

bj·gear



Washdown electric motors

Hygienic 316L stainless steel and aluminum electric motors

Customisation is our standard

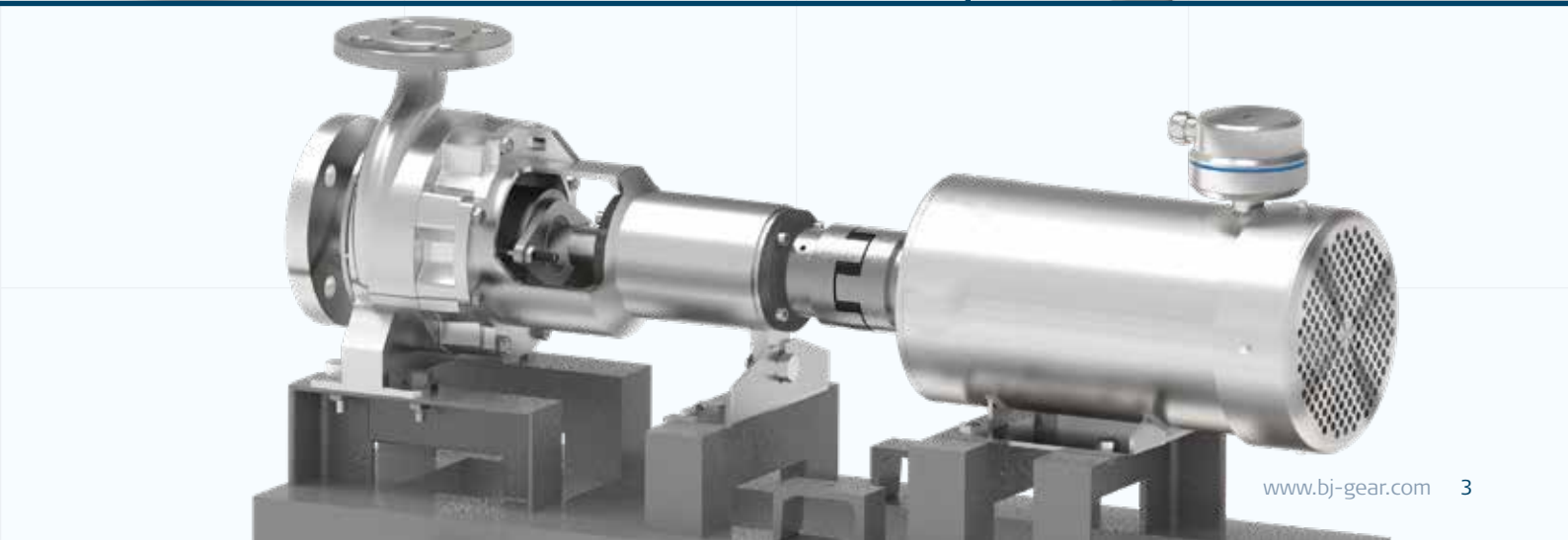
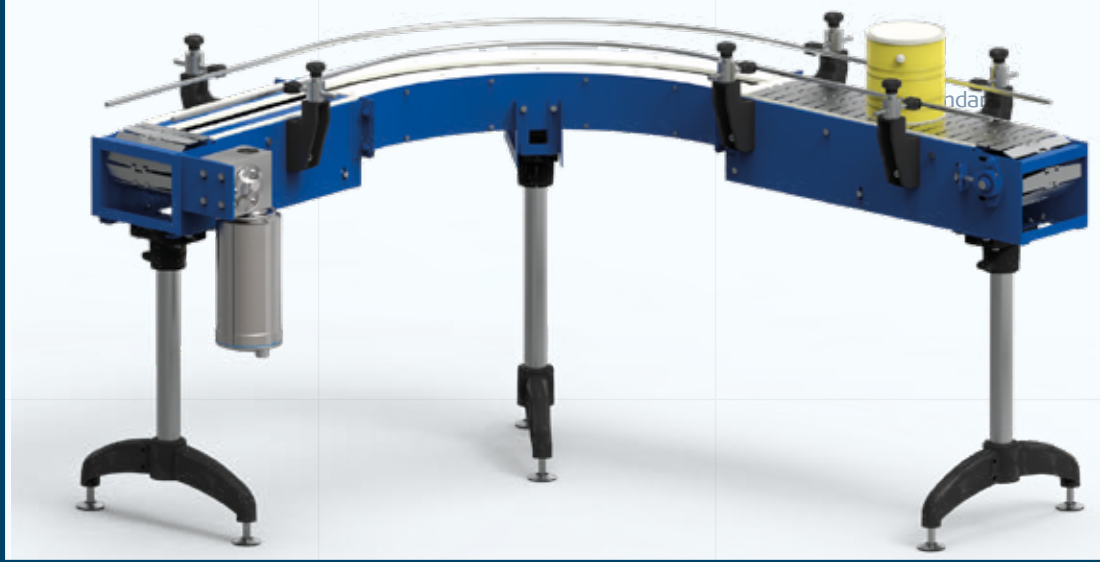
Hygienic design electric motors

Main features

- High pressure clean up
- Pooling free mounting
- Sealed holes
- Sealed oil plugs
- Simple washing
- Smooth surfaces
- No plastic plugs

Sector of use

- Meat&Poultry
- Beverage
- Fruits & Vegetables
- Animal food
- Seafood / Fish farming
- Bakery
- Confectionery
- Cleaning systems
- Conveyors
- Dairy
- Food packaging
- Food processing
- Freezing Systems
- Mixers Agitators
- Pumps
- Ventilators
- Chemical
- Cosmetics
- Pharmaceutical
- Marine and fishing





Section 1

APM Series Aluminum premium motors

Customisation is our standard

Clean shape aluminum electric motor to reduce dust accumulation, ideal where hot water wash down is used (without aggressive detergents)

ALUMINUM

IP69k

CE

UL US

IE4

IE3



STANDARD terminal box with cable gland in **RADIAL** position



ON REQUEST direct cable with cable gland in **AXIAL** position

The APM Series

Hygienic aluminum electric motors



STANDARD terminal box with cable gland in **RADIAL** position



APM SERIES - B14
Aluminum premium motor

The APM series

It is a basic solution to reduce dust accumulation, where hot water wash down is used (without aggressive detergents). Totally Enclosed Non-Ventilated IC410 (TENV), hygienic smooth surfaces: no ribs, no fins. Die cast aluminum rotor, precision balanced G2,5 according to ISO1940-1 2003.

STANDARD Protective high resistance coating With anodized body and special coating on flanges.

APM certification

Electric motors



Three phase.
TENV (totally enclosed non ventilated).

Standard terminal box with cable gland in radial position.
On request cable UL certified resistant to hot temperature (+90°C).

IEC Sizes	63, 71, 80, 90
Power	0.12 ÷ 2.2 kW
Mounting	B14
Poles	2, 4, 6

The basic protection

NBR oil seal on the shaft

Options Double seal



Extra protection

Flinger for extra protection against high pressure water spray.



Bearings

Double sealed with grease lubricated.

AISI 420 Stainless steel shaft

O-ring and seal to prevent water entry. Blue seal.

Options Direct cable in axial position

Direct cable length 2.5m of UL certified resistant to hot temperature (+90°C), with cable gland in axial position.



Standard Hygienic cable gland



Hygienic design cable gland.

PTO thermal protection

PTO thermal protection. Easy and stable connection with terminal block inside back conduit box. Inverter spike resistant Class F insulation system allows operation on adjustable speed drives. On request it is available with direct cable.

Options Anti condensation valve



Valve air breather

Options PTC thermistors

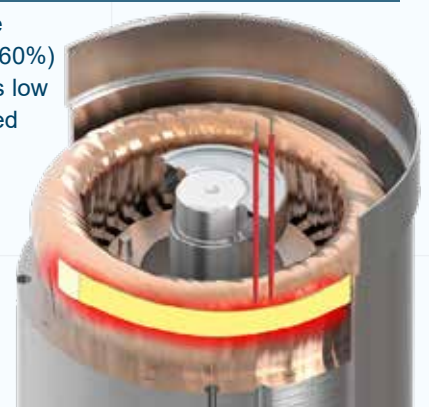


The PTC thermistor can be used to protect motors from overload once a certain temperature has been exceeded. Available only with terminal box

Options Pre-heater

For applications where the humidity rate is high (RH>60%) or the room temperature is low (T<-20°C), can be equipped with an anticondensation heater to be used when motor is switched off.

The heater has to be supplied with single phase 230V 50Hz.



How to order

APM	B	KC	4	J	TE	N	A
Series	Size	Power	Pole	Mounting	Tension	Cooling	Coating
APM	B → 63	KC → 0.12	2	B14	Three-phase	N	N
	C → 71	KD → 0.18	4	J → IMB14	TE 230/400V _{50Hz}	TENV	STANDARD
	D → 80	KE → 0.25	6	Horizontal shaft	TU 230/460V _{60Hz}		
	E → 90	KF → 0.37			On request		V
		KG → 0.55			TC 332/575V _{60Hz}		PAINTED
		KH → 0.75		K → IMV18	TD 220/380V _{60Hz}		RAL 7035
		KI → 1.1		Vertical downward shaft			
		KK → 1.5					
		KL → 2.2		L → IBV19			
				Vertical upward shaft			
							

4	K	-	A	6	SA	-	--
Efficiency	Protection	Terminal box	Cable gland position	Cable gland type	Cable	Thermal protection	Humid rooms options
3 IE4 Efficiency	K IP69k	C Terminal block 3 + splicing connector 3w 	R Radial position 	N Without cable gland 	N Without cable 	- STANDARD PTO only with terminal box	-- STANDARD
4 IE4 Efficiency		- Without terminal block 	Only on request A Axial position 	2 Plastic cable gland 	SA 2.5 m cable supplied with Y connection TA 2.5 m cable supplied with Δ connection	1 PTC + (PTO) Thermistor Available only with terminal box 	-S PRE-HEATER 
		Always supplied with cable	With terminal box	6 Plastic cable gland with Anti-condensation valve 	SB 5 m cable sup- plied with Y con- nection TB 5 m cable sup- plied with Δ con- nection		
			Without the terminal box				

2 Poles

Technical data

APM Series Aluminum premium motors

B14
Mounting

IE4
Efficiency class

S1 service, F insulation class			Operating characteristics at rated power								Direct starting						ENCLOSURE
kW	Motor code	Frame	Rated current	Speed	Nominal torque	Efficiency at % load			PF	Torque	Current	Inertia moment	Weight	R [Ω] 20°C			
Power			A 400/ 460V	rpm	Nm	100%	75%	50%	cos φ	Ms/Mn	Is/In	[kgm^2]	Kg				
230/400V 50Hz rpm 1000	0.18	APM BKD2JTEN	63A	0.45	2890	0.60	70.8	67.5	64.2	0.81	4.1	6.4	0.0005	6.5	29.1	TENV	
	0.25	APM BKE2JTEN	63B	0.65	2895	0.84	74.3	72.8	70.5	0.85	4.4	7.8	0.0006	8.3	13.8		
	0.37	APM CKF2JTEN	71A	0.94	2930	1.23	78.1	78.0	77.2	0.75	4.3	8.8	0.0008	10.5	8.2		
	0.55	APM CKG2JTEN	71B	1.24	2910	1.85	81.5	83.3	70.5	0.77	5.4	8.9	0.0010	11.6	6.2		
	0.75	APM DKH2JTEN	80A	1.48	2900	2.45	83.5	83.1	80.8	0.83	6.2	12.5	0.0013	14.6	4.8		
	1.1	APM DKJ2JTEN	80B	2.10	2910	3.60	85.2	84.9	84.0	0.86	5.8	12.8	0.0017	17.1	3.1		
	1.5	APM EKK2JTEN	90S	2.80	2930	4.90	86.5	85.5	82.3	0.83	5.2	10.5	0.0054	30.3	1.7		
	2.2	APM EKL2JTEN	90L	3.90	2920	7.20	88.0	87.5	86.5	0.82	4.8	8.5	0.0056	32.2	1.7		
230/460V 60Hz rpm 1200	0.18	APM BKD2JTUN	63A	0.42	3460	0.50	70.0	68.1	64.9	0.78	4.3	6.6	0.0005	6.5	29.1	TENV	
	0.25	APM BKE2JTUN	63B	0.60	3500	0.70	74.0	68.2	64.9	0.77	4.6	8.0	0.0006	8.3	13.8		
	0.37	APM CKF2JTUN	71A	0.90	3545	1.00	77.0	76.5	75.0	0.72	4.5	9.0	0.0008	10.5	8.2		
	0.55	APM CKG2JTUN	71B	1.20	3510	1.50	80.0	79.3	77.4	0.74	5.6	9.1	0.0010	11.6	6.2		
	0.75	APM DKH2JTUN	80A	1.40	3490	2.00	82.5	82.0	80.6	0.83	6.4	12.7	0.0013	14.6	4.8		
	1.1	APM DKJ2JTUN	80B	2.00	3520	3.00	85.5	85.0	84.2	0.80	6.0	13.0	0.0017	17.1	3.1		
	1.5	APM EKK2JTUN	90S	2.75	3530	4.10	86.6	85.4	82.2	0.74	5.4	10.7	0.0054	30.3	1.7		
	2.2	APM EKL2JTUN	90L	3.82	3510	6.00	88.5	87.8	86.0	0.82	4.8	9.2	0.0056	32.2	1.6		

