

Technical Profile

GSPX

Multi-Stage Pump to API 685

The GSPX pump is a multi-stage derivative of the established HMD GSP range using a between bearings design (BB5) for the second and third stage impellers.

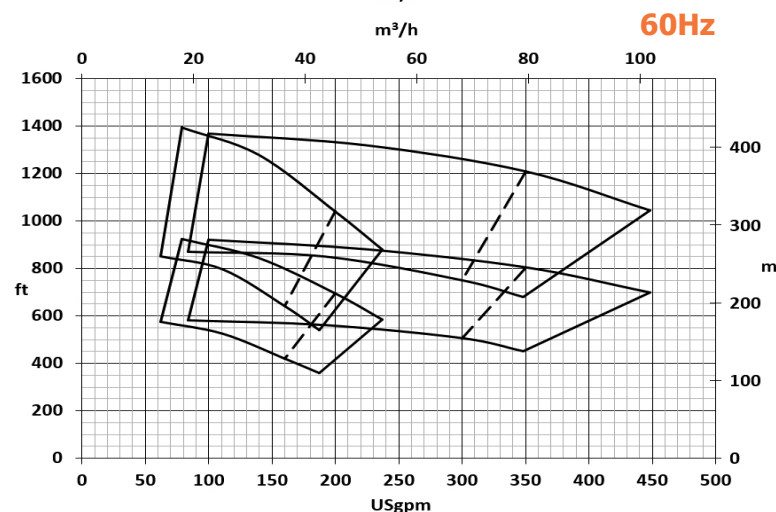
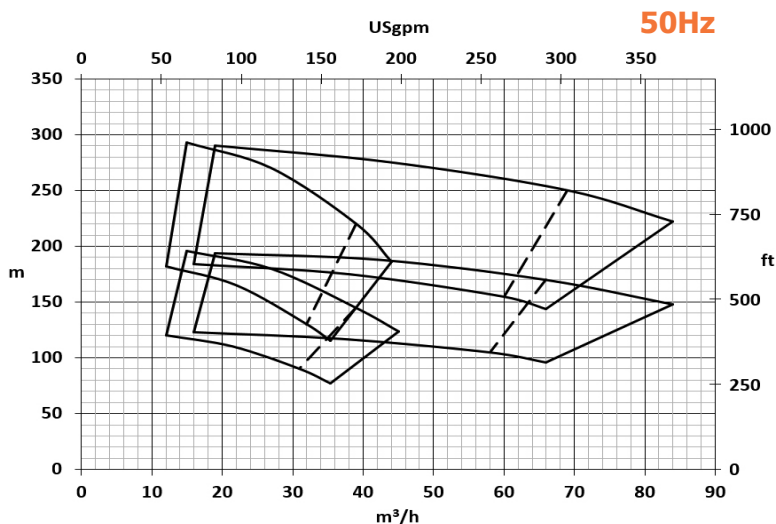
Based on our proven magnetic drive, it is available in 2 or 3 stages with two diffuser based hydraulic options.

The GSPX produces higher differential pressures than our single-stage sealless models, whilst offering all of the robustness and advantages expected from Sundyne HMD Kontro.

Conforming to API 685 it is ideal for oil and gas installations, typically refineries, as well as for other chemical and petrochemical applications.



Performance of the GSPX



Design range limits

The GSPX pump is designed to operate from -40°C up to 260°C (-40°F up to 500°F) without the need for any ancillary cooling medium. Design working pressure is 40 bar (580 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 - others on request

Options

Build Options:

- Inducers for low NPSH
- External filtration
- NACE compliant materials
- Secondary control and containment
- ZeroLoss™ containment shell

Instrumentation Options:

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

GSPX Pump Models

No.	Hydraulic	Stages	Frame	ZeroLoss Option
1	2 x 2 x 10 (2)	2	2	Yes
2	2 x 2 x 10 (3)	3	2	Yes
3	3 x 2 x 10 (2)	2	2	Yes
4	3 x 2 x 10 (3)	3	2	Yes

