Goulds 3298
Chemical Process Pump
Goulds 3298

Chemical Process Pumps

- Capacities to 1,200 GPM (270 m³/h)
- Heads to 500 feet (162m)
- Temperatures to 250°F (121° C)
- Pressures to 225 PSIG (1551 kPa)

Performance Features for Chemical Services

Extended Pump Life

- Tefzel® (ETFE) Construction
- Sealless Design
- Stationary Silicon Carbide Shaft
- Optional Silicon Carbide Dryguard™ Bearings

Optimum Performance

- Non-Slip Synchronous Drive
- Efficiency Equivalent to Sealed ANSI Pumps, 30% Higher than Metal Sealless Pumps

Ease of Maintenance

- Minimum Parts
- No Pump / Motor Alignment Required with Close-Coupled Design
- ANSI Dimensional
- Optional Frame-Mounted Design
- No Mechanical Seal

Safety

- Drive and Driven Magnet Assembly Safety Clearances (Frame-Mounted Design)
- Adapter and Casing Drain Connections
- Zero Emissions

Ideal for Moderate to Severe Corrosives!
The 3298 can handle the tough chemical services. As a sealless design, it’s an effective alternative to pumps with mechanical seal problems. Meets strictest EPA regulations.
Chemical Process Pumps
Design Features for Wide Range of Process Services

CLOSE-COUPLED DESIGN
Arrangement eliminates need to perform pump / motor alignment. Single piece, dual bolt circle adapter accommodates all motor sizes for maximum application flexibility.

CLAMP RING
Pressure retaining ductile iron for safety.

FULLY CONFINED O-RING
Sealed to casing for zero leakage. Acid-resistant Viton standard other materials available.

ANSI DIMENSIONS
Allows easy retrofit of problem ANSI pumps.

TEFZEL® (ETFE) CONSTRUCTION
Provides superior corrosion resistance; inert to most chemicals. Tough material for superior solids handling / abrasion resistance (same or better than 316 SS).

TEFZEL® LINING WITH DUCTILE IRON CASING
One-piece solid casing lined with minimum ⅛ inch (3 mm) TEFZEL®, Rotolining process assures mechanical integrity of lining.

ONE-PIECE ENCLOSED IMPELLER
Minimizes axial thrust for extended thrust bearing life. Unlike two-piece designs, one-piece construction eliminates possibility of front shroud failure.

SOLID STATIONARY SHAFT
Pure sintered silicon carbide construction eliminates shaft deflection. Fully supported stationary design maximizes radial bearing life. Straight geometry eliminates stress concentrations and possibility of failure during pump operation.

BEARING SPIDER
Fully supports Silicon Carbide shaft for maximum shaft rigidity. Protects the end of the Silicon Carbide shaft from damage. Smooth hydraulic flow path into the eye of the impeller, equal to that of a standard ANSI pump. Rounded spider hub and spider supports (flow straighteners) reduce turbulence and pre-rotation for better hydraulic stability.

RARE EARTH MAGNETS
High strength neodymium iron, provide high torque and hard-start capability without slip. Drive is synchronous.

CONTAINMENT SHELL
TEFZEL® lining with glass reinforced vinylester backing. Rugged design with burst pressure greater than 500 PSI. Non-metallic construction provides efficiencies same as sealed ANSI pumps. (30% higher efficiencies than metal sealless pumps.)

RIGID CASING FEET
Reduce effect of pipe loads on pump and motor shaft alignment.

RADIAL BEARING WITH TEFLO® SPACER
Two-piece design with Teflon® spacer allows bearings to self-align under load. Independent movement maximizes bearing life. Carbon bearing construction standard; silicon carbide and Dryguard™ optional.

CASING DRAIN
Allows complete draining of fluid from pump for system maintenance. Blind flange and gasket ensure leak-free seal for safety.

BEARING LUBRICATION
Generous passageways in the magnet and bearing circuit result in the smallest possible pressure drop across the bearings. This maximizes the flow rate and the pressure in the critical bearing area to prevent vaporization and loss of hydraulic bearing support. Unique vane geometry in the containment shell coupled with dynamic grooves in the bearings prevents solids from getting trapped and accumulating in the circulation path. Can pass 5% (by weight) soft solids up to 160 microns. Other pump designs will “choke” on small solids due to tight clearances with multiple static flow paths.
10X More Dry Run Protection with Dryguard™ Bearings
Goulds unique Dryguard™ diamond-like carbon coating significantly reduces the coefficient of friction enabling periods of safe operation under dry run conditions. Dryguard™ is up to 1.5× harder than silicon carbide, ensuring its protection lasts throughout the life of the pump.