Nominal values with ±10% tolerance on Voltage
Technical data and performances may change



Totally Enclosed non ventilated

TENV

B14

Mounting

IE4Efficiency
class

APM Series

Aluminum premium motors

4

Poles

Technical data

S1 service, F insulation class			Operating characteristics at rated power							Direct starting						ENCLOSURE
kW	Motor code	Frame	Rated current	Speed	Nominal torque	Efficiency at % load			PF	Torque	Current	Inertia moment	Weight	R [Ω] 20°C		
Power			A 400/ 460V	rpm	Nm	100%	75%	50%	cos φ	Ms/Mn	Is/In	[kgm^2]	Kg			
230/400V 50Hz rpm 1500	0,12	APM BKC4JTEN	63A	0,40	1445	0,81	69,8	69,5	63,9	0,64	3,5	6,5	0,0014	7,3	42,8	TENV
	0,18	APM BKD4JTEN	63B	0,50	1445	1,21	74,7	74,1	69,3	0,72	3,8	6,6	0,0016	8,1	31,4	
	0,25	APM CKE4JTEN	71A	0,68	1444	1,66	77,9	74,8	70,1	0,73	3,7	7,2	0,0021	9,8	22,6	
	0,37	APM CKF4JTEN	71B	0,98	1440	2,45	81,1	79,7	75,9	0,71	4,1	7,4	0,0025	12	12,6	
	0,55	APM DKG4JTEN	80A	1,38	1448	3,66	83,9	80,7	77,0	0,73	4,8	8,2	0,0026	14	8,3	
	0,75	APM DKH4JTEN	80B	1,75	1440	4,95	85,7	82,5	79,2	0,74	5,6	8,5	0,0032	16,5	5,1	
	1,1	APM EK4JTEN	90S	2,65	1465	7,15	87,2	84,4	80,3	0,73	4,8	8,6	0,0095	29,5	2,1	
	1,5	APM EKK4JTEN	90L	3,50	1465	9,75	88,2	87,1	84,3	0,74	4,9	9,8	0,0107	32,4	1,6	
230/460V 60Hz rpm 1800	0,12	APM BKC4JTUN	63A	0,36	1752	0,65	70,0	71,0	64,9	0,65	3,7	6,7	0,0014	7,3	42,8	TENV
	0,18	APM BKD4JTUN	63B	0,46	1750	0,98	74,0	73,0	70,3	0,72	4,0	6,8	0,0016	8,1	31,4	
	0,25	APM CKE4JTUN	71A	0,62	1748	1,36	77,7	75,8	71,1	0,70	3,9	7,4	0,0021	9,8	22,6	
	0,37	APM CKF4JTUN	71B	0,92	1742	2,02	81,5	80,6	76,8	0,67	4,3	7,6	0,0025	12	12,6	
	0,55	APM DKG4JTUN	80A	1,30	1750	3,05	84,0	81,7	78,0	0,70	5,0	8,4	0,0026	14	8,3	
	0,75	APM DKH4JTUN	80B	1,65	1765	4,13	85,5	82,5	79,5	0,71	5,8	8,7	0,0032	16,5	5,1	
	1,1	APM EK4JTUN	90S	2,50	1780	5,96	87,5	84,1	80,1	0,70	5,0	8,8	0,0095	29,5	2,1	
	1,5	APM EKK4JTUN	90L	3,30	1785	8,13	88,5	87,4	84,4	0,70	5,1	10,0	0,0107	32,4	1,6	

Nominal values with ±10% tolerance on Voltage
Technical data and performances may change



Totally Enclosed non ventilated

TENV

6 Poles

Technical data

APM Series Aluminum premium motors

B14
Mounting

IE4
Efficiency class

S1 service, F insulation class			Operating characteristics at rated power								Direct starting						ENCLOSURE
kW	Motor code	Frame	Rated current	Speed	Nominal torque	Efficiency at % load			PF	Torque	Current	Inertia moment	Weight	R [Ω] 20°C			
Power			A 400/ 460V	rpm	Nm	100%	75%	50%	cos φ	Ms/Mn	Is/In	[kgm^2]	Kg				
230/400V 50Hz rpm 1000	0,18	APM CKD6JTEN	71A	0,55	890	1,95	70,1	67,2	60,1	0,68	2,6	3,0	0,0021	9,9	42,6	TENV	
	0,25	APM CKE6JTEN	71B	0,76	920	2,65	74,1	71,3	66,8	0,65	3,2	3,4	0,0025	11,5	24,3		
	0,37	APM DKF6JTEN	80A	1,10	890	3,98	78,0	76,0	73,2	0,63	1,7	3,4	0,0026	14,0	16,6		
	0,55	APM DKG6JTEN	80B	1,50	890	5,30	80,9	77,7	67,4	0,69	2,4	3,7	0,0032	16,2	13,1		
	0,75	APM EKH6JTEN	90S	1,80	940	7,60	82,7	81,5	78,0	0,77	2,6	5,7	0,0095	29,5	5,3		
	1,1	APM EK6JTEN	90L	2,40	930	11,10	84,5	83,0	82,0	0,78	2,9	6,1	0,0107	32,3	4,9		
230/460V 60Hz rpm 1200	0,18	APM CKD6JTUN	71A	0,52	1115	1,50	72,0	67,0	60,0	0,61	2,6	3,0	0,0021	9,9	42,6	TENV	
	0,25	APM CKE6JTUN	71B	0,70	1120	2,1	75,5	67,0	61,0	0,61	3,2	3,4	0,0025	11,5	24,3		
	0,37	APM DKF6JTUN	80A	1,05	1125	3,10	78,5	74,4	73,2	0,57	1,7	3,4	0,0026	14,0	16,6		
	0,55	APM DKG6JTUN	80B	1,35	1120	4,70	82,5	77,6	68,4	0,69	2,4	3,7	0,0032	16,2	13,1		
	0,75	APM EKH6JTUN	90S	1,70	1128	6,2	84,0	81,0	78,0	0,69	2,6	5,7	0,0095	29,5	5,3		
	1,1	APM EK6JTUN	90L	2,20	1140	9,2	88,5	83,0	82,0	0,75	2,9	6,1	0,0107	32,3	4,9		

Nominal values with ±10% tolerance on Voltage
Technical data and performances may change



Totally Enclosed non ventilated

TENV

B14

Mounting

IE3Efficiency
class

APM Series

Aluminum premium motors

2

Poles

Technical data

S1 service, F insulation class			Operating characteristics at rated power								Direct starting						ENCLOSURE
kW	Motor code	Frame	Rated current	Speed	Nominal torque	Efficiency at % load			PF	Torque	Current	Inertia moment	Weight	R [Ω] 20°C			
Power			A 400/ 460V	rpm	Nm	100%	75%	50%	cos φ	Ms/Mn	Is/In	[kgm^2]	Kg				
230/400V 50Hz rpm 3000	0,25	APM BKD2JTEN	63A	0,62	2880	0,84	69,7	66,4	62,0	0,84	4,0	6,9	0,0005	6,5	29,1	TENV	
	0,37	APM CKF2JTEN	63B	0,85	2860	1,25	73,8	70,6	66,9	0,85	3,9	7,8	0,0006	8,3	13,8		
	0,55	APM CKG2JTEN	71A	1,25	2870	1,85	77,8	74,6	71,5	0,82	4,8	7,1	0,0008	10,5	8,2		
	0,75	APM DKH2JTEN	71B	1,5	2860	2,45	80,7	77,5	74,3	0,88	6,2	12,5	0,0010	11,6	6,2		
	1,1	APM DKD2JTEN	80A	2,1	2850	3,60	82,7	79,2	76,3	0,89	5,4	12,3	0,0013	14,6	4,8		
	1,5	APM EKK2JTEN	80B	2,85	2860	4,90	84,2	82,2	79,5	0,90	5,0	10,1	0,0017	17,1	3,1		
	2,2	APM EKL2JTEN	90S	4,4	2850	7,20	85,9	82,8	80,2	0,84	4,5	8,5	0,0054	30,3	1,7		
230/460V 60Hz rpm 3600	0,25	APM BKE2JTEN	63A	0,62	3490	0,70	69,5	66,9	62,5	0,77	4,6	8,0	0,0005	6,5	13,8	TENV	
	0,37	APM CKF2JTEN	63B	0,85	3520	1,03	73,4	71,3	68,4	0,72	4,5	9,0	0,0006	8,3	8,2		
	0,55	APM CKG2JTEN	71A	1,25	3490	1,54	76,8	73,5	70,1	0,74	5,6	9,1	0,0008	10,5	6,2		
	0,75	APM DKH2JTEN	71B	1,50	3480	2,04	77,0	74,1	71,2	0,83	6,4	12,7	0,0010	11,6	4,8		
	1,1	APM DKI2JTEN	80A	2,10	3500	3,00	84,0	82,5	78,6	0,80	6,0	13,0	0,0013	14,6	3,1		
	1,5	APM EKK2JTEN	80B	2,85	3500	4,08	85,5	83,4	80,2	0,74	5,4	10,7	0,0017	17,1	1,7		
	2,2	APM EKL2JTEN	90S	4,4	3480	6,00	86,5	84,0	81,0	0,73	4,8	9,2	0,0054	30,3	1,7		

Nominal values with ±10% tolerance on Voltage
 Technical data and performances may change
 Reduced output motor flange



Totally Enclosed non ventilated

TENV

4 Poles

Technical data

APM Series Aluminum premium motors

B14

Mounting

IE3

Efficiency
class

S1 service, F insulation class			Operating characteristics at rated power							Direct starting					ENCLOSURE
kW	Motor code	Frame	Rated current	Speed	Nominal torque	Efficiency at % load			PF	Torque	Current	Inertia moment	Weight	R [Ω] 20°C	
Power			A 400/ 460V	rpm	Nm	100%	75%	50%	cos φ	Ms/Mn	Is/In	[kgm ²]	Kg		
230/400V 50Hz rpm 1500															TENV
0,18	APM BKD4JTEN	63A	0,46	1410	1,25	69,9	69,2	66,4	0,81	2,8	5,6	0,0014	7,3	42,8	
0,25	APM CKE4JTEN	63B	0,66	1400	1,68	73,5	73,0	70,5	0,76	2,7	6,2	0,0016	8,1	31,4	
0,37	APM CKF4JTEN	71A	0,86	1405	2,65	77,3	76,5	74,6	0,80	3,1	6,4	0,0021	9,8	22,6	
0,55	APM DKG4JTEN	71B	1,20	1420	3,70	80,8	79,8	77,9	0,82	3,8	7,2	0,0025	12,0	12,6	
0,75	APM DKH4JTEN	80A	1,73	1420	5,05	82,5	82,0	79,3	0,76	4,6	7,5	0,0026	14,0	8,3	
1,1	APM EK4JTEN	80B	2,35	1425	7,30	84,1	83,2	80,0	0,80	4,1	8,1	0,0032	16,5	5,1	
1,5	APM EKK4JTEN	90S	3,25	1440	9,80	85,3	84,2	82,6	0,78	4,2	9,1	0,0095	29,5	2,1	
230/460V 60Hz rpm 1800															TENV
0,18	APM BKD4JTEN	63A	0,46	1730	0,98	69,5	67,5	64,1	0,71	4,0	6,8	0,0014	7,3	42,8	
0,25	APM CKE4JTEN	63B	0,65	1735	1,36	73,4	71,8	68,5	0,66	3,9	7,4	0,0016	8,1	31,4	
0,37	APM CKF4JTEN	71A	0,86	1725	2,02	78,2	76,2	74,1	0,70	4,3	7,6	0,0021	9,8	22,6	
0,55	APM DKG4JTEN	71B	1,20	1740	3,05	81,1	78,9	75,8	0,71	5,0	8,4	0,0025	12,0	12,6	
0,75	APM DKH4JTEN	80A	1,65	1740	4,13	83,5	80,9	77,8	0,66	5,8	8,7	0,0026	14,0	8,3	
1,1	APM EK4JTEN	80B	2,35	1760	5,96	86,5	84,6	82,5	0,68	5,0	8,8	0,0032	16,5	5,1	
1,5	APM EKK4JTEN	90S	3,20	1760	8,13	86,5	84,7	82,8	0,69	5,1	10	0,0095	29,5	2,1	

