

Technical Profile

CS Range - C&D Drive

Magnet drive, end suction, centrifugal pumps - chemical service range

The CS product covers an hydraulic range that is split between four frame sizes, C, D, E & F (for frame E & F, refer to separate Technical Profile).

The pumps are supplied with a range of torque ring drives rated to match prime mover performance. Prime mover specifications of all denominations can be catered for.

The torque ring (induced) drive, invented by Sundyne HMD Kontro, enables the pumps to operate at high temperatures without cooling. All the pumps covered by this range are particularly suited to handling high temperature mediums.

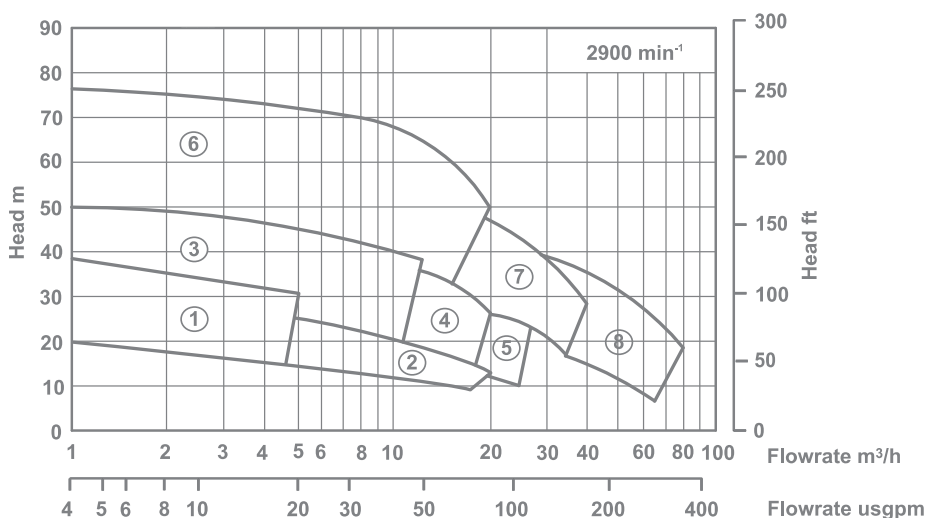
The standard materials of construction are stainless steel with carbon internal bearings for the 'C' frame.

The standard materials of construction are carbon steel with carbon internal bearings for the 'D' frame.

HMD Kontro



Performance of the CS range



Pump model

1	1C/H	3	1D/H	5	1D/L	7	2D/M
2	1C/L	4	1D/M	6	2D/H	8	2D/L

Design range limits

The CS pump is designed to operate from -80°C up to 450°C, -112°F up to 850°F without the need for any ancillary cooling medium. Design working pressure is 20 bar, 290 psi.

Solids handling

The unit is capable of handling solids up to 1.5% w/w less than 100 microns.

Options

Materials of construction

Wetted parts
Stainless Steel ('D' frame)
Gasket
Graphite

Other options

Jacketed pump casing
Secondary Control
Coupling housing drain
Coupling feed filtration
Large range of pump protection

