Our company goal is to provide the solutions that protect our surroundings, raise the environmental awareness, and promote the growth of the community.

Providing environmentally safe sealless, magnetic pumps of the highest quality for over 30 years.
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WARRENDER
SEALLESS MAG-DRIVE PUMPS

The Fine Art of Magnetic Pumps™
Over 30 years of experience in producing and applying magnetic drive pumps continues to provide problem solving for thousands of customers with an expansive array of applications. We typically solve the most challenging pumping problems with reliable and cost effective solutions.

We know the key elements that comprise a magnetic pump, engineering our own pump hydraulics and magnetic couplings to provide an integrated design.

Zero Emissions and Maximum Safety
Benefit from a process free of leakage, contamination or toxic releases while avoiding constant monitoring and potential environmental fines. Eliminate all toxic and dangerous chemical releases including explosive and volatile liquids that can react with atmospheric contact.

Zero Leakage- Zero Corrosion™
WARRENDER mag-drive pumps are built in various constructional materials including: 316L-SS, Alloy-20, Incoloy-825, Hastelloy-C276, Titanium, Polypropylene, PVDF or ETFE to meet specific process requirements.

Advanced Technology and the Highest Quality for Long Pump Life
WARRENDER pump designs are built to the highest quality standards to protect your process, preventing costly maintenance and lost production time.

* Robust, high thickness pump casings
* High efficiency impellers with low NPSH requirements
* High strength, rare earth magnetic couplings suitable for extreme temperatures
* Heavy duty rear casings in single or double walled non-welded designs

Performances to the Extreme
* Magnetic coupling power up to 650 HP (larger couplings available)
* Flows from 0.1 to 4500 gpm
* Pressures up to 7,250 psig (higher pressures available)
* Heads to 3,250 feet (higher heads available)
* Temperatures from -200°C to +840° F
* Pump liquefied gases or liquids with low NPSH
Three Pump Designs Provide Complete Hydraulic Coverage:

End Suction Centrifugal for standard to the most challenging services. Transfer, unloading and circulation

- High efficiency, long life, with low maintenance costs
- Hermetically sealed to eliminate mechanical seal failures
- Modular construction for rapid and simple maintenance
- Flows up to 4500 gpm
- Heads up to 1650 feet
- System pressures from vacuum up to 7,250 psig
- Temperatures from -150°C to +650°F (650-840°F w/ heat exchanger)

Regenerative-Peripheral Turbine Pumps for low and medium flows High head systems requiring pulsation free performance

- Replaces oversized centrifugals, avoiding high head cavitations
- Alternative to complex and costly multistage pumps
- Handles up to 20% entrained gas, resists vapor locking
- Flows up to 45 gpm
- Heads up to 3,250 feet
- System pressures from vacuum up to 7,250 psig
- Temperatures from -150°C to +650°F (650-840°F w/ heat exchanger)

Rotary (Sliding) Vane Pumps for metering with pulse-free flow Injection of chemicals w/ low flow at high pressure

- Suitable for low or high viscosity liquids
- Capable of differential pressures up to 200 psig
- Self-priming up to 13 feet of dry lift, runs dry without damage
- System pressures up to 7,250 psig
- Temperatures from -100°C up to +480°F
- Flow Range:
  - Range 1° from 0.1 to 2.2 gpm
  - Range 2° from 2.2 to 5 gpm
  - Range 3° from 5 to 11 gpm
APPLICATIONS

Corrosive Thermoplastic Pump Applications

- Various EPA monitored chemicals
- Corrosives (e.g., HCL, HF, sulphuric, nitric, etc.)
- Caustics including sodium or potassium hydroxide, salt brine, sea water
- Permeating liquids (i.e., chlorine, fluorine, bromine or halogen solutions)

Demanding Alloy Pump Services

- All EPA monitored chemicals
- Dangerous, toxic, noxious and carcinogenic liquids
- Solvents, hydrocarbons, pyrophorics and other volatile liquids
- Heat transfer fluids (up to 650° F, 840° F w/ heat exchanger).
- Hot water
- Refrigerants and liquefied gases
- Cryogenic fluids (down to -200°C)
- High pressure circulation systems
- Pressurizing mechanical seal pots
- Sampling, metering or chemical injection systems

We have an extensive selection of pumps and spare parts to provide the best service. Our technical department is at your disposal from the onset of plant start-up to meet all of your needs.

