The Poly-Guard™ Series pumps offer a durably constructed outer Stainless Steel body with a heavily layered Fluoro-Polymer (PFA) internal lining. This highly chemically resistant PFA lining is mechanically attached and bonded to the internal stainless steel surfaces using a specialized molding process, effectively isolating the fluid being pumped from any metal surfaces. Fluoro-Polymers exhibit the highest corrosion resistance of any plastics. This combination of stainless steel on the outside and Fluoro-Polymer on the inside gives the Poly-Guard™ the full strength and integrity of a metal pump with the ultimate corrosion resistance of a Fluoro-Polymer.

(Polymer lining is shown in gold)

Case History
A water supply authority was required to fluoridate the water system for a large metropolitan area. The method chosen was metered injection of concentrated Hydrofluorosilicic Acid into the water supply. Any process interruption or fluid leakage would be unacceptable. Originally, diaphragm metering pumps were specified, however they were found to be unsatisfactory due to leakage as a result of diaphragm failure. They then chose a gear pump with an Alloy-C body; however, the Alloy-C was severely attacked by the acid resulting in fluid leakage within a month. Liquiflo was then approached to help them find a solution. Liquiflo recognized that an all metal pump was not acceptable from a corrosion standpoint. It was also known that glass and carbon were incompatible with this highly corrosive acid. This eliminated the option of using an all plastic pump that used carbon or glass fiber reinforcement. The solution was the Poly-Guard™ pump with PFA lining, Stainless Steel body, unfilled PVDF gears, and Silicon Carbide wear plates, bearings and shafts. These pumps have now been in service in excess of 18 months with zero down time due to fluid leakage or degraded performance.
### GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>SPECIFICATION</th>
<th>Units</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>P5</th>
<th>P6</th>
<th>P7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port Size &amp; Type*</td>
<td>ANSI 150#</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 1/2</td>
<td>1 1/2</td>
<td>1 1/2</td>
</tr>
<tr>
<td>DIn PN16</td>
<td>mm</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Theoretical Displacement (^1)</td>
<td>gal/rev L/rev</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>.000828</td>
<td>.00138</td>
<td>.00193</td>
<td>.00289</td>
<td>.00491</td>
<td>.00675</td>
<td>.00859</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.00313</td>
<td>.00522</td>
<td>.00731</td>
<td>.01094</td>
<td>.01858</td>
<td>.02555</td>
<td>.03251</td>
</tr>
<tr>
<td>Max Speed</td>
<td>RPM</td>
<td>1750</td>
<td>1750</td>
<td>1750</td>
<td>1750</td>
<td>1750</td>
<td>1750</td>
<td>1750</td>
</tr>
<tr>
<td>Max Flow Rate(^1)</td>
<td>GPM LPM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8.6</td>
<td>11.8</td>
<td>15.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.5</td>
<td>9.1</td>
<td>12.8</td>
<td>19.1</td>
<td>32.5</td>
<td>44.7</td>
<td>56.9</td>
</tr>
<tr>
<td>Max Differential Pressure</td>
<td>PSI barg</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Max Allowable Pressure (^2)</td>
<td>PSI barg</td>
<td>275</td>
<td>275</td>
<td>275</td>
<td>275</td>
<td>275</td>
<td>275</td>
<td>275</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19</td>
<td>19</td>
<td>19</td>
<td>19</td>
<td>19</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Max Temperature</td>
<td>°F °C</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td></td>
<td>93</td>
<td>93</td>
<td>93</td>
<td>93</td>
<td>93</td>
<td>93</td>
<td>93</td>
</tr>
<tr>
<td>NPSHR @ Max Speed</td>
<td>ft m</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>5.2</td>
<td>5.2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>0.9</td>
<td>1.6</td>
<td>1.6</td>
<td>1.2</td>
</tr>
<tr>
<td>Suction Lift (Dry)</td>
<td>ft m</td>
<td>1.5</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.45</td>
<td>0.6</td>
<td>1.2</td>
<td>1.8</td>
<td>1.8</td>
<td>2.1</td>
<td>2.1</td>
</tr>
<tr>
<td>Weight, less motor (approx.)</td>
<td>lbs kg</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>63</td>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19</td>
<td>19</td>
<td>19</td>
<td>19</td>
<td>29</td>
<td>29</td>
<td>29</td>
</tr>
</tbody>
</table>

*Raised Face (RF) Flanges
1 Based on Maximum Speed and zero Differential Pressure.
2 Based on pressure rating of Flanges at ambient temperature.