Nominal values with ±10% tolerance on Voltage
Technical data and performances may change
Reduced output motor flange



Totally Enclosed non ventilated

TENV

Mounting arrangements and positions (IEC 60034-7)

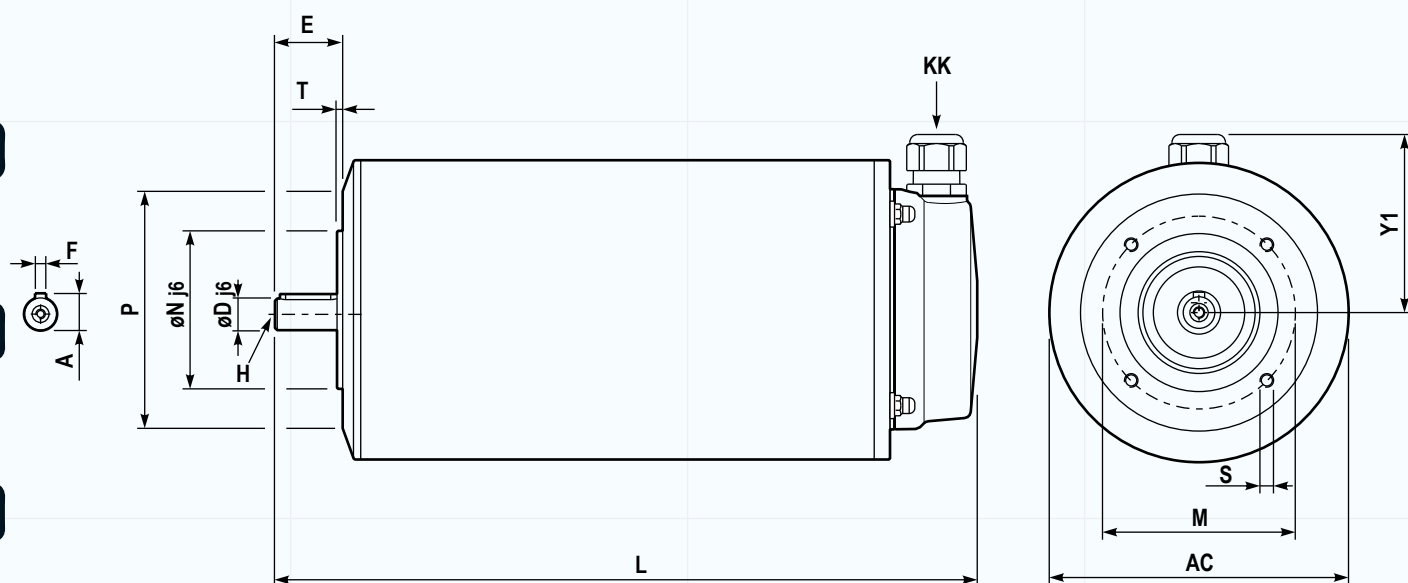
B14 Motors with fixing flange provided with threaded holes.	IMB14 Horizontal shaft	
	IMV18 Vertical downward shaft	
	IMV19 Vertical upward shaft	

According to IEC 60034-7, there are two ways to define the configuration and installation position for an electric motor. In this table is indicated by the letters IM (International Mounting) followed by another letter (B = horizontal shaft; V = vertical shaft) and from a number.

APM Series Aluminum premium motors

TENV Totally Enclosed non ventilated, with terminal box **kW 0.12÷2.2**

STANDARD terminal box with cable gland in **RADIAL** position



Dimensions

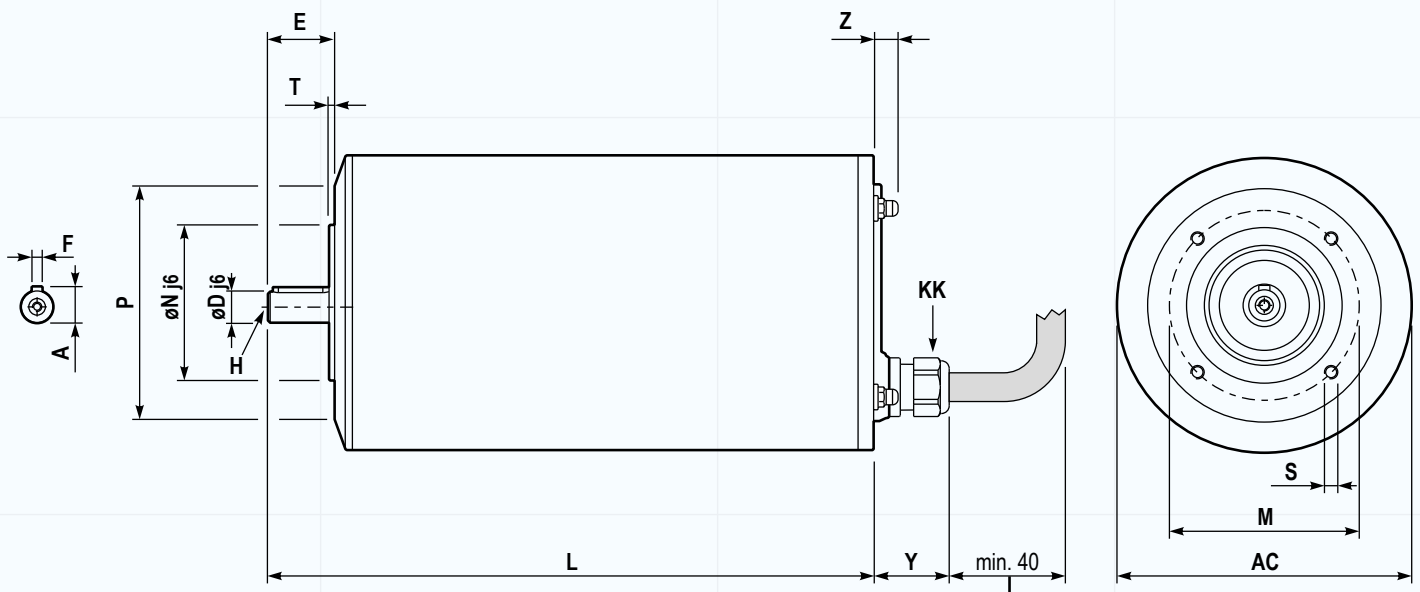
Motor	IE4			IE3		A	$\varnothing D j6$ H	E	F	L	M	$\varnothing N j6$	P	S	T	AC	KK	Y1
	2 poles kW	4 poles kW	6 poles kW	2 poles kW	4 poles kW													
63A 63B	0.18 0.25	0.12 0.18	-	0.25 0.37	0.18 0.25	12,5	$\varnothing 11$ M4x11	23	4	264	75	60	90	M5x14	2,5	133	M20x1.5	78
71A 71B	0.37 0.55	0.25 0.37	0.18 0.25	0.55 0.75	0.37 0.55	16	$\varnothing 14$ M5x12	30	5	311	85	70	105	M6x15	2,5	133	M20x1.5	78
80A 80B	0.75 1.1	0.55 0.75	0.37 0.55	1.1 1.5	0.75 1.1	21,5	$\varnothing 19$ M6x16	40	6	350,5	100	80	120	M6x15	3	143	M20x1.5	78
90S 90L	1.5 2.2	1.1 1.5	0.75 1.1	2.2 -	1.5 -	27	$\varnothing 24$ M8x20	50	8	386	115	95	140	M8x20	3	183	M20x1.5	97

APM Series Aluminum premium motors

B14
Dimensions

TENV Totally Enclosed non ventilated, with direct cable **kW 0.12÷2.2**

ON REQUEST direct cable with cable gland in **AXIAL** position



Dimensions

Motor	IE4			IE3		A	øD j6 H	E	F	L	M	øN j6	P	S	T	AC	KK	Y	Z
	2 poles kW	4 poles kW	6 poles kW	2 poles kW	4 poles kW														
63A 63B	0.18 0.25	0.12 0.18	-	0.25 0.37	0.18 0.25	12,5	ø11 M4x11	23	4	225,5	75	60	90	M5x14	2,5	133	M20x1.5	35	11
71A 71B	0.37 0.55	0.25 0.37	0.18 0.25	0.55 0.75	0.37 0.55	16	ø14 M5x12	30	5	272,5	85	70	105	M6x15	2,5	133	M20x1.5	35	11
80A 80B	0.75 1.1	0.55 0.75	0.37 0.55	1.1 1.5	0.75 1.1	21,5	ø19 M6x16	40	6	312	100	80	120	M6x15	3	143	M20x1.5	35	11
90S 90L	1.5 2.2	1.1 1.5	0.75 1.1	2.2 -	1.5 -	27	ø24 M8x20	50	8	347,5	115	95	140	M8x20	3	183	M20x1.5	35	11

SPM Series Stainless steel premium motors

Section 2

Full stainless steel electric motors
ideal for extreme conditions.



AISI 316L

IE4

IP69k

CE



STANDARD terminal box with
cable gland in **AXIAL** position



ON REQUEST terminal box with
cable gland in **RADIAL** position

The SPM Series

Hygienic stainless steel electric motors



STANDARD terminal box with cable gland in **RADIAL** position



B14, B5, B3 AND NEMA
Stainless steel premium motor

The SPM series

It is ideal for extreme conditions.

Smooth surfaces and stainless steel are the ideal solutions where the hygienic requirements are strict, like in the Food and Beverage Industry, in order to avoid bacterial contamination. The motor is easy to clean, resistant to rust and corrosion. The IP69K rating provides ultimate protection against high pressure (100 bar) hot water (80°C) sprays. Meat&poultry, dairy, seafood equipments are very demanding in terms of corrosion resistance: our motors can face these challenges. Totally Enclosed Non-Ventilated IC410 (TENV), hygienic smooth surfaces: no ribs, no fins. Die cast aluminum rotor, precision balanced G2,5 according to ISO1940-1 2003.

SPM certification

Electric motors



IEC Three phase 230/400V 50Hz.

TENV (totally enclosed non ventilated).

TEFC (totally enclosed fan cooled) IEC only 2.2 kW 4P and 3kW 6P.

IEC Trifase 230/400V 50Hz.

TENV (totalmente chiuso non ventilato).

TEFC (totalmente chiuso ventilato) IEC solo 2.2 kW 4P e 3kW 6P.

Standard terminal box with cable gland in axial position.

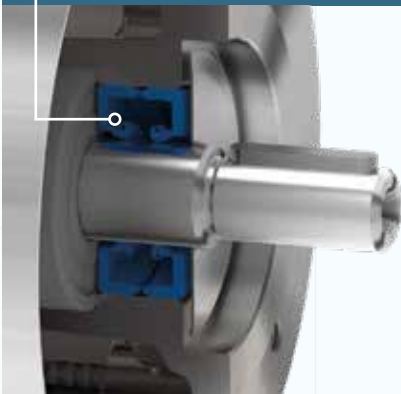
On request terminal box with cable gland in radial position.

IEC Sizes	63, 71, 80, 90, 100
Power	0.12 ÷ 3.0 kW
Mounting	B14, B5, B3
Poles	2, 4, 6

The best protection in 316L

NBR oil seal on the shaft

Options Double seal



Extra protection

Flinger for extra protection against high pressure water spray.



Bearings

Double sealed with grease lubricated.

AISI 420 Stainless steel shaft

O-ring and seal to prevent water entry. Blue seal.

Standard Hygienic cable gland



Standard design

PTO thermal protection

PTO thermal protection. Easy and stable connection with terminal block inside back conduit box. Inverter spike resistant Class F insulation system allows operation on adjustable speed drives.

