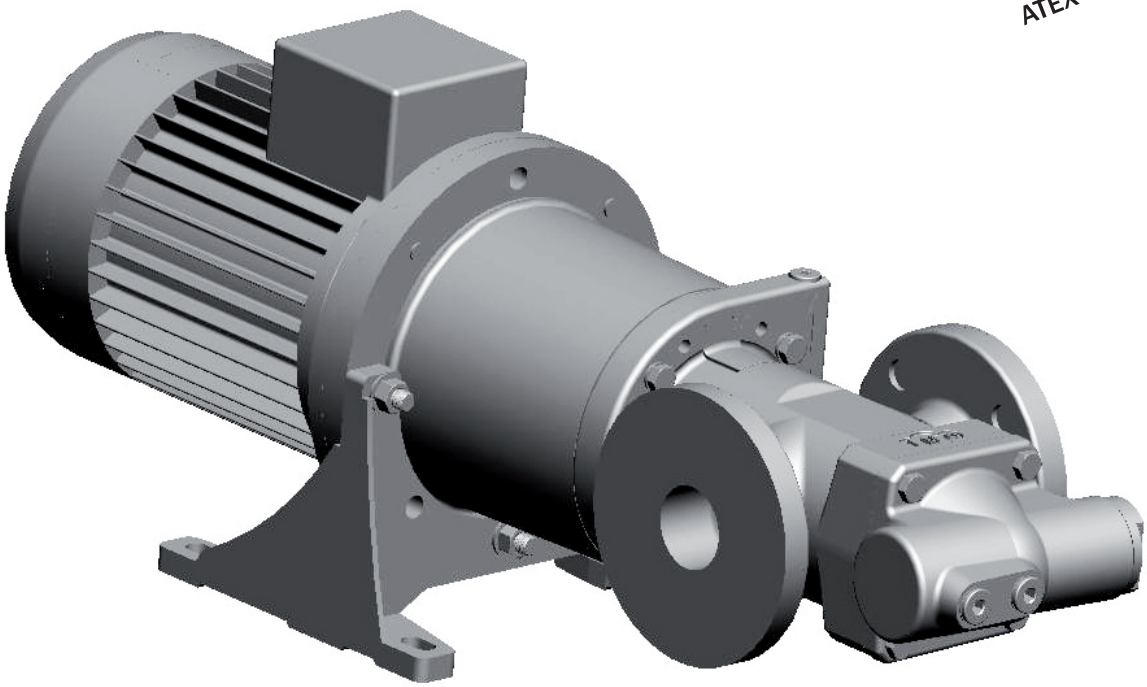
ACG8
OptiLine

CIRCOR
IMO®

Product Description

ATEX-compliance



Flow volume:	**75 - 1180 l/min**
Max differential pressure:	**16 bar**
Applications:	**Circulation and transfer**

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1. Applications

1.1 Functionality

The ACG OptiLine pump is used for a number of different fluids:

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

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

1.2 Applications

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

1.3 Use in potentially explosive areas

The pump fulfils the requirements according to EU explosion-protection directive 2014/34/EU (ATEX 100a) for devices in device class II, category 2G.

Classification into temperature classes according to DIN EN 80079-36 depends on the temperature of the pumped liquid.

Refer to the proposal or order documentation for the maximum permissible liquid temperature for the respective temperature classes.

Note: When operating the pump in category 2, suitable measures must be provided to prevent impermissible warming of the pump surfaces in the event of disturbance.

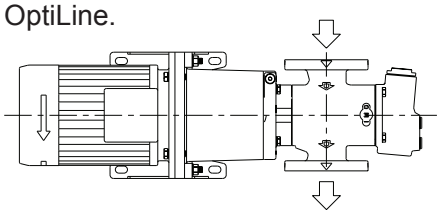
1.4 Installation

The pump is designed to be flange-mounted to its electric motor via a connecting frame and a magnetic coupling. By the angle bracket, the pump may be mounted horizontally or vertically.

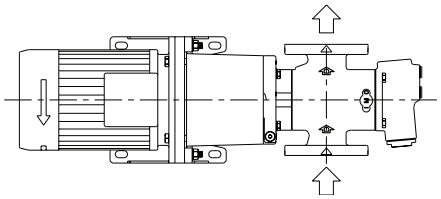
As standard, the pump is supplied without counter flanges (DIN type) but they can be included if requested.

As standard the pump is delivered with the discharge side to the right when seen from the pump shaft side(see below).

