



EV SERIES 50 HZ

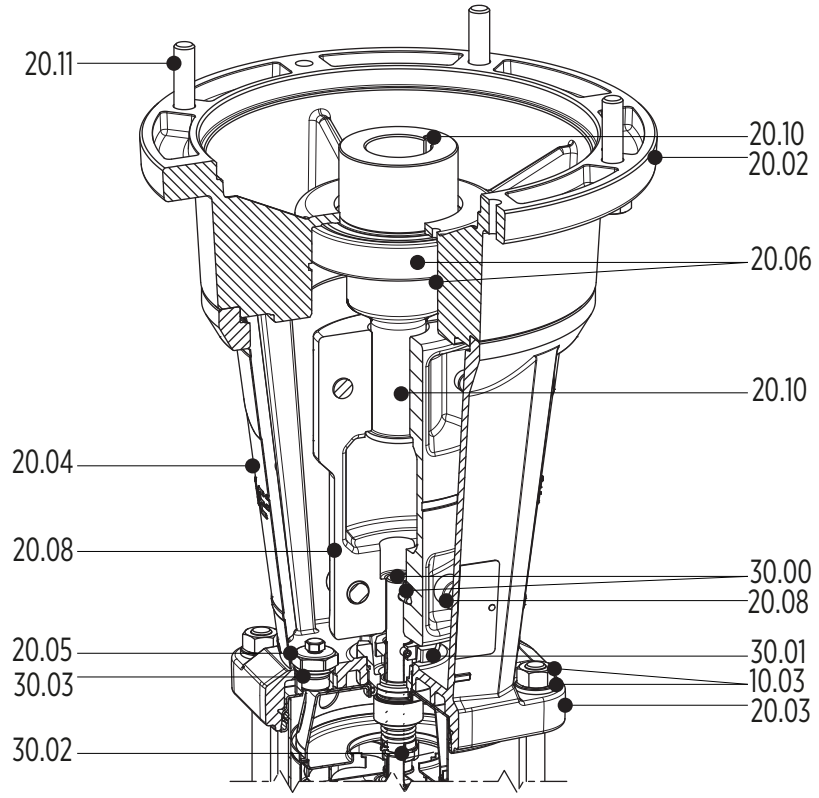
VERTICAL MULTISTAGE PUMPS



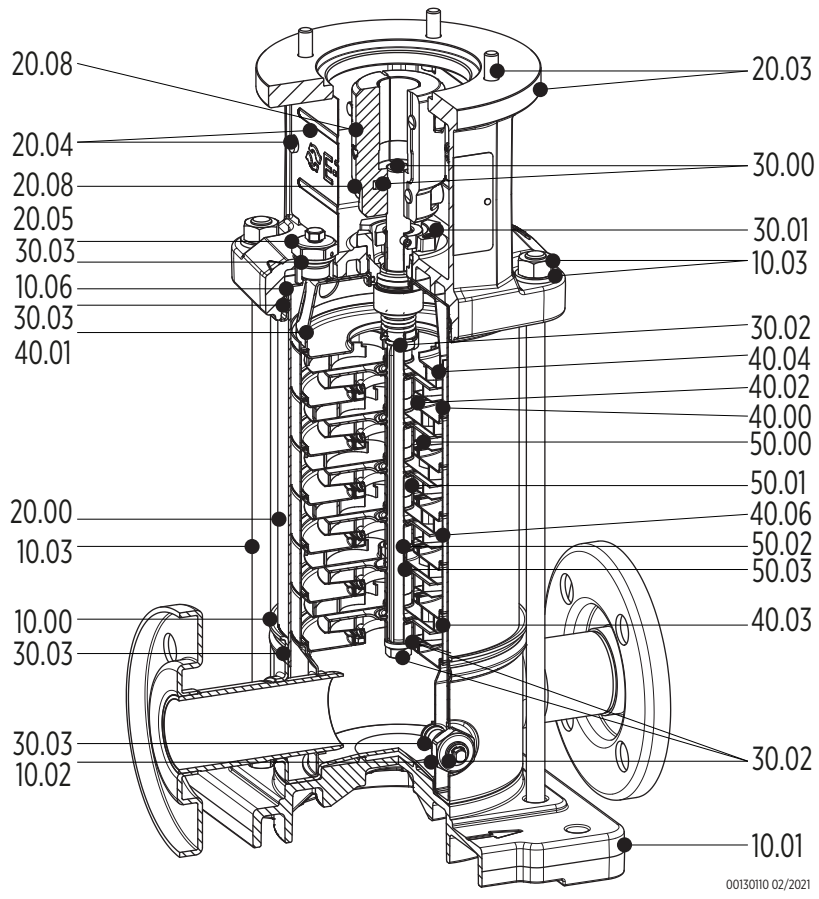
Spare parts and materials

EV 1-3-6-10

CONFIGURATION 5.5 KW AND ABOVE
WITH THRUST BEARING



CONFIGURATION UP TO 4 KW
WITHOUT THRUST BEARING



00130110 02/2021

PARTS IN CONTACT WITH LIQUID

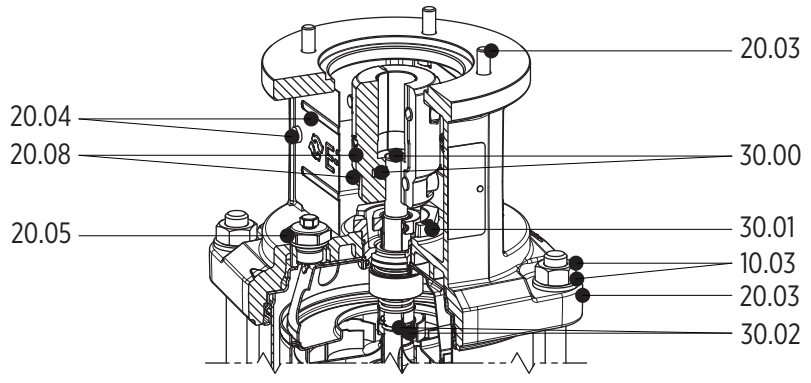
Ref. No	Parts description	Material	Reference standard			
			I version		N version	
			ASTM	DIN/EN	ASTM	DIN/EN
10.00	Pump casing	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
10.02	Drain plug	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
10.06	Upper flange	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
20.00	Outer case	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
20.05	Filling plug	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
30.00	Pump shaft & Pin	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
30.01	Cartridge mechanical seal	Stainless Steel / Carbon graphite / Silicon Carbide / EPDM				
30.02	Mechanical seal fastening kit	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
30.03	Kit O-rings	EPDM				
40.00	Stage housing and diffuser	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
40.01	Stage Centering outlet	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
40.02	Floating neck ring	Stainless steel, PPS	AISI 304	1.4301	AISI 316	1.4401
40.03	Initial stage housing	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
40.04	Last Stage with diffuser	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
40.06	Stage housing and diffuser with bearing	Stainless Steel / Tungsten carbide (WC)	AISI 304	1.4301	AISI 316	1.4401
50.00	Impeller	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
50.01	Impeller spacer	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
50.02	Intermediate sleeve	Tungsten Carbide (WC)				
50.03	Intermediate sleeve spacer	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401

