

## Technical Profile

### HPGSP

High Pressure GSP sealless magnetic drive pumps to API 685

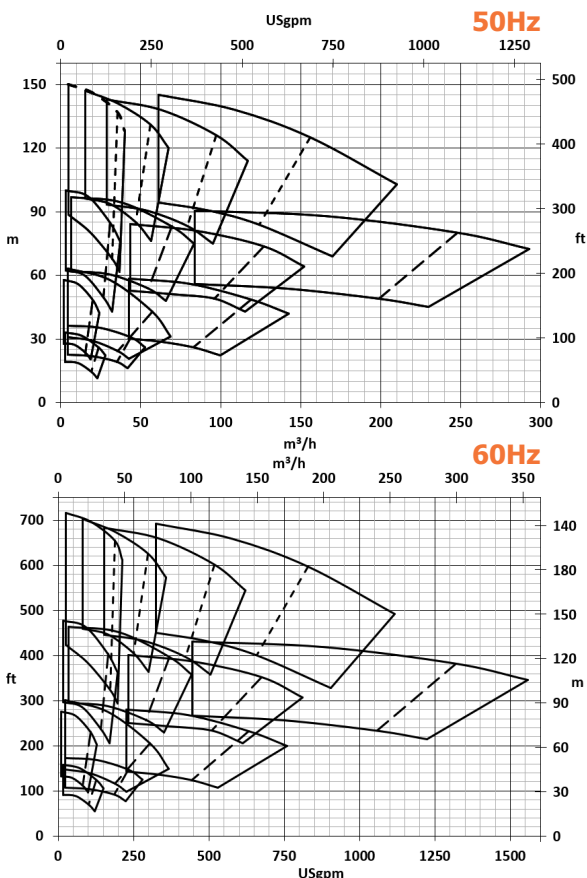
The HPGSP magnetic drive sealless pump is at the top end of our range of high pressure pumps for oil and gas, petrochemical and chemical industries. Capable of easily handling system pressures up to 185 bar and higher, dependent upon temperature extremes, these high pressure pumps are exceptionally versatile yet safe and secure. Built to API 685 specification, the separate mounted design is available in thirteen hydraulic sizes and two basic frame sizes to suit power requirements.

- High pressure version of the successful GSP pump
- Handles system pressures up to 185 bar
- Higher pressures possible dependent on temperature
- Exceptionally versatile, yet safe and secure
- Modular design based on established GS components

### HMD Kontro



### Performance of the HPGSP



#### Design range limits

The HPGSP pump is designed to operate from -100°C up to 260°C (-148°F up to 500°F) without the need for any ancillary cooling medium. Maximum design working pressure is 185 bar (2685 psi).

#### Solids handling

The unit is capable of handling solids up to 5% w/w with 100 microns.

#### Materials of construction

S-5, A-8, D-1, D-2

#### Options

##### Build Options:

- Inducers for low NPSH
- External filtration
- NACE compliant materials
- Vertical (OH5) derivative

##### Instrumentation Options:

- Power control monitor
- RTD temperature sensing
- Secondary housing monitoring (liquid or pressure)
- VapourView® 'gas-in-liquid' detection

