

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.

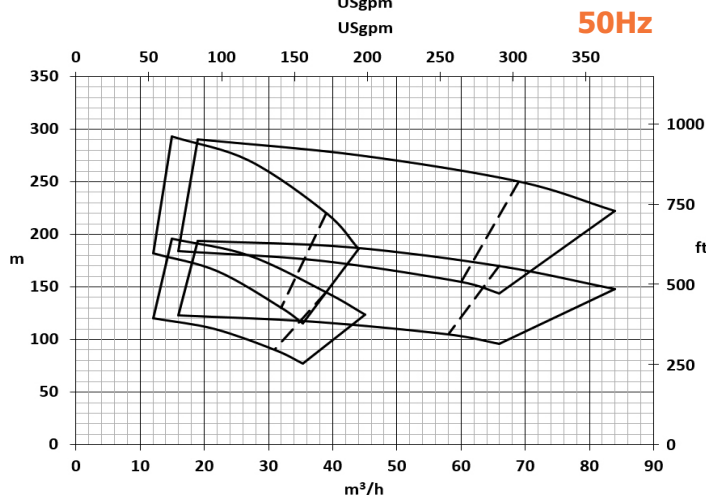
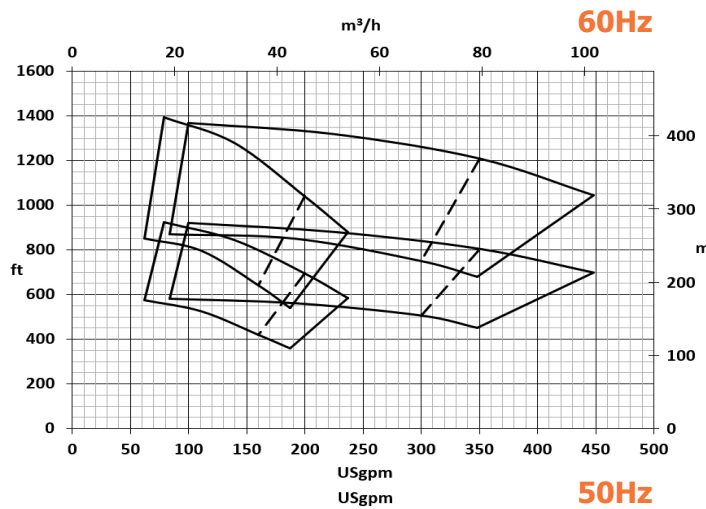
The GSPX produces higher differential pressures than our single-stage sealless models, whilst offering all of the robustness and advantages expected from Sundyne HMD Kontro.

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

HMD Kontro



Performance of the GSPX



Design range limits

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

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)

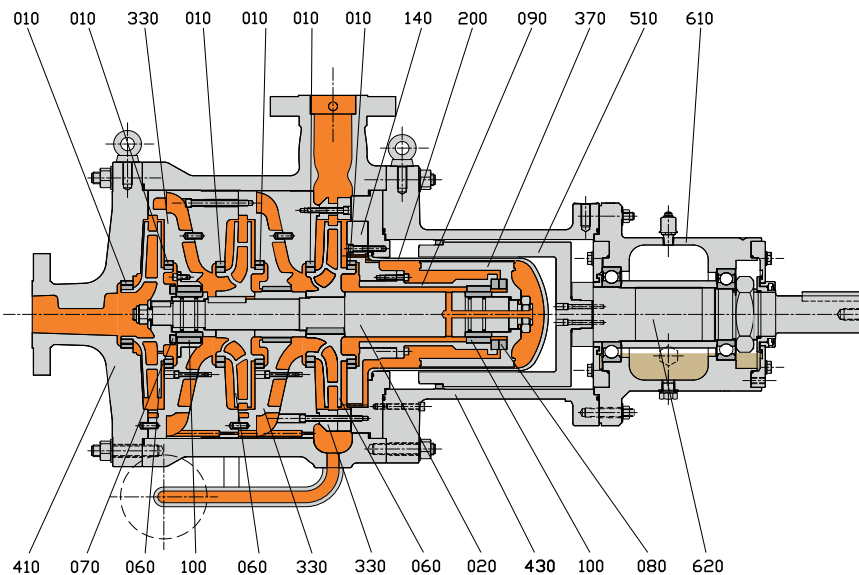
GSPX Pump Models

| 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 minimizes 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 maximizes 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.