SPARE PARTS LIST

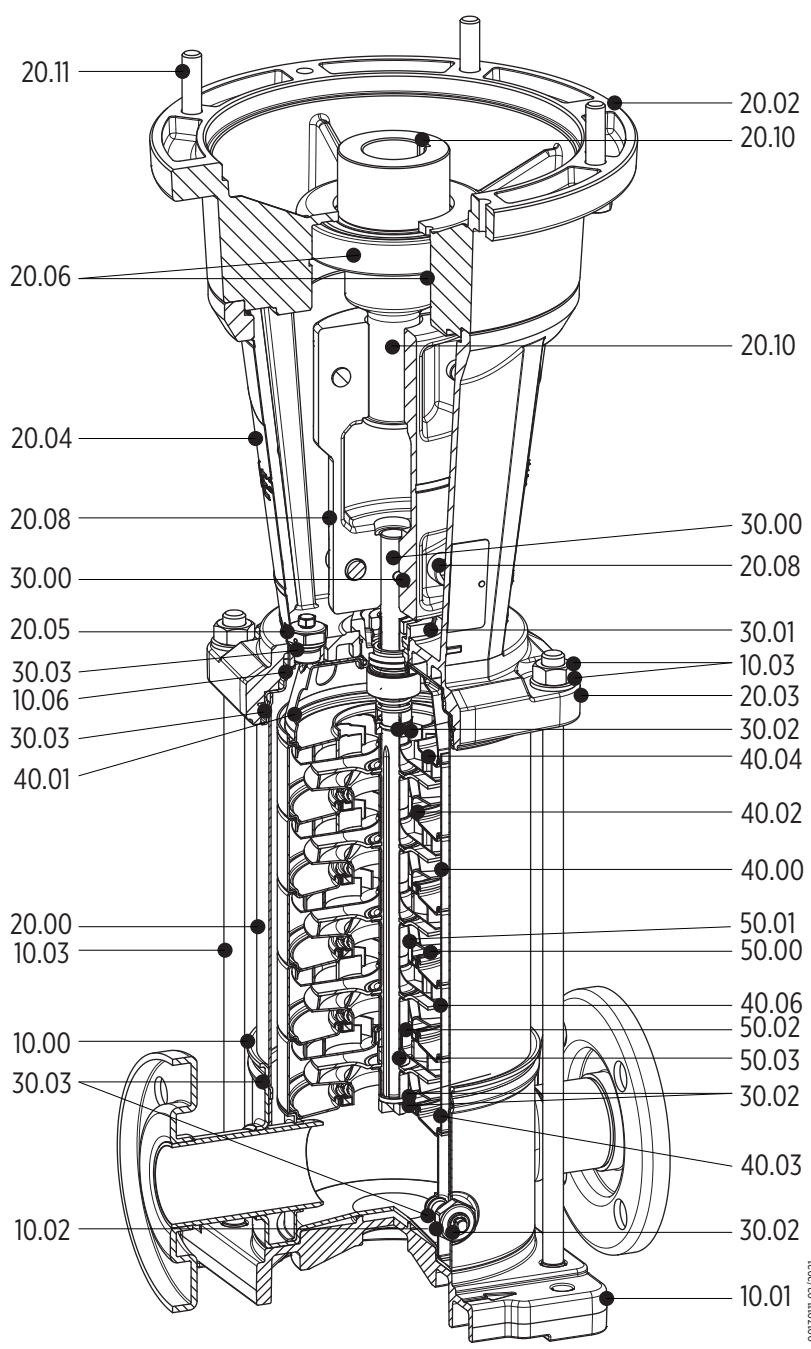
Ref. No	Parts description
10.00	Pump casing
10.01	Pump base
10.02	Drain plug
10.03	Tie bolts, washers and nuts
10.06	Upper flange
20.00	Outer case
20.02	Motor flange
20.03	Motor bracket
20.04	Coupling guard
20.05	Filling plug
20.06	Kit bearings
20.08	Coupling
20.10	Motor shaft adapter
20.11	Lifting eyelets and bolts

Ref. No	Parts description
30.00	Pump shaft & Pin
30.01	Cartridge mechanical seal
30.02	Kit screws, lower disks and rings
30.03	Kit O-rings
40.00	Stage housing and diffuser
40.01	Stage Centering outlet
40.02	Floating neck ring
40.03	Initial stage housing
40.04	Last Stage with diffuser
40.06	Stage housing and diffuser with bearing
50.00	Impeller
50.01	Impeller spacer
50.02	Intermediary sleeve
50.03	Intermediary sleeve spacer

