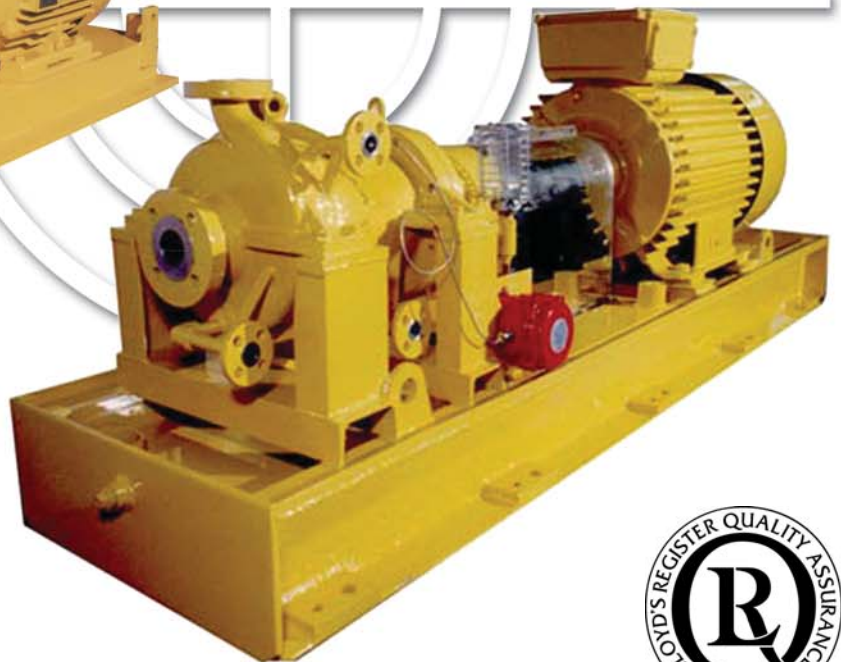


HMD Kontro

SEALLESS PUMPS



The Sealless evolution ...



**Achieving
Competitive
Excellence**



... is still evolving

Your success is our success

We could happily tell you all about HMD Kontro: our heritage, our expertise and our reputation for innovation. We could tell you that we're a specialist company which happens to be part of a renowned global network, and that we were the first company to introduce Sealless Pumps, with their permanent magnet drive over 50 years ago.

All of which is true and we're proud of it.

But this brochure isn't all about us. It's about you. Your success is our success, which is why our products are engineered to meet your goals.

Goals such as:

Efficiency. You're aiming for zero-waste. We can help you achieve lower power costs, improved performance and fewer call-outs.

Reliability. There's no comparison with mechanical sealed pumps. Our pumps have proven their reliability in the severest of conditions: from the frozen lands of Alaska to the deserts of the Middle East. Many of our pumps have been fully operational for more than 30 years.

Safety. We know in your industry you can't afford to take chances, which is why our products are manufactured to conform to international design and safety standards.

Cost-effectiveness. If you add up the price you've paid for pumps in the past, plus the cost of maintaining them ... we're confident that you'll make significant future savings by choosing HMD Kontro.

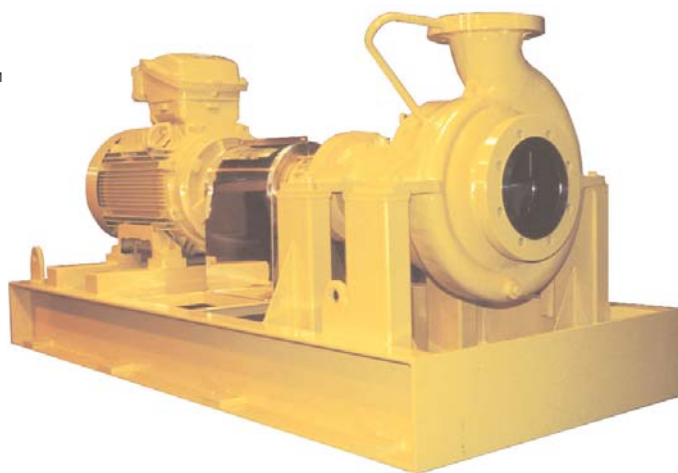
Service. We understand it's not just about price. You'll be factoring in all the other considerations, such as how well a supplier can meet your order and delivery expectations, which is why we are firmly committed to aggressive targets for on-time deliveries.

Engineering excellence, built to last.

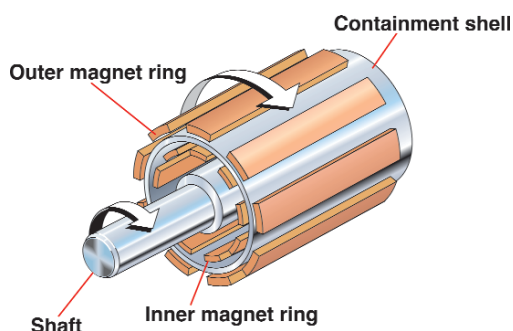
Read on for answers to your questions about our products: specifications, applications, performance, the research behind them and the service that comes with them.

In particular, we'd like to introduce you to our newest, most revolutionary pump, the MAGMAX™ - the world's only direct-on-line (DOL) fully synchronous canned magnet drive pump. Read more about what it can offer you on page 11.

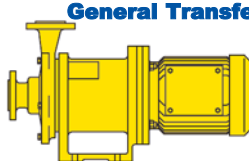
When you're ready to make your choice, talk to your agent or distributor. Remember, you can be confident that you are dealing with the people who know about sealless pumps - and who care about your success



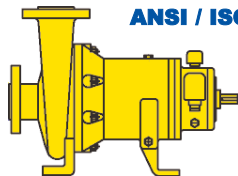
Synchronous Drive



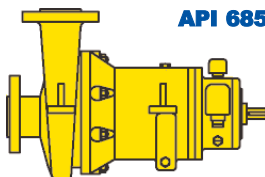
General Transfer



ANSI / ISO



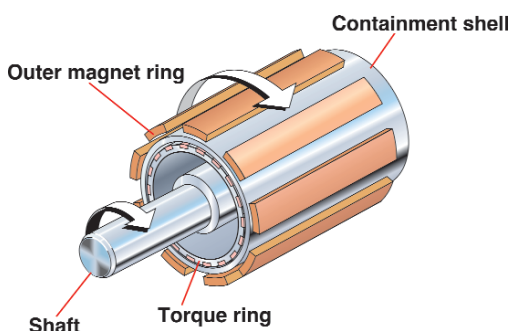
API 685



Using Samarium Cobalt magnets for optimum power transfer, this drive is the ideal solution for many of the applications demanding sealless pumps.

Simplicity of design, shielded magnets and proven technology make pumps using this drive some of the most efficient and reliable available in today's marketplace.

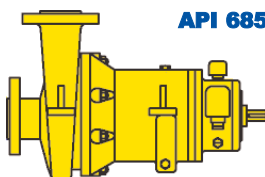
Eddy Current Drive



Thermal Transfer



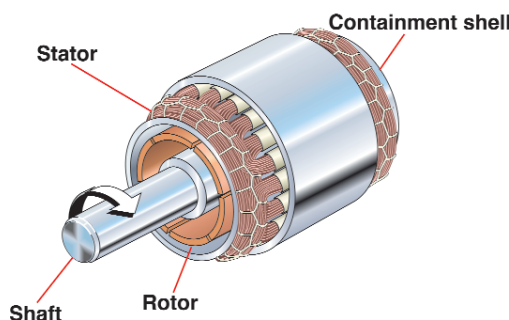
API 685



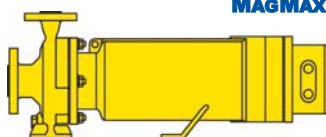
Proven over more than 40 years, this drive is ideally suited to those applications that require soft starting, have a high viscosity or are operating in temperatures up to 850°F.

The Eddy Current drive is able to handle these temperatures without the need for any cooling. This makes it ideal for use on hot oil systems and, due to its unique characteristics, adds to the efficiency of the system.