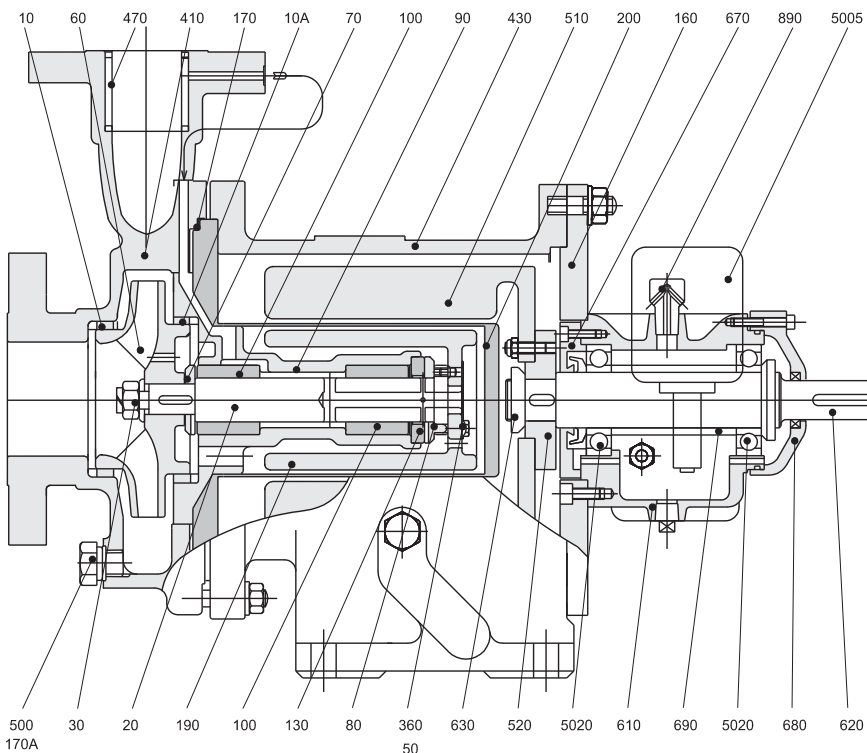
Key Design Features

- **Sealless design** - total product containment - ideal for hydrocarbon, petrochemical, toxic, aggressive, hot, crystallising and valuable product.
- Modular/Interchangeable high efficiency wet end, designed to ensure maximum flow/head coverage across all CS product ranges.
- Modular/Interchangeable high efficiency magnetic couplings.
- Choice of various metallic materials of construction.
- One joint casing/containment shroud/shell design
- Casing gasket fully confined to eliminate 'blowout' risk.
- Various suction and discharge flange connection options.
- Maximum interchangeability exists between spare parts for the entire range.
- Cartridge assemblies allowing fast replacement of the rotating element.
- Internationally approved pressure vessel standard: ASME VIII code.

Benefits of CS 'C&D' pump range

- Ease of application
- Low capital cost
- Design ensures safe, leak free operation
- Low running costs
- Minimal spares holding
- Minimal downtime/fast maintenance
- Maximises on-line process time

Construction of CS 'C&D' pump



10	Front Neck Ring	Carbon Steel
10A	Back Neck Ring	Carbon Steel
20	Pump Shaft	Stainless Steel
30	Impeller Fixing	Stainless Steel
50	Coupling Washer	Stainless Steel
60	Impeller	Cast Iron
70	Thrust Washer (Front)	Stainless Steel
80	Thrust Washer (Back)	Stainless Steel
90	Bush Holder	Cast Iron
100	Bush	Carbon
130	Thrust Pad	Carbon
160	Adaptor Flange	Carbon Steel
170	Gasket (Casing)	CSF
170A	Gasket (Drain)	CSF
190	Torque Ring	Stainless Steel
200	Containment Shroud/Shell	Alloy C & 316L SS
360	Coupling Fixing	Stainless Steel
410	Casing	Carbon Steel
430	Coupling Housing	SG Iron
470	Strainer Basket	Stainless Steel
500	Drain Plug	Stainless Steel
510	Outer Magnet Ring	Carbon Steel
520	Drive Shaft Adaptor	Carbon Steel
610	Bearing Housing	SG Iron
620	Drive Shaft	Carbon Steel
630	Drive Shaft Nut (Kit)	Carbon Steel
670	Front Cap	Carbon Steel
680	Back Cap	Carbon Steel
690	Spacer	Carbon Steel
890	Breather / Filler Plug	Carbon Steel
5005	Constant Level Oiler	Proprietary
5020	Race (Kit)	Proprietary
****	Fixings (Kit)	Various

Flanges and Connections

Casing

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

ANSI B16.5 Class 150 Machined with 1.5mm (0.06") high raised face having a continuous spiral groove.

ANSI B16.5 Class 300 Machined with 1.5mm (0.06") 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 2 of API 610 8th edition and exceed the values in ISO 5199 Annex C.

Drain Connections

The following drain options are available:

Standard: 1/2" BSP drain plug fitted with fully trapped gaskets.

Option 1: No drain, boss left undrilled.

Option 2: 1/2" flanged drain rated to the casing flanges.

