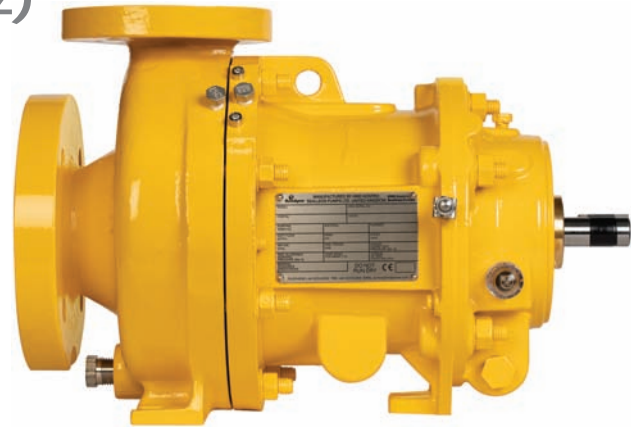


Technical Profile

HMD Kontro CSA Frame 1 (50Hz)

Magnet Drive end suction centrifugal pumps in accordance to ASME B73.3-2015

A modular range of chemical service pumps designed to cover a wide duty and application base using the minimum of pump models by maximising interchangeability of components. Available within the range is the CSA (ASME B73.3-2015) and CSI (ISO 2858:2010 and ISO 15783:2003) versions. **This profile covers the CSA derivative only.**



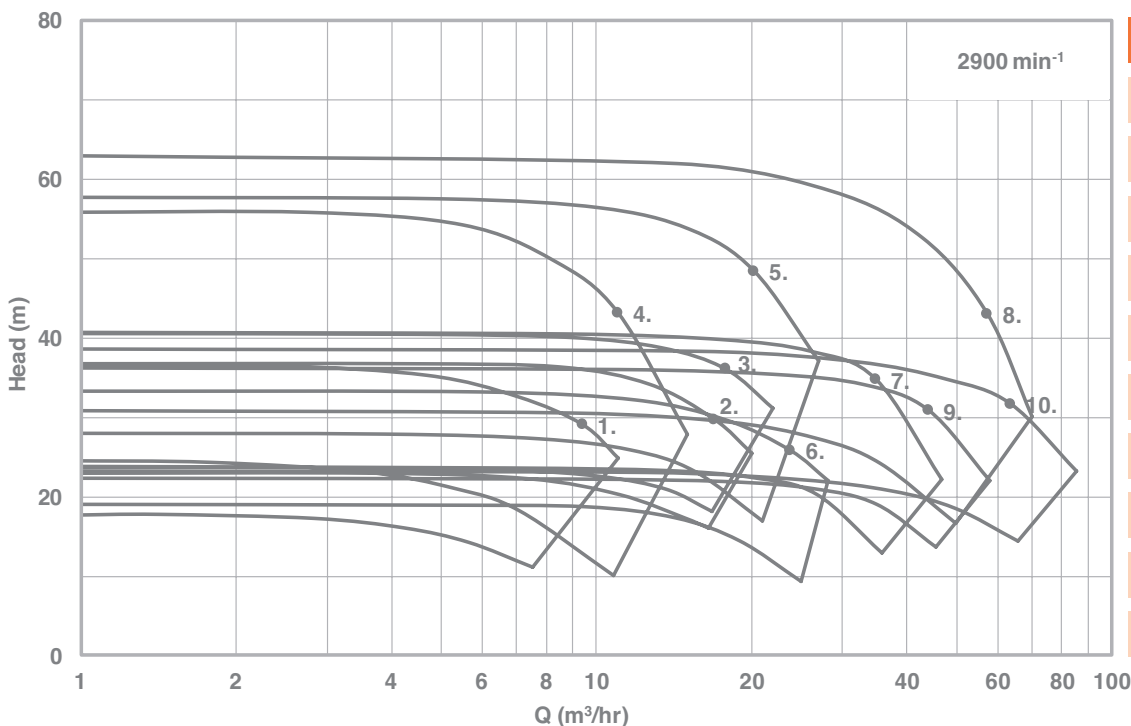
The CSA (ASME) Frame 1 product line covers a hydraulic range that offers pumping solutions up to 22kW. The pumps are offered with a range of bespoke Synchronous Magnetic Drives rated to match prime mover performance and fitted with either metallic or high efficiency ZeroLoss® containment shells as standard.

The range is based on a number of hydraulic sizes and fully conform to the ASME B73.3:2015 dimensional, performance and construction requirements. Close coupled and separately mounted variants are available.