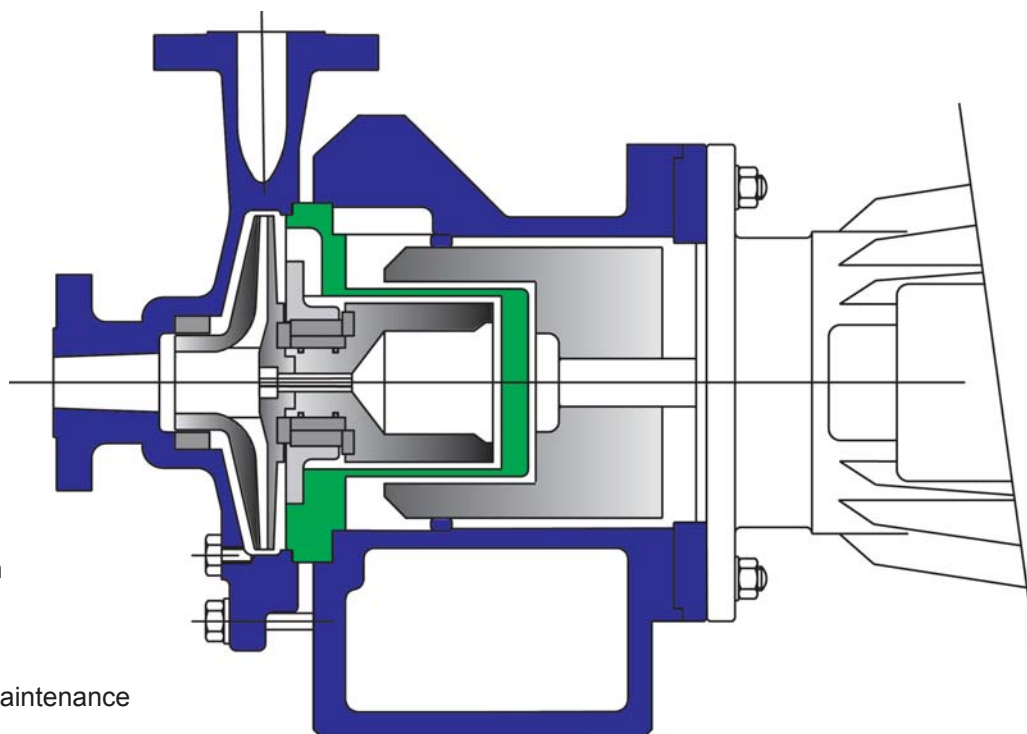
True Synchronous Motor



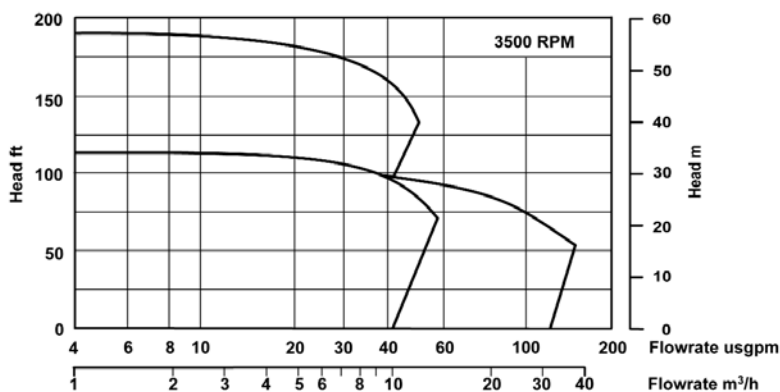
MAGMAX



MAGMAX™ uses a unique drive format. Using the Total Containment of the canned motor pump and combining it with the simplicity of the magnet drive to create this latest pump. True synchronous speeds (3600 rpm @ 60hz) enable these pumps to give greatly improved efficiency resulting in lower power costs demanded by today's users. This drive is the world's only Direct-on-Line start (DOL) synchronous motor.



- Low capital cost
- Compact modular design
- Low running costs
- Minimal downtime/fast maintenance
- Quick ship delivery program for pumps and parts



Head	Flow	Temperature	Pressure
190 ft	163 usgpm	-40 to +500°F	275 psi
58 m	37 m³/h	-40 to +260°C	18.9 bar

Standard construction is Stainless Steel with Silicon Carbide internal bearings. Options of Alloy 20 or Alloy C with PTFE gaskets are available.

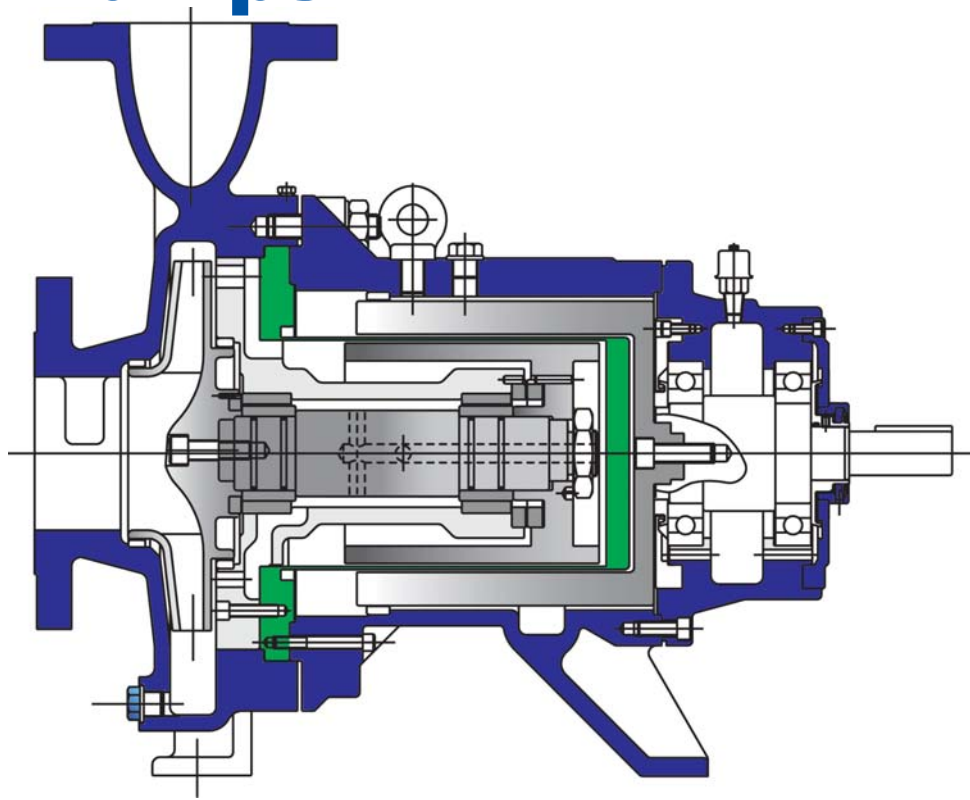
The pumps are supplied with ANSI standard fasteners and flanges



A small pump - but big on value

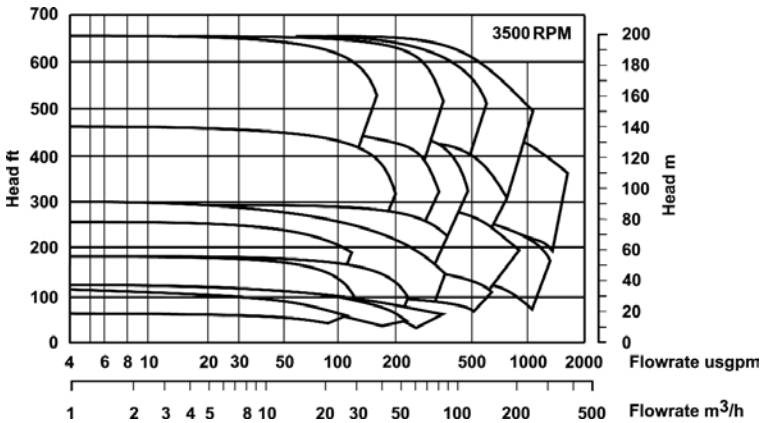
Companies such as pharmaceutical skid manufacturers often need compact pumps suitable for a range of general transfer applications. Such a pump is the GT from HMD. The GT is sized below ANSI dimensions and it has a number of features which make it one of the most highly competitive pumps in its class. For example, the high nozzle loadings of the GT give it a superior ability to withstand stresses - helping to avoid costly failures and leaks. Thanks to its simplicity of maintenance, space-saving design and interchangeability, the GT pump has proved to be a popular choice.