EV 15-20



CONFIGURATION UP TO 4 KW
WITHOUT THRUST BEARING



CONFIGURATION 5.5 KW AND ABOVE
WITH THRUST BEARING

00030TH 02/2021

PARTS IN CONTACT WITH LIQUID

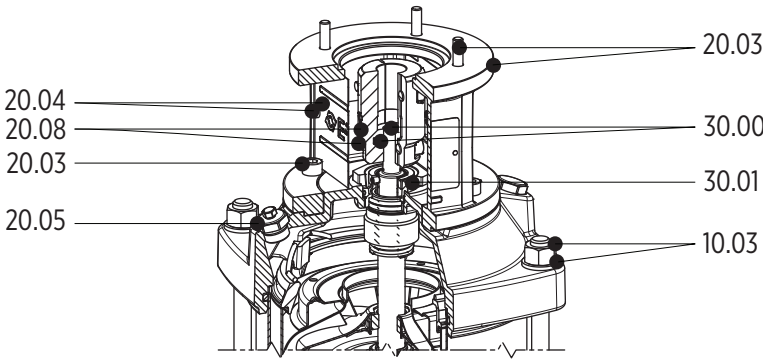
Ref. No	Parts description	Material	Reference standard			
			I version		N version	
			ASTM	DIN/EN	ASTM	DIN/EN
10.00	Pump casing	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
10.02	Drain plug	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
10.06	Upper flange	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
20.00	Outer case	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
20.05	Filling plug	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
30.00	Pump shaft & Pin	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
30.01	Cartridge mechanical seal	Stainless Steel / Carbon graphite / Silicon Carbide / EPDM				
30.02	Mechanical seal fastening kit	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
30.03	Kit O-rings	EPDM				
40.00	Stage housing and diffuser	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
40.01	Stage Centering outlet	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
40.02	Floating neck ring	Stainless steel, PPS	AISI 304	1.4301	AISI 316	1.4401
40.03	Initial stage housing	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
40.04	Last Stage with diffuser	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
40.06	Stage housing and diffuser with bearing	Stainless Steel / Tungsten carbide (WC)	AISI 304	1.4301	AISI 316	1.4401
50.00	Impeller	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
50.01	Impeller spacer	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
50.02	Intermediate sleeve	Tungsten Carbide (WC)				
50.03	Intermediate sleeve spacer	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401

SPARE PARTS LIST

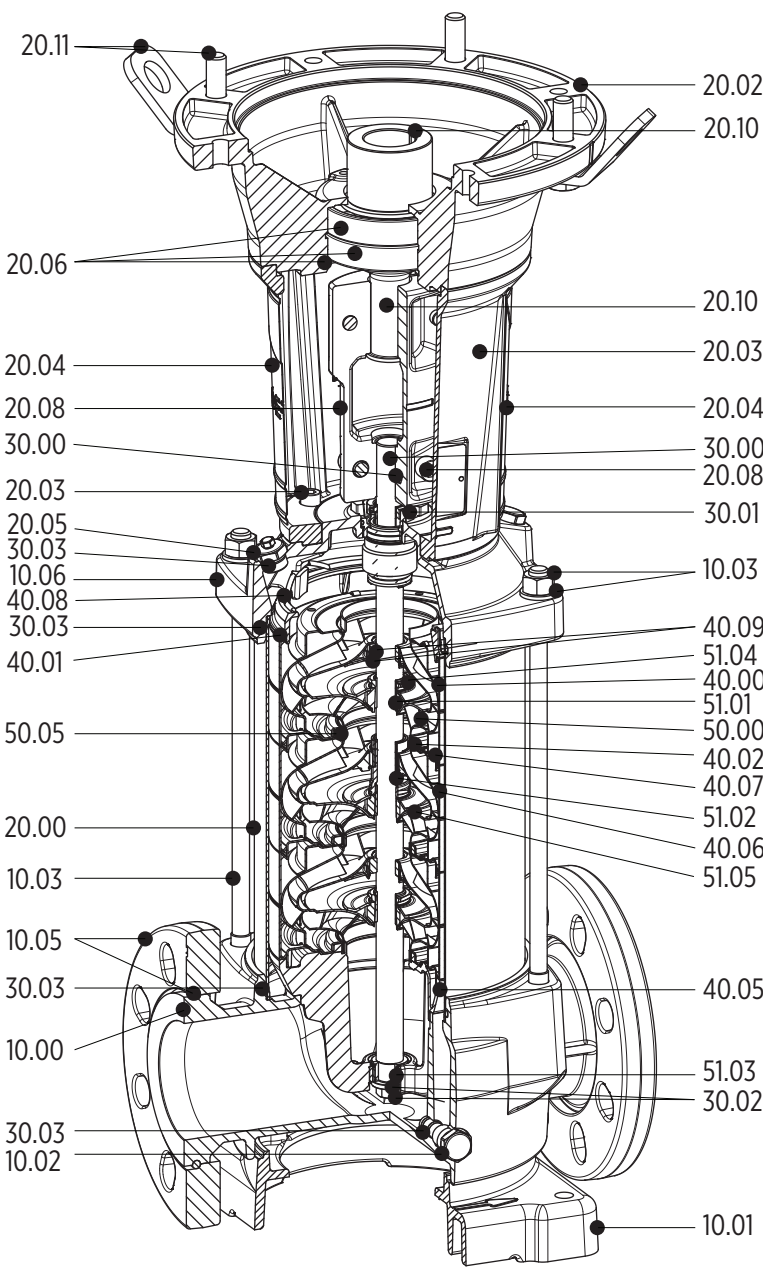
Ref. No	Parts description
10.00	Pump casing
10.01	Pump base
10.02	Drain plug
10.03	Tie bolts, washers and nuts
10.06	Upper flange
20.00	Outer case
20.02	Motor flange
20.03	Motor bracket
20.04	Coupling guard
20.05	Filling plugs
20.06	Kit bearings
20.08	Coupling
20.10	Motor shaft adapter
20.11	Lifting eyelets and bolts

Ref. No	Parts description
30.00	Pump shaft & Pin
30.01	Cartridge mechanical seal
30.02	Mechanical seal fastening kit
30.03	Kit O-rings
40.00	Stage housing and diffuser
40.01	Stage Centering outlet
40.02	Floating neck ring
40.03	Initial stage housing
40.04	Last Stage with diffuser
40.06	Stage housing and diffuser with bearing
50.00	Impeller
50.01	Impeller spacer
50.02	Intermediate sleeve
50.03	Intermediate sleeve spacer