For more information about installation, see Service, Maintenance and Installaton for ACG OptiLine.



Mounting standard picture M93-0.



On request the pump can be delivered with opposite flow direction, M39-0.

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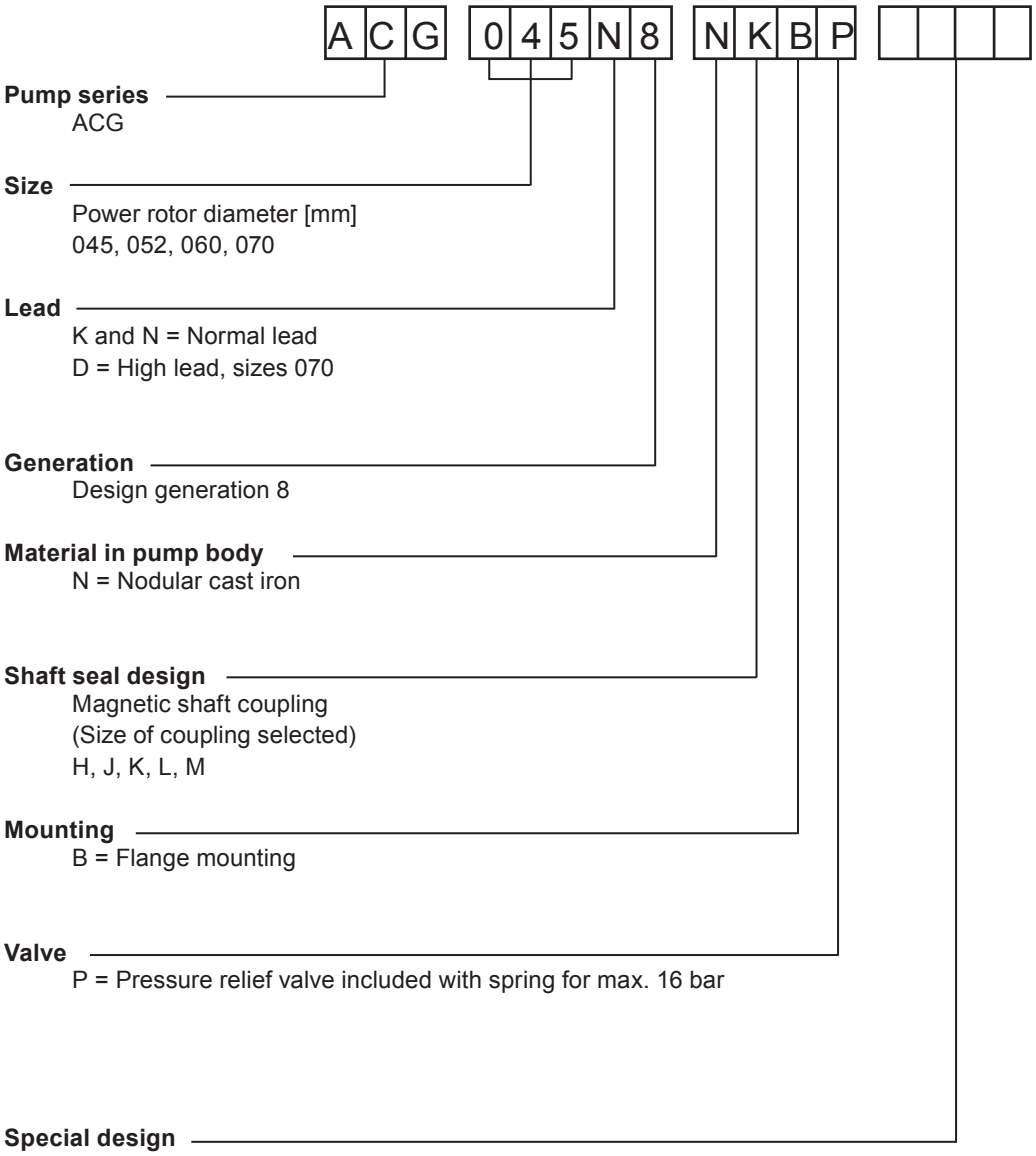
2. Pump model code



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3. Technical Data

3.1 Pressure Information

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 relief valve will open by the pressure.

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 Service, Maintenance and Installaton for ACG OptiLine).

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

The valve has a maximum set pressure of 16 bar.

Inlet pressure

Minimum inlet pressure (suction capability) is dependent on fluid viscosity and rotation speed. It increases with decreasing viscosity and decreasing speed. Information about minimum inlet pressure for each individual duty case can be obtained from IMO AB or pump selection software WinPump.

