Your Process Reliability & Profitability is our #1 Priority
Since 1985, our priority has been your process reliability & profitability.

**Pumps for most process applications in a wide range of designs and materials**
- Sealed and Sealless, Mag-drive,
- ANSI, sub-ANSI & ISO centrifugal pumps, as well as small gear-pumps
- Long and close-coupled pumps for NEMA or IEC motors
- Metallic – Ductile Iron, Steel, Stainless Steels, Alloy 20, Alloy B&C, Monel and Titanium
- Non-Metallic lined pumps – Polypropylene, PVDF, ETFE and PFA

**Superior Straddled-mounted Design**
Magnatex metal, mag-drive pumps feature a straddle-mounted inner magnet design that reduces radial shaft load when compared to our competitors’ cantilevered models. This feature allows operation across the entire performance curve without compromising service life.

**Smaller, sub-ANSI Pumps**
For low flow applications, robust metal and non-metallic sub-ANSI models allow operation closer to the best efficiency point when compared to ANSI pumps, which reduces initial cost and total cost of ownership.

**Innovative Solutions to Challenging Applications**
High-pressure and high-temperature liquids, solids laden liquids, acids, bases, pyrophoric liquids and toxic liquids are just a few of the challenging liquids being successfully handled by Magnatex Pumps.

**Enhanced Dry-running bearing system**
Magnatex metal pumps now feature SiC-X bearing material as a standard on our smaller pumps or as an option on larger units. With a coefficient of friction 1/4 that of SiC, SiC-X provides extended dry-running capability during upset conditions. Non-metallic pumps also have optional bearing materials for challenging services.

**Extremely cost-effective ANSI sealed pump alternatives**
In addition to sealless, long-coupled ANSI units, close coupled models are available with flange locations identical to sealed ANSI pumps. This feature enables easy replacement of problem sealed pumps with Magnatex sealless mag-drive, metallic or non-metallic pumps.

**Solids Handling**
With multiple provisions for handling up to 8% or more solids, Magnatex can take on difficult process applications that other mag-drive pumps are unable to handle.

**Quick Support and easy Maintenance**
Slip-fit construction allows easy, onsite maintenance, if required. Additionally, Magnatex can inspect and repair any pump at our facility in Houston, TX. A worldwide network of distributors and representatives provide technical assistance and parts support 24/7.

**Large Inventory**
A multimillion dollar inventory enables same day shipment of pumps and parts in emergency situations, anywhere in the world.
Since 1985, our priority has been your process reliability & profitability.

MAXP Series ANSI (Magnetic Drive)
Max. Flow: 2000 gpm
Max. Head: 470 feet
Temperature: -150°F to 800°F
Max. Power: 200 hp
Materials of Construction: Carbon Steel, 304SS, 316SS, Alloy 20, Monel, Titanium
Bearings: SiC, SiC-X

3575 Series ANSI (Mechanical Seal)
Max. Flow: 5000 gpm
Max. Head: 720 feet
Temperature: up to 700°F
Max. Power: 300 hp
Materials of Construction: Ductile Iron, Steel, 316SS, CD4M-Cu, Alloy 20, Monel, Titanium

MP/MPL/MPH Series Sub-ANSI / ANSI (Magnetic Drive)
Max. Flow: 340 gpm
Max. Head: 400 feet
Temperature: -100° to 536°F
Max. Power: 20 hp
Materials of Construction: 316SS, Alloy 20, Monel, Titanium
Bearings: SiC, SiO2-X

MPT Series (Magnetic Drive)
Max. Flow: 40 gpm
Max. Head: 440 feet
Temperature: -40° to 445°F
Max. Power: 20 hp
Materials of Construction: 316SS
Bearings: SiC-X

MMP Series (Magnetic Drive)
Max. Flow: 20 gpm
Max. Head: 95 feet
Temperature: -100° to 536°F
Max. Power: 3/4 hp
Materials of Construction: 316SS
Bearings: SiC-X

MTA Series ANSI (Magnetic Drive)
Max. Flow: 1000 gpm
Max. Head: 400 feet
Temperature: 5° to 275°F
Max. Power: 25 hp
Materials of Construction: PFA Lined+Bearings: C-PTFE, SiC
Shaft: 316SS

ME Series (Magnetic Drive)
Max. Flow: 90 gpm
Max. Head: 140 feet
Temperature: 32° to 195°F
Max. Power: 3 hp
Materials of Construction: ETFE Lined, PVDF Lined+Bearings: C-PTFE, SiC; Shaft: Ceramic

Side Channel Pumps
Max Flow: 155 gpm
Max Head: 1180 feet
Max Temp: 482°F
Max Power: 150 hp
Max Pressure: 750 psi
Max Viscosity: 200 centistokes
Others available upon request.

FRP Pumps
Max Flow: 1800 gpm
Max Head: 450 feet
Max Temp: 250°F
FRP Construction
Different formulations of epoxy vinyl ester resins available upon request.

Custom engineered pumps are available for conditions that exceed the operating parameters outlined above.
API MAG DRIVE PUMPS
Max Flow: 17600 gpm
Max Head: 1000 feet
Max Temp: 842˚F
Max Power: 1300 hp
Max Pressure: 14700 psi
Max Viscosity: 200 centistokes

VANE MAG MAGNETIC DRIVE
SLIDING VANE PUMPS
Max Flow: 13 gpm
Max Head: 472 feet
Max Temp: 392˚F
Max Power: 3 hp
Max Pressure: 730 psi
Max Viscosity: 10000 centistokes

HOLLOW DISC PUMPS
Max Flow: 200 gpm
Max Head: 267
Max Temp: 392˚F
Max Power: 50 hp
Max Pressure: 232 psi
Max Viscosity: 10000 centistokes

S Series-Gear Pumps
(Mechanical Seal)
Max. Flow: 30 gpm
Max. Head: 150 psi
Max. Temperature: 450° F
Max. Power: 5 hp
Casing Materials: 316SS, Hastelloy® equiv., Ryton®
Shaft: 316SS, Hastelloy® equiv.
Bearing Materials: Carbon, Teflon®, Rulon®

SM Series-Gear Pumps
(Magnetic Drive)
Max. Flow: 30 gpm
Max. Head: 110 psi
Max. Temperature: 450° F
Max. Power: 5 hp
Casing Materials: 316SS, Hastelloy® equiv., Ryton®
Shaft: 316SS, Hastelloy® equiv.
Bearing Materials: Carbon, Teflon®, Rulon®

Custom engineered pumps are available for conditions that exceed the operating parameters outlined above.

Since 1985, our priority has been your process reliability & profitability.
MAGNATEX® MMP Series

The MMP Series magnetically driven, sealless, centrifugal pumps are heavy-duty mag-drive pumps with superior SiC-X bearing materials for low flow applications. These close-coupled pumps are similar in construction to the MPL/MP Series, except the shaft is stationary and the suction/discharge ports are male NPT with optional flanges available.

The MMP Series pumps are high-quality, dependable, long-lasting, pumps utilizing our exclusive straddle bearing design and furnished with the shaft, thrust ring and bushing made of beta sintered silicon carbide material. Sealless pumps help eliminate “Reportable -Release” issues.

All Magnatex® pumps and spare parts come with a 1-year unconditional warranty on materials and workmanship.

Materials of Construction:

- 316SS
- Ceramic or Stainless Steel Shaft Option

Optional high-pressure models for suction conditions to 5,000 psi and more.

