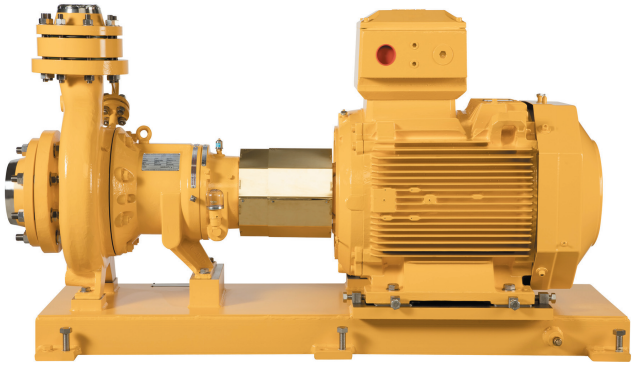
Technical Profile

GSA/GSI frame II

HMD Kontro

Magnet drive, end suction, centrifugal pumps
to ISO 2858 / DIN. EN 22858:1993 / ASME B73.3

A versatile range of general service pumps designed to cover a wide duty and application base, using the minimum of pump models by maximizing interchangeability of components. Available within the range is the GSA (ASME standard pump) and the GSI (ISO DIN standard pump). A GSL option is available for temperatures down to -150°F / -100°C.

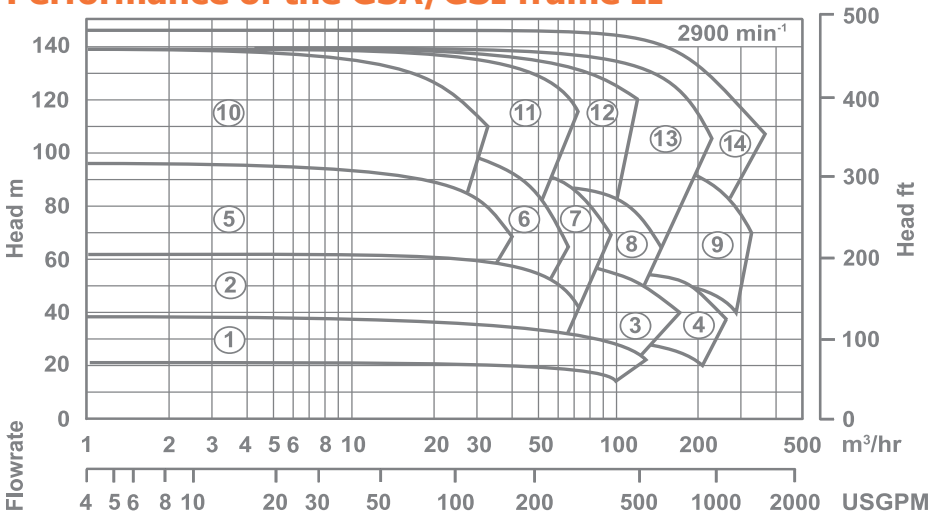


The GSA (ASME) and GSI (ISO) product covers a hydraulic range that is split between three frame sizes, Frames 0, I, & II. The pumps are offered with a range of Synchronous Magnet Drives rated to match prime mover performance, hence specifications of all denominations can be catered for.

This range is based on sizes conforming to ASME & ISO performance and dimensional standards.

The standard materials of construction are Stainless Steel with silicon carbide internal bearings.

Performance of the GSA/GSI frame II



Pump model

	GSA	GSI
1	4 x 3 x 6	100-80-160
2	3 x 2 x 8	–
3	4 x 3 x 8H	100-65-200H
4	6 x 4 x 8H	125-80-200H
5	2 x 1 x 10*	50-32-250
6	3 x 1.5 x 10	65-50-250
7	3 x 2 x 10	80-50-250
8	4 x 3 x 10H	100-65-250H

	GSA	GSI
9	6 x 4 x 10	125-100-250
10	2 x 1 x 13	50-32-315
11	3 x 1.5 x 13	65-40-315
12	3 x 2 x 13	80-50-315
13	4 x 3 x 13	100-65-315
14	6 x 4 x 13	–
15	8 x 6 x 11.5+	–

* Includes low flow hydraulic options

\+ 4 pole speeds only

Design range limits

The GSA/GSI 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 275 psi, 18.9 bar.

Solids handling capability

The unit is capable of handling solids up to 5% w/w less than 150 microns.