Process Pumps



Head	Flow	Temperature	Pressure
656 ft	1630 usgpm	-40 to +500°F	275 psi
200 m	370 m ³ /h	-40 to +260°C	18.9 bar

- Sealless design - total product containment - ideal for hydrocarbon, petrochemical, toxic, aggressive, hot, crystallizing and valuable product.
- Conforming to ANSI standards.
- Modular high efficiency wet ends, designed to ensure maximum flow/head coverage across all ranges.
- Choice of various metallic materials of construction.
- One fully confined casing/containment shell gasket.



Standard construction is Stainless Steel with Silicon Carbide internal bearings. Options of Alloy 20, C or B with Silicon Carbide/Carbon bearings and PTFE gaskets are available.

Various flange options are available as standard.

Superior standards count

A major pharmaceutical company wanted to be confident about its choice of pump, since it was to be installed across all of its plants for Heat Transfer Fluid and solvent applications.

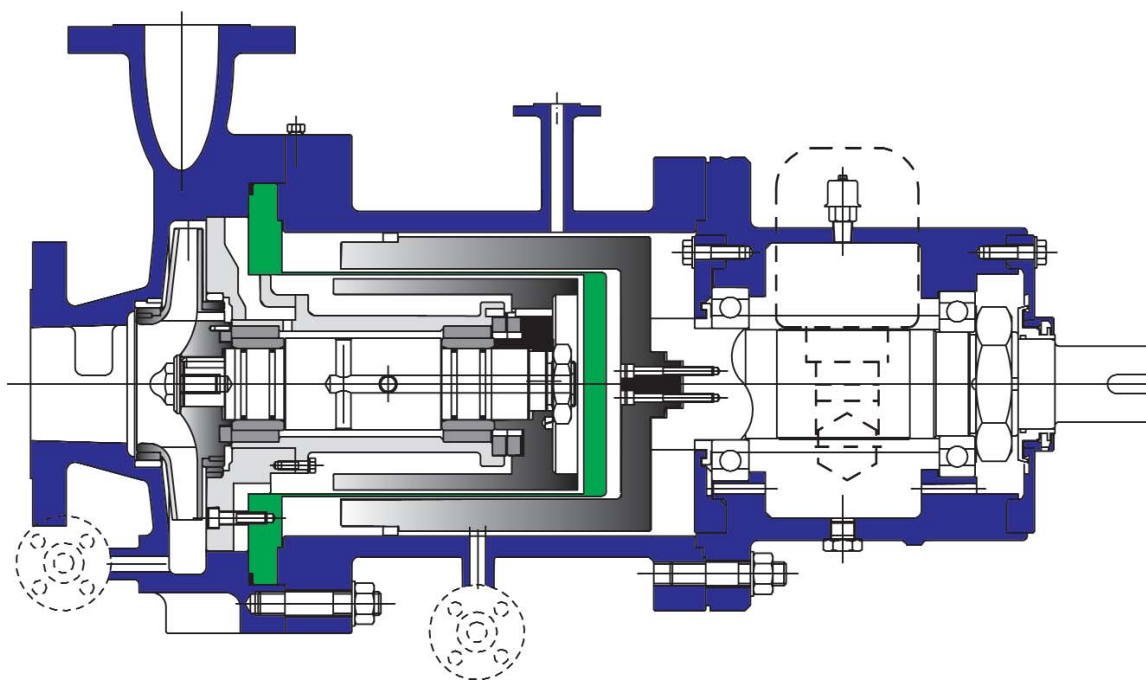
HMD suggested the GSA, a magnet drive unit suitable for a wide range of applications and conforming to ANSI standards.

A stripdown demonstration convinced the client how easy it was to maintain. But what really impressed them was the fact that nozzle loadings of the GSA pump conform to API 610 - far superior to the ISO 5199 standard of competitors' units. (In fact, we're proud to say that all loadings of HMD metallic pumps conform to API 610.)

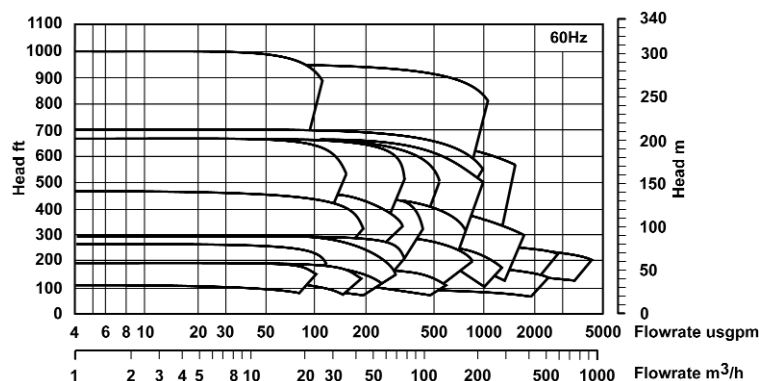
In the end, the GSA was the obvious choice.



... is still evolving



Head	Flow	Temperature	Pressure
1000 ft	4400 usgpm	-40 to +660°F	580 psi
305 m	1000 m³/h	-40 to +350°C	40 bar



- Conforms to API 685 for sealless pumps.
- Design ensures safe, leak free operation.
- Increased efficiency, Low running costs.
- Minimal spares holding.
- Maximizes on-line process time.
- No costly seal support systems to maintain.
- Reduced installation costs.

Standard materials of construction are A8 and S5 with silicon carbide internal bearings and spiral wound gaskets are available. Other material options are available on request.

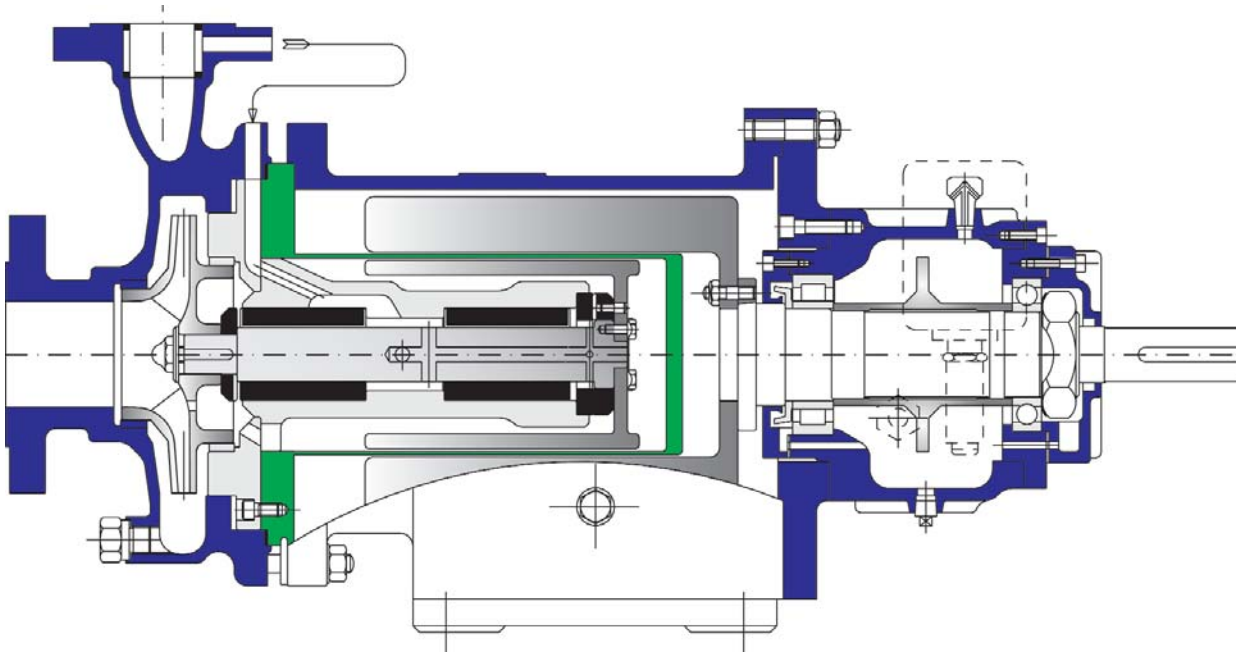
Various flange options are available as standard.