EV 30-45-65-95



CONFIGURATION UP TO 4 KW
WITHOUT THRUST BEARING



CONFIGURATION 5.5 KW AND ABOVE
WITH THRUST BEARING

0013012 02/2021

PARTS IN CONTACT WITH LIQUID

Ref. No	Parts description	Material	Reference standard			
			G version		N version	
			ASTM	DIN/EN	ASTM	DIN/EN
10.00	Pump casing	Cast Iron / Stainless Steel	A48 Class 35	GJL-250	CF 8M / AISI 316	1.4408
10.02	Drain plug	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
10.06	Upper flange	Cast Iron / Stainless Steel	A48 Class 35	GJL-250	CF 8M / AISI 316	1.4408
20.00	Outer case	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
20.05	Filling plugs	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
30.00	Pump shaft & Pin	Stainless Steel	AISI 431	1.4057	AISI 329	1.4460
30.01	Cartridge mechanical seal	Stainless steel / Carbon graphite, Silicon Carbide / EPDM				
30.02	Mechanical seal fastening kit	Stainless Steel	AISI 316	1.4401	AISI 316	1.4401
30.03	Kit O-rings	EPDM				
40.00	Stage housing and diffuser	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
40.01	Stage Centering outlet (ONLY 65/95 vers.)	Stainless Steel	CF 8 / AISI 304	1.4308	CF 8M / AISI 316	1.4408
40.02	Floating neck ring	PTFE				
40.05	Inlet spider bearing	Stainless Steel / Tungsten Carbide (WC)	AISI 316	1.4401	AISI 316	1.4401
40.06	Stage housing and diffuser with bearing	Stainless Steel / Tungsten Carbide (WC)	AISI 304	1.4301	AISI 316	1.4401
40.07	Flange clamping neck ring	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
40.08	Spring ring	Stainless Steel	AISI 316	1.4401	AISI 316	1.4401
40.09	Secondary sleeve with ring	Stainless Steel, Carbon graphite	AISI 316	1.4401	AISI 316	1.4401
50.00	Impeller	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
50.05	Wear ring	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
51.01	Split cone	Stainless Steel	AISI 304	1.4301	AISI 316	1.4401
51.02	Intermediate sleeve nut	Stainless Steel / Tungsten Carbide (WC)	AISI 316	1.4401	AISI 316	1.4401
51.03	Journal sleeve	Stainless Steel / Tungsten Carbide (WC)	AISI 316	1.4401	AISI 316	1.4401
51.04	Split cone nut	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401
51.05	Intermediate impeller with screw	Stainless Steel	AISI 304	1.4301	AISI 316L	1.4401

SPARE PARTS LIST

Ref. No	Parts description
10.00	Pump casing
10.01	Pump base
10.02	Drain plug
10.03	Tie bolts, washers and nuts
10.05	Kit flanges ring
10.06	Upper flange
20.00	Outer case
20.02	Motor flange
20.03	Motor bracket
20.04	Coupling guard
20.05	Filling plugs
20.06	Kit bearings
20.08	Coupling
20.10	Motor shaft adapter
20.11	Lifting eyelets and bolts
30.00	Pump shaft & Pin
30.01	Cartridge mechanical seal

Ref. No	Parts description
30.02	Mechanical seal fastening kit
30.03	Kit O-rings
40.00	Stage housing and diffuser
40.01	Stage Centering outlet (ONLY 65/95 vers.)
40.02	Floating neck ring
40.05	Stage Centering inlet
40.06	Stage housing and diffuser with bearing
40.07	Flange clamping neck ring
40.08	Spring ring
40.09	Secondary sleeve with ring
50.00	Impeller
50.05	Wear ring
51.01	Split cone
51.02	Intermediate sleeve nut
51.03	Journal sleeve
51.04	Split cone nut
51.05	Intermediate impeller with screw

MOTORS

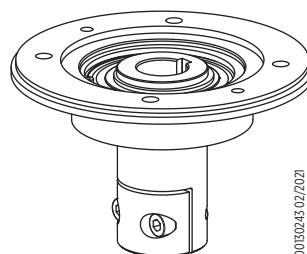
The pump must be coupled with a synchronous or asynchronous electric motor single-phase (up to 2.2 kW) or three-phase (up to 45 kW); dimensions according to IEC 60034-1 or Nema standard, based on motor type.

The default motors (Lafert brand) are Totally Enclosed Fan Cooled, air cooled, asynchronous, for non-explosive risk environments. However, explosion proof (ATEX) and three-phase synchronous motors are available on request.

The features of the original equipment motors up to 4 kW are indicated in the table below. If a different motor is used, it must have equivalent features. The drive-end side bearing must be blocked and the non drive-end side bearing must be spring loaded, otherwise you can order the up thrust bearing kit as optional device (see example in figure).

PTC 155 °C sensor are available on request from 0.75 kW up to 7.5 kW.

PTC is standard from 11 kW.



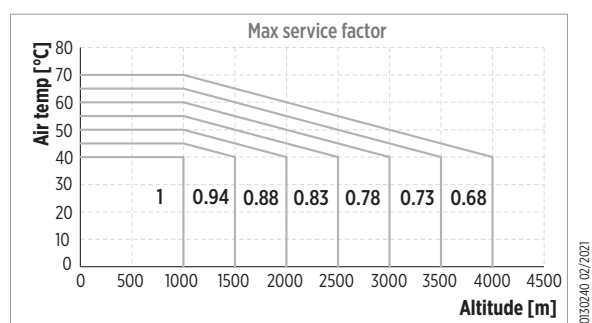
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For IEC 60034-1 standard, available:

MEC 71/ MEC 80 / MEC 90 / MEC 100-112

Power		Phases	IEC	Design	min ⁻¹	Pump side bearing	Starting torque [Nm]	N %
[kW]	[HP]							
SINGLE-PHASE MOTORS								
0.37	0.5	1	71	B14	2780	6203-2Z	1.0	57.6
0.55	0.75	1	71	B14	2740	6203-2Z	1.3	69.0
0.75	1	1	80	B14	2800	6204-2Z	1.6	65.0
1.1	1.5	1	80	B14	2730	6204-2Z	1.9	74.0
1.5	2	1	90	B14	2835	6205-2Z	2.6	73.0
2.2	3	1	90	B14	2770	6205-2Z	1.5	73.0
THREE-PHASE MOTORS								
0.37	0.5	3	71	B14	2810	6203-2Z	3.6	69.5
0.55	0.75	3	71	B14	2790	6203-2Z	3.2	74.1
0.75	1	3	80	B14	2910	6204-2Z	12	82.0
1.1	1.5	3	80	B14	2870	6204-2Z	18	82.7
1.5	2	3	90	B14	2875	6205-2Z	18	84.2
2.2	3	3	90	B14	2880	6205-2Z	29	86.5
3	4	3	100	B14	2900	6206-2Z	54	87.1
4	5.5	3	112	B14	2900	6206-27	66	88.1

HEAVY DUTY MOTOR SIZING



All values indicated on motor label and in the table refer to clean water and maximum working temperature according to the nameplate.