MMP SERIES COMPOSITE PERFORMANCE CURVES

@ 3550 RPM 60hz
1 MMP10 .5 x .5 - 4
2 MMP11 .5 x .75 - 4
3 MMP21 .75 x .75 - 4
4 MMP22 1 x .75 - 4

@ 1750 RPM 60hz
1 MMP10 .5 x .5 - 4
2 MMP11 .5 x .75 - 4
3 MMP21 .75 x .75 - 4
4 MMP22 1 x .75 - 4
MAGNATEX® MMP Series Component View

Optional high-pressure models for suction conditions to 5,000 psi and more

<table>
<thead>
<tr>
<th>MODEL</th>
<th>MOTOR FRAME</th>
<th>DIMENSIONS</th>
<th>STANDARD NPT</th>
<th>* OPTIONAL 150# ANSI RF</th>
<th>APROX. WEIGHT lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMP11</td>
<td>56 C</td>
<td>M 13.85 CP</td>
<td>S ½</td>
<td>1.80 4.00 8.00</td>
<td>40</td>
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<tr>
<td></td>
<td>MAX</td>
<td>B 21.15</td>
<td>D ½</td>
<td>2.00 4.70 8.70</td>
<td>44</td>
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<td>E 21.65</td>
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<tr>
<td>MMP22</td>
<td>56 C</td>
<td>F 21.65</td>
<td>G ½</td>
<td>5.40 1.80 4.00</td>
<td>44</td>
</tr>
</tbody>
</table>

*DOES NOT CHANGE THE PRESSURE RATING OF THE PUMP*
MAGNATEX® MP Series

Close-coupled, compact, MP Series pumps are the efficient and dependable choice for medium-flow, medium-head applications. The MP Series pump features sub-ANSI sizes for efficient lower flow applications. Affordable, high-performance Magnatex® pumps give you higher efficiency with lower horsepower and a lower total cost of ownership.

- Standard SiC-X bearing system for enhanced dry running capability
- Straddle-mounted, double bearing design reduces shaft load and bearing wear when compared to our competitors' typical cantilevered, overhung designs
- Slip-fit construction allows easy maintenance and on-site repairs with no special tools required
- Large internal flow path handles solids: 1% at 500μ; 8% at 100μ.
- Close-coupled configuration eliminates coupling and motor alignment issues
- No expensive mechanical seals; eliminates costly shutdowns and pump repair, which helps eliminate “Reportable Release” issues
- Handles toxic, noxious and corrosive liquids for leak-free pumping with increased safety to plant personnel and the environment
- Optional high-temperature construction to handle up to 660°F
- Optional baffled rear casing design for enhanced solids handling

Materials of Construction:
- 316SS
- Alloy 20
- Alloy B&C

MAGNATEX® MP Series Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tbody>
<tr>
<td>Maximum Flow</td>
<td>150 GPM</td>
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<tr>
<td>Maximum Head</td>
<td>190 FT</td>
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<tr>
<td>Liquid Temperature</td>
<td>-112°F to +660°F</td>
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<tr>
<td>Maximum Power</td>
<td>10 HP</td>
</tr>
<tr>
<td>Maximum Working Pressure</td>
<td>150 psig</td>
</tr>
<tr>
<td>Connections</td>
<td>150# RF Flanges</td>
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<tr>
<td>Bearings</td>
<td>SiC/SiC-X Standard</td>
</tr>
<tr>
<td>Impeller</td>
<td>Enclosed</td>
</tr>
<tr>
<td>Speeds</td>
<td>Up to 3550 rpm</td>
</tr>
<tr>
<td>Magnets</td>
<td>Neodymium or Samarium Cobalt</td>
</tr>
<tr>
<td>Motor</td>
<td>NEMA or IEC Frame Mounted</td>
</tr>
</tbody>
</table>

MP SERIES COMPOSITE PERFORMANCE CURVES

CAPACITY @ 3550 RPM 60hz

@ 1750 RPM 60hz

<table>
<thead>
<tr>
<th>Model</th>
<th>Head</th>
<th>Capacity @ 1750 RPM</th>
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<tbody>
<tr>
<td>MP210</td>
<td>1x.75-4</td>
<td>1.3, 5, 10, 16, 20, 26, 32, 60</td>
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<tr>
<td>MP220</td>
<td>1x.75-5</td>
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<td>MP221</td>
<td>1x.75-6</td>
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<td>MP222</td>
<td>1x.75-6</td>
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<td>1.5x1-6</td>
<td>1.3, 5, 10, 16, 20, 26, 32, 60</td>
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<tr>
<td>MP421</td>
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<tr>
<td>MP423</td>
<td>1.5x1-8</td>
<td>1.3, 5, 10, 16, 20, 26, 32, 60</td>
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<tr>
<td>MP541</td>
<td>2x1.5-5</td>
<td>1.3, 5, 10, 16, 20, 26, 32, 60</td>
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<tr>
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<td>MP543</td>
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<tr>
<td>MP842</td>
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</table>

CAPACITY @ 3550 RPM 60hz

@ 3550 RPM 60hz

<table>
<thead>
<tr>
<th>Model</th>
<th>Head</th>
<th>Capacity @ 3550 RPM</th>
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<tr>
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<td>MP842</td>
<td>3x2-6</td>
<td>1.3, 5, 10, 16, 20, 26, 32, 60</td>
</tr>
</tbody>
</table>
Single confined gasket is the only "seal" in the pump

Standard SiC bearing system with sleeve of SiC-X material for potential "upset" or dry running operation

Casing drain allows complete draining of the pump and rear casing

Neodymium or optional samarium cobalt magnets for high-temperature operation provide synchronous drive (no slip)

Internal radial clearance: .040" nominal, minimum, allows passage of a modest amount of solids in the rear casing area of the pump

Rugged one-piece, rear containment shell between the inner and outer magnets providing high efficiency, greater component strength and positive hermetic sealing

Inner magnet is "straddle" mounted between bearings (no overhung load) allowing operation across the complete curve without shaft deflection

<table>
<thead>
<tr>
<th>MODEL</th>
<th>S</th>
<th>D</th>
<th>A</th>
<th>B</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>X</th>
<th>CL</th>
<th>O</th>
<th>PUMP MOTOR</th>
<th>MOTOR FRAME</th>
<th>M</th>
<th>CP</th>
<th>MOTOR LBS</th>
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<td>0.75</td>
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<td>6.85</td>
<td>0.47</td>
<td>2.56</td>
<td>5.12</td>
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<td>4.72</td>
<td>4.23</td>
<td>4.33</td>
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<td>56C</td>
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<td>22.07</td>
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<td>0.71</td>
<td>3.15</td>
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<td>9.84</td>
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<td>147</td>
<td>213TC</td>
<td>20.42</td>
<td>173</td>
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</tr>
</tbody>
</table>

CONDUIT BOX SHOWN FOR ILLUSTRATION ONLY. REQUIRED LOCATION MUST BE SPECIFIED

MAGNATEX®

NOT FOR CONSTRUCTION

DIMENSIONAL DRAWING
MP SERIES CLOSE-COUPLING PUMP

B. VALENTIN
01/02/10
NTS
1 1/8

DD—MP SERIES

ALL DIMENSIONS IN INCHES + 0.12"
MAGNATEX® MPL Series

Close coupled, compact, MPL Series pumps are the efficient and dependable choice for medium to high head applications. The process side of the MPL pump conforms to ANSI B73.3 dimensions. Affordable, high performance Magnatex® pumps give you higher efficiency with lower first cost, lower horsepower and a lower total cost of ownership.

- Optional SiC-X bearing system for enhanced dry running capability
- Straddle-mounted, double bearing design reduces shaft load and bearing wear when compared to our competitors’ typical cantilevered, overhung designs
- Slip-fit construction allows easy maintenance and on-site repairs with no special tools required
- Close-coupled configuration eliminates coupling and motor alignment issues
- No expensive mechanical seals; eliminates costly shutdowns and pump repair, which helps eliminate “Reportable Release” issues
- Handles toxic, noxious and corrosive liquids for leak-free pumping with increased safety to plant personnel and the environment
- Optional high temperature construction to handle up to 660°F
- Optional baffled rear casing design for enhanced solids handling
- Large internal flow path handles solids: 1% at 500μ; 8% at 100μ

Materials of Construction:
- 316SS
- 304SS
- Alloy 20
- Alloy B&C

MAGNATEX® MPL Series Specifications

- Maximum Flow: 340 GPM
- Maximum Head: 400 FT
- Liquid Temperature: -100° F to +660° F
- Maximum Power: 30 HP
- Maximum Working Pressure: 170 or 225 psig
- Connections: 150# RF Flanges
- Bearings: SiC/SiC-X Optional
- Impeller: Enclosed
- Speeds: Up to 3550 rpm
- Magnets: Samarium Cobalt or Neodymium
- Motor: NEMA or IEC Frame Mounted

