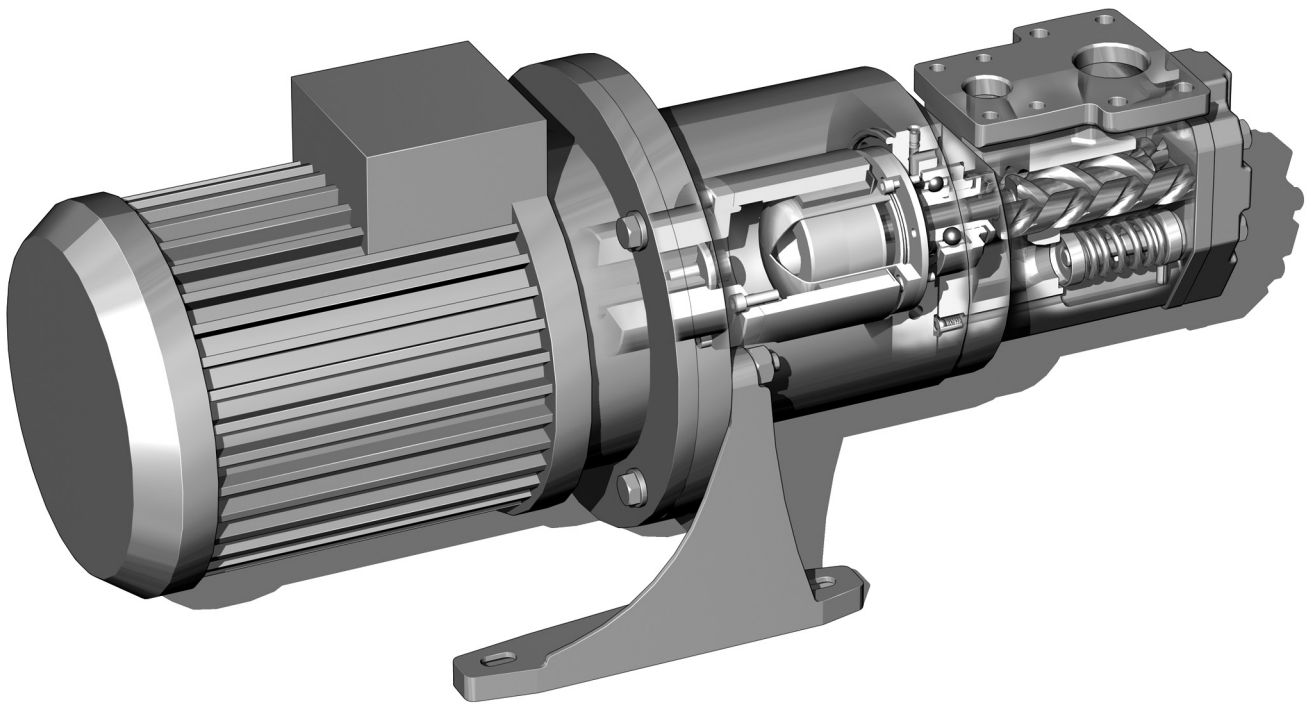




A Colfax Business Unit

# Opti Line ACE3 Screw pump

## Product description



Flow volume: 10-160 l/min  
Max differential pressure: 16 bar  
Applications: Lubrication, circulation and transfer

# Application

The ACE pumps are used for a number of different fluids:

Lubrication oil, fuel oil, vegetable oil, hydraulic oil and other hydraulic fluids, glycol, polymers, emulsions, and any non-aggressive fluid with sufficient lubricating properties.

When so required the ACE pump may be certified according to any of following classification societies: DNV, BV, LRS, ABS, RS, GL, RINA, KR, NK or CCS.

Typical applications are:

- Lubrication of diesel engines, gears, gas and steam turbines, hydro turbines and paper machines.
- Circulation for cooling and filtration in large machineries, hydraulic systems and transformer oil for insulation in transformers.
- Transfer onboard ships, in oil factories, refineries, tank farms etc.
- Fuel supply duties for diesel engines.

---

## Technical data

### Discharge pressure

Maximum discharge pressure is 16 bar.

### Differential pressure

Maximum differential pressure is 16 bar.

For low viscosity this value is reduced according to the table below. It may also be reduced at high speed/high viscosity related to the pump size and the torque capability of the selected magnetic shaft coupling. Please refer to your IMO representative or use the pump selection software WinPump to determine the exact operating limits.

Viscosity (cSt)	2	6	10	20
Max. diff. pressure (bar)	8	12.4	15.2	16

### Inlet pressure

Maximum inlet pressure is 7 bar.

Minimum inlet pressure is -0,85 bar, however adjusted upwards related to pump size, operating speed, viscosity and vapor pressure. Please refer to your IMO representative or use the pump selection software WinPump to determine the exact operating limits.