Options Anti condensation valve



Stainless steel cable gland with pressure compensation

Options PTC thermistors

The PTC thermistor can be used to protect motors from overload once a certain temperature has been exceeded.



Options Encapsulated motor

Stator covered with resin to protect all parts of the motor by isolating them electrically and making the winding completely protected from any liquid.



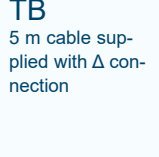
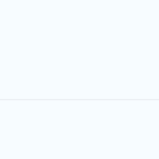
Options Pre-heater

With high humidity (RH>60%) or with low ambient temperature ($T < -20^{\circ}\text{C}$), can be equipped with an anticondensation heater to be used when motor is switched off. Supplied with single phase 230V 50Hz.



How to order

SPM	B	KC	4	J	TE	N	N
Series	Size	Power	Pole	Mounting	Tension	Cooling	Coating
SPM	B → 63	KC → 0.12	2	B14	Three-phase	N	N
	C → 71	KD → 0.18	4		TE 230/400V ^{50Hz}	TENV	Without
	D → 80	KE → 0.25	6		TU 230/460V ^{60Hz}		coating
	E → 90	KF → 0.37		J → IMB14	On request		
	F → 100	KG → 0.55		K → IMV18			
		KH → 0.75		L → IBV19	TC 332/575V ^{60Hz}		
		KI → 1.1			TD 220/380V ^{60Hz}		
		KK → 1.5		B5		V	
		KL → 2.2				TEFC	
		KM → 3.0		G → IMB5			
				H → IMV1			
				I → IMV3			
				B3 with feet			
							
				P → IMB34			
				Q → IMV15			
				R → IMV36			

4	K	-	A	1	-N	-	--
Efficiency	Protection	Terminal box	Cable gland position	Cable gland type	Cable	Thermal protection	Humid rooms options
4 IE4 Efficiency	K IP69k	S Terminal blocks 4+3  F Splicing connectors 1w+3w  Only for TEFC version - Without terminal box  Only for TEFC version Always supplied with cable	A Axial  R Radial  U Universal 	N Without cable gland  1 Stainless steel cable gland  3 Anti-condensation cable gland  4 Anti-condensation valve  6 Stainless steel cable gland with Anti-condensation valve 	-N Without cable  SA 2.5 m cable supplied with Y connection  TA 2.5 m cable supplied with Δ connection  SB 5 m cable sup- plied with Y con- nection  TB 5 m cable sup- plied with Δ con- nection 	- STANDARD PTO always supplied 1 PTC + (PTO) Thermistor 	-- STANDARD -C Condensate drain slot  -S PRE-HEATER  -R Encapsulated resinated 

2 Poles

Technical data

The SPM Series Hygienic stainless steel motors

B14

B5

B3

IE4

Mounting

Efficiency
class

S1 service, F insulation class				Operating characteristics at rated power							Direct starting						ENCLOSURE
kW	Motor code	Frame	Rated current	Speed	Nominal torque	Efficiency at % load			PF	Torque	Current	Inertia moment	Weight B14	R [Ω] 20°C			
Power			A 400/ 460V	rpm	Nm	100%	75%	50%	cos φ	Ms/Mn	Is/In	[kgm^2]	Kg				
230/400V 50Hz rpm 3000	0,18	SPM BKD2JTEN	63A	0,45	2890	0,60	70,8	67,5	64,2	0,72	4,1	6,4	0,0005	8,2	29,1	TENV	
	0,25	SPM BKE2JTEN	63B	0,65	2895	0,84	74,3	72,8	70,5	0,72	4,4	7,8	0,0006	9,8	13,8		
	0,37	SPM CKF2JTEN	71A	0,94	2930	1,23	78,1	78,0	77,2	0,72	4,3	8,8	0,0008	11,8	8,2		
	0,55	SPM CKG2JTEN	71B	1,24	2910	1,85	81,5	81,4	77,5	0,77	5,4	8,9	0,0010	13,2	6,2		
	0,75	SPM DKH2JTEN	80A	1,48	2900	2,45	83,5	83,1	80,8	0,83	6,2	12,5	0,0013	16,6	4,8		
	1,1	SPM DKJ2JTEN	80B	2,10	2910	3,60	85,2	84,9	84,2	0,86	5,8	12,8	0,0017	19,5	3,1		
	1,5	SPM EKK2JTEN	90S	2,80	2915	4,90	86,5	85,5	82,3	0,83	5,2	10,5	0,0054	32,8	1,7		
	2,2	SPM EKL2JTEN	90S	3,90	2905	7,20	88,0	87,5	86,5	0,88	4,8	8,5	0,0056	33,5	1,3		
	3,0	SPM FKM2JTEV	100LA	5,30	2880	9,80	89,1	88,5	87,6	0,85	4,7	9,5	0,0062	37,9	1,3	TEFC	
230/460V 60Hz rpm 3600	0,18	SPM BKD2JTEN	63A	0,45	2890	0,60	70,8	67,5	64,2	0,72	4,1	6,4	0,0005	8,2	29,1	TENV	
	0,25	SPM BKE2JTEN	63B	0,65	2895	0,84	74,3	72,8	70,5	0,72	4,4	7,8	0,0006	9,8	13,8		
	0,37	SPM CKF2JTEN	71A	0,94	2930	1,23	78,1	78,0	77,2	0,72	4,3	8,8	0,0008	11,8	8,2		
	0,55	SPM CKG2JTEN	71B	1,24	2910	1,85	81,5	81,4	77,5	0,77	5,4	8,9	0,0010	13,2	6,2		
	0,75	SPM DKH2JTEN	80A	1,48	2900	2,45	83,5	83,1	80,8	0,83	6,2	12,5	0,0013	16,6	4,8		
	1,1	SPM DKJ2JTEN	80B	2,10	2910	3,60	85,2	84,9	84,2	0,86	5,8	12,8	0,0017	19,5	3,1		
	1,5	SPM EKK2JTEN	90S	2,80	2915	4,90	86,5	85,5	82,3	0,83	5,2	10,5	0,0054	32,8	1,7		
	2,2	SPM EKL2JTEN	90S	3,90	2905	7,20	88,0	87,5	86,5	0,88	4,8	8,5	0,0056	33,5	1,3		
	3,0	SPM FKM2JTEV	100LA	5,30	2880	9,80	89,1	88,5	87,6	0,85	4,7	9,5	0,0062	37,9	1,3	TEFC	

Nominal values with ±10% tolerance on Voltage
Technical data and performances may change



Totally Enclosed non ventilated

TENV

B14**B5****B3****IE4**

Mounting

Efficiency
class

The SPM Series

Hygienic stainless steel motors

4

Poles

Technical data

S1 service, F insulation class				Operating characteristics at rated power							Direct starting					ENCLOSURE
kW	Motor code	Frame	Rated current	Speed	Nominal torque	Efficiency at % load			PF	Torque	Current	Inertia moment	Weight B14	R [Ω] 20°C		
Power			A 400/ 460V	rpm	Nm	100%	75%	50%	cos φ	Ms/Mn	Is/In	[kgm^2]	Kg			
230/400V 50Hz rpm 1500	0,12	SPM BKC4JTEN	63A	0,40	1445	0,81	69,8	69,5	63,9	0,64	3,5	6,5	0,0014	8,8	42,8	TENV
	0,18	SPM BKD4JTEN	63B	0,50	1445	1,21	74,7	74,1	69,3	0,70	3,8	6,6	0,0016	9,7	31,4	
	0,25	SPM CKE4JTEN	71A	0,68	1444	1,66	77,9	74,8	70,1	0,70	3,7	7,2	0,0021	11,5	22,6	
	0,37	SPM CKF4JTEN	71B	0,98	1440	2,45	81,1	79,7	75,9	0,71	4,1	7,4	0,0025	13,2	12,6	
	0,55	SPM DKG4JTEN	80A	1,38	1448	3,66	83,9	80,7	77,0	0,71	4,8	8,2	0,0026	16,2	8,3	
	0,75	SPM DKH4JTEN	80B	1,75	1440	4,95	85,7	82,5	79,2	0,74	5,6	8,5	0,0032	18,7	5,1	
	1,1	SPM EKJ4JTEN	90S	2,65	1465	7,15	87,2	84,4	80,3	0,72	4,8	8,6	0,0095	32,4	2,1	
	1,5	SPM EKK4JTEN	90L	3,50	1465	9,75	88,2	87,1	84,3	0,72	4,9	9,8	0,0107	35,4	1,6	
2,2	SPM FKL4JTEV	100	4,50	1445	14,5	89,5	87,5	86,5	0,76	4,8	9,6	0,0108	37,5	1,5	TEFC	
230/460V 60Hz rpm 1800	0,12	SPM BKC4JTUN	63A	0,36	1752	0,65	70,0	71,0	64,9	0,65			0,0014	8,8	42,8	TENV
											3,7	6,7				
	0,18	SPM BKD4JTUN	63B	0,46	1750	0,98	74,0	73,0	70,3	0,72	4,0	6,8	0,0016	9,7	31,4	
	0,25	SPM CKE4JTUN	71A	0,62	1748	1,36	77,0	75,8	71,1	0,70	3,9	7,4	0,0021	11,5	22,6	
	0,37	SPM CKF4JTUN	71B	0,92	1742	2,02	81,5	80,6	76,8	0,67	4,3	7,6	0,0025	13,2	12,6	
	0,55	SPM DKG4JTUN	80A	1,30	1750	3,05	84,0	81,7	78,0	0,70	5,0	8,4	0,0026	16,2	8,3	
	0,75	SPM DKH4JTUN	80B	1,65	1765	4,13	85,5	82,5	79,5	0,71	5,8	8,7	0,0032	18,7	5,1	
	1,1	SPM EKJ4JTUN	90S	2,50	1780	5,96	87,5	84,1	80,1	0,70	5,0	8,8	0,0095	32,4	2,1	
	2,2	SPM FKL4JTUV	100	4,30	1750	12,0	91,0	87,8	86,0	0,73	4,8	9,2	0,0108	37,5	1,5	TEFC

Nominal values with ±10% tolerance on Voltage
Technical data and performances may change



Totally Enclosed Fan Cooler

TEFC

6

Poles

Technical data

The SPM Series

Hygienic stainless steel motors

B14**B5****B3****IE4**

Mounting

Efficiency class

S1 service, F insulation class			Operating characteristics at rated power								Direct starting						ENCLOSURE
kW	Motor code	Frame	Rated current	Speed	Nominal torque	Efficiency at % load			PF	Torque	Current	Inertia moment	Weight B14	R [Ω] 20°C			
Power			A 400/ 460V	rpm	Nm	100%	75%	50%	cos φ	Ms/Mn	Is/In	[kgm^2]	Kg				
230/400V 50Hz rpm 1000	0,18	SPM CKD6JTEN	71A	0,55	890	1,95	70,1	67,2	60,1	0,68	2,6	3,0	0,0021	11,6	42,6	TENV	
	0,25	SPM CKE6JTEN	71B	0,76	920	2,65	74,1	71,3	66,8	0,65	3,2	3,4	0,0025	12,7	24,3		
	0,37	SPM DKF6JTEN	80A	1,10	890	3,98	78,0	76,0	73,2	0,66	1,7	3,4	0,0026	15,8	16,6		
	0,55	SPM DKG6JTEN	80B	1,50	900	5,30	80,9	77,7	67,4	0,69	2,4	3,7	0,0032	18,9	13,1		
	0,75	SPM EKH6JTEN	90S	1,80	940	7,60	82,7	81,5	78,0	0,72	2,6	5,7	0,0095	32,5	5,3		
	1,1	SPM EK6JTEN	90L	2,40	930	11,10	84,5	83,0	82,0	0,78	2,9	6,1	0,0107	35,2	4,9		
230/460V 60Hz rpm 3600	0,18	SPM CKD6JTUN	71A	0,52	1115	1,50	72,0	67,0	60,0	0,61	2,6	3,0	0,0021	11,6	42,6	TENV	
	0,25	SPM CKE6JTUN	71B	0,70	1120	2,1	75,5	67,0	61,0	0,61	3,2	3,4	0,0025	12,7	24,3		
	0,37	SPM DKF6JTUN	80A	1,05	1125	3,10	78,5	74,4	73,2	0,57	1,7	3,4	0,0026	15,8	16,6		
	0,55	SPM DKG6JTUN	80B	1,35	1120	4,70	82,5	77,6	68,4	0,69	2,4	3,7	0,0032	18,9	13,1		
	0,75	SPM EKH6JTUN	90S	1,70	1128	6,2	84,0	81,0	78,0	0,69	2,6	5,7	0,0095	32,5	5,3		
	1,1	SPM EK6JTUN	90L	2,20	1140	9,2	88,5	83,0	82,0	0,75	2,9	6,1	0,0107	35,2	4,9		

