

4

BMF BCF BFC Series

**Monobloc Gear Pumps,
Bell-Coupling Gear Pumps.**



4.1 MAIN CHARACTERISTICS AND NOMINAL FLOW RATES

BMF, BCF and BFC pumps are volumetric gear pumps suitable for transferring lubricant viscous liquids without any suspended solids or abrasive substances. They are self-priming pumps used for a wide range of liquids with a viscosity from 1 to 1.000 cSt. The speed of rotation is chosen according to the viscosity of the liquid. Flowrate range is from 2 to 70 L/min.

The standard construction consists of pump housing and cover in cast iron, shafts and gears in carbon steel, O-rings in Viton, sleeve bushings in Steel-Bronze-PTFE and mechanical seal in ceramic-graphite-Viton. BMF, BCF and BFC pumps are supplied with a pressure relief valve in brass.

Nozzles in inlet and outlet are of the same diameter and

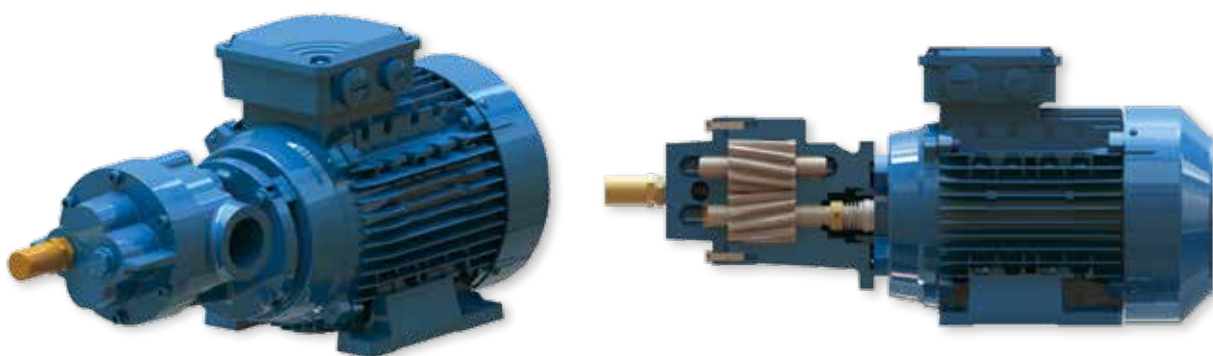
positioned on the same axis.

A short and straight alignment of the flow channels provides for a good suction capability and a quiet running. The helical gears result in extremely low noise levels and reduced pressure pulsation.

BMF (three phase) and BCF (single phase) are monobloc gear pumps with a very compact and strong design. These pumps have an integrated IM B34 electric motor. All the motors are IP55 with an insulation class F. Special voltages and protection IP56/IP65 on request.

The available electric motors are listed in Tables 404, 405, 406.

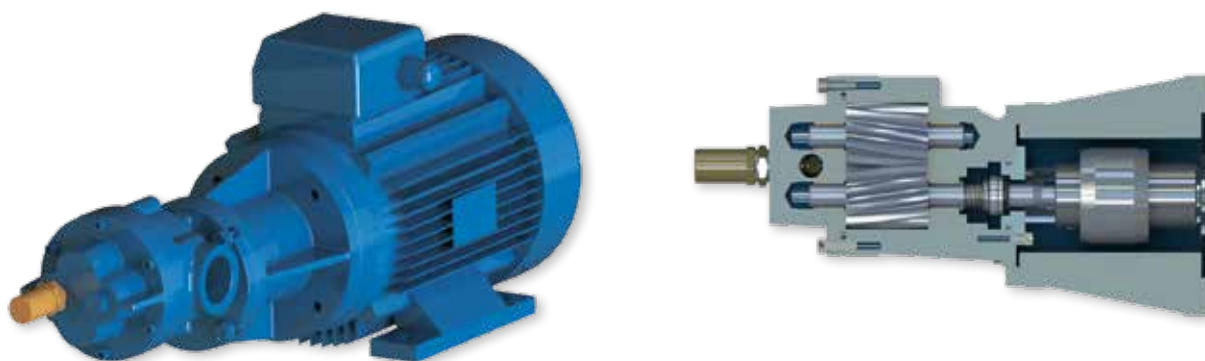
Fig. 401 – BMF, BCF pumps, standard version



BFC pumps are designed to fit, by means of a coupling bell and coupling, an industrial electric motor in compliance with the IEC standard with B14 flange and feet (IM B34). The electric motor can be supplied on request.

In table 401 are listed the typical combinations of BFC pumps and B34 electric motors.

Fig. 402 – BFC pump, standard version



Tab. 401 – B14 flanges available on BFC Series

PUMP SIZE (BFC)	IEC Frame size						
	56	63	71	80	90	100	112
2							
3							
4							
5							
10							
15							
25							
35							
50							
60							
70							

Table 402 shows the possible flow rates for non-pressurized pumping ($\Delta p=0$) and a 46 cSt fluid.

The flow rate of gear pumps is virtually proportional to

their speed. The selected speeds are the most common speeds at rated power of industrial electric motors at 50 and 60Hz.

Tab. 402 – Nominal flow rates

PUMP SIZE (BMF, BCF, BFC)	Geometrical displacement V_{geo} [cm ³ /rev]	Nominal flow rate Q_{teo} [L/min] at Speed n [1/min]					
		690	830	950	1150	1400	1750
2	1.5	1.0	1.2	1.4	1.7	2.1	2.6
3	2.1	1.5	1.8	2.0	2.4	3.0	3.7
4	3.0	2.0	2.5	2.8	3.4	4.1	5.2
5	4.6	3.1	3.8	4.3	5.2	6.4	8.0
10	9.1	6.3	7.5	8.6	10.5	12.7	15.9
15	13.6	9.4	11.3	12.9	15.7	19.1	23.9
25	18.2	12.5	15.1	17.3	20.9	25.5	31.8
35	26.7	18.4	22.2	25.4	30.7	37.4	46.7
50	38.0	26.2	31.5	36.1	43.7	53.2	66.5
60	46.3	32.0	38.4	44.0	53.3	64.8	81.1
70	51.0	35.2	42.3	48.4	58.6	71.3	89.2

4.2 MAIN OPTIONS

The main options available are:

- Clockwise rotation (see paragraph 4.3)
- Special seals according to liquids and temperatures (see paragraph 4.4)
- Options on relief valve (see paragraph 4.5)
- Constructions for corrosive liquids and aggressive environments (see paragraph 4.6)
- Motors (see paragraph 4.7)
- Accessories (see paragraph 4.8)
- Heatsink for maximum fluid temperature 300°C available on BFC series

