OHIO FABRICATORS COMPANY

Application Bulletin

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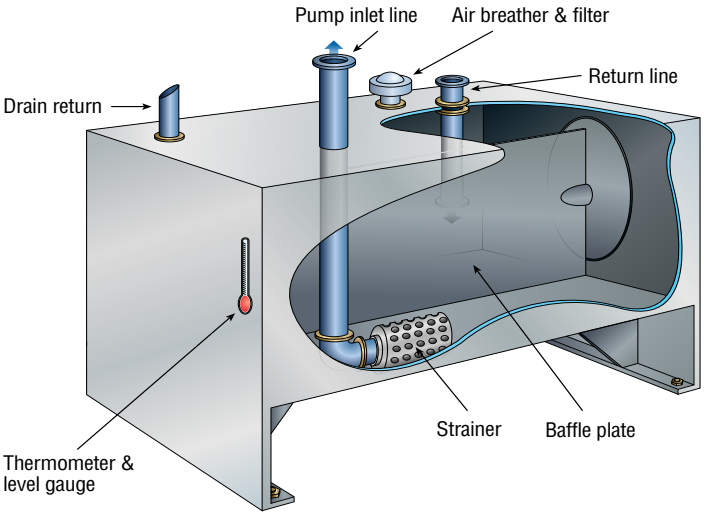
Ensuring Peak Performance In Hydraulic Systems:
Understanding Reservoir Accessories

Does your hydraulic system operate at peak performance? With the reservoir serving as the hydraulic fluid's source, it's imperative to examine the accessories, both inside and directly outside the reservoir.



Typically, the following reservoir accessories are utilized in a hydraulic system:

1. Suction strainer
2. Pump
3. Filler-breather or tank breather
4. Level gauge
5. Temperature indicator (thermometer)
6. Strainer
7. Return line diffuser

All the components and accessories mentioned are available in various configurations and sizes. When you view the "big picture" and assemble the pieces, you have a winning team. By examining these items, we'll piece them together to ensure the hydraulic system operates efficiently.

Hydraulic systems are designed in various sizes for differing applications. It's vital to determine the physical sizes and filtration levels required of the accessories to support a fully efficient operation.

Hydraulic reservoir accessories significantly impact system performance, particularly when combined with the reservoir and in terms of maintaining fluid cleanliness. A good hydraulic reservoir should include internal baffles positioned to prevent air from entering the pump inlet. Baffles work efficiently to separate the return flow from the pump's inlet flow. Additionally, baffles assist in proper reservoir fluid circulation, promoting heat dissipation.

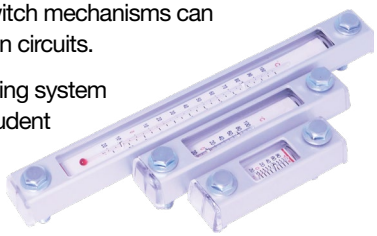
Sometimes, a return line **diffuser** is a useful accessory that slows returning fluid flow, preventing aeration due to turbulence. Reservoirs should also feature risers or legs to elevate the reservoir from the machine's floor. These legs facilitate air circulation around the reservoir, preventing fluid temperature buildup.

Straining the fluid before it passes through the pump is essential; the pump must be protected. A failed pump leads to system failure. Fluid returning to the reservoir should also be filtered to maintain cleanliness. This process aids fluid flow through to the inlet line and downstream.

Contamination is the primary cause of hydraulic component failures. Aside from filters at critical system points, airborne contamination around the reservoir is a concern. Airborne particles can infiltrate an unenclosed reservoir, contaminating the oil. However, since systemic oil levels fluctuate, a reservoir must "breathe." As fluid levels change, clean air exchange should occur through a **filler-breather** or, if a filler port exists, a tank breather should be used. An air filter, reminiscent of an automobile engine filter, allows air to enter the reservoir, facilitating clean air exchange as fluid levels rise and fall.

Monitoring the hydraulic reservoir's fluid level is crucial. Excess fluid may cause overflow, while insufficient fluid can lead to air intake by the pump, risking damage or destruction. Therefore, oil level observation via a sight glass or level gauge is essential. In high-production facilities, level switches, linked to warning lights or shutdown circuits, help maintain appropriate fluid levels and prevent system damage if fluid levels drop.

Lastly, fluid temperature monitoring is equally critical for maintenance. Overheated oil can degrade, losing lubricity and causing component seal failures. A **visual thermometer or temperature gauge**, possibly part of the sight glass, is recommended. Additionally, a temperature switch incorporated into level switch mechanisms can connect to warnings or shutdown circuits.



In conclusion, an efficient operating system is key. Thoughtful design and prudent accessory selection ensure a smooth operating system.