MPL SERIES COMPOSITE PERFORMANCE CURVES

@ 3550 RPM 60hz

<table>
<thead>
<tr>
<th>Model</th>
<th>Impeller</th>
<th>Head</th>
<th>Flow (gpm)</th>
</tr>
</thead>
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<td>1.5x1-6</td>
<td>53</td>
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<tr>
<td>MPL42</td>
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<td>53</td>
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<tr>
<td>MPL42-LF</td>
<td>1.5x1-8</td>
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<td>106</td>
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<tr>
<td>MPL52-LF</td>
<td>2x1-10</td>
<td>53</td>
<td>106</td>
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<tr>
<td>MPL84</td>
<td>3x1.5-6</td>
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<td>MPL84-8</td>
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<td>106</td>
</tr>
<tr>
<td>MPL85</td>
<td>3x2-6</td>
<td>53</td>
<td>106</td>
</tr>
</tbody>
</table>

@ 1750 RPM 60hz

<table>
<thead>
<tr>
<th>Model</th>
<th>Impeller</th>
<th>Head</th>
<th>Flow (gpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPL40</td>
<td>1.5x1-6</td>
<td>25</td>
<td>79</td>
</tr>
<tr>
<td>MPL42</td>
<td>1.5x1-8</td>
<td>25</td>
<td>79</td>
</tr>
<tr>
<td>MPL42-LF</td>
<td>1.5x1-8</td>
<td>25</td>
<td>79</td>
</tr>
<tr>
<td>MPL52-LF</td>
<td>2x1-10</td>
<td>25</td>
<td>79</td>
</tr>
<tr>
<td>MPL84</td>
<td>3x1.5-6</td>
<td>25</td>
<td>79</td>
</tr>
<tr>
<td>MPL84-8</td>
<td>3x1.5-8</td>
<td>25</td>
<td>79</td>
</tr>
<tr>
<td>MPL85</td>
<td>3x2-6</td>
<td>25</td>
<td>79</td>
</tr>
</tbody>
</table>
MPL

Single confined gasket is the only “seal” in the pump.

Fully enclosed impeller with balance holes provides high efficiency and low thrust (no shims or adjustments required).

Product path for bearing lubrication.

Standard SiC bearing system with optional sleeve of SiC-X material for potential “upset” or dry running operation.

Casing drain allows complete draining of the pump and rear casing.

Anti-contact ribs prevent outer magnet from rubbing on the rear casing in the event of motor bearing failure.

Large internal radial clearance: .055” minimum, allows passage of a modest amount of solids in the rear casing area of the pump.

Rugged rear containment shell between the inner and outer magnets, providing high efficiency, greater component strength and positive hermetic sealing.

Inner magnet is “straddle” mounted between bearings (no overhung load) allowing operation across the complete curve without shaft deflection.

Neodymium or optional samarium cobalt magnets for high-temperature operation provide synchronous drive (no slip).

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Casing drain allows complete draining of the pump and rear casing.

Anti-contact ribs prevent outer magnet from rubbing on the rear casing in the event of motor bearing failure.
Magnetic Drive Regenerative Turbine Pumps

MAGNATEX® MPT Series

MPT Series magnetically driven, sealless, regenerative turbine vane pumps are designed specifically for small flows at high heads. The MPT Series features close-coupled construction similar to the MP Series, but uses a regenerative turbine vane impeller. This design provides better pump hydraulics at low flow rates and low NPSHa conditions.

- Standard SiC-X bearing system for enhanced dry running capability
- Straddle-mounted, inner magnet system, with bearings on both sides of the magnet, which reduces shaft and bearing loads when compared to our competitors’ overhung, cantilevered inner magnet designs
- Slip-fit construction that allows easy on-site maintenance, with no special tools or fixtures required
- Close-coupled configuration eliminates coupling and motor alignment issues
- No expensive mechanical seals; eliminates costly shutdowns and pump repair, which helps eliminate "Reportable Release" issues
- Handles toxic, noxious and corrosive liquids for leak-free pumping with increased safety to plant personnel and the environment.
- Excellent for pumping entrained gases
- Excellent for low NPSHa applications

Materials of Construction:
- 316SS
- Alloy 20
- Alloy B & C
- Titanium

MAGNATEX® MPT Series Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Flow</td>
<td>40 GPM</td>
</tr>
<tr>
<td>Maximum Head</td>
<td>440 FT</td>
</tr>
<tr>
<td>Liquid Temperature</td>
<td>-20° F to +446° F</td>
</tr>
<tr>
<td>Maximum Power</td>
<td>5 HP</td>
</tr>
<tr>
<td>Maximum Working Pressure</td>
<td>232 psig</td>
</tr>
<tr>
<td>Connections</td>
<td>NPT with Optional Flanges</td>
</tr>
<tr>
<td>Bearings</td>
<td>SiC/SiC-X</td>
</tr>
<tr>
<td>Impeller</td>
<td>Turbine Vane</td>
</tr>
<tr>
<td>Speeds</td>
<td>Up to 3550 rpm</td>
</tr>
<tr>
<td>Magnets</td>
<td>Samarium Cobalt + Neodymium</td>
</tr>
<tr>
<td>Motor</td>
<td>NEMA or IEC Frame Mounted</td>
</tr>
</tbody>
</table>

MPT SERIES COMPOSITE PERFORMANCE CURVES

@ 3550 RPM 60hz

<table>
<thead>
<tr>
<th>Model</th>
<th>Impeller Size</th>
<th>RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPT151</td>
<td>.5 x .5 - 3</td>
<td>3550</td>
</tr>
<tr>
<td>MPT201</td>
<td>.75x.75 -3</td>
<td>3550</td>
</tr>
<tr>
<td>MPT251</td>
<td>1 x 1 - 4</td>
<td>3550</td>
</tr>
<tr>
<td>MPT252</td>
<td>1 x 1 - 4</td>
<td>3550</td>
</tr>
<tr>
<td>MPT254</td>
<td>1 x 1 - 4</td>
<td>3550</td>
</tr>
</tbody>
</table>

@ 1750 RPM 60hz

<table>
<thead>
<tr>
<th>Model</th>
<th>Impeller Size</th>
<th>RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPT151</td>
<td>.5 x .5 - 3</td>
<td>1750</td>
</tr>
<tr>
<td>MPT201</td>
<td>.75x.75 -3</td>
<td>1750</td>
</tr>
<tr>
<td>MPT251</td>
<td>1 x 1 - 4</td>
<td>1750</td>
</tr>
<tr>
<td>MPT252</td>
<td>1 x 1 - 4</td>
<td>1750</td>
</tr>
<tr>
<td>MPT254</td>
<td>1 x 1 - 4</td>
<td>1750</td>
</tr>
</tbody>
</table>
HOW A REGENERATIVE TURBINE PUMP WORKS

The unusual regenerative turbine impeller design involves a large number of blades machined into the periphery of the impeller.

• Blades are on both sides of the centerline to limit axial thrust, which hydraulically centers the impeller during operation.

• Instead of the liquid entering the impeller at the shaft centerline and exiting at the impeller periphery, liquid enters a regenerative turbine pump in the vicinity of the impeller OD. After acceleration around the pump casing it discharges through a port in the same plane as the suction.

• There is considerable debate about the fluid dynamics involved in regenerative turbine pumps, but the consensus of expert opinion is that liquid entering the impeller blade is accelerated radially and tangentially in the direction of rotation. Liquid moving outward toward the casing is reflected back onto the next impeller blade where it is further accelerated. This process is repeated many times until the liquid exits the discharge port.

• The clearances between the impeller and casing and between the inlet and outlet are smaller to minimize backflow in the discharge segment of the casing.

• Regenerative turbine pumps develop much more head for the impeller diameter and speed of rotation when compared to a typical centrifugal pump.

• Because of the special impeller design, regenerative turbine pumps are excellent for low NPSH applications.
MAGNATEX® MAXP-CL Series

The MAXP-CL Series of pumps has been designed to conform to ANSI B73.3 dimensional standards. The pumps are extremely rugged, which makes them ideal for rigorous duty in the chemical and petrochemical industries in applications up to 800°F.