Ultimate Protection
Magnetic drive pump failures are often due to dry running and closed discharge valve conditions. With Dryguard™ silicon carbide bearings and a power monitor, you have the best protection technology can offer. Goulds always recommends the use of a power monitor because...

failure is not an option!

TEFZEL® Construction for Extreme Corrosion Resistance
TEFZEL® (ETFE) is inert to most chemicals, and has good abrasion resistance. TEFZEL® lined casing and containment shell with solid TEFZEL® impeller provide superior corrosion resistance and long life unequalled by alloy pumps.

Power Monitors
No pump is designed to run dry for an extended period of time. Goulds recommends that pumps be protected with a power monitor. Easy to install and easy to operate, power monitors will ensure extended time between planned maintenance for the 3298 or any other pump in the facility.

Installation / Pump Replacement Flexibility
The 3298 is available in close-coupled or frame-mounted designs for true installation or pump replacement flexibility.

Since the 3298 meets ANSI dimensional standards, retrofitting mechanically sealed ANSI pumps is easy: simply replace the old pump with the equivalent close-coupled or frame-mounted ANSI size 3298.
Design Features for Extended Pump Life

Casing with TEFZEL® Lining
One-piece solid ductile iron casing with Tefzel® lining. Generous lining thickness of 1/8 inch (3 mm). Roto-lining process assures integrity of lining. Rugged foot mounted design provides maximum resistance to and distortion from pipe loads. Flange loads are the same as metal ANSI pumps. Casing drain allows complete evacuation of pump fluid.

Radial and Thrust Bearings
Multiple materials available to best suit your pumping application: Carbon, pure sintered Silicon-Carbide or Dryguard™. All rotating bearings are designed with flow grooves to help circulate fluid over the bearings and to help flush solids away. Dryguard™ option keeps your pump running when temporary dry run conditions exist. Forgiving hydraulic design and positive axial thrust allow the pump to get through dry run conditions without damage to other components.

Stationary Shaft
Silicon carbide construction eliminates shaft deflection. Fully supported stationary design maximizes radial bearing life.

Containment Shell
TEFZEL® lining with glass reinforced vinylester backing. Burst pressure greater than 500 PSIG. Fully confined O-ring seals containment shell to casing. Non-metallic construction provides efficiencies same or better than sealed ANSI pumps; 30% higher efficiencies than metal sealless pumps. Non-metallic construction eliminates magnet losses and heat generation. Heat sensitive liquids are easily pumped.

Enclosed One-Piece Impeller / Magnet Assembly
Enclosed design minimizes axial thrust, extends thrust bearing life. One-piece construction eliminates front shroud failure possible with two-piece impellers. Neodymium iron magnets are molded in place, reducing the chance of permeation.

Extreme Ease of Maintenance

Design Concept
The 3298 design concept is simple – few parts and only one bolt size. One-craft maintenance is all that’s required– with one wrench! Planned maintenance is fast and easier than other process pumps – sealed or sealless. Standard close-coupled model eliminates need to perform time consuming pump and motor alignment.

Simple Operation
Unlike most magnetic drive pumps, the 3298 is as easy to operate as any standard ANSI pump. Non-metallic construction with no heat build-up makes the 3298 ideally suited for tank transfer, tank unloading, or any batch type service.

Zero Leakage
The 3298 is sealless and environmentally safe. No mechanical seal assures zero leakage on moderate to severe corrosives, hazardous liquids. A great solution to pumps with mechanical seal problems.
### Parts List and Materials of Construction