Maximum inlet pressure is 15 bar.

Discharge pressure

Maximum discharge pressure is 16 bar.

Differential pressure

Maximum differential pressure is 16 bar but reduced at low viscosities according to table below

Viscosity [cSt]	1,4	2	6	10	>12
Max. diff. pressure [bar]	6,9	8,0	12,4	15	16

Refer to your IMO representative or use the pump selection software WinPump to determine the exact operating limits.

3.2 Driver information

Driver type

The power from motor to the OptiLine ACG 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.

Speed

The maximum speed is 3600 rpm. For higher speeds, contact IMO AB.

Rotation

The pump is designed to operate in one rotational direction only, as standard clockwise when facing the shaft end. Pumps for CCW operation can be delivered on special request.

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.

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3. Technical Data

3.3 Sound level

Typical pump sound levels refer to free field conditions at a distance of 1 m from the pump. Noise of driver excluded in the quoted figures. The sound levels are measured at a discharge pressure of 5 bar, speed 2900 rpm and viscosity 37 cSt.

Size	045	052	060	070
Sound level dB [A]	59	63	66	68

3.4 Moment of Inertia

Moment of intertia [10^{-3} kgm^2]

	Size			
Coupling sing	045	052	060	070
H	15	-	-	-
J	16	17	-	-
K	17	17	28	67
L	17	17	28	72
M	19	19	34	78

3.5 Magnetic shaft coupling

< Torque values (greater than, at least) [Nm]

	Size			
Coupling	045	052	060	070
H	10	-	-	-
J	20	20	-	-
K	30	30	25	85
L	40	40	50	140
M	60	40	80	180

3.6 Fluid viscosity

OptiLine:
1.4 – 1500 cSt

3.7 Fluid temperature

-20 – +180 °C

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4. Design

4.1 Ball bearing

The pump is fitted with an internal ball bearing which continously is being greased by the handling media.

4.2 Material & design

Model	Material pump	Material rotot	Material idler	Material seal	Material elastomers
ACG OL	Nodular cast iron	Structural steel, surface treated	Cast iron, surface treated		Special rubber

4.3 Steam tracing

During cold start-up conditions, high viscosity could cause the rated torque for the coupling to be exceeded.

The IMO OptiLine pump series have a way to warm up the pump by leading steam into small channels at the front cover. This is recommended if cold upstart can be assumed.

See Pump Unit Dimensions for dimensions of the connections to the steam system.

