# PARADYNE™

## POLYMER ACTIVATION TECHNOLOGY

### Optimize Your Polymer Performance


ParaDyne™
Series SP

A product born from over 100 years of combined liquid polymer handling experience.

Variable intensity mixing for optimum polymer performance.

The most advanced technology in polymer activation.

- **Suitable for All Polymer Types**
- **Rugged Stainless Steel Frame**
- **Motorized Activation Chamber**
- **Calibration Assembly for Metering Pump Standard**
- **Thermal Flow Switch for Loss of Water Flow Protection**
- **Automatic Adjustable Time Flush After Every Shut Down**
- **Mechanical Seal Failure Detection**
- **Completely Pre-piped and Pre-wired in an Industrial Duty Compact Package**
- **Washdown Duty Mixer and Pump Motors**
- **UL508 & CUL Approved Control Panel Fabrication**
- **Custom Designs Available, Consult Factory**

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# POLYMER ACTIVATION TECHNOLOGY

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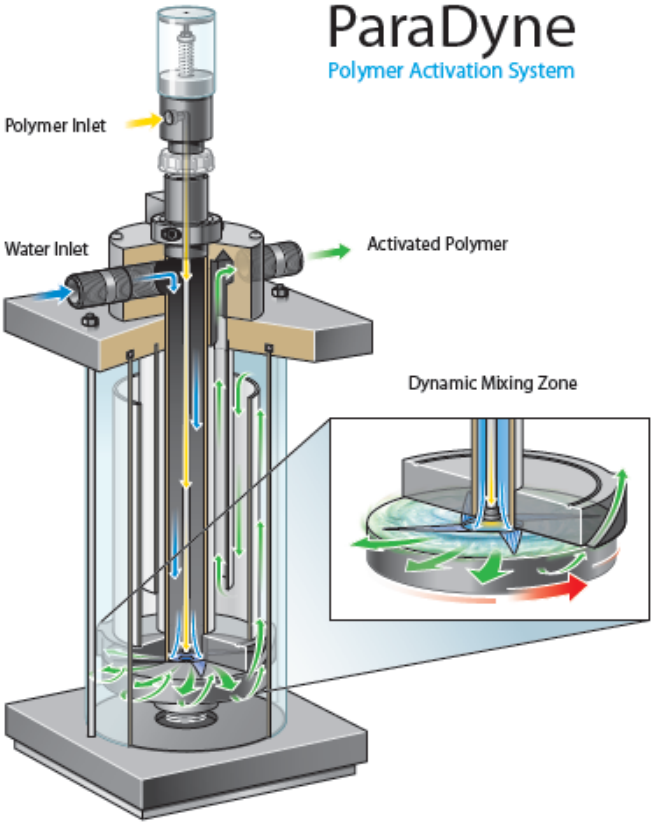


**Emulsion polymers require "ACTIVATION"**

Activation has two vital steps that must take place in the proper order:

**First:** Invert the Emulsion through an inversion zone = high-intensity mixing of polymer and water for a very short duration with totally uniform shear in a confined space without any recirculation through the high shear zone.

**Second:** Hydrate the polymer molecule through an activation or hydration zone = plug flow through a serpentine baffle configuration providing mild turbulence with low shear while in a confined pressurized vessel providing maturation of the hydrated solution

**Dynamic Mixing Zone:** The impeller disc is designed with multiple vanes that extend from the inlet to the outlet. The vanes are recessed and tapered in two axes providing rapid, even shear of the solution through the inversion zone thus controlling the time the molecules are subjected to the sheer force in the confined space.

The neat polymer check valve is stainless steel with a resilient replaceable seat placed into the chamber in an easily accessible and adjustable configuration.