4.3 SENSE OF ROTATION AND FLOW DIRECTION

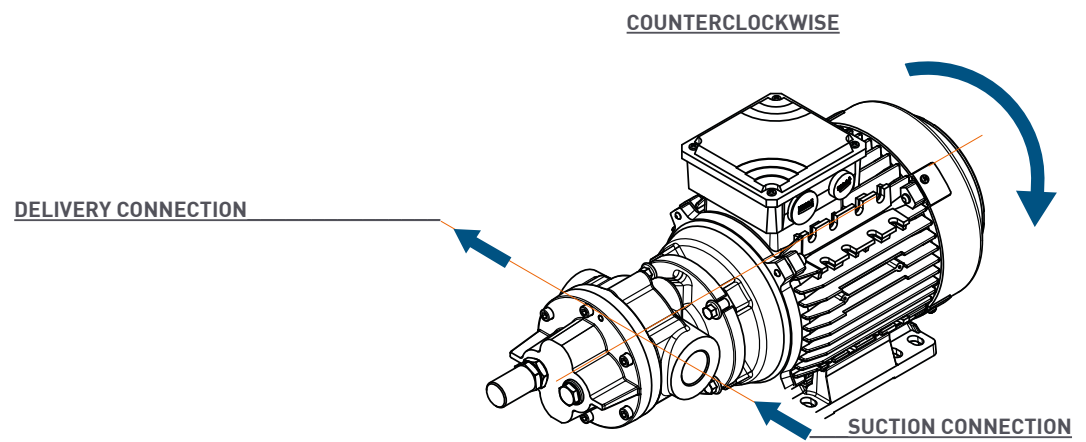
The standard version of BMF and BCF pumps can operate only in one direction of rotation: counterclockwise watching the electric motor fan.

The direction of rotation of the motor, when properly connected to the mains, is shown by an arrow placed on

the fan cover. Watching the electric motor fan, the flow direction will be from the left side to the right side and the pressure side (delivery) will be at the right-hand side.

On request a clockwise version can be supplied.

Fig. 403 – BMF, BCF Series - Sense of rotation and flow direction



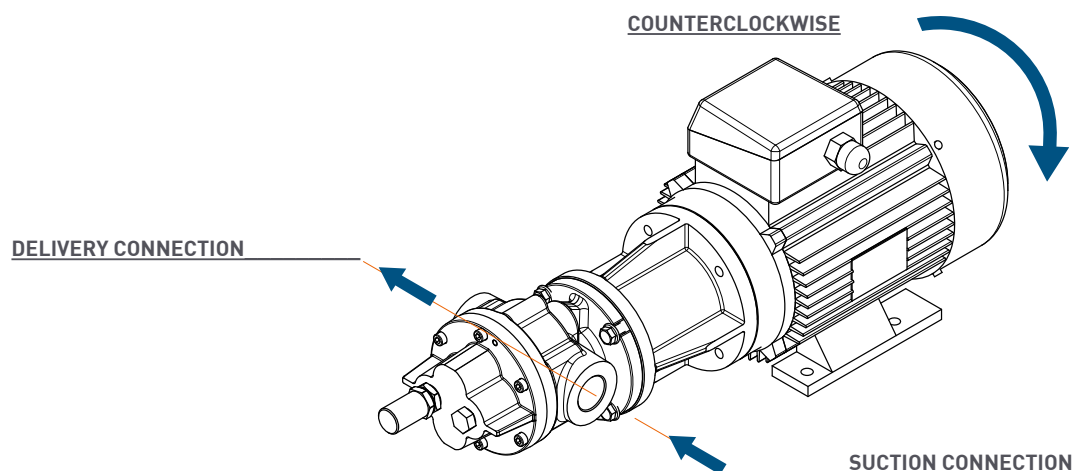
The standard version of BFC pumps, can operate only in one direction of rotation: counterclockwise watching the pump shaft end.

The direction of rotation of the motor, when properly connected to the mains, is shown by an arrow placed on

the fan cover. Watching the electric motor fan, the flow direction will be from the left side to the right side and the pressure side (delivery) will be at the right-hand side.

On request a clockwise version can be supplied.

Fig. 404 – BFC Series - Sense of rotation and flow direction



4.4 SHAFT-END SEALS

The standard version is fitted with mechanical seal in ceramic-graphite-FPM. A number of different seals materials can be supplied for different liquids and operating temperatures.

On request:

- Radial lip-type seal in FPM (Viton), NBR or PTFE (Teflon)
- Seal for high temperatures up to 200°C
- Reversible mechanical seal

Fig. 405 – Mechanical seal

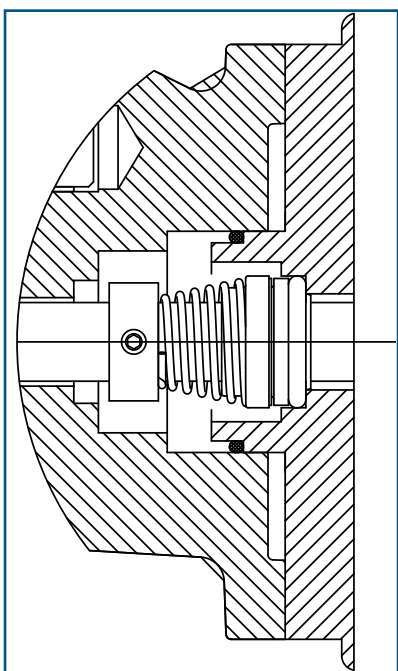
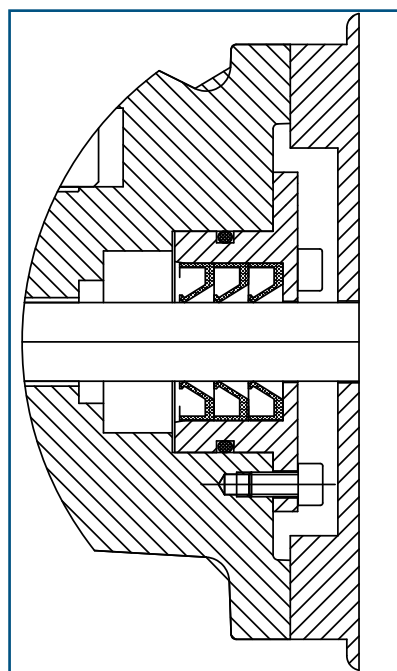


Fig. 406 – Lip seal



4.5 PRESSURE RELIEF VALVE

BMF, BCF, BFC pumps are supplied with a brass pressure relief valve as a standard.

It may be used as a safety valve only for short-term operations. When a partial discharge flow has to be drained over a prolonged period of time, a separate by-pass valve with return to the suction tank has to be installed into the piping.

The pressure relief valve is designed as a spring-preloaded piston valve. It is integrated into the pump's end cover.

The spring pretension and the relative opening pressure can be adjusted by means of a screw. Different springs are

also available to reach the desired adjustment range. The pressure relief valve is available on request in stainless steel construction.

There is the possibility of mounting a double relief valve: when it is necessary to have a reversible pump that works both in inlet and outlet. In this case it is compulsory to mount a reversible mechanical seal.

