MILTON ROY

Milton Roy DSD Technology for Diaphragm Liquid End Metering Pumps

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Milton Roy is proud to present one of the most significant and groundbreaking advances in metering pump technology in recent time. The patented DSD liquid end technology provides safety and precision at extremely low injection rates while maintaining an environmentally friendly operating footprint. DSD stands for Dynamic Stiffness Diaphragm and is based on a patented rigid diaphragm. Milton Roy's design team was able to achieve the same flow rate and injection pressure performance as a packed plunger liquid end while maintaining the same levels of performance and safety as a hydraulically balanced diaphragm liquid end. This breakthrough was achieved by utilizing a diaphragm made from a shape memory material (PEEK). In this design the diaphragm is a polymeric smart material that has the ability to return to its original form after an external stimulus which in this case is the pressure created by the hydraulic fluid in the liquid end. The design and mechanical properties of the DSD diaphragm prevent it from bending forward and it will not touch the front side of the liquid end. The design life of the DSD diaphragm is 25,000 hours and in normal operation is extremely failure resistant. It does not require a Mechanically Actuated Refill valve (MARS), is not subject to hydraulic cavitation, and is capable of high suction lift.

Another innovative feature of the DSD technology is the patented, intrinsic multifunction valve. This valve functions as a hydraulic oil refill valve, a hydraulic oil air bleed valve, a hydraulic oil reservoir (1.4 ounces/40 ml), displays the hydraulic oil level, functions as a hydraulic safety valve, and provides over pressure indication. This clever design simplifies maintenance by incorporating standard replacement parts into one easily replaceable component.

