

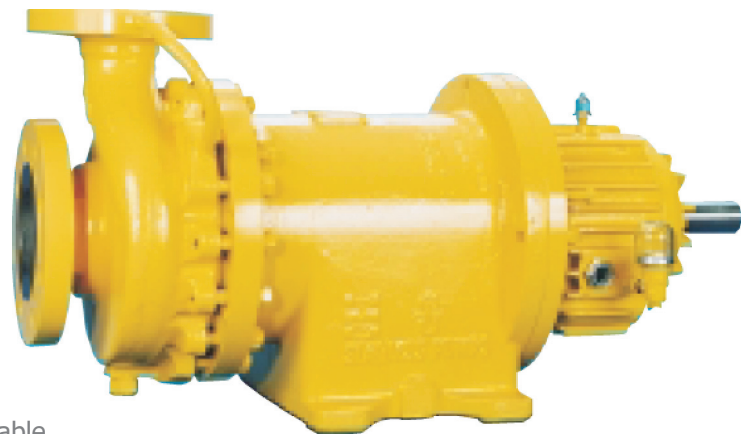
## Technical Profile

### CS Range 'E&F' Drive

Magnet drive, end suction, centrifugal pumps  
Chemical service range

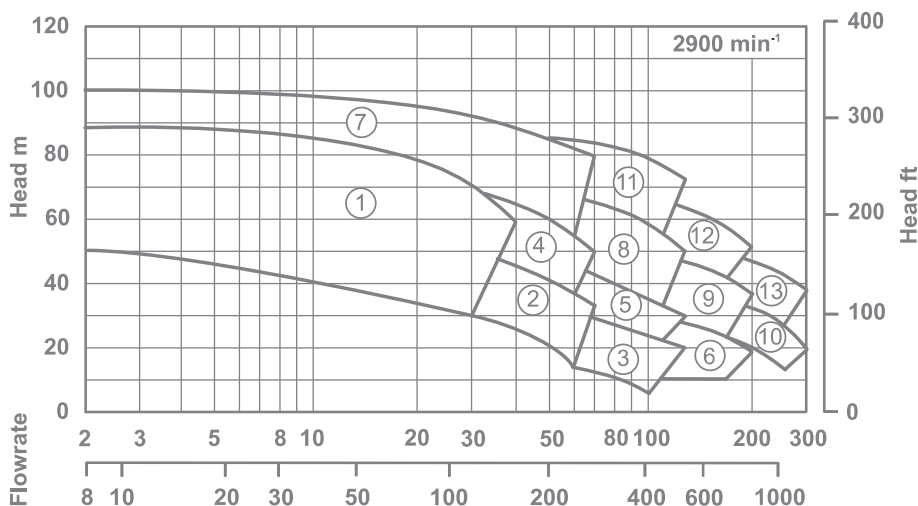
Isolating the pump from the heat source has always been essential in a hot oil system – until now. Thanks to its unique torque ring, the CS pump from Sundyne HMD Kontro requires no cooling fluids or heat exchangers during operation. The pump is totally self venting and the magnetic coupling is immersed in the hot oil. Not only that, but the torque ring design offers a built-in soft start for viscous liquids, and the energy created adds to the efficiency of the system.

Simple to operate and maintain, cost-effective to run and capable of operating up to 450°C without cooling – all this makes the Sundyne HMD Kontro CS pump the ideal choice.