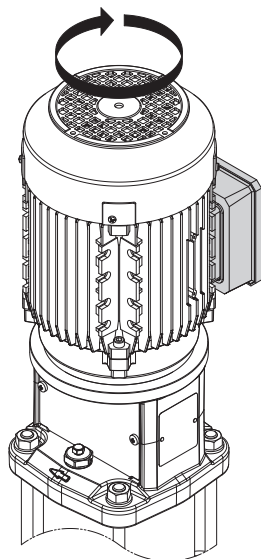
In case of high density and viscous liquids, please contact the manufacturer. When the ambient temperature and/or altitude overcome the nameplate values, it's necessary to reduce the motor service factor below the nominal power.

The graph shows how to choose the right maximum service factor applicable (share of the nominal power).

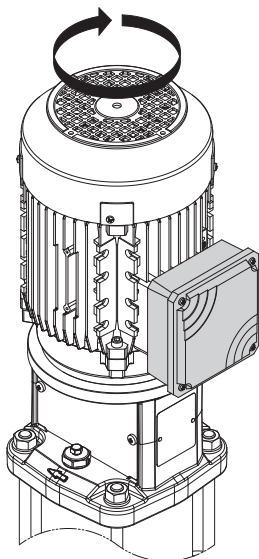
TERMINAL BOX POSITION *

It's possible to rotate the position of the motor in order to change the position of the terminal box.

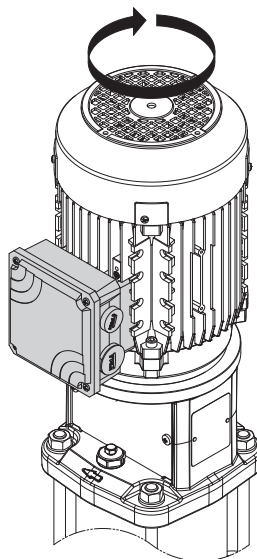
* See operation manual for instructions



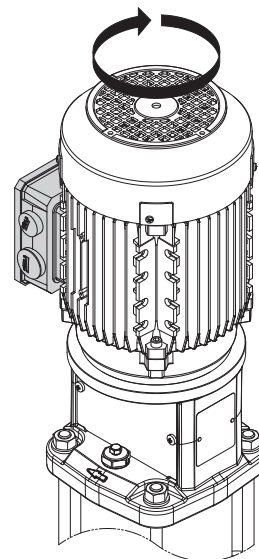
RIGHT
(Standard)



FRONT



LEFT



BACK

00130242 02/2021

AEG LAFERT MOTORS (original equipment)

FEATURES

- Protection degree: IP55
- Max ambient temperature: 40 °C
- Insulation class: F
- Size B14 up to 4 kW, size B5 from 5.5 kW and above
- PTC 155°C default from MEC160 (from 11 kW)



SINGLE-PHASE MOTORS

- Voltage: 230 V
- Capacitor inside terminal box

SINGLE-PHASE MOTORS DESIGNED FOR RANGE OF RATED VOLTAGE 230 V 50 Hz											
POWER		IEC Size	Constr.design	I _N [A] 230 V	min ⁻¹	M _N [Nm]	η %	cos φ	I _A /I _N	M _A /M _N	Weight [Kg]
[kW]	[HP]										
0.37	0.5	71	B14	3.1	2780	1.3	57.6	0.89	3.1	0.8	7.1
0.55	0.75	71	B14	3.9	2740	1.9	69.0	0.89	3.5	0.7	8.5
0.75	1	80	B14	5.3	2800	2.6	65.0	0.95	4.1	0.6	11.4
1.1	1.5	80	B14	6.5	2730	3.8	74.0	0.97	3.6	0.5	11.8
1.5	2	90	B14	9.3	2835	5.1	73.0	0.90	3.9	0.5	17.3
2.2	3	90	B14	14.6	2770	7.6	73.0	0.90	4.3	0.2	19.3

THREE-PHASE MOTORS – ENERGY EFFICIENT

- High Efficiency three-phase motors from 0.75 kW in compliance with Eco design Directive N. 640/2009.
- The standard design includes the following basic features to give a high level of flexibility:
- Multi Mount Construction for an easy change of terminal box position
- Terminal box rotates by 90° to allow cable entry from any direction
- Voltage: up to 3 kW 230/400 V, 400/690 V from 4 kW and above
- Special voltage and special version on request

THREE-PHASE MOTORS DESIGNED FOR RANGE OF RATED VOLTAGE 400 V 50 Hz															
Efficiency class	POWER		IEC Size	Constr. Design	I _N [A] Δ 230 V	I _N [A] Y 400 V	I _N [A] Δ 400V	I _N [A] Y 690V	min ⁻¹	M _N [Nm]	η %	cos φ	I _A /I _N	M _A /M _N	Weight [Kg]
	[kW]	[HP]													
IE2	0.37	0.5	71	B14	1.7	1.0	-	-	2810	1.3	69.5	0.78	2.7	2.8	5.8
	0.55	0.75	71	B14	2.4	1.4	-	-	2780	1.9	74.1	0.77	2.0	1.7	6.2
IE3	0.75	1	80	B14	2.9	1.7	-	-	2910	2.5	82.0	0.78	8.9	4.7	9.5
	1.1	1.5	80	B14	4.2	2.4	-	-	2870	3.7	82.7	0.76	9.3	5	11.1
	1.5	2	90	B14	5.2	3.0	-	-	2875	5.0	84.2	0.85	8.4	3.6	14.0
	2.2	3	90	B14	8.0	4.6	-	-	2880	7.3	86.5	0.82	9.2	4	16.0
	3	4	100	B14	9.7	5.6	-	-	2900	9.9	87.1	0.89	8.8	5.5	22.8
	4	5.5	112	B14	-	-	8	4.6	2900	13	88.1	0.83	10.7	5.1	26.5
	5.5	7.5	132	B5	-	-	10.2	5.9	2935	17.9	89.2	0.87	11.2	4.2	33.6
	7.5	10	132	B5	-	-	14.4	8.3	2930	24.5	90.1	0.84	10.4	4.5	36.0
	11	15	160	B5	-	-	19.9	11.5	2935	35.8	91.2	0.89	9.7	4.4	62.0
	15	20	160	B5	-	-	26.8	15.5	2915	49.2	91.9	0.88	9.6	3.7	68.0
	18.5	25	160	B5	-	-	33.0	19.1	2950	59.9	92.4	0.88	10.7	4.6	104.0
	22	30	180	B5	-	-	39.4	22.8	2950	71.3	92.7	0.87	10.4	4.5	106.0
	30	40	200	B5	-	-	52.7	30.5	2925	97.9	93.3	0.88	6.7	2.4	276.0
	37	50	200	B5	-	-	63.3	36.6	2930	120.6	93.7	0.90	6.3	2.3	283.0
	45	60	225	B5	-	-	78.5	45.4	2930	146.7	94.0	0.88	6.9	2.3	370.0

NEW INTERNATIONAL EFFICIENCY CLASSES OF MOTORS – IE CODE

IEC 60034-30:2008 defines the efficiency classes of motors worldwide.

