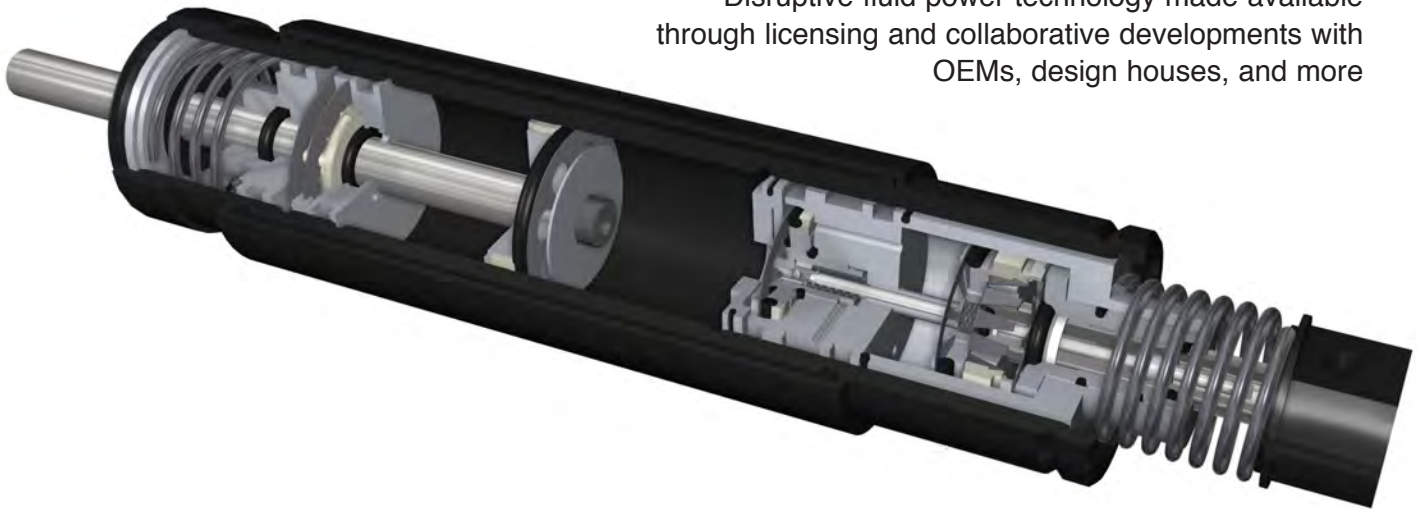


# MICROHYDRAULICS TECHNOLOGY IS SCALEABLE FOR MANY APPLICATIONS

Disruptive fluid power technology made available through licensing and collaborative developments with OEMs, design houses, and more



FastFlow® is a patented hydraulic technology that uses “microhydraulic” principles. Microhydraulics refers to hydraulic systems regulated by fluidics rather than conventional valves. Consequently, the technology enables small, lightweight hydraulic systems that fit within the palm of a hand that are able to easily generate 10,000 psi pressures with flow rates of one half liter per minute.

Traditional valves, pumps, and other convention hydraulic components are eliminated from FastFlow hydraulic systems. Instead, cast manifolds contain all the necessary porting. The microhydraulic technology relies on Bernoulli’s Principle where a change in a fluid’s speed is matched by a change in its pressure. How the Technology Works

To understand how FastFlow works, consider one application of the technology: LatchGroup’s patented PowerCylinder™.

**“Small liquid volumes, no connections, and water-based fluids inherent in the technology are a “Green Alternative”...”**

O-ring seals in FastFlow’s cylinder double as valves, which enable the elimination of spool valves and other conventional hydraulic parts. Instead, annular floating seals create the flow paths around pistons and ram rods. The seals are designed to seat in the direction of rod travel.

The unique cylinder design uses two mechanical sub-

assemblies: the Barrier and Ram-Cap. With very small parts, the subassemblies work together as a regenerative hydraulic circuit that rapidly advances a cylinder’s ram. The Barrier and Ram-Cap assemblies control the shift of the system in and out of the regenerative mode. It is a totally automatic process that is regulated by the resistance encountered by the ram. The cylinder’s bulkhead separates the pump from the actuator and directs the fluid distribution.

