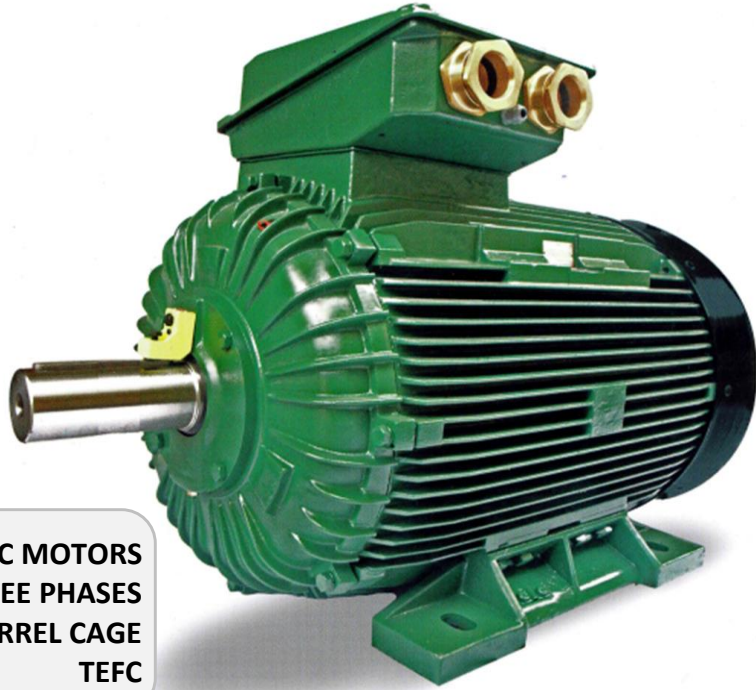
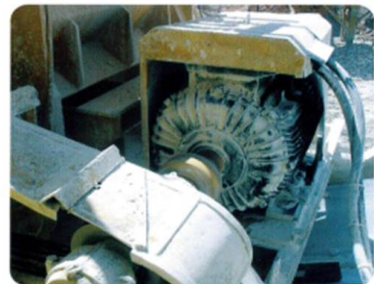
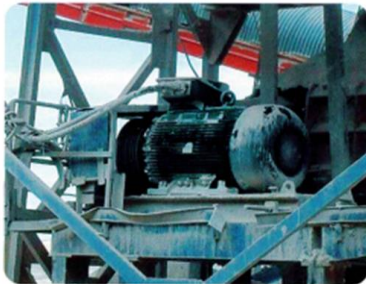


ELSAN ELEKTRİK SAN. ve TİC. A.Ş.




STANDARD AC MOTORS  
THREE PHASES  
SQUIRREL CAGE  
TEFC



## CERTIFICATES

### QUALITY MANAGEMENT SYSTEM

  <small>Kalite Yönetim Sistemi TS EN ISO/IEC 17021-1 No: 11/2019/2019</small>	<h2 style="margin: 0;">KALİTE YÖNETİM SİSTEMİ BELGESİ</h2> <h3 style="margin: 0;">QUALITY MANAGEMENT SYSTEM CERTIFICATE</h3>										
<p>TÜRK STANDARLARI ENSTİTÜSÜ bu belge ile</p> <p>ELSAN ELEKTRİK SANAYİ VE TİC. A.Ş. ETİLER MAH. 1458 SOK. NO:40 ETİMESGUT - ANKARA / TÜRKİYE</p> <p>kuruluşunun TS EN ISO 9001:2015 şartlarına uygun bir KALİTE YÖNETİM SİSTEMİNE sahip olduğunu onaylar.</p> <p>Belge kapsamı Ek'te verilmiştir</p>	 <p><b>TÜRK STANDARLARI ENSTİTÜSÜ</b> TURKISH STANDARDS INSTITUTION</p> <p>SİSTEM BELGELENDİRME GRUP BAŞKANI HEAD OF SYSTEM CERTIFICATION GROUP</p> <p><i>Gökçen Bircan Değerliyurt</i> <b>GÖKÇEN BİRCAN DEĞERLİYURT</b></p> <p>Türk Standardları Enstitüsü Türk Akreditasyon Kurumu TÜRKAK tarafından akredite edilmiştir. Turkish Standards Institution, has been accredited by the Turkish Accreditation Agency TÜRKAK.</p>	<p>TURKISH STANDARDS INSTITUTION hereby certifies that the organization</p> <p>ELSAN ELEKTRİK SANAYİ VE TİC. A.Ş. ETİLER MAH. 1458 SOK. NO:40 ETİMESGUT - ANKARA / TÜRKİYE</p> <p>has a QUALITY MANAGEMENT SYSTEM which fulfills the requirements of the TS EN ISO 9001:2015</p> <p>Scope of the certificate is given in annex</p>									
 <p><small>Bu belge belgelendirme şartlarına uygunluk sağlanıp sağlanmadığına göre geçerlidir.</small></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Belge No / Certificate No</td><td>KY-4286-06/10-R-15</td></tr> <tr><td>Belge Tarihi / Date of Certificate</td><td>28.08.2018</td></tr> <tr><td>Geçerlilik Tarihi / Valid Until</td><td>15.11.2019</td></tr> <tr><td>Revizyon Tarihi / Date of Revision</td><td>28.08.2018</td></tr> <tr><td>İlk Belge Tarihi / Initial Certification Date</td><td>19.01.2006</td></tr> </table> <p><small>This certificate is valid provided that compliance with the certification requirement is maintained.</small></p>	Belge No / Certificate No	KY-4286-06/10-R-15	Belge Tarihi / Date of Certificate	28.08.2018	Geçerlilik Tarihi / Valid Until	15.11.2019	Revizyon Tarihi / Date of Revision	28.08.2018	İlk Belge Tarihi / Initial Certification Date	19.01.2006
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#### IMPORTANT NOTE:

- Due to the continuous development policy our company reserves the right to make changes in the values, dimensions and constructions on this document at any time.
- Please visit our web site ([www.elsanas.com.tr](http://www.elsanas.com.tr) or [www.emtas.com.tr](http://www.emtas.com.tr)) for the current dimensions and values.