Nominal values with ±10% tolerance on Voltage
Technical data and performances may change



Totally Enclosed non ventilated

TENV

The SPM Series

Full stainless steel electric motors

Mounting
arrangements

Mounting arrangements and positions (IEC 60034-7)

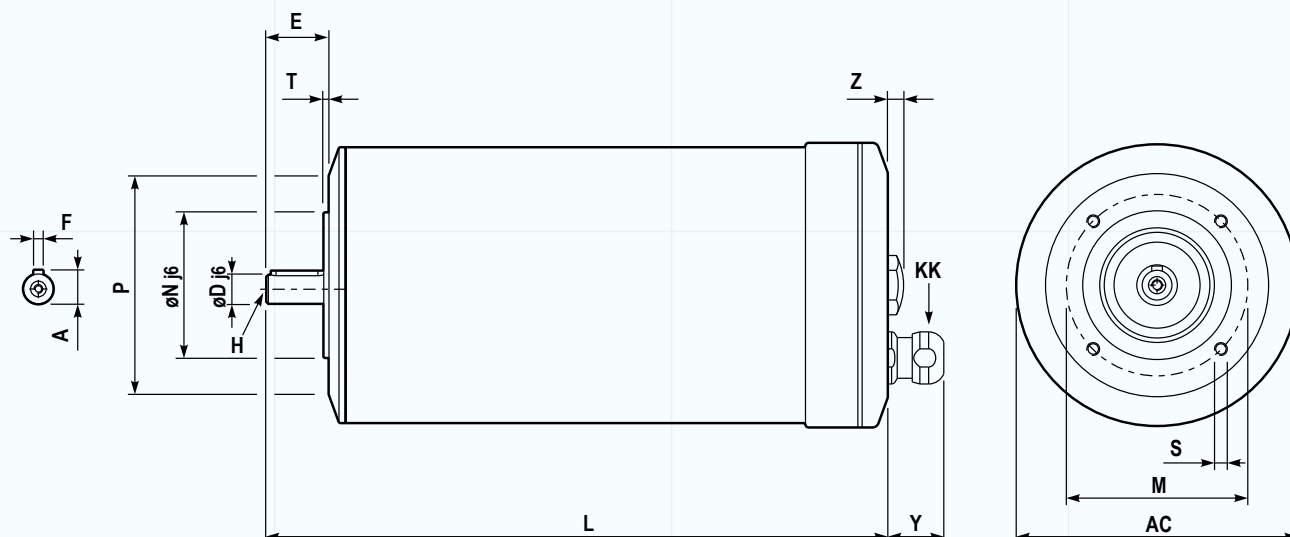
B14 Motors with fixing flange provided with threaded holes.	IMB14 Horizontal shaft 	IMB34 Horizontal shaft with foot 
	IMV18 Vertical downward shaft 	IMV15 Vertical downward shaft with foot 
	IMV19 Vertical upward shaft 	IMV36 Vertical upward shaft 
B5 Motors with fixing flange provided with passing holes.	IMB5 Horizontal shaft 	
	IMB5 Horizontal shaft 	
	IMV1 Vertical downward shaft 	

According to IEC 60034-7, there are two ways to define the configuration and installation position for an electric motor. In this table is indicated by the letters IM (International Mounting) followed by another letter (B = horizontal shaft; V = vertical shaft) and from a number.

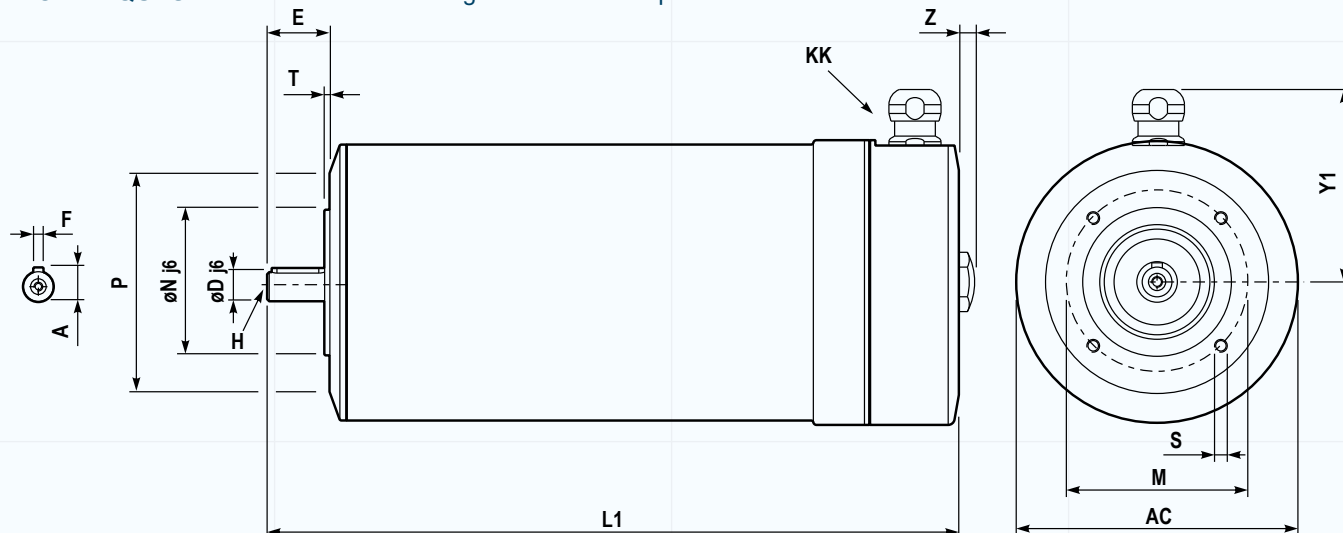
SPM Series Stainless steel premium motors

TENV Totally Enclosed non ventilated, with terminal box **kW 0.12÷2.2**

STANDARD terminal box with cable gland in **AXIAL** position



ON REQUEST terminal box with cable gland in **RADIAL** position



Dimensions

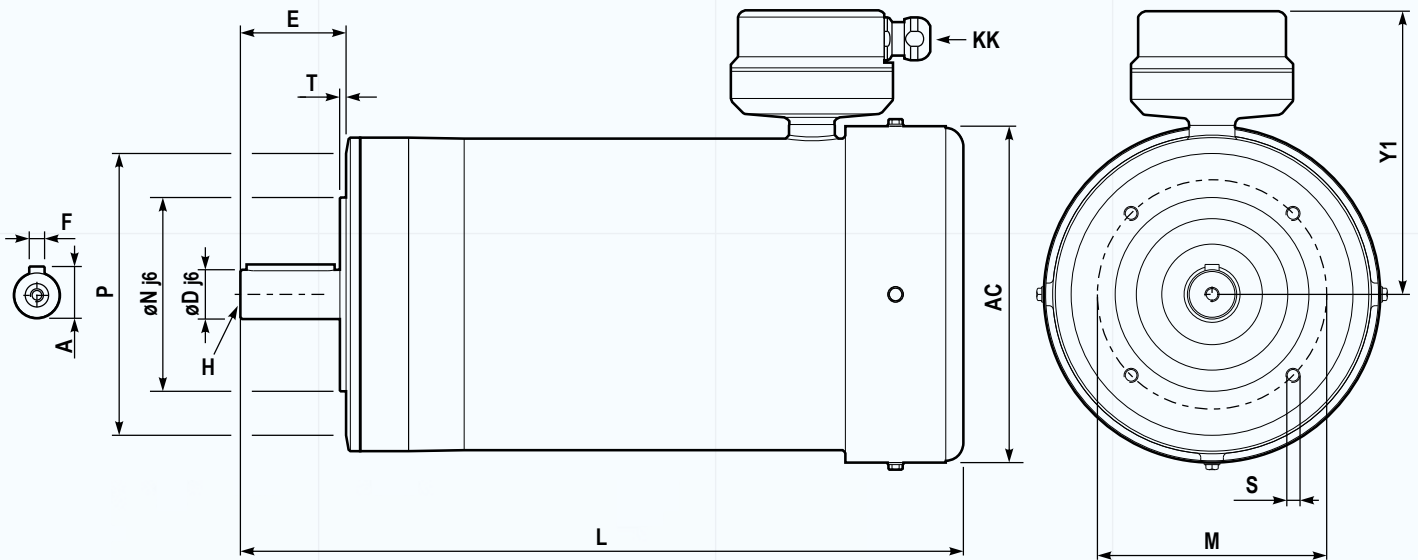
Motor	2 poles kW	4 poles kW	6 poles kW	A	øD j6 H	E	F	L	L1	M	øN j6	P	S	T	AC	KK	Y	Y1	Z
63A 63B	0.18 0.25	0.12 0.18	-	12,5	ø11 M4x11	23	4	247,5	277	75	60	90	M5x13	2,5	133	M20x1.5	27,5	91,5	7,4
71A 71B	0.37 0.55	0.25 0.37	0.18 0.25	16	ø14 M5x12	30	5	294,5	324	85	70	105	M6x13	2,5	133	M20x1.5	27,5	91,5	7,4
80A 80B	0.75 1.1	0.55 0.75	0.37 0.55	21,5	ø19 M6x16	40	6	340	368,5	100	80	120	M6x13	3	143	M20x1.5	27,5	96,5	7,4
90S 90L	1.5 2.2	1.1 1.5	0.75 1.1	27	ø24 M8x20	50	8	372	401,5	115	95	140	M8x16	3	181	M20x1.5	27,5	116	7,4

SPM Series Stainless steel premium motors

B14
Dimensions

TEFC Totally Enclosed Fan cooler

kW 2.2÷3.0



Motor fan and fan cover in stainless steel

All components of the motor fan and fan cover are made of stainless steel.



360° orientable

Options With direct cable

On request with direct cable UL certified cable, resistant to hot temperature (+90°C).



STANDARD with terminal box

ON REQUEST with direct cable

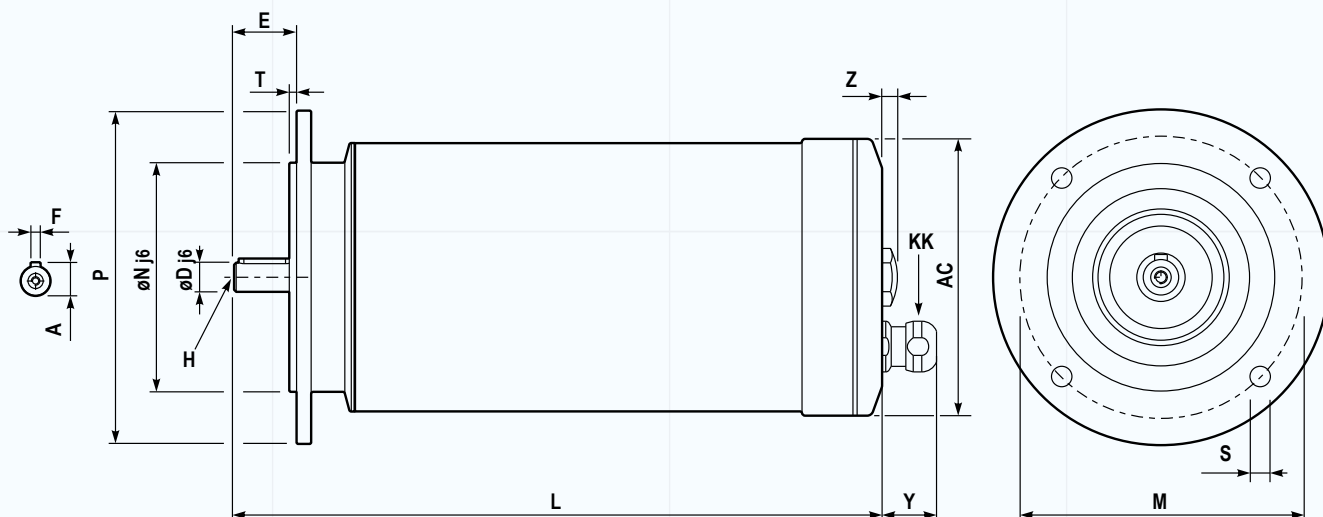
Dimensions

Motor	2 poles kW	4 poles kW	A	ØD j6 H	E	F	L	M	ØN j6	P	S	T	AC	KK	Z
100LA	3.0 2.2	31	"Ø28 M8x20"	60	8	410,5	130	110	160	M8x16	3,5	191	M20x1.5	163	11