The range is produced in 316 Stainless Steel as the standard material of construction with optional Alloy C and Alloy 20 materials available. Internal product lubricated bearings are Silicon Carbide, with Carbon and Ceramic Matrix Composite (CMC) variants to order.

A wide range of options are available including secondary sealing options and numerous bearing assembly variants. The range is specifically designed for maximum part interchangeability, ease of onsite service and has a wide number of site upgradable features.

Performance of the CSA Frame 1 Pump Range



Pump Model

Reference	CSA
1	1.5x1x6-L1
2	1.5x1x6
3	1.5x1x6H
4	1.5x1x8-L1
5	1.5x1x8
6	3x1.5x6
7	3x1.5x6H
8	3x1.5x8H
9	3x2x6
10	3x2x6H

Key Design Features

- **No Seals:** Minimises maintenance, all of the associated costs and eliminates potential leaks.
- **Sealless Design:** For total containment, essential for hazardous, aggressive or valuable product.
- **Modular & Interchangeable Components:** For maximum convenience and minimal lead time.
- **High Efficiency Hydraulics:** To provide maximum flow / head coverage.
- **Low & High Flow Hydraulic Variants:** Provide optimised hydraulic fit.
- **Robust Design:** Featuring ZeroLoss® containment shell as standard for tolerance to system upsets.
- **Casing Gasket Fully Confined:** Eliminating the risk of blowout.
- **Internal & External Bump Ring Design:** Providing additional level of robustness.
- **Modular Rotating Element Cartridge:** Providing the most efficient way to perform replacements and manage your spare part inventory.