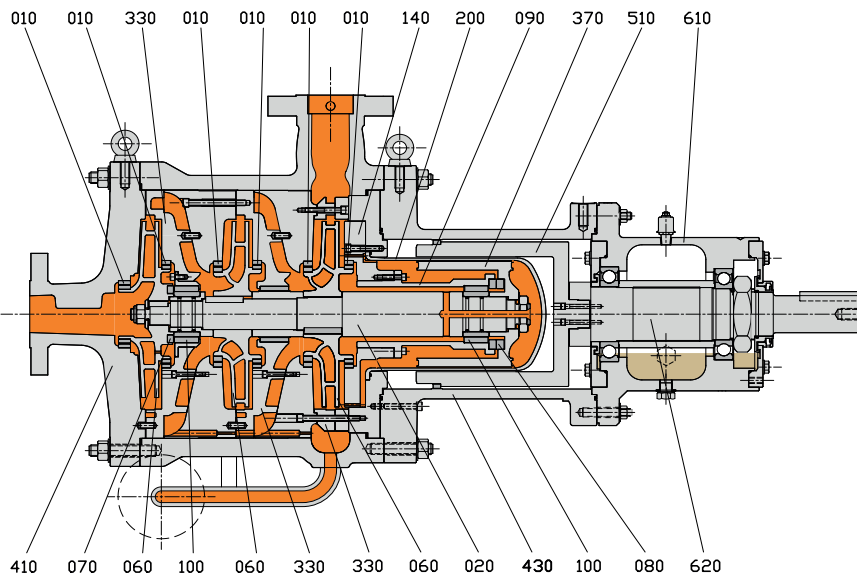
Key Design Features

- **Multiple in-line stages:** in an end suction configuration for compact package and ease of installation in plant.
- **BB5 Barrel Style design:** API compliant, no tie bolts.
- **No dynamic sealing:** eliminates leaks and minimises maintenance and all associated costs.
- **API 685 compliant:** ensures total containment of hazardous, aggressive or valuable products.
- **Interchangeable components:** commonality with Sundyne HMD Kontro's GSP range 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.
- **Replaceable impeller and casing wear rings:** for reduced maintenance cost.
- **Casing gaskets fully confined:** eliminates the risk of blowout.

Benefits of the GSPX

- **High Head Performance in a compact package:** achieved through multiple stages and diffusers. More space, cost and service effective than multiple single stage pumps in series.
- **High Efficiency:** optimised diffuser design and optional ZeroLoss™ composite containment shell which eliminates coupling losses and heating of the process liquid.
- **Good NPSH Performance:** equivalent to GSP pump range. End Suction configuration allows fitting inducers in very low NPSHA installations.
- **Magnet Coupling Optimisation:** wide range of magnetic drive solutions to suit duty requirements, with both metallic and ZeroLoss™ containment shells.
- **Fully self draining and self-venting**
- **Secondary Control / Containment:** available on request.
- **Bespoke Engineered options:** as with all HMD products, bespoke customer requirements can be incorporated within industry leading timescales.

Construction of GSPX 3-stage pump



- 010 Neck Ring
- 020 Pump Shaft
- 060 Impeller
- 070 Thrust Washer (Front)
- 080 Thrust Washer (Back) / Alignment Pad
- 090 Bush Holder Assembly
- 100 Bush
- 140 Casing Plate
- 200 Containment Shell Assembly
- 330 Diffuser
- 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 300 RF Machined with 2mm ($1/16$ ") high raised face having a continuous spiral groove

ANSI B16.5 Class 600 RF (optional) 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 2nd edition.

Drain Connections

$3/4$ " 300lb Standard, 600lb Optional.

Vent Connections

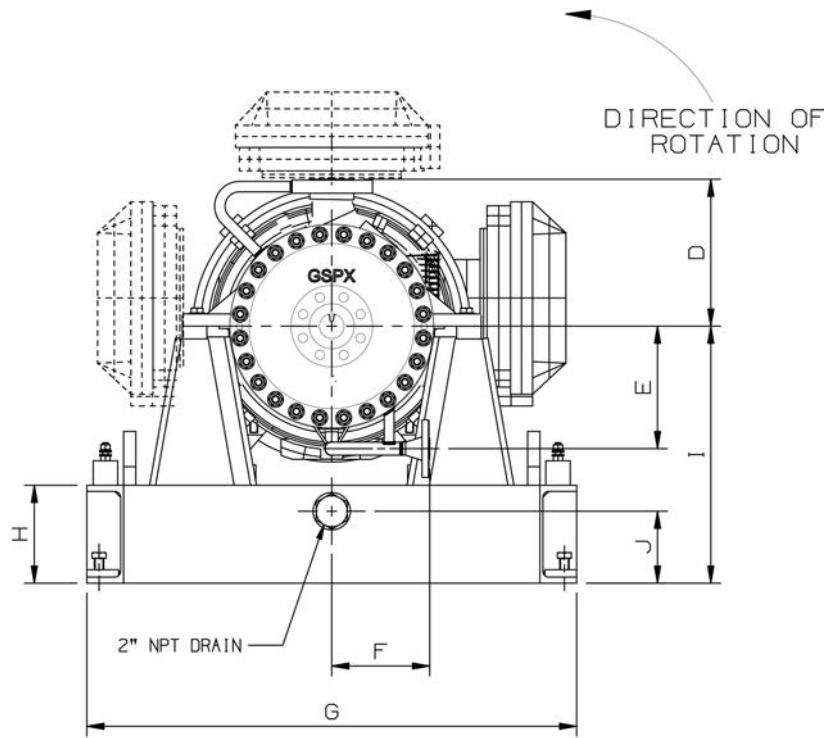
No vent options are required for these pumps, fully self-venting.