Magnatex MAXP pumps have the following design features:

- Centerline-mounted inner magnet system with bearings on both sides of the magnet—this design reduces shaft and bearing loads when compared to our competitors’ overhung, cantilevered, inner magnet designs
- Slip-fit construction, which allows easy on-site maintenance with no special tools or fixtures required
- Large internal flow paths, which means the pumps can easily handle 1% solids @ 500μ and up to 8% solids @ 100μ. Optional baffle-plated rear casing enables enhanced solids handling capability. Optional proprietary self-cleaning strainer technology enables us to handle even higher solids percentages if necessary
- No expensive mechanical seals; eliminates costly shutdowns and repairs, which helps eliminate “Reportable Release” issues
- Safely handles toxic, noxious, corrosive or high-temperature liquids with increased safety to personnel and the environment
- Special high-temperature construction is available to handle up to 800°F
- Several dual containment systems are available that virtually eliminate any leakage to the environment when handling extremely hazardous chemicals

Materials of Construction:

- 316SS
- 304SS
- Alloy 20
- Alloy B & C
- Monel
- Titanium
ANATOMY OF THE ULTIMATE MAGNETIC DRIVE PUMP

- External flush to rear casing of the pump from a self-cleaning strainer or compatible external source allows handling liquids with entrained solids.
- Standard Instrumentation port for detection of primary containment leakage.
- Neodymium or optional Samarium Cobalt magnets for high-temperature operation provide synchronous drive (no slip).
- Cooling fins and ports on bearing frame allow non-cooled operation to 350°F. For higher temperatures optional cooling systems are available.
- Oil-lubricated bearings (easily adaptable to oil mist) or optional greased-for-life bearings provide extra long life because of the minimal load of the outer magnet - no axial loading.
- Large internal radial clearance: 0.060" minimum, allows passage of a modest amount of solids in the rear casing area of the pump.
- Rugged rear containment shell with Alloy C material between the inner and outer magnets provides high efficiency, greater component strength, enhanced corrosion resistance and positive hermetic sealing.
- Several optional secondary containment designs are available, if necessary.

### MAGNATEX MAXP SERIES ANSI BASEPLATE DIMENSIONS

|------------|---------------|---------|----|----|--------------|--------------|--------------|--------------|----|----|---------|----|----|----|
MAGNATEX® 3575 Series

Heavy-duty, rugged, world-class quality, ANSI process pumps manufactured to meet the latest ASME B73.1-2001 standard (revision of ASME B73.1M-1991). Pumps are manufactured in 29 sizes and a wide variety of materials, seal options and seal flush systems to handle almost all applications in the process industries.

Magnatex® 3575 Series pumps and spare parts come with a 5-year unconditional warranty on materials and workmanship.

Spare Parts for Magnatex®, Goulds®, Durco® and Peerless® ANSI Pumps

Magnatex is a premier alternative, generic parts supplier for all of your Goulds 3196, Durco Mark II and III, or Peerless 8196 pumps.

Magnatex 3575 spare parts are guaranteed 100% interchangeable with Goulds 3196 parts.

We guarantee that our parts will meet the original manufacturers’ performance standards. Our parts department is ready to help you with your requirements 24/7.

Materials of Construction:
- Ductile Iron
- Steel
- 316SS
- CD4MCu
- Alloy 20
- Alloy B & C
- Ni-Hard
- Titanium

MAGNATEX® 3575 Series Specifications

Liquid Temperature  -100°F to +700°F (-73° to 371°C)
Maximum Shaft Deflection  0.002 Inch (0.0508mm)
Connections  150# FF std. or 300# RF Optional
B10 Bearing Life  50,000 Hours
Maximum Working Pressure  275 psig (18.96 bar)
Speed  Up to 3550 rpm (2959 @50hz)
Motor  NEMA or IEC Foot Mounted

3575 SERIES COMPOSITE PERFORMANCE CURVES

CAPACITY @ 3550RPM / 60hz

3575S
1. AA6  1x1.5-6
2. AB6  1.5x3-6
3. A10  2x3-6
4. AA8  1x1.5-8
5. AB8  1.5x3-8

3575M / 3575L
6. A70-7  3x4-7
7. A60-8  2x3-8
8. A70-8  3x4-8
9. A70-8G 3x4-8G
10. A05-10 1x2-10
11. A50-10 1.5x3-10
12. A50-10 1.5x3-10
13. A70-10 2x3-10
14. A40-10H 3x4-10H
15. A50-10H 4x6-10H
16. A80-10H 4x6-10H
17. A20-13 1.5x3-13
18. A30-13 2x3-13
19. A40-13 3x4-13
20. A00-13 4x6-13

3575XL
21. A90-13 6x8-13
22. A100-13 8x10-13
23. A110-15 6x8-15
24. A120-15 8x10-15
25. A00-15 8x10-15G

CAPACITY @ 1750RPM /60hz

T O T A L   H E A D

CAPACITY @ 3550RPM / 60hz

T O T A L   H E A D

CAPACITY @ 1750RPM /60hz

T O T A L   H E A D
Wide variety of sealing chamber options – large bore, tapered bore, standard bore and packed box available to suit any application

Open impeller with back pump-out vanes; facilitates solids handling, minimizes axial loads and reduces seal chamber pressure

Inboard & Outboard INPRO VBX-SD bearing isolators; minimizes external environmental contaminants entering bearing housing

Large capacity oil sump; assures positive lubrication and better cooling

Oil mist lubrication option; ideal for severe environment services

Externally adjustable impeller clearance; maintains peak pump performance

Heavy duty shaft; minimizes shaft deflection (optional hook sleeve construction available)

Large metal / glass oil level sight gauge; insures visibility of lubricant to help maintain proper oil level

Inboard & Outboard INPRO VBX-SD bearing isolators; minimizes external environmental contaminants entering bearing housing

150# ANSI FF flanges Std., 300# RF optional.

Note: confirm pressure and temperature limits for specific services

Not for Construction

MAGNATEX 3575 SERIES ANSI BASEPLATE DIMENSIONS

<table>
<thead>
<tr>
<th>NEMA Baseplate</th>
<th>HA MAX</th>
<th>HB</th>
<th>HT</th>
<th>HD MAX</th>
</tr>
</thead>
</table>

In inches [millimeters]
Magnetic Drive Sealless Polypropylene Pumps

MAGNATEX® MEP Series

Magnetic drive, sealless, medium-duty, polypropylene thermoplastic pumps, designed for chemical transfer applications. Simple construction allows for economical first cost and ease of maintenance. Sealless design helps eliminate “Reportable Release” issues.

Call us today at 713-972-8666 or 1-866-624-7867

MAGNATEX® MEP Series Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Flow</td>
<td>106 GPM</td>
</tr>
<tr>
<td>Maximum Head</td>
<td>103 FT</td>
</tr>
<tr>
<td>Liquid Temperature</td>
<td>Max 175° F</td>
</tr>
<tr>
<td>Maximum Power</td>
<td>5 HP</td>
</tr>
<tr>
<td>Connections</td>
<td>Drilled for DIN and ANSI Flanges</td>
</tr>
<tr>
<td>Bearings</td>
<td>Carbon, C-PTFE</td>
</tr>
<tr>
<td>Shaft</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Maximum Working Pressure</td>
<td>55 psig</td>
</tr>
<tr>
<td>Impeller</td>
<td>Enclosed</td>
</tr>
<tr>
<td>Speeds</td>
<td>Up to 3550 rpm</td>
</tr>
<tr>
<td>Magnets</td>
<td>Rare Earth</td>
</tr>
<tr>
<td>Motor</td>
<td>NEMA or IEC Frame Mounted</td>
</tr>
</tbody>
</table>

Materials of Construction:
- Polypropylene

MEP SERIES COMPOSITE PERFORMANCE CURVES

@ 1750 RPM 60hz
1 MEP-040  1.5x1.5-4
2 MEP-050  2x1.5-4

@ 3550 RPM 60hz
1 MEP-040  1.5x1.5-4
2 MEP-050  2x1.5-4
# MEP SERIES PUMPS

<table>
<thead>
<tr>
<th>PARTS</th>
<th>SHAFT</th>
<th>BEARING</th>
<th>REAR CASING</th>
<th>O-RING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>Alumina</td>
<td>SIC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td></td>
<td>Titanium</td>
<td>Carbon</td>
<td>C-PTFE</td>
</tr>
<tr>
<td>MEP-402</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>MEP-404</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>MEP-502</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>MEP-504</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>MEP-506</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

**NOTES:**
1. FLANGES ARE 150# DRILLED FOR DIN & ANSI DIMENSIONS
2. MAXIMUM WORKING PRESSURE IS 55 psig
3. MAXIMUM WORKING TEMPERATURE IS 175°F / 79.4°C
4. VERIFY WORKING PRESSURE AT PUMPING TEMPERATURE