### HMD Kontro

#### Performance of the CS 'E&F' Drive range



#### Design range limits

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

#### Solids handling capability

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
Gasket	Graphite

##### Other options

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

#### Pump model

<b>1</b>	2E/H	<b>6</b>	3E/L	<b>11</b>	4F/H
<b>2</b>	2E/M	<b>7</b>	3F/X	<b>12</b>	4F/M
<b>3</b>	2E/L	<b>8</b>	3F/H	<b>13</b>	4F/L
<b>4</b>	3E/H	<b>9</b>	3F/M		
<b>5</b>	3E/M	<b>10</b>	3F/L		

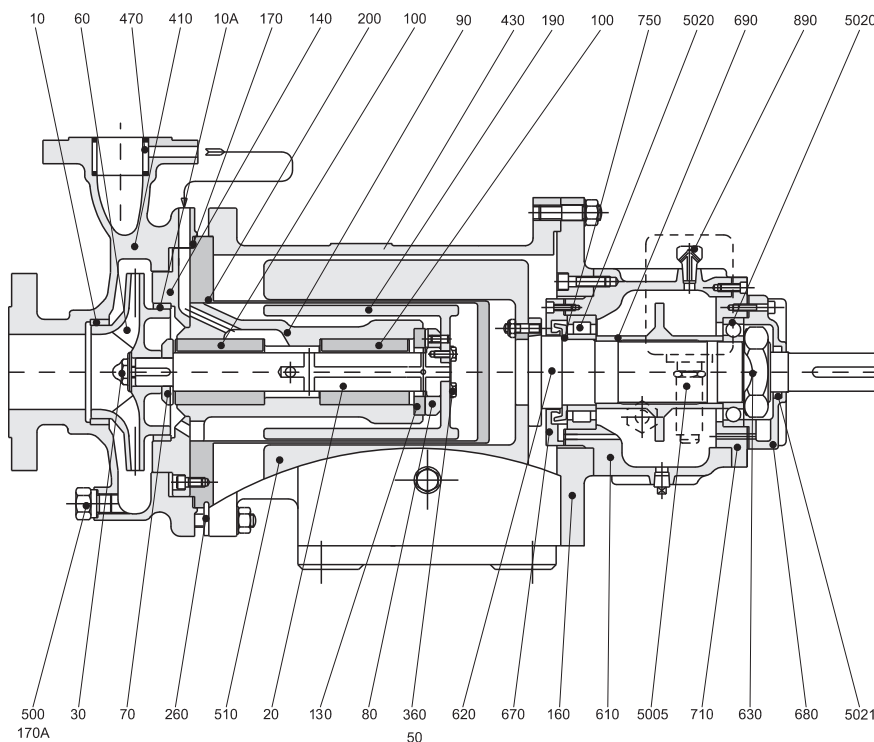
## Key Design Features

- **No seals:** To minimise 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 various metals in the construction of your pump.
- **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 CS pump range

- Ideal for heat transfer liquids.
- Sealless design – total product containment.
- No product cooling required for temperatures up to 450°C.
- One joint casing/containment shroud/shell.
- Fully confined to eliminate 'blowout' risk.
- Torque Ring drive positively contributes to the efficiency of the hot oil system.
- Built-in soft start feature.
- Ideal for viscous start up.

## Construction of CS range



10	Neck Ring [Front]	Stainless Steel
10A	Neck Ring [Back]	Stainless Steel
20	Pump Shaft	316L Stainless Steel
30	Impeller Fixing	Stainless Steel
50	Coupling Washer	Stainless Steel
60	Impeller	Stainless Steel
70	Thrust Washer [Front]	Stainless Steel
80	Thrust Washer [Back]	Stainless Steel
90	Bush Holder	Stainless Steel
100	Bush [Kit]	Carbon
130	Thrust Pad	Carbon
140	Casing Plate	Stainless Steel
160	Adaptor Flange	Carbon Steel
170	Gasket [Casing]	CS
170A	Gasket [Drain]	FCSF
190	Torque Ring	Stainless Steel
200	Containment Shroud/Shell	Alloy C & 316L SS
260	Shroud Retention Plate	304 Stainless Steel
360	Coupling Fixing	Stainless Steel
410	Casing	Stainless Steel
430	Coupling Housing	SG Iron
470	Strainer Basket	Stainless Steel
500	Drain Plug	Stainless Steel
510	Outer Magnet Ring	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	SG Iron
690	Spacer	Carbon Steel
710	Race Housing	Carbon Steel
750	Oil Thrower	Proprietary
890	Breather/Filler Plug	Carbon Steel
5005	Constant Level Oiler	Proprietary
5020	Race [Kit]	Proprietary
5021	Oil Seal	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 0.06" (1.5mm) high raised face having a continuous spiral groove.