Options

Materials of construction

Wetted parts	Alloy 20, Alloy C276
Internal bearings	SiC / Carbon
Gasket	PTFE

Other options

Casing drains flanged or screwed
Jacketed pump casing
Secondary Control
Coupling housing drain
Pressure upgrade to 360 psi, 25 bar
Large range of pump protection

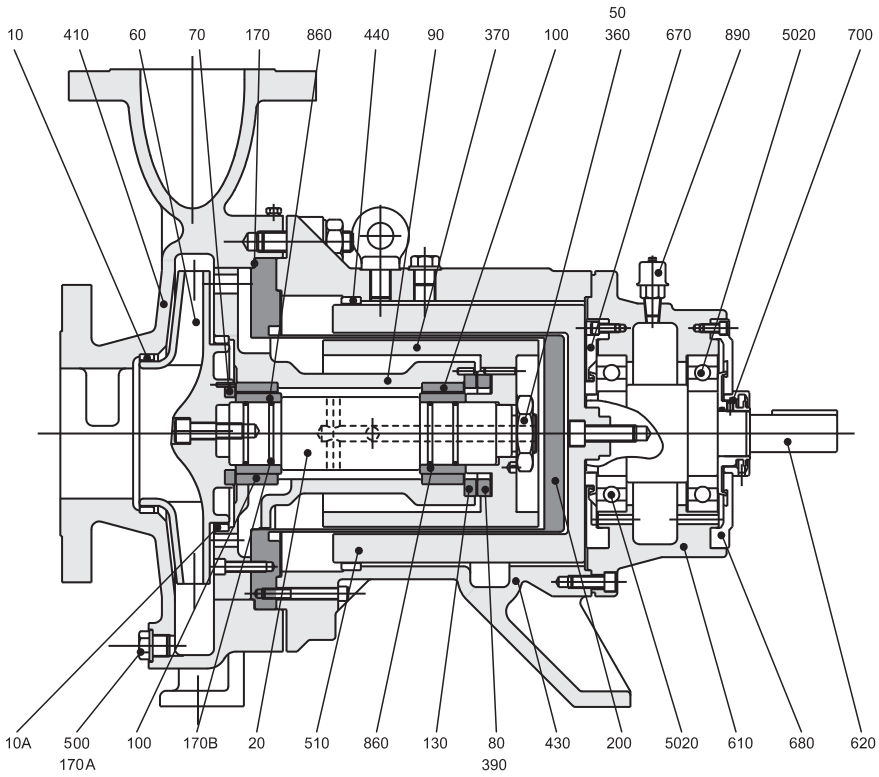
Key Design Features

- **No seals:** To minimize maintenance, all of the associated costs and eliminate potential leaks.
- **Sealless design:** For total containment, essential for hazardous, aggressive or valuable product.
- **Interchangeability of components:** For maximum convenience and reduced stock holding, operator training etc.
- **High efficiency wet end:** To benefit maximum flow / head coverage.
- **Wide choice of materials:** To allow a choice of metallurgy to suit the applications requirements.
- **Casing gasket fully confined:** So eliminating risk of blowout.
- **Universal connection options:** So that suction and discharge flange connections can be configured to your exact requirements.
- **Modular rotating element cartridge:** Providing the most efficient way to perform replacements and manage your spare part inventory.

Benefits of GSA/GSI pump range

- Sealless design for total product containment.
- Ideal for hydrocarbon, toxic, aggressive, hot and valuable product.
- Conforms to ASME and ISO 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 shroud / shell joint.

Construction of GSA/GSI frame II



10	Neck Ring [Front]	Stainless Steel
10A	Neck Ring [Back]	Stainless Steel
50	Coupling Washer	Stainless Steel
60	Impeller	Stainless Steel
70	Front Thrust Washer	Alpha SiC
80	Back Thrust Washer	Alpha SiC
90	Bush Holder	Stainless Steel
100	Bush	Alpha SiC
130	Thrust Pad	Alpha SiC
170	Gasket [Casing]	CSF / PTFE
170A	Gasket [Drain]	CSF / PTFE
170B	'O' Ring	Viton A / PFR
200	Containment Shroud/Shell	Alloy C & SS
360	Coupling Nut	Stainless Steel
370	Inner Magnet Ring	Stainless Steel
390	Support Gasket	Exfoliated Graphite & SS
410	Casing	Stainless Steel
430	Coupling Housing	SG Iron
440	Bump Ring	Phosphor Bronze
500	Drain Plug	Stainless Steel
510	Outer Magnet Ring	Carbon Steel
610	Bearing Housing	SG Iron
620	Drive Shaft	Carbon Steel
670	Front Cap	Carbon Steel
680	Back Cap	Carbon Steel
700	Labyrinth Seal [Kit]	Brass
700A	Sec. Containment Seal	Proprietary
860	Shaft Sleeve	Alpha SiC
890	Breather	Stainless Steel
5020	Race	Steel
********	Fixings [Kit]	Various