**CONDUIT BOX SHOWN FOR ILLUSTRATION ONLY REQUIRED LOCATION MUST BE SPECIFIED**

**NOT FOR CONSTRUCTION**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>MOTOR FRAME</th>
<th>DIMENSIONS</th>
<th>APROX. WEIGHT lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEP-402</td>
<td>56C</td>
<td>S 1.50</td>
<td>D 1.50</td>
</tr>
<tr>
<td>MEP-404</td>
<td>150TC</td>
<td>2.00</td>
<td>1.50</td>
</tr>
<tr>
<td>MEP-502</td>
<td>150TC</td>
<td>2.00</td>
<td>1.50</td>
</tr>
<tr>
<td>MEP-503</td>
<td>150TC</td>
<td>2.00</td>
<td>1.50</td>
</tr>
<tr>
<td>MEP-506</td>
<td>150TC</td>
<td>2.00</td>
<td>1.50</td>
</tr>
</tbody>
</table>
Magnatex®/ Texel® ME Series sub-ANSI pumps are dependable, durable, replaceable liner, magnetic drive pumps. They are the solution for low to medium flow, corrosive fluid applications. These pumps provide a lifetime of maintenance-free operation with low initial cost and low total cost of ownership. Replaceable liners make repairs easy and inexpensive without special tooling required. Sealless design helps eliminate “Reportable Release” issues.

**Magnatex® ME Series Specifications**

- **Maximum Flow**: 90 GPM
- **Maximum Head**: 140 FT
- **Liquid Temp**: 32°F to 250°F
- **Maximum Power**: 3 HP
- **Connections**: 125 lb RF Flanges
- **Bearing**: C-PTFE, G-PTFE, SiC, Carbon
- **Shaft**: Ceramic SiC
- **Maximum Working Pressure**: 70 psig
- **Impeller**: Enclosed
- **Speeds**: Up to 3550 rpm
- **Magnets**: Rare Earth
- **Motor**: NEMA or IEC Frame Mounted

**Materials of Construction:**

- ETFE Lined
- Kynar® (PVDF) Lined. Registered trademark of Arkema, Inc

**ME SERIES COMPOSITE PERFORMANCE CURVES**

- **@ 3550 RPM 60hz**
  1. MEH40 1.5 x .75 - 6
  2. MER50 2 x 1.5 - 6

- **@ 1750 RPM 60hz**
  1. MEH40 1.5 x .75 - 6
  2. MER50 2 x 1.5 - 6
Single confined O-ring gasket

Replaceable liner offers low cost maintenance option — if needed

One piece impeller with rare earth magnet for efficient operation

Close-coupled NEMA motor eliminates alignment issues

Stationary shaft with both ends supported for stable operation

Hardened materials for the bearing support system

Non-metallic rear casing eliminates hysteresis losses, resulting in efficient operation

Raised face flanges provide positive sealing

### Single confined O-ring gasket

- Replaceable liner offers low cost maintenance option — if needed
- One piece impeller with rare earth magnet for efficient operation
- Close-coupled NEMA motor eliminates alignment issues
- Stationary shaft with both ends supported for stable operation
- Hardened materials for the bearing support system
- Non-metallic rear casing eliminates hysteresis losses, resulting in efficient operation
- Raised face flanges provide positive sealing

### Pump Dimensions

#### MEH/MER Series Close-Coupled Pumps

<table>
<thead>
<tr>
<th>MODEL</th>
<th>MOTOR FRAME</th>
<th>DIMENSIONS in INCHES [ MILLIMETERS ]</th>
<th>APROX. WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NEMA IEC</td>
<td>S  D CP O A C X B G</td>
<td>PUMP MOTOR</td>
</tr>
<tr>
<td>1.5 x .75 x 6</td>
<td>143TC 90S</td>
<td></td>
<td>4.68 [119]</td>
</tr>
<tr>
<td>182TC 112S</td>
<td></td>
<td></td>
<td>5.66 [144]</td>
</tr>
<tr>
<td>2 x 1.5 x 6</td>
<td>143TC 90S</td>
<td></td>
<td>4.92 [125]</td>
</tr>
<tr>
<td>182TC 112S</td>
<td></td>
<td></td>
<td>99 (44)</td>
</tr>
</tbody>
</table>
Magnatex®/Texel® MTA Series sealless, mag-drive pumps feature a transfer molded, mechanically attached PFA lining that is thicker and more uniform than our competitors’ roto-molded linings. Ideal for almost all industrial chemical applications including high purity and elevated temperature applications, our pumps offer many enhanced characteristics over the competition. MTA Series pumps conform to ANSI B73.3 Standards. Sealless design helps eliminate “Reportable Release” issues.

All Magnatex® pumps and spare parts come with a 1-year unconditional warranty on materials and workmanship.

Transfer-compression molding allows positive, interlocking casing linings 5-6 mm thick that stay in place; ideal for vacuum and higher temperature applications.

**Materials of Construction:**
- PFA Lined
Proprietary high-pressure transfer molded PFA fluoropolymer lining is 5-6mm thick for superior strength, permeation and abrasion resistance.

Dovetail grooves in the DI casing armor provides positive locking of the lining — good for vacuum and high-temperature applications.

Shape secured component design eliminates keyed construction stress points.

Extra long main bushing provides stable operation over the entire operating range of the pump.

Reinforced heavy-duty frame adapter supports close coupled motors to 20hp and 284TSC frame.

Engineered plastic rear casing outer shell provides rigid high strength to the PFA lining.

NEMA C-Face motor provides positive pump and motor alignment.

Motor adapter plate allows use of different hp ratings on a single pump model for performance versatility.

Stationary shaft simple construction.

Heavy-duty ductile iron casing armor provides mechanical strength to the pump and protection for the PFA lining.

PFA encapsulated seamless construction. Rare earth inner magnets are either Nd or SmCo.
Fiberglass Reinforced Plastic Pumps

MAGNATEX® / Argal FRP Pumps

The pumps are manufactured using the RTM injection molding process. Reinforcing layers of fiberglass mat are placed in molds prior to injecting the appropriate resin, depending on the application. The use of layers of different weight mats produces a finished product of the highest possible mechanical strength, comparable to stainless steel or alloy pumps, so that a casing armor is not required to reinforce the strength of the pump. Thermoset resin pumps offer higher strength, thermal and dimensional stability and much longer life than competitive thermoplastic pumps.

Applications

Depending on the application, the use of different formulations of epoxy vinyl ester resins provides a broad spectrum of chemical and abrasion resistance, such that the pumps are commonly used in industrial and municipal waste water treatment facilities, water parks, large scale aquariums, zoos and aquaculture farms.

MAGNATEX® MFRP-L (Long Coupled) ANSI Specifications

- Maximum Flow: 5900 GPM
- Maximum Head: 450 FT
- Liquid Temperature: -50°F and 250°F

MAGNATEX® MFRP-C (Close Coupled) ANSI Specifications

- Maximum Flow: 1320 GPM
- Maximum Head: 246 FT
- Liquid Temperature: -50°F and 250°F

Fiberglass Resin/Applications

- V1G standard vinyl ester resin compound: General Purpose / Salt Water
- V1A vinyl ester resin compound: Abrasive Liquid
- V1C vinyl ester resin compound: Bleach Applications
- V1F vinyl ester resin compound: Fluoride Applications

MFRP SERIES COMPOSITE PERFORMANCE CURVES
FRP PUMPS for aquarium, zoos, marine parks and aquaculture facilities.

Magnatex/Argal Pumps are specifically designed to handle sea water services in large public aquariums, zoos, aquaculture facilities and marine parks. All wet end parts are manufactured from high strength, long strand, fiberglass reinforced polymer (FRP) in order to resist corrosion, abrasion and operating temperatures between -50°F (-45°C) and 250°F (120°C). Available pumps include ANSI B73.1 pumps in both close coupled and long coupled configurations, Vertical sump pumps, AODD pumps and Submersible pumps.