#### ANSI B16.5 Class 300

Machined with 0.06" (1.5mm) high raised face having a continuous spiral groove.

#### DIN 2543/2545 PN16 + PN40

Machined with a 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 ANSI 5199 Annex C.

### Drain Connections

The following drain options are available:

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

**Option 1:** No drain, boss left undrilled.

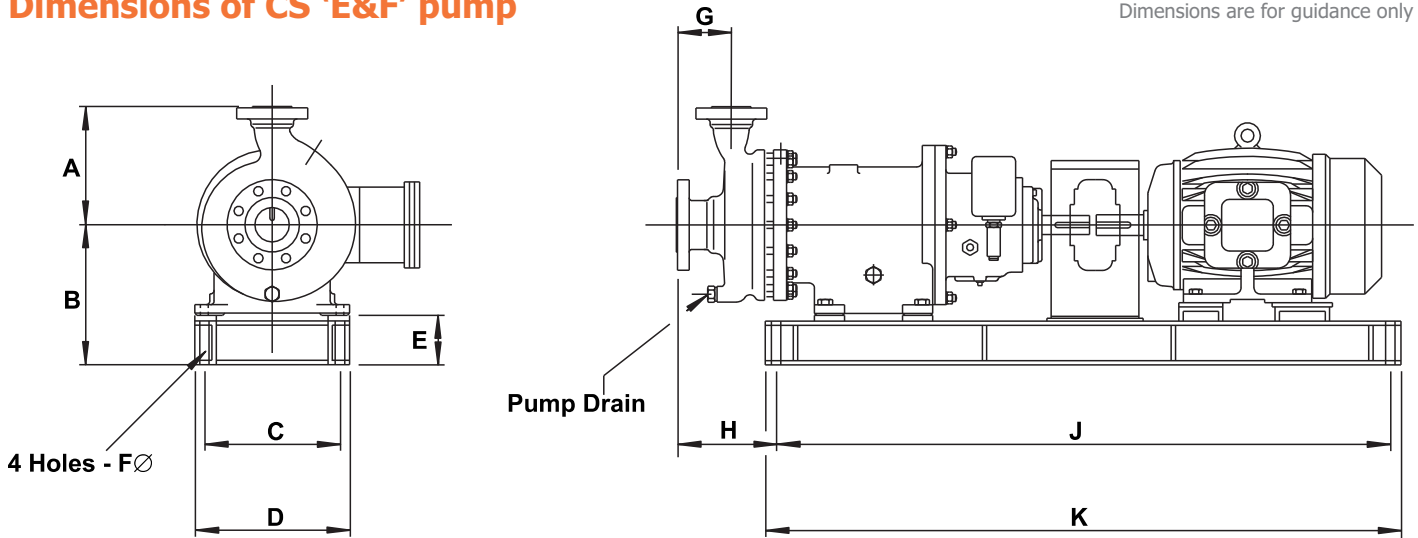
**Option 2:** 1/2" flanged drain rated to the casing flanges.

### Gauge Connections:

No provision for gauge connections has been made on this range of pumps.

## Dimensions of CS 'E&F' pump

Dimensions are for guidance only



## CS 'E&F' pump

Pump size	A	B	E	F	G	H
CS2ECH	10.6"/270	12.8"/326	4.3"/110	0.86"/22	3.9"/100	7.7"/197
CS2ESM	9.8"/250	12.8"/326	4.3"/110	0.86"/22	3.9"/100	8.3"/212
CS2ESL	9.8"/250	12.8"/326	4.3"/110	0.86"/22	3.9"/100	8.5"/217
CS3ESH	10.8"/275	12.8"/326	4.3"/110	0.86"/22	3.9"/100	8.1"/207
CS3ESM	10.2"/260	12.8"/326	4.3"/110	0.86"/22	3.9"/100	8.5"/217
CS3ESL	10.2"/260	12.8"/326	4.3"/110	0.86"/22	4.9"/125	9.3"/237