## GENERAL INFORMATION

### STANDARDS

Motors comply with relevant standards and specifications, especially with:

IEC 60034-1	IEC 60034-2
IEC 60034-5	IEC 60034-6
IEC 60034-7	IEC 60034-8
IEC 60034-9	IEC 60034-12
IEC 60034-14	IEC 60034-15
IEC 60034-18-1	IEC 60072

### MECHANICAL CONSTRUCTION

Totally enclosed fan cooled (TEFC) squirrel cage motors are robust in design and construction and are capable of running continuously for prolonged periods with minimum of attention.

All frames have cooling ribs to provide much better cooling, high strength and rigidity.

The feet are screw connected to enable easy replacement and removal (for conversion to flange mounting).

The materials of motor parts are listed the table below.

Parts / Frame Sizes	90	100	112	132	160	180	200	225	250	280	315	355
Frame	Cast Iron [GG20]											
End shields and bearing caps	Cast Iron [GG20]											
Feet	Ductile Iron [GGG50]											
Terminal box and cover	Cast Iron [GG20]			Aluminium						Cast Iron [GG20]		
Shaft	Steel [SAE 1040]											
Fan	Plastic											Alum.
Fan cowl	Steel Sheet											
Cable gland	Plastic										Brass	

### VOLTAGE AND FREQUENCY

Motors are produced 380 V - 50 Hz as standard. On request, motors can be produced up to 1100 V.

If a standard motor is run with 380 V - 60 Hz the rated speed is increased 20% and the rated torque is decreased 20%. If the voltage is increased with same ratio the rated speed and the rated output are increased 20% and the rated torque is same.

### INSULATION CLASS

280 size and lower motors are "F" insulation. 315 and 355 size motors are "H" insulation. On request, motors can be produced with higher insulation.

### TERMINAL BOX

The terminal boxes are located on the right side of motor viewed from the drive end (except 315 and 355 sizes). On request, the terminal boxes can be located on the top or right side.

The terminal box are designed to turn by 180°.

### ENCLOSURE

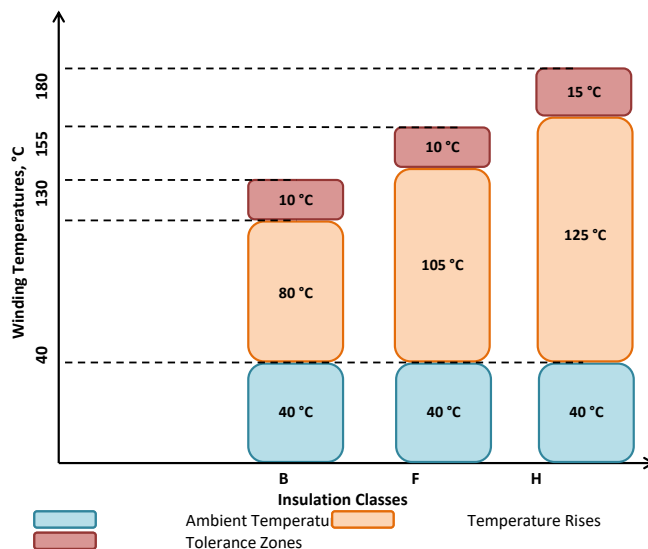
280 size and lower motors are "IP55" protection. 315 and 355 size motors are "IP65" protection. For this reason, motors can be run at dusty and dirty environments.

On request, motors can be produced with higher protection.

280 size and bigger motors have the drain holes at bottom of the frame. The drain holes are closed a tap. If the drain holes are open motors are "IP44" protection.

### COOLING

Motors are cooled by a current of cooling air forced over the ribbed stator frame by a bi-directional fan which is mounted on the motor shaft at the non-driving end, and protected by a fan cover. The direction of rotation is not affect the cooling.



## GENERAL INFORMATION

### RATED OUTPUT

The rated outputs and operating characteristics given in the tables refer to short time duty (S2 240 min) at a rated frequency of 50 Hz, rated voltage, a maximum ambient temperature of 40°C and an altitude of up to 1000 m above sea level. For operation in different ambient temperatures and/or sea level, the rated output is corrected as follows:

Ambient temperature	30 °C	35 °C	40 °C	45 °C	50 °C	55 °C	60 °C
Derating factor $k_1$	1,07	1,04	1,00	0,95	0,91	0,86	0,80
Sea level	1000 m	2000 m	3000 m	4000 m	5000 m		
Derating factor $k_2$	1,00	0,94	0,87	0,80	0,77		

Example:

Rated output      11 kW  
 Ambient temperature    45 °C  
 Sea level                2000 m

Derated output:

$$P = k_1 \times k_2 \times P_n = 0,95 \times 0,94 \times 11 = 9,82 \text{ kW}$$

### THERMAL PROTECTION

Ideally the choice of thermal protection for the stator windings should be based on the operating conditions. Two main methods of protection are available: Current dependent circuit breakers and temperature-dependent semiconductor detectors (thermistors).

Circuit breakers and over-current relays protect the motor against possible damage in cases of occasional overloads, locked rotor or phase failure, whereas thermistors provide a higher degree of protection because the temperature is monitored at the critical point in the winding. Thus protecting the motor against any cause which results in excessive winding heating such as overloads, excessive ambient temperature, unpermissibly high or low voltage, impaired cooling, intermittent operation, high switching frequency, non-sinusoidal wave form, etc. 250 size and bigger motors are fitted with PTC thermistor detectors which are placed at the hot spots in the end-windings, normally one per phase, and connected in series. On request, other motors can be fitted with PTC thermistor.

### STARTING

All motors are capable of direct starting when suitable network and other components exist. For the direct starting, the starting torque and the starting current are high.