Meeting the needs of refineries worldwide

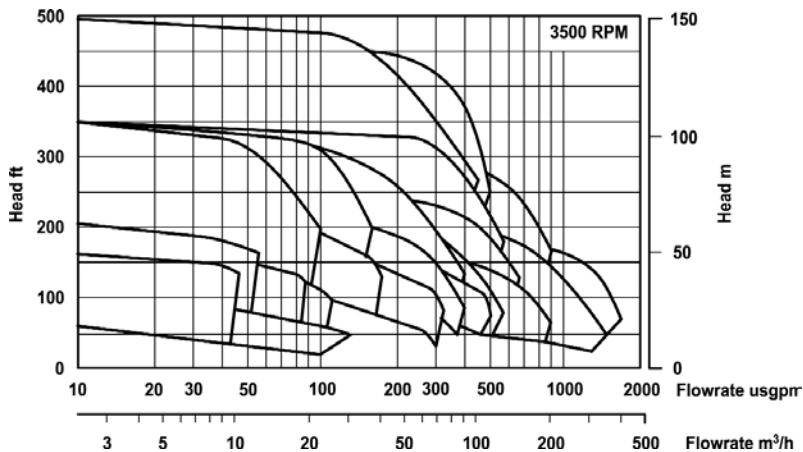
When looking to install 36 API process pumps for a major refinery, a prominent contractor approached HMD. The contractor's main concern was cost - not just of the products themselves, but also installation and service.

HMD offered magnet drive GSP units, as they required no expensive seal support systems or auxiliary fluids. The GSP is a heavy duty centerline-mounted process pump that complies with API 685 refinery applications for sealless pumps. The client was convinced by the product. The contractor was particularly impressed with its cost-effectiveness - in comparison, the mechanical seal equivalent comes with higher installation costs and an expensive support system. As a result of their success at the refinery, the GSP units have now been installed throughout the site.





Head	Flow	Temperature	Pressure
490 ft	1760 usgpm	-112 to +850°F	275 psi
150 m	400 m³/h	-80 to +450°C	18.9 bar



- Sealless design - total product containment - ideal for heat transfer liquids.
- No product cooling required for temperatures up to 850°F.
- Single confined gasket casing/containment shell design fully confined to eliminate 'Blowout' risk.
- Torque Ring drive positively contributes to the efficiency of the system.
- Built-in soft start feature.
- Ideal for viscous liquids.

Standard construction is Carbon Steel with Carbon internal bearings. Options of Stainless Steel with graphite gaskets are available.

Various flange options are available as standard.

A unique solution for hot oil systems

Isolating the pump from the heat source has always been essential in a hot oil system - until now.

Thanks to its unique torque ring, the CS pump from HMD requires no cooling fluids or heat exchangers during operation. The pump is totally self-venting and the magnetic coupling is immersed in the hot oil. Not only that, but the torque ring design offers a built in soft start for viscous liquids, and the energy created adds to the efficiency of the system. Simple to operate and maintain, cost-effective to run and capable of operating up to 850°F without cooling - all this makes the CS unit the ideal choice.



Single-piece bush holder is simple and ensures bearing alignment at all times.

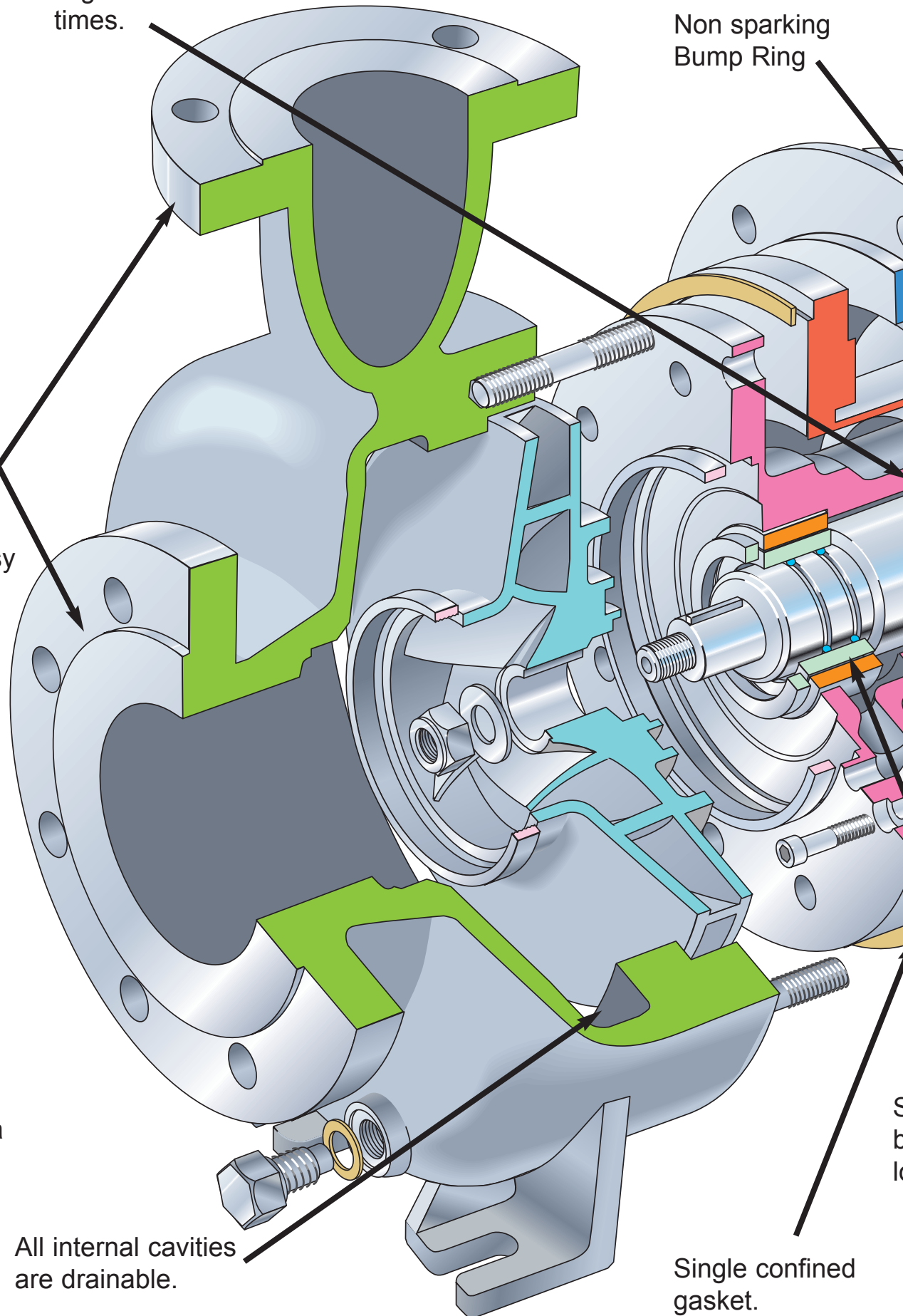
Non sparking Bump Ring

Flanges conform to ANSI dimensions which make upgrades to HMD Kontro fast and easy