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Part Name</th>
<th>Material</th>
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<tbody>
<tr>
<td>100</td>
<td>Casing</td>
<td>Ductile Iron/TEFZEL*</td>
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<tr>
<td>101</td>
<td>Impeller Assembly</td>
<td>TEFZEL</td>
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<tr>
<td>101A</td>
<td>Bearing Spider</td>
<td>TEFZEL/Silicon Carbide, Optional-TEFZEL/Dryguard**</td>
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<td>109A</td>
<td>Bearing End Cover (Frame-Mounted)</td>
<td>Ductile Iron</td>
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<td>112</td>
<td>Ball Bearing (Frame-Mounted)</td>
<td>Steel</td>
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<td>113A</td>
<td>Plug-Oil Fill (Frame-Mounted)</td>
<td>Steel</td>
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<tr>
<td>122A</td>
<td>Stationary Shaft</td>
<td>Silicon Carbide, Optional-Dryguard**</td>
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<tr>
<td>122B</td>
<td>Drive Shaft (Frame-Mounted)</td>
<td>Steel</td>
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<tr>
<td>141C</td>
<td>Clamp Ring</td>
<td>Ductile Iron</td>
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<tr>
<td>144A</td>
<td>Ring (M&amp;L Frame-Mounted)</td>
<td>Cast Iron</td>
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<tr>
<td>157A</td>
<td>Bearing Spacer–Radial</td>
<td>TEFZEL*</td>
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<td>178S</td>
<td>Key, Impeller to Bearings</td>
<td>TEFZEL</td>
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<tr>
<td>178Y</td>
<td>Key, Drive Carrier</td>
<td>Steel</td>
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<tr>
<td>197B</td>
<td>Radial Bearing</td>
<td>Standard-Carbon Graphite, Optional–Silicon Carbide or Dryguard**</td>
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<tr>
<td>197C</td>
<td>Bearing, Reverse Thrust</td>
<td>Carbon-Filled TEFZEL</td>
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<tr>
<td>197D</td>
<td>Bearing, Impeller Thrust</td>
<td>Standard-Carbon-Filled TEFZEL, Optional–Silicon Carbide or Dryguard**</td>
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<tr>
<td>203</td>
<td>Rear Impeller Wear Ring (M and L Group only)</td>
<td>Carbon-Filled TEFZEL</td>
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<td>228</td>
<td>Frame Foot</td>
<td>Cast Iron</td>
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<tr>
<td>241</td>
<td>Frame Foot</td>
<td>Cast Iron</td>
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<tr>
<td>314H</td>
<td>Retaining Ring, Impeller/Driven Magnet Assembly</td>
<td>TEFZEL</td>
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<tr>
<td>332A</td>
<td>Labyrinth Seal (Frame-Mounted)</td>
<td>Stainless Steel/Bronze</td>
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<td>333D</td>
<td>Lip Seal (Frame-Mounted)</td>
<td>Buna Rubber</td>
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<td>351G</td>
<td>Gasket, Case Drain</td>
<td>Gylon</td>
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<td>355A</td>
<td>Nut (Frame-Mounted)</td>
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<td>356A</td>
<td>Hex Cap Screw–Clamp Ring to Case</td>
<td>304 Stainless Steel</td>
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<tr>
<td>358</td>
<td>Flange, Case Drain</td>
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<td>Gasket–Bearing End Cover to Frame (Frame-Mounted)</td>
<td>Vanished Kraft</td>
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<td>360W</td>
<td>Gasket–Frame to Clamp Ring</td>
<td>Aramid Fibers with EPDM Rubber</td>
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<tr>
<td>361H</td>
<td>Retaining Ring (L Group Only)</td>
<td>TEFZEL Encapsulated Silicon</td>
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<tr>
<td>370B</td>
<td>Hex Cap Screw–Frame to Clamp Ring</td>
<td>304 Stainless Steel</td>
</tr>
<tr>
<td>370C</td>
<td>Hex Cap Screw–End Cover to Frame (Frame-Mounted)</td>
<td>304 Stainless Steel</td>
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<td>370F</td>
<td>Hex Cap Screw–Frame Foot</td>
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<tr>
<td>372Y</td>
<td>Hex Cap Screw–Frame To Rub Ring (M &amp; L Group Only)</td>
<td>304 Stainless Steel</td>
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<tr>
<td>412M</td>
<td>O-ring–Containment Shell</td>
<td>Standard-Viton, Optional-EPDM, Optional-Viton Encapsulated in TEFZEL</td>
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<tr>
<td>418</td>
<td>Hex Tap Bolt–Jacking (M &amp; L Group Only)</td>
<td>304 Stainless Steel</td>
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<tr>
<td>426A</td>
<td>Hex Cap Screw–Case Drain</td>
<td>304 Stainless Steel</td>
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<td>496D</td>
<td>O-ring–Reverse Thrust Bearing</td>
<td>Viton Encapsulated in TEFZEL</td>
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<tr>
<td>529</td>
<td>Washer, Wave Spring (L Group Only)</td>
<td>Steel</td>
</tr>
<tr>
<td>740A</td>
<td>Driven Magnet Assembly (L Group Only)</td>
<td>TEFZEL, Neodymium Iron</td>
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<tr>
<td>740B</td>
<td>Drive Carrier Assembly</td>
<td>Cast Iron/Neodymium Iron</td>
</tr>
<tr>
<td>750</td>
<td>Containment Shell</td>
<td>TEFZEL/Fiber Reinforced Vinyl Ester</td>
</tr>
</tbody>
</table>

*Registered trademarks for fluoropolymer resins, films and fibers made by DuPont.

The 3298 S provides additional low flow coverage below the hydraulics of the smallest traditional ANSI pump size. XS pumps meet user requirements for low flow capabilities. Applying an oversized ANSI pump is not required.