The relief valve holes and circuit, can be used as a heating solution when needed. In this case it is not possible to mount the relief valve.

As an option the pumps can be supplied without relief valve.

4.6 VERSION FOR AGGRESSIVE LIQUIDS AND ENVIRONMENTS

BMF, BCF, BFC pumps can be supplied in a corrosion and acid-resistant construction.

Stainless-steel version

Pump housing, cover, shafts and gears in stainless steel and sleeve bushings in AISI 316-Bronze-PTFE.

Bronze version

Pump housing and cover in bronze, shaft and gears in stainless

steel, and sleeve bushings in AISI 316-Bronze-PTFE.

Seals and gaskets materials are chosen according to the liquid pumped.

Many combinations suitable for corrosive liquids and aggressive environment can be supplied as follows:

- Gears in bronze
- Sleeve bushings in PTFE or Tecapeek on BFC series

4.7 MOTORIZATION

The most common installed electric motors have the following characteristics:

- Standard motors for BMF, BCF serie in IP55, insulation class F available at 4 and 6 poles
- Standard motors for BFC serie in IP55, insulation class F available at 4, 6 and 8 poles
- Standard voltages for Three-phase motors $\leq 4\text{kW}$ 230/400V 50Hz - 265/460V 60Hz
- Standard voltages for Single-phase motors 230V 50Hz.

Special options on electric motors:

- Motors with built-in frequency converter (only for BFC serie)
- Motors suitable for frequency converter connection
- Motor with forced ventilation (only for BFC serie)
- Tropicalization

- Special voltages
- Protection IP56/IP65
- Protection IP67/IP68 (only for BFC serie)
- Thermistors PTC
- Special treatment for corrosive and saline environment
- Motors according to UL-CSA, NEMA, cURus and Marine regulations
- Insulation class H
- Motor form B35 (only for BFC serie)

Special motors only for BFC serie:

- Internal combustion engines
- Gearmotor
- Mechanical variator
- DC motors at 12V and 24V

4.8 ACCESSORIES

- Pump on trolley
- Control panel
- ON/OFF switches
- Reversing switches
- Piping
- Heated piping
- Valves
- Pressure gauge and pressure switch
- Electric cables

4.9 PUMP SELECTION AND PERFORMANCE DATA

In table 403 are listed the actual delivery Q_{eff} and required power P_{mec} for each pump size at different speeds and pressures.

The data refers to a mineral oil ISO46 (Kinematic viscosity 46 cSt at 40°C).

The rated power for the drive motor should be 20% higher than the required power P_{mec} .

For different viscosities please ask the performances (delivery and power) to our Technical department.

As a general rule the flow rate is approximately proportional to the speed.

A lower viscosity may lead to a loss of the net delivery and a higher viscosity may lead to an increase of the net delivery.

When dimensioning please consider the maximum viscosity, usually at the start-up phase.

Pump selection, delivery and required power at different speeds:

- 1) Given the project delivery Q_{pro} [L/min] and speed n_{pro} [1/min] calculate the project displacement V_{pro} [cm³/rev]:

$$V_{\text{pro}} = 1000 \times Q_{\text{pro}} / n_{\text{pro}}$$

- 2) Select the Pump Type with the geometrical displacement V_{geo} closer to V_{pro} ,

- 3) Read from the Performance Table the delivery at 1450 1/min and at the given pressure p:

$$Q_{1450, p} \text{ [L/min]}$$

- 4) Calculate the actual delivery Q [L/min] at n_{pro} and p:

$$Q = Q_{1450, p} + V_{\text{geo}} \times (n_{\text{pro}} - 1450) / 1000$$

- 5) Read from the Performance Table the required power and actual delivery of the selected Pump Type at the closer speed n_x to n_{pro} and at p:

$$P_{n_x, p} \text{ [kW]}, Q_{n_x, p} \text{ [L/min]}$$

- 6) Calculate the actual required power P at n_{pro} and p [kW]:

$$P = P_{n_x, p} \times Q / Q_{n_x, p}$$

Tab. 403 - Performance data at 690, 830, 950, 1150, 1450, 1750 1/min and 46 cSt

PUMP SIZE (BMF, BCF, BFC)	Geometrical displacement V_{geo} [cm ³ /rev]	Pressure P [bar]	Speed n [1/min]											
			690		830		950		1150		1450		1750	
			Q_{eff} [L/min]	P_{mec} [kW]	Q_{eff} [L/min]	P_{mec} [kW]	Q_{eff} [L/min]	P_{mec} [kW]	Q_{eff} [L/min]	P_{mec} [kW]	Q_{eff} [L/min]	P_{mec} [kW]	Q_{eff} [L/min]	P_{mec} [kW]
2	1.5	2	1.0	0.02	1.2	0.02	1.3	0.03	1.6	0.03	2.0	0.04	2.5	0.05
		5	0.9	0.04	1.0	0.05	1.2	0.05	1.5	0.06	1.9	0.08	2.3	0.10
		10	0.7	0.08	0.8	0.09	1.0	0.10	1.2	0.12	1.6	0.14	2.0	0.18
		12	0.6	0.09	0.8	0.11	0.9	0.12	1.2	0.14	1.5	0.16	1.9	0.21
3	2.1	2	1.4	0.02	1.7	0.03	1.9	0.03	2.3	0.04	2.9	0.05	3.6	0.07
		5	1.2	0.05	1.5	0.06	1.8	0.07	2.2	0.08	2.8	0.11	3.4	0.13
		10	1.0	0.10	1.3	0.11	1.5	0.13	1.9	0.16	2.5	0.19	3.1	0.22
		12	1.0	0.11	1.2	0.14	1.4	0.15	1.8	0.18	2.3	0.22	2.9	0.26
4	3.0	2	2.0	0.02	2.4	0.03	2.7	0.03	3.3	0.04	4.2	0.06	5.0	0.07
		5	1.8	0.05	2.2	0.06	2.5	0.07	3.1	0.09	4.0	0.11	4.8	0.14
		10	1.6	0.11	1.9	0.13	2.3	0.14	2.8	0.17	3.6	0.21	4.5	0.25
		12	1.5	0.13	1.8	0.15	2.2	0.17	2.7	0.20	3.5	0.25	4.3	0.29
5	4.6	2	3.0	0.03	3.7	0.04	4.2	0.05	5.1	0.06	6.4	0.08	6.4	0.08
		5	2.9	0.08	3.5	0.09	4.0	0.11	4.9	0.13	6.2	0.17	6.2	0.17
		10	2.6	0.2	3.2	0.19	3.7	0.21	4.5	0.26	5.8	0.32	5.8	0.32
		12	2.5	0.2	3.1	0.22	3.5	0.26	4.4	0.31	5.6	0.38	5.6	0.38
10	9.1	2	6.1	0.05	7.3	0.06	8.4	0.07	10.2	0.08	12.9	0.11	15.6	0.14
		5	5.8	0.11	7.0	0.14	8.0	0.16	9.8	0.2	12.4	0.2	15.1	0.3
		10	5.3	0.2	6.5	0.3	7.4	0.3	9.1	0.4	11.6	0.5	14.2	0.6
		12	5.1	0.3	6.2	0.3	7.2	0.4	8.8	0.5	11.3	0.6	13.8	0.7
15	13.6	2	8.9	0.1	10.8	0.1	12.3	0.1	15.0	0.1	19.0	0.2	23.0	0.2
		5	8.2	0.2	9.9	0.2	11.4	0.3	14.0	0.3	17.8	0.4	21.7	0.5
		10	6.9	0.4	8.5	0.4	9.9	0.5	12.3	0.6	15.9	0.7	19.6	0.9
		12	6.4	0.4	8.0	0.5	9.3	0.6	11.6	0.7	15.1	0.9	18.8	1.0
25	18.2	2	11.9	0.1	14.4	0.1	16.5	0.1	20.1	0.1	25.5	0.2	30.9	0.2
		5	10.9	0.2	13.3	0.2	15.3	0.3	18.8	0.3	24.1	0.4	29.5	0.5
		10	9.2	0.3	11.5	0.4	13.4	0.5	16.8	0.6	21.9	0.8	27.2	1.0
		12	8.6	0.4	10.7	0.5	12.6	0.6	15.9	0.7	21.0	0.9	26.3	1.1
35	26.7	2	18.0	0.1	21.6	0.1	24.8	0.2	30.1	0.2	38.0	0.3	45.9	0.4
		5	17.3	0.3	20.9	0.3	24.0	0.4	29.1	0.5	36.9	0.6	44.7	0.8
		10	16.2	0.6	19.6	0.7	22.6	0.8	27.6	0.9	35.1	1.2	42.7	1.4
		12	15.7	0.7	19.1	0.8	22.0	0.9	26.9	1.1	34.4	1.4	41.9	1.7
50	38.0	2	25.5	0.2	30.8	0.2	35.4	0.3	43.0	0.3	54.5	0.5	65.8	0.6
		5	24.4	0.4	29.7	0.5	34.3	0.6	42.0	0.7	53.5	0.9	64.7	1.1
		10	22.7	0.7	27.9	0.9	32.5	1.0	40.2	1.3	51.9	1.6	62.9	2.0
		12	22.0	0.9	27.2	1.1	31.8	1.2	39.5	1.5	51.3	1.9	62.2	2.3
60	46.3	2	31.2	0.3	37.6	0.3	43.2	0.4	52.4	0.5	66.5	0.7	80.3	0.9
		5	30.1	0.6	36.4	0.7	41.9	0.8	51.1	1.0	65.5	1.3	79.1	1.7
		10	28.2	1.2	34.4	1.4	39.8	1.5	48.9	1.8	63.9	2.3	77.2	2.9
		12	27.5	1.4	33.6	1.6	39.0	1.8	48.1	2.1	63.2	2.7	76.5	3.4
70	51.0	2	33.6	0.2	40.5	0.3	46.5	0.3	56.5	0.4	71.6	0.6	86.6	0.7
		5	31.9	0.5	38.7	0.6	44.6	0.7	54.5	0.9	69.5	1.1	84.6	1.4
		10	29.2	1.0	35.7	1.2	41.5	1.3	51.2	1.6	66.0	2.1	81.1	2.5
		12	28.0	1.1	34.5	1.4	40.2	1.6	49.9	1.9	64.6	2.5	79.8	3.0

Different viscosities, working pressure, rotational speed and ambient conditions can change performance data shown in the table.

4.10 INTEGRATED ELECTRIC MOTORS AVAILABLE ON PUMPS BMF AND BCF

Tab. 404 - Rated Data for integrated electric motors available on pumps BMF – Three-phase 400V / 50Hz

Pole	Frame Size	Power [kW]	IE	Speed [1/min]	Current [A]	Available on Pump BMF Size						
4	63	0.13	1	1360	0,50	2	3	4				
	63	0.18	1	1325	0,70							
	63	0.25	1	1360	0,90				5	(*)		
	71	0.37	1	1380	1,00					10	15	
	71	0.55	1	1395	1,55							
	80	0.75	3	1425	1,70						25	(*)
	90	1.10	3	1440	2,50							
	90	1.50	3	1430	3,60						35	50
	90	1.80	3	1420	4,30							60 70
6	71	0.18	1	880	0,90				5			
	71	0.26	1	870	1,20					10		
	80	0.37	1	910	1,25						15	25
	80	0.55	1	920	1,57							
	90	0.75	3	935	2,00							(*)
	90	1.10	3	935	3,10						35	50 60 70

(*) Mechanically different motors.

Tab. 405 - Rated Data for integrated electric motors available on pumps BCF – Single-phase 230V / 50Hz

Pole	Frame Size	Power [kW]	IE	Speed [1/min]	Current [A]	Available on Pump BCF Size						
4	63	0.11	1	1400	1.20	2	3	4				
	63	0.18	1	1350	1.70							
	71	0.29	1	1300	2.40				5	10	15	
	71	0.37	1	1370	3.20							
	80	0.55	1	1390	4.20						25	
	80	0.75	1	1445	5.10						(*)	
	90	1.10	1	1430	7.30							
	90	1.50	1	1430	9.30						35	50 60 70
6	71	0.18	1	870	1.80				5			
	80	0.25	1	900	2.40					10		
	80	0.37	1	940	3.00						15	
	90	0.55	1	950	3.60							25

(*) Mechanically different motors.

Tab. 406 - Rated Data for integrated electric motors available on pumps BMF – Three-phase 460V / 60Hz

Pole	Frame Size	Power [kW]	IE	Speed [1/min]	Current [A]	Available on Pump BMF Size									
4	63	0.15	1	1630	0.50	2	3	4							
	63	0.22	1	1590	0.70										
	63	0.30	1	1630	0.90	5	10	15							
	71	0.37	1	1700	0.88										
	71	0.55	1	1715	1.40	25	35	50							
	80	0.75	3	1735	1.50										
	90	1.10	2	1745	2.30	60	70								
	90	1.50	2	1740	3.30										
	90	1.80	2	1730	4.10	5	10	15	25	35	50	60	70		
6	71	0.22	1	1060	0.90										
	71	0.30	1	1040	1.20	15	25	35	50	60	70				
	80	0.44	1	1090	1.25										
	80	0.55	1	1135	1.44	25	35	50	60	70					
	90	0.75	3	1150	1.75										
	90	1.10	1	1130	2.70	35	50	60	70						

(*) Mechanically different motors.

4.11 SOUND LEVEL

The sound level has been measured in dB(A) at 1m distance, at 1450 1/min with gear oil (viscosity 46 cSt).