### MATERIALS AVAILABLE

<table>
<thead>
<tr>
<th>BODY</th>
<th>GEARS</th>
<th>WEAR PLATES</th>
<th>BEARINGS</th>
<th>SHAFTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS-PFA Plastic-Lined</td>
<td>PEEK Kynar Ryton Teflon</td>
<td>Silicon Carbide (^1) Carbon-60 Teflon</td>
<td>Silicon Carbide (^1) Carbon-60</td>
<td>Silicon Carbide(^1) Ceramic Zirconia (^2)</td>
</tr>
</tbody>
</table>

1 Self-sintered SiC
2 Transformation Toughened Zirconia (TTZ)
MAG-DRIVE, CLOSE-COUPL ED

PERFORMANCE CURVES

P1: Mag-Drive, Close-Coupled

Dimensional Data: inches [mm]

1 Based on Maximum Speed and zero Differential Pressure.
2 Based on pressure rating of Flanges at ambient temperature.

Port Size & Type  
ANSI 3/4" 150# RF Flanges
DIN 20 mm PN16 RF Flanges
Theoretical Displacement \(^1\) 0.00828 gal/rev (.00313 L/rev)
Max Speed 1750 RPM
Max Flow Rate \(^1\) 1.4 GPM (5.5 LPM)
Max Differential Pressure 100 PSI (7 bar)
Max Allowable Pressure \(^2\) 275 PSIG (19 barg)
Max Temperature 200°F (93°C)
NPSHR @ Max Speed 2 ft (0.6 m)
Suction Lift (Dry) 1.5 ft (0.45 m)
Gear Type Spur, External
Bearing Type Sleeve / Journal
Motor Frame Sizes NEMA 56C, 143TC, 145TC
IEC 71, 80, 90 – B5 Flange
Weight, less motor (approx.) 42 lbs (19 kg)

LIQUIFLO.COM  tel. 908.518.0777  fax. 908.518.1847
### Performance Curves

#### 1 CPS Fluid (Water)

- **Flow (GPM):** 0.05 to 8.40
- **Differential Pressure (PSI):** 0 to 100
- **Power (BHP):** 0.05 to 0.40

#### 100 CPS Fluid (Oil)

- **Flow (GPM):** 0.05 to 8.40
- **Differential Pressure (PSI):** 0 to 100
- **Power (BHP):** 0.05 to 0.40

### Technical Specifications

- **Model:** P2
- **Port Size & Type:** ANSI 3/4" RF Flanges
- **Max Speed:** 1750 RPM
- **Max Flow Rate:** 2.4 GPM (9.1 LPM)
- **Max Differential Pressure:** 100 PSI (7 bar)
- **Max Allowable Pressure:** 275 PSIG (19 barg)
- **Max Temperature:** 200°F (93°C)
- **NPSHR @ Max Speed:** 2 ft (0.6 m)
- **Suction Lift (Dry):** 2 ft (0.6 m)
- **Gear Type:** Spur, External
- **Bearing Type:** Sleeve / Journal
- **Motor Frame Sizes:** NEMA 56C, 143TC, 145TC
- **IEC 71, 80, 90 – B5 Flange
- **Weight, less motor (approx.):** 42 lbs (19 kg)

