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

Providing environmentally safe seal-less magnetic pumps of the highest quality for over 30 years

Services

Refrigeration Systems
- Ammonia, CO2
- Fluorocarbon Refrigerants

API & CPI Processes
- Liquefied Gases
- Petroleum By-Products
- Hydrocarbons
- Petrochemicals
- Chemical Processing

Thermal Transfer Systems
- High-temp Synthetic Oils
- Low-temp Synthetic Oils
- Super Heated Water

Zero Emissions
Low Heat Load
No Flashing
WARRENDER SEAL-LESS MAG-DRIVE PUMPS

Seal-less Pumps - Standard Motors™

Warrender mag-drive seal-less pumps meet EPA zero emissions regulations with versatile magnetic coupling technology. Minimal heat loads, field serviceability and lower installation costs are significant process advantages. Solve your most challenging pumping problems with reliable and cost effective solutions.

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 volatile and toxic liquids that can react with atmospheric contact.

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
- Rugged internal bearing system withstands process upsets

Performances to the Extreme

- Flows from 0.1 to 1500 gpm
- Pressures up to 2200 psig
- Heads to 1000 feet
- Temperatures from -139°F to +600°F
- Pump liquefied gases or liquids with low NPSH
- Compatible with VFD control systems
Three Designs Provide Complete Hydraulic Coverage

- High head turbine for transfer systems
- High flow centrifugal for compressor circulation systems
- Low flow rotary vane for injection systems

Typical Applications

- Liquid Ammonia, CO2 and Fluorocarbon Refrigerants
- All EPA monitored chemicals
- Dangerous, toxic, noxious and carcinogenic liquids
- Solvents, hydrocarbons, pyrophorics and other volatile liquids
- Heat transfer fluids (up to + 600°F, 840°F w/ heat exchanger).
- Hot / super heated water
- Liquefied gases
- High pressure circulation systems
- Pressurizing mechanical seal pots
- Sampling, metering or chemical injection systems

Seal-less Low Heat Load No Flashing
Transfer Pumps: Low NPSH - High Head, Seal-less Turbine

Series WMTA-LN mag-drive regenerative turbine pumps safely meet high head, low NPSH system requirements. Dynamic turbine impeller pumping action handles entrained gases to resist vapor locking.

WMTA-LN Features

- High head pumping with pulsation free performance
- Handles up to 20% entrained gas, resists vapor locking
- Dynamic design (avoid over pressurization w/ P.D. pumps)
- Low heat induction to avoid flashing
- See pages 8-9 for more information

WMTA-LN Performance Range

- Flows from 5 to 40 gpm (1.1 - 9.1 m3/h)
- Heads to 1000 feet (305 m)
- System Pressures to 1450 psig (100 bar)
- Temperatures from -139 to +600°F (-95 to +315°C)
- NPSHr to 1’
Performance Curves 3600 RPM (60Hz)

**WMTA6-LN-2S**

<table>
<thead>
<tr>
<th>OVERALL DIMENSIONS (Inches)</th>
<th>PORTS</th>
<th>WEIGHT Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
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<tr>
<td>8.40</td>
<td>10.47</td>
<td>5.91</td>
</tr>
</tbody>
</table>

**WMTA6-LN-3S**

<table>
<thead>
<tr>
<th>OVERALL DIMENSIONS (Inches)</th>
<th>PORTS</th>
<th>WEIGHT Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>11.54</td>
<td>10.47</td>
<td>8.46</td>
</tr>
</tbody>
</table>
Rise to Shut-Off & Flow Control

Turbine pumps are rated for continuous duty in low flow – high head systems. Variations in differential heads have minimal effect on turbine pump flow due to the high rise to shut-off. Dynamic turbine pump characteristics accommodate control valve regulation without by-passing.

### Series WMTA
Standard Turbine Mag-Drive

### WMTA Performances Range

- Continuous or intermittent low flow – high head pumping
- Handles up to 20% entrained gas and resists vapor locking
- Flows up to 40 gpm (9.1 m³/hr)
- Heads up to 500 feet (115 m)
- System pressures from vacuum up to 2200 psig (150 bar)
- Temperature from -150°F/ -100°C to +600°F/ 315°C

### Table: WMTA6T-LN 2S and 3S

<table>
<thead>
<tr>
<th>PUMP MODEL</th>
<th>OVERALL DIMENSIONS (Inches)</th>
<th>PORTS</th>
<th>WEIGHT Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G</td>
<td>H</td>
<td>I</td>
</tr>
<tr>
<td>WMTA6T-LN 2S</td>
<td>7.95</td>
<td>10.47</td>
<td>5.91</td>
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<tr>
<td>WMTA6T-LN 3S</td>
<td>10.50</td>
<td>10.47</td>
<td>8.46</td>
</tr>
</tbody>
</table>
Composite Curves 3600 RPM (60Hz)