Tab. 407- Sound level

PUMP SIZE (BMF, BCF, BFC)	Sound level dB(A) at pressure			
	2 bar	5 bar	10 bar	12 bar
2	64	64	64	65
3	64	64	64	65
4	64	64	64	65
5	71	72	72.5	72.5
10	71	72	72.5	72.5
15	71	72	72.5	72.5
25	71	72	72.5	72.5
35	72	72	74	74
50	72	72	74	74
60	72	72	74	74
70	72	72	74	74

4.12 OVERALL DIMENSIONS AND WEIGHTS

4.12.1 BMF, BCF

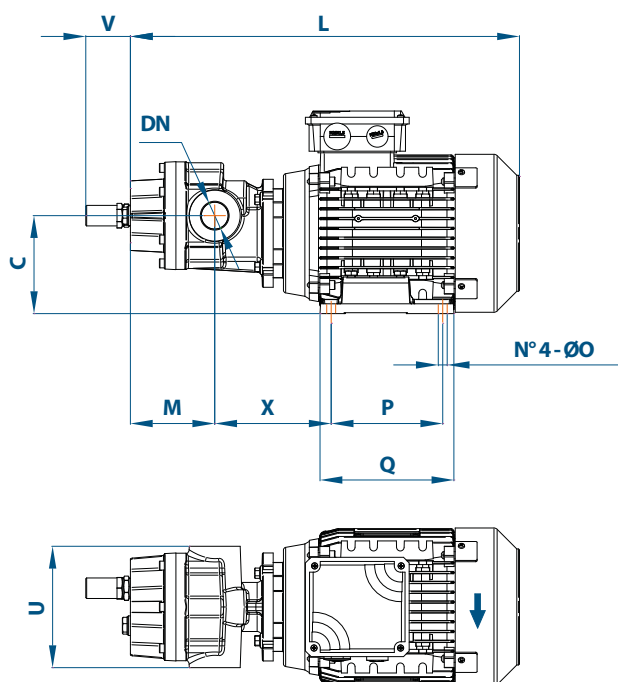
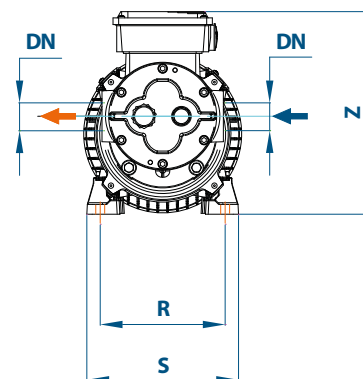


Fig. 407 - BMF, BCF dimensional drawing



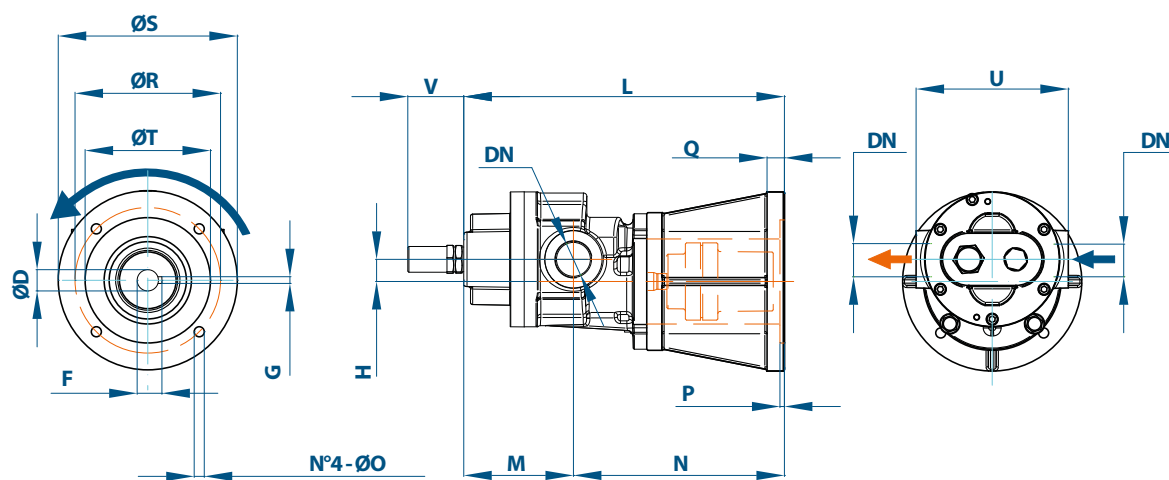
Tab. 408 - BMF, BCF overall dimensions and weights

PUMP SIZE (BMF, BCF)	with IEC electric motor		DN ISO 228-1	C	L (*)	M	O	P	Q (*)	R	S (*)	U	V	X	Z (*)	Weight [kg]
	Frame size	IM														
2	63	B34	G 3/8"	74	266	49	7	80	100	100	120	85	50	69.5	165	6.2
3	63	B34	G 3/8"	74	268.5	52	7	80	100	100	120	85	50	69.5	165	6.3
4	63	B34	G 3/8"	74	272.5	56	7	80	100	100	120	85	50	69.5	165	6.5
5	63	B34	G 1/2"	78.5	298	61	7	80	100	100	120	113	50	90	165	8
	71	B34	G 1/2"	86.5	326	61	8	90	116	112	142	113	50	95	182	9.8
10	63	B34	G 3/4"	78.5	318	66	7	80	100	100	120	113	50	105	165	8.6
	71	B34	G 3/4"	86.5	346	66	8	90	116	112	142	113	50	110	182	10.4
	80	B34	G 3/4"	95.5	397	66	10	100	130	125	160	113	50	115	200	13.7
15	71	B34	G 3/4"	86.5	356	76	8	90	116	112	142	113	50	110	182	11
	80	B34	G 3/4"	95.5	407	76	10	100	130	125	160	113	50	115	200	14.3
	90	B34	G 3/4"	105.5	447	76	10	125	153	140	170	113	50	121	238	20
25	71	B34	G 3/4"	91	366	85.5	8	90	116	112	142	113	50	110.5	182	11.5
	80	B34	G 3/4"	100	417	85.5	10	100	130	125	160	113	50	115.5	200	14.8
	90	B34	G 3/4"	110	457	85.5	10	125	153	140	170	113	50	121.5	238	20.5
35	80	B34	G 1"	100	427	95.5	10	100	130	125	160	136	50	115.5	200	16.7
	90	B34	G 1"	110	467	95.5	10	125	153	140	170	136	50	121.5	238	22.4
50	90	B34	G 1"	110	466	94.5	10	125	153	140	170	136	50	121.5	238	22.6
60	90	B34	G 1 1/4"	110	476	104.5	10	125	153	140	170	136	50	121.5	238	22.8
70	90	B34	G 1 1/4"	110	476	104.5	10	125	153	140	170	136	50	121.5	238	23

Dimensions in mm; tolerances allowed; (*) = depends on the motor manufacturer.