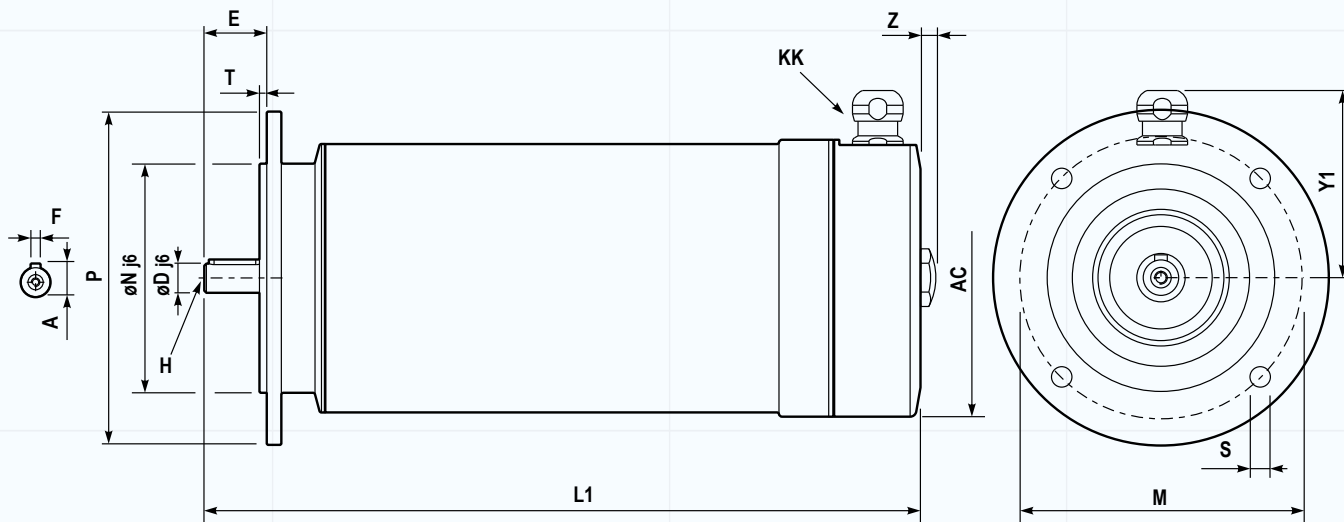
SPM Series Stainless steel premium motors

TENV Totally Enclosed non ventilated, with terminal box **kW 0.18÷2.2**

STANDARD terminal box with cable gland in **AXIAL** position



ON REQUEST terminal box with cable gland in **RADIAL** position



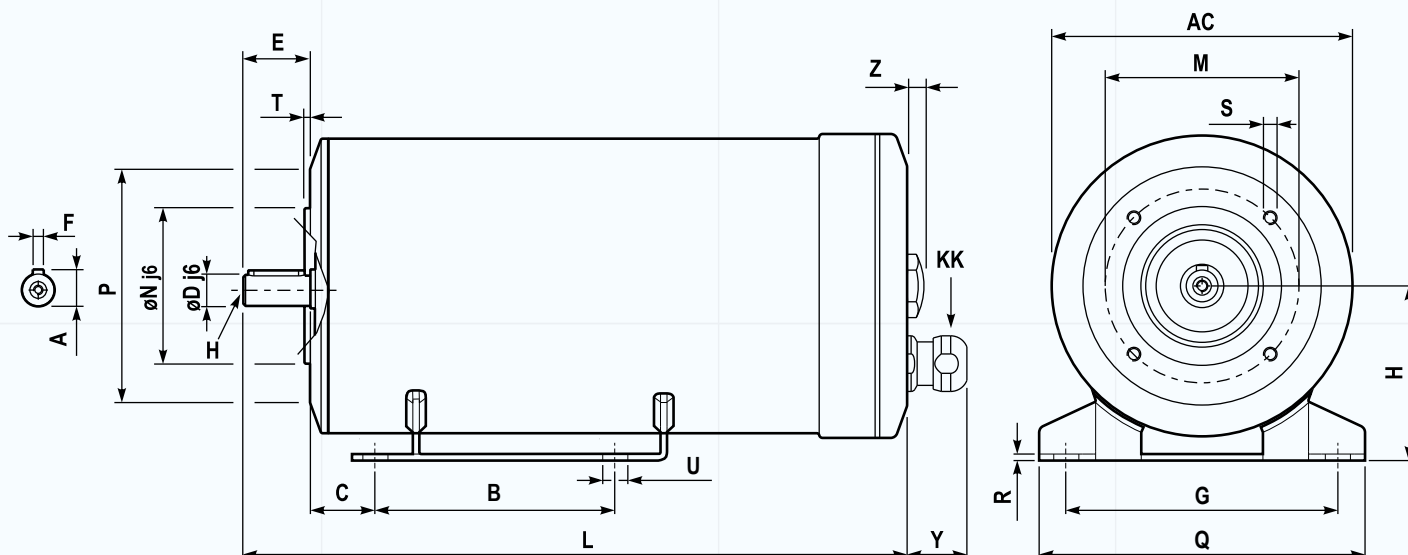
Dimensions

Motor	2 poles kW	4 poles kW	6 poles kW	A	ØD j6 H	E	F	L	L1	M	ØN j6	P	S	T	AC	KK	Y	Y1	Z
71A 71B	0.37 0.55	0.25 0.37	0.18 0.25	16	Ø14 M5x12	30	5	314,5	344	130	110	160	Ø10	3,5	133	M20x1.5	27,5	91,5	7,4
80A 80B	0.75 1.1	0.55 0.75	0.37 0.55	21,5	Ø19 M6x16	40	6	340	368,5	165	130	200	Ø12	3,5	143	M20x1.5	27,5	96,5	7,4
90S 90L	1.5 2.2	1.1 1.5	0.75 1.1	27	Ø24 M8x20	50	8	402	431,5	165	130	200	Ø12	3,5	181	M20x1.5	27,5	116	7,4

SPM Series Stainless steel premium motors

B3
Dimensions

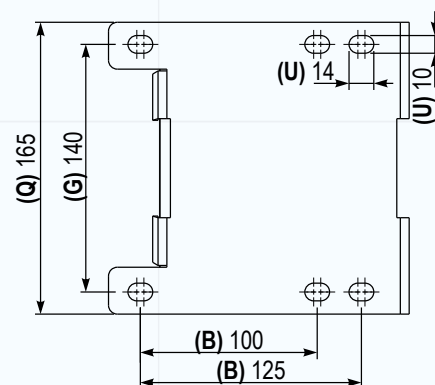
TENV Totally Enclosed non ventilated with foot kW 1.2÷2.2



Feet fixing dimensions

Most of the dimensions of the feet are interchangeable with the brands in the market, except for the size 63 and 90.

Example of foot dimensions for size 90.



Foot dimensions

Motor	B	C	G	H	U	Q	R
63A 63B	90	45	112	71	7x10	132	3
71A 71B	90	45	112	71	7x10	132	3
80A 80B	100	50	125	80	10x14	150	3
90S 90L	100 125	56	140	100	10x14	165	4

Dimensions

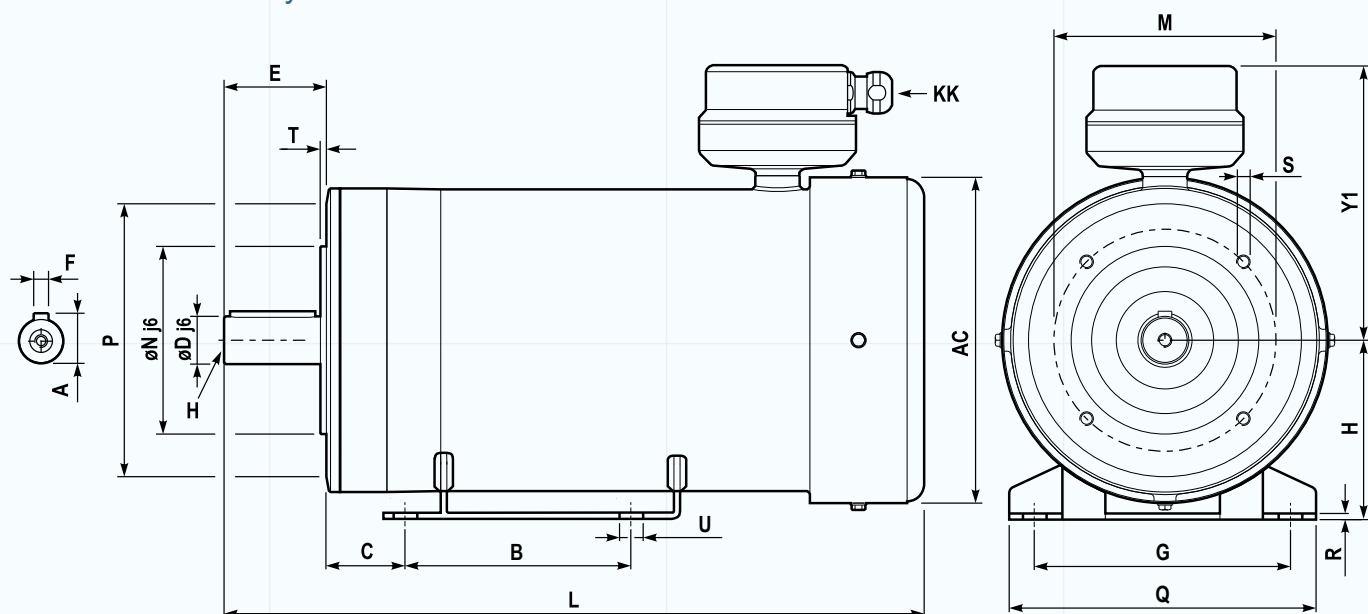
Motor	2 poles kW	4 poles kW	6 poles kW	A	øD j6 H	E	F	L	M	øN j6	P	S	T	AC	KK	Y	Z
63A 63B	0.18 0.25	0.12 0.18	-	12,5	ø11 M4x11	23	4	247,5	75	60	90	M5x13	2,5	133	M20x1.5	27,5	7,4
71A 71B	0.37 0.55	0.25 0.37	0.18 0.25	16	ø14 M5x12	30	5	294,5	85	70	105	M6x13	2,5	133	M20x1.5	27,5	7,4
80A 80B	0.75 1.1	0.55 0.75	0.37 0.55	21,5	ø19 M6x16	40	6	340	100	80	120	M6x13	3	143	M20x1.5	27,5	7,4
90S 90L	1.5 2.2	1.1 1.5	0.75 1.1	27	ø24 M8x20	50	8	372	115	95	140	M8x16	3	181	M20x1.5	27,5	7,4

B3

Dimensions

SPM Series Stainless steel premium motors

TEFC Totally Enclosed Fan cooler with foot kW 2.2÷3.0

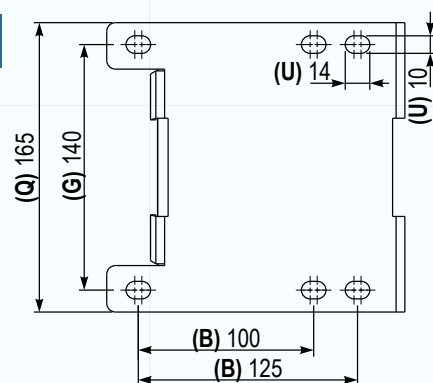


Motor fan and fan cover in stainless steel

All components of the motor fan and fan cover are made of stainless steel.

Feet fixing dimensions

The dimensions of the feet are interchangeable with most brands in the market.



Foot dimensions

Motor	B	C	G	H	U	Q	R
90S	100	56	140	100	10x14	165	4
90L	125						



STANDARD
with terminal box



Options With direct cable

On request with direct cable UL certified cable, resistant to hot temperature (+90°C).

Dimensions

Motor	2 poles kW	4 poles kW	A	øD j6 H	E	F	L	M	øN j6	P	S	T	AC	KK	Z
100LA	3.0	2.2	31	ø28 M8x20	60	8	410,5	130	110	160	M8x16	3.5	191	M20x1.5	163

Full stainless steel electric motors ideal for extreme conditions.