Rear Cartridge Kits Minimize Downtime

Rear cartridge kits can be changed out in minutes with registered fits, requiring no special tools. This assembly is recommended as an emergency spare for all critical services.
WMCA alloy compact centrifugal mag-drive pumps provide the advantages of a heavy-duty sealless process pump in a compact, cost effective design. WMCA Horizontal pumps are equipped with zero leakage magnetic couplings to meet the latest toxic emissions regulations. The absence of mechanical seals eliminates costly pump maintenance, lost production time and process contamination.

<table>
<thead>
<tr>
<th>Performance Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flow</strong></td>
</tr>
<tr>
<td><strong>Head</strong></td>
</tr>
<tr>
<td><strong>Temp</strong></td>
</tr>
<tr>
<td><strong>System Pressures</strong></td>
</tr>
</tbody>
</table>

**DESIGN FEATURES**
- Sealless magnetic drive coupling
- Rugged alloy casing and pump components
- Heavy duty alloy containment shell
- High efficiency enclosed impeller design
- High torque magnets suitable for direct starting motors
- Close-coupled NEMA motor frame or bearing pedestal

**MATERIALS**
- SS-316 stainless steel
- Hastelloy-C276
WMCA - ISO-2858 Process Horizontal, End Suction

Cross-sectional view

WMCA - ISO 2858

Performance Range

<table>
<thead>
<tr>
<th>Flow</th>
<th>8-4500 GPM</th>
<th>2-1000 M³/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>To 700 feet</td>
<td>213 M</td>
</tr>
<tr>
<td>Temp</td>
<td>-238 to 600°F</td>
<td>-150 to 315°C</td>
</tr>
<tr>
<td>System Pressures</td>
<td>To 350 PSIG</td>
<td>24 BAR</td>
</tr>
</tbody>
</table>

WMCA-ISO 2858 alloy centrifugal process pump program is a culmination of 30 years of research, engineering, product development and manufacturing technology. The WMCA designs are the benchmark for heavy-duty sealless process pumps offering the utmost in versatility and reliability in the most arduous applications. Particularly suited to pump liquids in any industrial field: chemical, petrochemical; pharmaceutical; paper mills, textile industry, food processing, sugar plants, dairies, electronics, water treatment or any hazardous chemical application.

DESIGN FEATURES

- Casings built with heavy wall thicknesses; Flanges machined to 150 lb. or 300 lb. R.F. ANSI configurations
- The standard one-piece Hastelloy C276 containment housing exceeds ASME pressure vessel codes; rated for 350 PSIG working pressures with capabilities to 1500 PSIG
- External lubrication maintains highest pressure differential, enabling dead-head operation
- Backed by silicon carbide thrust bearings, impeller pump-out vanes balance axial thrust
- Quick-change rear cartridge assembly (an WMCA standard) allows for replacement and restart-up within 10 minutes
- Dual back-pull-out design; service either hydraulic end or ball bearing assembly

MATERIALS

- AISI 316 or 316L SS
- Cast steel WCB (Casing and Impeller only)
- Alloy 20
- Monel-400
- Hastelloy B or C-276
WMCA-ANSI B73.1 alloy centrifugal process pumps feature a hydraulically balanced impeller and ample running clearances. The WMCA designs are the benchmark for heavy-duty sealless process pumps are suitable for standard applications, and extreme high temperature or cryogenic services. WMCA alloy centrifugal mag-drive designs are available in NEMA close-coupled and long-coupled pedestal configurations.

**Performance Range**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow</td>
<td>8-1000 GPM</td>
</tr>
<tr>
<td>Head</td>
<td>To 400 feet</td>
</tr>
<tr>
<td>Temp</td>
<td>0 to 250°F</td>
</tr>
<tr>
<td>System Pressures</td>
<td>To 350 PSIG</td>
</tr>
</tbody>
</table>

**MATERIALS**

- AISI 316 or 316L SS
- Cast steel WCB (Casing and Impeller only)
- Alloy 20
- Monel-400
- Hastelloy B or C-276

**DESIGN FEATURES**

- Casings built with heavy wall thicknesses; Flanges machined to 150 lb. or 300 lb. R.F. ANSI configurations
- The standard one-piece Hastelloy C276 containment housing exceeds ASME pressure vessel codes; rated for 350 PSIG working pressures with capabilities to 1500 PSIG
- External lubrication maintains highest pressure differential, enabling dead-head operation
- Backed by silicon carbide thrust bearings, impeller pump-out vanes balance axial thrust
- Quick-change rear cartridge assembly (an WMCA standard) allows for replacement and restart-up within 10 minutes
- Dual back-pull-out design; service either hydraulic end or ball bearing assembly
**DESIGN FEATURES**