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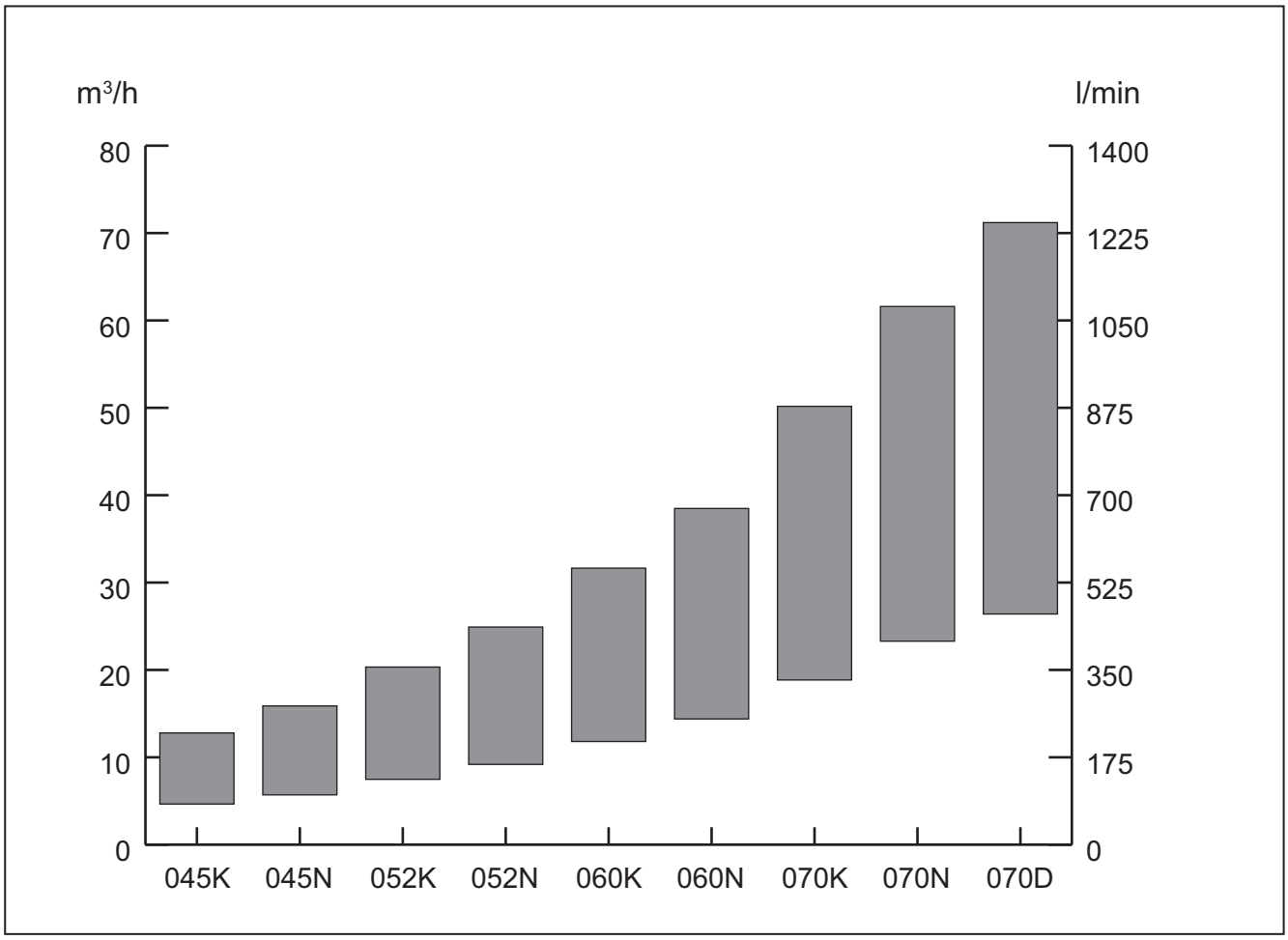
5. Performance Guide

Typical performance values at 5 bar
Flow calculated at 26 cSt, power at 260 cSt.
Pump performance established according to EN 14343.



	045K			045N			052K			052N		
rpm	l/min	kW	form	l/min	kW	form	l/min	kW	form	l/min	kW	form
1470	77	1,5	NJBP	95	1,8	NJBP	125	2,2	NJBP	153	2,7	NKBP
1770	97	1,8	NJBP	119	2,2	NJBP	156	2,8	NJBP	191	3,4	NKBP
2950	174	3,5	NJBP	216	4,2	NJBP	277	5,3	NKBP	340	6,4	NKBP
3550	213	4,4	NKBP	265	5,4	NJBP	229	6,9	NLBP	415	8,0	NKBP

	060K			060N			070K			070N		
rpm	l/min	kW	form	l/min	kW	form	l/min	kW	form	l/min	kW	form
1470	197	3,7	NLBP	240	4,3	NLBP	314	6,8	NKBP	388	7,8	NKBP
1770	245	4,6	NLBP	298	5,5	NLBP	389	8,5	NKBP	480	9,9	NLBP
2950	432	8,9	NLBP	525	10,5	NLBP	686	16,8	NLBP	843	21,0	NLBP
3550	528	11,3	NLBP	641	13,3	NLBP	836	21,8	NLBP	1027	27,2	NLBP

	070D		
rpm	l/min	kW	form
1470	440	9,7	NLBP
1770	548	12,4	NLBP
2950	971,3	24,7	NLBP
3550	1187,6	32,0	NLBP