### Displacement

Size, lead	025L	025N	032L	032N	038K	038N
Displacement dm <sup>3</sup> /r	0.0098	0.0139	0.0206	0.0291	0.0388	0.0491

### Design

The OptiLine ACE pump is a positive displacement pump of 3-screw type. The design basically meets the requirements of EN ISO 14849.

### Pressure relief valve

The pump is equipped with an integral pressure relief valve with internal return, limiting the differential pressure across the pump and protecting the pump, should the discharge line be blocked. The valve is adjustable for different opening pressures. The value of the pressure limit can be set at the factory and should be adjusted at installation (see Installation & Startup instruction for low-pressure pumps).

The maximum pressure accumulation varies with pump size, speed and viscosity, but will normally not exceed 4 bar.

The characteristic of the valve allows the valve to be used as pressure regulating valve when not too high demands on pressure modulation are required. The valve has a maximum set pressure of 16 bar.

### Drive

The power from motor to the Opti Line ACE pump is transmitted without mechanical contact over a magnetic coupling. A coupling hub with a set of permanent magnets is mounted on the pump shaft. This hub is totally enclosed by a stainless steel can. The motor hub with another set of permanent magnets rotates on the outside of this can. Thus the pumped liquid is totally confined within the pump without the use of a conventional shaft seal.

The pump is designed for this type of drive only.

## Speed

The maximum speed is 3600 rpm. For higher speeds contact your IMO representative.

## Rotation

The ACE pump is designed to operate in one rotational direction only, as standard clockwise when facing the shaft end.

For shorter periods of time, a few minutes for emptying a discharge line, the pump may be operated in reverse direction, provided the back pressure is limited to 3 bar.

## Fluid viscosity

1.6 cSt up to 1500 cSt.

## Fluid temperature

-20°C up to 155°C.

## Sound level

A typical sound level from a pump with standard driver is 58 dB(A). This value refers to free field conditions at 5 bar, 2940 rpm and 40 cSt, measured according to ISO-3741.

## Moment of inertia

Moment of inertia, 10<sup>-6</sup> kgm<sup>2</sup>

Size	025	032	038
Pump only	50	80	200
Pump with inner hub for			
7 Nm coupling	250	280	400
14 Nm coupling	400	430	450
21 Nm coupling	550	580	700

## Mounting attitude

The OptiLine ACE pump can be mounted in any attitude.

## Material and design

Pump body	Nodular cast iron
Power rotor	Steel, surface treated
Idler rotors	Perlitic cast iron, surface treated
Elastomers	Viton

For handling of fluids that may be aggressive to above materials consult your IMO representative.

## Viscosity table

cSt	2	4	8	20	37	75	200	400	800	1500
SSU	32.6	39.2	52.2	99.4	174	346	927	1850	3700	6940

## Units

The following units are frequently used for specification of pumps:

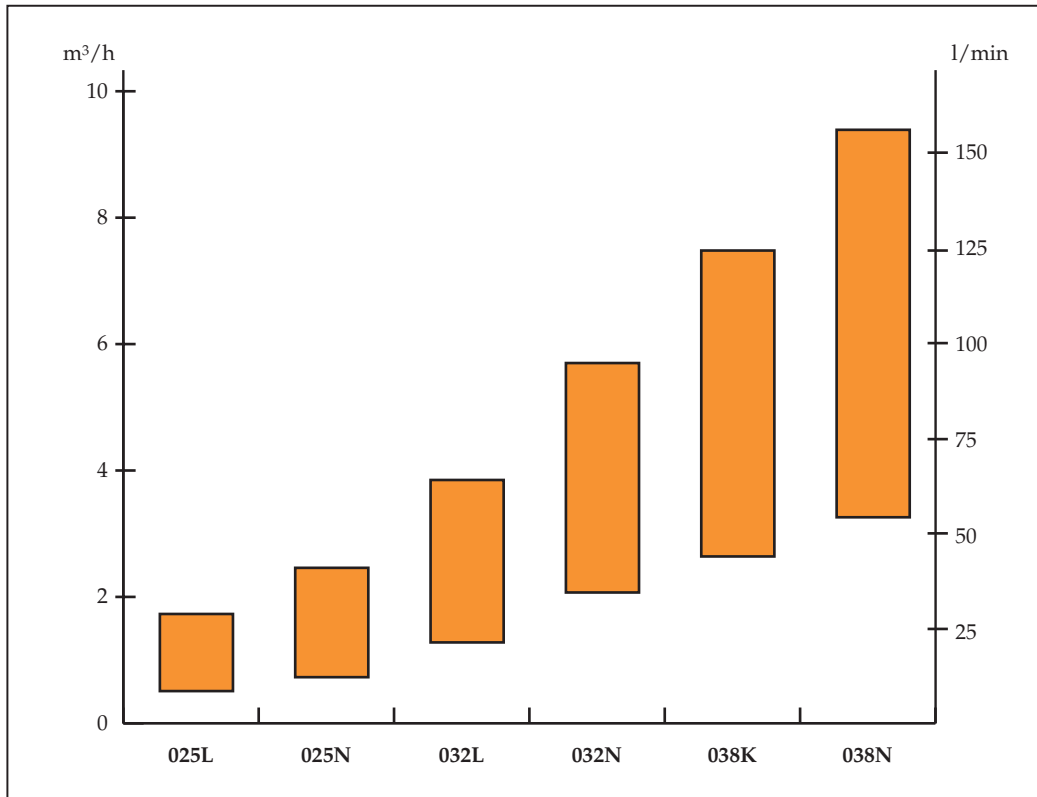
	SI-unit	IMO units	USA units	conversion
Pressure	Pa (MPa)	bar	psi	1 bar = 14.5 psi = 0.1 MPa
Speed	r/s	rpm	rpm	1 rpm = 0.016667 r/s
Viscosity	mm <sup>2</sup> /s	cSt	SSU	mm <sup>2</sup> /s = cSt (see table)
Temperature	°C	°C	°F	°C = (°F-32)/1.8
Length	m	mm	inch	1 mm = 0.0394 inch
Flow rate	m <sup>3</sup> /s	lit/min	GPM	1 lit/min = 0.264 GPM