Range Capabilities

Frequency	Head	Flow	Design Temperature	Design Pressure
50Hz	295m	85 m ³ /h	-40°C to 260°C	40 bar
60Hz	1400ft	450 USgpm	-40°F to 500°F	580 psi

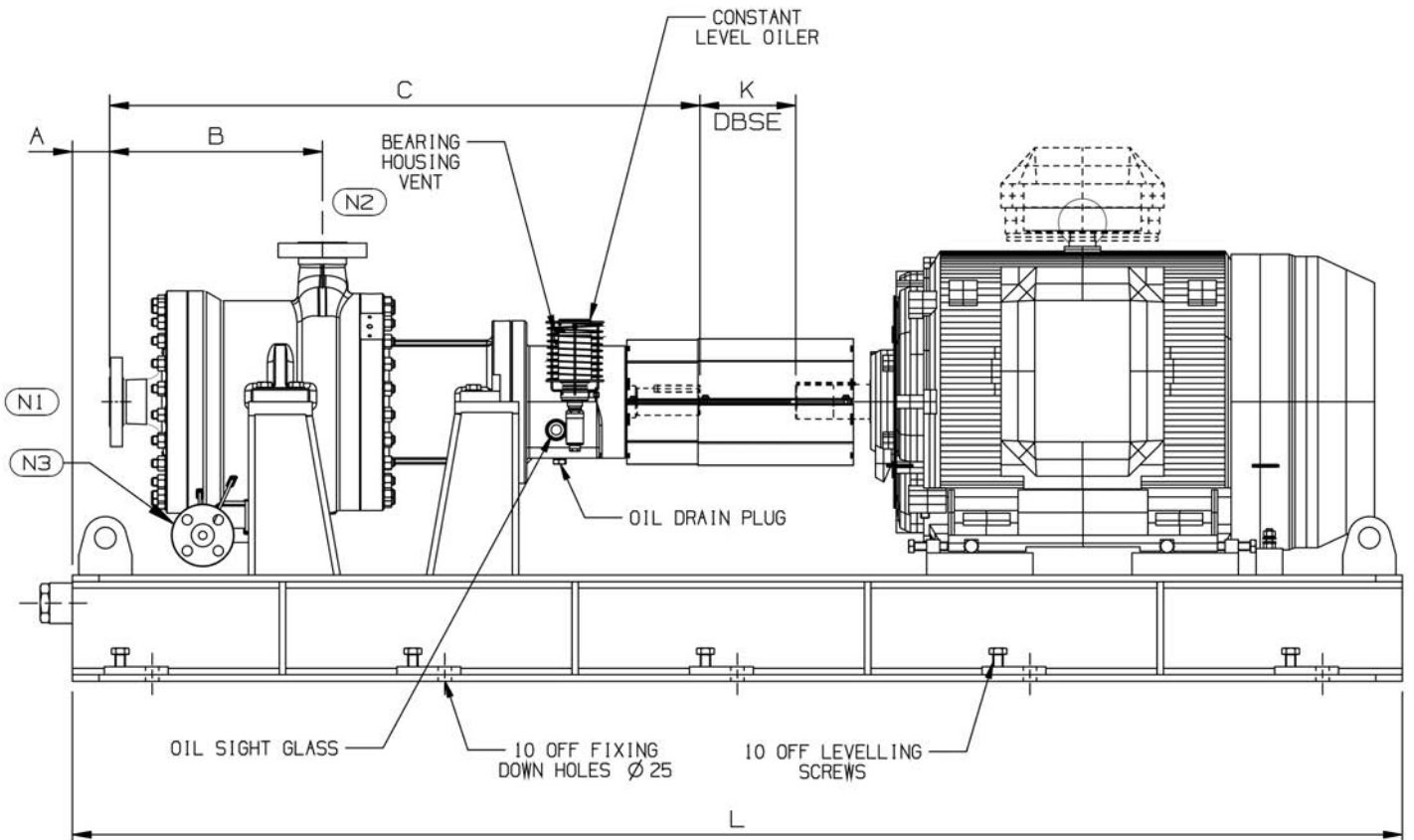
Note 1: Design pressures are 40 bar (580 psi) as standard with a 50 bar (725 psi) option. Higher pressure Engineered Option on request.
 Note 2: Temperature range can be extended to -100°C to 315°C / -150°F to 600°F using special materials.
 Note 3: Temperature range for ZeroLoss™ shells restricted to -40°C to 120°C / -40°F to 250°F at 40 bar (580 psi).