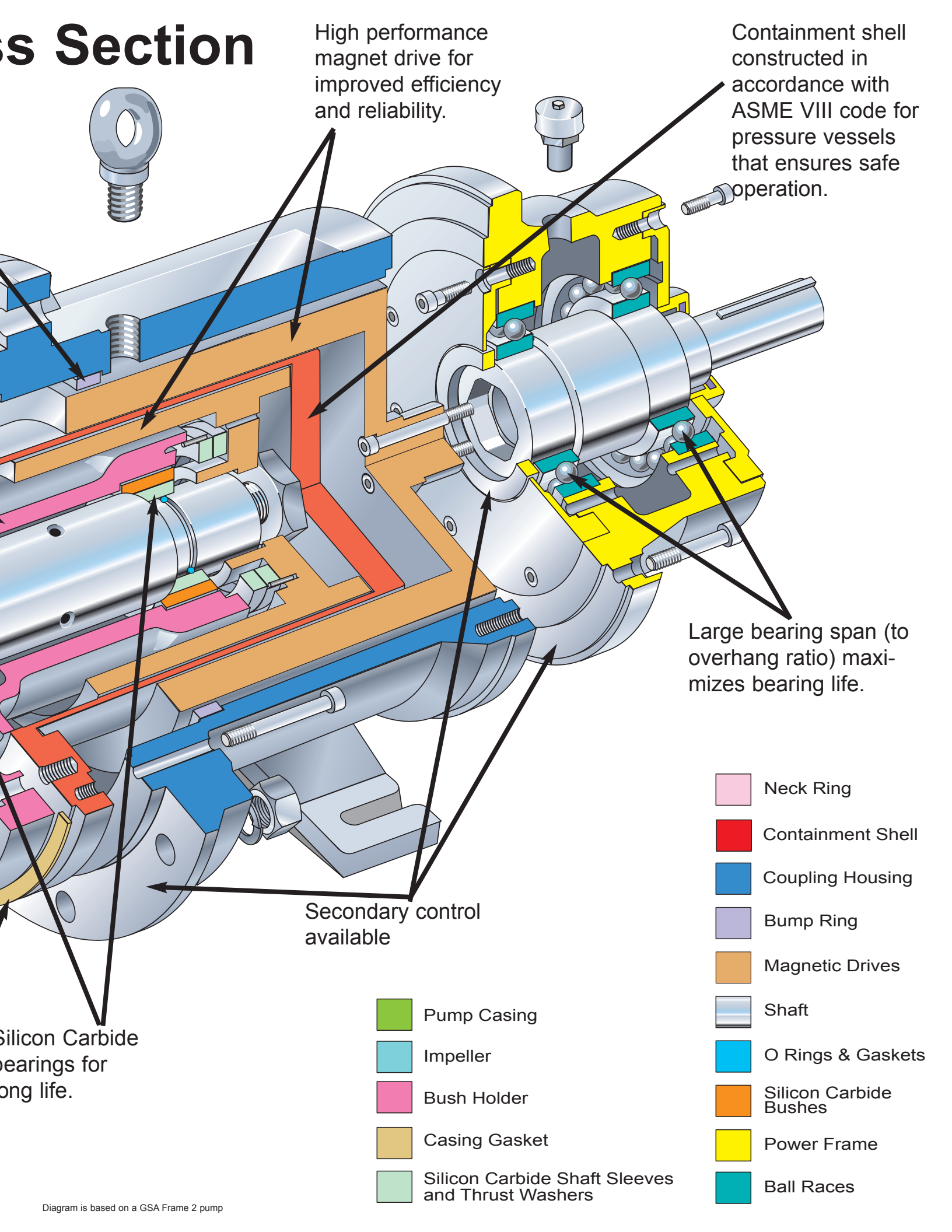
Close coupled configuration available, eliminating power frame and flexible coupling costs and saving space with a smaller footprint.

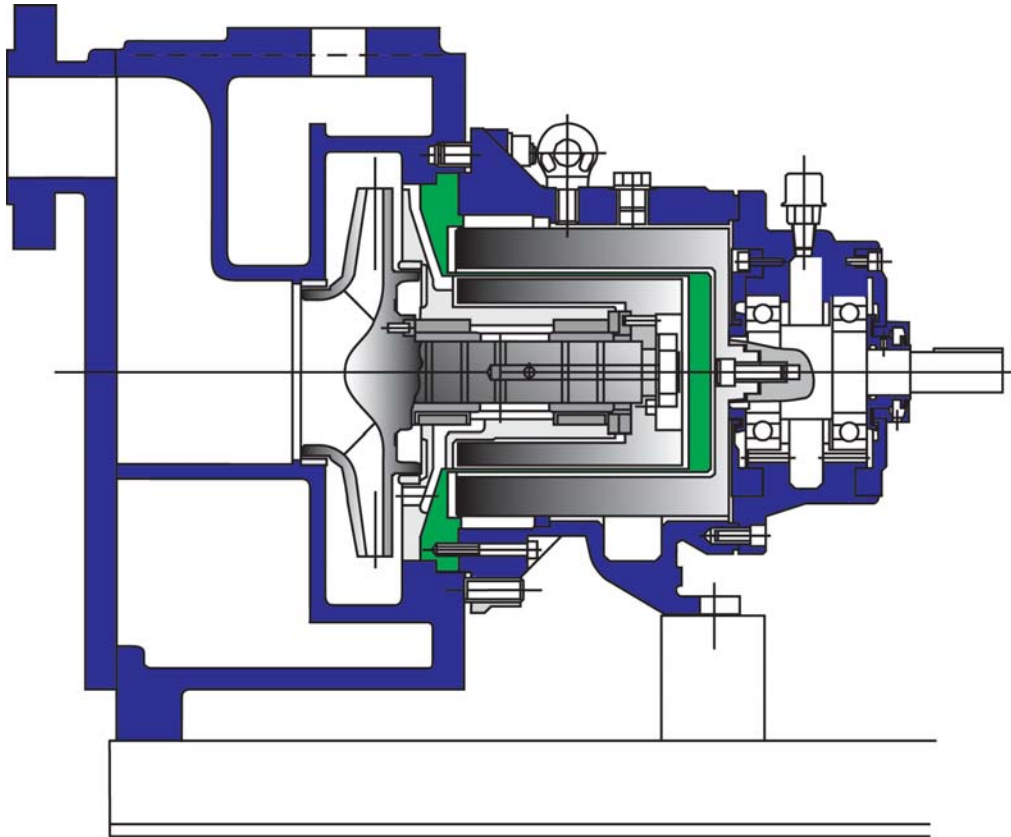
All internal cavities are drainable.

Single confined gasket.

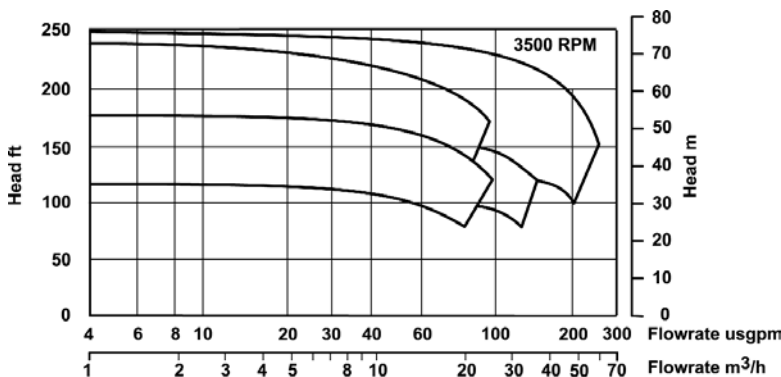


s Section





Head	Flow	Temperature	Pressure
250 ft	265 usgpm	-40 to +250°F	145 psi
76 m	60 m ³ /h	-40 to +120°C	10 bar



- Self priming capability to ensure the safe transfer of liquid from tank to process.
- Increased efficiency liquid ends = Lower running costs.
- Many compatible spares with other GS range pumps.
- Ease of installation.
- Site maintainability.

Standard construction is Stainless Steel with Silicon Carbide internal bearings. Options of Alloy 20 or Alloy C with PTFE gaskets are available.

Various flange options are available as standard.



