

McCARTNEY™ LPDE Valves & Components

Precision Under Pressure

The engineers, designers and technicians at KMT Waterjet & McCartney Products have the experience and resources to develop innovative solutions to address your specific process equipment issues.

Our **Poppet Check Valve** designed to address the "hotcheck" problem common to many hyper compressor lubrication systems. Other applications may include catalyst/modifier delivery lines and reactor entry points.



The McCartney™ **Block Check Valve** is a poppet design in-line valve available with removable seat and can be configured to meet specific process, mechanical, and material requirements for pressures up to 60,000 PSI (4.138 bar).



McCARTNEY™ **High Speed Vent Valves** combine the 2-piece McCartney vent valve design and pneumatic actuator with external manifold and oversize solenoid valve. The unique pneumatic actuator design allows for "stacking" of the 12" diameter pistons up to a total of six, reducing spare parts inventory.



Our **Process Control Valves (PCV)** are manufactured from selected heat-treated alloy steel forgings. Valve body and trim designs are furnished to meet customer specifications for particular service. Available pressure ranges are 5,000 to 75,000 PSI (.345 to 5.17 bar). Valves furnished with Electro-hydraulic or Pneumatic operators for precise control.



McCARTNEY™ **High Pressure Angle Valves** are manufactured from selected heat-treated alloy steel forgings. Valve body and trim designs are furnished to meet customer specifications for particular service. Available pressure ranges are 5,000 to 75,000 PSI (.345 to 5.17 Bar). Gear Driven, Pneumatic and Hydraulic actuators are available.



This unique design configuration combines the **Let Down and Vent Valve**, allowing for a very compact and efficient valve package. The dual valve design reduces the length of "dead leg" gas to an absolute minimum, greatly reducing related problems such as gas degradation in that area. Available pressure ranges are 5,000 to 75,000 PSI (.345 to 5.17 bar).



Cone Ring and Lens Ring Gaskets can be fabricated in any size according to customer specifications, or we can design the parts to suit your working conditions. Materials will be selected per customer specifications or according to the specific application.



McCARTNEY™ has full **Carbide Plunger** fabrication capabilities to grind and finish a wide variety of plungers from 250" – 4.00" (6.4 mm – 101 mm). Using Kennametal™ carbide blanks, we commonly grind and polish plunger OD surfaces to 1-2 RMS finish. We also provide O.D. regrind and polish service for worn plungers of all sizes.



McCARTNEY™ designs and fabricates **Thermocouple** and **Injection Lens Rings** and **Cone Rings** in a variety of configurations. These include the full flange design shown above, as well as the "Dogbone" design, and of course the basic ring with thermocouple silver soldered in place.



McCARTNEY™ can design and provide **Line Strainers** of any size to fit your working conditions, eliminating larger debris from your system before causing major problems down line. Materials will be selected per customer specifications or according to the specific application.



kmtldpe.com



PF-1 Plus Pump Installations

PMH Pump Installations



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McCARTNEY™ LDPE PRODUCT LINE



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PF-1 Plus Phase Flow™ Initiator Injection Pump

The McCartney™ PF-1 Phase Flow™ Intensifier represents a breakthrough in intensifier technology and another example of McCartney's commitment to the advancement of Polyethylene Initiator Injection Pump Technology.

The independent nature of the PF-1 Intensifier's two side by side piston and plunger assemblies allow "phasing".

This unique feature pre-compresses the catalyst in the second cylinder as the first completes its discharge, essentially eliminating the pressure drop associated with shifting the supply from one cylinder to the other.

With this innovative technology the temperature profile within the reactor will get much smoother, allowing you to run closer to the optimum set-point. As improved rates can be achieved, the PF-1 can in most cases improve production without changing the process itself.

The design of the PF-1 allows a slower cycle rate than conventional reciprocating style intensifiers, resulting in fewer pressure cycles on the cylinder components and check valves.

The slow, steady plunger movement will result in extended life of the patented, non-adjustable pressure seals. Overall reliability is very good, with seal life in excess of 6,000-18,000 hours and a 98% on-line time being achieved by users.

Modern electronics give the PF-1 a very fast response time. Simple interface connections to client DCS hardware is all that is required for the PF-1 to automatically control process temperatures with immediate and repeatable servo valve accuracy. The PF-1 is rapidly becoming the industry standard for initiator fluid delivery systems.