4.12.2 BFC

Fig. 408 - BFC dimensional drawing



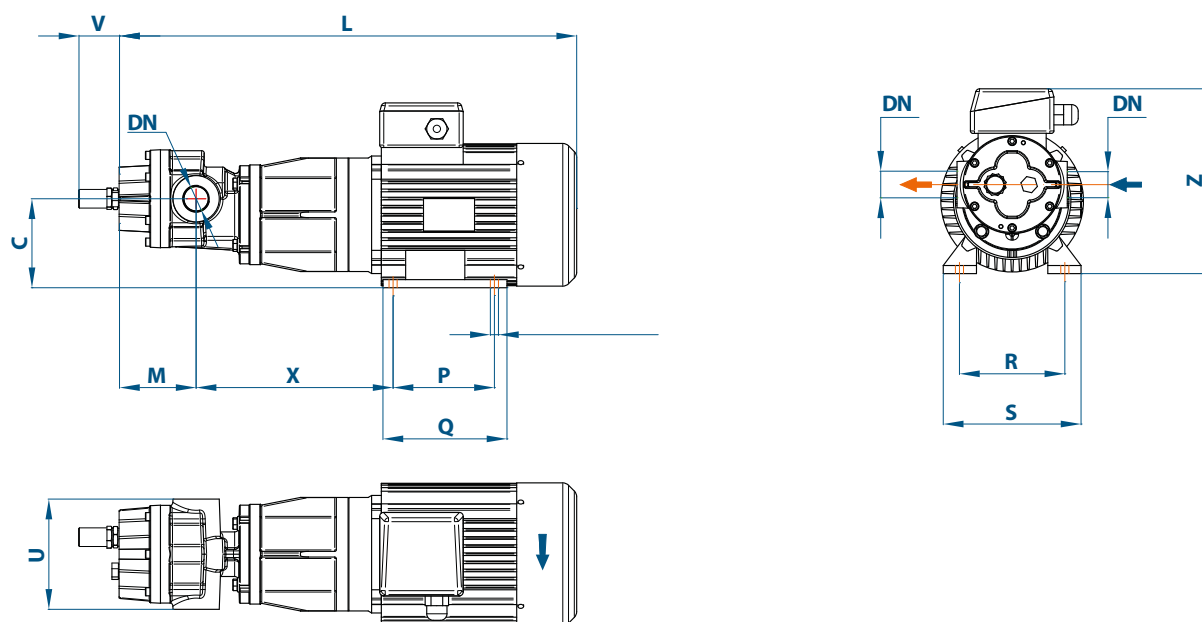
Tab. 409 - BFC overall dimensions and weights

PUMP SIZE (BFC)	for IEC electric motor		DN ISO 228-1	D	F	G	H	L	M	N	O	P	Q	R	S	T	U	V	Weight [kg]
	Frame size	IM																	
2	56	B34	G 3/8"	11	12,8	4	11	155,5	49	106,5	5,5	4	8	65	80	50	85	50	2,6
	63	B34	G 3/8"	11	12,8	4	11	155,5	49	106,5	5,5	4	8	75	90	60	85	50	2,6
	71	B34	G 3/8"	11	12,8	4	11	163,5	49	114,5	5,5	4	8	85	105	70	85	50	2,6
3	56	B34	G 3/8"	11	12,8	4	11	158,5	52	106,5	5,5	4	8	65	80	50	85	50	2,7
	63	B34	G 3/8"	11	12,8	4	11	158,5	52	106,5	5,5	4	8	75	90	60	85	50	2,7
	71	B34	G 3/8"	11	12,8	4	11	166,5	52	114,5	5,5	4	8	85	105	70	85	50	2,7
4	56	B34	G 3/8"	11	12,8	4	11	162,5	56	106,5	5,5	4	8	65	80	50	85	50	2,8
	63	B34	G 3/8"	11	12,8	4	11	162,5	56	106,5	5,5	4	8	75	90	60	85	50	2,8
	71	B34	G 3/8"	11	12,8	4	11	170,5	56	114,5	5,5	4	8	85	105	70	85	50	2,8
5	71	B34	G 1/2"	14	16,3	5	15,5	234	61	173	6,5	4	15,5	85	105	70	113	50	5,5
	80	B34	G 1/2"	14	16,3	5	15,5	234	61	173	6,5	4	15,5	100	120	80	113	50	5,5
10	71	B34	G 3/4"	14	16,3	5	15,5	254	66	188	6,5	4	15,5	85	105	70	113	50	6,3
	80	B34	G 3/4"	19	21,8	6	15,5	254	66	188	6,5	4	15,5	100	120	80	113	50	6,3
15	71	B34	G 3/4"	14	16,3	5	15,5	264	76	188	6,5	4	15,5	85	105	70	113	50	6,8
	80	B34	G 3/4"	19	21,8	6	15,5	264	76	188	6,5	4	15,5	100	120	80	113	50	6,8
25	71	B34	G 3/4"	19	21,8	6	15,5	274	85,5	188,5	6,5	4	15,5	100	120	80	113	50	7,3
	80	B34	G 3/4"	19	21,8	6	15,5	274	85,5	188,5	6,5	4	15,5	100	120	80	113	50	7,3
	90	B34	G 3/4"	24	27,3	8	15,5	274	85,5	188,5	9	4	15,5	115	140	95	113	50	7,6
35	80	B34	G 1"	19	21,8	6	20	284	95,5	188,5	6,5	4	15,5	100	120	80	136	50	9,4
	90	B34	G 1"	24	27,3	8	20	284	95,5	188,5	9	4	15,5	115	140	95	136	50	9,6
	100	B34	G 1"	28	31,3	8	20	284	95,5	188,5	9	4	15,5	130	160	110	136	50	9,6
	112	B34	G 1"	28	31,3	8	20	284	95,5	188,5	9	4	15,5	130	160	110	136	50	9,6
50	90	B34	G 1"	24	27,3	8	20	283	94,5	188,5	9	4	15,5	115	140	95	136	50	9,7
	100	B34	G 1"	28	31,3	8	20	283	94,5	188,5	9	4	15,5	130	160	110	136	50	9,7
	112	B34	G 1"	28	31,3	8	20	283	94,5	188,5	9	4	15,5	130	160	110	136	50	9,7
60	90	B34	G 1 1/4"	24	27,3	8	20	293	104,5	188,5	9	4	15,5	115	140	95	136	50	10,2
	100	B34	G 1 1/4"	28	31,3	8	20	293	104,5	188,5	9	4	15,5	130	160	110	136	50	10,2
	112	B34	G 1 1/4"	28	31,3	8	20	293	104,5	188,5	9	4	15,5	130	160	110	136	50	10,2
70	90	B34	G 1 1/4"	24	27,3	8	20	293	104,5	188,5	9	4	15,5	115	140	95	136	50	10,3
	100	B34	G 1 1/4"	28	31,3	8	20	293	104,5	188,5	9	4	15,5	130	160	110	136	50	10,3
	112	B34	G 1 1/4"	28	31,3	8	20	293	104,5	188,5	9	4	15,5	130	160	110	136	50	10,3

Dimensions in mm; tolerances allowed.