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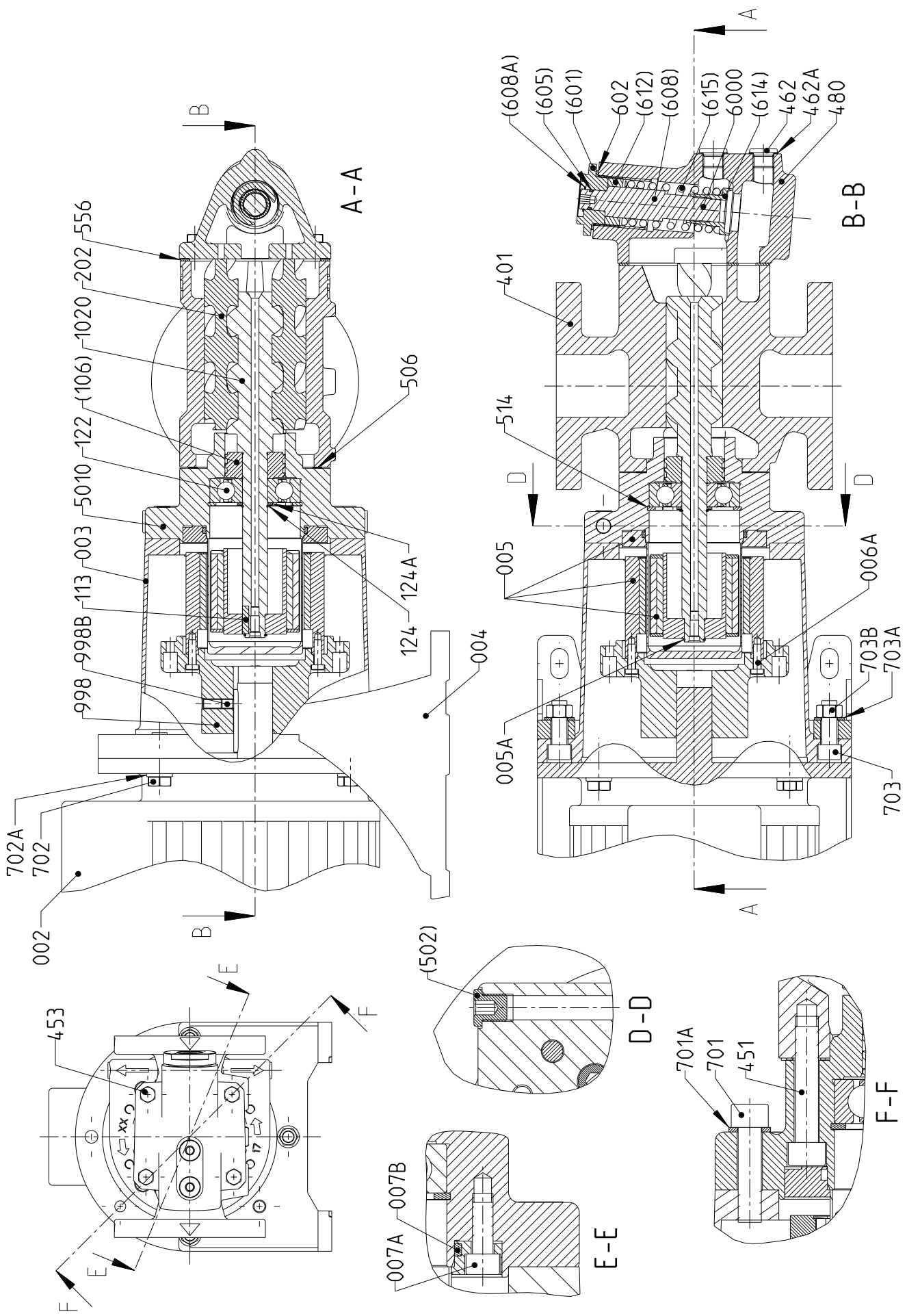
6. Sectional view