- Capacities to 120 GPM (27 m³/h)
- Heads to 160 feet (49 m)
- Temperatures to 250° F (121° C)
- Pressures to 150 PSIG (1034 kPa)
Hydraulic Coverage
All dimensions in inches and (mm). Not to be used for construction.
Goulds SP 3298 for Self-Priming Applications

When suction lift conditions exist, air must be evacuated to effectively prime the pump. This air or vapor must be expelled each time the pump is started. The Goulds design incorporates a highly reliable one-piece casing without the use of an internal check valve or external gooseneck.

**Optimally-sized Casing**
Retains enough liquid to prime but not too much to increase fluid temperature during priming. Temperature rise is half of the competition.

**Design Features for Superior Self-Priming Performance**

**One-Piece Casing without Check Valve**
Provides reliable priming in all conditions. Eliminates the additional gooseneck component found on other brands. Retains proper amount of liquid in casing to prime without the use of a troublesome check valve. Check valves are commonly used to retain liquid in the casing to assist in priming on successive uses. However, these check valves wear quickly and contribute additional losses on the suction side due to induced drag. Goulds has eliminated the check valve and the SP 3298 out-performs our competition in priming times.

**The Volute Insert**
Completes the self-priming design. The volute separates the air from the liquid, expels the air through the discharge, and returns the liquid to the suction until all the air is removed and the pump is operating like a standard centrifugal pump.

**For Ease of Maintenance**

**Parts Interchangeability**
All components fully interchangeable with 3298 and V 3298, except the casing, volute insert, and backplate. Reduces spare parts inventory requirements.
Dimensions

Bare Pump Dimensions

<table>
<thead>
<tr>
<th>Size</th>
<th>A</th>
<th>D</th>
<th>S</th>
<th>X</th>
<th>Y</th>
<th>Close-Coupled</th>
<th>Frame-Mounted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 X 1 1/2-6</td>
<td>15.5 (393.7)</td>
<td>11.5 (292.1)</td>
<td>4.0 (101.6)</td>
<td>7.25 (184.2)</td>
<td>7.5 (190.5)</td>
<td>160 lbs. (72.7 kg.)</td>
<td>175 lbs. (79.5 kg.)</td>
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<tr>
<td>2 X 3-6</td>
<td>15.5 (393.7)</td>
<td>13.5 (342.9)</td>
<td>6.0 (152.4)</td>
<td>10.75 (273.1)</td>
<td>12.12 (307.8)</td>
<td>198 lbs. (90 kg.)</td>
<td>213 lbs. (96.8 kg.)</td>
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</table>

All dimensions in inches and (mm). Not to be used for construction.

Hydraulic Coverage

Goulds 3298 11
In-Line Design for Cost Savings

In-Line Design for Cost Savings
In-line pumps have become increasingly popular due to minimal floor space required and reduced installation costs. Installation is simple since the unit is mounted directly in the line, like a valve. Field alignment is not required and the unit is not subject to misalignment due to pipe strain or temperature changes.

Vertical Configuration
Vertical casing frees up additional floor space required for pump.

Additional Dry-Run Protection
With the vertical design, the front thrust bearing will always be submerged in liquid. This unique feature adds an extra measure of dry run protection.

Self-Venting Design
Containment shell and magnet area expel all trapped air / gases completely and efficiently during start-up without adversely affecting the shaft and bearings.

Parts Interchangeability
All components fully interchangeable with 3298 and SP 3298, except the casing. Reduces spare parts inventory requirements.

DRAIN CONNECTION
Allows complete draining of fluid from pump for system maintenance. Blind flange and gasket ensure leak-free seal for safety.

CASING SUPPORT
Optional casing supports provide rigid pump support when a pipe hung pump is not an option.
**Dimensions**

![Diagram of pump dimensions](image)

<table>
<thead>
<tr>
<th>Group</th>
<th>Size</th>
<th>Y (in)</th>
<th>A (in)</th>
<th>B (in)</th>
<th>Weight (lbs)</th>
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</thead>
<tbody>
<tr>
<td>S</td>
<td>1 1/2 x 2-6</td>
<td>4.50</td>
<td>8.12</td>
<td>6.62</td>
<td>79</td>
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<td>S</td>
<td>1 1/2 x 2-8</td>
<td>5.06</td>
<td>8.88</td>
<td>7.88</td>
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<tr>
<td>S</td>
<td>2 x 3-6</td>
<td>4.88</td>
<td>9.39</td>
<td>7.39</td>
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<tr>
<td>M</td>
<td>1 1/2 x 2-10</td>
<td>5.12</td>
<td>9.69</td>
<td>9.19</td>
<td>188</td>
</tr>
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</table>

All dimensions in inches and (mm). Not to be used for construction.

