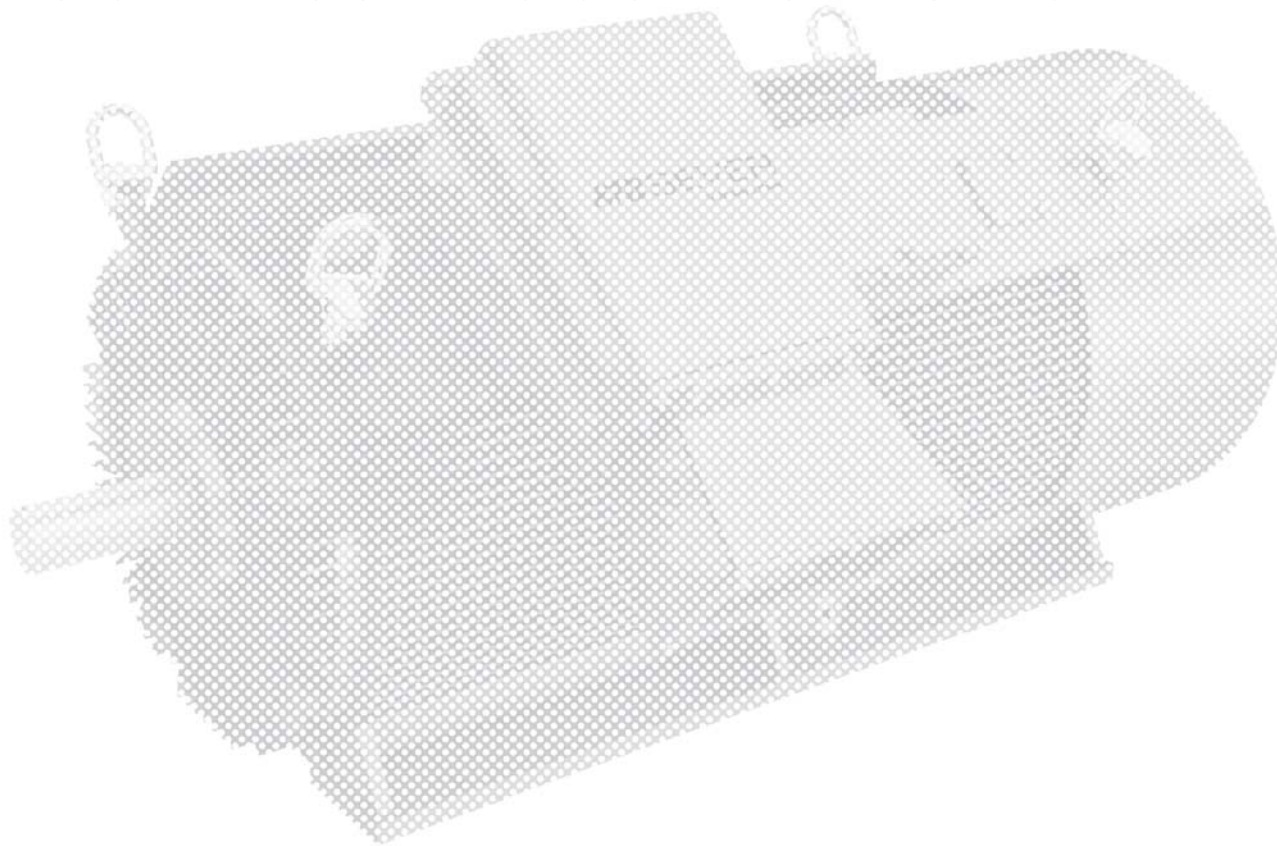


# Technical Documentation



TRANSNORM  
LOW VOLTAGE MOTORS  
IC 411

**ATB SEVER**  
Technology in Motion

## Mission, Vision, Targets



Our electric motors and generators are optimized in accordance with our client's technical and economical requests. Our clients will receive from us, within a very short notice, most advanced and high quality technical solutions of electric motors, generators, electric drives and complete technical solutions of small and middle sized hydroelectric power plants, along with economically most favourable conditions.

We are constantly moving your ideas. We are not just manufacturing motors and generators, we turn ambitious concepts of our clients into advanced, innovative and reliable products, which are unique and future oriented. Our reliability, creativity and flexibility will assist our clients in achieving their goals.

Keeping track with newest technological and technical solutions, our products are being constantly developed and therefore we are improving all our activities aimed to fulfil our client's requests. Our view of the future is oriented towards development of high power and big sized electric motors, hydrogenerators for small and middle sized hydroelectric power plants, as well as electric motors designed for extreme working conditions and most complex technical requirements.

## TRANSNORM MOTORS

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## Low Voltage

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# TRANSNORM MOTORS

## 2 Our philosophy

As a competent full-range supplier of bespoke highly efficient electrical drives, we are ready to meet the challenges on a global market.

We find the perfect solution together with our customers and partners for their individual drive applications using our comprehensive development and production competences.

Our product range is as diverse as our customers' needs, leading to highly efficient solutions such as the transnorm motor range.

The transnorm motor range is now upgraded with a IC411 motor family with improved cooling system, providing state of the art performance while committed to our tradition as application expert and development partner.

The highly efficient new motor range has been developed by an international team of ATB specialists bringing together our joint values and expertise and will be produced as new platform on selected sites.

The ATB group represents innovative drive solutions and continually invests in the development of electrical motors and systems to meet the specific requirements of tomorrow.

## Characteristics

### Performance parameters

- ⚡ Power range from 160 kW to 4 MW
- ⚡ High efficiency up to 97,5 %
- ⚡ Comprehensive range of high and low voltage from 2 to 8 poles
- ⚡ IE3 up to 375 kW (acc. EN 60034-30:20129)
- ⚡ Enclosure IP 55 standard, optional IP 56, IP65

### Special attributes

- ⚡ Increased power to weight ratio
- ⚡ Optimized design to maximize performance
- ⚡ Improved cooling system IC 411
- ⚡ Lower bearing temperature and easy maintenance
- ⚡ Reduced noise level
- ⚡ Multi-position terminal box
- ⚡ Universal mounting position
- ⚡ Easy customization with modular add-on accessories
- ⚡ Suitable for use with inverter drives
- ⚡ Developed with Computational Fluid Dynamics (CFD)
- ⚡ Easy to fit in multiple industrial application and segments
- ⚡ Worldwide product and service support