**ParaDyne Advantages:**

1. **Non-Impinging Rotor:** ParaDyne™ utilizes a non-impinging rotor that pulls polymer through the mixing zone as opposed to pushing it with an impeller.
2. **No Recirculation:** All polymer and water introduced into the mixing chamber passes through the high shear mixing zone without recirculation, eliminating the possibility of partially hydrated polymer molecules recirculating through the high shear zone resulting in fracture of the polymer molecules.
3. **Stay Clean™ Check valve:** The check valve spring is located outside of the flow path. This eliminates polymer gumming or clogging around the spring.
4. **Seal Flush:** ParaDyne™ flushes the mechanical seal pocket to extend the life of the mechanical seal.
5. **Mechanical Seal Failure Alarm:** A conductivity sensing system alerts the operator in the event of a mechanical seal failure.

### FLOW DESCRIPTION

- **Dilution Water** enters the chamber through the top water inlet in the chamber passing down through the water conduit.
- **Neat Polymer** enters the chamber at the top of the unit passing through it's conduit to the adjustable tension check valve.
- The water and polymer collide at the confined space created between the stator disc and the impeller disc "inversion zone" providing for milliseconds of high energy and high uniform shear to form an **aqueous solution** which then flows through the low shear, baffled, hydration zone.

# POLYMER ACTIVATION TECHNOLOGY

## Optimize Your Polymer Performance

| SYSTEM DESCRIPTIONS | | |
|---|---|---|
| | **Series** | **System Description** |
|  | **S-P** | • Progressive Cavity Neat Polymer Metering Pump<br>• Relay Logic Control System<br>• Manual Water Flow Adjustment via Globe Valve<br>• Rotameter Type Flow meter<br>• Thermal Flow Switch for Loss of Water Flow Alarm<br>• Max Polymer Solution Capacity: 12,000 gph |
|  | **S-D** | • Diaphragm Neat Polymer Metering Pump-Electronically pulsed<br>• Relay Logic Control System<br>• Manual Water Flow Adjustment via Globe Valve<br>• Rotameter Type Flow meter<br>• Thermal Flow Switch for Loss of Water Flow Alarm<br>• Max Polymer Solution Capacity: 12,000 gph |
|  | **IM-P** | • Progressive Cavity Neat Polymer Metering Pump<br>• Microprocessor Control System w/ Touchscreen<br>• Manual Water Flow Adjustment via Globe Valve<br>• Magnetic Type Flow meter<br>• Max Polymer Solution Capacity: 12,000 gph |

| | | |
|---|---|---|
|  | **IM-D** | • Diaphragm Neat Polymer Metering Pump- Electronically pulsed<br>• Microprocessor Control System w/ Touchscreen<br>• Manual Water Flow Adjustment via Globe Valve<br>• Magnetic Type Flow meter<br>• Max Polymer Solution Capacity: 12,000 gph |
|  | **IA-P** | • Progressive Cavity Neat Polymer Metering Pump<br>• Microprocessor Control System w/ Touchscreen<br>• Automatic Water Flow Adjustment via Electronic Modulation Valve<br>• Magnetic Type Flow meter<br>• Max Polymer Solution Capacity: 6,000 gph |
|  | **IA-D** | • Diaphragm Neat Polymer Metering Pump- Electronically pulsed<br>• Microprocessor Control System w/ Touchscreen<br>• Automatic Water Flow Adjustment via Electronic Modulation Valve<br>• Magnetic Type Flow meter<br>• Max Polymer Solution Capacity: 6,000 gph |
|  | **PD** | • Diaphragm Neat Polymer Metering Pump- Electronically pulsed<br>• Relay Logic Control System<br>• Manual Water Flow Adjustment via Globe Valve<br>• Rotameter Type Flow meter<br>• Thermal Flow Switch for Loss of Water Flow Alarm<br>• Designed for Low Flow Economical Applications<br>• Max Polymer Solution Capacity: 600 gph |