## Key design features

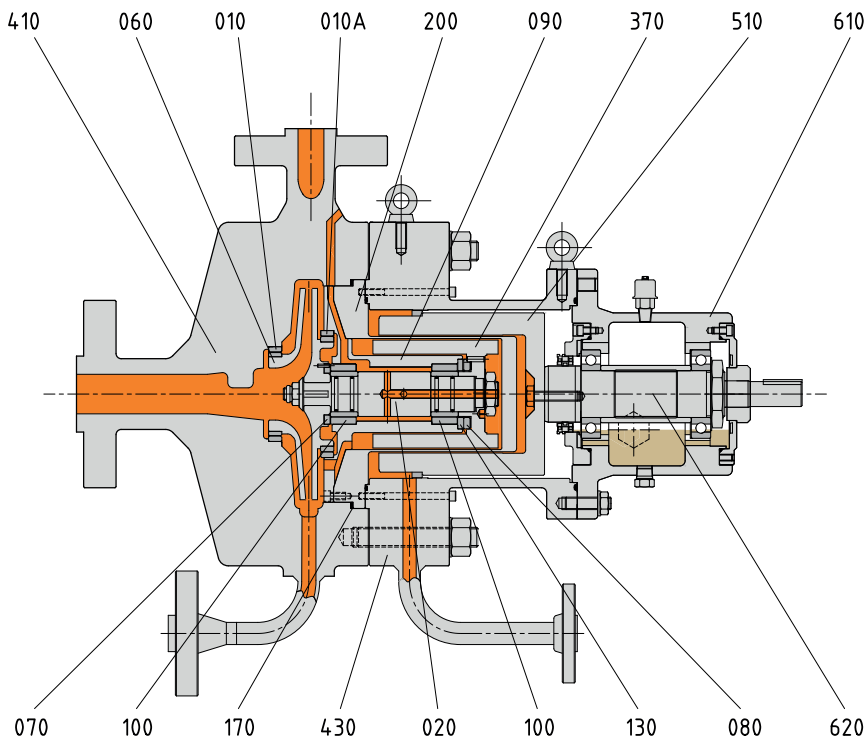
- **No seals:** eliminates leaks and minimises maintenance and all associated costs
- **Sealless design:** provides total containment of hazardous, aggressive or valuable products
- **Interchangeable components:** maximises convenience and reduces stock holding, operator training etc.
- **High efficiency wet end:** benefits maximum flow and head coverage
- **Wide choice of materials:** allows the pump to be constructed from a variety of metals
- **Casing gasket fully confined:** eliminates the risk of blowout
- **Universal connection options:** allows the suction and discharge flange connections to be configured to exact requirements
- **Modular rotating element cartridge:** provides the most efficient way to replace parts and manage the spares inventory

## HPGSP pump models

No.	Hydraulic	Frame
1	3 x 1.5 x 6	1
2	3 x 2 x 6	1
3	1.5 x 1 x 8	1
4	3 x 1.5 x 8H	1

No.	Hydraulic	Frame
1	4 x 3 x 8H	2
2	2 x 1 x 10	2
3	3 x 2 x 10	2
4	4 x 3 x 10H	2
5	6 x 4 x 10	2
6	2 x 1 x 13	2
7	3 x 1.5 x 13	2
8	3 x 2 x 13	2
9	4 x 3 x 13	2

## Construction of HPGSP pump



010	Neck Ring (Front)
010A	Neck Ring (Back)
020	Pump Shaft
060	Impeller
070	Thrust Washer (Front)
080	Thrust Washer (Back) / Alignment Pad
090	Bush Holder Assembly
100	Bush
130	Thrust Pad
170	Casing Gasket
200	Containment Shell Assembly
370	Inner Magnet Ring
410	Casing Assembly
430	Coupling Housing Assembly
510	Outer Magnet Ring
610	Bearing Housing
620	Drive Shaft

## Flanges and Connections

### Casing

Suction and discharge flanges are designed in accordance with the following relevant standards:

**ANSI B16.5 Class 600** Machined with 7mm (1/4") high raised face having a continuous spiral groove

**ANSI B16.5 Class 900** Machined with 7mm (1/4") high raised face having a continuous spiral groove

**ANSI B16.5 Class 1500** Machined with 7mm (1/4") high raised face having a continuous spiral groove

### Flange Loadings

Allowable flange loadings imposed by pipework are in accordance with Table 4 of API 685 2<sup>nd</sup> edition.

### Drain Connections

The following drain options are available:

Frame 1 - 1/2" Pipe with Weld Neck Flange, gusseted in two planes.  
Frame 2 - 3/4" Pipe with Weld Neck Flange, gusseted in two planes.

### Vent Connections

Not required.

### Gauge Connections

No provision for gauge connections has been made on this range of pumps.