### Low voltage range

#### Performance parameters

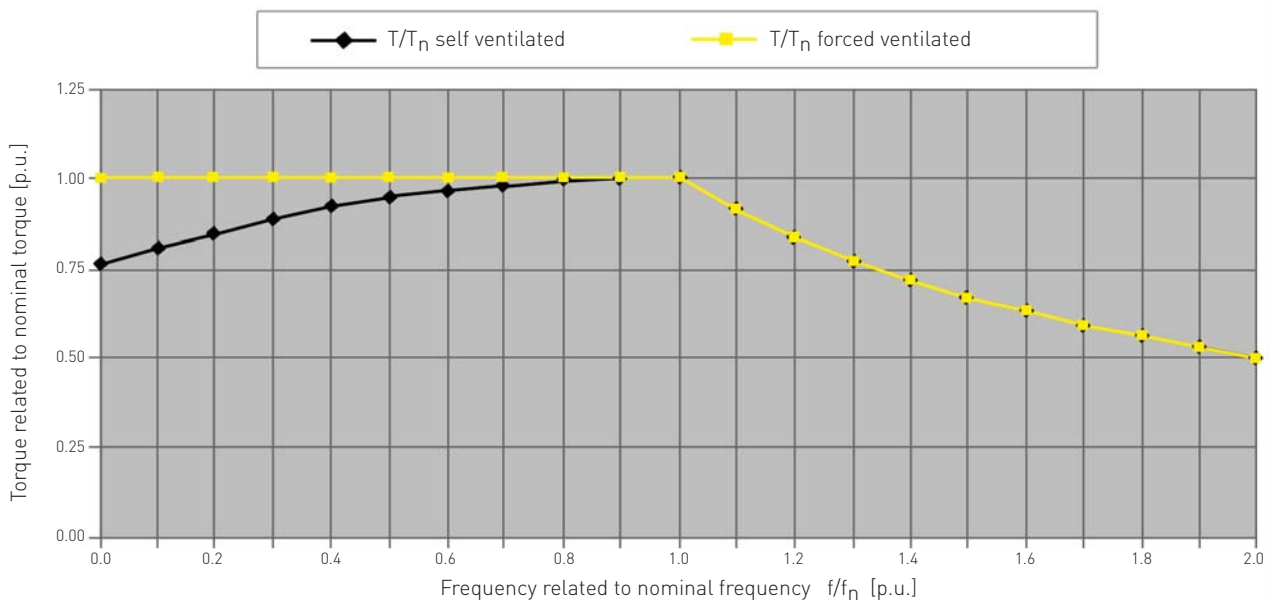
Frame size	mm	315	355	400	450	500	560	630	710
Power range	kW	200-500	450-650	400-800	650-1,150	900-1,500	1,250-2,000	1,900-2,140	3,000

### High voltage range

#### Performance parameters

Frame size	mm	315	355	400	450	500	560	630	710
Power range	kW	160-400	225-600	355-800	560-1,250	710-1,800	1,250-2,250	1,800-3,000	2,600-4,000

Torque reduction for converter operation as a function of cooling system and rotational speed



# TRANSNORM MOTORS

## 4 Technical data

	Low voltage range	High voltage range
Voltage	400/690 V	3,6/6/11 kV
Power	200-3,000 kW	160-4,000 kW
Frequency	50/60 Hz	50/60 Hz
Motor type	asynchronous motor with cage rotor	
Starting	direct, duty type S1	
Class of insulation	F	
Temperature rise class	B (F*)	
Degree of protection	IP 55	
Degree of protection of terminal box	IP 65	
Method of cooling	IC 411	
Type of construction	IMB3, IMV1	
Ambient temperature	-20°C up to 40°C	
Altitude	up to 1,000 m above sea level	

\* Inverter drive motor

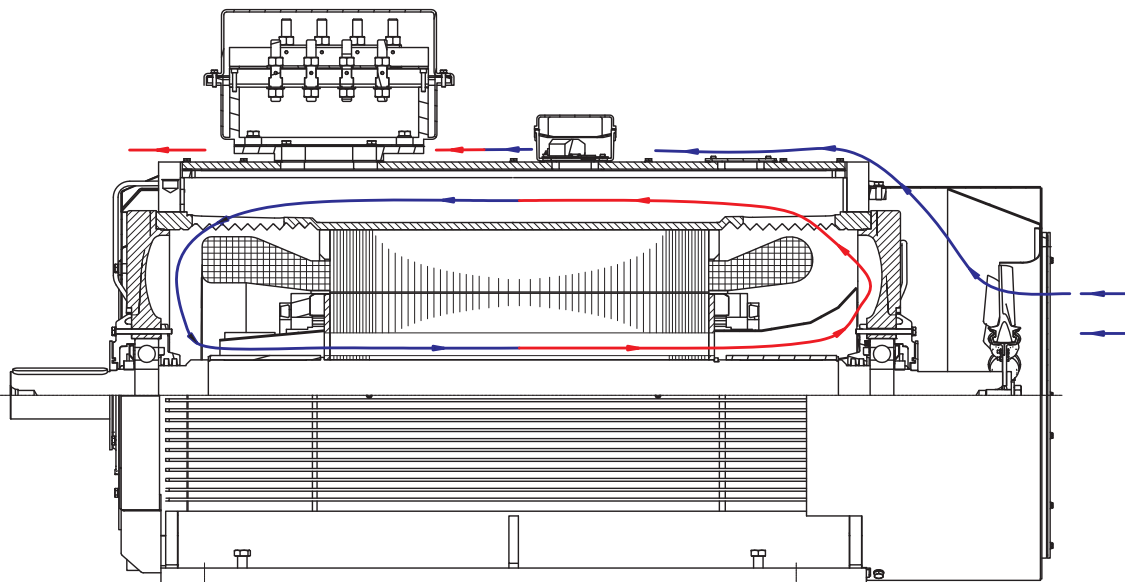
Subject to modifications



### Cooling with the own fan, method of cooling IC411, motor series 5. ZK and 4.ZK

Motors with housings with ribs and the own ventilation have technically sophisticated concept of cooling, which corresponds to method of cooling IC411 according to IEC 60034-6 with additional internal circulation circuit. As shown in the drawing, the fan is placed on the non-drive end side. It sucks air from the outside and pushes it axially along the external cooling ribs of the housing. Heat exchange is done in the internal cooling circuit, which ensures uniform temperature distribution in the active motor part and in the bearing areas.

Fans which push the cooling air inside and outside are mounted on the motor shaft and have a role in significant reduction of noise regarding its optimized aerodynamic design.



### Motor protection

Many standard and optional devices for monitoring and protection are available.

Protective device	Description
Stator winding monitoring	Standard equipment is 6 x Pt100 resistors for temperature monitoring
Rolling bearings monitoring	Standard equipment is one Pt100 resistor for temperature monitoring per bearing. Optional – nipple for impact impulse measuring.
Monitoring of starting and speed	Optional – pulse encoder for variable speed drive motors
Heaters	Optional

# TRANSNORM LV MOTORS

## 6 Characteristics

### Vibrations

Horizontal motors up to 3600 min<sup>-1</sup> meet A vibration level according to IEC 60034-14. Vibration level B is available as an option. The values of vibration for vertical motors we give on request.

### Balance quality

Rotors are dynamically balanced with a half key. Balancing quality is G2.5 according to ISO 1940, for speed up to and including 1500 min<sup>-1</sup>.

### Rotation direction, fan

Rotation direction has to be defined for every order. External fan is foreseen for one rotation direction.

### Standards and regulations

Motors meet appropriate standards and regulations, especially those specified in the following table.