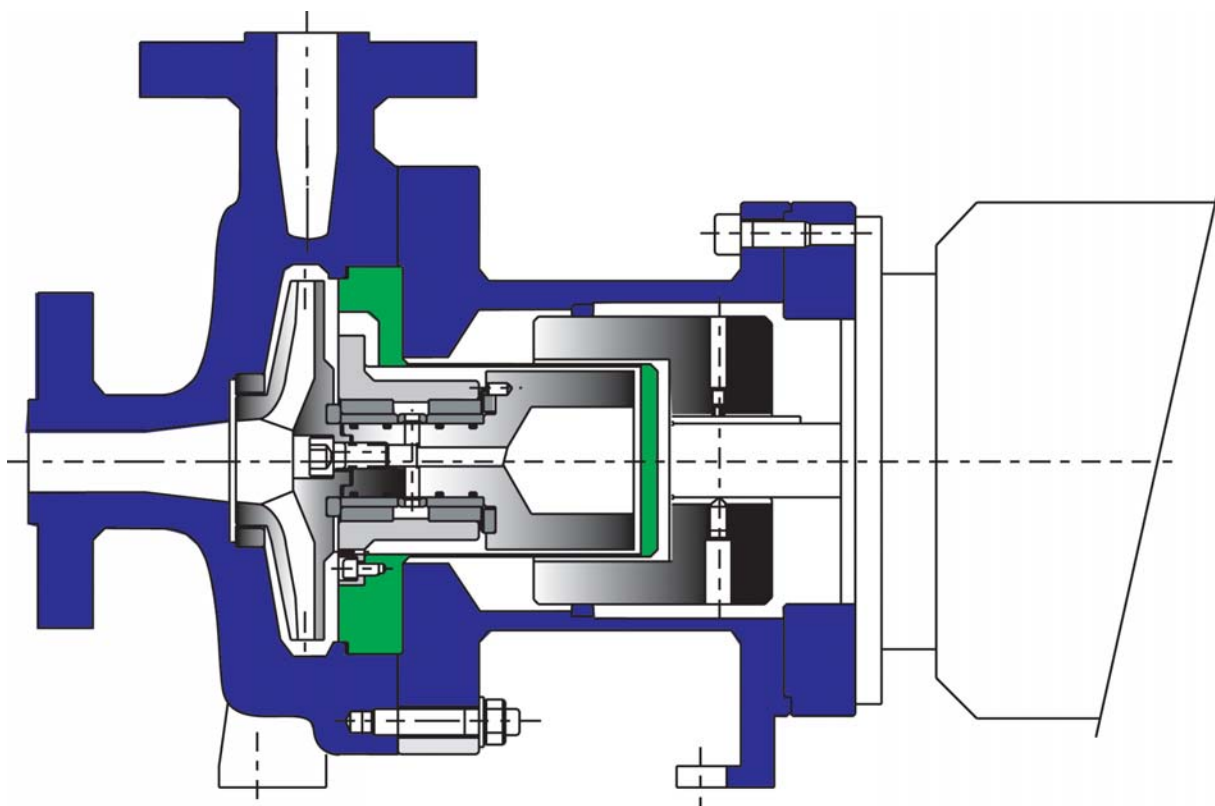
Picture courtesy of Polymer Latex

When it comes to top unloading liquids, particularly where containment is crucial, the GSSP self-priming sealless pump comes into its own.

For example, a customer in the paint pigment industry was receiving titanium tetrachloride (TiCl₄), a liquid which is generally transported by tanker and top unloaded via a self-priming pump. It is essential that TiCl₄ does not come into contact with air, as this results not only in an unusable product, but the release of toxic gas into the atmosphere. The answer was to install an GSSP, its sealless design eliminating any worries about possible leakage. The GSSP is also available with the MAGMAX™ drive for total secondary containment.

High System Pressure

GSHP

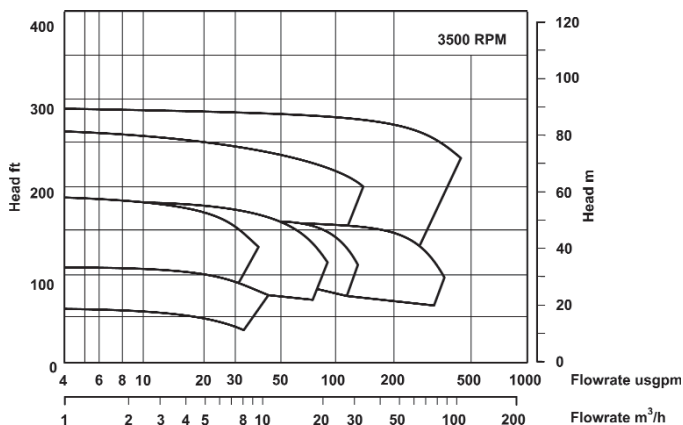


Head	Flow	Temperature	Pressure
295 ft	440 usgpm	-40 to +400°F	up to 2680 psi
90 m	100 m³/h	-40 to +205°C	up to 185 bar

- Seal/less design - total product containment - ideal in the petrochemical and site utilities.
- Modular/Interchangeable high efficiency wet end, designed to provide maximum flow/head coverage across all product ranges.
- High efficiency magnetic couplings.
- Various metallic materials of construction available on request.
- System pressures up to 2680 psi.
- Ideal sampling unit.

Standard construction is Stainless Steel with Silicon Carbide internal bearings. Options of other materials are available on request.

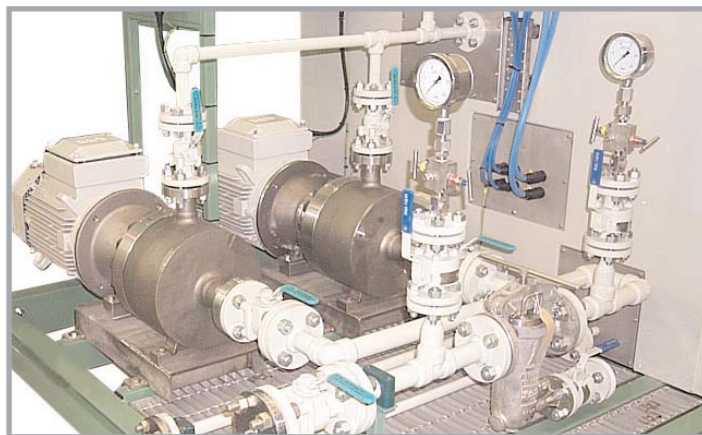
Various flange options are available as standard.



Accuracy under high pressure

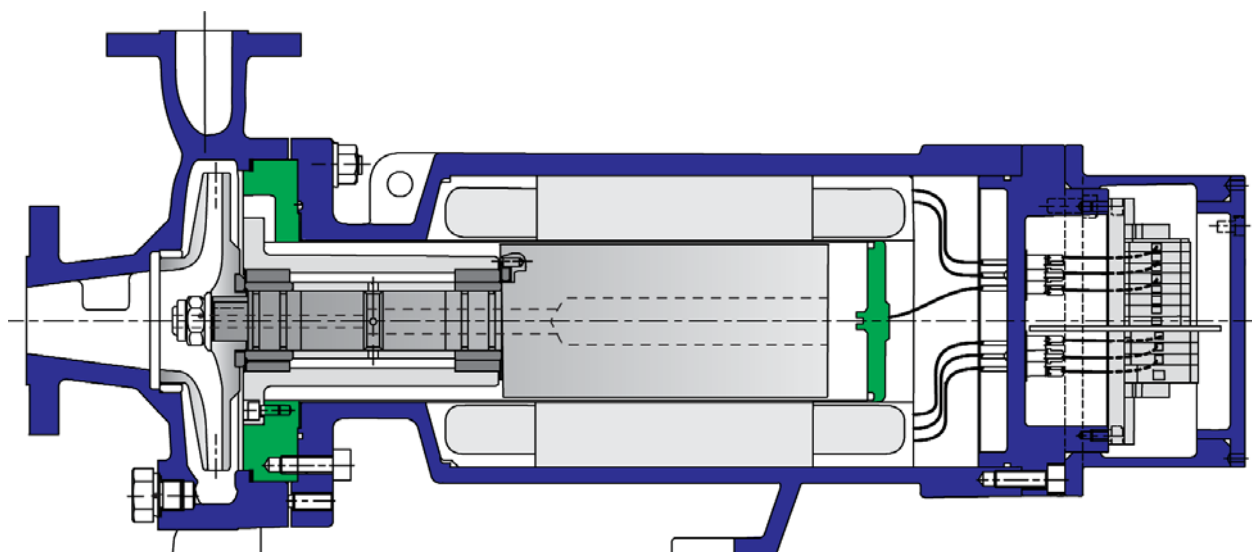
Original equipment manufacturers worldwide have discovered the benefits of the GSHP pump when checking the density of fluids passed down a high pressure pipeline. The pump is used on these skids to take a sample of the fluid out of the main product stream. The sample is then passed through the densitometer, which analyzes the fluid, and afterwards is returned to the main pipeline.