# Performance Guide

## Typical performance values at 5 bar

Flow calculated at 26 cSt, power at 500 cSt

For values under other operating conditions, please refer to the IMO AB pump selection software WinPump (download it from [www.imo.se](http://www.imo.se) and apply for licence).



025L				025N		
rpm	l/min	kW	form	l/min	kW	form
1470	8,5	0,4	NKBP	12,1	0,4	NKBP
1770	11,5	0,5	NKBP	16,3	0,6	NKBP
2950	23,1	1,0	NKBP	32,7	1,1	NKBP
3550	28,9	1,3	NKBP	41,0	1,7	NLBP

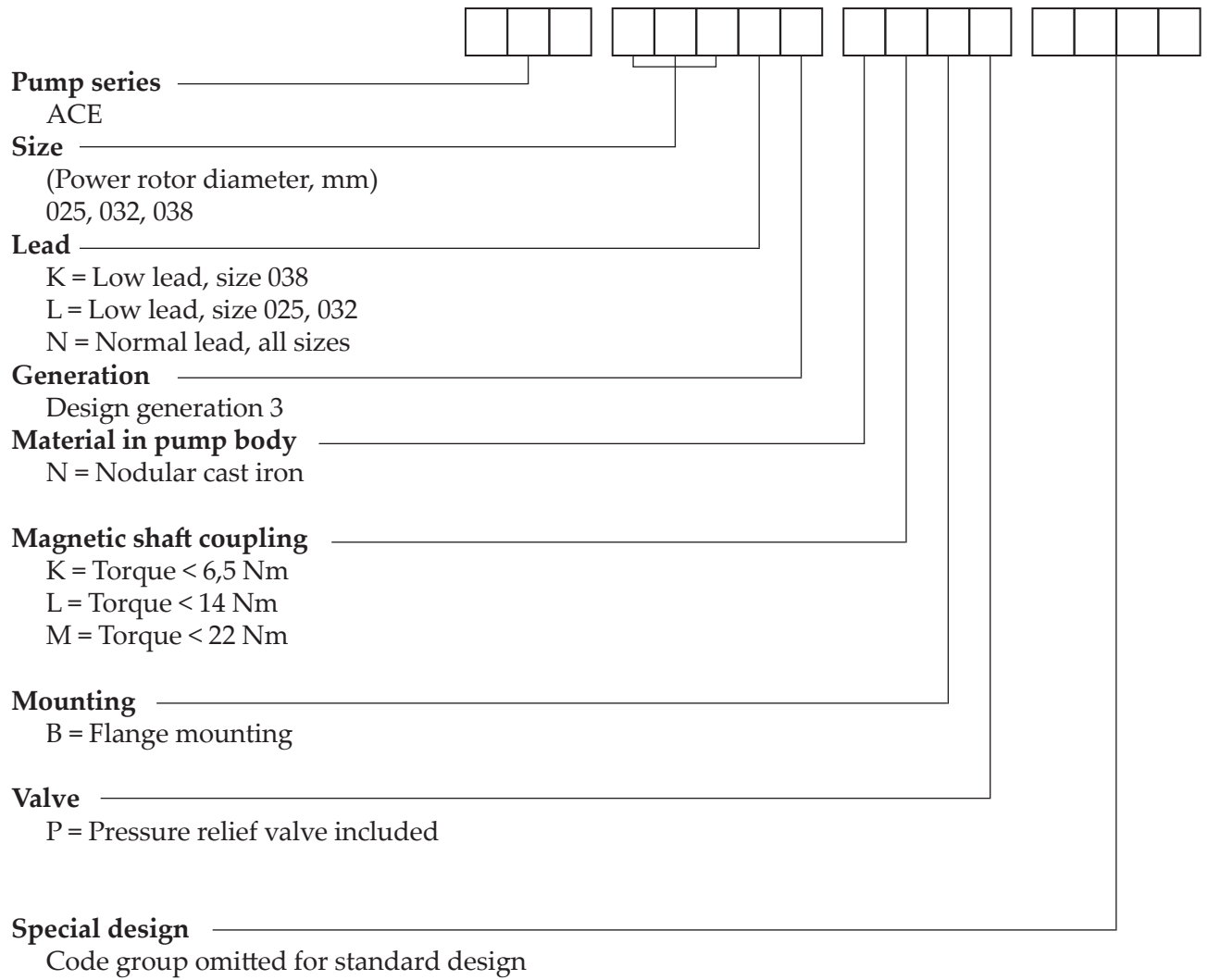
  

032L				032N		
rpm	l/min	kW	form	l/min	kW	form
1470	21,4	0,6	NKBP	34,5	0,9	NLBP
1770	27,5	0,7	NKBP	43,2	1,1	NLBP
2950	51,8	1,7	NLBP	77,5	2,2	NLBP
3550	64,2	2,2	NLBP	95,0	2,9	NLBP

038L				038N		
rpm	l/min	kW	form	l/min	kW	form
1470	44,0	1,1	NLBP	54,3	1,4	NLBP
1770	55,7	1,4	NLBP	69,1	1,8	NMBP
2950	101,5	3,0	NMBP	127,0	3,7	NMBP
3550	124,7	3,9	NMBP	156,5	4,8	NMBP

# Pump model code



# Pump dimensions

Pump size	IEC No	Frame size	Main dimension									Foot dimension							
			A	A1	A2	AC	B	C	D	D1	E	F	G	G1	H	J	K	L	M
025	80	F165	541	238	239	160	185	112	46	106	60	90	60	-	15	210	180	12	Ø11
025	90	F165	575	272	247	178	185	112	46	106	60	90	60	-	15	210	180	12	Ø11
025	100	F215	646	308	309	199	228	155	46	142	60	230	75	185	22	250	215	15	14x24
025	112	F215	659	321	322	215	228	155	46	142	60	230	75	185	22	250	215	15	14x24
032	80	F165	577	238	239	160	185	112	54	114	75	90	60	-	15	210	180	12	Ø11
032	90	F165	611	272	247	178	185	112	54	114	75	90	60	-	15	210	180	12	Ø11