Advantages:

- Superior Discharge Pressure Signal
- HP Components Designed for up to 60,000 PSI (4138 bar)
- Slow Stroking, Small Footprint and Safe DC Control
- External Control Cables are Hazardous Location Approved
- Longer Check Valve and Packing Life
- No Check Valve fouling because of seal design
- Seal Lubrication enhanced seal lifetime
- All Stainless Steel Hydraulic Tubing
- Environmentally Friendly



Features:

- High-Performance Digital Motion Control System
- Discharge Pressure Rating up to 60,000 PSI (4138 bar)
- Easy Access Door and Panel Enclosure
- 3 Piece Elastomer Plunger Seal
- Stainless Steel Cylinder and Check Valve Body
- Pressure Compensated Axial Piston Hydraulic Pump
- HP Cylinder Cooling Jackets
- Stainless Steel Cylinder and Check Valve Body
- High Pressure Seal Lubricator
- Continuous Hydraulic Fluid Recirculation for Filtration & Cooling
- Epoxy Powder Coated 45 Gal (170L) Hydraulic Oil Reservoir
- Explosion Proof Electrical Enclosure
- Drip Pans

Control Features:

- Manual/Reset/Auto Mode Selection
- Emergency Stop
- 4-20 mA Input for Flow Control
- 4-20 mA Input for Phasing Control
- Over Temperature Contact and Fault Warning
- Plunger Position Feedback and Fault Warning

PMH (Single & Dual) Reciprocating Peroxide Injection Pump

The McCartney™ PMH Hydraulic Driven Reciprocating Metering Pump has long been the Industry Workhorse for Initiator Injection.

The McCartney™ PMH Pump, now available with Single or Dual Intensifiers, is the latest generation of reciprocating peroxide injection LDPE pumps.

The PMH pump includes the newest proven designs for the intensifier top works as well as the hydraulic drive unit. The new PMH hydraulic drive units are equipped with state of the art Closed Loop Electronic Flow Control. The fully calibrateable PID controller responds directly to a 4-20 mA input and provides precision control of initiator flow and high turndown ratios not achievable with traditional pneumatic positioners utilizing instrument air control.

Pump units are available in single configuration or in a dual configuration when space is a consideration. Single and dual pump units can be supplied with manifolded process suction and discharge piping with single point connections. Cooling jackets are an option when initiator flashing is a concern.

Features:

- PMH Topworks Upgrade Available for Older Pumps
- Hydraulic Driven Reciprocating Metering Pump with Electronic Control
- Initiator Injection: 20,000 - 60,000 PSI (1380 – 4138 bar)
- Modifier Injection: 5,000 - 8,700 PSI (345 – 600 bar)



Features Cont'd.:

- Proven Reliability for More than 45 Years
- Extended Check Valve and Packing Lifetime
- Easy Access Door and Panel Enclosure
- 3-Piece Elastomer Plunger Seal
- Stainless Steel Cylinder and Check Valve Body
- Magnetic Proximity Reversing Devices
- High Pressure Seal Lubricator
- Continuous Hydraulic Fluid Recirculation for Filtration and Cooling
- Epoxy Powder Coated 45 Gal (170L) Hydraulic Oil Reservoir, Stainless Steel is Optional
- Axial Piston Hydraulic Pump
- HP Cylinder Cooling Jackets
- Environmentally Friendly

Reduce Pressure Drop! McCartney™ RPD Check Valve High Flow Springless Check Valve for Initiator Pumps

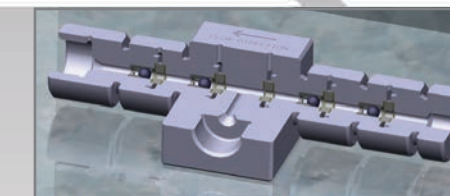


RPD High Flow Springless Check Valve for Initiator Pumps

Traditional initiator pump check valve designs have been characterized by significant pressure drop across the inlet checks. This pressure drop generally requires about 50 PSI of "suction pressure" to prevent cavitation of the pump with typical initiator fluids.

In recent years, LDPE process changes have led to the use of initiator fluids with significantly higher vapor pressure. In order to keep the process fluids in the liquid phase, high suction pressures and cooling jackets have been utilized. Even with these actions there have still been concerns about potential pump cavitation while operating in high flow rate conditions.

To address these concerns the new McCartney RPD initiator check valve design has been developed to dramatically reduce the pressure drop across the valve.



Cut-away View of the McCartney RPD High Flow Springless Check Valve

The engineers, designers and technicians at KMT Waterjet & McCartney™ Products have the experience and resources to develop innovative solutions to address your specific process equipment issues.

Since KMT Waterjet & McCartney Products are located at the same facility, we are able to leverage these resources and apply knowledge gained from the latest developments in ultra high pressure technology (up to 100,000 PSI!).

The McCartney RPD High Flow Check Valve was developed to address specific LDPE equipment issues communicated to us by our customers.

Key Design Features:

- 0.188" ball seat orifice diameter
- High flow ball cage design
- Lightweight ceramic check balls
- All stainless steel components (except check balls)
- Ball return springs not required
- Will run in either horizontal or vertical orientation
- Direct replacement for previous McCartney designs (no piping modifications required)