IE1 = Standard Efficiency (comparable to EFF2)

IE2 = High Efficiency (comparable to EFF1)

IE3 = Premium Efficiency

The efficiency levels according to IEC 60034-30 are measured based on the test methods defined in IEC 60034-2-1:2007.

The IEC 60034-30 only defines requirements of efficiency classes and aims to create provisions for international consistency.

It does not define which motors must be supplied with which efficiency level. This is subject to respective regional legislation.

OUTPUT [kW]	IE2 code Standard Efficiency			IE3 code Standard Efficiency		
	2 poles	4 poles	6 poles	2 poles	4 poles	6 poles
0.37	69.5	72.7	67.6	73.8	77.3	73.5
0.55	74.1	77.1	73.1	77.8	80.8	77.2
0.75	-	-	-	80.7	82.5	78.9
1.1	-	-	-	82.7	84.1	81.0
1.5	-	-	-	84.2	85.3	82.5
2.2	-	-	-	85.9	86.7	84.3
3	-	-	-	87.1	87.7	85.6
4	-	-	-	88.1	88.6	86.8
5.5	-	-	-	89.2	89.6	88.0
7.5	-	-	-	90.1	90.4	89.1
11	-	-	-	91.2	91.4	90.3
15	-	-	-	91.9	92.1	91.2
18.5	-	-	-	92.4	92.6	91.7
22	-	-	-	92.7	93.0	92.2
30	-	-	-	93.3	93.6	92.9
37	-	-	-	93.7	93.9	93.3
45	-	-	-	94.0	94.2	93.7

Efficiency values according to IEC 60034-30:2008.

Efficiency standard calculation: IEC 60034-2-1:2007

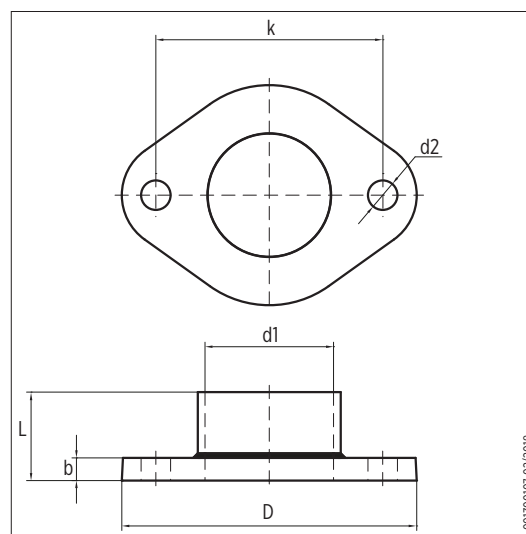
Accessories

HYDRAULIC CONNECTION

OVAL COUNTERFLANGES

DN	DIMENSIONS [mm]					HOLES		PN
	D	d1	k	L	b	d2	N°	
32	99	Rp 1" ¼	75	33	8	11	2	16
		NPT1" ¼						
40	130	Rp 1" ½	100	35	10	13		
		NPT1" ½						
50		Rp 2"		39				
		NPT 2"						

Kit round counterflanges available on request; AISI 304 (EN 1.4301)



001300107 02/2018

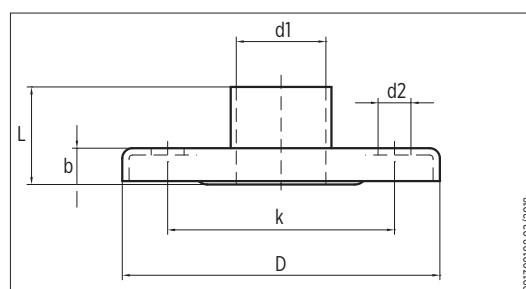
ROUND THREADED COUNTERFLANGES ACCORDING TO EN 1092-1

DN	DIMENSIONS [mm]					HOLES		PN
	D	d1	k	L	b	d2	N°	
25	115	Rp 1" NPT 1"	85	43	16	14	4	25
32	140	Rp 1" ¼ NPT 1" ¼	100			18		
40	150	Rp 1" ½ NPT 1" ½	110			19		
50	165	Rp 2" NPT 2"	127			8		
65	185	Rp 2" ½ NPT 2" ½	145	32	18	18	8	16
80	200	Rp 3" NPT 3"	160	34	20			
100	220	Rp 4" NPT 4"	180	40				

Kit round counterflanges available on request:

DN 25-32-40-50: galvanized steel, AISI 304 (EN 1.4301), AISI 316L (EN 1.4404)

DN 65-80-100: galvanized steel, AISI 316 (EN 1.4401)

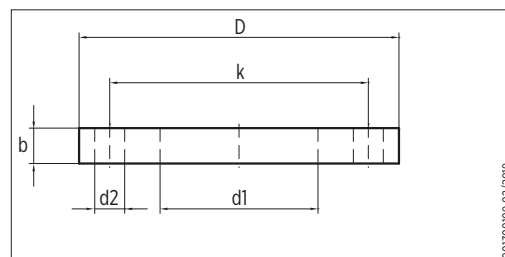


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WELD-ON ROUND COUNTERFLANGES ACCORDING TO EN 1092-1

DN	DIMENSIONS [mm]					HOLES		PN
	D	d1	k	L	b	d2	N°	
65	185	77,5	145	-	22	18	8	25/40
80	200	90,5	160		24			
100	235	116	190		26			