- Non-cantilevered shaft
- Hermetically sealed column
- Heavy duty column shaft with oversized ball bearings
- Modular impeller allows for modifying performances
- Compact, high torque magnetic coupling with reduced mass

**Performance Range**

<table>
<thead>
<tr>
<th>Flow</th>
<th>8-4500 GPM</th>
<th>2-1000 M³/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>To 400 feet</td>
<td>122 M</td>
</tr>
<tr>
<td>Temp</td>
<td>-148 to 600°F</td>
<td>-100 to 315°C</td>
</tr>
<tr>
<td>System Pressures</td>
<td>To 350 PSIG</td>
<td>24 BAR</td>
</tr>
</tbody>
</table>

**MATERIALS**

- AISI 316 or 316L SS
- Cast steel WCB (Casing and Impeller only)
- Alloy 20

WMCA alloy centrifugal vertical sump pump program is free of mechanical or lip seals, ensuring leak-proof handling of corrosives. The heavy duty shaft is supported by bearings with no bushings to wear; shaft deflection is thereby eliminated.
WMCA - API 685 Process, End or Top Suction

**MATERIALS**
- AISI 316 or 316L SS
- Cast steel WCB (Casing and Impeller only)
- Alloy 20
- Monel-400
- Hastelloy B or C-276

WMCA alloy centrifugal mag-drive designs are available in API 610, API 685 and API 685 multistage configurations. Dynamically balanced, back-to-back impellers allow for minimal axial load on multistage units.

**DESIGN FEATURES**
- Casings built with heavy wall thicknesses
- The standard one-piece Hastelloy C276 containment housing exceeds ASME pressure vessel codes; rated for 350 PSIG working pressures with capabilities to 1500 PSIG
- External lubrication maintains highest pressure differential, enabling dead-head operation
- Backed by silicon carbide thrust bearings, impeller pump-out vanes balance axial thrust
- Quick-change rear cartridge assembly (an WMCA standard) allows for replacement and restart-up within 10 minutes
- Dual back-pull-out design or service either hydraulic end or ball bearing assembly

**Performance Range**

<table>
<thead>
<tr>
<th></th>
<th>Flow</th>
<th>Head</th>
<th>Temp</th>
<th>System Pressures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8-4500 GPM</td>
<td>To 3850 feet</td>
<td>-238 to 840°F</td>
<td>To 7250 PSIG</td>
</tr>
<tr>
<td></td>
<td>2-1000 M³/H</td>
<td>1173 M</td>
<td>-150 to 449°C</td>
<td>500 BAR</td>
</tr>
</tbody>
</table>
WMCP - Molded Thermoplastic, Horizontal

Performance Range

<table>
<thead>
<tr>
<th>Flow</th>
<th>2-175 GPM</th>
<th>0.45-40 M³/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>To 110 feet</td>
<td>33 M</td>
</tr>
<tr>
<td>Temp</td>
<td>To 180°F</td>
<td>85°C</td>
</tr>
<tr>
<td>System Pressures</td>
<td>To 50 PSIG</td>
<td>3 BAR</td>
</tr>
</tbody>
</table>

WMCP molded horizontal centrifugal sealless mag-drive thermoplastic pumps provide high reliability, with emphasis on optimum chemical compatibility. Interchangeable impellers provide flexibility for precisely matching head and flow capacities. WMCP Molded Horizontal pumps can be used in a wide range of acids and alkaline solutions up to temperatures of 180°F.

DESIGN FEATURES

- Heavy walled casings for added strength, pressure and temperature resistance
- Volute casing for optimum efficiencies and performances
- Interchangeable impellers, independent of internal magnets
- High torque, low mass magnetic couplings resist uncoupling
- Oversized internal shaft, sleeve and thrust bearings
- Standard 56-C, 143/5-TC & 182/4-TC NEMA frame motors

MATERIALS

- PP
- PVDF
WMCP molded vertical centrifugal sealless mag-drive thermoplastic pumps are engineered for reliability, durability and chemical resistance. Molded vertical pumps are best suited for filtration and spray systems, in-tank and sump applications. Complete isolation of the motor from the process liquid prevents internal corrosion, air entrainment or product contamination. Zero-leakage operation ensures maximum safety and full compliance with toxic emissions regulations.