Against the high starting current, the star/delta starting is preferred for 4 kW and upper motors. For the star/delta starting, the starting torque and the starting current is 1/3 of the values of the direct starting.

All motors are suitable for the soft starter.

### FREQUENCY CONVERTER

To decrease the impacts of the frequency converter, the changings are applied:

- Winding with corona strength wire (225 size and bigger)
- Reinforced insulation
- Rotor construction (200 size and bigger)
- Insulated bearing (315 size and bigger)
- Forced ventilation unit (According to the application)

### ENCODER

On request, motors are produced with the encoder. The properties of the standard encoder are listed below:

- Incremental type
- "5 VDC" supply
- "TTL Line Driver" output
- Cable 8 poles
- 1024 pulse

The different encoder or customers' encoder are fitted on the motor.

The length of motors with the encoder and/or the forced ventilation unit are increased according to the table below:

Motor Type	Addition of Length, [mm]
NMST 90	95
NMST 100	95
NMST 112	95
NMST 132	70
NMST 160	110
NMST180	105
NMST 200	80
NMST 225	85
NMST 250	300
NMST 280	360
NMST 315/2	340
NMST 315/4	330
NMST 355	330

## GENERAL INFORMATION

### BEARINGS

All motors are fitted the bearings are carried radial, axial or combine loads and generously sized to ensure long life. For the bearings types of various frame sizes see the table below. On request, motors can be delivered with cylindrical roller bearings at the drive end.

Motor Type	Number of Poles	Drive End [DE]		Non-Drive End [NDE]	Mounting Type
		Ball	Roller		
NMST 90	2-4-6-8	6205 ZZ	-	6205 ZZ	
NMST 100	2-4-6-8	6206 ZZ	-	6206 ZZ	
NMST 112	2-4-6-8	6306 ZZ	-	6306 ZZ	
NMST 132	2-4-6-8	6308 ZZ	-	6308 ZZ	
NMST 160	2-4-6-8	6309 ZZ	-	6309 ZZ	
NMST180	2-4-6-8	6310 ZZ	-	6310 ZZ	
NMST 200	2-4-6-8	6313 ZZ	-	6313 ZZ	
NMST 225	2	6313	-	6313	
	4-6-8	6314	NU 314	6314	
NMST 250	2	6314	-	6314	
	4-6-8	6315	NU 315	6314	
NMST 280	2	6316	-	6316	
	4-6-8	6317	NU 317	6316	
NMST 315	2	6316	-	6316	
NMST 315S NMST 315Ma NMST 315Lb	4-6-8	6319	NU 319	6318	
NMST 315L	4-6-8	6321	NU 321	6318	
NMST 355	4-6-8	6322	NU 322	6321	



### PERMISSIBLE RADIAL LOADS

MOTOR TYPE	$F_R$ [N]							
	2 poles - 3000 rpm		4 poles - 1500 rpm		6 poles - 1000 rpm		8 poles - 750 rpm	
	$X = X_0$	$X = X_{max}$	$X = X_0$	$X = X_{max}$	$X = X_0$	$X = X_{max}$	$X = X_0$	$X = X_{max}$
NMST 90	577	458	785	623	898	713	998	793
NMST 100	899	731	1.115	907	1.273	1.035	1.415	1.151
NMST 112	1.283	1.041	1.604	1.302	1.837	1.490	2.039	1.654
NMST 132	1.861	1.460	2.321	1.867	2.654	2.136	2.994	2.409
NMST 160	2.346	1.877	3.009	2.407	3.449	2.760	3.790	3.033
NMST 180	2.793	2.245	3.458	2.779	4.014	3.226	4.402	3.538
NMST 200	4.086	3.382	5.091	4.221	6.054	5.020	6.642	5.507
NMST 225	3.990	3.329	5.599	4.514	6.449	5.146	7.200	5.745
NMST 250	4.430	3.618	5.980	4.884	6.991	5.710	7.737	6.320
NMST 280	4.972	4.228	6.797	5.810	7.608	6.504	8.962	7.661
NMST 315	3.998	3.381	6.735	5.683	8.400	7.087	9.164	7.731
NMST 355	-	-	8.571	7.142	10.548	8.790	11.894	9.912

Note: The permissible radial and axial load values are calculated according to 25.000 operating hours at 50 Hz. These values must be decreased by 30% for 40.000 operating hours and must be decreased by 10% for 60 Hz.