**Close-Coupled**

<table>
<thead>
<tr>
<th>Motor Frame</th>
<th>Group</th>
<th>CP (Approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>143TC</td>
<td>S</td>
<td>19.00 (463)</td>
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<tr>
<td>145TC</td>
<td>S</td>
<td>18.00 (457)</td>
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<td>182TC/184TC</td>
<td>M</td>
<td>25.03 (636)</td>
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<tr>
<td>213TC/215TC</td>
<td>S</td>
<td>25.62 (651)</td>
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<td>254TC/256TC</td>
<td>M</td>
<td>28.53 (725)</td>
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<td>284TSC-286TSC</td>
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<td>30.12 (765)</td>
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<tr>
<td>324TSC-326TSC</td>
<td>M</td>
<td>33.03 (839)</td>
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</tbody>
</table>

**Hydraulic Coverage**

![Graphs of hydraulic coverage](image)
Designed for Safe Operation

**Dual Containment Shell**
PTFE lining with carbon fiber reinforced plastic (CFRP) shell.
Non-metallic construction provides efficiencies the same or better than sealed ANSI pumps; 30% higher efficiencies than metal sealless pumps. Non-metallic construction eliminates magnet losses and heat generation. CFRP shell provides rigid support for the liner and acts as a secondary method of containment should the primary liner fail.

Dry Run Capability

**Standard Dryguard™ Silicon Carbide Bearings**
Provide the corrosion resistance and durability of silicon carbide with short term dry run capability without the catastrophic failure modes of standard silicon carbide in a dry run situation.

Solids Handling
Standard large internal clearances allow the passage of solids up to 0.06 inches with a maximum concentration of 2%. With the optional clean external injection flush, the 3299 can handle solids up to 0.080 inches with a concentration near 10%.

PFA Construction for Universal Corrosion Resistance to 360° F (182° C)
Virgin Teflon® (PFA) is virtually inert to all chemicals and has good abrasion resistance. PFA lined casing, bearing carrier, containment shell, and one-piece impeller / shaft assembly provide superior corrosion resistance and long life, unequalled by alloy pumps.

Integral Shaft and Impeller
Large 316 stainless steel core improves impeller mechanical strength. Integral PFA lined 316 stainless shaft and impeller optimizes corrosion resistance, strength and durability of the stainless steel shaft.
Hydraulic Coverage

Model 3299
Leadership in Sealless Pump Technology

Model 3296 EZMAG

Bearing Cartridge
Individual bearings are contained in a single cartridge assembly.

- Bearings are made of highly abrasion and corrosion resistant silicon carbide. Dryguard™ bearings are available for protection against occasional dry run conditions.
- In the event of bearing failure, the cartridge design contains the bearings and prevents further damage to pump internals.
- Installation and replacement of bearings is simple. Only one component to install.

Dryguard™ Bearings
The heat generation from dry run conditions is the number one mode of failure for sealless pumps. Dryguard™ is a diamond-like carbon that reduces the coefficient of friction by over 70% enabling short periods of safe operation under dry run conditions. Dryguard™ is up to 2× harder than silicon carbide, ensuring its benefits cannot be compromised in even the harshest conditions.

Maintenance Made Simple
The 3296 EZMAG was designed with the end user in mind. Fewer parts make planned maintenance faster and easier than other sealless and sealed process pumps. The S group is also available in a close coupled configuration, further eliminating the need for time-consuming pump and motor alignment.

Containment Shell
The containment shell is the most important component isolating the pumpage from the atmosphere.

- The containment shell is a deep-drawn single piece design made from Hastelloy C for reliable corrosion resistance.
- The vortex-breaking bead at the bottom of the can prevents erosion.
- Burst pressure is greater than 2,175 PSI.

High Temperature Applications
The High Temperature option is perfect for applications between 350° F and 535° F. This option includes Samarium Cobalt magnets and a special High Temperature bearing cartridge designed to handle the additional rate of thermal expansion.
Hydraulic Coverage

3600 / 2900 RPM

1800 / 1450 RPM
## Sealless Selection

<table>
<thead>
<tr>
<th>Model</th>
<th>Installation Considerations</th>
<th>Materials of Construction</th>
<th>Temperature Limits (F)</th>
<th>Pumpage</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>ABS Dim</td>
<td>ISO Dim</td>
<td>Sumps</td>
<td>Limited Floor Space</td>
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<tr>
<td>3298</td>
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<td>EZ-MAG</td>
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