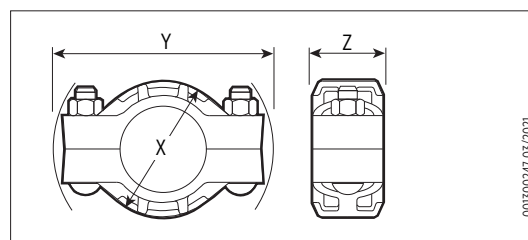
Kit round counterflanges available on request; AISI 316 (EN 1.4401)



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VICTAULIC COUNTERFLANGES

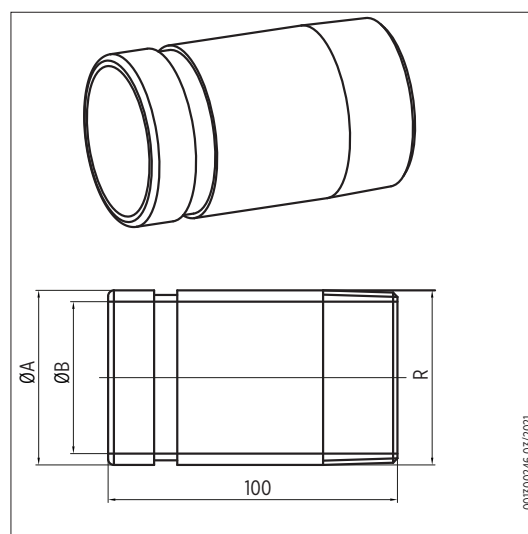
COLLARS			
DN	DIMENSIONS [mm]		
	X	Y	Z
32	67	127	48
50	92	149	48



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NIPPLE			
DN	DIMENSIONS [mm]		
	Ø A	Ø B	R *
32	42.2	35.0	1" ¼
50	60.3	52.5	2" -11

* Pipe threads UNI EN 10226-1



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CLAMP COUNTERFLANGES

For technical information about Clamp version, please contact Franklin Electric.

HIGH PRESSURE KIT

Assembling kit for high pressure set with two pumps. This kit allows the hydraulic connection between the pumps. Please contact Franklin Electric for more information.

HORIZONTAL INSTALLATION KIT

This kit allows the horizontal installation of pumps and assure the correct operation of the product. Please contact Franklin Electric for more information.

VARIABLE FREQUENCY DRIVES (VFD) - DRIVE-TECH INVERTER

Available for motor or wall installation.

APPLICATIONS

- Booster sets
- HVAC systems with electric circulation pumps
- Control of electric pumps (wall-mounted inverter with kit)

FEATURES

- Energy saving thanks to variable speed control
- Smooth start-up and stop
- Longer system life and greater system reliability
- Simplified installation on the motor or on the wall
- Quick commissioning through guided initial configuration
- Installation possible in damp and dusty environments due to IP55 degree protection
- High thermal and mechanical performance thanks to all-aluminium casing



SPECIFICATIONS

- **Advanced user experience due to:**
 - Programming and monitoring via display or smartphone and FE Connect, available for Android, iOS devices
 - Remote control using a smartphone placed nearby as a modem
 - Copy / pasting pre-imposed programmes between different devices
 - Ability to send reports via email
 - Multilingual support
- **Multiple control methods:**
 - Constant pressure control
 - Constant or proportional differential pressure control
 - Constant temperature control
 - Control at constant differential temperature
 - Constant flow control
 - Control with external frequency signal or pre-set at 1 or 2 values
- **Integrated protections against:**
 - Overvoltage and undervoltage
 - Overcurrent and no load
 - Dry running
 - Overheating
- **EMC compatibility:**
 - Each inverter is equipped with an integrated EMI filter to comply with EN55011 Class A (or EN61800-3 Category C2). By installing an additional input filter, it is possible to achieve class B (C1)
- **Group operation (COMBO):**
 - Up to 8 connected units
 - Alternated operation to equalise electric pump wear
 - Automatic exchange between Master and Slave units in case of failure of one unit to guarantee the continued operation of the set
- **Advanced motor controls:**
 - Control of new generation asynchronous motors

SYSTEM PERFORMANCE

- Mains supply frequency: 50-60 Hz ($\pm 2\%$)
- Maximum working temperature at nominal load: $+40\text{ }^{\circ}\text{C}$
- Maximum altitude at nominal load: 1000 metres above sea level
- Relative humidity: max 95% (without condensation)
- Degree of protection: IP55 (NEMA 4) or degree of motor protection if mounted on the motor (protect the device from direct exposure to sunlight and atmospheric influences)
- Connectivity: RS 485 serial port for COMBO operation (up to 8 units) + SMART Bluetooth communication + RS485 serial port for MODBUS RTU communication

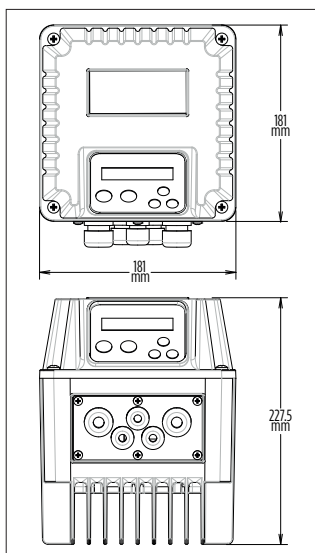
ELECTRICAL FEATURES AND PERFORMANCE

Drive-Tech model	$V_{in} \pm 15\%$ [V]	max V_{out} [V]	Max current at input [A]	Max current at output [A]	Typical motor * P_2 [kW]	Size
2.015	1 x 230	1 x 230	15	9	1.1	1
		3 x 230		7	1.5	
2.030	1 x 230	1 x 230	20	9	1.5	1
		3 x 230		11	3	
2.040	1 x 230	3 x 230	38	18	4	2
2.055	3 x 230	3 x 230	53	25	5.5	
3.040	3 x 230	3 x 230	21	18	4	
3.055	3 x 230	3 x 230	31	25	5.5	
3.075	3 x 230	3 x 230	35	30	7.5	
4.022	3 x 400	3 x 400	10	6	2.2	1
4.040	3 x 400	3 x 400	13.5	9	4	2
4.055	3 x 400	3 x 400	16	14	5.5	
4.075	3 x 400	3 x 400	21	18	7.5	
4.110	3 x 400	3 x 400	31	25	11	
4.150	3 x 400	3 x 400	35	30	15	
4.185	3 x 400	3 x 400	42	38	18.5	3
4.220	3 x 400	3 x 400	52	48	22	
4.300	3 x 400	3 x 400	68	65	30	
4.370	3 x 400	3 x 400	78	75	37	
4.450	3 x 400	3 x 400	88	85	45	