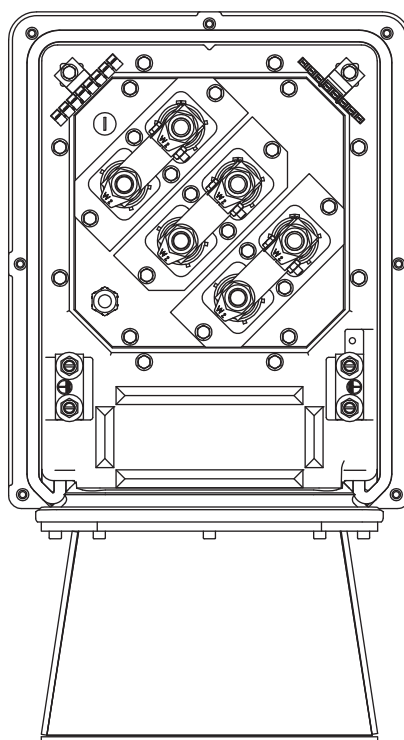
Title	IEC designation
Rotating electrical machines – Part 1: Rating and performance	IEC60034-1
Rotating electrical machines – Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) – Classification	IEC60034-5
Rotating electrical machines - Part 6: Methods of cooling (IC Code)	IEC60034-6
Rotating electrical machines – Part 7: Classification of types of construction, mounting arrangements and terminal box position (IM Code)	IEC60034-7
Rotating electrical machines – Part 8: Terminal markings and direction of rotation	IEC60034-8
Rotating electrical machines – Part 14: Mechanical vibration of certain machines with shaft heights 56 mm and higher – Measurement, evaluation and limits of vibration severity	IEC60034-14
Rotating electrical machines – Part 15: Impulse voltage withstand levels of rotating a.c. machines with form-wound stator coils	IEC60034-15
Electrical insulation - Thermal evaluation and designationMechanical vibration -- Balance quality requirements for rotors in a constant (rigid) state -- Part 1: Specification and verification of balance tolerances	IEC60085
Rotating electrical machines - Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)	IEC60034-2-1



Table of bearings for motors IM B3 and IM V1

Size	Mounting arr.	Poles	DE side	NDE side	Grease quantity (cm <sup>3</sup> )	Lubrication period (h)			
						2p=2	2p=4	2p=6	2p=8
315	B3	2	6317 C3	6317 C3	46/46	1400			
		>=4	6322 C3	6322 C3	75/75		3000	4900	6300
	V1	2	6317 C3	6317 C3/C4	46/46	1400			
		>=4	6322 C3	6322 C3/C4	75/75		3000	4900	6300
355	B3	2	6317 C3	6317 C3	46/46	1400			
		>=4	6322 C3	6322 C3	75/75		3000	4900	6300
	V1	2	6317 C3	6317 C3/C4	46/46	1400			
		>=4	6322 C3	6322 C3/C4	75/75		3000	4900	6300
400	B3	2	6317 C3	6317 C3	46/46	1400			
		>=4	6324 C3	6324 C3	90/90		2700	4500	5900
	V1	2	6317 C3	6317 C4	46/46	1400			
		>=4	6324 C3	6324 C3	90/90		2700	4500	5900
450	B3	>=4	6326 M C3	6326 M C3	105/105		2500	4200	5500
	V1	>=4	6326 M C3	7326B + 6326 C3	105/105+105		2000	3500	4500
500	B3	>=4	6326 M C3	6330 M C3	105/105		2500	4200	5500
	V1	>=4	6326 M C3	7330 B M + 6330 M C3	105/105+105		2000	3500	4500
560	B3	>=4	6330 C3	6334 C3	120/120		2000	3500	4500
	V1	>=4	6330 C3	7334 B M + 6334 C3	120/120+120		1700	3000	3800

Drawing of terminal box



# TRANSNORM LV MOTORS

## 8 Electrical data

### Network operation

Low voltage TEFC motors, IP55, class F/B

400 V, 690V / 50Hz

Type	Power Pn kW	Nominal speed n 1/min	Motor efficiency $\eta$ %	Power factor $\cos\varphi$	Nominal current at		Nominal torque Tn Nm	Maximum torque Tm/Tn	Momentum of inertia J kgm <sup>2</sup>	Weight m kg
					400V In A	690V In A				
<b>2p=2</b>										
5.ZK 315 La-2	400	2976	96,1	0,95	632	365	1284	2,9	2,64	2150
5.ZK 315 Lb-2	450	2981	96,4	0,94	717	414	1442	3,4	2,9	2280
5.ZK 315 Lc-2	500	2980	96,5	0,95	787	454	1602	3	3,27	2400
5.ZK 355 La-2	500	2978	96,4	0,96	780	450	1603	2,5	5,51	3000
5.ZK 355 Lb-2	560	2982	96,5	0,95	882	509	1793	3,3	6,3	3170
5.ZK 355 Lc-2	650	2980	96,6	0,96	1003	579	2083	2,9	7,2	3370
5.ZK 400 La-2	560	2982	96,4	0,94	516	298	1793	2,9	9,1	3230
5.ZK 400 Lb-2	630	2985	96,4	0,93	581	335	2016	2,8	10,2	3380
5.ZK 400 Lc-2	710	2986	96,5	0,94	657	379	2270	2,8	11,5	3550
5.ZK 400 Ld-2	800	2987	96,7	0,95	728	420	2558	3	13	3790
<b>2p=4</b>										
5.ZK 315 La-4	400	1486	96,2	0,88	682	394	2571	2,7	4,34	1960
5.ZK 315 Lb-4	450	1487	96,4	0,89	757	437	2890	2,7	4,78	2060
5.ZK 315 Lc-4	500	1489	96,6	0,88	849	490	3207	3	5,25	2170
5.ZK 355 La-4	500	1492	96,8	0,87	857	495	3200	4,1	8,77	2930
5.ZK 355 Lb-4	560	1491	96,9	0,92	907	524	3587	3,6	9,76	3090
5.ZK 355 Lc-4	650	1492	97,0	0,90	1075	621	4161	3,9	10,87	3280
5.ZK 400 La-4	560	1491	96,9	0,91	920	531	3586	3	14,9	3520
5.ZK 400 Lb-4	630	1491	97,0	0,91	1027	593	4035	2,9	16,8	3730
5.ZK 400 Lc-4	710	1491	97,1	0,92	1152	665	4548	2,9	18,9	3950
5.ZK 400 Ld-4	800	1491	97,0	0,92	1294	747	5124	2,9	21,3	4200
4.ZK 450 La-4	1150	1492	97,2	0,89		1115	7361	2,4	32,6	5600
4.ZK 500 La-4	1100	1492	97,0	0,88		1078	7041	2,8	39,5	6300
4.ZK 500 Lb-4	1300	1493	97,1	0,89		1266	8315	2,5	44	6600
4.ZK 500 Lc-4	1500	1493	97,2	0,89		1460	9595	2,8	49	7400
4.ZK 560 La-4	1750	1493	97,1	0,91		1666	11194	3	98	8300
4.ZK 560 Lb-4	2000	1494	97,2	0,93		1861	12784	3	115	8900
<b>2p=6</b>										
5.ZK 315 La-6	315	985	95,3	0,8	596	344	3054	2,4	5,46	1870
5.ZK 315 Lb-6	355	985	95,4	0,81	663	383	3442	2,4	60,5	1970
5.ZK 315 Lc-6	400	984	95,5	0,84	720	416	3882	2,1	6,38	2070
5.ZK 355 La-6	450	987	96,0	0,86	787	454	4354	2,7	9,53	2840
5.ZK 355 Lb-6	500	987	96,0	0,86	874	505	4838	2,7	10,79	2990
5.ZK 355 Lc-6	560	988	96,1	0,85	990	572	5413	2,8	12,2	3170
5.ZK 400 La-6	500	992	96,4	0,85	885	511	4813	2,8	20,1	3480
5.ZK 400 Lb-6	560	992	96,5	0,86	970	560	5391	2,7	22,6	3670
5.ZK 400 Lc-6	630	992	96,6	0,88	1067	616	6065	2,5	25,4	3880
5.ZK 400 Ld-6	710	992	96,7	0,88	1197	691	6835	2,6	28,6	4130