Manufacturing Process

Magnatex/Argal fiberglass reinforced polymer pumps are manufactured using a Resin Transfer Injection molding process (RTM). Reinforcing layers of long strand fiberglass mats are placed into molds prior to injecting the appropriate resin. The use of layers of different weight fiberglass mats produces a finished product of the highest possible mechanical strength (comparable to stainless steel or alloy pumps) so that a casing armor is not required to reinforce the pump casing. FRP (fiberglass reinforced polymer) thermoset resin pumps offer higher strength, thermal and dimensional stability and much longer life than our competitors’ thermoplastic pumps.

Applications

Depending on the application, different formulations of epoxy vinyl ester resins provides a broad spectrum of chemical and abrasion resistance suitable for pumps that are used in industrial and municipal waste water treatment facilities, water parks, large scale aquariums, zoos, marine parks and aquaculture farms.
TEXEL® PFA Lined MTA Series Pump Features

- PFA (Perfluoroalkoxytetrafluoroethylene) is a high-strength, high-temperature and abrasion-resistant fluoropolymer material
- Standard lining thickness is 5-6 mm
- PFA lining is mechanically secured to the ductile iron casing armoring by means of recessed dovetails that are cast into the ductile iron casing armor
- Extra long main shaft bushing
- Proprietary high pressure (1200 psi) transfer compression molding process
- Completely seamless inner magnet lining.

Competitive Comparator

<table>
<thead>
<tr>
<th>MAGNATEX</th>
<th>COMPETITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFA offers the broadest range of resistance to chemical attack, lowest</td>
<td>Generally only available in cheaper ETFE (Ethylene Tetrafluoroethylene)</td>
</tr>
<tr>
<td>permeation rate and highest temperature capability of all the fluoropolymer materials, which ensures the maximum possible service life for Magnatex® lined magnetic drive pumps.</td>
<td>material, which has less chemical resistance, higher permeability and lower temperature resistance than PFA.</td>
</tr>
<tr>
<td>Magnatex PFA linings are 5–6mm thick and therefore will last longer</td>
<td>Most competitors’ linings are just 3–4 mm thick, which means they have proportionately less corrosion and permeation resistance than Magnatex lined pumps.</td>
</tr>
<tr>
<td>in service than thinner ones of the same material and even longer when compared to the ETFE and PVDF linings offered by most of our competitors.</td>
<td>Most competitors have no mechanical means of restraining the casing liner, which can result in lining movement in high vacuum or low suction pressure applications. Shifting or movement of the lining may result in linings collapsing onto the internal rotating elements leading to catastrophic failure of the pump.</td>
</tr>
<tr>
<td>High-pressure molding at 1200 psi produces a positive locking of the lining material and prevents lining movement in high vacuum or low suction pressure applications.</td>
<td>Competitors generally offer shorter main shaft bushings, resulting in a smaller surface area to support dynamic shaft loads, which results in a shorter pump life.</td>
</tr>
<tr>
<td>The extra long main shaft bushing provides greater stability for operation across the entire hydraulic range of the pump, with smooth, quiet operation and extremely low vibration. Greater shaft support surface area means lower hydraulic loading, less wear and longer service life.</td>
<td>Competitors use a cheaper, atmospheric pressure, rotomolding process, which results in a thinner, less dense, and more permeable lining material with a less uniform surface finish. Rotomolded linings may have air bubbles trapped behind them, which can lead to linings cracking in high-temperature applications.</td>
</tr>
<tr>
<td>High-pressure transfer molding @ 1200psi produces a lining with a dense, uniform thickness and superior surface finish, all of which contribute to superior service life in demanding chemical services. High pressure molding also eliminates any air pockets between the casing lining and the armoring, which is critical in high temperature services.</td>
<td>Completely seamless inner magnet lining eliminates a potential leak path for the process fluid to reach and attack the inner magnet. Shape secured main bushing eliminates keyed construction; easing related stress points.</td>
</tr>
<tr>
<td>Completely seamless inner magnet lining eliminates a potential leak path for the process fluid to reach and attack the inner magnet. Shape secured main bushing eliminates keyed construction; easing related stress points.</td>
<td>Most competitors have seams in the inner magnet lining that can allow aggressive chemicals to penetrate the lining, which cause the magnet segments to swell and corrode, leading to catastrophic failure of the pump.</td>
</tr>
</tbody>
</table>
MTA

- Proprietary high-pressure transfer molded PFA fluoropolymer lining is 5-6mm thick for superior strength, permeation and abrasion resistance.
- Heavy-duty ductile iron casing armor provides mechanical strength to the pump and protection for the PFA lining.
- Dovetail grooves in the DI casing armor provides positive locking of the lining — good for vacuum and high temperature applications.
- Shape secured component design eliminates keyed construction stress points.
- Extra long main bushing provides stable operation over the entire operating range of the pump.
- Reinforced heavy-duty frame armor supports close coupled motors to 25hp and 284TSC frame.
- Motor adapter plate allows use of different hp ratings on a single pump model for performance versatility.
- Engineered plastic rear casing outer shell provides rigid high strength to the PFA lining.
- NEMA C-Face motor provides positive pump and motor alignment.
- PFA encapsulated seamless construction. Rare earth inner magnets are either Nd or SmCo.
- Stationary shaft simple construction.
Magnatex magnetic drive pumps now feature significantly increased dry-running capability!

- Our SiC-X bearings can run dry for extended periods — even hours!
- Unique materials and manufacturing techniques of our specially treated SiC-X bearings provide a coefficient of friction 1/4 that of SiC.

The very low coefficient of friction of our SiC-X bearings results in much less heat being generated in upset or dry-running conditions.
SiC-X bearings are more forgiving of dry-running conditions frequently encountered at start-up, during upset conditions or in batch services.
Extremely hard surfaces minimize wear and prolong service life; resistance to chemicals is maintained for extended bearing life.

- Online pump selector
- System head calculator

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SiC-X Availability
- MMP/ MMH/ MML—Standard
- MP/ ML/ MPH/ MPT—Standard
- MPL/ MLL/ MHL—Optional
- MAXP—Optional
Dry-running capability is improved by using our proprietary SiC-X bearings when compared to SiC.

Preliminary Test Results

- In multiple dry-running tests using an MP220, 1 HP unit with standard SiC bearings, noise developed after a brief period of operation. On disassembly, internal damage was identified. The same pump with the special bearing material operated over 1 hour and 45 minutes with no unusual noise. On disassembly, there was no visible damage.
- The next test involved running the same pump with the SiC-X bearing material dry for one hour with the suction valve closed. The rear casing temperature reached 260°F. With the pump still operating, the suction valve was then opened, allowing room temperature water to enter the pump. On inspection after the pump continued to operate, no damage or cracks were observed—all parts were in excellent condition.
- A test at a customer facility was inadvertently run dry when the suction cap used during shipping was not removed before installation. After running dry for 10 minutes, the pump was inspected and no damage was observed. The pump was reinstalled without the cap and operated as expected.

Controlled Test Results

<table>
<thead>
<tr>
<th>Test Progression</th>
<th>Standard SiC</th>
<th>SiC-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation with a combination of air and liquid; rotation speed of 19.7 ft/sec and magnet assembly weight of 8.2 lbs.</td>
<td>The bearing surface was abraded with noticeable wear after operating for 10 minutes</td>
<td>Coefficient of Friction = 0.39</td>
</tr>
<tr>
<td>Dry-running—no liquid; 19.7 ft/sec, magnet assembly weight of 8.2 lbs</td>
<td>Bearing damage after 4 seconds of operation</td>
<td>Coefficient of Friction = 0.099</td>
</tr>
<tr>
<td>Dry-running—no liquid; 15.4 ft/sec, inner magnet assembly weight of 2.2 lbs</td>
<td>Bearing damage after 45 seconds of operation</td>
<td>Bearing was in excellent condition after 1 hour and 45 minutes of operation</td>
</tr>
<tr>
<td>Heat shock after dry-running 1 hour; poured water at room temperature on bearing which was assumed over 330°F</td>
<td>N/A—will not run dry this long</td>
<td>Bearing was in excellent condition after 1 hour runtime; no thermal cracking or heat checking evident</td>
</tr>
<tr>
<td>Dry-running—No liquid, inner magnet assembly weight of 22.5 lbs</td>
<td>Bearings destroyed after 2-3 seconds</td>
<td>Bearings were in excellent, as new condition, after 1 minute of runtime.</td>
</tr>
<tr>
<td>Dry-running—No liquid, inner magnet assembly weight of 22.5 lbs</td>
<td>Bearings destroyed after 2-3 seconds</td>
<td>Shaft sleeve was cracked after 2 minutes of operation. No other permanent damage to the pump was recorded.</td>
</tr>
</tbody>
</table>