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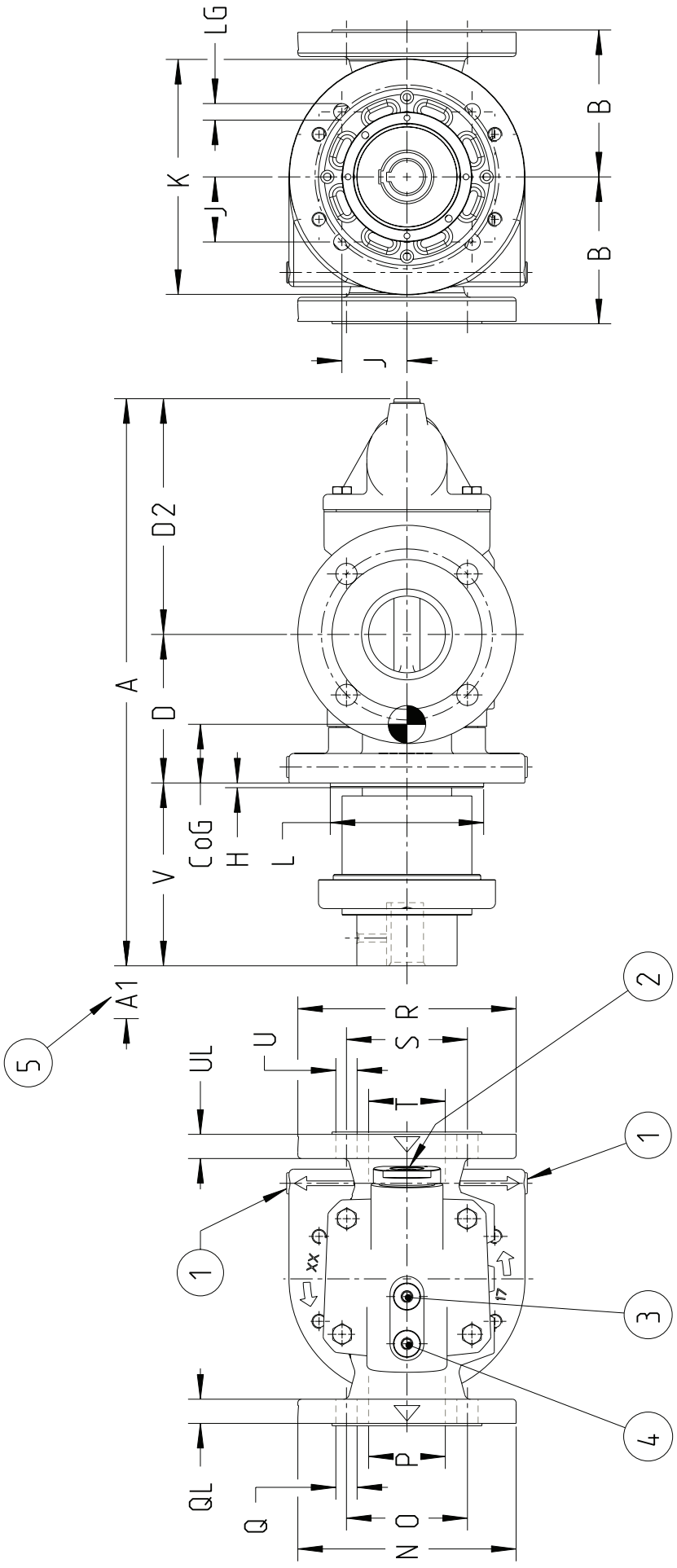
Pos No	Denomination
002	Motor
003	Connecting frame
004	Angle bracket
005	Magnetic coupling
005A	Retaining ring
006A	Screw
007A	Screw
007B	O-ring
1020	Complete power rotor
(106)	Balancing piston
113	Key
122	Ball bearing
124	Retaining ring
124A	Support ring
202	Idler rotor

Pos No	Denomination
401	Pump body
451	Screw
453	Screw
462	Plug
462A	Sealing washer
480	Valve housing
5010	Complete front cover
(502)	Plug
506	Gasket
514	Retaining ring
556	Gasket
6000	Complete valve element
(601)	Valve top cover
(605)	O-ring
(608)	Valve spindle

Pos No	Denomination
(608A)	Retaining ring
(612)	Regulating nut
(614)	Valve piston
(615)	Valve spring
602	Sealing washer
701	Screw
701A	Washer
702	Screw
702A	Washer
703	Screw
703A	Washer
703B	Nut
998	Drive hub
998B	Screw