Flanges and Connections

Casing

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

ASME B16.5 Class 150	Machined with 0.06" (1.5mm) high raised face having a continuous spiral groove.
DIN 2545 PN40	Machined with 2mm high raised face with a continuous spiral groove. (Note: these flanges are identical to BS4504 PN40).

Flange Loadings

Allowable flange loadings imposed by pipework are in accordance with Table 4 of API 685 2nd edition and exceed the values in ISO 5199 Annex C.

Drain Connections

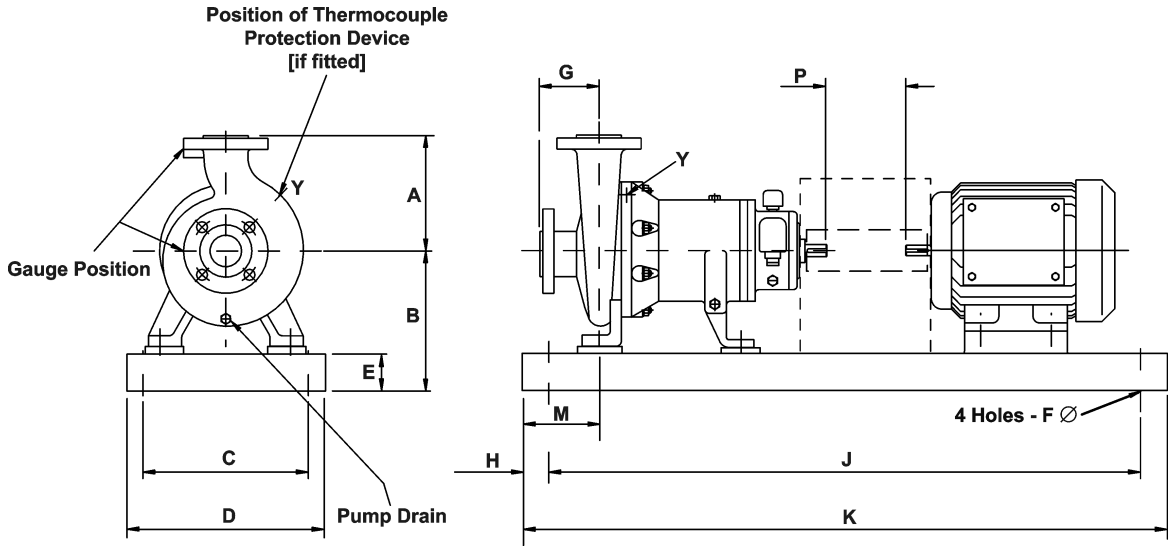
The following drain options are available:
Standard: 3/8" BSP drain plug fitted with fully trapped gaskets.
Option 1: No drain, boss left undrilled.
Option 2: 1/2" NPT plug.
Option 3: 1/2" flanged drain rated to the casing flanges.

Gauge Connections:

Suction and discharge flanges are fitted with bosses for drilling/tapping: 1/2" NPT.

Dimensions of GSA/GSI frame II

Dimensions are for guidance only



Pump size	A	G	M	B1
4x3x6	8.25″/210	4″/101.6	4.5″/114.3	8.25″
3x2x8	9.5″/241	4″/101.6	4.5″/114.3	8.25″
4x3x8H	11″/280	4″/101.6	4.5″/114.3	8.25″
6x4x8H	11″/280	4″/101.6	4.5″/114.3	8.25″
2x1x10*	8.5″/216	4″/101.6	4.5″/114.3	8.25″
3x1.5x10	8.5″/216	4″/101.6	4.5″/114.3	8.25″
3x2x10	9.5″/241	4″/101.6	4.5″/114.3	8.25″
4x3x10	11″/280	4″/101.6	4.5″/114.3	8.25″
6x4x10	13.5″/343	4″/101.6	4.5″/114.3	10″
2x1x13	10.5″/266	4″/101.6	4.5″/114.3	10″
3x1.5x13	10.5″/266	4″/101.6	4.5″/114.3	10″
3x2x13	11.5″/292	4″/101.6	4.5″/114.3	10″
4x3x13	12.5″/318	4″/101.6	4.5″/114.3	10″

Dimension P= 1″/25.4 for non spacer type and 4″/100 for spacer type.