Table of Sizes and Specifications

<table>
<thead>
<tr>
<th>PUMP MODEL</th>
<th>OVERALL DIMENSIONS (Inches)</th>
<th>PORTS</th>
<th>WEIGHT Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H</td>
<td>L</td>
<td>M</td>
</tr>
<tr>
<td>WMTA25</td>
<td>5&quot;</td>
<td>3/8</td>
<td>4&quot;</td>
</tr>
<tr>
<td>WMTA37</td>
<td>6&quot;</td>
<td>7/8</td>
<td>5&quot;</td>
</tr>
<tr>
<td>WMTA49</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>WMTA78</td>
<td>6&quot;</td>
<td>7/8</td>
<td>5&quot;</td>
</tr>
<tr>
<td>WMTA1011</td>
<td>6&quot;</td>
<td>7/8</td>
<td>5&quot;</td>
</tr>
</tbody>
</table>
The hydraulic barrier between stages is made of a special high pressure static seal. “Barrel” construction, with back inserted volute rings, to have the best hydraulic alignment and the longest wear ring life. Available in 2 or 3 stages.

The range design is available in 2 or 3 stages, with or without centrifugal inducer to minimize the required NPSH to 1’ - 2’.

Particular design of the hydraulic, with self balancing impeller to improve the wear ring life.

CF8M or WCB pump casing, cover & impellers
High quality casting components

Other materials: Hastelloy C276, Incoloy825, Duplex, or others available on request

Drain plug (1/2”NPT)

REAR CARTRIDGE KIT to ensure easy and fast maintenance retrofits
Field servicing of the lubricated bearings does not require special tools.

The bearing materials are available in three different materials to match each application: Silicon Carbide (SIC), Tungsten Carbide (TC), Carbon to allow intermittent dry running.

Epoxy primer and polyacrylic enamel water-based painting for optimal chemical resistance, yet environmentally friendly.

Hastelloy®-C276 or Titanium-G5 isolation shell material - providing a safe and efficient solution – system pressure max 100 BAR.

High torque synchronous rare earth magnetic coupling.

The high performance magnets can be operated at liquid temperatures of up to 600°F (315°C) without external cooling.

Confined casing O-rings prevents product leakage to atmosphere – different materials available:
- PTFE
- Buna
- Viton
- Kalrez
Series WMCA
ISO-2858 / API-685
Process Centrifugal
(medium to high flows)

Compressor Circulation Pumps: Low Heat Load Seal-less Centrifugal

Series WMCA- ISO-2858 mag-drive centrifugal pumps are engineered for long-life, zero emissions pumping in the most arduous process conditions. Low heat induction avoids costly down-time and repairs due to flashing, in ammonia, CO2, refrigerants and hot oil systems.

WMCA Features

- Seal-less design free of mechanical seal maintenance
- Low heat load avoids flashing
- Magnetic coupling design for process & inventory flexibility
- Standard NEMA motors meet UL and EXP requirements

WMCA Performance Range

- Flows from 8 to 4500 gpm (2-1000 m3/h)
- Heads to 650 feet (200 m)
- System Pressures to 1,450 psig (100 bar)
- Temperatures from -139 to +600°F (-95 to +315°C)
Field assembling of the product lubricated bearing arrangement does not require special tools. The bearing materials available in three different materials to provide the best solution for each application: Silicon Carbide (SSIC), Tungsten Carbide (TC) and Carbon.

The use of tolerance rings reduces the sleeve and thrust bearing loads to guarantee many years of maintenance-free operation.

Epoxy primer and polyacrylic enamel water based paint system for a corrosion resistant coating, yet environmentally friendly.

Close coupled and bearing pedestal drive assemblies

CF8M pump casing & impeller
High quality casting components

Other materials : Hastelloy C276, Incoloy825, Duplex, Titanium, or others available on request

Epoxy primer and polyacrylic enamel water based paint system for a corrosion resistant coating, yet environmentally friendly.

Confined casing gaskets prevent leakage to the atmosphere – optional materials available:
- PTFE
- Graphoil type
- Garlock type
- Gylon type
- Flexitallic type

High strength, synchronous magnetic couplings, are free of epoxy or potting materials, and fitted with samarium cobalt rare earth magnets. The high performance magnets can be operated at liquid temperatures up to 662 °F (350 °C) without external cooling. Power capability exceeds 700 HP / 520 kW.