Notes:
- Components with Pos No within parenthesis are parts of subassembly

8. Pump Dimensions



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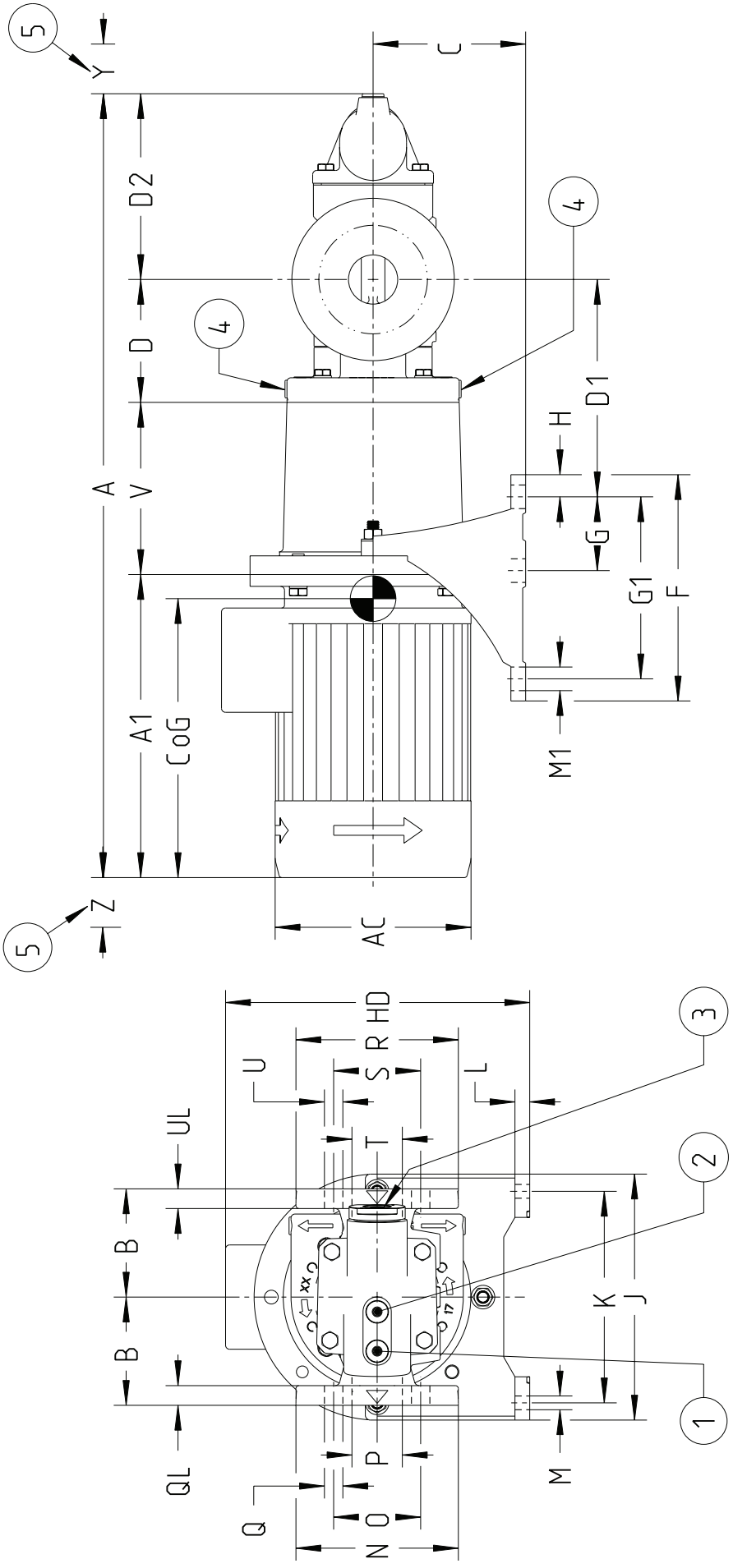
Pump size	IEC No	Motor shaft Ø	Frame size	Main dimensions									Flange dimensions					Outlet					Inlet					Weight	
				A	A	A1	A1	B	D	D2	V	V	H	J	K	L [1]	LG	N	O	P	Q	QL	R	S	T	U	UL	CoG	kg
045	100	28	F215	468	488	20	0	110	125	188	155	175	4	51.3	175	120	11	165	125	50	4x Ø18	20	165	125	50	4x Ø18	20	66	36
	112																											67	
	132	38	F265			41	21																						
	160	42	F300			73	53																						
052	100	28	F215	477	497	20	0	122.5	126	196			4	55.15	200	130	14	185	145	65	4x Ø18	20	185	145	65	4x Ø18	20	79	43
	112																											80	
	132	38	F265			41	21																					79	44
	160	42	F300			73	53																						
060	132	38	F265	554.5	–	21	–	140	168	211.5	175	–	4	76	250	180	18	200	160	80	8x Ø18	20	200	160	80	8x Ø18	20	107	58
	160	42	F300			53																						108	
	180	48																										109	
070	132	38	F265	615	–	0	–	150	181	224	210	–	4	73.9		180	18	220	180	100	8x Ø18	22	220	180	100	8x Ø18	22	98	77
	160	42	F300			46																						99	
	180	48																										100	
	200	55	F350			0																							
	225	55	F400	661		29					256																		
		60		615		75					210																		
Execution code				xHxx xJxx xKxx xLxx	xMxx	xHxx xJxx xKxx xLxx	xMxx				xHxx xJxx xKxx xLxx	xMxx																		

Drawing remarks:
(1) Connection for heating. ISO G1/4
(2) Control for relief valve
(3) Inlet gauge. ISO G3/8
(4) Outlet gauge. ISO G3/8
(5) Mounting distance to motor flange