Motors fed via frequency converter with non-sinusoidal exit voltage have reinforced insulation system.

Values, presented on this page are according to IEC 34-2-1 defined for the net supply operation.

Values for the converter fed operation depend from converter choice, and they cannot be defined in advance.

Motors with higher pole number, or multispeed motors are available ETO.

# TRANSNORM LV MOTORS

## Electrical data 9

Network operation  
Low voltage TEFC motors, IP55, class F/B  
400 V, 690V / 50Hz

Type	Power	Nominal speed	Motor efficiency	Power factor	Nominal current at		Nominal torque	Maximum torque	Momentum of inertia	Weight
	P <sub>n</sub> kW	n 1/min	η %	cos φ	I <sub>n</sub> A	I <sub>n</sub> A	T <sub>n</sub> Nm	T <sub>m</sub> /T <sub>n</sub>	J kgm <sup>2</sup>	m kg
<b>2p=6</b>										
4.ZK 450 La-6	880	993	96,7	0,86	885	8463	2,7	42,6	5700	
4.ZK 500 La-6	1250	995	96,9	0,87	1248	11997	2,4	89	6600	
4.ZK 500 Lb-6	1350	995	96,9	0,85	1380	12957	2,85	97,5	6900	
4.ZK 500 Lc-6	1500	995	97,0	0,86	1505	14397	2,5	106	7200	
4.ZK 560 La-6	1750	995	97,2	0,88	1712	16796	2,6	141	8900	
4.ZK 560 Lb-6	1950	996	97,3	0,87	1928	18697	2,8	161,25	9500	
4.ZK 560 Lc-6	2150	996	97,3	0,88	2101	20615	2,8	180	10000	
4.ZK 630 La-6	2300	996	97,3	0,89	2222	22053	2,9	287,1	11700	
4.ZK 630 Lb-6	2450	996	97,3	0,89	2381	23491	2,85	306,5	12000	
<b>2p=8</b>										
5.ZK 315 La-8	200	737	94,7	0,83	367	212	2592	2	6,8	2000
5.ZK 315 Lb-8	250	737	94,7	0,77	495	286	3239	2,1	7,6	2120
5.ZK 315 Lc-8	315	739	95,1	0,77	621	359	4071	2,1	8,2	2320
5.ZK 355 La-8	355	740	95,5	0,83	646	373	4581	2,4	11,82	2880
5.ZK 355 Lb-8	400	741	95,6	0,81	746	431	5155	2,5	13,38	3040
5.ZK 355 Lc-8	450	740	95,7	0,83	818	472	5807	2,5	15,17	3220
5.ZK 400 La-8	400	743	95,9	0,78	771	445	5141	2,5	25,3	3430
5.ZK 400 Lb-8	450	743	96,1	0,80	842	486	5784	2,3	29,1	3620
5.ZK 400 Lc-8	500	743	96,2	0,81	928	536	6427	2,3	36,2	3800
5.ZK 400 Ld-8	560	743	96,3	0,80	1044	603	7198	2,4	42,4	4050
4.ZK 450 La-8	650	745	96,3	0,81	697	8332	2,5	52	5600	
4.ZK 500 La-8	900	745	96,4	0,80	976	11537	2,4	81,7	6300	
4.ZK 500 Lb-8	1000	745	96,5	0,80	1084	12819	2,3	90,6	6700	
4.ZK 500 Lc-8	1100	745	96,5	0,81	1179	14101	2,3	100	7000	
4.ZK 560 La-8	1250	747	96,7	0,81	1344	15981	2,9	155	8700	
4.ZK 560 Lb-8	1400	747	96,7	0,82	1486	17898	2,85	168,5	9000	
4.ZK 560 Lc-8	1630	747	96,8	0,81	1730	20839	2,75	189,2	9600	
4.ZK 630 La-8	1900	746	96,9	0,86	1919	24323	2,7	300,5	11200	
4.ZK 630 Lb-8	2140	746	97,0	0,87	2134	27395	2,5	315,5	11400	

Motors fed via frequency converter with non-sinusoidal exit voltage have reinforced insulation system.  
Values, presented on this page are according to IEC 34-2-1 defined for the net supply operation.  
Values for the converter fed operation depend from converter choice, and they cannot be defined in advance.  
Motors with higher pole number, or multispeed motors are available ETO.