Its ability to withstand system pressures up to 2680 psi, together with its sealless construction, means that the GSHP eliminates the need for the expensive callouts, downtime and repairs associated with mechanical sealed pumps. Quite simply, the GSHP outperforms the competition on both cost and efficiency.

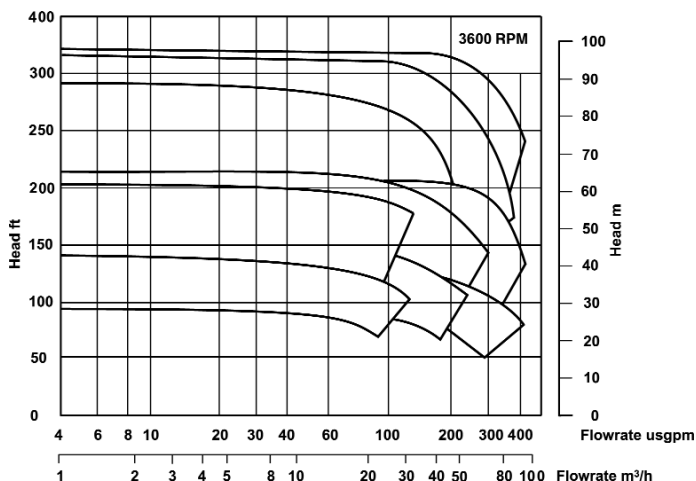


Picture courtesy of Jiskoot Autocontrols Ltd

Canned Magnet Drive Pump



Head	Flow	Temperature	Pressure
318 ft	440 usgpm	-40 to +250°F	275 psi
97 m	100 m³/h	-40 to +120°C	18.9 bar



- Secondary Containment.
- Design ensures safe, leak free operation.
- Full synchronous speed ensuring higher performance and efficiency.
- Direct-on-Line (DOL) starting
- Maintainable on site.
- Maximizes on-line process time.
- Silicon carbide bearings as standard.
- Unique vapor detector available.

Standard construction is Stainless Steel with Silicon Carbide internal bearings. Options of Alloy 20 or Alloy C with PTFE gaskets are available.

Various flange options are available as standard.

Why go to the trouble of moving a pump when there's no need?

To conduct full deluge tests at a solvent tanker offloading installation, a major pharmaceutical company had a problem: the pump was located in a sump. It would have been very expensive to shut down the power and remove the pump from the sump before conducting the test, then to reconnect and recharge the system once it was done. HMD's answer was to install a **MAGMAX** pump, which is fitted with Type 6P cable glands and cables. Site Safety Engineers can now conduct the tests with the pump in place and without a power shutdown.

As a consequence, installing the **MAGMAX** resulted in substantial savings while also allowing for 'real time' system tests to be carried out in the future.



Chemicals

GT, GS, CS, ALA/I, GSSP, MAGMAX™

The pumping of chemicals has always been a major application for the HMD/Kontro Sealless Pump. Particularly suited to the Toxic, Aggressive and Carcinogenic liquids, the HMD/Kontro Sealless Pump has consistently given exemplary service, providing safe and efficient transfer of the most dangerous of substances. Designed to meet ANSI standards, a selection of materials of construction and a range of magnetic couplings to drive the pumps, the HMD/Kontro Sealless Pump has got to be the obvious choice when specifying pumping equipment for your chemical plant.

Pharmaceuticals

GT, GS, CS, ALA/I, GSSP, MAGMAX™

Pharmaceuticals form an important part in the health of the world's population. HMD/Kontro Sealless Pumps can help in specifying safe and efficient leak-free pumps for those difficult liquids used in the production of health care products. Where total security is needed, either in the liquid itself or to the surrounding environment, the HMD/Kontro Sealless Pump with all its safety features, material and magnetic coupling options and low running costs will provide you with the perfect solution to your pumping needs.

Petrochemicals

GT, GSP, GSHP, MAGMAX™

The Petrochemical market provides particular challenges in the movement of product, whether the liquid is a primary or an intermediary chemical. Sealless pumping provides a safe answer without the inherent checks and support systems that sealed pumps require. The HMD/Kontro Sealless Pump with its single confined gasket, modular interchangeable wet end design and conformance to international design standards provides a viable solution to your site pumping needs. For those particularly difficult situations HMD/Kontro Sealless Pumps can be manufactured with Secondary Control devices and Instrument protection to give total "Peace of Mind".

Refineries

GSP, GS, CS, MAGMAX™

HMD/Kontro Sealless Pumps have a range of pumps that conform to API 610 Eighth Edition and API 685 specifications. These pumps offer total containment which is ideal for the hazardous products found in and around the refinery industry. Modular and interchangeable high efficiency liquid ends offer maximum flow/head coverage across the whole range. With a fully confined single gasket design to eliminate "Blowout" risk and no mechanical seals to leak, the HMD/Kontro Sealless Pump is the answer to those Safety and Environmental issues associated with refinery sites.

Site Utilities

CS, GSP, GSHP, MAGMAX™

Many industries need to use pumps for additional services that enable processes to be performed quickly and efficiently. The need for heat is one such application and the HMD/Kontro Sealless Pump is ideally suited to safely handle hot thermal oil to a temperature of 850°F without the need for any cooling. Other typical services are very hot water, cold water and cleaning media such as caustic soda for CIP systems. Whatever the service requirement is you can be assured the HMD/Kontro Sealless Pump will provide an efficient and safe answer.

Engineered applications



Don't be afraid to ask:-

We may have done it before.

We may have a simple solution.

We may have a standard option in our Sundyne Sealless portfolio.

HMD/Kontro has a strong reputation of working in partnership with our clients to ensure we provide a safe and cost effective solution to their pumping problems