4.12.3 BFC with IEC electric motor

Fig. 409 - BFC dimensional drawing with motor



Tab. 410 - BFC with motor overall dimensions and weights

PUMP SIZE (BFC)	with IEC electric motor		DN	C	L (*)	M	O	P	Q (*)	R	S (*)	U	V	X	Z (*)	Weight [kg]
	Frame size	IM	ISO 228-1													
2	63	B34	G 3/8"	74	342.5	49	7	80	100	100	120	85	50	146.5	165	6.8
	71	B34	G 3/8"	82	378.5	49	8	90	116	112	142	85	50	159.5	182	8.6
3	63	B34	G 3/8"	74	345.5	52	7	80	100	100	120	85	50	146.5	165	6.9
	71	B34	G 3/8"	82	381.5	52	8	90	116	112	142	85	50	159.5	182	8.7
4	63	B34	G 3/8"	74	349.5	56	7	80	100	100	120	85	50	146.5	165	7
	71	B34	G 3/8"	82	377.5	56	8	90	116	112	142	85	50	151.5	182	8.8
5	71	B34	G 1/2"	86.5	449	61	8	90	116	112	142	113	50	218	182	11.5
	80	B34	G 1/2"	95.5	500	61	10	100	130	125	160	113	50	223	200	14.8
10	71	B34	G 3/4"	86.5	469	66	8	90	116	112	142	113	50	233	182	12.3
	80	B34	G 3/4"	95.5	520	66	10	100	130	125	160	113	50	238	200	15.6
15	71	B34	G 3/4"	86.5	479	76	8	90	116	112	142	113	50	233	182	12.8
	80	B34	G 3/4"	95.5	530	76	10	100	130	125	160	113	50	238	200	16.1
	90	B34	G 3/4"	105.5	570	76	10	125	153	140	170	113	50	244	238	21.8
25	71	B34	G 3/4"	86.5	489	85.5	8	90	116	112	142	113	50	233.5	182	13.3
	80	B34	G 3/4"	95.5	540	85.5	10	100	130	125	160	113	50	238.5	200	16.6
	90	B34	G 3/4"	105.5	580	85.5	10	125	153	140	170	113	50	244.5	238	22.6
35	80	B34	G 1"	100	550	95.5	10	100	130	125	160	136	50	238.5	200	18.7
	90	B34	G 1"	110	590	95.5	10	125	153	140	170	136	50	244.5	238	24.6
	100	B34	G 1"	120	641	95.5	12	140	170	160	202	136	50	251.5	257	40.6
50	90	B34	G 1"	110	589	94.5	10	125	153	140	170	136	50	244.5	238	24.7
	100	B34	G 1"	120	640	94.5	12	140	170	160	202	136	50	251.5	257	40.7
60	90	B34	G 1 1/4"	110	599	104.5	10	125	153	140	170	136	50	244.5	238	25.2
	100	B34	G 1 1/4"	120	650	104.5	12	140	170	160	202	136	50	251.5	257	41.2
	112	B34	G 1 1/4"	132	658	104.5	12	140	170	190	222	136	50	258.5	280	51.7
70	90	B34	G 1 1/4"	110	599	104.5	10	125	153	140	170	136	50	244.5	238	25.3
	100	B34	G 1 1/4"	120	650	104.5	12	140	170	160	202	136	50	251.5	257	41.3
	112	B34	G 1 1/4"	132	658	104.5	12	140	170	190	222	136	50	258.5	280	51.8

Dimensions in mm; tolerances allowed; (*) = depends on the motor manufacturer.

4.13 SPARE PARTS

Fig. 410 – BMF, BCF pumps (mechanical seal version)