Dimensions of a typical GSPX pump



KEY	2-Stage		3-Stage	
	mm	inches	mm	inches
A	190	7.5	70	2.8
B	280	11.0	400	15.7
C	990	39.0	1110	43.7
D	300	11.8	300	11.8
E	250	9.8	250	9.8
F	200	7.9	200	7.9
G	1000	39.4	1000	39.4
H	200	7.9	200	7.9
I	525	20.7	525	20.7
J	147	5.8	147	5.8
K	180	7.1	180	7.1
L	2500	98.4	2500	98.4
N1	Suction (2" or 3")			
N2	Discharge (2")			
N3	Drain (3/4")			

Note: the tabulated dimensions are for guidance only.



Pressure limits

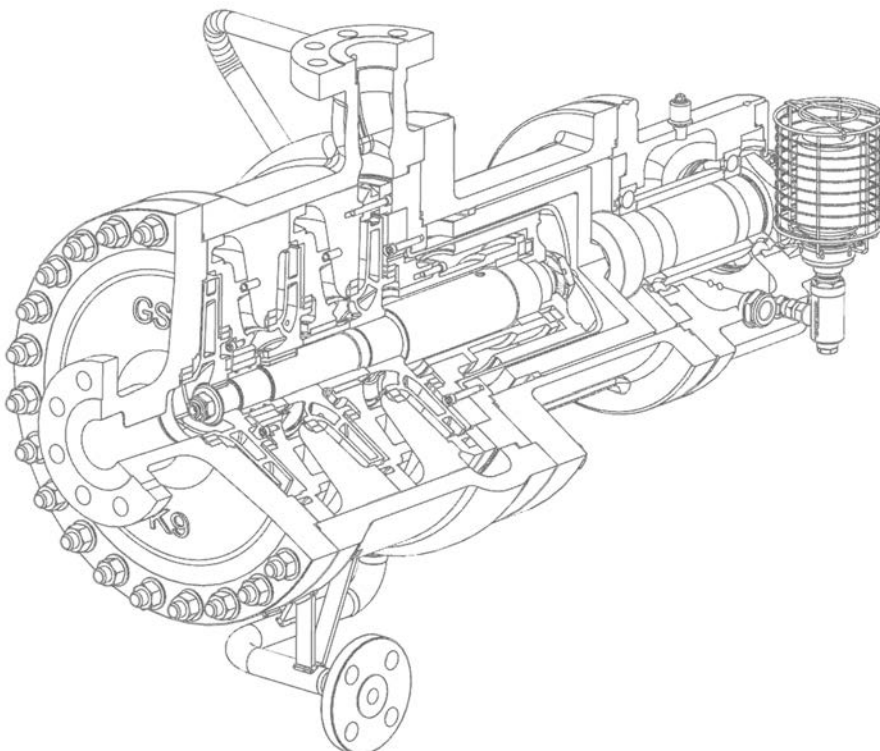
Design pressure				
	S-5	A-8	D-1	D-2
Standard: 40 bar	4,0 MPa 580 psi	4,0 MPa 580 psi	4,0 MPa 580 psi	4,0 MPa 580 psi
Optional: 50 bar	5,0 MPa 725 psi	5,0 MPa 725 psi	5,0 MPa 725 psi	5,0 MPa 725 psi

Hydrostatic test values				
	S-5	A-8	D-1	D-2
Standard: 40 bar	6,0 MPa 870 psi	6,0 MPa 870 psi	6,0 MPa 870 psi	6,0 MPa 870 psi
Optional: 50 bar	7,5 MPa 1088 psi	7,5 MPa 1088 psi	7,5 MPa 1088 psi	7,5 MPa 1088 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)

Note: Maximum Allowable Pressure must be de-rated for elevated temperatures, above 40°C (104°F).



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Sundyne HMD Kontro GSPX TP
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