**Performance Range**

<table>
<thead>
<tr>
<th></th>
<th>Flow</th>
<th>2-175 GPM</th>
<th>0.45-40 M³/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>To 110 feet</td>
<td>53 M</td>
<td></td>
</tr>
<tr>
<td>Temp</td>
<td>To 180°F</td>
<td>85°C</td>
<td></td>
</tr>
<tr>
<td>System Pressures</td>
<td>To 50 PSIG</td>
<td>3 BAR</td>
<td></td>
</tr>
</tbody>
</table>

**Design Features**

- Heavy walled casings for added strength, pressure and temperature resistance
- Volute casing for optimum efficiencies and performances
- Interchangeable impellers, independent of internal magnets
- High torque, low mass magnetic couplings resist uncoupling
- Oversized internal shaft, sleeve and thrust bearings
- Standard 56-C & 143/5-TC NEMA frame motors
WMCP machined thermoplastic horizontal centrifugal sealless mag-drive pumps are fabricated from SOLID Simona ® PP or PVDF thermoplastics to resist internal or external corrosion. Heavy walled, CNC machined construction provide far greater resistance to permeation and migration of corrosive, and permeating liquids. Additionally, added strength and thermal stability resists deformation, even in the most severe applications.

**Performance Range**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow</td>
<td>3-500 GPM</td>
</tr>
<tr>
<td>Head</td>
<td>To 175 feet</td>
</tr>
<tr>
<td>Temp</td>
<td>To 200°F</td>
</tr>
<tr>
<td>System Pressures</td>
<td>To 100 PSIG</td>
</tr>
</tbody>
</table>

**DESIGN FEATURES**

- Exclusive SOLID machined PP or PVDF casings and impeller components for maximum chemical resistance
- Non-metallic casings withstand external corrosion
- Integral raised face flanges (no threaded adapters) to ensure zero leakage
- Modular impeller allows for varying hydraulic performances
- Oversized, high purity ceramic or silicon carbide thrust bearings and shaft
- Standard, direct starting NEMA motors

**MATERIALS**

- PP
- PVDF
WMCP machined thermoplastic self-priming centrifugal sealless mag-drive pumps apply to the Self-Priming design with the addition of a self-contained, self-priming pump casing. Machined Horizontal Self-Priming pumps provide smooth continuous leak-proof operation where top unloading is specified.

**Performance Range**

<table>
<thead>
<tr>
<th>Performance</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow</td>
<td>30-275 GPM</td>
</tr>
<tr>
<td>Head</td>
<td>To 130 feet</td>
</tr>
<tr>
<td>Temp</td>
<td>To 200°F</td>
</tr>
<tr>
<td>System Pressures</td>
<td>100 PSIG</td>
</tr>
</tbody>
</table>

**Design Features**

- Exclusive SOLID machined PP or PVDF casings and impeller components for maximum chemical resistance
- Non-metallic casing withstands external corrosion
- Integral raised face flanges (no threaded adapters) to ensure zero leakage
- Modular impeller allows for varying hydraulic performances
- Oversized, high purity ceramic or silicon carbide thrust bearings and shaft
- Standard, direct starting NEMA motors

**Materials**

- PP
- PVDF
- ETFE
WMCP machined thermoplastic centrifugal sealless mag-drive vertical sump pumps do not require mechanical or lip seals, ensuring leak-proof handling of corrosives. The heavy duty shaft is supported by ball bearings with no bushings to wear; shaft deflection is thereby eliminated. The hermetically sealed column is permanently isolated from corrosive liquid or fumes.

**Performance Range**

<table>
<thead>
<tr>
<th>Flow</th>
<th>3-500 GPM</th>
<th>0.68-113 M³/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>To 175 feet</td>
<td>53 M</td>
</tr>
<tr>
<td>Temp</td>
<td>To 200°F</td>
<td>95°C</td>
</tr>
<tr>
<td>System Pressures</td>
<td>100 PSIG</td>
<td>7 BAR</td>
</tr>
</tbody>
</table>

**Design Features**

- Exclusive solid CNC machined thermoplastic casings and impeller components
- Hermetically sealed column
- Oversized, high purity ceramic or silicon carbide thrust bearings and shaft
- Modular impeller allows for modifying performances
- Isolated heavy duty column shaft with oversized ball bearings
- Direct starting NEMA motors

**Materials**

- PP
- PVDF

---

Cross-sectional view

WMCP – Machined Vertical

WMCP - Machined Thermoplastic, Vertical Sump
WMTA alloy regenerative turbine sealless mag-drive pumps are ideally suited for low flow / high head applications. All WMTA pumps are equipped with zero leakage magnetic couplings to meet the latest toxic emissions regulations. The absence of mechanical seals or packing glands eliminates costly pump maintenance, lost production time and process contamination.