032	100	F215	682	308	309	199	228	155	54	150	75	230	75	185	22	250	215	15	14x24
032	112	F215	695	321	322	215	228	155	54	150	75	230	75	185	22	250	215	15	14x24
032	132	F265	766	371	373	255	258	185	54	155	75	270	95	225	23	300	265	18	14x24
038	80	F165	575	238	239	160	195	112	48	108	85	90	60	-	15	210	180	12	Ø11
038	90	F165	609	272	247	178	195	112	48	108	85	90	60	-	15	210	180	12	Ø11
038	100	F215	680	308	309	199	238	155	48	144	85	230	75	185	22	250	215	15	14x24
038	112	F215	693	321	322	215	238	155	48	144	85	230	75	185	22	250	215	15	14x24
038	132	F265	764	371	373	255	268	185	48	149	85	270	95	225	23	300	265	18	14x24

Dimensions in mm

Pump size	IEC No	Frame size	Outlet				Inlet				Dismantling			Weight	
			P	PB	PR	PS	T	TB	R	S	V	Y	Z	CoG	kg
025	80	F165	25	37	27	30	25	37	27	30	140	84	132	293	27
025	90	F165	25	37	27	30	25	37	27	30	140	84	132	293	33
025	100	F215	25	37	27	30	25	37	27	30	175	104	167	292	41
025	112	F215	25	37	27	30	25	37	27	30	175	104	167	288	46
032	80	F165	25	37	27	30	40	42	42	49	140	84	132	310	29
032	90	F165	25	37	27	30	40	42	42	49	140	84	132	309	35
032	100	F215	25	37	27	30	40	42	42	49	175	104	167	308	43
032	112	F215	25	37	27	30	40	42	42	49	175	104	137	304	48
032	132	F265	25	37	27	30	40	42	42	49	196	104	188	306	72
038	80	F165	40	42	42	49	40	42	42	49	140	84	132	325	32
038	90	F165	40	42	42	49	40	42	42	49	140	84	132	325	38
038	100	F215	40	42	42	49	40	42	42	49	175	104	167	323	46
038	112	F215	40	42	42	49	40	42	42	49	175	104	167	319	51
038	132	F265	40	42	42	49	40	42	42	49	196	104	188	321	75