Closed impeller statically and dynamically balanced. The axial thrust loads are balanced by back vanes.
Table of Sizes and Specifications (DIN / ISO2858)

<table>
<thead>
<tr>
<th>Model ISO 2858</th>
<th>Model DIN 24256</th>
<th>Shaft Range</th>
<th>Suction Flange ANSI 150#</th>
<th>Discharge Flange ANSI 150#</th>
<th>Impeller Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>WMCA 2x1.25x5</td>
<td>32-125</td>
<td>24 – 1st</td>
<td>2&quot;</td>
<td>1 1/4&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>WMCA 2.5x2x5</td>
<td>50-125</td>
<td>24 – 1st</td>
<td>2 1/2&quot;</td>
<td>2&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>WMCA 3x2.5x5</td>
<td>65-125</td>
<td>24 – 1st</td>
<td>3&quot;</td>
<td>2 1/2&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>WMCA 4x3x5</td>
<td>n.a.</td>
<td>24 – 1st</td>
<td>4&quot;</td>
<td>3&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>WMCA 2x1.25x6</td>
<td>32-160</td>
<td>24 – 1st</td>
<td>2&quot;</td>
<td>1 1/4&quot;</td>
<td>6&quot;</td>
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<tr>
<td>WMCA 2.5x2x6</td>
<td>50-160</td>
<td>24 – 1st</td>
<td>2 1/2&quot;</td>
<td>2&quot;</td>
<td>6&quot;</td>
</tr>
<tr>
<td>WMCA 3x2.5x6</td>
<td>65-160</td>
<td>24 – 1st</td>
<td>3&quot;</td>
<td>2 1/2&quot;</td>
<td>6&quot;</td>
</tr>
<tr>
<td>WMCA 4x3x6</td>
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<td>4&quot;</td>
<td>3&quot;</td>
<td>6&quot;</td>
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<td>WMCA 5x3x6</td>
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<td>5&quot;</td>
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<td>6&quot;</td>
</tr>
<tr>
<td>WMCA 2x1.25x8</td>
<td>32-200</td>
<td>24 – 1st</td>
<td>2&quot;</td>
<td>1 1/4&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>WMCA 2.5x1.5x8</td>
<td>40-200</td>
<td>24 – 1st</td>
<td>2 1/2&quot;</td>
<td>1 1/2&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>WMCA 3x2x8</td>
<td>50-200</td>
<td>24 – 1st</td>
<td>3&quot;</td>
<td>2&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>WMCA 4x2.5x8</td>
<td>65-200</td>
<td>32 – 2nd</td>
<td>4&quot;</td>
<td>2 1/2&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>WMCA 5x3x8</td>
<td>80-200</td>
<td>32 – 2nd</td>
<td>5&quot;</td>
<td>3&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>WMCA 5x4x8</td>
<td>100-200</td>
<td>32 – 2nd</td>
<td>5&quot;</td>
<td>4&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>WMCA 2x1.25x10</td>
<td>32-250</td>
<td>32 – 2nd</td>
<td>2&quot;</td>
<td>1 1/4&quot;</td>
<td>10&quot;</td>
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<tr>
<td>WMCA 2.5x1.5x10</td>
<td>40-250</td>
<td>32 – 2nd</td>
<td>2 1/2&quot;</td>
<td>1 1/2&quot;</td>
<td>10&quot;</td>
</tr>
<tr>
<td>WMCA 3x2x10</td>
<td>50-250</td>
<td>32 – 2nd</td>
<td>3&quot;</td>
<td>2&quot;</td>
<td>10&quot;</td>
</tr>
<tr>
<td>WMCA 4x2.5x10</td>
<td>65-250</td>
<td>32 – 2nd</td>
<td>4&quot;</td>
<td>2 1/2&quot;</td>
<td>10&quot;</td>
</tr>
<tr>
<td>WMCA 5x3x10</td>
<td>n.a.</td>
<td>32 – 2nd</td>
<td>5&quot;</td>
<td>3&quot;</td>
<td>10&quot;</td>
</tr>
<tr>
<td>WMCA 2.5x1.5x13</td>
<td>40-315</td>
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<td>2 1/2&quot;</td>
<td>1 1/2&quot;</td>
<td>13&quot;</td>
</tr>
<tr>
<td>WMCA 3x2x13</td>
<td>50-315</td>
<td>32 – 2nd</td>
<td>3&quot;</td>
<td>2&quot;</td>
<td>13&quot;</td>
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</table>

WMCA Conditions and Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Flow</td>
<td>1000 gpm</td>
</tr>
<tr>
<td>Max. Head</td>
<td>650 Feet</td>
</tr>
<tr>
<td>Max. Allowable Working Pressure</td>
<td>40 BAR/ 600 PSI Standard</td>
</tr>
<tr>
<td>Max. Allowable Working Pressure</td>
<td>100 BAR/ 1450 PSI Built-to-Spec</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.15 - 2.0</td>
</tr>
<tr>
<td>Max. Viscosity</td>
<td>400 cP</td>
</tr>
<tr>
<td>Liquid Temperature Range</td>
<td>-139 °F to +600 °F</td>
</tr>
<tr>
<td>Pump Material</td>
<td>Carbon Steel, Duplex, 316SS</td>
</tr>
<tr>
<td>Motor Horsepower Range</td>
<td>2 - 200 HP</td>
</tr>
</tbody>
</table>