SiC-X Corrosion Testing

<table>
<thead>
<tr>
<th>Liquid</th>
<th>Temperature degrees °F</th>
<th>Time</th>
<th>Degrees of Corrosion (g/m2/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>65% HNO3</td>
<td>Boiling</td>
<td>24 Hours</td>
<td>0.003</td>
</tr>
<tr>
<td>100% H2SO4</td>
<td>Boiling</td>
<td>24 Hours</td>
<td>0.002</td>
</tr>
<tr>
<td>35% HCl</td>
<td>Boiling</td>
<td>24 Hours</td>
<td>0.002</td>
</tr>
<tr>
<td>30% NaOH</td>
<td>Boiling</td>
<td>24 Hours</td>
<td>0.002</td>
</tr>
<tr>
<td>100% CH3COOH</td>
<td>158°F</td>
<td>24 Hours</td>
<td>0.000</td>
</tr>
<tr>
<td>35% H2O2</td>
<td>Boiling</td>
<td>24 Hours</td>
<td>0.002</td>
</tr>
</tbody>
</table>

In the case of the test application involving air with liquid— an inherently difficult situation for product lubricated bearings— the SiC-X bearing operated continuously for 10 minutes with no cracks or wear. Even with completely dry operation with no liquid whatsoever. Inspection revealed the bearings to still be in good condition after 1 hour 45 minutes.

Conclusions

- One of the weak points of ceramic materials is poor responsternal shock. In our tests, the SiC-X bearing material was unaffected. On inspection the bearings showed no evidence of damage. The results of a similar, though inadvertent, field test where a technician discovered the pump was being operated in a dry-running condition were equally impressive. He stopped the pump and poured liquid on the bearing to cool it off quickly. Even in that situation with the bearing close to the point of being damaged, the SiC-X gave the customer good results. The technician “expected damage” and was surprised to see the SiC-X in good condition.
- As indicated in the corrosion testing chart above, SiC-X has comparable performance to that of SiC as shown in various literature sources for the listed chemicals.

Summary

- From our testing and analysis, it is clear that the SiC-X provides good results when used in magnetically-driven pumps, especially for troublesome short term startup dry-running conditions. You can expect better performance in the case of upset conditions and other temporary dry-running situations, delaying or reducing bearing damage whereas a catastrophic bearing failure would have immediately occurred with standard SiC. When used in conjunction with a power monitor and/or vibration monitoring equipment, sudden, catastrophic mechanical failure of magnetic drive pumps can be a thing of the past. It should be noted that the heavier the inner magnet assembly is, the shorter the dry running duration capability.
- The values in the above charts are from actual test results and are considered reliable, though we cannot guarantee similar results.
# ANSI Pump Replacement with MP/MPL Series Adapter Block Dimensions

<table>
<thead>
<tr>
<th>MODEL</th>
<th>MP / MPL</th>
<th>ANSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP423 1.5 x 1 T</td>
<td>AA6 1.5 x 1.5</td>
<td>X 6.50, Y 4.00, D 9.00, X 6.50, Y 4.00</td>
</tr>
<tr>
<td>MPL40 1.5 x 1.6</td>
<td>AA8 1.5 x 1.5</td>
<td>X 6.50, Y 4.00, D 9.00, X 6.50, Y 4.00</td>
</tr>
<tr>
<td>MPL42 &amp; MPL42LF 1.5 x 1.8</td>
<td>AA8 1.5 x 1.5</td>
<td>X 6.50, Y 4.00, D 9.00, X 6.50, Y 4.00</td>
</tr>
<tr>
<td>MPL84 3 x 1.5 x 6</td>
<td>AB6 3 x 1.5 x 6</td>
<td>X 6.50, Y 4.00, D 9.00, X 6.50, Y 4.00</td>
</tr>
<tr>
<td>* MPL52LF 2 x 1 x 10</td>
<td>A05-10 2 x 1 x 10</td>
<td>X 6.50, Y 4.00, D 9.00, X 8.50, Y 4.00</td>
</tr>
<tr>
<td>* MPL85 3 x 2 x 6</td>
<td>A10-6 3 x 2 x 6</td>
<td>X 8.25, Y 4.00, D 9.00, X 8.25, Y 4.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MP / MPL SERIES</th>
<th>ANSI PUMP</th>
<th>BASE</th>
<th>HD</th>
<th>Z +/- 0.13 [3mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP423 1.5 x 1 T</td>
<td>AA6 1.5 x 1.5</td>
<td>139</td>
<td>9.00 [228]</td>
<td>0.00 [0]</td>
</tr>
<tr>
<td>MPL40 1.5 x 1.6</td>
<td>AA8 1.5 x 1.5</td>
<td>148</td>
<td>10.50 [266]</td>
<td>1.50 [38]</td>
</tr>
<tr>
<td>MPL42 &amp; MPL42LF 1.5 x 1.8</td>
<td>AA8 1.5 x 1.5</td>
<td>153</td>
<td>12.88 [327]</td>
<td>3.88 [96]</td>
</tr>
<tr>
<td>MPL84 3 x 1.5 x 6</td>
<td>AB6 3 x 1.5 x 6</td>
<td>148</td>
<td>10.50 [266]</td>
<td>1.50 [38]</td>
</tr>
<tr>
<td>* MPL52LF 2 x 1 x 10</td>
<td>A05-10 2 x 1 x 10</td>
<td>153</td>
<td>12.88 [327]</td>
<td>3.88 [96]</td>
</tr>
<tr>
<td>* MPL85 3 x 2 x 6</td>
<td>A10-6 3 x 2 x 6</td>
<td>245</td>
<td>12.00 [304]</td>
<td>3.00 [76]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>252</td>
<td>12.38 [314]</td>
<td>3.38 [86]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>258</td>
<td>13.00 [330]</td>
<td>4.00 [101]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>264</td>
<td>13.88 [352]</td>
<td>4.88 [124]</td>
</tr>
</tbody>
</table>

* BASEPLATE MAY BE LEFT IN PLACE AND ADAPTER BLOCK THICKNESS ADJUSTED AS NEEDED. (REVIEW OLD BASE MOTOR PAO HEIGHT)

**ALL DIMENSIONS IN INCHES [mm]**
API-685, 1st Edition
Sealless Centrifugal Pumps for Petroleum, Heavy Duty Chemical, and Gas Industry Services
Comments and Clarifications

1. **SCOPE** These comments apply to API-685 – 1st Edition, October 2000. The API authors of this specification for Sealless Centrifugal Pumps for Petroleum, Heavy Duty Chemical, and Gas Industry Services wisely recognized there are numerous applications within the API and related markets for which the service requirements can be satisfied with pumping equipment that does not fully comply with the API-685 standard. Stated differently, there are service requirements within the API market that can be readily satisfied with a sealless mag-drive centrifugal process pump conforming to ANSI B73.1M which comply with the "not to exceed" values listed in the Scope of API-685. An owner of a process plant can benefit from several characteristics of a bonafide sealless mag-drive pump, such as provided by Magnatex Pumps, Inc., when compared with an API-685 compliant pump. Some of those benefits are:
   a. Greatly reduced lead time for unit supply with many models in 316SS construction available from stock in a matter of 1-4 weeks for routine requirements. When needed pumps and parts can be supplied in hours for emergency situations.
   b. Spare parts availability from manufacturer stock which reduces owner stock requirements.
   c. Rugged design provides highly reliable service life.
   d. Reduced initial cost as excess design requirements are removed from the equipment specifications.

Specific comments by section follow. Sections not addressed are considered to be in full compliance.

2. **6.3.3** Minimum metallurgy for the pressure casing is 316SS to minimize corrosion effect to less than 0.002" per year for most applications. As pumped liquids become more aggressive, materials are selected to keep the corrosion rate within the aforementioned corrosion rate limit.

3. **6.3.7** Nozzle loading - Does not comply with the higher strength casting requirements. The best system design characteristics include adequate piping support to prevent pipe loading moments and forces from being transferred to the pump. This helps extend pump service life and lengthen intervals of MTBF.