* Includes low flow hydraulic options.

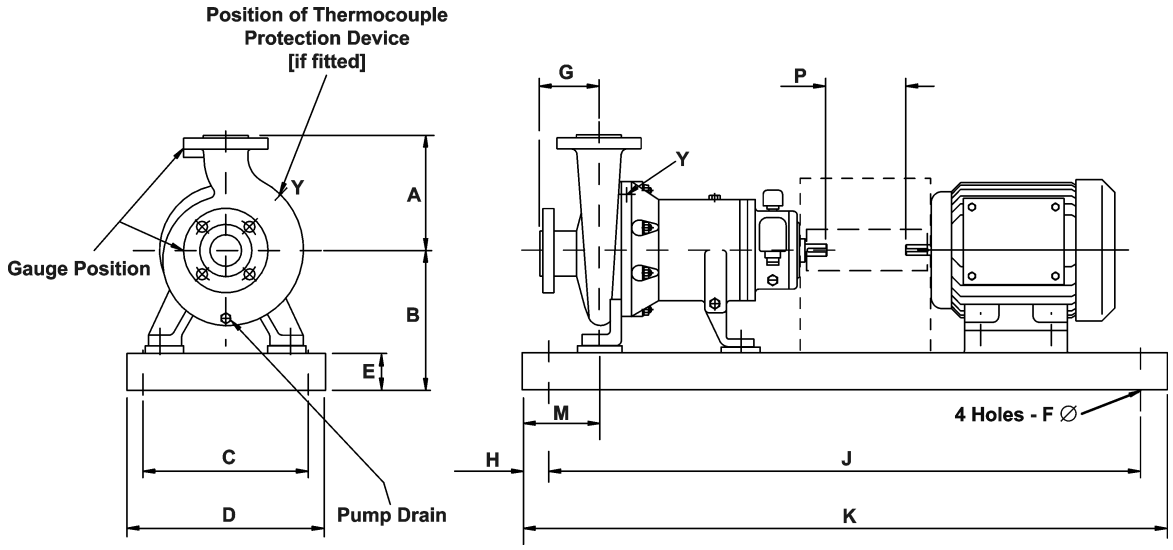
Motor Frame	B (B1=8.25″)	B (B1=10″)	C	D	E	F	H	J	K
90-100-112-132	12.25″/311	14″/355	9″/229	12″/305	3.5″/90	0.75″/19	1.25″/31.5	42.5″/1080	45″/1143
132 (Spacer)	12.25″/311	14″/355	9″/229	12″/305	3.5″/90	0.75″/19	1.25″/31.5	46.5″/1187	49″/1250
160-180	12.25″/311	14″/355	12″/306	15″/381	3.5″/90	0.75″/19	1.25″/31.5	49.5″/1258	52″/1321
200	14″/356	15″/381	15″/380	18″/457	4″/102	1″/25	1.25″/31.5	58″/1472	60.5″/1535
225	14″/356	15″/381	15″/380	18″/457	4″/102	1″/25	1.25″/31.5	59″/1497	61.5″/1560
50	15″/381	15″/381	17.7″/450	21.6″/550	4″/102	1″/25	1.25″/31.5	64.5″/1637	67″/1700/
182-184-213-215	12.25″/311	14″/355	9″/229	12″/305	3″/76	0.75″/19	1.25″/31.5	42.5″/1080	45″/1143
254-256-284-286	12.25″/311	14″/355	12″/304	15″/381	90/3.5″	0.75″/19	1.25″/31.5	49.5″/1258	52″/1321
324-326-364-365	14″/355	15″/381	16″/406	18″/457	4″/102	1″/25	1.25″/31.5	55.5″/1410	58″/1473