Centrifugal Flow Ratings

The accepted guideline for centrifugal pumps is 10% to the right of BEP (Best Efficiency Point) and 20% to the left. This ensures optimal hydraulic efficiencies and prevents runout and high head cavitation. Recirculation frictional heat of process liquid within centrifugal pumps operating below minimum stable flows can lead to high head cavitation from the energy that is imparted into the liquid.
Series SR Close-Coupled Centrifugal (low to medium flows)

Compressor Circulation or Transfer: Versatile Seal-less Centrifugal

SR Performance Range

- Flows from 2 to 150 gpm (.5 - 34 m³/h)
- Heads to 115 feet (35 m)
- System Pressures to 720 psig (50 bar)
- Temperatures from -148 to +450°F (-100 to +232°C)

Series SR compact mag-drive centrifugal pumps meet low flow requirements with comparable features of the WMCA design.

Table of Sizes and Specifications

<table>
<thead>
<tr>
<th>PUMP MODEL</th>
<th>Port Size (NPT or Flanged)</th>
<th>*MAX GPM</th>
<th>*MAX TDH</th>
<th>HP</th>
<th>Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR6.0</td>
<td>1”x3/4”</td>
<td>30</td>
<td>40</td>
<td>0.5</td>
<td>56C</td>
</tr>
<tr>
<td>SR7.0</td>
<td>1-1/2” x1”</td>
<td>65</td>
<td>52</td>
<td>1.5</td>
<td>56C or 143/5TC</td>
</tr>
<tr>
<td>SR7.5</td>
<td>1-1/2” x1-1/4”</td>
<td>110</td>
<td>90</td>
<td>2-3</td>
<td>143/5TC</td>
</tr>
<tr>
<td>SR8.0</td>
<td>2” x 1-1/2”</td>
<td>170</td>
<td>110</td>
<td>5-7.5</td>
<td>182/4TC</td>
</tr>
</tbody>
</table>

Standard SR Wetted Materials: 316L-SS front casing, impeller and rear casing, PTFE-C or Carbon sleeve and thrust bearings, single confined o-ring.

- Note: Maximum condition stated references open pumping capacity and maximum head at the limits of the curve.
- * depending on operating temperature
Performance Curves 3600 RPM (60Hz)

Series MPA
Rotary Vane
(low flows - high pressure)

Injection Pumps: P.D. Seal-less Rotary Vane

MPA Features
- Seal-less magnetic coupling eliminates seals or packing glands
- No metal to metal contact for extended MTBF
- Capable of differential pressures up to 200 psig
- Self-priming up to 13 feet of dry lift, runs dry without damage

MPA Performance Range
- Flows from 0.1 to 11 gpm (22 to 2500 l/h)
  Range 1° from 0.1 to 2.2 gpm
  Range 2° from 2.2 to 5 gpm
  Range 3° from 5 to 11 gpm
- Heads to 200 psig (12 bar)
- System Pressures to 600 psig (40 bar)
- Temperatures to 450°F (232°C)
MPA Performance Curves 1800 RPM (60Hz)

Range 1

<table>
<thead>
<tr>
<th>PUMP MODEL</th>
<th>OVERALL DIMENSIONS (Inches)</th>
<th>WEIGHT Lbs.</th>
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</thead>
<tbody>
<tr>
<td>Range 1</td>
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<tr>
<td>AP-CS</td>
<td></td>
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<tr>
<td>114 - 214 - 314 - 414</td>
<td>3/8” NPT 1” 6” 2” 3/4 1” 7/8 4” 1/8 6” 1/2</td>
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Range 2

<table>
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<td>Range 2</td>
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<tr>
<td>AP-CS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>614 - 814</td>
<td>1/2” NPT 1” 3/8 8” 3” 3/4 2” 5/8 5” 1/2 6” 1/2</td>
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</tbody>
</table>

Table of sizes and Specifications

Range 3

<table>
<thead>
<tr>
<th>PUMP MODEL</th>
<th>OVERALL DIMENSIONS (Inches)</th>
<th>WEIGHT Lbs.</th>
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</thead>
<tbody>
<tr>
<td>Range 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AP-CS</td>
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<td></td>
</tr>
<tr>
<td>1014 - 1514 - 2014</td>
<td>3/4” NPT 1” 7/8 10” 4” 7/8 3” 1/2 7” 7/8 6” 1/8 7” 1/2 4” 1/2</td>
<td>28</td>
</tr>
</tbody>
</table>

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