# TRANSNORM LV MOTORS

## 10 Electrical data

Converter fed operation

Constant torque speed range 1:2

400 V, 690V / 50Hz

Type	Power P <sub>n</sub> kW	Nominal speed n 1/min	Motor efficiency η %	Power factor cos φ	Nominal current at		Nominal torque T <sub>n</sub> Nm	Maximum torque T <sub>m</sub> /T <sub>n</sub>
					400V I <sub>n</sub> A	690V I <sub>n</sub> A		
5.RZK 400 La-2	516	2984	96,3	0,94	826	477	1651	3
5.RZK 400 Lb-2	580	2986	96,3	0,94	932	538	1855	3
5.RZK 400 Lc-2	654	2987	96,3	0,93	1051	607	2091	3
5.RZK 400 Ld-2	737	2988	96,6	0,95	1166	673	2355	3,3
5.RZK 400 La-4	516	1491	96,7	0,90	856	494	3305	3,1
5.RZK 400 Lb-4	580	1491	96,8	0,91	953	550	3715	3
5.RZK 400 Lc-4	654	1491	96,9	0,91	1067	616	4189	3
5.RZK 400 Ld-4	737	1491	97,0	0,91	1199	692	4720	3,1
5.RZK 400 La-6	461	993	96,3	0,84	828	478	4434	2,9
5.RZK 400 Lb-6	516	993	96,4	0,86	902	521	4963	2,8
5.RZK 400 Lc-6	580	992	96,5	0,88	989	571	5584	2,8
5.RZK 400 Ld-6	654	992	96,7	0,87	1122	648	6296	2,7
5.RZK 400 La-8	369	743	95,9	0,77	727	420	4743	2,5
5.RZK 400 Lb-8	415	743	96,0	0,79	790	456	5334	2,4
5.RZK 400 Lc-8	461	743	96,1	0,80	869	502	5925	2,3
5.RZK 400 Ld-8	516	743	96,2	0,79	977	564	6632	2,5
4.RZK 450 La-4	1060	1490	97,1	0,89		1022	6793	2,5
4.RZK 450 La-6	820	992	96,8	0,85		827	7894	2,9
4.RZK 450 La-8	580	744	96,4	0,80		629	7444	2,7
4.RZK 500 La-4	1015	1492	97,1	0,88		988	6497	3,1
4.RZK 500 Lb-4	1200	1491	97,2	0,89		1154	7686	2,6
4.RZK 500 Lc-4	1400	1490	97,3	0,90		1337	8973	2,8
4.RZK 500 La-6	1180	993	96,9	0,86		1176	11348	2,4
4.RZK 500 Lb-6	1280	994	97,0	0,84		1310	12298	2,9
4.RZK 500 Lc-6	1430	993	97,0	0,86		1425	13752	2,6
4.RZK 500 La-8	830	743	96,4	0,79		904	10668	2,7
4.RZK 500 Lb-8	900	743	96,4	0,78		994	11567	2,6
4.RZK 500 Lc-8	970	743	96,4	0,79		1061	12467	2,5
4.RZK 560 La-4	ETO	ETO	ETO	ETO		ETO	ETO	ETO
4.RZK 560 Lb-4	ETO	ETO	ETO	ETO		ETO	ETO	ETO
4.RZK 560 La-6	1650	993	97,2	0,88		1602	15868	2,6
4.RZK 560 Lb-6	1850	994	97,3	0,87		1828	17774	2,9
4.RZK 560 Lc-6	2100	994	97,3	0,88		2033	20176	2,8
4.RZK 560 La-8	1150	745	96,8	0,79		1251	14741	3,2
4.RZK 560 Lb-8	1290	745	96,8	0,80		1380	16536	3
4.RZK 560 Lc-8	1500	745	96,9	0,80		1613	19228	3,1
4.RZK 630 La-6	2180	994	97,3	0,89		2100	21822	3
4.RZK 630 Lb-6	2325	994	97,3	0,89		2244	23273	2,9
4.RZK 630 La-8	1725	745	97,0	0,85		1749	22112	2,9
4.RZK 630 Lb-8	1950	745	97,0	0,86		1950	24997	2,7

# TRANSNORM LV MOTORS

## Electrical data 11

### Converter fed operation

Constant torque speed range 1:5

400 V, 690V / 50Hz

Type	Power	Nominal speed	Motor efficiency	Power factor	Nominal current at		Nominal torque	Maximum torque
	P <sub>n</sub> kW	n 1/min	η %	cos φ	I <sub>n</sub> A	I <sub>n</sub> A	T <sub>n</sub> Nm	T <sub>m</sub> /T <sub>n</sub>
5.RZK 400 La-2	457	2985	96,1	0,94	736	425	1462	3,6
5.RZK 400 Lb-2	514	2987	96,1	0,93	833	481	1643	3,6
5.RZK 400 Lc-2	580	2989	96,1	0,93	939	542	1853	3,6
5.RZK 400 Ld-2	654	2989	96,4	0,94	1043	602	2090	4
5.RZK 400 La-4	457	1492	96,6	0,89	767	443	2925	3,7
5.RZK 400 Lb-4	514	1492	96,8	0,90	854	493	3290	3,6
5.RZK 400 Lc-4	580	1492	96,9	0,91	956	552	3712	3,6
5.RZK 400 Ld-4	654	1492	97,0	0,91	1074	620	4186	3,7
5.RZK 400 La-6	408	993	96,2	0,82	752	434	3924	3,5
5.RZK 400 Lb-6	457	993	96,4	0,84	816	471	4395	3,4
5.RZK 400 Lc-6	514	993	96,5	0,87	889	513	4943	3,1
5.RZK 400 Ld-6	580	993	96,6	0,86	1010	583	5578	3,2
5.RZK 400 La-8	327	744	95,8	0,74	669	386	4197	3
5.RZK 400 Lb-8	368	743	95,9	0,77	722	417	4730	2,9
5.RZK 400 Lc-8	408	744	96,0	0,78	790	456	5237	2,8
5.RZK 400 Ld-8	457	744	96,1	0,77	890	514	5866	3
4.RZK 450 La-4	940	1491	97,0	0,88		914	6021	2,8
4.RZK 450 La-6	700	993	96,6	0,83		724	6732	3,4
4.RZK 450 La-8	490	745	96,2	0,76		554	6281	3,2
4.RZK 500 La-4	900	1493	97,0	0,87		888	5757	3,6
4.RZK 500 Lb-4	1000	1492	97,1	0,88		974	6401	3,2
4.RZK 500 Lc-4	1170	1493	97,1	0,87		1154	7484	3,9
4.RZK 500 La-6	1020	994	96,8	0,85		1034	9800	2,9
4.RZK 500 Lb-6	1120	994	96,8	0,82		1175	10761	3,4
4.RZK 500 Lc-6	1260	996	96,9	0,85		1276	12081	3
4.RZK 500 La-8	770	743	96,4	0,78		853	9897	3
4.RZK 500 Lb-8	850	744	96,4	0,77		951	10911	2,8
4.RZK 500 Lc-8	940	743	96,4	0,78		1035	12082	3
4.RZK 560 La-4	ETO	ETO	ETO	ETO		ETO	ETO	ETO
4.RZK 560 Lb-4	ETO	ETO	ETO	ETO		ETO	ETO	ETO
4.RZK 560 La-6	1450	994	97,1	0,87		1425	13931	3
4.RZK 560 Lb-6	1650	994	97,2	0,85		1656	15853	3,3
4.RZK 560 Lc-6	1850	994	97,2	0,87		1814	17774	3,2
4.RZK 560 La-8	980	745	96,6	0,76		1114	12562	3,8
4.RZK 560 Lb-8	1100	745	96,6	0,77		1224	14101	3,5
4.RZK 560 Lc-8	1280	745	96,7	0,77		1434	16408	3,7
4.RZK 630 La-6	1960	994	97,2	0,88		1909	18831	3,4
4.RZK 630 Lb-6	2080	995	97,2	0,88		2030	19964	3,3
4.RZK 630 La-8	1560	745	96,8	0,83		1607	19997	3,3
4.RZK 630 Lb-8	1760	745	96,9	0,85		1786	22561	3,1