The WMTA pumps are able to pump liquids containing up to 20% entrained gas. The WMTA pumps are suitable for thin non-lubricating liquids and/or high differential pressures.

### Performance Range

<table>
<thead>
<tr>
<th>Flow</th>
<th>0.25-55 GPM</th>
<th>0.5-10 M³/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>To 700 Feet</td>
<td>213 M</td>
</tr>
<tr>
<td>Temp</td>
<td>-148 to 600°F</td>
<td>-100 to 316°C</td>
</tr>
<tr>
<td>System Pressures</td>
<td>To 700 PSIG</td>
<td>48 BAR</td>
</tr>
</tbody>
</table>

### Design Features

- High head / low flow capability minimizes by-pass requirements and prevents overheating of centrifugals and high head cavitation
- Self balancing impeller—zero axial thrust loading
- Impeller design handles up to 20% entrained gas—ideal for pumping liquefied gases
- No galling or metal to metal contact
- Heavy duty alloy containment shell
- High torque magnets, suitable for direct starting motors
WMTA machined billet alloy regenerative turbine sealless mag-drive pumps can be constructed for high system pressures and special alloy configurations. All WMTA pumps are equipped with zero leakage magnetic couplings to meet the latest toxic emissions regulations. The absence of elaborate mechanical seal systems eliminates costly pump maintenance, lost production time and process contamination.

Variations in head calculations have minimal effect on the flow of a turbine pump. Also, turbine pumps can be throttled to a required duty point without by-passing.

### DESIGN FEATURES
- High head / low flow capability minimizes by-pass requirements and prevents overheating of centrifugals and high head cavitation
- Self balancing impeller—zero axial thrust loading
- Impeller design handles up to 20% entrained gas—ideal for pumping liquefied gases
- No galling or metal to metal contact
- Heavy duty alloy containment shell
- High torque magnets, suitable for direct starting motors
- Heavy walled casings withstand extreme system pressures.

### Performance Range

<table>
<thead>
<tr>
<th>Performance</th>
<th>Flow</th>
<th>0.25-45 GPM</th>
<th>0.5-10 M³/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>To 700 Feet</td>
<td>213 M</td>
<td></td>
</tr>
<tr>
<td>Temp</td>
<td>-148 to 600°F</td>
<td>-100 to 316°C</td>
<td></td>
</tr>
<tr>
<td>System Pressures</td>
<td>To 7250 PSIG</td>
<td>500 BAR</td>
<td></td>
</tr>
</tbody>
</table>

### MATERIALS
- AISI SS-316 Stainless Steel
- Alloy-20
- Incoloy-825
- Hastelloy-C27
WMTA alloy regenerative turbine sealless mag-drive pumps are ideally suited for low flow / high head applications. All WMTA pumps are equipped with zero leakage magnetic couplings to meet the latest toxic emissions regulations. The absence of mechanical seals or packing glands eliminates costly pump maintenance, lost production time and process contamination.

The WMTA pumps are able to pump liquids containing up to 20% entrained gas. The WMTA pumps are suitable for thin non-lubricating liquids and/or high differential pressures.

**Performance Range**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow</td>
<td>10-45 GPM</td>
<td>2.2-10 M³/H</td>
</tr>
<tr>
<td>Head</td>
<td>To 3000 Feet</td>
<td>915 M</td>
</tr>
<tr>
<td>Temp</td>
<td>-148 to 650°F</td>
<td>-100 to 343°C</td>
</tr>
<tr>
<td>System Pressures</td>
<td>7250 PSIG</td>
<td>500 BAR</td>
</tr>
</tbody>
</table>

**Materials**

- AISI SS-316 Stainless Steel
- Alloy-20
- Incoloy-825
- Hastelloy-C27

**Design Features**

- High head / low flow capability minimizes by-pass requirements and prevents overheating of centrifugals and high head cavitation
- Self balancing impeller—zero axial thrust loading
- Impeller design handles up to 20% entrained gas—ideal for pumping liquefied gases
- No galling or metal to metal contact
- Heavy duty alloy containment shell
- High torque magnets, suitable for direct starting motors
WMTP machined thermoplastic regenerative turbine sealless mag-drive pumps are ideally suited to low flow applications. WMTP regenerative turbine pumps avoid oversized centrifugals, that require flow by-passing and excessive horsepower. WMTP non-metallic turbine designs have excellent chemical resistance and extremely low wear characteristics. Variations in head calculations have minimal effect on the flow of a turbine pump. Also, turbine pumps can be throttled to a required duty point without by-passing.