Radial and axial loads	Section 3
Bearings	Section 3
Temperature rise of the electric motors	Section 3
Environmental temperature	Section 3
S3 Intermittent periodic duty	Section 3
Instructions PTO probe and PTC	Section 3
Certifications on the BJ-Gear A/S products	Section D
Important information as warranty and use	Section I

Section 3

How to select an electric motor

A

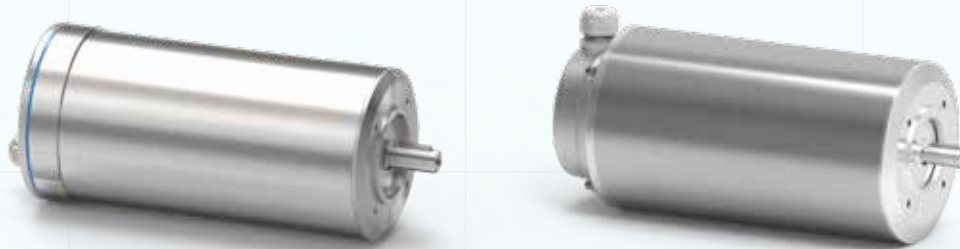
Select the poles or the speed

C

Select the voltage

B

Select the power or nominal torque



4 Poles
Technical data

Electric motor

A

Poles

A

Speed

B

Nominal torque

Technical data ex.

S1 service, F insulation class			Operating characteristics at rated power							Direct starting		Inertia moment			ENCLOSURE
kW	Motor code	Frame	Rated current	Speed	Nominal torque	Efficiency at % load			PF	Torque	Current	Inertia moment	Weight B14	R [Ω] 20°C	
Power			A 400/ 460V	rpm	Nm	100%	75%	50%	cos φ	Ms/Mn	Is/In	[kgm ²]	Kg		
0,12	APM BKC4JTEN	63A	0,40	1445	0,85	70,1	67,2	60,1	0,68	2,6	3,0	0,0021	11,6	42,6	
018	APM BKD4JTEN	63B	0,48	1445	1,25	74,1	71,3	66,8	0,65	3,2	3,4	0,0025	12,7	24,3	TENV
0,25	APM CKE4JTEN	71A	0,64	1444	1,66	78,0	76,0	73,2	0,66	1,7	3,4	0,0026	15,8	16,6	

B

Power

Frame

C

Voltage

Is= Starting current / In= Nominal current

Resistance

Symbols	Unit of measurement	Description
Power	kW	Rated output
Rated current	A	Rated current at full load
Spee	rpm	Round per minute, shaft speed at full load
Nominal torque	Nm	Nominal torque
Efficiency at %	%	Efficiency at 100%, 75% and 50%
PF	cos φ	Power factor
Ms/Mn	-	Starting torque - Nominal torque
Is/In	-	Starting current - Nominal current
Inertia moment	kgm ²	Value of the crankshaft to maintain its speed
Weight	Kg	Weight of electric motor
R 20°C	Ω	Winding phase resistance
TENV	-	Totally enclosed not ventilated
TEFC	-	Totally enclosed fan cooled

Radial and axial loads

Radial load F_R

The following table has obtained by taking into account a radial load F_R applied to the center-lines ($E/2$) of the end of output shaft and an axial load F_A negligible ($F_A/F_R < 0.2$), where as a degree of reliability of the bearings of 98% and a duration life of the same amount to 20.000 hours of operation, frequency 50Hz (for 60Hz operation is necessary to consider a reduction of the table values by about 7%).

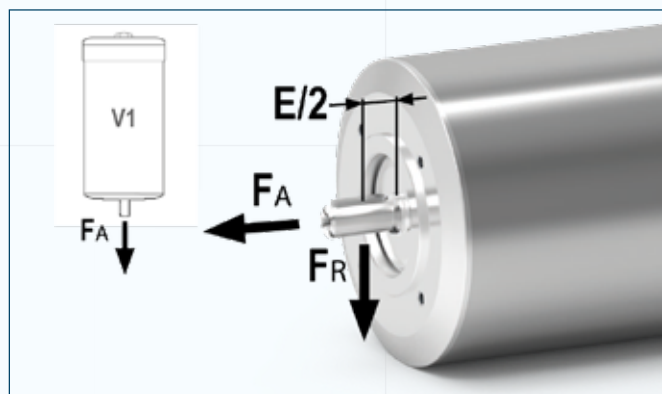
	F_R max [Nm] -50Hz, $F_R/F_A < 0,2$		
Size	2P	4P	6P
60 +71	360	450	520
80	490	620	710
90 +100	680	870	1000

Axial load F_A

The following table has obtained with no radial load, depending on the type of installation and the direction of application of force. For vertical installation V1, the calculation made is inclusive of any unfavorable effect of the weight of the rotor and the force of the spring preload.

Values in the table with 50Hz operation (for 60Hz frequency is necessary to consider a reduction of the table values by about 7%).

	F_R max [Nm] -50Hz, $F_R/F_A < 0,2$					
Size	2P		4P		6P	
	B5	V1	B5	V1	B5	V1
60 +71	250	120	250	175	325	220
80	390	235	495	340	565	410
90 +100	550	400	595	500	790	645



Bearings

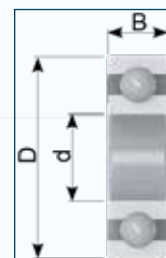
The motor shaft is mounted on two suitably sized rolling bearings, self-lubricated for life. The bearings are inserted in the front cover and in the rear cover.

1C It's the bearing in the front, cover output shaft side (DE).

2C It's the rear bearing, terminal box side (NDE).



	Bearings		Dimensions		
Frame	1C	2C	d	D	B
60 +71	6203.2Z C3	6203.2Z C3	17	40	12
80	6205.2Z C3	6205.2Z C3	25	52	15
90 +100	6206.2Z C3	6206.2Z C3	30	62	16



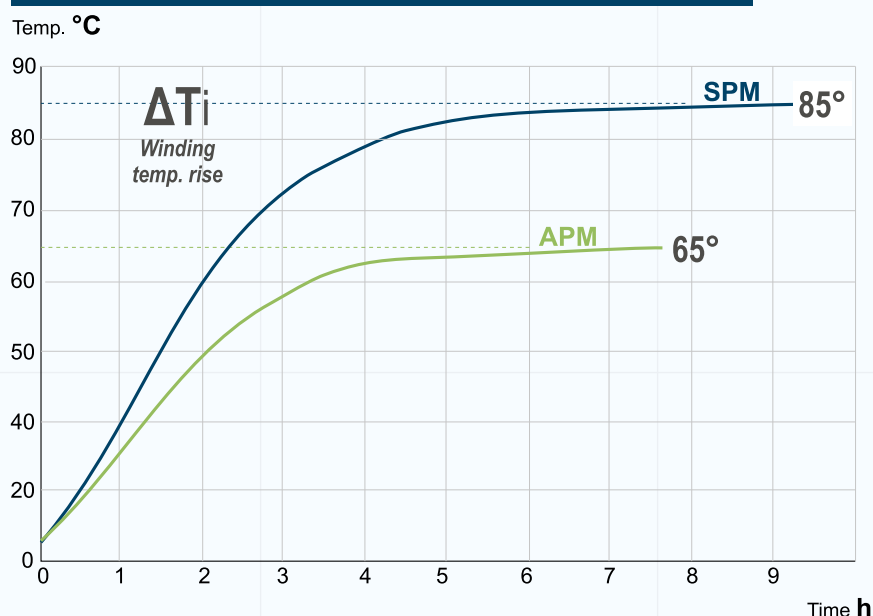
Section 3

Temperature rise of the electric motors

If the motor is selected on the appropriate selection tables according to the load required by the application, the temperature reached by the motor winding does not exceed the design that ensures its correct continuous operation in accordance with IEC60034-1. The critical motor temperature is the maximum temperature at which the winding insulation can withstand without permanent damage.

The external temperature is the sum of the ambient temperature plus the temperature rise winding (defined by IEC60034-1 in relation to the insulators used) to which is added a safety margin (see graph at the bottom of the page).

Average temperature rise of winding S1 full power.



— SPM stainless steel electric motor
— APM aluminum electric motor

Calculate the external temperature of the electric motor

$$Ex.T = \Delta T_i + T_{amb} = \dots \text{ } ^\circ\text{C}$$

ΔT_i = Temperature rise of winding

T_{amb} = Ambient temperature

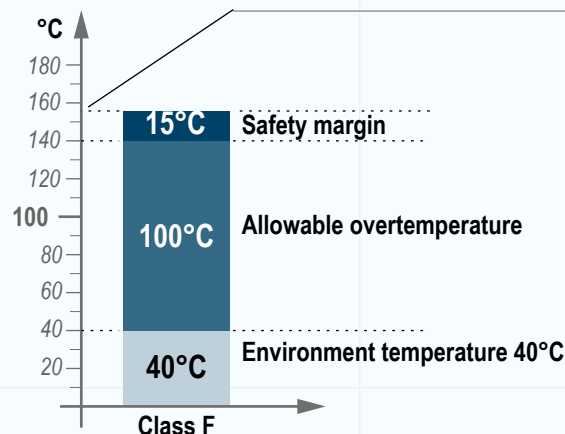
$Ex.T$ = External temperature of motor

Environmental temperature

The motors, according to the class F of insulation for which they are designed, can work in environments with temperatures between -15 and +40 °C.

For temperatures outside this range, contact the BJ-Gear A/S.

SPM and APM motors are equipped with PTO which is activated when the temperature of 150°C is reached.



S3 Intermittent periodic duty

The S3 duty is a sequence of equal operating cycles made of a period of operation at constant load and a period of rest (without electrical power). The starting current does not influence the temperature rise of the motor, therefore thermal equilibrium will not be reached during running period.

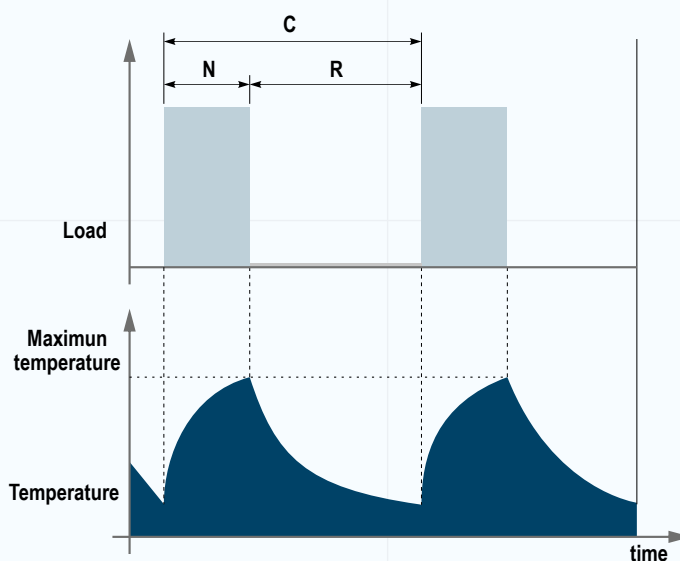
The wording S3 is followed by the intermittency ratio (example: S3 15% means that the motor is loaded for 15% of the total cycle time).

The S3 service has a rest time (i.e. no external loads applied) during which the motor has time to cool down, thus allowing it to be overloaded compared to when it was itself is used with an S1 service (and therefore continuously below load).

Electric motors with service other than S1 are not included in the European regulation regarding high efficiency motors.

For further information, please refer to the IEC 60034-1 standard.

The cycle duration in the S3 service must be less than 10 minutes, for longer durations contact our technical office.



N = Steady load operating time

R = Rest time

C = Cycle time

(1) The intermittency ratio is determined according to the formula:

$$I = N / (N+R) * 100$$

S3 power selection

If the working cycle is as described above and the motors could cool down, it is possible to use all SPM and APM motors according to S3 duty for the power just higher.

Ex. 0.37 kW S1 → 0.55 kW S3 15%

Meaning that motors can run for 15% of the time at 0.55 kW.
(Example: 15% on 10 minutes, 1.5 min. motor running - 8.5min., motor stopped)

Output speed and electrical data will slightly change when S1 motor is used at S3; on request datas are available.

Section 3

PTO probe and PTC

SPM and APM motors are equipped with PTO probes to prevent overheating.

In addition to improve motor protection against overcurrent, it's possible to provide PTC probes.