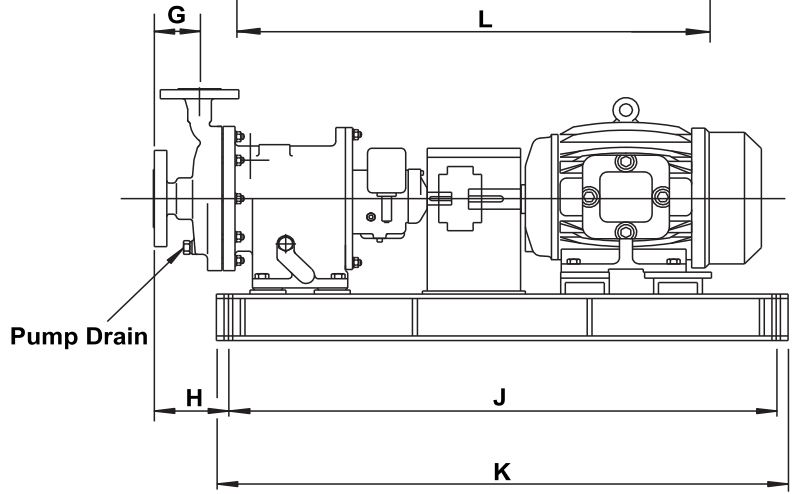
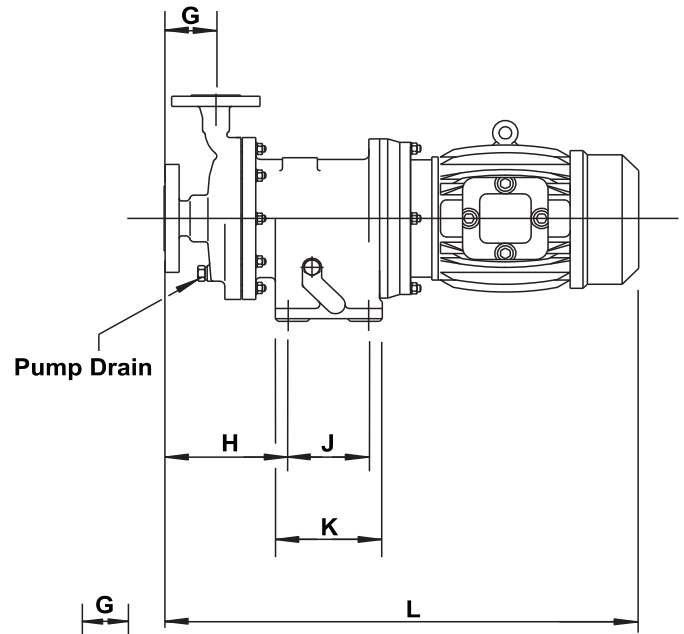
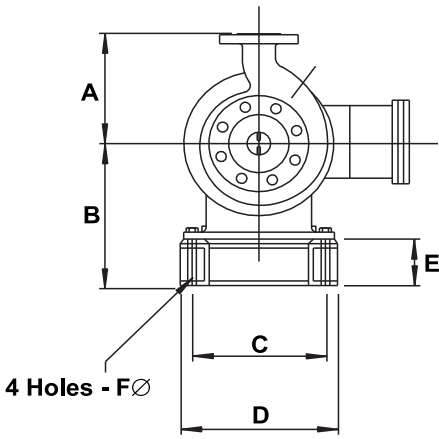
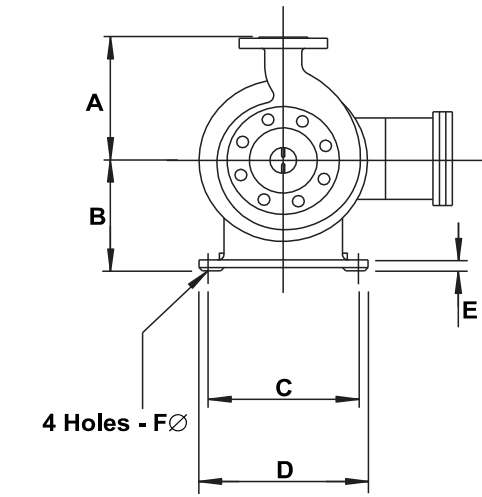
Gauge Connections:

No provision for gauge connections has been made on this frame of pump.

Range capabilities

Model	Head	Flow	Design Temperature	Design Pressure	Viscosity cSt	Mounting
CS1 C	40 m 131 ft	20 m ³ /h 88 USgpm	-80 to 450°C -112 to 850°F	20 bar 290 psi	200	Close Coupled (CC) Separate Mounted (SM)
CS1 D	50 m 164 ft	25 m ³ /h 110 USgpm	-80 to 450°C -112 to 850°F	20 bar 290 psi	200	Close Coupled (CC) Separate Mounted (SM)
CS2 D	77 m 252 ft	80 m ³ /h 352 USgpm	-80 to 450°C -112 to 850°F	20 bar 290 psi	200	Close Coupled (CC) Separate Mounted (SM)