**Performance Range**

<table>
<thead>
<tr>
<th>Flow</th>
<th>0.6-65 GPM</th>
<th>0.13-13M³/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>To 180 Feet</td>
<td>55 M</td>
</tr>
<tr>
<td>Temp</td>
<td>To 200°F</td>
<td>95°C</td>
</tr>
<tr>
<td>System Pressures</td>
<td>100 PSIG</td>
<td>7 BAR</td>
</tr>
</tbody>
</table>

**DESIGN FEATURES**

- Exclusive solid machined PP or PVDF casings and impeller components
- Heavy casing wall thicknesses
- Resists external corrosion
- Self-balancing impeller eliminates thrust bearing wear
- Handles up to 20% entrained gas, resists cavitation
- Direct starting, standard NEMA motors

**MATERIALS**

- PP
- PVDF
- ETFE
WMTP machined thermoplastic self-priming regenerative turbine sealless mag-drive pumps provide smooth, continuous, leak-proof operation where top unloading is required. The same basic features of Self-Siphoning pumps apply to the Self-Priming series design with the addition of a self-contained, self-priming pump casing.

**Performance Range**

<table>
<thead>
<tr>
<th></th>
<th>Flow 0.60-55 GPM</th>
<th>Flow 0.13-13 M³/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>To 180 Feet</td>
<td>55 M</td>
</tr>
<tr>
<td>Temp</td>
<td>To 200°F</td>
<td>95°C</td>
</tr>
<tr>
<td>System Pressures</td>
<td>100 PSIG</td>
<td>7 BAR</td>
</tr>
</tbody>
</table>

**Design Features**

- Exclusive solid machined PP or PVDF casings and impeller components
- Self-priming pump housing
- Resists external corrosion
- Self-balancing impeller eliminates thrust bearing wear
- Handles up to 20% entrained gas, resists cavitation
- Direct starting, standard NEMA motors
WMRA - Cast, Top Port

**Performance Range**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow</td>
<td>0.1-11 GPM</td>
</tr>
<tr>
<td>Head</td>
<td>To 180 psig</td>
</tr>
<tr>
<td>Temp</td>
<td>To 450°F</td>
</tr>
<tr>
<td>System Pressures</td>
<td>350 PSIG</td>
</tr>
</tbody>
</table>

WMRA series alloy P.D. rotary vane sealless mag-drive pumps are ideally suited for low flow / high head applications. The top porting design is ideally suited for confined piping systems. All WMRA pumps are equipped with zero leakage magnetic couplings to meet the latest toxic emissions regulations. The WMRA pumps feature self-compensating sliding-vanes which maintain design head and flow capacities for extended operating life. The WMRA pumps are suitable for thin non-lubricating liquids and/or high differential pressures. The pumps are capable of self-priming from a dry start.

**DESIGN FEATURES**

- Self-priming and can run dry without damage
- No gears to wear or metal to metal contact, low internal slip
- Capable of proportioning with variable speed drives, turn-down ratios depend upon differential head requirements
- Heavy duty alloy containment shell for added safety
- Replaceable carbon cartridge—low maintenance costs
- High torque magnets for direct starting motors
- Internal relief valve prevents over pressurization

**MATERIALS**

- AISI SS-316 Stainless Steel
- Incoloy-825
- Hastelloy-B or C-276
WMRA series alloy P.D. rotary vane sealless mag-drive pumps are ideally suited for low flow / high pressure applications including chemical injection and metering systems. All WMRA pumps are equipped with zero leakage magnetic couplings to meet the latest toxic emissions regulations. The WMRA pumps feature self-compensating sliding-vanes which maintain design head and flow capacities for extended operating life. The WMRA pumps are suitable for thin non-lubricating liquids and/or high differential head pressures. The pumps are capable of self-priming from a dry start.