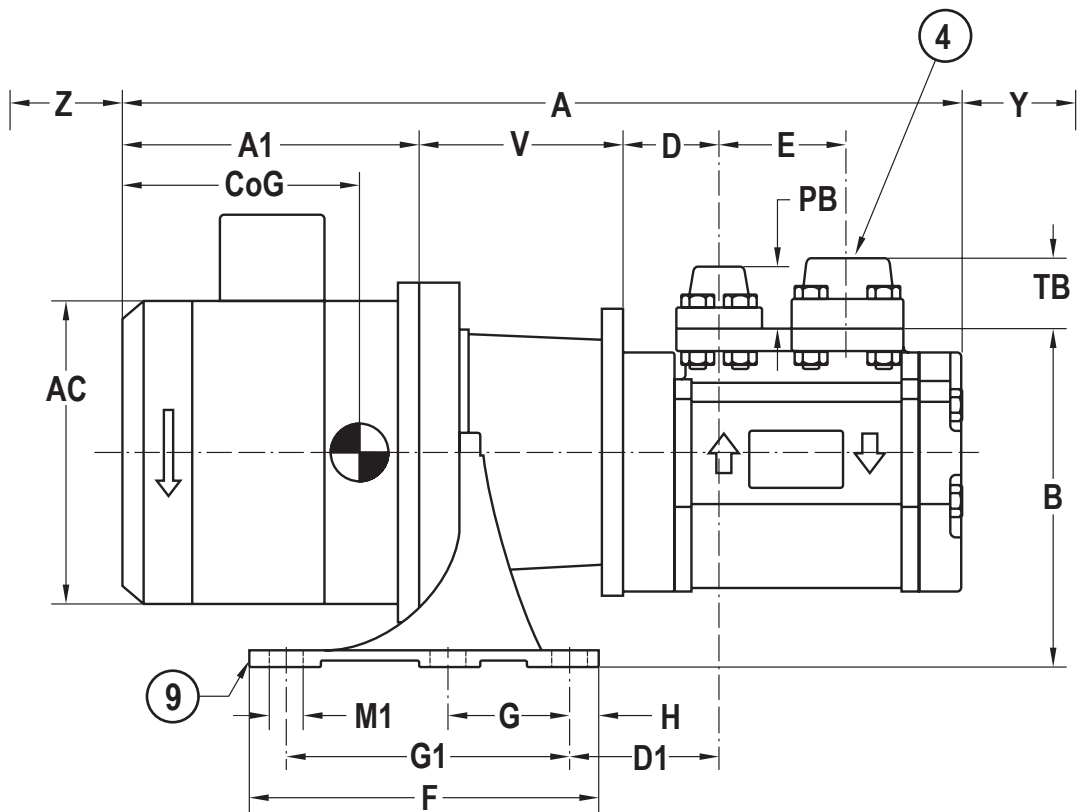
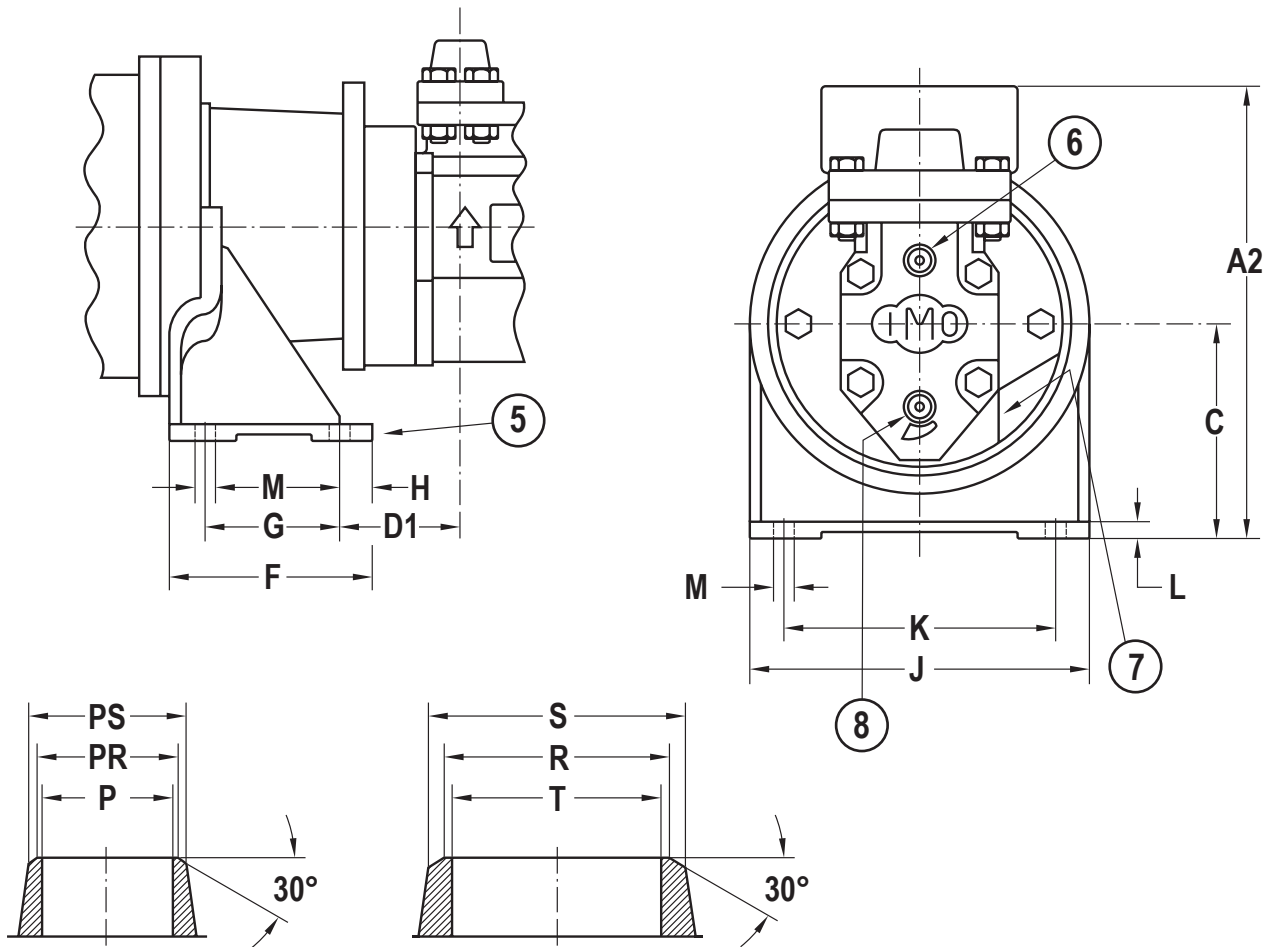
## Notes:

- 1) OptiLine ACE pump dimensions are equal to corresponding sizes of other ACE pumps with the exception of dimensions 'A', 'V' and 'D1'.
- 2) Dimensions 'A', 'A1' and 'AC' are approximate and refer to common type AC motors.
- 3) Weight and CoG refer to a common type AC motor.

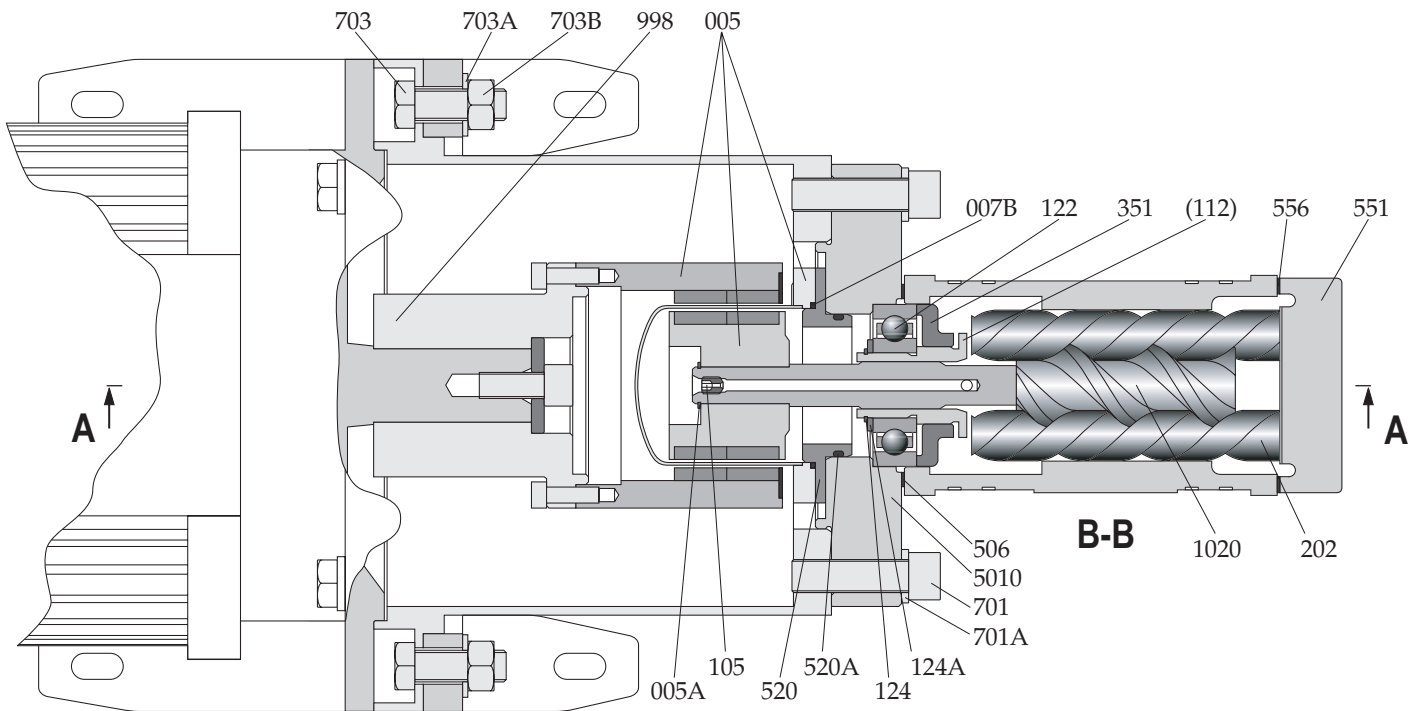
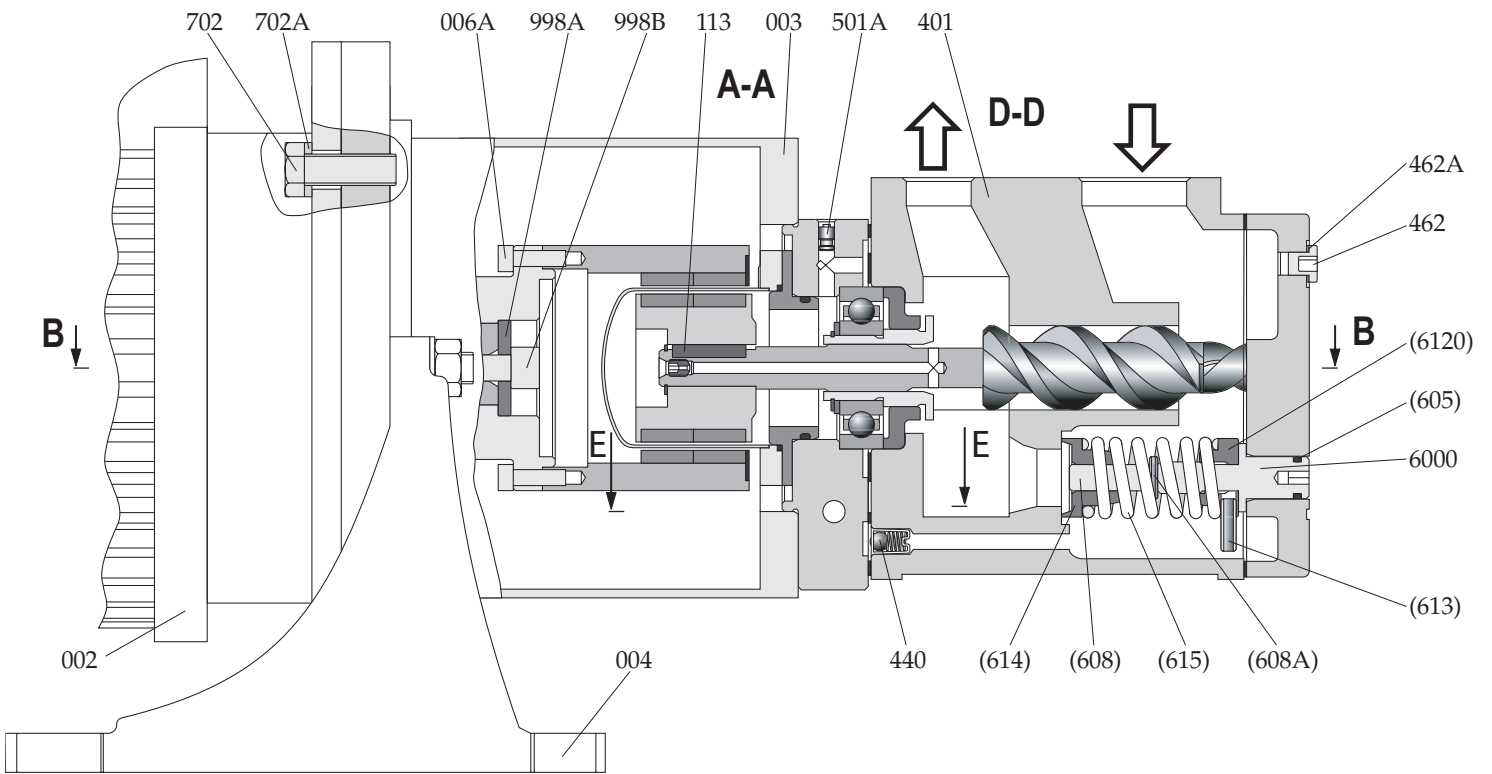
## Drawing remarks