# TRANSNORM LV MOTORS

## 12 Electrical data

Converter fed operation

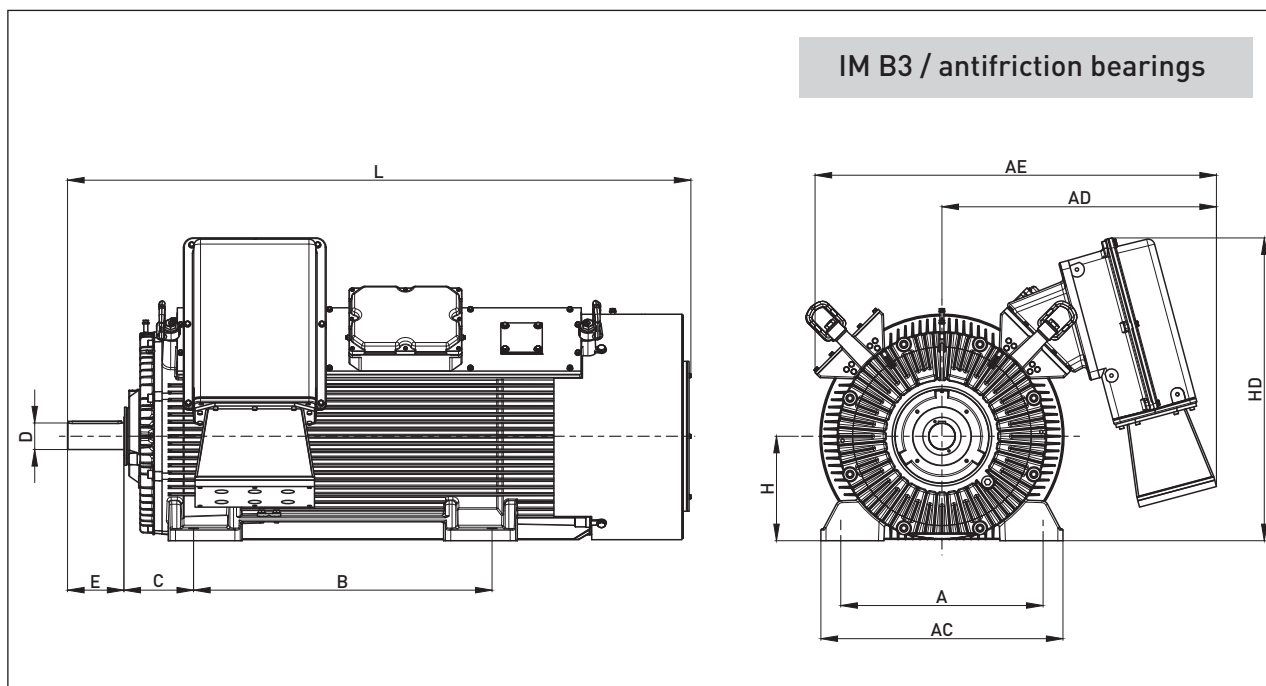
Constant torque speed range 1:10

400 V, 690V / 50Hz

Type	Power P <sub>n</sub> kW	Nominal speed n 1/min	Motor efficiency η %	Power factor cos φ	Nominal current at		Nominal torque T <sub>n</sub> Nm	Maximum torque T <sub>m</sub> /T <sub>n</sub>
					400V I <sub>n</sub> A	690V I <sub>n</sub> A		
5.RZK 400 La-2	405	2987	95,8	0,94	660	381	1295	3,9
5.RZK 400 Lb-2	455	2988	95,9	0,93	745	430	1454	4
5.RZK 400 Lc-2	513	2990	95,9	0,93	842	486	1639	4
5.RZK 400 Ld-2	578	2990	96,1	0,94	930	537	1846	4,4
5.RZK 400 La-4	405	1493	96,5	0,88	693	400	2591	4,2
5.RZK 400 Lb-4	455	1493	96,6	0,89	769	444	2910	4,1
5.RZK 400 Lc-4	513	1493	96,8	0,90	859	496	3281	4,1
5.RZK 400 Ld-4	578	1493	96,9	0,90	965	557	3697	4,2
5.RZK 400 La-6	361	994	96,1	0,80	689	398	3468	4
5.RZK 400 Lb-6	405	994	96,2	0,82	745	430	3891	3,9
5.RZK 400 Lc-6	455	993	96,4	0,86	804	464	4376	3,5
5.RZK 400 Ld-6	513	994	96,5	0,85	913	527	4929	3,6
5.RZK 400 La-8	289	744	95,6	0,71	618	357	3710	3,5
5.RZK 400 Lb-8	325	744	95,8	0,75	663	383	4172	3,3
5.RZK 400 Lc-8	361	744	95,9	0,75	727	420	4634	3,1
5.RZK 400 Ld-8	405	744	95,9	0,75	821	474	5199	3,5
4.RZK 450 La-4	900	1492	97,0	0,88		879	5761	3
4.RZK 450 La-6	660	994	96,6	0,82		691	6341	3,7
4.RZK 450 La-8	450	745	96,1	0,75		522	5768	3,5
4.RZK 500 La-4	860	1493	97,0	0,86		854	5501	3,7
4.RZK 500 Lb-4	940	1493	97,0	0,87		927	6013	3,6
4.RZK 500 Lc-4	1100	1493	97,0	0,86		1096	7036	4,2
4.RZK 500 La-6	960	994	96,7	0,84		983	9223	3,1
4.RZK 500 Lb-6	1040	995	96,7	0,81		1109	9982	3,7
4.RZK 500 Lc-6	1180	994	96,8	0,84		1208	11337	3,3
4.RZK 500 La-8	710	744	96,3	0,76		804	9114	3,2
4.RZK 500 Lb-8	780	744	96,2	0,75		893	10012	3
4.RZK 500 Lc-8	880	744	96,3	0,77		984	11296	2,8
4.RZK 560 La-4	ETO	ETO	ETO	ETO		ETO	ETO	ETO
4.RZK 560 Lb-4	ETO	ETO	ETO	ETO		ETO	ETO	ETO
4.RZK 560 La-6	1350	994	97,0	0,86		1338	12970	3,2
4.RZK 560 Lb-6	1550	995	97,1	0,84		1571	14877	3,6
4.RZK 560 Lc-6	1800	996	97,2	0,87		1771	17259	3,3
4.RZK 560 La-8	930	745	96,5	0,74		1076	11921	4
4.RZK 560 Lb-8	1050	745	96,5	0,76		1185	13460	3,7
4.RZK 560 Lc-8	1250	745	96,6	0,76		1410	16023	3,8
4.RZK 630 La-6	1875	995	97,1	0,87		1836	17996	3,5
4.RZK 630 Lb-6	1985	995	97,1	0,87		1949	19052	3,4
4.RZK 630 La-8	1460	745	96,8	0,82		1524	18715	3,5
4.RZK 630 Lb-8	1670	745	96,9	0,84		1708	21407	3,3