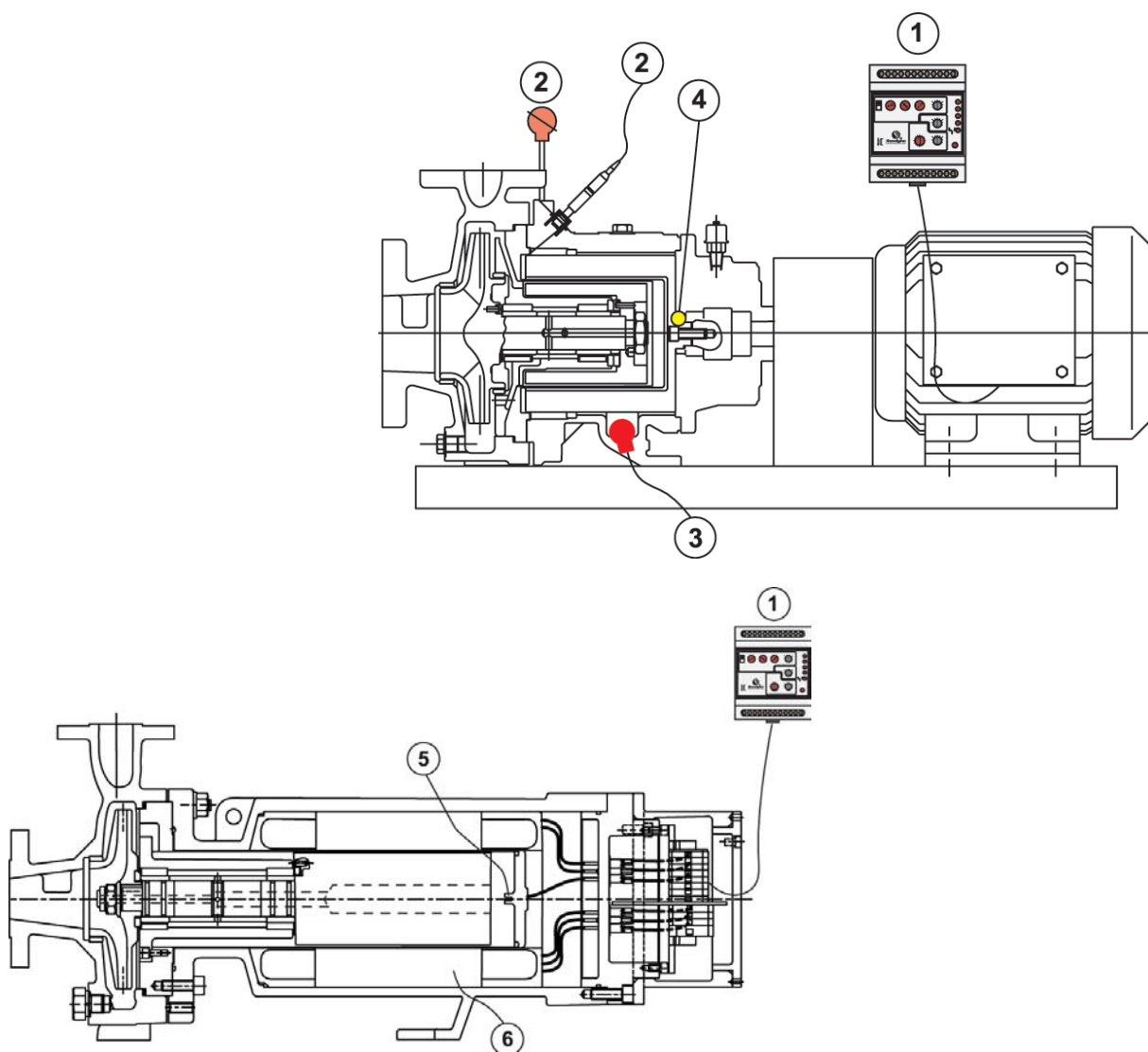
Our reputation is built on providing what you, the customer, need to ensure that your processes and applications are operating at their maximum potential.

Operational Security



Applications

The sealless pump clearly offers the ultimate solution to fugitive emission regulation. All pumps, however, can also become operationally sensitive owing to unstable process conditions. Protection is therefore recommended on all applications to alert the operator to system failure conditions, such as cavitation, low flow, dead heading, no flow, empty suction vessel and similar. A range of protection devices are available from HMD/Kontro Sealless Pumps Ltd.



Working in close cooperation with pump users we have identified the most common areas for concern and have researched the available products that address these issues. The products we supply and recommend have been carefully assessed to ensure they have the same reliability built into them that we at HMD/Kontro have built into our sealless pump.

The diagram above shows all of the options available, however not all of these would be used together, and some of these are not available for specific pump models. Please refer to HMD/Kontro personnel for full details concerning your specific requirements.

1. SundGard - Motor Monitoring

A microprocessor based digital load monitor protects against under and overload conditions caused by Dry Running, Low Flow, Cavitation or Magnetic decoupling etc. (see separate brochure for more details)

2. Temperature Detection.

RTD (PT 100) or Thermocouple sensors permanently located at the containment shell, monitor variations of the temperature inside the magnetic coupling.

3. Liquid Sensing Probe

This instrument is usually installed in conjunction with secondary control. It provides an early warning of containment shroud/shell failure before dangerous quantities of spillage can fill the coupling housing.

4. Secondary Control

On some processes the added benefit of secondary containment is regarded as essential. HMD/Kontro is able to provide their pumps with secondary control devices to severely restrict any leakage into the immediate locality. Mechanical devices fitted to the drive shaft assembly are activated in the unlikely event of containment shell failure. In addition to this, the pump coupling housing is provided with gaskets to eliminate any leakage across the joining faces. Several of the devices discussed above may also be used to help and prevent a major failure from happening in the first place.

5. Vapor Detector

Liquids and/or systems can produce vapor, especially when a malfunction occurs. To prevent this causing a major problem HMD/Kontro have developed a Vapor Detector mounted in the back of the Containment Shell which will cause the pump to be turned off until the problem can be overcome.

6. Motor Thermistors

To prevent damaging temperature build-up in the event of failure of system or pump, thermistors have been embedded in the stator. These can be linked to a control panel where, in the event of a failure, the pump can be turned off or an alarm sounded.

Benefits of ownership

- Early problem identification
- Reduces call-outs to false alarms
- Constant monitoring of pump performance
- All configurations of pump and prime mover catered for
- Protects against operator error
- Easily integrated with new or existing DCS systems.
- Retro-fitting available on many items



Our products can save you money - sometimes more quickly than you expect.

Constant pump failures are expensive - something that one of our customers, a major pharmaceutical plant working with solvents, knew only too well. After months of frustration they decided to change pump suppliers - urgently.

A **MAGMAX™** pump from HMD was installed - and it paid for itself within a week. How? The **MAGMAX™** Vapor Detector picked up on a leak of nitrogen gas through a faulty valve into the pump suction. Thanks to the Vapor Detector, process engineers discovered what had caused the previous units to fail and were able to correct it.

Needless to say the company was delighted.

24/7 stock parts and pumps technical assistance service engineers worldwide

**Pump Breakdown Emergency Telephone Number
1-800-425-0800**

Your local contact may be found at www.sundyne.com

ARGENTINA	NETHERLANDS
AUSTRALIA	NEW ZEALAND
AUSTRIA	NORWAY
BELGIUM	PAKISTAN
BRAZIL	PHILIPPINES
BULGARIA	POLAND
CANADA	PORTUGAL
CHILE	QATAR
CHINA	ROMANIA
CYPRUS	RUSSIA
CZECH REPUBLIC	SAUDI ARABIA
DENMARK	SINGAPORE
FINLAND	SOUTH AFRICA
FRANCE	SPAIN
GERMANY	SWEDEN
GREECE	SWITZERLAND
HONG KONG	TAIWAN
HUNGARY	THAILAND
INDIA	TURKEY
INDONESIA	UNITED ARAB
IRELAND	EMIRATES
ITALY	UNITED KINGDOM
JAPAN	USA
KOREA	VENEZUELA
KUWAIT	VIETNAM
MALAYSIA	

"Every day, around the world, customers define our competitive excellence when they decide to buy our products and services over those of a competitor. Similarly, investors define our competitive excellence when they choose to invest in us or in another company. Only by offering superior value to both customers and investors will our company continue to grow and prosper. **Therefore, our quest for competitive excellence has no end.**"



Internationally renowned

HMD/Kontro Sealless Pumps is part of the Sundyne Corporation, an industrial division of the **United Technologies Corporation, USA** and is a truly international company with a network of trade partners and engineers, ready to meet your needs anywhere in the world.

HMD/Kontro Sealless Pumps are specialists in the providing of magnet drive centrifugal pumps. For industries and applications where performance and environmental integrity are important, HMD/Kontro provide an extensive range to suit all your needs.



Using the very latest in magnet drive technology HMD/Kontro is able to offer the widest selection of sealless pumps on the market, with the ability to adapt these to suit specific requirements. This portfolio enables our engineers to select the correct pump to suit your needs.

For further details on all the HMD/Kontro products please ask your local representative, agent or distributor, or contact HMD/Kontro direct.

Your nearest Agent/Distributor is:



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14845 West 64th Avenue, Arvada, Colorado 80007, USA.
Tel: +1 303 425 0800 Fax: +1 303 425 0896
email: pumps@hmdpumps.com

www.hmdkontro.com www.sundyne.com