## GENERAL INFORMATION

### PERMISSIBLE AXIAL LOADS

MOTOR TYPE	HORIZONTAL MOTOR (B3)				VERTICAL MOTOR (V5) - SHAFT DOWNWARD			
								
	Fa outward [N]	Fa inward [N]	Fa outward [N]	Fa inward [N]	Fa downward [N]	Fa upward [N]	Fa downward [N]	Fa upward [N]
$F_R = 0$		$F_R = \max$		$F_R = 0$		$F_R = \max$		
<b>2 poles - 3000 rpm</b>								
NMST 90	160	450	160	400	130	490	130	405
NMST 100	210	720	210	570	165	675	165	575
NMST 112	220	1.100	220	920	160	1.085	160	905
NMST 132	340	1.600	340	1.310	230	1.595	230	1.315
NMST 160	350	2.020	350	1.680	*	2.290	*	1.960
NMST 180	425	2.310	425	1.965	*	2.725	*	2.315
NMST 200	430	3.650	430	3.160	*	4.240	*	3.755
NMST 225	4.050	4.050	1.925	1.925	3.540	4.760	1.585	2.815
NMST 250	4.510	4.510	2.350	2.350	3.855	5.450	1.670	3.270
NMST 280	5.100	5.100	2.650	2.650	4.130	6.575	1.600	4.045
NMST 315	4.630	4.630	2.650	2.650	2.795	7.505	745	5.455
<b>4 poles - 1500 rpm</b>								
NMST 90	160	665	160	605	120	715	120	580
NMST 100	210	875	210	790	145	945	145	820
NMST 112	220	1.550	220	1.280	130	1.520	130	1.265
NMST 132	340	2.230	340	1.830	160	2.225	160	1.895
NMST 160	350	2.750	350	2.350	*	3.160	*	2.710
NMST 180	425	3.175	425	2.715	*	3.755	*	3.230
NMST 200	430	4.950	430	4.250	*	5.790	*	5.160
NMST 225	5.960	5.960	3.100	3.100	5.160	7.135	2.215	4.190
NMST 250	6.330	6.330	3.355	3.355	5.530	7.965	2.320	4.760
NMST 280	6.770	6.770	3.550	3.550	5.225	8.935	2.095	5.805
NMST 315	7.150	7.150	4.200	4.200	4.310	11.495	1.170	8.350
NMST 355	8.020	8.020	4.520	4.520	4.010	13.310	*	10.080
<b>6 poles - 1000 rpm</b>								
NMST 90	160	820	160	730	110	860	110	725
NMST 100	210	1.055	210	1.000	125	1.165	125	1.010
NMST 112	220	1.860	220	1.565	110	1.810	110	1.540
NMST 132	340	2.680	340	2.230	130	2.670	130	2.300
NMST 160	350	3.360	350	2.850	*	3.800	*	3.275
NMST 180	425	3.915	425	3.305	*	4.465	*	3.840
NMST 200	430	7.450	430	5.160	*	6.835	*	6.025
NMST 225	6.900	6.900	3.600	3.600	6.220	8.385	2.685	4.855
NMST 250	7.770	7.770	3.950	3.950	6.960	9.540	2.845	5.430
NMST 280	7.920	7.920	4.210	4.210	6.005	10.800	2.300	7.100
NMST 315	8.510	8.510	4.900	4.900	5.945	12.855	2.300	9.220
NMST 355	9.330	9.330	5.210	5.210	5.120	14.910	*	11.110
<b>8 poles - 750 rpm</b>								
NMST 90	160	920	160	830	110	975	110	815
NMST 100	210	1.240	210	1.130	125	1.345	125	1.120
NMST 112	220	2.160	220	1.790	110	2.085	110	1.750
NMST 132	340	3.010	340	2.600	150	2.960	150	2.565
NMST 160	350	3.760	350	2.890	*	4.245	*	3.755
NMST 180	425	4.375	425	3.740	*	4.995	*	4.415
NMST 200	430	6.820	430	5.910	*	7.680	*	6.765
NMST 225	8.030	8.030	4.060	4.060	7.165	9.335	3.155	5.320
NMST 250	8.550	8.550	4.455	4.455	7.580	10.315	3.315	6.050
NMST 280	9.230	9.230	4.800	4.800	7.575	11.620	3.175	7.220
NMST 315	9.700	9.700	5.500	5.500	6.910	14.590	2.370	10.050
NMST 355	10.400	10.400	5.760	5.760	6.020	16.240	*	11.950

\* Please consult our company for these values.



## GENERAL INFORMATION

### SHAFT


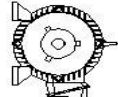
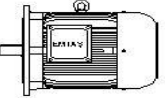
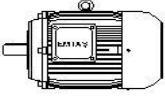
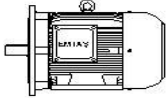
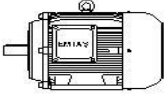
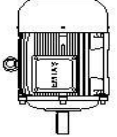
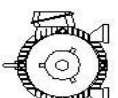
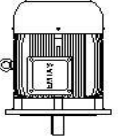
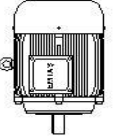
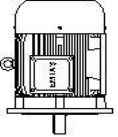
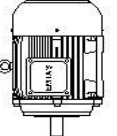
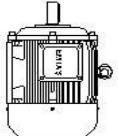
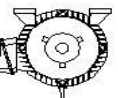
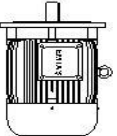
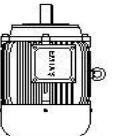
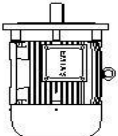
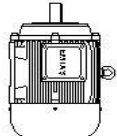
Motor are normally produced with one shaft. On request, a second shaft extension or a special shaft extensions can be provided.

Motor are delivered with key mounted.

### BALANCE

The rotating parts of the motor (shaft, rotor and aluminium fan) are dynamically balanced with an half key.

### CONSTRUCTION TYPES

FOOT MOUNTING		FLANGE MOUNTING		FOOT AND FLANGE MOUNTING	
		B5 (A) - FLANGE	B14 (C) - FLANGE	B5 (A) - FLANGE	B14 (C) - FLANGE
B3 	B6 	B5 	B14 	B3/B5 	B3/B14 
V5 	B7 	V1 	V18 	V1/V5 	V18/V5 
V6 	B8 	V3 	V19 	V3/V6 	V19/V6 

### ORDERING INFORMATION

#### Necessary Information:

Rated output [kW]  
Synchronous speed or rated speed [rpm]  
Position of terminal box

The standard values are listed in the table on the side for information is not taken.