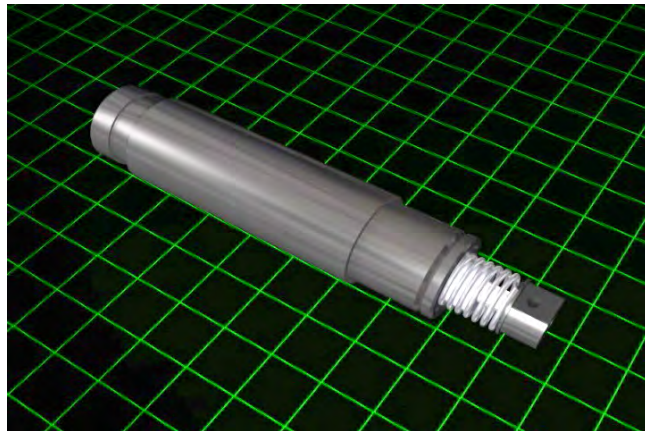
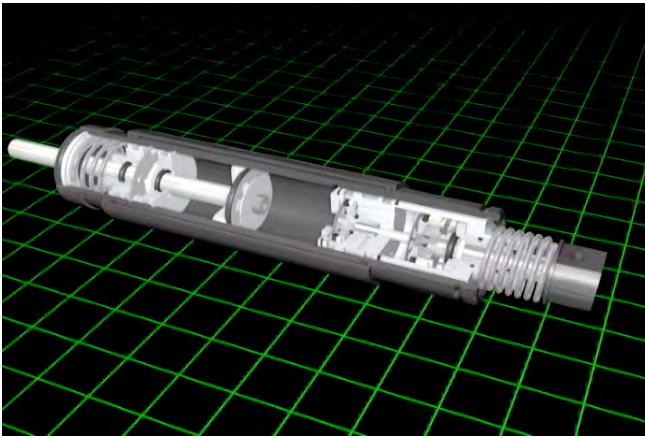
The rod side of the ram acts as the reservoir. Working in combination with the Ram-Cap, the Barrier stops the flow of fluid from the reservoir to the accumulator so that the fluid displaced by the advancing ram is forced back through the Ram-Cap into the Ram Chamber to create a regenerative circuit (See Figure 1). The transition from the regenerative to expectant circuit happens instantaneously.

The ram is driven by the cross-sectional area of the ram-rod. As the ram engages its work, resistance and pressure build. At a pre-determined pressure, the floating seal valve in the Barrier squeezes off the surface of the seal plate, thereby opening the Barrier Gate. Fluid on the rod side of the ram is now expressed into the accumulator and the ram is driven by the cross-sectional area of the Ram-Cap.

Accumulator volume is greater than the volume of the displaced rod. The systems’ dart valve sets the maximum force, prevents over pressurization, and enables modulation.

## The Fluid

The fluid used with FastFlow contains high water content. It’s driven either manually or by motor. It is four times less compressible than oil, which eliminates



the “sponginess” associated with other oil-based hydraulic fluids.

The water-based fluid has a low viscosity that reduces frictional losses. The high surface tension also keeps the water-based fluids from leaking. Additives provide lubricity, rust prevention, anti-freeze, and other desirable properties.

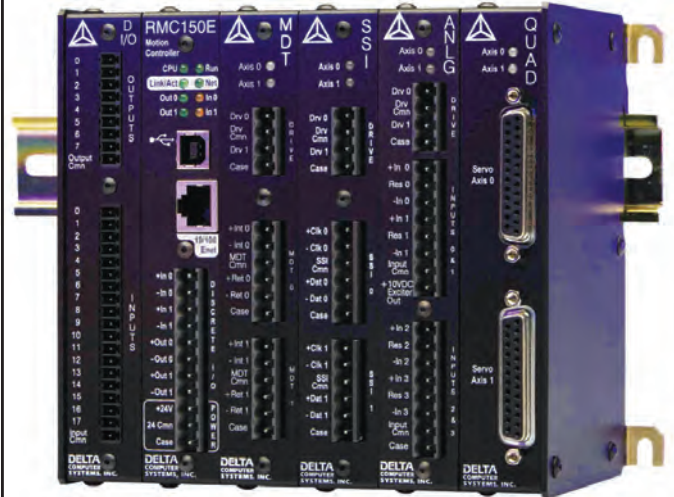
FastFlow systems are suitable for hazardous and hostile environments. The technology also minimizes the environmental risks of accidental spillage of fluid, fugitive leaks, and catastrophic disasters. Small liquid volumes, no connections, and water-based fluids inherent in the technology are a “Green Alternative” to larger, traditional hydraulic fluid-based systems. One Technology, Many Applications

FastFlow can be used in many diverse applications where compact, self-contained high-force linear actuators and motion control devices are needed. It enables improvement and can reduce the manufacturing cost of products on the market now, but also makes possible entirely new categories of products. The wide applicability and far-reaching potential for the technology are a few of the reasons why LatchTool Group practices an OPEN Business Model through a syndicate of engineering design firms and licensed OEM’s.

**For More Information Click Below:**

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## Calculating a big move?



### RMC150 Motion Controllers

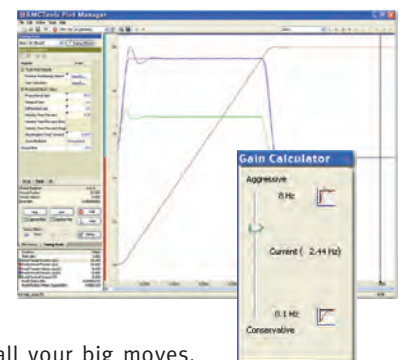
- CONNECT WITH BUILT-IN 10/100 ETHERNET
- CONTROL 8 POSITION-PRESSURE/FORCE AXES
- SYNCHRONIZE 8 AXES
- OPTIMIZE QUICKLY WITH RMCTOOLS SOFTWARE

## We'll do the heavy lifting.

Delta's new RMC Motion Controllers make it easy to move heavy objects precisely. Whether you have hydraulic or electric axes, our new RMC150 gives you precise closed-loop control. And our RMCTools software eases the load of setup, programming, and tuning.

So don't sweat over rote calculations or trial-and-error tuning. Instead, let an RMC150 Motion Controller do the heavy lifting. It's one powerful, easy-to-use controller that makes light work of all your big moves.

### RMCTools Software



Details at [deltamotion.com](http://deltamotion.com).

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