current internal system can do the job.
        - **Broken laterals** as a result of poor quality and/or application design, improper support bed or installation.

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