1. Based on Maximum Speed and zero Differential Pressure.
2. Based on pressure rating of Flanges at ambient temperature.

### Mechanical Design

- **Material:** Stainless Steel
- **Polymers:** PTFE, NBR, Viton

### Dimensions

- **Dimensions:** Inches [mm]
  - **DIA THRU 3/4" ANSI 150# RF FLANGES:** 0.41 (10.4)
  - **5.94 (151)
  - **3.50 (88.9)
  - **3.07 (78.0)
- **DIN 20 mm PN16 RF Flanges:** 0.41 (10.4)
  - **3.50 (88.9)
  - **3.07 (78.0)

### Contact Information

- **Tel:** 908.518.0777
- **Fax:** 908.518.1847
- **LIQUIFLO.COM**
MODEL P3

MAG-DRIVE, CLOSE-COUPL ED

P3: Mag-Drive, Close-Coupled
Dimensional Data: inches [mm]

1 CPS Fluid (Water)

100 CPS Fluid (Oil)

<table>
<thead>
<tr>
<th>Port Size &amp; Type</th>
<th>ANSI</th>
<th>DIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4&quot; 150# RF Flanges</td>
<td>20 mm PN16 RF Flanges</td>
<td></td>
</tr>
</tbody>
</table>

| Theoretical Displacement | 0.0193 gal/rev (0.00731 L/rev) |
| Max Speed | 1750 RPM |
| Max Flow Rate | 3.4 GPM (12.8 LPM) |
| Max Differential Pressure | 100 PSI (7 bar) |
| Max Allowable Pressure | 275 PSIG (19 barg) |
| Max Temperature | 200°F (93°C) |
| NPSHR @ Max Speed | 2 ft (0.6 m) |
| Suction Lift (Dry) | 4 ft (1.2 m) |
| Gear Type | Spur, External |
| Bearing Type | Sleeve / Journal |
| Motor Frame Sizes | NEMA 56C, 143TC, 145TC |
| IEC | 71, 80, 90 - B5 Flange |

Max Differential Pressure 100 PSI (7 bar)
Max Allowable Pressure 275 PSIG (19 barg)
Max Temperature 200°F (93°C)
NPSHR @ Max Speed 2 ft (0.6 m)
Suction Lift (Dry) 4 ft (1.2 m)
Gear Type Spur, External
Bearing Type Sleeve / Journal
Motor Frame Sizes NEMA 56C, 143TC, 145TC
IEC 71, 80, 90 - B5 Flange
Weight, less motor (approx.) 42 lbs (19 kg)

1 Based on Maximum Speed and zero Differential Pressure.
2 Based on pressure rating of Flanges at ambient temperature.

Based on Maximum Speed and zero Differential Pressure.
Based on pressure rating of Flanges at ambient temperature.

LIQUIFLO.COM
tel. 908.518.0777  fax. 908.518.1847
### Performance Curves

**1 CPS Fluid (Water)**

- Flow (GPM) vs. Differential Pressure (PSI)
- Power (BHP) vs. Flow (GPM)
- Max Speed: 1750 RPM
- Max Flow Rate: 5.0 GPM (19.1 LPM)
- Max Differential Pressure: 100 PSI (7 bar)
- Max Allowable Pressure: 275 PSI (19 barg)
- Motor Frame Sizes: NEMA 56C, 143TC, 145TC
- Weight, less motor (approx.): 42 lbs (19 kg)

**100 CPS Fluid (Oil)**

- Flow (GPM) vs. Differential Pressure (PSI)
- Power (BHP) vs. Flow (GPM)
- Max Speed: 1750 RPM
- Max Flow Rate: 15 GPM (57.0 LPM)
- Max Differential Pressure: 100 PSI (7 bar)
- Max Allowable Pressure: 275 PSI (19 barg)
- Motor Frame Sizes: NEMA 56C, 143TC, 145TC
- Weight, less motor (approx.): 42 lbs (19 kg)

---

**P4: Mag-Drive, Close-Coupled**

Dimensional Data: inches [mm]