# TRANSNORM LV MOTORS

Electrical data 13

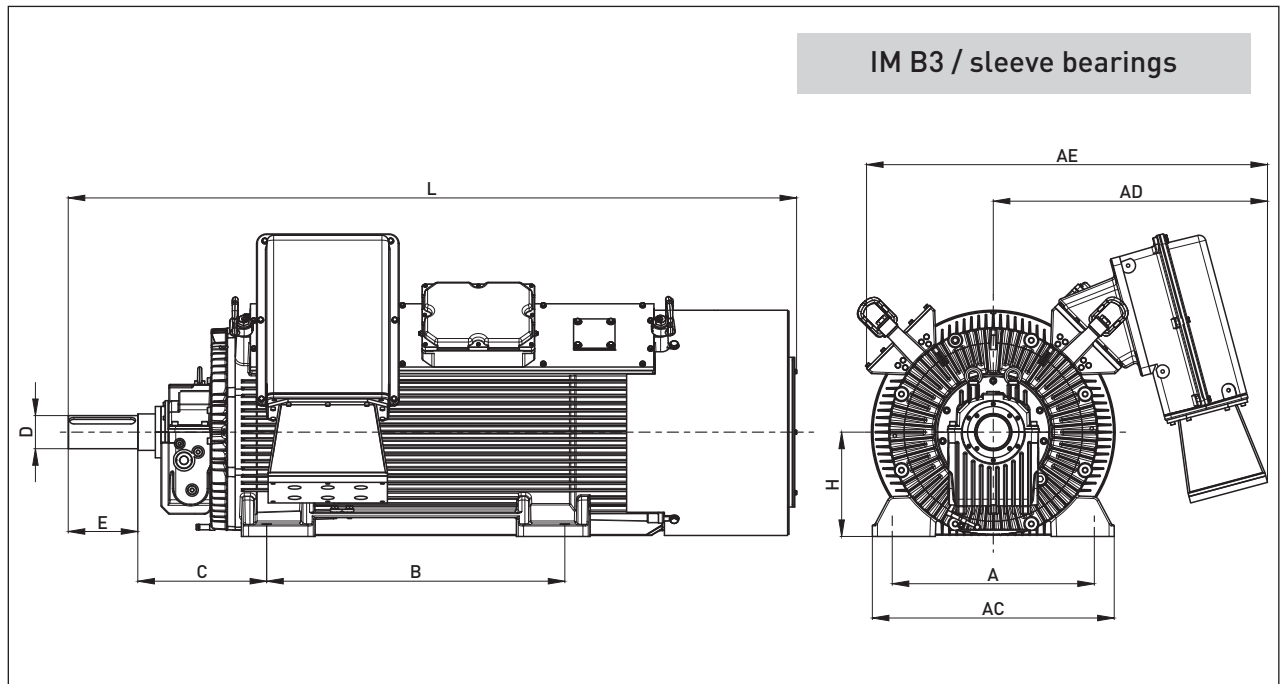


		dimensions										
type	pole	A mm	AC mm	AD mm	AE mm	B mm	C mm	D mm	E mm	H mm	HD mm	L mm
315	2	610	730	830	1210	900	200	80	170	315	915	1900
315	>=4	610	730	830	1210	900	200	100	210	315	915	1940
355	2	686	810	855	1275	1000	224	80	170	355	1025	1995
355	>=4	686	810	855	1275	1000	224	100	210	355	1025	2035
400	2	750	940	870	1320	1120	254	80	170	400	1090	2105
400	>=4	750	940	870	1320	1120	254	110	210	400	1090	2145
450	>=4	850	1050	920	1425	1250	280	120	210	450	1195	2550
500	>=4	950	1160	960	1505	1320	315	140	250	500	1275	2825
560	>=4	1060	1270	990	1585	1400	335	160	240	560	1375	ETO
630	>=4	1120	1370	1025	1675	1600	335	180	240	630	1475	ETO
710	>=4	ETO	ETO	ETO	ETO	ETO	ETO	190	350	710	ETO	ETO

ETO - engineering to order

# TRANSNORM LV MOTORS

## 14 Dimensions



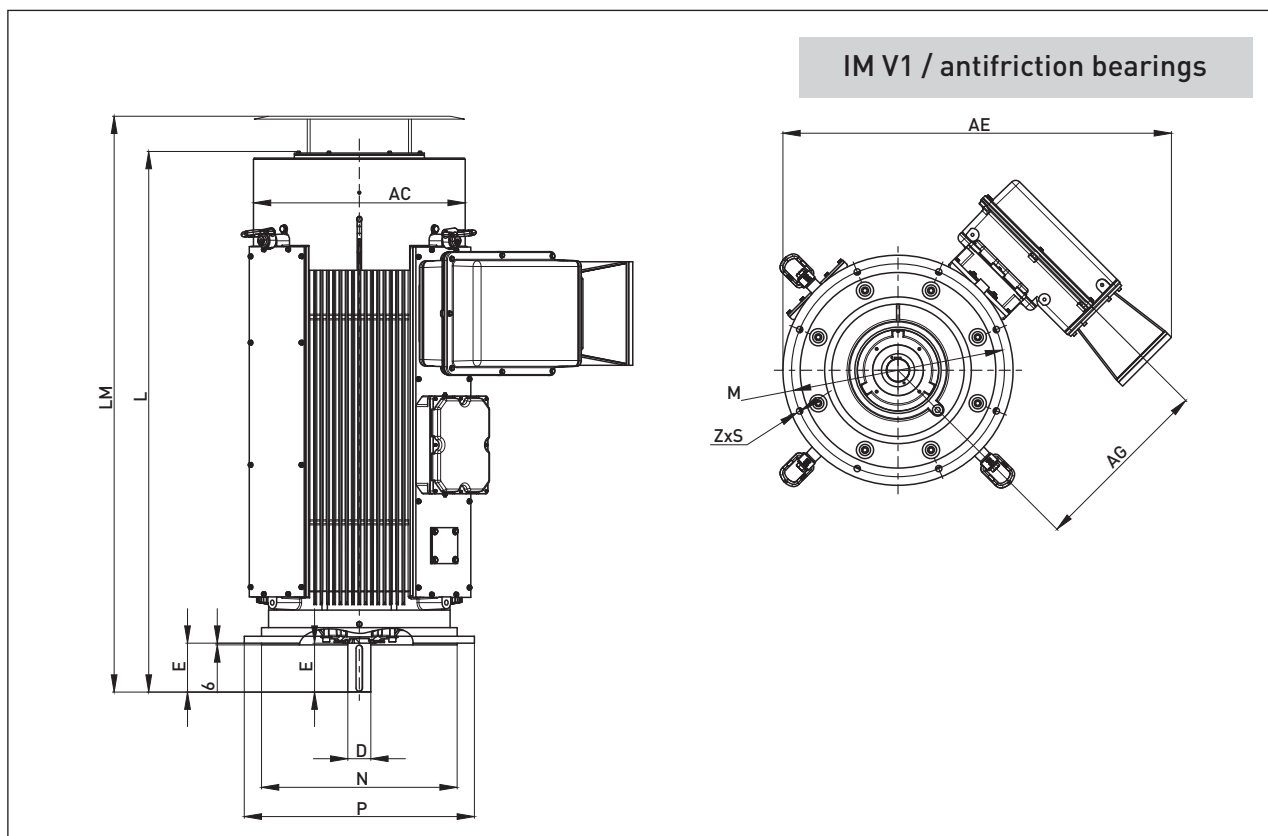
type	pole	dimensions										
		A mm	AC mm	AD mm	AE mm	B mm	x C mm	x D mm	x E mm	H mm	x HD mm	x L mm
315	2	610	730	830	1210	900	390	75	140	315	915	2060
315	>=4	610	730	830	1210	900	390	75	140	315	915	2060
355	2	686	810	855	1275	1000	365	80	170	355	1025	2165
355	>=4	686	810	855	1275	1000	365	100	210	355	1025	2205
400	2	750	940	870	1320	1120	430	85	170	400	1090	2605
400	>=4	750	940	870	1320	1120	430	100	210	400	1090	2645
450	2	850	1050	920	1425	1250	475	95	170	450	1195	2835
450	>=4	850	1050	920	1425	1250	475	120	210	450	1195	2875
500	2	950	1160	960	1505	1320	530	120	210	500	1275	3175
500	>=4	950	1160	960	1505	1320	530	140	250	500	1275	3215
560	2	1060	1270	990	1585	1400	560	140	250	560	1375	ETO
560	>=4	1060	1270	990	1585	1400	560	160	240	560	1375	ETO
630	>=4	1120	1370	1025	1675	1600	570	180	240	630	1475	ETO
710	>=4	ETO	ETO	ETO	ETO	ETO	ETO	190	350	710	ETO	ETO