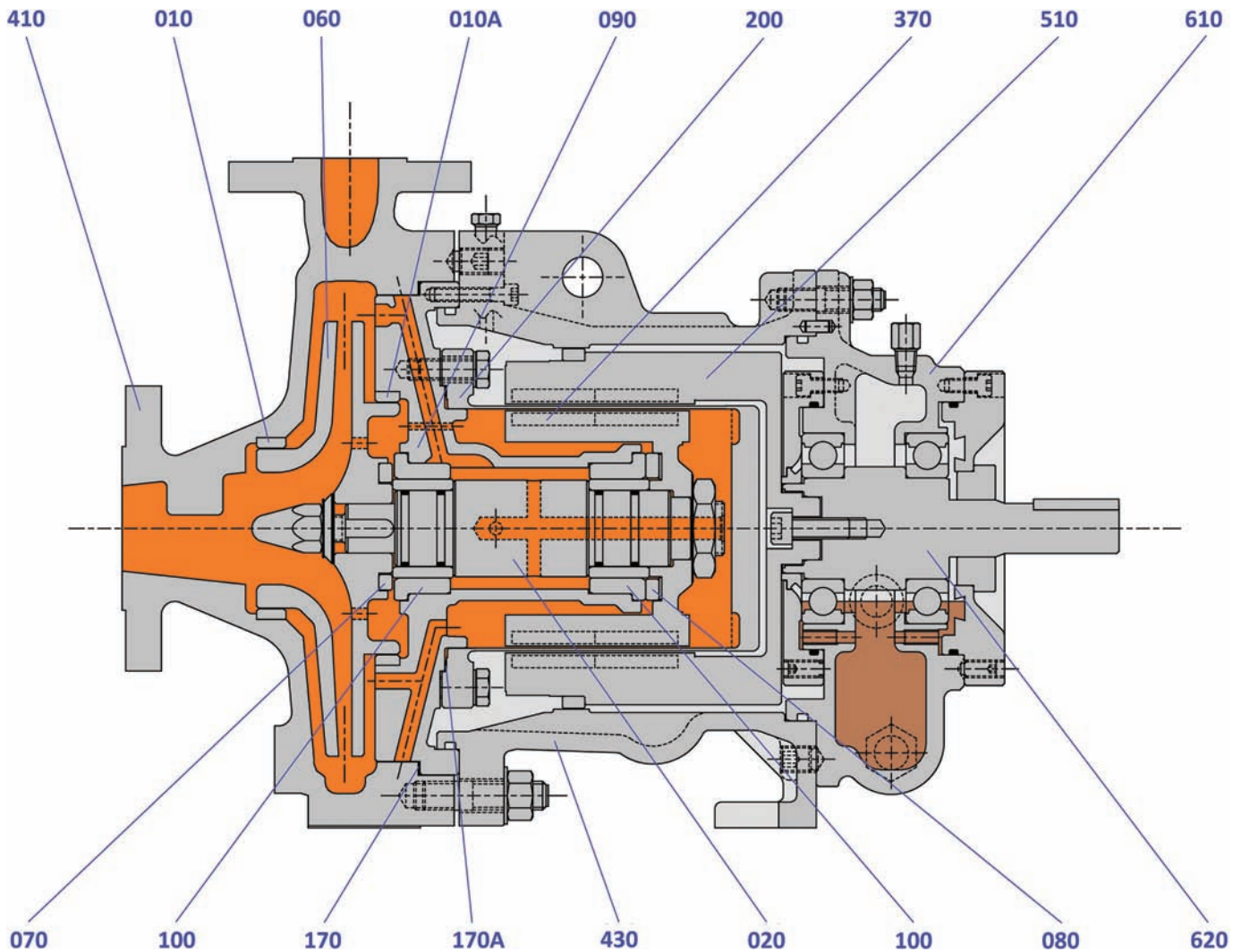
Benefits of CSA

Frame 1 Pump Range:

- Sealless design for total product containment
- Ideal for hazardous, toxic, aggressive, hot and valuable product
- Conforms fully to ASME standards
- Modular construction
- Interchangeable with existing ASME B73.1 or B73.3 installations
- Choice of materials of construction
- Site upgradable design features

Construction of CSA Frame 1 Pump

Separately mounted variant indicating standard build and materials

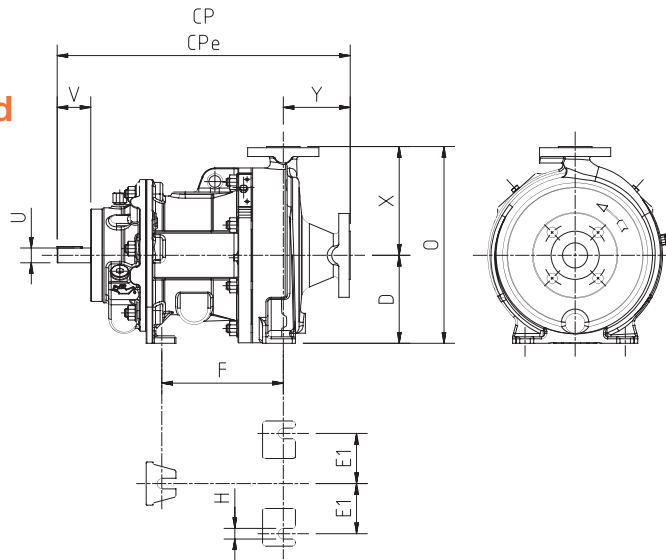


010	Neck Ring (Front)	316L St St	090	Bush Holder	316L St St	410	Casing	316L St St
010A	Neck Ring (Back)	316L St St	100	Bush	Silicon Carbide	430	Coupling Housing	SG Iron
020	Pump Shaft	316L St St	170	Casing Gasket	CSF	510	Outer Magnet Ring	C. Steel (Sheathed)
060	Impeller	316L St St	170A	Shell Gasket	CSF	610	Bearing Housing	SG Iron
070	Front Thrust Washer	Silicon Carbide	200	Containment Shell	Alloy C / 316L	620	Drive Shaft	Carbon Steel
080	Back Thrust Washer	Silicon Carbide	370	Inner Magnet Ring	316L St St Clad			

Dimensions of CSA Frame 1 Pump

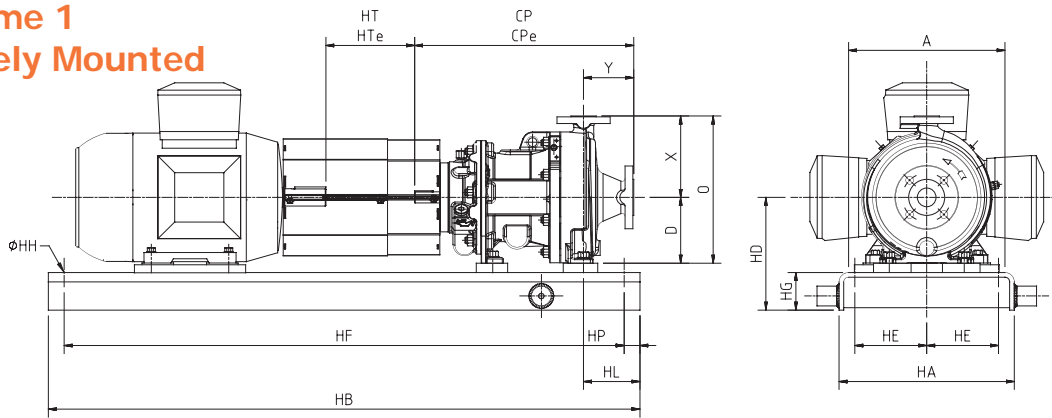
Dimensions are for guidance only

CSA Frame 1 Separately Mounted (Bareshaft)