**Performance Range**

<table>
<thead>
<tr>
<th></th>
<th>Flow</th>
<th>Head</th>
<th>Temp</th>
<th>System Pressures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.1-11 GPM</td>
<td>To 180 psig</td>
<td>To 450°F</td>
<td>350 PSIG</td>
</tr>
<tr>
<td></td>
<td>22-2500 l/h</td>
<td>12 bar</td>
<td>232°C</td>
<td>24 BAR</td>
</tr>
</tbody>
</table>

**DESIGN FEATURES**

- Self-priming and runs dry without damage
- No gears to wear or metal to metal contact, low internal slip
- Capable of proportioning with variable speed drives, turn-down ratios depend upon differential head requirements
- Heavy duty alloy containment shell for added safety
- Replaceable carbon cartridge—low maintenance costs
- High torque magnets for direct starting motors

**MATERIALS**

- AISI SS-316 Stainless Steel
- Incoloy-825
- Hastelloy-B or C-276
WMRA machined billet rotary vane sealless mag-drive pumps are built for high system pressures and special alloy requirements. All WMRA pumps are equipped with zero leakage magnetic couplings to meet the latest toxic emissions regulations. The absence of mechanical seals eliminates costly pump maintenance, lost production time and process contamination. The WMRA pumps feature self-compensating sliding-vanes which maintain design head and flow capacities for extended operating life. The WMRA pumps are suitable for thin non-lubricating liquids and/or high differential pressures. The WMRA pumps are capable of dry self-priming.

**MATERIALS**
- AISI SS-316 Stainless steel
- Incoloy-825
- Hastelloy-B or C-276

**DESIGN FEATURES**
- Self-priming and runs dry without damage
- No gears to wear or metal to metal contact, low internal slip
- Capable of proportioning with variable speed drives, turn-down ratios depend upon differential head requirements
- Heavy duty alloy containment shell for added safety
- Replaceable carbon cartridge—low maintenance costs
- High torque magnets for direct starting motors

**Performance Range**

<table>
<thead>
<tr>
<th></th>
<th>Flow</th>
<th>Head</th>
<th>Temp</th>
<th>System Pressures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>To 0.1-11 GPM</td>
<td>22 to 2500 l/h</td>
<td>180 psig</td>
<td>500 BAR</td>
</tr>
<tr>
<td></td>
<td>To 180 psig</td>
<td>12 bar</td>
<td>450°F</td>
<td>232°C</td>
</tr>
<tr>
<td></td>
<td>To 7250 PSIG</td>
<td>12 bar</td>
<td>450°F</td>
<td>232°C</td>
</tr>
</tbody>
</table>
WMRP machined thermoplastic self-priming rotary vane sealless mag-drive pumps are positive displacement pumps intended for low-flow/high head applications, high-pressure systems or where metering is required. CNC machined from solid Simona polypropylene or polyvinylidene fluoride (PVDF), WMRP Machined In-Line pumps are extremely resistant to internal or external corrosion, permeation and migration of solvents and corrosives. WMRP Machined In-Line pumps are capable of dry priming. Zero-leakage operation ensures maximum safety and full compliance with toxic emissions regulations.

**Performance Range**

<table>
<thead>
<tr>
<th></th>
<th>Flow</th>
<th>Head</th>
<th>Temp</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.1-11 GPM</td>
<td>To 50 psig</td>
<td>To 200°F</td>
</tr>
<tr>
<td></td>
<td>22-2500 l/h</td>
<td>3.4 bar</td>
<td>95°C</td>
</tr>
<tr>
<td>System Pressures</td>
<td>100 PSIG</td>
<td>7 BAR</td>
<td></td>
</tr>
</tbody>
</table>

**Design Features**

- Self-priming and can run dry without damage
- No gears to wear or metal to metal contact, low internal slip
- Capable of proportioning with variable speed drives, turn-down ratios depend upon differential head requirements
- Replaceable carbon cartridge—low maintenance costs
- High torque magnets for direct starting motors
- All non-metallic wetted components

**Materials**

- PP
- PVDF

Cross-sectional view
Replacement Spare Kits And Components

WARRENDER, LTD. sealless mag-drive pumps encompass 30 years of research and development with many stages of design advancements. Virtually all WARRENDER pump designs can be serviced or upgraded with spare components or complete assembly kits.