- Port Size & Type: ANSI 3/4" 150# RF Flanges
- DIN 20 mm PN16 RF Flanges
- Theoretical Displacement: 0.00289 gal/rev (.01094 L/rev)
- Cooling: Oil
- Gear Type: Spur, External
- Bearing Type: Sleeve / Journal
- Motor Frame Sizes: NEMA 56C, 143TC, 145TC
- Weight, less motor (approx.): 42 lbs (19 kg)

1. Based on Maximum Speed and zero Differential Pressure.
2. Based on pressure rating of Flanges at ambient temperature.
MAG-DRIVE, CLOSE-COUPLED

P5: Mag-Drive, Close-Coupled
Dimensional Data: Inches [mm]

<table>
<thead>
<tr>
<th>Port Size &amp; Type</th>
<th>ANSI</th>
<th>DIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot; 150# RF Flanges</td>
<td>100491 gal/rev (.01858 L/rev)</td>
<td>40 mm PN16 RF Flanges</td>
</tr>
</tbody>
</table>

- Max Speed: 1750 RPM
- Max Flow Rate: 8.6 GPM (32.5 LPM)
- Max Differential Pressure: 100 PSI (7 bar)
- Max Allowable Pressure: 275 PSIG (19 barg)
- Max Temperature: 200°F (93°C)
- NPSHR @ Max Speed: 5.2 ft (1.6 m)
- Suction Lift (Dry): 6 ft (1.8 m)
- Gear Type: Spur, External
- Bearing Type: Sleeve / Journal
- Motor Frame Sizes: NEMA 56C, 143TC, 182TC, 184TC

IEC 71, 80, 90, 100, 112 – B5 Flange

- Weight, less motor (approx.): 63 lbs (29 kg)

Based on Maximum Speed and zero Differential Pressure.
Based on pressure rating of Flanges at ambient temperature.

**Performance Curves**

- **1 CPS Fluid (Water)**
  - Flow vs. Differential Pressure (PSI)
  - Flow vs. Power (BHP)

- **100 CPS Fluid (Oil)**
  - Flow vs. Differential Pressure (PSI)
  - Flow vs. Power (BHP)

**PolyGuard Series**

POLYMER-LINED STAINLESS STEEL GEAR PUMP

**P5**

LIQUIFLO.COM
tel. 908.518.0777 fax. 908.518.1847
**POLY-GUARD SERIES**

**POLYMER-LINED STAINLESS STEEL GEAR PUMP**

**MODEL P6**

MAG-DRIVE, CLOSE-COUPLLED

---

**PERFORMANCE CURVES**

**1 CPS Fluid (Water)**

**100 CPS Fluid (Oil)**

---

**P6: Mag-Drive, Close-Coupled**

Dimensional Data: inches [mm]

---

**Port Size & Type**

<table>
<thead>
<tr>
<th>ANSI</th>
<th>1½” 150# RF Flanges</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIN</td>
<td>40 mm PN16 RF Flanges</td>
</tr>
</tbody>
</table>

**Theoretical Displacement**

1.0675 gal/rev (.02555 L/rev)

**Max Speed**

1750 RPM

**Max Flow Rate**

11.8 GPM (44.7 LPM)

**Max Differential Pressure**

100 PSI (7 bar)

**Max Allowable Pressure**

275 PSIG (19 barg)

**Max Temperature**

200°F (93°C)

**NPSHR @ Max Speed**

5.2 ft (1.6 m)

**Suction Lift (Dry)**

7 ft (2.1 m)

**Gear Type**

Spur, External

**Bearing Type**

Sleeve / Journal

**Motor Frame Sizes**

NEMA 56C, 143TC, 145TC, 182TC, 184TC

IEC 71, 80, 90, 100, 112 – B5 Flange

**Weight, less motor (approx.)**

63 lbs (29 kg)

---

1. Based on Maximum Speed and zero Differential Pressure.

2. Based on pressure rating of Flanges at ambient temperature.