ETO - engineering to order



# TRANSNORM LV MOTORS

## Dimensions 15

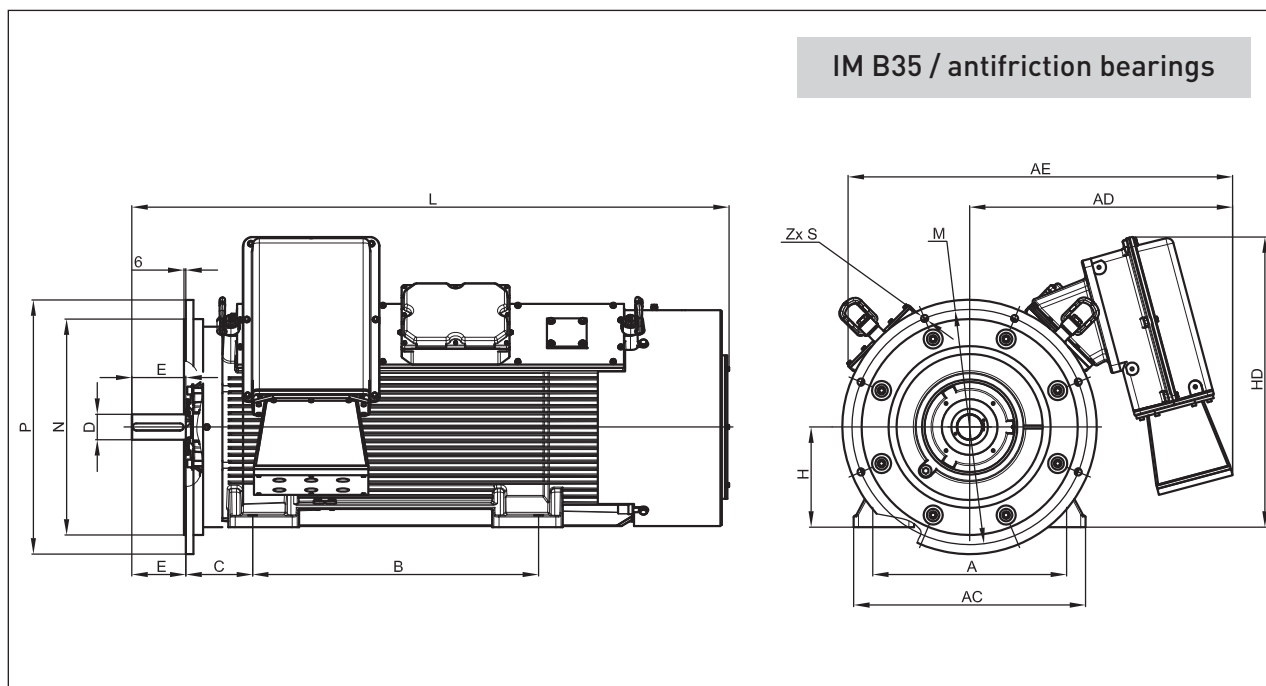


type	pole	dimensions											Z Quantity
		AC mm	AG mm	AE mm	D mm	E mm	L mm	LM mm	P mm	N mm	M mm	S mm	
315	2	740	650	1350	80	170	1900	2030	800	680	740	22	8
315	>=4	740	650	1350	100	210	1940	2070	800	680	740	22	8
355	2	820	700	1425	80	170	1995	2125	900	780	840	22	8
355	>=4	820	700	1425	100	210	2035	2165	900	780	840	22	8
400	2	885	735	1450	80	170	2105	2235	1000	880	940	22	8
400	>=4	885	735	1450	110	210	2145	2275	1000	880	940	22	8
450	>=4	1000	795	1575	120	210	2550	2680	1150	1000	1080	22	8
500	>=4	1100	850	1655	140	250	2825	2955	1270	1120	1200	35	8
560	>=4	ETO	ETO	ETO	160	240	ETO	ETO	ETO	ETO	ETO	ETO	ETO
630	>=4	ETO	ETO	ETO	180	240	ETO	ETO	ETO	ETO	ETO	ETO	ETO
710	>=4	ETO	ETO	ETO	190	350	ETO	ETO	ETO	ETO	ETO	ETO	ETO

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# TRANSNORM LV MOTORS

## 16 Dimensions



		dimensions																
typ	pole	A	AC	AD	AE	B	C	D	E	H	HD	L	P	N	M	S	Z	
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Quantity	
315	2	610	740	830	1350	900	200	80	170	315	915	1900	800	680	740	22	8	
315	>=4	610	740	830	1350	900	200	100	210	315	915	1940	800	680	740	22	8	
355	2	686	820	855	1425	1000	224	80	170	355	1025	1995	900	780	840	22	8	
355	>=4	686	820	855	1425	1000	224	100	210	355	1025	2035	900	780	840	22	8	
400	2	750	885	870	1450	1120	254	80	170	400	1090	2105	1000	880	940	22	8	
400	>=4	750	885	870	1450	1120	254	110	210	400	1090	2145	1000	880	940	22	8	
450	>=4	850	1000	920	1575	1250	280	120	210	450	1195	2550	1150	1000	1080	22	8	
500	>=4	950	1100	960	1655	1320	315	140	250	500	1275	2825	1270	1120	1200	35	8	
560	>=4	1060	ETO	990	ETO	1400	335	160	240	560	1375	ETO	ETO	ETO	ETO	ETO	ETO	
630	>=4	1120	ETO	1025	ETO	1600	335	180	240	630	1475	ETO	ETO	ETO	ETO	ETO	ETO	
710	>=4	ETO	ETO	ETO	ETO	ETO	ETO	190	350	710	ETO	ETO	ETO	ETO	ETO	ETO	ETO	

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