#### Optional Information:

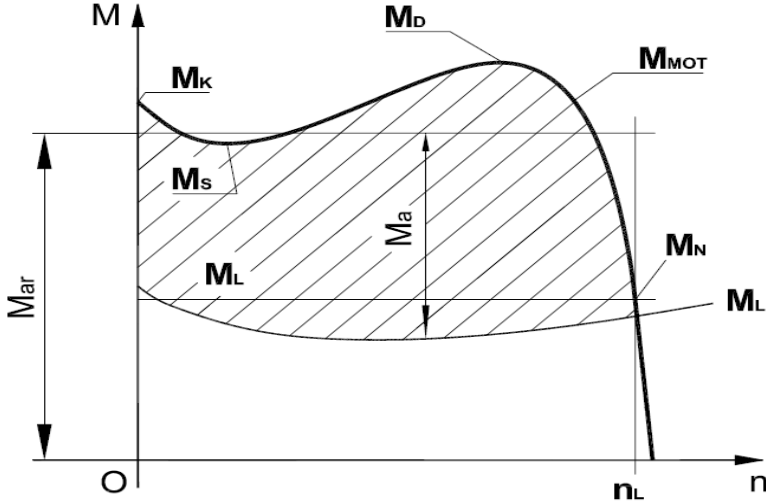
Construction type : B5 flange, B14 flange etc.  
Frame size : 160 type, 180 type etc.  
Voltage : 400 V, 550 V etc.  
Frequency : 60 Hz, 70 Hz, etc.  
Starting method : Direct on line, soft starter, frequency converter etc.  
Protection class : IP56, IP65 etc.  
Insulation class : H etc.  
Duty type : S3 %60 etc.  
Ambient temperature : 50 °C, 60 °C etc.  
Radial/Axial loads : 600 kg etc.  
Other properties : Two shaft extensions etc.

#### Standard Values for Information Is Not Taken:

Information	Standard Values
Construction type	B3 foot mounting
Frame size	See Page-9 ve 10
Length of feet	See Page-9 ve 10
Voltage	380 V
Frequency	50 Hz
Starting method	See Page-3
Protection class	See Page-2
Insulation class	See Page-2
Duty type	S2 240 min
Ambient temperature	40 °C
Radial/Axial loads	See Page-4 ve 5
Shaft extension	See Page-6, 11, 12 ve 13
Terminal box location	See Page-2
Material of motor parts	See Page-2
DE/NDE bearing	See Page-4

## GENERAL INFORMATION

### MOTOR LOAD (TORQUE-SPEED) CURVE



- $M_K$  - Starting Torque
- $M_S$  - Pull up Torque
- $M_D$  - Breakdown Torque
- $M_N$  - Rated Torque
- $M_L$  - Load Torque
- $M_{ar}$  - Average Torque of Acceleration Torque
- $M_a$  - Acceleration Torque
- $n_L$  - Rated Speed
- $M_{MOT}$  - Motor Torque

### TOLERANCES ON PERFORMANCE DATA

IEC 60034-1 specifies the following standard tolerances for electro mechanical characteristics.

Parameters	Tolerances IEC 60034-1
<b>Efficiency</b>	
Method of indirect determination	
- $P_N \leq 150$ kW	$\frac{-(1-\eta) \cdot 15}{100}$
- $P_N > 150$ kW	$\frac{-(1-\eta) \cdot 10}{100}$
<b>Power Factor (Cos <math>\varphi</math>)</b>	$\frac{-(1 - \text{Cos } \varphi)}{6}$
	Min 0,02 Max 0,07
<b>Imp</b> (at full load and at working temperature)	
- $P_N < 1$ kW	$\pm 30 \%$
- $P_N \geq 1$ kW	$\pm 20 \%$
<b>Starting Current, (<math>I_k</math>)</b>	[A] +20 %
<b>Starting Torque, (<math>M_k</math>)</b>	[Nm] +25 % -15 %
<b>Breakdown Torque, (<math>M_D</math>)</b>	[Nm] -10 % (Even after deducting this tolerance, the breakdown torque must not be lower than 1,6 times the rated torque.)



## FORMULAS

### FORMULAS FOR ELECTRIC MOTORS

As the load is increased, the actual speed  $n$  of an induction motor falls from its initial no-load speed which is effectively the synchronous speed  $n_{syn}$ . The slip in % is defined as:

$$n_{syn} = \frac{120 \cdot f}{p} \quad s = \frac{n_{syn} - n}{n_{syn}}$$

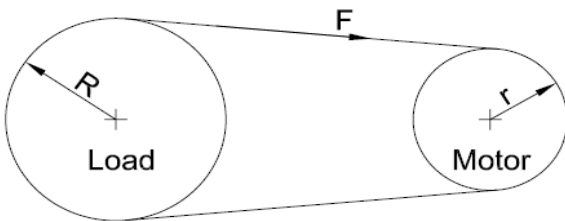
$n$  : Asynchronous speed [rpm]  
 $n_{syn}$  : Synchronous speed [rpm]  
 $f$  : Supply frequency [Hz]  
 $p$  : Number of poles  
 $s$  : slip [%]

	SI	MKS
P : Rated output	[kW]	[PS]
U : Supply voltage	[V]	[V]
I : Current per phase	[A]	[A]
Cos $\varphi$ : Power factor	-	-
$\eta$ : Efficiency	%	%

$$P = \frac{\sqrt{3} \cdot U \cdot I \cdot \cos \varphi \cdot \eta}{1000} \quad [\text{kW}]$$

$$P = \frac{1.36 \cdot \sqrt{3} \cdot U \cdot I \cdot \cos \varphi \cdot \eta}{1000} \quad [\text{PS}]$$

### BELT-PULLEY SYSTEM



	SI	MKS
P : Rated output	[kW]	[PS]
M : Torque	[Nm]	[kgfm]
F : Force	[N]	[kgf]
r : Radius arm	[m]	[m]
n : Asynchronous speed	[rpm]	[rpm]

SI	MKS
$M = F \cdot r$ [Nm]	$M = F \cdot r$ [kgfm]
$P = \frac{M \cdot n}{9550}$ [kW]	$P = \frac{M \cdot n}{716}$ [PS]

1 kW = 1,36 PS  
 1 Nm = 0,102 kgfm  
 1 N = 0,102 kgf

### MOTOR CHARACTERISTICS AND STARTING TIME

	SI	MKS
$t_a$ : Starting time	[sn]	[sn]
J, GD <sup>2</sup> : Moment of inertia	[kgm <sup>2</sup> ]	[kgfm <sup>2</sup> ]
n : Speed	[1/dak.]	[d/dak.]
M : Torque	[Nm]	[kgfm]
i : Gear ratio		

$$t_a = \frac{J \cdot n}{9,55 \cdot M_a} \quad t_a = \frac{GD^2 \cdot n}{375 \cdot M_a}$$

$$M_a = M_{ar} - M_L \quad M_a = M_{ar} - M_L$$

$J_{mot}$  : Moment of inertia of motor (Please refer to Performance Data charts)