- 4) Butt weld counter flanges of IMO AB design shown on drawing are included.
- 5) Angle bracket for frame size F165.
- 6) Inlet gauge ISO-G1/8.
- 7) Outlet gauge ISO-G1/8.
- 8) Relief valve. Turn clockwise to increase pressure.
- 9) Angle bracket for frame size F215-F265.

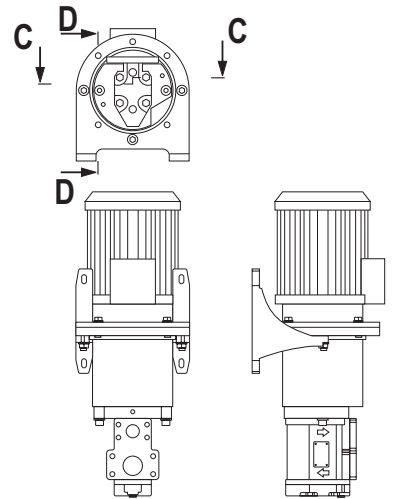
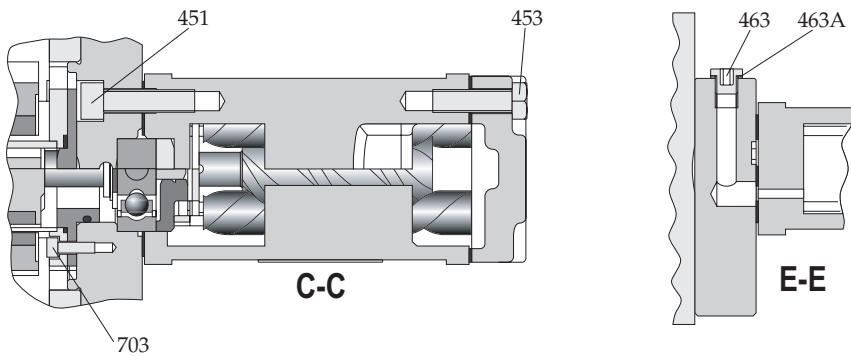
# Pump dimensions



# Sectional view



# Sectional view



## List of components

### Pos No Denomination

002	Motor
003	Connecting frame
004	Angle bracket
005	Magnetic coupling
005A	Retaining ring
006A	Screw
007A	Screw
007B	O-ring
1020	Power rotor
(105)	Nozzle
(112)	Balancing piston
113	Key
122	Ball bearing
124	Retaining ring
124A	Support washer
202	Idler rotor
351	Balancing bush
401	Pump body

### Pos No Denomination

440	Return valve
451	Screw
453	Screw
462	Plug
462A	Sealing washer
463	Plug
463A	Sealing washer
(501A)	Expander plug
5010	Front cover
506	Gasket
520	Cover
520A	O-ring
551	Rear cover
556	Gasket
6000	Compl. valve element
605	O-ring
(608)	Valve spindle
(608A)	Tension pin

### Pos No Denomination

(6120)	Set screw
(613)	Pin
(614)	Valve piston
(615)	Valve spring
701	Screw
701A	Washer
702	Screw
702A	Washer
703	Screw
703A	Washer
703B	Nut
998	Drive shaft
998A	Washer
998B	Screw

Components with Pos No within parenthesis are parts of subassembly

# Installation

The OptiLine ACE pump is flange-mounted to an electric motor via a connecting frame and a magnetic coupling and has an angle bracket for mounting horizontally and vertically, see mounting instructions in Installation folder.

## OptiLine double assembly

Two pump units can also be mounted to a double assembly on a common frame with inlet and outlet pipe connections. The double assembly saves space and facilitates installation, maintenance, service and supervision. See Product description T4.

# Maintenance and Service

Spare parts for these pumps are easily available from stock. For detailed information and know-how about service see the Maintenance and Service instruction for ACE-pumps or contact your IMO representative.





A Colfax Business Unit

[www.imo.se](http://www.imo.se)

---

**IMO AB:** P.O. Box 42090, SE 126 14 Stockholm, Sweden  
Telephone: +46 8 50 622 800, Telefax: +46 8 645 1509