# POLYMER ACTIVATION TECHNOLOGY

## Optimize Your Polymer Performance

| Table: 1 - System Control & Instrumentation Features | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Series | | | | | | |
| | | S-P | S-D | IM-P | IM-D | IA-P | IA-D | PD |
| Equipment Features | Remote Start/ Stop | X | X | X | X | X | X | X |
| | Remote Pacing (4-20mA) | X | X | X | X | X | X | X |
| | Remote Running Dry Contact | X | X | X | X | X | X | |
| | Remote Speed Feedback (4-20mA) | X | | X | X | X | X | |
| | Common Alarm Dry Contact | X | X | X | X | X | X | |
| | In Remote Dry Contact | X | X | X | X | X | X | |
| | Local Pump Speed Display | X | X | X | X | X | X | |
| | Actual Concentration Display | | | X | X | X | X | |
| | Magnetic Flow Meters (Dilution Water) | | | X | X | X | X | |
| | Modulation Valve (Dilution Water) | | | | | X | X | |
| | Mechanical Seal Failure Indication light | X | X | X | X | X | X | |
| | Water Flow Switch (Dilution Water) | X | X | X | X | X | X | |
| | Polymer Flow Switch (Neat Polymer) > 0.25 gph | X | | X | | X | | |
| | Auto Flushing System | X | X | X | X | X | X | X |
| | Mix Chamber VFD | X | X | X | X | X | X | |
| | Washdown Duty Mixer Motor | X | X | X | X | X | X | |
| | "Stay Clean" Polymer Check Valve Technology | X | X | X | X | X | X | X |

# PARADYNE™

## Optimize Your Polymer Performance

### ParaDyne™ Model Number Builder

| | | EXAMPLE | P | S | 20P | 2400 | S |
|---|---|---|---|---|---|---|---|
| **SERIES** | | | | | | | |
| ***P*** | ***PARADYNE ACTIVATION CHAMBER*** | | | | | | |
| **SYSTEM CONTROLS & INSTRUMENTATION FEATURES** | | | | | | | |
| ***S*** | ***STANDARD RELAY BASED (see previous page)*** | | | | | | |
| *IM* | *PLC BASED - MANUAL WATER CONTROL (see table: 1)* | | | | | | |
| *IA* | *PLC BASED - AUTOMATIC WATER CONTROL (see table: 1)* | | | | | | |
| **NEAT POLYMER PUMP RATE / TYPE** | | | | | | | |
| *DIAPHRAGM PUMP: (lower & higher capacities available – consult factory)* | | | | | | | |
| *0.4D* | *0.02 TO 0.4 GPH* | | | | | | |
| *1.0D* | *0.05 TO 1 GPH* | | | | | | |
| *2.5D* | *0.125 TO 2.5 GPH* | | | | | | |
| *4D* | *0.2 TO 4 GPH* | | | | | | |
| *10D* | *0.5 TO 10 GPH* | | | | | | |
| *PROGRESSIVE CAVITY PUMPS: (lower & higher capacities available – consult factory)* | | | | | | | |
| *2P* | *0.1 TO 2 GPH* | | | | | | |
| *5P* | *0.25 to 5 GPH* | | | | | | |
| *10P* | *0.5 TO 10 GPH* | | | | | | |
| ***20P*** | ***1 TO 20 GPH*** | | | | | | |
| *45P* | *2.25 TO 45 GPH* | | | | | | |
| *60P* | *3 TO 60 GPH* | | | | | | |
| **WATER RATE** *(lower & higher capacities available – consult factory)* | | | | | | | |
| *120* | *12 TO 120 GPH* | | | | | | |
| *300* | *30 TO 300 GPH* | | | | | | |
| *600* | *60 TO 600 GPH* | | | | | | |
| *1200* | *120 TO 1200 GPH* | | | | | | |
| ***2400*** | ***240 TO 2400 GPH**** | | | | | | |
| *6000* | *600 TO 6000 GPH* | | | | | | |
| *12000* | *600 TO 12000 GPH** | | | | | | |
| **CONTROL SYSTEM** *(custom control panels available – consult factory)* | | | | | | | |
| ***S*** | ***Standard Control Panel*** | | | | | | |
| *C* | *Custom Control Panel* | | | | | | |

** Post dilution is required. Post dilution includes rotameter type flow meter, globe valve, and static mixer.*
*Series PD model numbers are not provided above, Please refer to Series PD data sheet for available capacities and model numbers.*