4. **6.3.8** Centerline Mounting - Available as an option. Typically applied when process temperatures exceed 550°F for foot mounted pump casing.

5. **6.3.9** O-ring sealing meets the intent of this section; however, the exact dimensions and characteristics of the design are proprietary. Our O-ring seals do not leak when applied within the design parameters of the equipment limitations.

6. **6.3.11.4** Cap screws and studs are used as appropriate to facilitate field maintenance. All pressure retaining and wetted internal fasteners are a minimum of 316SS. External non-wetted process pressure retaining fasteners are 304SS.

7. **6.4.2.5** Flange surfaces comply with ISO 7005-1 smooth finish requirements and the standard raised face flange configuration provides excellent sealing characteristics within the pump design parameters for most liquids. Serrated spiral or concentric grooves complying with this section are available as an option at additional costs.

8. **6.4.3.1** Welded auxiliary connections as required are available at additional costs.

9. **6.4.3.2 and 3** Welded connections to pressure casings may be limited in size due to the space available and may not conform to the specific minimum material required by these sections.
10.  6.4.3.8.3 Cylindrical (straight) threaded connections are not used on Magnatex pumps.

11.  6.7 Wear rings are not furnished.

12.  6.8.2 Secondary Control corrective action must be taken as soon as possible to isolate the source of primary leakage to assure integrity of the control system.

13.  6.8.5 Secondary pressure containment casing is ductile iron. SS secondary pressure containment is available at additional costs.

14.  6.10.4 Tolerance rings are not used. Pumps are matched to required temperature ranges while still maintaining the slip-fit maintenance features and benefits, which requires a higher level of quality control.

15.  7.2 Instrumentation and control systems when required will be matched to the application requirements specified by the purchaser. Additional costs will apply.

16.  7.3 Piping and appurtenances for auxiliary systems when required will be matched to the application requirements specified by the purchaser. Additional costs will apply.

17.  7.4 No special tools are required for maintenance of Magnatex pumps. Our pumps are designed with slip-fit construction to facilitate field maintenance.

18.  8 Inspections and Testing are tailored to the specific job requirements as required. Additional costs may apply.

19.  9.1.1.5 Magnatex pumps incorporate a straddle mount bearing system that balances shaft loading and does not pass radial loading to the rear casing. The dual bearing system is superior to single bearing arrangements that do not employ the support of the shaft from the rear containment shell. Further, our rear containment shell is the thickest in the industry and designed to handle any forces that may be encountered in operation over the performance range of the pump.

20.  9.1.1.8 A supplemental nameplate will be provided for A/F bearing numbers and magnet coupling torque rating.

21.  9.1.3.4 Outer Magnets for the smallest size magnet frames (F Series) are threaded in the direction of rotation (tightening) and set screwed in place onto the Outer Shaft, not keyed. All other Outer Magnets are keyed to the shaft for frame sizes S, M, and L, and secured by set screws over the key and at 90° on the outer magnet hub.

22.  9.1.3.5 The outer magnet segments are mechanically spaced and retained with adhesive in machined steps in the outer magnet retaining ring to prevent radial and axial movement independent of the magnet assembly. The inside diameter of the outer magnet front ring extends beyond the inner diameter surface of the magnet segments in close proximity of the rear casing. This prevents contact with the outer diameter on the rear casing containment shell portion of the rear casing during assembly and maintenance operations. Outer magnet sheathing is not required or provided for best functioning of the magnets in the range of pumps supplied by Magnatex Pumps, Inc. The inner magnet is sheathed in the same or a superior material compared to the general materials of construction for wetted parts.

We welcome your comments and inquiries and will be pleased to respond to any questions you may have about the reliability of our pumps. Contact your Magnatex representative or call us at 713.972.8666 or 866.MAG-PUMP. To view all our pump types or use our pump selection program, visit our website at www.magnatexpumps.com.
3600 vs. 1800 RPM SPEED CONSIDERATIONS
FOR MAGNETICALLY DRIVEN PUMPS

Historically, engineers have preferred to use centrifugal pumps operating at 1800 RPM rather than 3600 RPM, anticipating lower wear rates. In the case of mag-drive pumps, you need to throw all your old thinking out! Higher speeds offer many advantages! With Magnatex magnetically driven sealless centrifugal pumps:

A. **Sealless construction.** There are no mechanical seals used, so there are no seals to wear out.

B. **The laws of Physics prevail.** The Affinity Laws dictate that the size of the impeller required varies directly with the speed relative to flow and as the square of the speed for head. In practical terms, since a different pump with different impeller pattern will likely be selected, the impeller diameter needed at 1800 RPM will be double or more the size for a 3600 RPM selection. Not only is the impeller size larger, but also the casing and any other parts associated with change in impeller diameter.

C. **No wear considerations.** Impeller and casing abrasive wear is not an issue as pumping solids laden liquids with sealless pumps is not recommended without an external or recirculated/filtered flush.

D. **Stable pump bearings.** The internal bearings and thrust rings are made of Silicon Carbide, which has a hardness of Vickers 3100. Even with small amounts of solids, this extremely hard material is very wear resistant, so there should be no concerns.

E. **No-contact radial bearings.** The internal bearings operate on a hydrodynamic “cushion” of pumped liquid. The higher the speed, the greater the cushion which leads to longer pump life. The effect is similar to a car hydroplaning – if you go too fast, the “cushion” of water under your tires will be sufficient that you lose control; the tires no longer have any contact with the road. The same effect exists with our pumps; the pump sleeve will not have contact with the bearing during operation. The only time the product lubricated, mag-drive pump bearings make contact is during start-up or shut-down.

F. **Low anti-friction bearing loads.** Since there is no solid connection between the shaft in the bearing housing or motor (for close-coupled pumps) and the inner rotating assembly, thrust loads are not transferred to the bearing frame or motor, and radial loads are extremely low for the ball bearings in the bearing housing or motor (for close-coupled pumps.) As an example, for the Magnatex Model AA6-F25, the L₁₀ bearing life is in excess of 300,000 hours, compared to an L₁₀ of only 25,000 hours for a standard mechanical seal ANSI pump.

G. **Higher speeds mean smaller magnets and lower cost.** Mag-drive pumps have a constant torque magnetic coupling, that is, the magnet horsepower rating changes directly with the speed. To illustrate, a magnet rated for 30 HP at 3600 RPM would only be rated for 15 HP at 1800 RPM; the 3600 RPM magnet would be much smaller than an 1800 RPM magnet for the same horsepower.

As you can see, from all of these factors, it is much more cost effective to operate at 3600 RPM. In most applications there is no mechanical benefit from operating at slower speeds.
### APPLICATION DETAILS

<table>
<thead>
<tr>
<th>Service Name</th>
<th>Replace Make</th>
<th>Replace Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget/Firm</td>
<td>Number of Units</td>
<td></td>
</tr>
<tr>
<td>Tag Number</td>
<td>Materials of Construction</td>
<td></td>
</tr>
</tbody>
</table>

#### Liquid

<table>
<thead>
<tr>
<th>Solids Content</th>
<th>Size</th>
<th>Max. 100/500 Micron</th>
<th>% Weight</th>
<th>Max. 4/1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature °F</td>
<td>Specific Gravity</td>
<td>Viscosity (cp cs ssu)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Flow</td>
<td>TDH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suction Pressure</td>
<td>Discharge Pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPSHA</td>
<td>Motor Enclosure</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Explosion Proof</th>
<th>Class</th>
<th>Division</th>
<th>Group</th>
<th>Temp Code</th>
</tr>
</thead>
</table>

### Specific Heat

- Specific Heat (if available)

### Thermal Conductivity

- Thermal Conductivity (if available)

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**NOTES:** Any special requirements? We use water to test our pumps. If water is incompatible with your process, please let us know and we will use an alternative pressure test procedure.

<table>
<thead>
<tr>
<th>Pump Model</th>
<th>Price</th>
<th>WT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Spec.</td>
<td>Price</td>
<td>WT.</td>
</tr>
<tr>
<td>Motor Part #</td>
<td>Price</td>
<td>WT.</td>
</tr>
<tr>
<td>Baseplate</td>
<td>Price</td>
<td>WT.</td>
</tr>
<tr>
<td>Other</td>
<td>Price</td>
<td>WT.</td>
</tr>
</tbody>
</table>