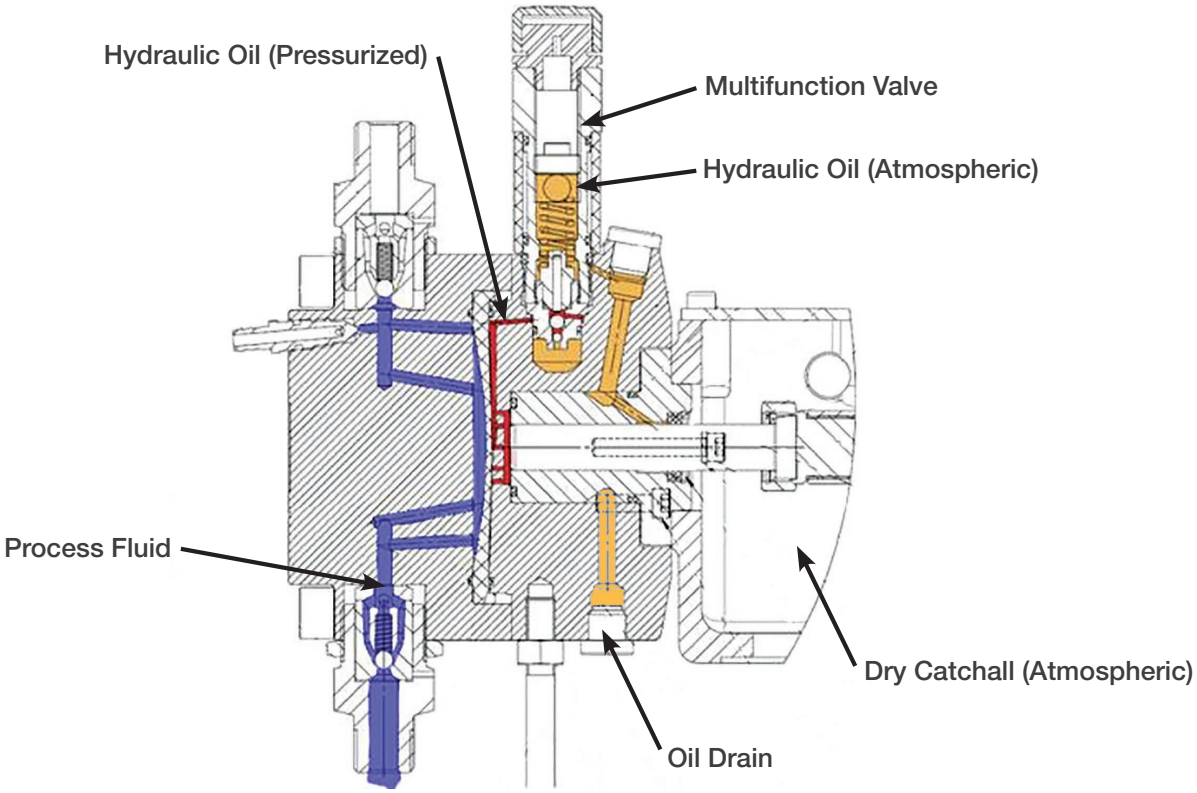

Figure 1- DSD liquid end cross-section on a Milton Roy MilRoyal D drive

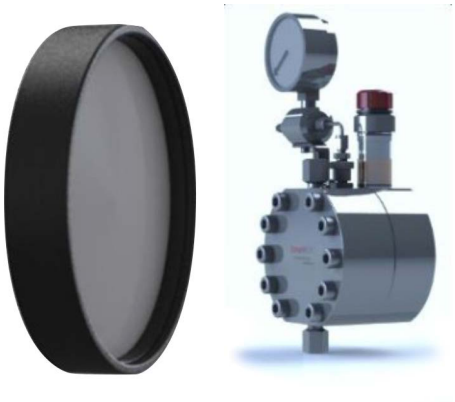

Figure 2 -DSD PEEK diaphragm and liquid end assembly

Figure 3 -DSD liquid end on a Milton Roy MilRoyal D

DSD Technology for Critical Applications

The unique design of the DSD Liquid End makes it ideal for applications requiring highly accurate, metered chemical injection coupled with a robust and dependable drive platform. Metered injection of chemicals such as corrosion inhibitors, wax inhibitors, biocides, coagulants, oxygen scavengers, polymers, acids and bases for pH control as well as virtually any chemical additive in a safe and reliable manner is the DSD's greatest strength.

A partial list of the industries best served by DSD Technology includes:

- Oil and gas production facilities
- Chemical and petrochemical process plants
- Industrial and wastewater treatment plants
- Cooling towers and boilers
- Potable water treatment

Features and Benefits

The patented DSD Technology incorporates a hydraulically balanced rigid diaphragm (PEEK) an integrated, intrinsic safety valve and an effective hydraulic oil degassing design that is only available on Milton Roy pumps. The hermetically sealed, leak proof liquid end design prevents any contact between process fluid, atmosphere, and hydraulic fluid. The small hydraulic reservoir (1.4 ounces/40 ml) is filled, primed, and ready for use when received by the customer on-site. This evolutionary design precludes the need for a large reservoir of hydraulic oil thus eliminating any possible contact between the hydraulic oil and the lubricating oil for the drive.

The dosing accuracy of the DSD liquid end is +/-1% over the range of 10% to 100% of its nominal flowrate even when injecting viscous fluids of up to 7000 centipoise (depending on pumping conditions). This precision injection capability is one of the factors that enables the DSD to be compliant with American Petroleum Institute standards (API 675). A rugged, sealed, cast iron gear box provides a rugged drive for use in the harshest plant and field environments.

ATEX Zone 1 and 2, T3 or T4 compliance is available depending on pump model configuration and area classification.

Standard metering pump options such as materials of construction, connections, manual or electronic stroke control, specialized protective coatings, and multiplex capability are all available. Due to the robust nature of the rigid diaphragm a Diaphragm Rupture Detection System (DRDS) is not necessary but can be furnished if required by specification.

A History of Reliability

With over 85 years of experience, Milton Roy combines extensive industry knowledge, a proven track record, and a culture of continuous technological improvement to provide customized solutions for all dosing applications.

Milton Roy delivers the market's most reliable and comprehensive range of metering pumps. Every one of our pumps is engineered to exceed expectations and is backed by a global network of highly trained and skilled field service engineers and after-sales support that is second to none.

In conclusion, Milton Roy DSD Technology is an ideal and innovative solution where chemical injection is required for critical processes. We are proud to add this new technology to our growing repertoire of metering pumps.

Visit: http://www.miltonroy.com

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