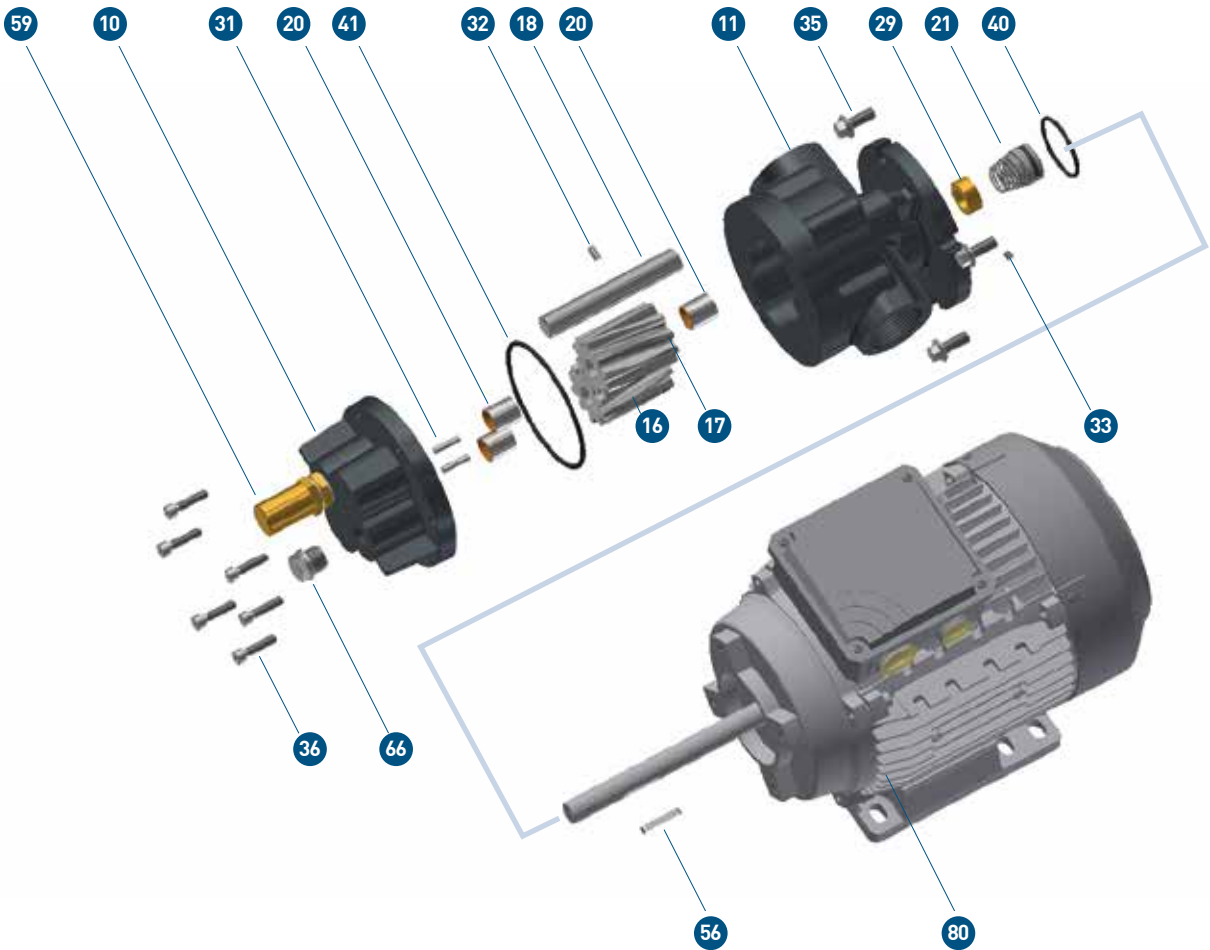


Fig. 308 – Pressure relief valve details

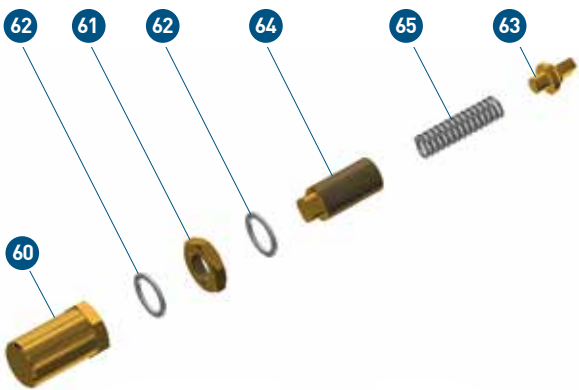


Fig. 411 – Lip seal details

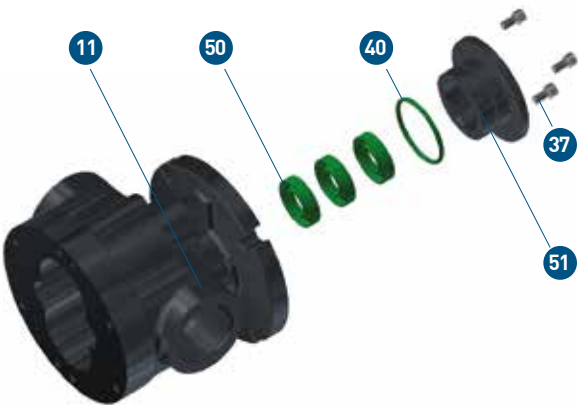
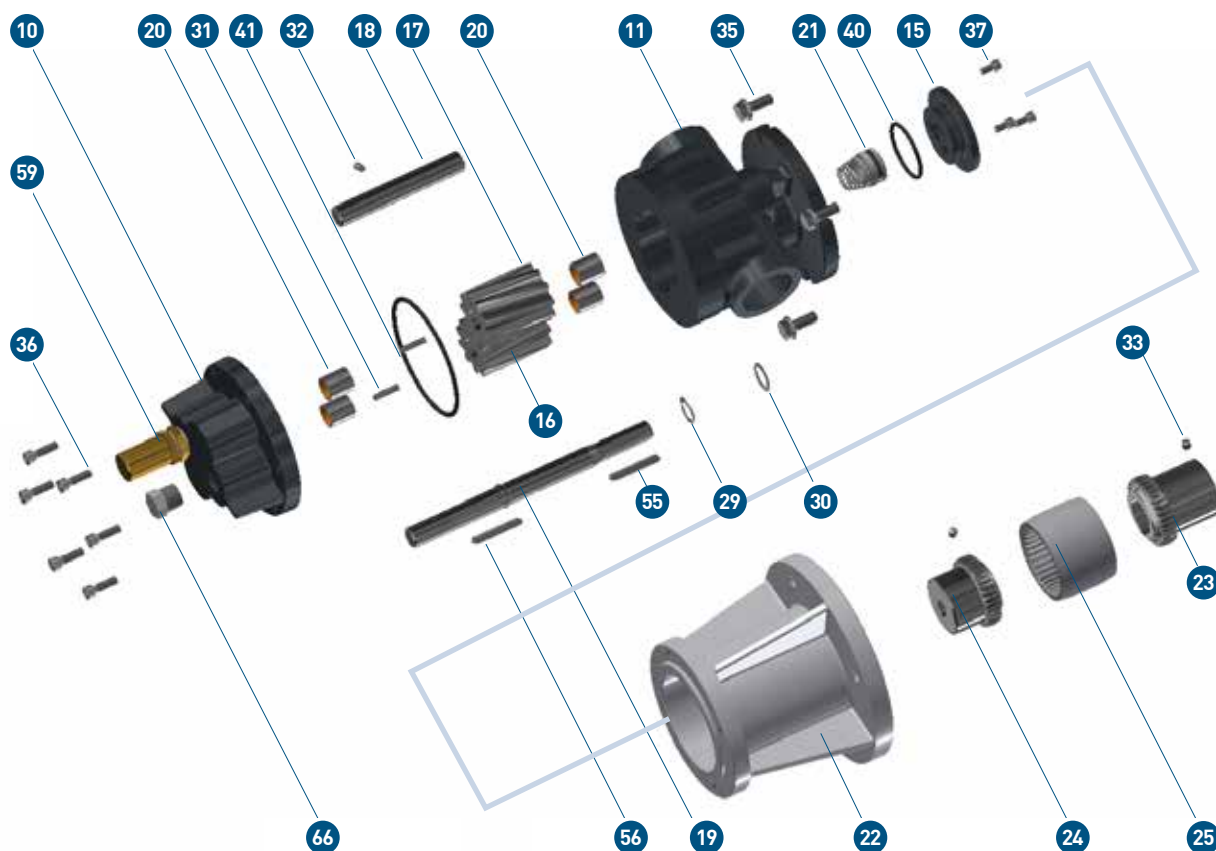


Fig. 412 – BFC pumps (mechanical seal version)



Tab. 411 - BMF, BCF, BFC part list

Ref.	Description	Ref.	Description	Ref.	Description	Ref.	Description
10	Pump rear cover	22	Bell housing	35	Screw	59	Relief valve kit
11	Pump housing	23	Half-coupling motor side	36	Screw	60	Valve cap
15	Mechanical seal housing	24	Half-coupling pump side	37	Screw	61	Valve locknut
16	Driving gear	25	Toothed sleeve	40	O-ring	62	Valve washer
17	Driven gear	29	Locking ring	41	O-ring	63	Valve poppet
18	Driven shaft	30	Ring seal	50	Lip seals	64	Valve adjusting screw
19	Driving shaft	31	Dowel pin	51	Lip seal housing	65	Valve spring
20	Sleeve bushings	32	Dowel pin	55	Feather key	66	Threaded cap
21	Mechanical seal	33	Grub screw	56	Feather key	80	Electric motor