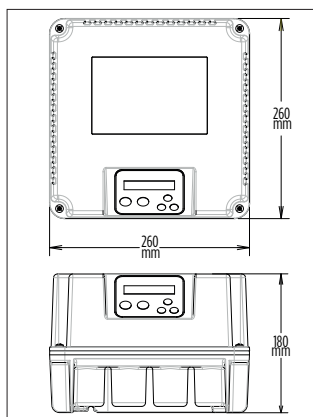
* Typical power. Refer to the motor current when selecting the appropriate Drive-Tech model

** EV pumps equipped with Drive-Tech mounted on motor fan are available on request only for models 1-20, up to 15 kW

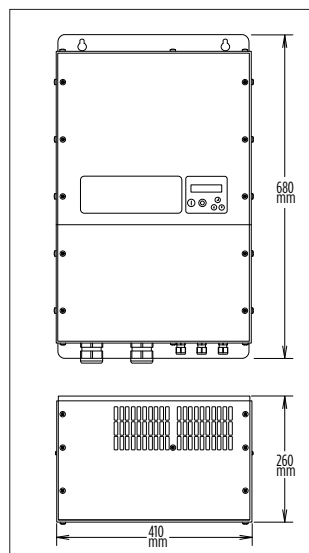
Size
1



Size
2



Size
3



TECHNICAL FEATURES

- Power supply frequency: 50/60 Hz ($\pm 2\%$)
- Maximum ambient temperature at nominal current: 40 °C (104 °F)
- Maximum altitude at nominal current: 1000 metres above sea level
- Degree of protection: IP55 (size 1, 2); IP54 (size 3)
- Settable digital output signals (normally open or normally closed):
 - Motor start signal
 - Alarm signal
 - DOL 1 pump signal
 - DOL 2 pump signal
- Analogue input (10 or 15 V cc):
 - 4-20 mA
 - 4-20 mA
 - 4-20 mA / 0-10 Vdc (settable)
 - 4-20 mA / 0-10 Vdc (settable)
- 4 digital inputs, normally open or normally closed (settable), for starting and stopping the motor
- RS485 serial communication

INSTALLATION

- DrivE-Tech can be installed directly on the motor fan cover or fixed to the wall.
- **Motor mounting kit::**
 - The motor cooling fan also cools the DrivE-Tech.
 - The special assembly kit allows a solid coupling between the two units.

ErP REGULATION

Information related to energy performance of the motor, according to Reg. 2019/1781 CE and modifications:

EFFICIENCY REQUIREMENTS FOR VARIABLE SPEED DRIVES

Efficiency requirements for variable speed drives shall apply as follows: From 1 July 2021, the power losses of variable speed drives rated for operating with motors with a rated output power equal to or above 0,12 kW and equal to or below 1 000 kW shall not exceed the maximum power losses corresponding to the IE2 efficiency level. Energy efficiency for VSDs, expressed in International Energy efficiency classes (IE), is determined based on the power losses as follows: The maximum power losses of the IE2 class are 25 % lower than the reference value referred to in table:

Reference VSD losses and test load displacement factor for the IE class determination of VSDs			
Apparent output power of VSD (kVA)	Rated power of Motor (kW) (indicative)	Reference power losses (kW), at 90 % rated motor stator frequency and 100 % rated torque-producing current	"Test load displacement factor cos phi (+/- 0,08)"
0,278	0,12	0,100	0,73
0,381	0,18	0,104	0,73
0,500	0,25	0,109	0,73
0,697	0,37	0,117	0,73
0,977	0,55	0,129	0,73
1,29	0,75	0,142	0,79

If the apparent output power of a VSD is between two values in Table 6, the higher power loss value and the lower value of the test load displacement factor shall be used for the IE class determination.

1. power losses in % of the rated apparent output power: see the documentation of the VSD;
2. efficiency level: 'IE2';
3. manufacturer's name or trade mark, commercial registration number and address: see the nameplate;
4. product's model identifier: see the nameplate;
5. apparent output power or range of apparent output power (kVA): see the nameplate and the catalog;
6. indicative motor rated power output(s) PN or range of rated power output (kW): see the nameplate and the catalog;
7. rated output current (A): see the nameplate and the catalog;
8. maximum operating temperature (40 °C);
9. rated supply frequencies: 50-60 Hz;
10. rated supply voltage(s) or range of rated supply voltage (V): see the nameplate;

CONSTRUCTION OPTIONS

MOTORS

- ATEX version (explosive environments)
- With PTC sensor
- Heavy duty (for heavy application)
- 4 poles

VFD

- Installed on motor and wired

PUMPS

- Mechanical seal, wear parts and elastomers are available in EPDM or FKM, combined with wear parts in SiC/Graphite, SiC/SiC, WC/WC.
- Balanced mechanical seal: the design allows to reduce the liquid thrust on wear parts, extending the product life.
- Optional upperthrust bearings for motors up to 4 kW: to save the motor bearing from the pump upper thrust and in the cases where the motor doesn't fulfil the minimum conditions requested, it's available the optional upper thrust bearing. The installation of upperthrust bearing is reversible (it's ever possible to come back to the standard version or install it).
- High pressure pumps: reinforced design pumps with PN 50 bar maximum working pressure (only Victaulic connections and available models).
- Passivated pumps: for pumping of corrosive liquids (eg. reverse osmosis systems) are available pumps in AISI 316 / CF-8M, with chemical treatment and special design features, for higher corrosion resistant.

CATALOG REVISION CHANGE NOTICE

Rev. No.	Changes	Page
01	Updating mechanical seal "Available on request" materials	17
	Updating performance tables EV 30-45-65	27-28
	Updating performance curves EV 30 (1 - 7 stages)	62-63
02	Updating ErP motor regulation	22
	Updating "motors" tables	12-15
	Updating performance curves EV 30 (8-13 stages)	65
	Updating "ELECTRICAL FEATURES AND PERFORMANCE" VFD table	83
	Added "ErP Regulation" for VFD	84-85



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10000007873 EN REV.02_07-2021



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