# Dimensions of a typical HPGSP pump

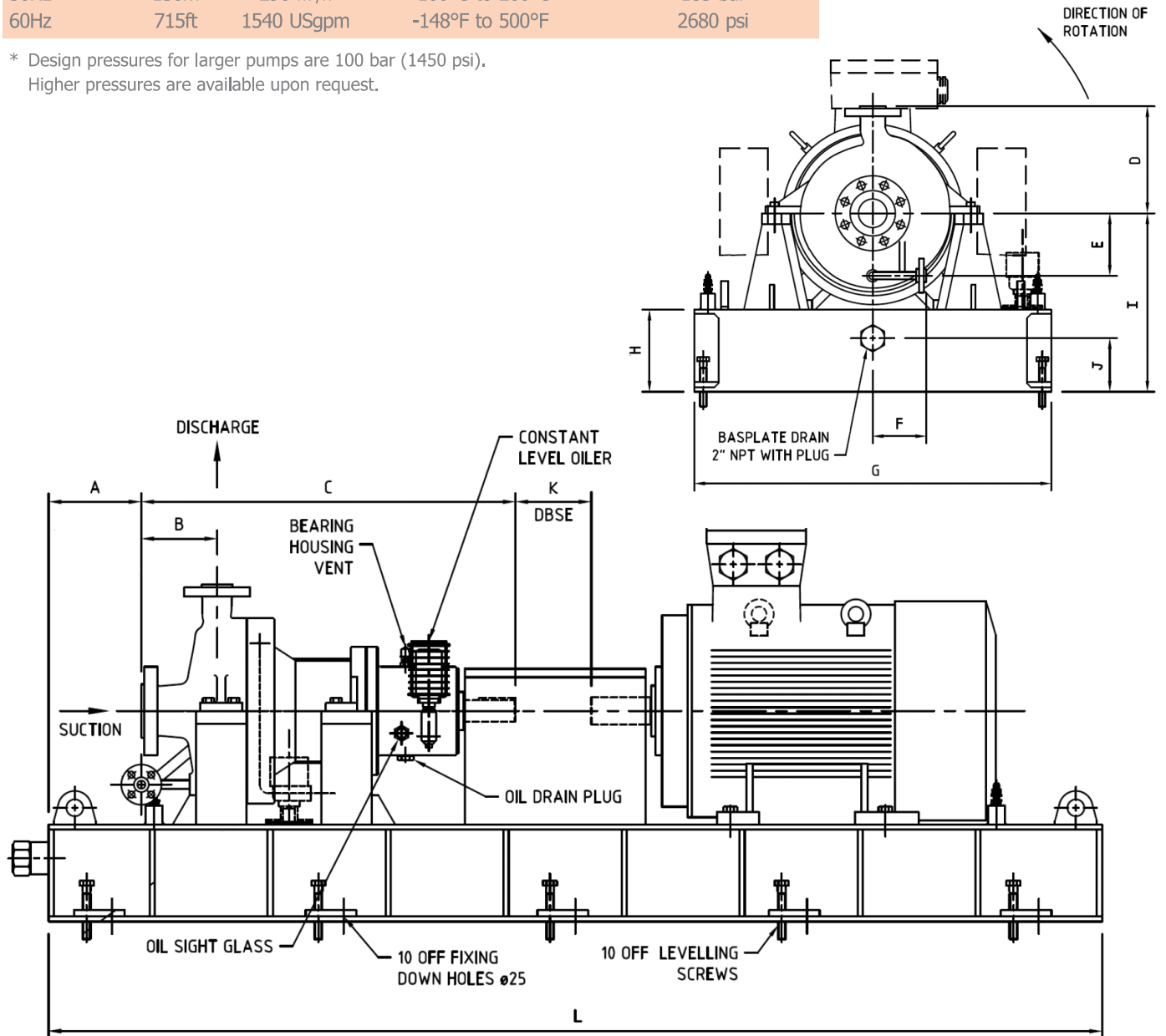
Note: the dimensions tabulated below apply to HPGSP Frame 2 and are for guidance only. For Frame 1 dimensions contact HMD for specific requirements.