Range capabilities

Model	Head	Flow	Design Temperature	Design Pressure	Viscosity cSt	Mounting
GSA II	459 ft 140 m	1346 USgpm 305 m^3/h	-40 to 500°F -40 to 260°C	275 psi 18.9 bar	200	Separate Mounted (SM)
GSI II	459 ft 140 m	1346 USgpm 305 m^3/h	-40 to 500°F -40 to 260°C	232 psi 16 bar	200	Separate Mounted (SM)

Dimensions of GSA/GSI frame II

Dimensions are for guidance only



Baseplate/B	A	G	M	P	132	160	180	200	225	250	280
50-32-250	8.8″/225	3.9″/100	2.9″/75	3.9″/100	5-302/11.9″	11.9″/6-302	11.9″/6-302	12.7″/7-322	-	-	-
50-32-315	9.8″/250	4.9″/125	2.9″/75	3.9″/100	5-322/12.7″	12.7″/6-322	12.7″/6-322	12.7″/7-322	13.6″/7-346	-	-
65-40-250	8.8″/225	3.9″/100	2.9″/75	3.9″/100	5-302/11.9″	11.9″/6-302	11.9″/6-302	12.7″/7-322		-	-
65-40-315	9.8″/250	4.9″/125	2.9″/75	3.9″/100	5-322/12.7″	12.7″/6-322	12.7″/6-322	12.7″/7-322	13.6″/7-346		
80-50-250	8.8″/225	4.9″/125	2.9″/75	3.9″/100	5-302/11.9″	11.9″/6-302	11.9″/6-302	12.7″/7-322	13.6″/7-346	-	-
80-50-315	11″/280	4.9″/125	2.9″/75	3.9″/100	5-346/13.6″	13.6″/6-346	13.6″/7-346	13.6″/7-346	13.6″/7-346	14.6″/7-371	15.6″/9-396
100-80-160	7.9″/200	3.9″/100	2.9″/75	3.9″/100	5-282/11.1″	11.1″/6-282	11.9″/6-302	12.7″/7-322	-	-	-
100-65-200H	8.8″/225	3.9″/100	2.9″/75	5.5″/140	5-302/11.9″	11.9″/6-302	11.9″/6-302	12.7″/7-322	13.6″/7-346	-	-
100-65-250H	9.8″/250	4.9″/125	3.5″/90	5.5″/140	5-322/12.7″	12.7″/6-322	12.7″/6-322	12.7″/7-322	13.6″/7-346	14.6″/7-371	15.6″/9-396
100-65-315	11″/280	4.9″/125	3.5″/90	5.5″/140	6-346/13.6″	13.6″/6-346	13.6″/7-346	13.6″/7-346	13.6″/7-346	14.6″/7-371	15.6″/9-396
125-80-200H	9.8″/250	4.9″/125	2.9″/75	5.5″/140	5-302/11.9″	11.9″/6-302	11.9″/6-302	12.7″/7-322	13.6″/7-346	14.6″/7-371	-
125-100-250	11″/280	5.5″/140	3.5″/90	5.5″/140	6-346/13.6″	13.6″/6-346	13.6″/7-346	13.6″/7-346	13.6″/7-346	14.6″/7-371	15.6″/9-396
125-100-315	12.4″/315	5.5″/140	3.5″/90	5.5″/140	6-371/14.6	14.6″/6-371	14.6″/7-371	13.6″/7-346	14.6″/7-371	14.6″/7-371	15.6″/9-396

First number indicates Baseplate size.

Baseplate	C	D	E	F	H	J	K
5	17.2″/440	19.3″/490	0.8″/20	0.9″/23	7.5″/190	29.1″/740	44″/1120
6	19.3″/490	21.3″/540	0.8″/20	0.9″/23	8.1″/205	33″/840	49″/1250
7	21.7″/550	24″/610	0.8″/20	1.1″/27	9″/230	37″/940	55″/1400
8	23.6″/600	26″/660	0.8″/20	1.1″/27	10.6″/270	41.7″/1060	63″/1600
9	26.4″/670	28.7″/730	0.8″/20	1.1″/27	11.8″/300	47.2″/1200	71″/1800

Dimensions shown are imperial (inches)/metric.