Please refer to page 7 for  $M_{a1}$ ,  $M_{ar}$  and  $M_L$

$$J = \frac{J_{load}}{i^2} + J_{mot} \quad GD^2 = \frac{GD^2_{load}}{i^2} + GD^2_{mot}$$

**PERFORMANCE DATA**

3000 rpm																		2 POLES				400 V				50 Hz	
TYPE	Rated Output		Rated Current	Rated Speed	Power Factor				Efficiency				Rated Torque	Starting Current	Starting Torque	Breakdown Torque	Moment of Inertia	Weight									
	Frame Size	kW	PS	I <sub>N</sub> A	n rpm	Cos φ				η				M <sub>N</sub> Nm	I <sub>k</sub> /I <sub>N</sub>	M <sub>k</sub> /M <sub>N</sub>	M <sub>D</sub> /M <sub>N</sub>	J <sub>MOT</sub> kgm <sup>2</sup>	kg								
						%125	%100	%75	%50	%125	%100	%75	%50														
NMST 90S2	1,5	2	3,1	△	2837	0,91	<b>0,89</b>	0,85	0,76	75,0	<b>77,3</b>	78,3	80,1	5,0	5,0	2,5	2,5	0,0013	20								
NMST 90L2	2,2	3	4,5	△	2839	0,91	<b>0,89</b>	0,84	0,74	75,7	<b>79,8</b>	82,3	85,1	7,4	5,4	2,5	2,8	0,0016	24								
NMST 100L2	3	4	6,3	△	2865	0,87	<b>0,84</b>	0,79	0,69	81,6	<b>81,7</b>	85,2	79,6	10,0	5,9	2,6	2,9	0,0027	30								
NMST 112M2	4	5,5	7,6	△	2872	0,92	<b>0,91</b>	0,88	0,82	84,8	<b>83,3</b>	87,0	87,2	13,3	6,5	2,5	2,6	0,0048	41								
NMST 132S2	5,5	7,5	10,7	△	2886	0,88	<b>0,87</b>	0,83	0,75	85,3	<b>84,9</b>	86,9	84,9	18,2	6,3	2,7	2,8	0,0099	58								
NMST 132S2	7,5	10	14,3	△	2877	0,90	<b>0,88</b>	0,84	0,75	85,5	<b>86,1</b>	87,6	85,5	24,9	6,8	3,0	3,0	0,0123	66								
NMST 160M2	11	15	21,2	△	2934	0,86	<b>0,85</b>	0,80	0,73	87,8	<b>88,0</b>	87,8	85,1	35,8	6,7	2,9	2,8	0,0274	106								
NMST 160M2	15	20	27,7	△	2923	0,89	<b>0,88</b>	0,85	0,78	88,4	<b>88,7</b>	90,3	88,9	49,0	6,3	2,8	3,2	0,0339	112								
NMST 160Lb2	18,5	25	32,8	△	2930	0,92	<b>0,91</b>	0,89	0,86	87,8	<b>89,4</b>	88,9	90,6	60,3	7,0	3,0	3,2	0,0435	134								
NMST 180M2	22	30	39,2	△	2926	0,90	<b>0,90</b>	0,79	0,85	89,1	<b>89,9</b>	88,5	88,5	71,8	6,8	2,6	3,2	0,0593	150								
NMST 200L2	30	40	52,9	△	2945	0,90	<b>0,90</b>	0,90	0,87	88,8	<b>91,0</b>	90,7	87,9	97,3	7,0	2,6	2,9	0,1089	245								
NMST 200L2	37	50	65,1	△	2962	0,90	<b>0,90</b>	0,89	0,85	91,6	<b>91,2</b>	91,4	89,0	119,3	7,1	2,6	2,8	0,1300	254								
NMST 225M2	45	60	78,7	△	2962	0,90	<b>0,90</b>	0,89	0,84	92,4	<b>91,7</b>	90,6	90,5	145,1	7,0	2,5	2,8	0,1983	330								
NMST 225Md2	55	75	94,3	△	2957	0,90	<b>0,91</b>	0,90	0,86	90,2	<b>92,5</b>	90,9	90,7	177,6	6,7	2,5	2,6	0,2424	360								
NMST 250M2	55	75	94,2	△	2964	0,90	<b>0,91</b>	0,90	0,85	92,0	<b>92,6</b>	92,9	91,5	177,2	7,2	2,3	2,8	0,3241	440								
NMST 250M2	75	100	128,2	△	2963	0,90	<b>0,91</b>	0,90	0,87	90,5	<b>92,8</b>	92,7	91,7	241,7	7,0	2,5	2,8	0,3624	465								
NMST 280S2	75	100	120,5	△	2980	0,94	<b>0,94</b>	0,90	0,85	95,3	<b>95,6</b>	95,9	95,7	240,4	6,5	2,0	2,7	1,4506	641								
NMST 280S2	90	125	144,3	△	2980	0,95	<b>0,94</b>	0,91	0,85	95,5	<b>95,8</b>	96,0	95,9	288,4	7,5	2,0	2,9	1,5702	690								
NMST 280M2	110	150	175,9	△	2980	0,95	<b>0,94</b>	0,91	0,85	95,8	<b>96,0</b>	96,3	96,1	352,5	7,0	2,0	2,7	1,7879	742								
NMST 315S2	110	150	191,3	△	2976	0,86	<b>0,88</b>	0,89	0,88	94,0	<b>94,3</b>	94,7	95,3	353,0	6,8	1,8	2,9	1,3176	760								
NMST 315Ma2	132	180	223,8	△	2975	0,89	<b>0,90</b>	0,91	0,89	94,0	<b>94,6</b>	95,0	95,4	423,7	6,8	1,8	2,8	1,4160	870								
NMST 315M2	160	220	270,7	△	2976	0,90	<b>0,90</b>	0,89	0,87	94,0	<b>94,8</b>	95,1	95,5	513,4	7,0	1,8	2,6	1,5606	930								
NMST 315L2	185	250	309,5	△	2975	0,91	<b>0,91</b>	0,91	0,88	94,1	<b>94,8</b>	95,2	95,5	593,9	7,0	1,9	2,5	1,7727	1120								
NMST 315L2	200	270	330,3	△	2980	0,92	<b>0,92</b>	0,91	0,88	94,2	<b>95,0</b>	95,5	95,9	640,9	7,5	2,1	2,4	1,8910	1200								
NMST 315Ld2	250	340	417,4	△	2980	0,91	<b>0,91</b>	0,89	0,85	94,2	<b>95,0</b>	95,4	95,9	801,2	7,5	2,0	2,2	2,3053	1290								