Notes:
- Dimensions in mm
- Weight is an approximate value and valid for respective pump size with it´s largest magnetic coupling
- Counter flanges according to DIN2633/ND16

1) Tolerances ISO h7

9. Pump Unit dimensions



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Pump Size	IEC No	Frame size	Main dimensions									Foot dimensions										Outlet					Inlet					Dism.		Weight	
			A	A1	AC	B	C	D	D1	D2	V	F	G	G1	H	HD	J	K	L	M	M1	N	O	P	Q	QL	R	S	T	U	UL	Y	Z	CoG	kg
045	100	F215	796	308	199	110	155	125	221	188	175	230	75	185	22	309	250	215	15	14	24	165	125	50	4x Ø18	20	165	125	50	4x Ø18	20	132	184	397	63
	112		810	322	215											322																		392	68
	132	F265	880	371	255		185		226		196	270	95	225	23	373	300	265	18	14	24											205	401	84
	160	F300	1036	495	314		235		238		228	305	115	265	20	475	350	300	18	18	30											237	441	127
052	100	F215	805	308	199	122,5	155	126	222	196	175	230	75	185	22	309	250	215	15	14	24	185	145	65	4x Ø18	20	185	145	65	4x Ø18	20	132	184	421	70
	112		819	322	215											322																		415	75
	132	F265	889	371	255		185		227		196	270	95	225	23	373	300	265	18	14	24											205	425	91
	160	F300	1045	495	314		235		239		228	305	115	265	20	475	350	300	18	18	30											237	466	135
060	132	F265	947	371	255	140	185	168	269	211,5	196	270	95	225	23	373	300	265	18	14	24	200	160	80	8x Ø18	20	200	160	80	8x Ø18	20	124	204	471	108
	160	F300	1103	495	314		235		281		228	305	115	265	20	475	350	300	18	18	30											236	507	148
	180		1165	557	358											495																		509	182
070	132	F265	986	371	255	150	185	181	296	224	210	270	95	225	23	373	300	265	18	14	24	220	180	100	8x Ø18	22	220	180	100	8x Ø18	22	146	220	505	128
	160	F300	1156	495	314		235		322		256	305	115	265	20	475	350	300	18	18	30											266	554	168
	180		1218	557	358											495																		554	202
	200	F350	1338	677	381		260		312			350	-	300	25	561	400	350	20	18	30											266	544	339
	225	F400	1465	775	448		295		331		285	385	-	335	25	640	450	400	20	18	30											295	593	461

Drawing remarks:
(1) Outlet gauge. ISO G3/8
(2) Inlet gauge. ISO G3/8
(3) Control for relief valve
(4) Connection for heating. ISO G1/4
(5) Space for dismantling

Notes:
- Dimensions in mm
- Dimensions A, A1, AC and Weight are valid for Brook Crompton motors
- Dimensions Z and Weight are valid for respective pump size with it's largest magnetic coupling
- Weight is an approximate value

10. Accessories

A bare shaft pump (Fig. 1) can be ordered with the accessories in fig. 2-6.

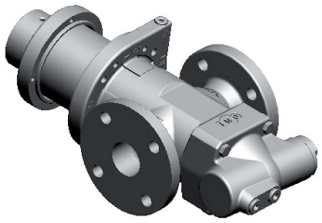

Fig. 1 Bare shaft pump

Fig. 2 Set of counter flanges

Fig. 3 Connecting frame

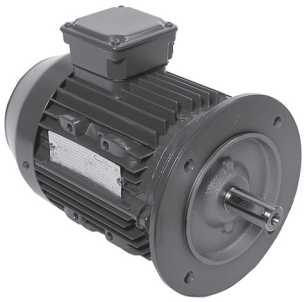

Fig. 4 Electric motor

Fig. 5 Angle bracket

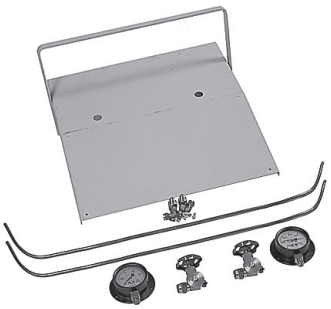

Fig 6. Gauge panel

11. Maintenance and Service

Spare parts for these pumps are easily available from stock. For detailed information and know-how about service, see see Service, Maintenance and Installaton for ACG OptiLine or contact IMO AB.

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Adress:

IMO AB
PO Box 42090, 126 14 Stockholm
Sweden

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