These upgraded/ latest edition WARRENDER pump repair components are readily available:

- Complete Pump Assemblies
- Wet End Kits
- Rear Wet End Kits
- Shaft, Sleeve & Thrust Bearings
- Internal & External Magnets
- Impeller & Channel Rings
- O-ring Kits
- Cartridge Kits

Please Contact Our Sales Department if you have further questions:

888-24-PUMPS
sales@warrender.com
WMCA SERIES
A closer look at quality

- **150 lb or 300 lb R.F. AN-SI flanges**
- **Back-pull-out hydraulic end**
- **Replaceable casing wear ring**
- **Shaft & bearings are supported by pump frame for withstanding hydraulic loads**
- **Impeller utilizes pump-out vanes for balancing axial thrust**
- **Silicon carbide vs. silicon carbide sleeve and thrust bearings, with grooves to pass particles**
- **Star tolerance rings positively locate silicon carbide bearings, and allow for differential thermal expansion**
- **Con confined casing gasket**
- **Self-draining rear cavity port**
- **Rear bearing cavity operates near full discharge pressure to prevent flashing**
- **Oil seals; lip type or labyrinth**
- **Wide ball bearing span, bearings on same plane for proper oil lubrication**
- **Non-sparking safety ring prevents damage to containment housing**
- **Lubrication system maintains highest pressure differential and allows for dead heading; MCA pumps can retrofit existing piping systems without by-pass requirements**
- **High-torque, high-temperature rated samarium cobalt magnets**
- **Confined casing gasket**
- **Self-draining rear cavity port**
- **Back-pull-out power frame—adapter housing remains in place to shield containment housing during ball bearing service**

Standard containment housing is Hastelloy C one-piece design; no welding
### Current Installation

<table>
<thead>
<tr>
<th>Manufacturer:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Design:</td>
<td></td>
</tr>
<tr>
<td>Pump Size:</td>
<td></td>
</tr>
<tr>
<td>Model No.</td>
<td></td>
</tr>
<tr>
<td>Impeller Diameter:</td>
<td></td>
</tr>
<tr>
<td>Material:</td>
<td></td>
</tr>
<tr>
<td>Suction Port Diameter:</td>
<td></td>
</tr>
<tr>
<td>Discharge Port Diameter:</td>
<td></td>
</tr>
<tr>
<td>Motor HP:</td>
<td></td>
</tr>
<tr>
<td>RPM:</td>
<td></td>
</tr>
</tbody>
</table>

### Fluid & Process Conditions

<table>
<thead>
<tr>
<th>Liquid &amp; Percentage:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp (F):</td>
<td></td>
</tr>
<tr>
<td>Flow (GPM):</td>
<td></td>
</tr>
<tr>
<td>TDH:</td>
<td></td>
</tr>
<tr>
<td>Suction Head:</td>
<td></td>
</tr>
<tr>
<td>Suction Pressure:</td>
<td></td>
</tr>
<tr>
<td>Discharge Pressure:</td>
<td></td>
</tr>
<tr>
<td>NPSHa:</td>
<td></td>
</tr>
<tr>
<td>Specific Gravity:</td>
<td></td>
</tr>
<tr>
<td>Viscosity:</td>
<td></td>
</tr>
<tr>
<td>Specific Heat:</td>
<td></td>
</tr>
<tr>
<td>pH:</td>
<td></td>
</tr>
<tr>
<td>Particles (% by vol.):</td>
<td></td>
</tr>
<tr>
<td>Particle Size:</td>
<td></td>
</tr>
<tr>
<td>Liquid Level (Ft):</td>
<td></td>
</tr>
<tr>
<td>Suction Lift:</td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

### System Design

<table>
<thead>
<tr>
<th>Tank Material:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank Volume:</td>
<td></td>
</tr>
<tr>
<td>Piping Material:</td>
<td></td>
</tr>
<tr>
<td>Suction Pipe Diameter:</td>
<td></td>
</tr>
</tbody>
</table>

### Discharge Pipe Diameter:

<table>
<thead>
<tr>
<th>Electronic Flowmeters</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid Level Controls</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Will system be flushed</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Can pump run dry?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Can pump dead-head?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NPT Pump Ports:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flanged Pump Ports:</td>
<td></td>
</tr>
</tbody>
</table>

### Motor Specifications

- Enclosure: TEFC
- Mounting: Close Coupled
- Preferred RPM: 1750
- Hertz: 50 Hz
- Phase: Single
- Voltage: 115 V
- Power Monitor: Single Trip
- Thermocouple Probe: Yes
- Welded Steam Jackets: Casing
- NPT Pump Ports: ☐
- Flanged Pump Ports: ☐

### Options & Monitoring:

- Self-Cleaning Discharge Strainer (WMCA models only)

### Preliminary Pump Selection:

- Centrifugal
- Turbine
- Self-Priming
- Vane

*NOTE: Pump warranty is contingent upon an approved electronic monitoring device.*