Screw the PTC probe into the M4 hole provided, screw until tight max 2Nm (only on SPM series, an M8 hole is also available for the PTC probe).



SPM series

APM series

PTO (protection thermal overload)

STANDARD

The PTO thermal pad is a normally closed bimetallic contact which opens electrical once the maximum desired temperature has been reached (150°C / 302°F selected for BJ-Gear electric motors).

The PTO thermal protection is installed inside the winding, in the case of BJ-Gear motors being three-phase there are 3 PTOs, one per phase, to have greater control of the heating of each individual phase. The three pads are connected in series so that if one opens, it also interrupts the circuit of the others. The BJ-Gear motors have 2 wires on the terminal board which form the so-called contact to be combined with the motor run contactor.

An electrical signal is thus interrupted which, connected to the panel, cuts off power to the entire electric motor. Once the temperature of the electric motor drops below the safety limit, the thermal protection returns to its original position ready for a new work cycle. If connected directly to the power supply, the motor could suddenly restart.

It is always not recommended to connect the thermal protection directly to the motor power supply but to use a separate circuit for motor control.

The PTOs used by BJ-Gear are reset automatically once the safety temperature is reached.

PTC (positive temperature coefficient)

ON REQUEST

PTC IS A TEMPERATURE SENSOR

This device is a temperature sensor (thermistor) located inside the electric motor. It is used to monitor the temperature and set an alarm threshold before PTO intervention. The two connection terminals go to a PTC temperature gauge.

The PTC thermistors, once the established threshold is reached, supply a signal that can be used by a release device (Contactor).

Check that the supply voltage corresponds to the motor nameplate data. Make the electrical wiring according to the diagram indicated on the motor plate, shown in the figure below. For completeness of information, carefully consult the instruction manual supplied with the motor.

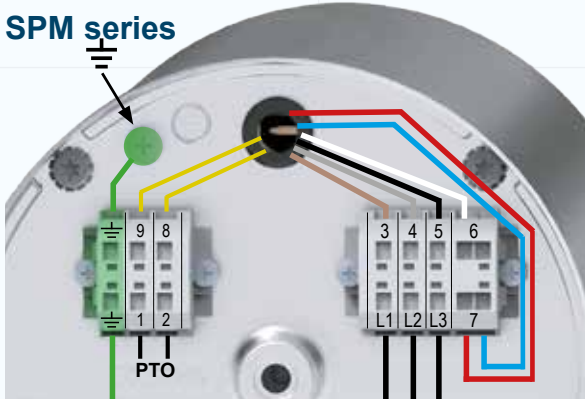
Use cables of suitable section to avoid overheating or voltage drops.

Direction of rotation: before coupling the motor to the driven machine, it is advisable to check the direction of rotation of the motor, to avoid possible damage to people and / or things. For safety, remove the spline of the shaft during the rotation verification phase. To reverse the direction of rotation of the three-phase motor, simply reverse two power supply phases.

Y Standard connection

400V STANDARD

SPM series



GROUNDING

400V LINE

The motor is supplied with Y connection.

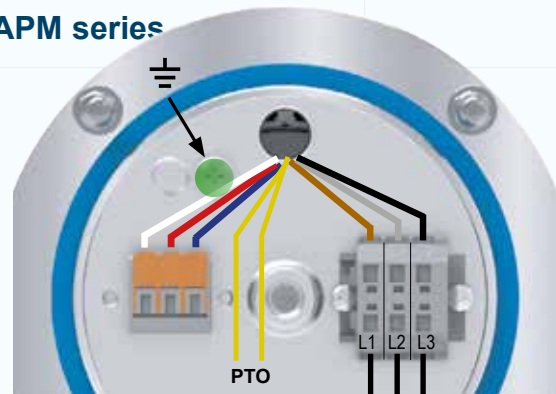
Connections on the 3-pole terminal block:

- 1 ground terminal (yellow / green).
- 2 terminals for PTO thermal switch (ref 1 and 2)

Connections on the 4-pole terminal block:

- 3 power supply terminals: L1 , L2 and L3.

APM series



400V LINE

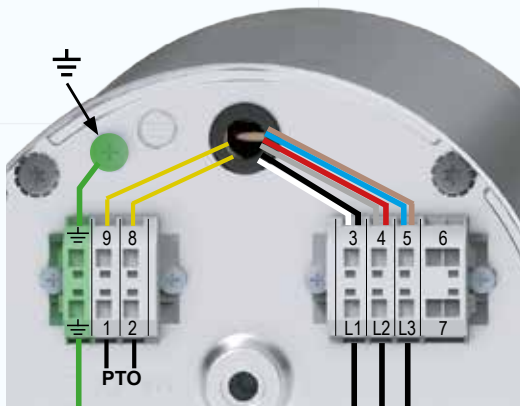
The motor is supplied with Y connection.

Connections on the 3-pole terminal block:

- Ground screw with symbol ().
- On this 3-pole terminal block there is the power supply terminals: L1, L2 and L3.
- Cables for PTO sensor connection.

Δ Connection

230V ON REQUEST

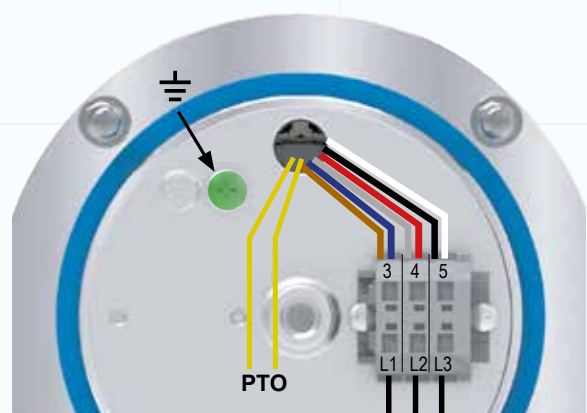


GROUNDING

230V LINE

To make the Δ connection, move the White, Red and Blue cables as follows:

- White by connecting it together with Black in terminal 3.
- Red connecting it together with Gray in terminal 4.
- Blue connecting it together with Brown in terminal 5.



230V LINE

Set the wiring as shown in the figure.

Connections on the 3-pole terminal block:

- Ground screw with symbol ().
- On this 3-pole terminal block :

White connecting it together with Black in terminal 3.

Red connecting it together with Gray in terminal 4.

Blue connecting it together with Brown in terminal 5.

- Cables for PTO sensor connection.

Section D

Certifications on the BJ-Gear A/S products

The logo consists of the text "IP69k" in a bold, black, sans-serif font, centered within a white circle.

IP69k is a rating of German standard DIN 40050-9 extending the IEC 60529 that provides the maximum protection degree against close range high pressure (100 bar), high temperature (80°C) spray downs, applied at a variety of angles, as well as against dust penetration. In many industries, where dust and dirt can be an issue or where hygiene and cleanliness are essential, like in food and beverage industry, this certification is indispensable for the equipment that must be sanitized, withstanding rigorous high pressure and high temperature wash-down procedures.



Products marked cRUUs are certified to be manufactured in accordance with the requirements of UL and approved to be used in Usa and Canada.

This certification means that the products were tested and resulted compliant regarding potential flammability, electrical shock and mechanical hazard.

The CE mark is a stylized "C" followed by a "E", both in a bold, black, sans-serif font, centered within a white square.

By applying CE mark a manufacture declares the conformity of the product to the safety requirements settled in European regulations. It means that the product is compliant to all the directives of European Community regarding its usage: from design and manufacturing to release to the market, functioning and recycling.



NSF International is an accredited, independent third-party certification organization that tests and certifies products to verify they meet these public health and safety standards. The NSF certification mark on a product means that the product complies with all standard requirements referring to the hygienic and health. NSF conducts periodic unannounced inspections and product testing to verify that the product continues to comply with the standard.

IE4

IE3

IE mark indicates the efficiency class for electrical motor (Standard IEC 60034-30:2008 for three-phase low tension motors) "IE" code stands for "International Efficiency":

IE1 = Standard Efficiency; IE2 = High Efficiency; IE3 = Premium Efficiency; IE4 = Super Premium Efficiency.

Starting from the 1st January 2017 IE3 efficiency is mandatory for the motors between 0,75 and 375 kW and IE2 in case the motor powered by inverter.

From 1 July 2021: the energy efficiency of three-phase motors with a rated output equal to or above 0,75 kW and equal to or below 1 000 kW, with 2, 4, 6 or 8 poles, shall correspond to at least the IE3 efficiency from 1 July 2023:

the energy efficiency ,with a rated output equal to or above 0,12 kW and equal to or below 1.000kW, with 2, 4, 6 or 8 poles, and single-phase motors with a rated output equal to or above 0,12 kW shall correspond to at least the IE2 efficiency, the energy efficiency of three-phase motors which are not brake motors, Ex eb increased safety motors, or other explosion-protected motors, with a rated output equal to or above 75 kW and equal to or below 200 kW, with 2, 4, or 6 poles, shall correspond to at least the IE4 efficiency.

Minimun efficiency class	For Motors	For AC drives
From July 2021	IE3	IE2
From July 2023	IE4 for motors rated 75÷200kW	IE2

Important information as warranty and use

**SINCE CLEAN-GEARTECH IS A DIVISION OF HYDRO-MEC SPA.
HYDROMEC SPA IS THE LEGAL RESPONSABLE FOR WARRANTY ISSUES.**

PLEASE READ CAREFULLY

The following WARNING and CAUTION information are supplied to you for the proper functioning of your product.
Read ALL instructions prior to operating reducer.

Injury to personnel or reducer failure may be caused by improper installation, maintenance or operation.

WARNING:

- Written authorization is required to operate or use reducers in man lift or people moving devices.
- Check to make sure that certain applications do not exceed the allowable load capacities published in the current catalog.
- Buyer shall be solely responsible for determining the adequacy of the product for any and all uses to which Buyer shall apply the product. The application by Buyer shall not be subject to any implied warranty of fitness for a particular purpose.
- For safety, Buyer or User should provide protective guards over all shaft extensions and any moving apparatus mounted thereon. The User is responsible for checking all applicable safety codes in his area and providing suitable guards. Failure to do so may result in bodily injury and/or damage to equipment.
- Gearboxes operating in high position should have a protective shield for any possible parts falling down for casual accidents where people are moving under them.
- Hot oil and reducers can cause severe burns. Use extreme care when removing lubrication plugs and vents.
- Make certain that the power supply is disconnected before attempting to service or remove any components. Lock out the power supply and tag it to prevent unexpected application power.
- Reducers are not to be considered fail safe or self-locking devices. If these features are required, a properly sized, independent holding device should be utilized.

Reducers should not be used as a brake.

- Any brakes that are used in conjunction with a reducer must be sized or positioned in such a way so as to not subject the reducer to loads beyond the catalog rating.
- Lifting supports including eyebolts are to be used for vertically lifting the gearbox only and not other associated attachments or motors.
- Use of an oil with an EP additive on units with backstops may prevent proper operation of the backstop. Injury to personnel, damage to the reducer or other equipment may result.
- Overhung loads subject shaft bearings and shafts to stress which may cause premature bearing failure and or shaft breakage from bending fatigue, if not sized properly.

SELLING CONDITIONS

Warranty for manufacturing defects will expire one-year after the invoicing date. Cleangeartech will replace or repair defective parts but will not accept any further changes for direct or indirect damages of any kind. The warranty will become null and void if repairs or changes are carried out without our prior written authorization.

Our company will not be responsible for any direct or indirect damages, caused by a wrong use of the products or for not observing the catalogue/web indication.

If the process requires total protections the customers should consider additional measures to avoid any contaminations arising from the gearboxes.

All rights reserved.

All information shown in this catalogue are purely indicative; Hydro-Mec s.p.a reserves the right to make any necessary variation without prior notice.

Our product program



VFD



VFN



VFI



BVN



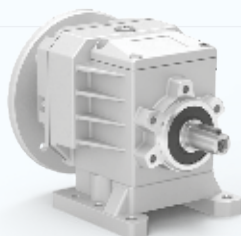
APM



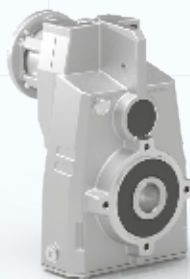
SPM



**Worm
gearboxes**



**Helical
gearboxes**



**Shaft mounted
gearboxes**



**Helical bevel
gearboxes**

bj·gear

Customisation is our standard



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