Construction of GSPX 3-stage pump



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.

- 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 $\frac{1}{16}$ " (2mm) high raised face having a continuous spiral groove

ANSI B16.5 Class 600 RF (optional) Machined with $\frac{1}{4}$ " (7mm) 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

$\frac{3}{4}$ " 300lb Standard, 600lb Optional.

Vent Connections

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

Range Capabilities

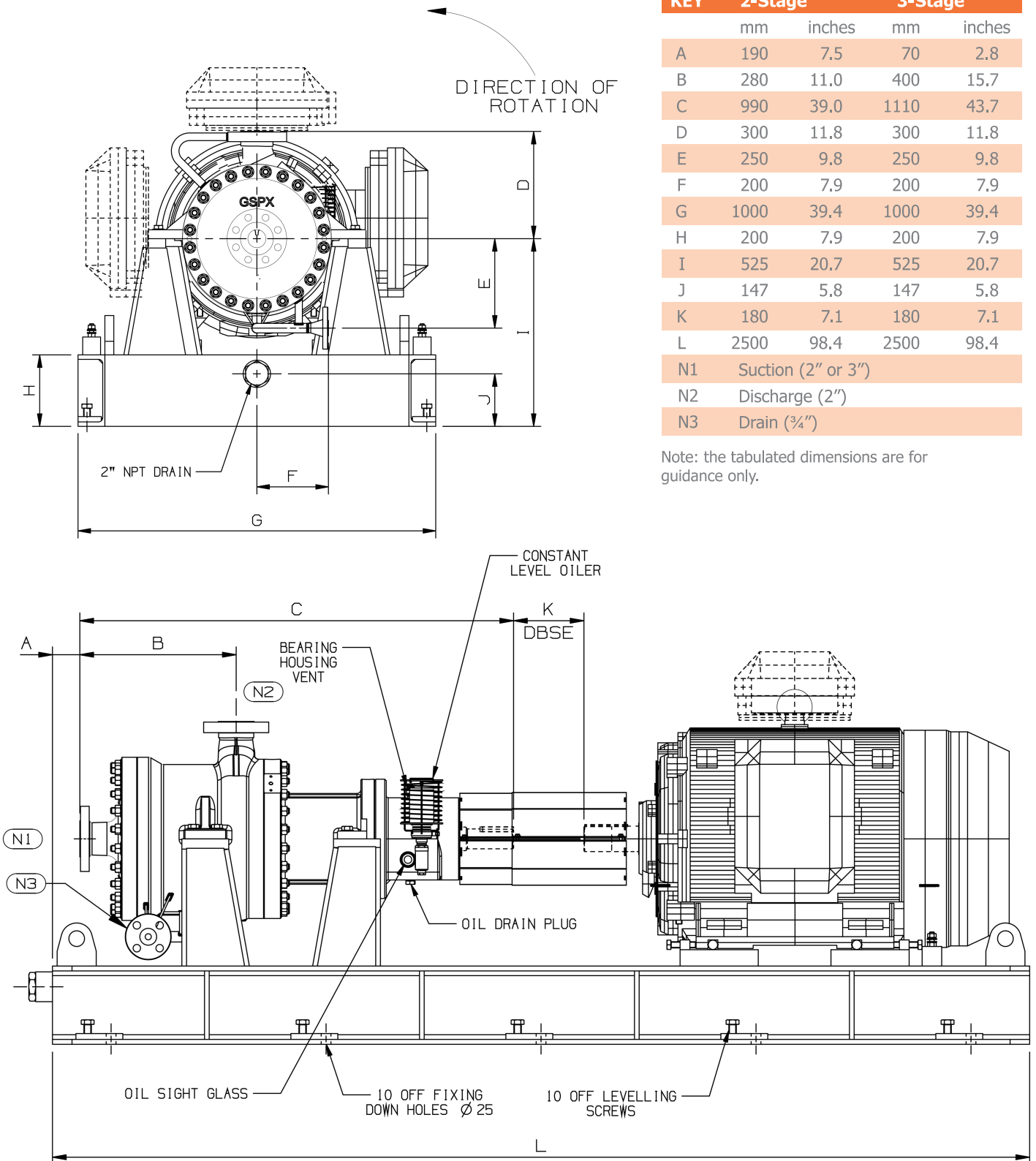
| Frequency | Head | Flow | Design Temperature | Design Pressure |
|-----------|--------|----------------------|--------------------|-----------------|
| 60Hz | 1400ft | 450 USgpm | -40°F to 500°F | 580 psi |
| 50Hz | 295m | 85 m ³ /h | -40°C to 260°C | 40 bar |