Dimensions of CS 'C&D' pump



Pump size	A	B	C	D	E	F	G	H	J	K	Motor Frame	L
CS1CCH	160/6.3"	150/5.9"	230/9"	260/10.2"	15/0.6"	14/0.55"	105/4.1"	164/6.5"	110/4.3"	170/6.7"	80-90	600/23.6"
CS1CCL	160/6.3"	150/5.9"	230/9"	260/10.2"	15/0.6"	14/0.55"	110/4.3"	170/6.7"	110/4.3"	170/6.7"	100-112	665/26.2"
											143-145	590/23.2"
											182-184	657/25.8"
CS1DCH	225/8.9"	200/7.9"	270/10.6"	310/12.2"	25/1"	18/0.7"	80/3.1"	210/8.3"	160/6.3"	200/7.9"	90	700/27.6"
CS1DCM	225/8.9"	200/7.9"	270/10.6"	310/12.2"	25/1"	18/0.7"	80/3.1"	220/8.7"	160/6.3"	200/7.9"	100-112	760/29.9"
CS1DCL	240/9.5"	200/7.9"	270/10.6"	311/12.2"	25/1"	18/0.7"	80/3.1"	227/8.9"	160/6.3"	200/7.9"	132	870/34.2"
CS2DCH	265/10.4"	200/7.9"	270/10.6"	310/12.2"	25/1"	18/0.7"	80/3.1"	220/8.7"	160/6.3"	200/7.9"	160	1020/40.1"
CS2DCM	240/9.5"	200/7.9"	270/10.6"	310/12.2"	25/1"	18/0.7"	100/3.9"	230/9"	160/6.3"	200/7.9"	182-184	752/29.6"
CS2DCL	240/9.5"	200/7.9"	270/10.6"	310/12.2"	25/1"	18/0.7"	100/3.9"	225/8.9"	160/6.3"	200/7.9"	213-215	822/32.4"
											254-256	1020/40.1"
											284-286	1080/42.5"

Pump size	A	B	E	F	G	H	Motor Frame	C	D	J	K	L
CS1CSH	160/6.3"	180/7.1"	24/0.94"	14/0.55"	105/4.1"	100/3.9"	80-90	225/8.6"	275/10.8"	750/29.5"	800/31.5"	880/34.6"
CS1CSL	160/6.3"	180/7.1"	24/0.94"	14/0.55"	110/4.3"	109/4.3"	100-112	225/8.6"	275/10.8"	810/31.9"	860/33.8"	940/37"
CS1DSH	225/8.9"	310/12.2"	110/4.3"	18/0.7"	80/3.1"	140/5.5"	143-145	228/9"	280/11"	760/30"	813/32"	914/36"
CS1DSM	225/8.9"	310/12.2"	110/4.3"	18/0.7"	80/3.1"	150/5.9"	182-184	228/9"	280/11"	760/30"	813/32"	914/36"
CS1DSL	240/9.5"	310/12.2"	110/4.3"	18/0.7"	80/3.1"	157/6.2"	90	280/11"	330/13"	825/32.5"	875/34.5"	1000/40.8"
CS2DSH	265/10.4"	310/12.2"	110/4.3"	18/0.7"	80/3.1"	150/5.9"	100-112	280/11"	330/13"	875/34.5"	958/37.7"	1050/41.3"
CS2DSM	240/9.5"	310/12.2"	110/4.3"	18/0.7"	100/3.9"	160/6.3"	132	280/11"	330/13"	1000/39.4"	1050/41.3"	1165/45.9"
CS2DSL	240/9.5"	310/12.2"	110/4.3"	18/0.7"	100/3.9"	155/6.1"	160	280/11"	330/13"	1150/45.3"	1200/47.2"	1320/53.8"
							182-184	280/11"	330/13"	838/33"	890/35"	1041/41"
							213-215	280/11"	330/13"	890/35"	940/37"	1005/43.5"
							254-256	280/11"	330/13"	1016/40"	1067/42"	1270/50"
							284-286	305/12"	355/14"	1219/48"	1270/50"	1397/55"

Dimensions shown are metric (mm) / imperial (inches).

Pressure Limits

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

Flange standard	Design pressure	
	316 St St	Carbon Steel
ANSI B16.5 Class 150	1.89 MPa 275 psi	1.89 MPa 275 psi
BS 4504 Class 300	2.0 MPa 290 psi	2.0 MPa 290 psi
DIN 2543 PN 40	4.0 MPa 580 psi	4.0 MPa 580 psi

Component	Hydrostatic test values	
	316 St St	
Casing	3.1 MPa 450 psi	3.1 MPa 450 psi
Containment Shroud/Shell	3.1 MPa 450 psi	3.1 MPa 450 psi

Temperature limits

Standard Range	-80°C to 350°C / -110°F to 660°F
Option	450°C / 840°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.

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