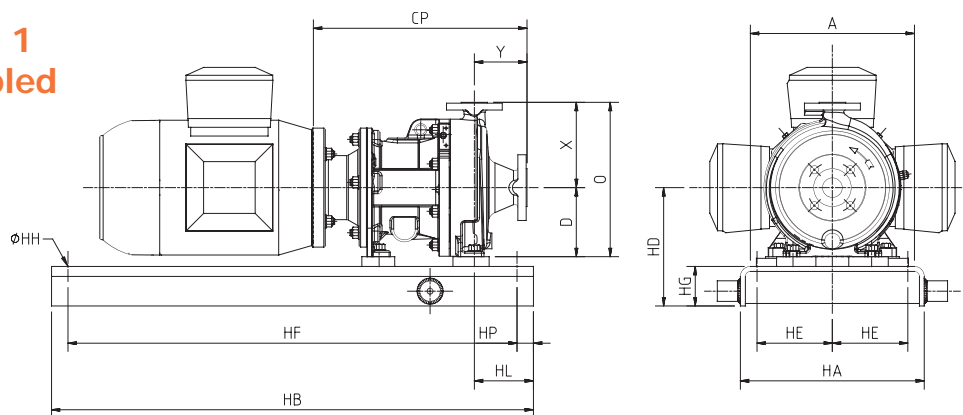
Size	CP	CPe	D	2E1	F	H	O	U	V	X	Y
All Hydraulics	445	484	133	152	184	16	298	22.225	51	165	102

CSA Frame 1 Separately Mounted



Motor Frame	A	HA	HB	HT	HTe	HD	HE	HF	HG	HH	HL	HP
90S – 112M	305	356	1092	142	102	229	114	1029	76	19	114	32
132S – 160L	381	432	1321	142	102	267	152	1257	89	19	114	32
180M – 200L	457	508	1448	142	102	317	190	1384	102	19	114	32

CSA Frame 1 Close Coupled



Motor Frame	CP	A	HA	HB	HD	HE	HF	HG	HH	HL	HP
90S – 90L	381	305	356	813	229	114	749	76	19	114	32
100S – 112M	391	305	356	813	229	114	749	76	19	114	32
132S – 132M	411	381	432	1041	267	152	978	89	19	114	32
160M – 160L	491	381	432	1041	267	152	978	89	19	114	32
180M – 180L	491	457	508	1118	317	190	1054		19	114	32

Range Capabilities (50hz)

Model	Head	Flow	Design Temperature	Design Pressure	Viscosity	Mounting
CSA Frame 1	62 m	64 m ³ /hr	-40 to 260°C*	18.9 bar (at 38°C)	0.1 to 200 cSt	Separately Mounted or Close Coupled

*260°C with Thermal Spacer

Solids Handling

The units are capable of handling solids up to 5% w/w with sizes less than 150 microns.

Flanges and Connections

Casing

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

ASME B16.5 Class 150lb	Machined with 1.5mm (0.06') high raised face having a continuous spiral groove
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Options

A wide variety of options are available:

Materials of Construction:

- 316L Stainless Steel (standard)
- Alloy C (optional variant)
- Alloy 20 (optional variant)

Containment Shells:

- Metallic Construction (-40°C to 260°C)
- High Efficiency ZeroLoss® PEEK (-40°C to 120°C)

Internal Bearings:

- Silicon Carbide vs Silicon Carbide (standard)
- Carbon vs Silicon Carbide (optional)
- Silicon Carbide vs CMC (optional)

Casings Drain:

- No Drain or ½" NPT Plugged

Flange Loadings

Allowable flange loadings imposed by the pipework are in accordance with ANSI/HI 9.6.2.

Gaskets:

- Compressed Synthetic Fibre or PTFE

Mounting Configuration:

- Close Coupled (IEC B5 Flange or B3/B5 Foot Flange Motors)
- Separately Mounted (IEC B3 Motor and Flexible Coupling)

Constructional Variants:

- Secondary Containment
- Secondary Control
- Oil Bath / Oil Mist Lubrication of external bearing assembly
- 205-260°C Thermal Break

Instrumentation:

- Power Sensing, Temperature Sensing and VapourView®

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

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

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