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

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

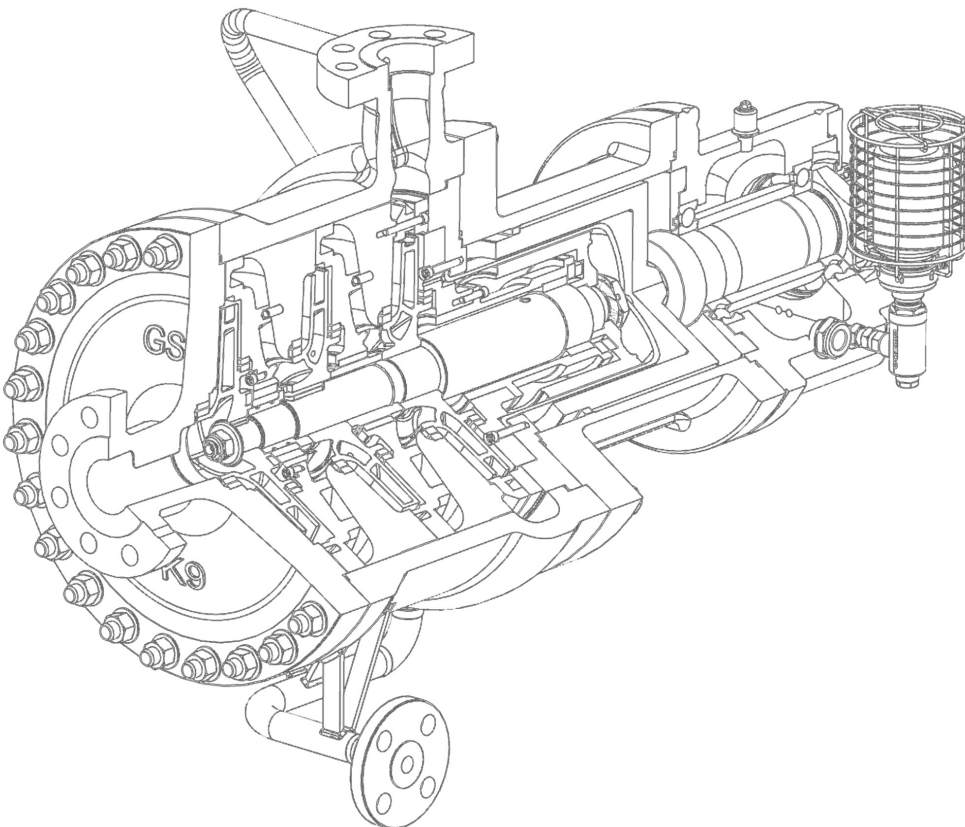
| Design pressure | | | | |
|------------------|--------------------|--------------------|--------------------|--------------------|
| | S-5 | A-8 | D-1 | D-2 |
| Standard: 40 bar | 4.0 MPa 580 psi | 4.0 MPa 580 psi | 4.0 MPa 580 psi | 4.0 MPa 580 psi |
| Optional: 50 bar | 5.0 MPa 725 psi | 5.0 MPa 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 |
|------------------|-------------------|------------------|------------------|
| -20°F to 500°F | -148°F to 500°F | -40°F to 500°F | -40°F to 500°F |
| (-29°C to 260°C) | (-100°C to 260°C) | (-40°C to 260°C) | (-40°C to 260°C) |

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



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Sundryne HMD Kontro GSPX TP
 1.1 10/14 Letter