1500 rpm																		4 POLES				400 V				50 Hz	
TYPE	Rated Output		Rated Current	Rated Speed	Power Factor				Efficiency				Rated Torque	Starting Current	Starting Torque	Breakdown Torque	Moment of Inertia	Weight									
	Frame Size	kW	PS	I <sub>N</sub> A	n rpm	Cos φ				η				M <sub>N</sub> Nm	I <sub>k</sub> /I <sub>N</sub>	M <sub>k</sub> /M <sub>N</sub>	M <sub>D</sub> /M <sub>N</sub>	J <sub>MOT</sub> kgm <sup>2</sup>	kg								
						%125	%100	%75	%50	%125	%100	%75	%50														
NMST 90S4	1,1	1,5	2,5	△	1401	0,86	<b>0,83</b>	0,75	0,63	71,0	<b>75,5</b>	75,5	74,3	7,5	4,3	2,3	2,5	0,0022	22								
NMST 90L4	1,5	2	3,4	△	1418	0,86	<b>0,82</b>	0,75	0,62	72,0	<b>77,4</b>	80,0	81,3	10,1	5,0	2,4	2,6	0,0028	24								
NMST 100L4	2,2	3	5,0	△	1420	0,84	<b>0,80</b>	0,72	0,58	80,5	<b>79,9</b>	79,6	77,5	14,8	5,3	2,4	2,6	0,0043	31								
NMST 100L4	3	4	6,6	△	1425	0,84	<b>0,80</b>	0,72	0,59	78,8	<b>81,5</b>	82,6	82,5	20,1	6,0	2,5	2,8	0,0055	34								
NMST 112M4	4	5,5	8,6	△	1425	0,86	<b>0,81</b>	0,73	0,60	81,9	<b>83,1</b>	82,6	82,7	26,8	6,0	2,6	2,9	0,0103	44								
NMST 112M4	5,5	7,5	11,7	△	1415	0,87	<b>0,83</b>	0,76	0,64	79,3	<b>82,0</b>	83,1	82,0	37,1	7,5	2,5	2,8	0,0103	46								
NMST 132S4	5,5	7,5	11,0	△	1416	0,87	<b>0,85</b>	0,80	0,69	81,9	<b>84,8</b>	86,3	85,3	37,1	6,0	2,4	2,8	0,0221	67								
NMST 132M4	7,5	10	14,8	△	1430	0,87	<b>0,85</b>	0,81	0,72	83,1	<b>86,0</b>	87,6	88,4	50,1	6,2	2,4	2,8	0,0291	76								
NMST 160M4	11	15	21,5	△	1463	0,86	<b>0,84</b>	0,79	0,69	84,5	<b>88,0</b>	87,0	87,6	71,8	6,3	2,5	2,8	0,0553	112								
NMST 160Lb4	15	20	28,4	△	1465	0,87	<b>0,84</b>	0,79	0,68	88,9	<b>90,6</b>	88,9	86,9	97,8	6,9	2,7	2,9	0,0730	126								
NMST 180M4	18,5	25	35,2	△	1459	0,86	<b>0,85</b>	0,81	0,73	86,7	<b>89,3</b>	88,8	87,8	121,1	6,2	2,8	2,9	0,1074	162								
NMST 180Lb4	22	30	43,1	△	1463	0,86	<b>0,81</b>	0,82	0,74	92,8	<b>91,0</b>	93,2	90,0	143,6	6,6	2,8	2,8	0,1285	176								
NMST 200L4	30	40	54,3	△	1470	0,89	<b>0,88</b>	0,84	0,76	90,5	<b>90,7</b>	91,3	88,7	194,9	6,5	2,5	2,8	0,2069	228								
NMST 200L4	37	50	66,5	△	1472	0,89	<b>0,88</b>	0,84	0,77	91,1	<b>91,2</b>	92,3	89,6	240,0	7,0	2,6	2,7	0,2682	248								
NMST 225S4	37	50	66,5	△	1472	0,90	<b>0,88</b>	0,87	0,80	93,2	<b>91,3</b>	94,0	92,0	240,0	6,6	2,7	2,7	0,3526	308								
NMST 225M4	45	60	78,6	△	1472	0,91	<b>0,90</b>	0,87	0,81	91,1	<b>91,8</b>	92,0	91,0	291,9	6,6	2,7	2,8	0,4195	334								
NMST 225Md4	55	75	97,8	△	1470	0,90	<b>0,88</b>	0,84	0,75	91,6	<b>92,2</b>	92,4	91,0	357,3	6,8	2,5	2,7	0,4735	368								
NMST 250M4	55	75	97,7	△	1478	0,90	<b>0,88</b>	0,84	0,78	92,0	<b>92,3</b>	92,3	91,9	355,4	6,8	2,7	2,8	0,6045	418								
NMST 250M4	75	100	135,5	△	1475	0,89	<b>0,86</b>	0,82	0,74	92,7	<b>92,9</b>	92,8	92,6	485,6	7,0	3,0	2,7	0,7316	464								
NMST 280S4	75	100	128,1	△	1490	0,90	<b>0,88</b>	0,85	0,80	95,7	<b>96,0</b>	96,3	95,4	480,7	7,0	2,8	2,6	1,4427	626								
NMST 280M4	90	125	155,4	△	1490	0,89	<b>0,87</b>	0,84	0,79	95,8	<b>96,1</b>	96,5	95,6	576,8	7,0	2,2	2,6	1,5897	660								
NMST 280M4	110	150	189,5	△	1490	0,89	<b>0,87</b>	0,84	0,79	96,1	<b>96,3</b>	96,6	95,7	705,0	6,7	2,4	2,4	1,8430	722								
NMST 315S4	110	150	189,5	△	1490	0,89	<b>0,87</b>	0,84	0,79	96,0	<b>96,3</b>	96,5	96,4	705,0	6,4	2,4	2,8	2,2123	855								
NMST 315Ma4	132	180	224,6	△	1490	0,90	<b>0,88</b>	0,85	0,80	96,1	<b>96,4</b>	96,6	96,5	846,0	6,0	2,1	2,4	2,6236	958								
NMST 315M4	160	220	271,7	△	1490	0,90	<b>0,88</b>	0,85	0,80	96,4	<b>96,6</b>	96,8	96,7	1025,5	6,2	2,2	2,4	3,0349	1088								
NMST 315L4	185	250	314,1	△	1490	0,90	<b>0,88</b>	0,85	0,80	96,3	<b>96,6</b>	96,8	96,7	1185,7	6,1	2,2	2,4	3,4462	1240								
NMST 315L4	200	270	339,2	△	1490	0,90	<b>0,88</b>	0,85	0,80	96,4	<b>96,7</b>	96,9	96,8	1281,9	6,3	2,4	2,7	3,8575	1295								
NMST 315Lk4	250	340	432,0	△	1490	0,89	<b>0,87</b>	0,88	0,83	94,5	<b>96,0</b>	93,8	91,9	1602,3	7,0	2,0	2,0	4,0594	1313								
NMST 355S4	250	340	417,6	△	1489	0,91	<b>0,90</b>	0,91	0,86	91,7	<b>96,0</b>	94,7	97,4	1603,4	6,5	1,9	2,2	4,6266	1390								
NMST 355S4	315	430	550,7	△	1490	0,92	<b>0,86</b>	0,90	0,84	92,2	<b>96,0</b>	95,1	90,3	2019,0	7,3	1,9	2,2	6,4202	1594								
NMST 355L4	355	485	624,3	△	1490	0,91	<b>0,86</b>	0,89	0,83	91,9	<b>96,0</b>	93,6	94,2	2275,3	7,3	2,0	2,2	7,1662	1870								
NMST 355L4	400	544	668,2	△	1490	0,91	<b>0,90</b>	0,87	0,79	91,2	<b>96,0</b>	93,0	91,4	2563,8	7,5	2,0	2,2	8,2423	1956								