Typical liquids pumped

Acids
Acetic Acid
Acrylic Acid
Arsenic Acid
Benzoic Acid
Boric Acid
Carbolic Acid
Carbonic Acid
Chlorosilicic Acid
Citric Acid
Cresilyc Acid
Fatty Acids
Fluosilicic Acid
Formic Acid
Hydrobromic Acid
Hydrochloric Acid
Hydrocyanic Acid
Hydrofluoric Acid
Lactic Acid
Maleic Acid
Nitric Acid
Oxalic Acid
Phosphoric Acid
Phthalic Acid
Picric Acid
Sulphuric Acid
Sulphurous Acid
Tannic Acid
Tartaric Acid

Alcohol & glycols
Butanol
Diethyl Glycol
Ethanol
Glycol
Isopropyl
Alcohol
Methanol
Propanol
Propylene Glycol

Alkalis
Ammonium Hydroxide
Ferric Hydroxide
Potassium Hydroxide

Halogenides
Anhydrous Chlorine
Carbon Tetrachloride
Fluorocarbon Liquids
Freon
Hydrogen Chloride
Methyl Chloride
Methylene Chloride
Phosgene
Silicon Tetrachloride
Titanium Tetrachloride

Heat transfer fluids
Alkylated Aromatics
Diphenyl / diphenyl oxide
Eutectic Salts
Hydrocarbon Oil
Isometric Triaryldimethanes
Polyalkylene Glycol
Silicone Oils

Hydrocarbons
Acrylic Monomers
Acrylonitrile
Amyl Acetate
Benzene
Butadiene
Butane
Chloroform
Chloroprene
Cyclohexane
Dichlorobenzene
Ethylene
Furfural
Hexane
Kerosene
LPG
MDA
MDI
Methylene Dichloride
Methyl Naphthalene
Naphtha
Naphthalene
Pentane
Phenol
Phthalic Anhydride
Polychlorinated Biphenyls
Pyridine
Pyrogallic Acid
Styrene
TDA
TDI
Toluene
Trichloroethylene
Vinyl Acetate
Vinyl Chloride
Vinyl Chloride Monomer
Various Chlorinated Hydrocarbons
Xylene

Nitrogen & Sulphur compounds
Anhydrous Ammonia
Aniline
Carbon Disulphide
Hydrarine
Sulphur Dioxide

Salts
Aluminium Nitrate
Phosphate
Ammonium Chloride
Ammonium Sulphate
Barium Chloride
Barium Chlorate
Calcium Chloride
Copper Nitrate
Copper Sulphate
Ferrous Sulphate
Phosphorus Trichloride
Phosphorus Oxychloride
Potassium Chlorate
Sodium Carbonate
Sodium Chlorate
Sodium Cyanide
Sodium Nitrate
Sodium Sulphate
Zinc Chloride

Other chemicals
Acetaldehyde
Acetic
Anhydride
Acetone
Acrolein
Arcton (Refrigerant)
Detergents
Ethylene Oxide
Ethyl Ether
Formaldehyde
Freon
Hydrogen Peroxide
Lead Acetate
Mercuric Chloride
Methacrylates
Methyl
Monoglycerides
Propylene Oxide
Sorbitol
Sugar Solutions
Syrup
Tallow
Tetraethyl Lead
Tritely Lead
Vegetable Oils
Water, Boiler
Water, Demonized
Water, Demineralized
Water, Heavy

This list is only a sample of the vast array of liquids regularly pumped by the Sundyne HMD Kontro products.

For liquids not covered above, please contact Sundyne HMD Kontro direct.

Pressure Limits

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

Flange standard	Design pressure		
	316 St St	Alloy 20	Alloy C
ASME B16.5 Class 150 + 300	1.89 MPa 275 psi	1.59 MPa 230 psi	2.0 MPa 290 psi
BS 4504 PN16	1.6 MPa 232 psi	1.52 MPa 220 psi	1.6 MPa 232 psi
DIN 2543 PN16 + PN40	1.6 MPa 232 psi	1.52 MPa 220 psi	1.6 MPa 232 psi

Component	Hydrostatic test values		
	316 St St	Alloy 20	Alloy C
Casing (ASME 150 + 300lb)	2.93 MPa 425 psi	2.41 MPa 350 psi	3.1 MPa 450 psi
Casing (PN16 + PN40)	2.40 MPa 348 psi	2.3 MPa 330 psi	2.4 MPa 348 psi
Containment Shroud /Shell	2.93 MPa 425 psi	2.41 MPa 350 psi	3.1 MPa 450 psi

Temperature limits

Standard Range	-40°F to 400°F / -40°C to 205°C /
Option	14°F to 500°F / -10°C to 260°C

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 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
Shangai, 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