Pump size	A	B	E	F	G	H
CS3FSX	11.8"/300	18.7"/475	6"/152	0.86"/22	4.9"/125	5.7"/144
CS3FSH	11.8"/300	18.7"/475	6"/152	0.86"/22	4.9"/125	5.9"/150
CS3FSM	12.8"/325	18.7"/475	6"/152	0.86"/22	4.9"/125	6.5"/165
CS3FSL	11.8"/300	18.7"/475	6"/152	0.86"/22	4.9"/125	7.2"/183
CS4FSH	12.2"/310	18.7"/475	6"/152	0.86"/22	4.9"/125	5.9"/150
CS4FSM	12.8"/325	18.7"/475	6"/152	0.86"/22	4.9"/125	6.5"/165
CS4FSL	14"/355	18.7"/475	6"/152	0.86"/22	4.9"/125	7.4"/187

Motor Frame	C	D	J	K	L
112	12.4"/315	14.2"/360	44.5"/1130	46.5"/1180	54"/1370
132	12.4"/315	14.2"/360	48.5"/1233	50.5"/1283	58"/1475
160	12.4"/315	14.2"/360	53.1"/1350	55.1"/1400	62.6"/1590
180	12.4"/315	14.2"/360	56.2"/1428	58.1"/1478	65.7"/1670
200	14"/355	15.7"/400	59"/1500	61"/1550	68.9"/1750
213-215	12"/305	14"/355	48"/1219	50"/1270	58"/1473
254-256	14"/355	16"/406	54"/1372	56"/1422	62"/1574
284-286	16"/406	18"/457	57"/1448	60"/1524	65"/1651
326	16"/406	18"/457	60"/1524	63"/1600	68"/1727

Motor Frame	C	D	J	K	L
160	15.7"/400	18.1"/460	59"/1500	61.4"/1560	66.9"/1700
180	15.7"/400	18.1"/460	61.8"/1570	64.2"/1630	69.5"/1765
200	15.7"/400	18.1"/460	65.3"/1660	67.7"/1720	73.2"/1860
225	15.7"/400	18.1"/460	66.5"/1690	68.9"/1750	74.4"/1890
250	15.7"/400	18.1"/460	68.5"/1740	70.9"/1800	76.2"/1935
284-286	16"/406	18"/457	62"/1575	65"/1651	70"/1778
326	16"/406	18"/457	65"/1651	68"/1727	74"/1880
364-365	16"/406	18"/457	68"/1727	71"/1803	76"/1930

Dimensions shown are imperial (inches) / metric.

## Range capabilities

Model	Head	Flow	Design Temperature	Design Pressure	Viscosity cSt	Mounting
CS2 E	292 ft 89 m	528 USgpm 120 m <sup>3</sup> /h	-112 to 850°F -80 to 450°C	290 psi 20 bar	200	Close Coupled (CC) Separate Mounted (SM)
CS3 E	255 ft 78 m	881 USgpm 200 m <sup>3</sup> /h	-112 to 850°F -80 to 450°C	290 psi 20 bar	200	Separate Mounted (SM)
CS3 F	357 ft 109 m	1321 USgpm 300 m <sup>3</sup> /h	-112 to 850°F -80 to 450°C	290 psi 20 bar	200	Separate Mounted (SM)
CS4 F	393 ft 120 m	1321 USgpm 300 m <sup>3</sup> /h	-112 to 850°F -80 to 450°C	290 psi 20 bar	200	Separate Mounted (SM)

## 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	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	-110°F to 660°F / -80°C to 350°C
Option	840°F / 450°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, coupling/bearing and motor adaptor assembly interface.

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 CS TP 2.0 9/14 Letter