Pump Size	A	B	C	D	E	F	G	H	I	J	K	L
4 x 3 x 8H	248	153	861	305	195	150	1000	230	500	150	180	2500
2 x 1 x 10	267	133	841	235	128	150	1000	230	500	150	180	2500
3 x 2 x 10	244	156	864	260	143	150	1000	230	500	150	180	2500
4 x 3 x 10H	235	165	873	310	163	150	1000	230	500	150	180	2500
6 x 4 x 10	197	178	911	343	205	150	1000	230	500	150	180	2500
2 x 1 x 13	220	180	890	300	172	150	1000	230	500	150	180	2500
3 x 1.5 x 13	220	180	888	300	175	150	1000	230	500	150	180	2500
3 x 2 x 13	220	180	888	350	190	150	1000	230	500	150	180	2500
4 x 3 x 13	200	200	908	350	204	150	1000	230	500	150	180	2500

## Range capabilities

Frequency	Head	Flow	Design Temperature	Design Pressure
50Hz	150m	290 m <sup>3</sup> /h	-100°C to 260°C	185 bar
60Hz	715ft	1540 USgpm	-148°F to 500°F	2680 psi

\* Design pressures for larger pumps are 100 bar (1450 psi). Higher pressures are available upon request.



## Pressure Limits

All parts are to be rated to the pressures shown below at 38°C / 100°F

Flange standard	Design pressure			
	S-5	A-8	D-1	D-2
ANSI B16.5 Class 600	10,0 MPa 1450 psi	10,0 MPa 1450 psi	10,0 MPa 1450 psi	10,0 MPa 1450 psi
ANSI B16.5 Class 900/1500	18,5 MPa 2683 psi	18,5 MPa 2683 psi	18,5 MPa 2683 psi	18,5 MPa 2683 psi

Component	Hydrostatic test values			
	S-5	A-8	D-1	D-2
Casing Class 600	15,0 MPa 2175 psi	15,0 MPa 2175 psi	15,0 MPa 2175 psi	15,0 MPa 2175 psi
Casing Class 900/1500	27,75 MPa 4025 psi	27,75 MPa 4025 psi	27,75 MPa 4025 psi	27,75 MPa 4025 psi
Containment Shell Class 600	15,0 MPa 2175 psi	15,0 MPa 2175 psi	15,0 MPa 2175 psi	15,0 MPa 2175 psi
Containment Shell Class 900/1500	27,75 MPa 4025 psi	27,75 MPa 4025 psi	27,75 MPa 4025 psi	27,75 MPa 4025 psi

## Temperature limits

S-5	A-8	D-1	D-2
-29°C to 260°C	-100°C to 260°C	-40°C to 260°C	-40°C to 260°C
(-20°F to 500°F)	(-148°F to 500°F)	(-40°F to 500°F)	(-40°F to 500°F)

For sub zero temperatures a suitable sealing compound (Loctite Multi Gasket or similar) is used to prevent the ingress of moisture into the coupling housing between the containment shroud/shell, coupling/bearing and motor adaptor assembly interface.

Sundyne Headquarters:

### Sundyne, LLC

14845 West 64th Avenue  
Arvada, Colorado 80007  
USA  
1-866-Sundyne  
Phone: 1 303 425 0800  
Fax: 1 303 940 2911  
www.sundyne.com

Sundyne United Kingdom:

### Sundyne HMD Kontro Sealless Pumps

Marshall Road  
Hampden Park Industrial Estate  
Eastbourne, East Sussex, BN22 9AN  
United Kingdom  
Phone: +44 (0)1323 452000  
Fax: +44 (0)1323 503369

Sundyne China:

### Sundyne Industrial Equipment (Tianjin) Company Limited

Building 1, No. 879 Shen Fu Road  
XinZhuang Industrial Zone  
Min Hang District  
Shanghai, China 201108  
Phone: +86 21 5055 5005  
Fax: +86 21 5442 5265

Sundyne France:

### Sundyne International S.A.

13-15, Bld. Eiffel - B.P. 30  
21604 Longvic Cedex  
France  
Phone: +33 (0)3 80 38 33 00  
Fax: +33 (0)3 80 38 33 66

Sundyne Spain:

### Sundyne Marelli Bombas, S.R.L.

Ctra. Madrid-Toledo, Km.30.8  
45200 Illescas  
Toledo, Spain  
Phone: +34 925 53 45 00  
Fax: +34 925 51 16 00

### Worldwide Sales Headquarters

Unit 2 Harvington Business Park  
Brampton Road  
Hampden Park Industrial Estate  
Eastbourne East Sussex, BN22 9BN  
United Kingdom  
Phone: +44 (0)1323 452125

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