Please visit our web site ([www.elsanas.com.tr](http://www.elsanas.com.tr) or [www.emtas.com.tr](http://www.emtas.com.tr)) for the current dimensions and values.

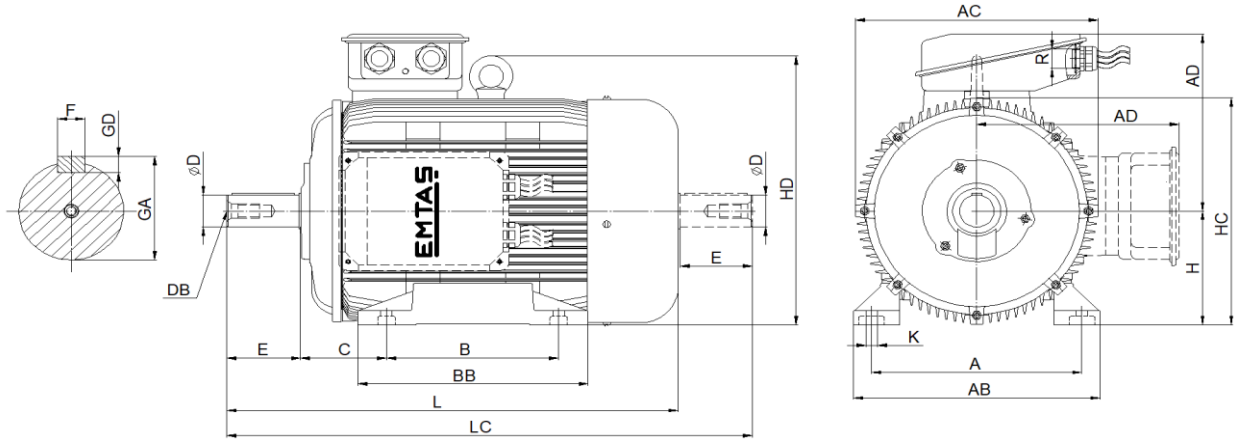
**PERFORMANCE DATA**

1000 rpm																		6 POLES																		400 V				50 Hz	
TYPE		Rated Output		Rated Current		Rated Speed		Power Factor				Efficiency				Rated Torque		Starting Current		Starting Torque		Breakdown Torque		Moment of Inertia		Weight															
Frame Size		kW		PS		I <sub>N</sub> A		n rpm		Cos φ				η				M <sub>N</sub> Nm		I <sub>k</sub> /I <sub>N</sub>		M <sub>k</sub> /M <sub>N</sub>		M <sub>D</sub> /M <sub>N</sub>		J <sub>MOT</sub> kgm <sup>2</sup>		kg													
NMST 90S6	0,75	1	2,1	↘	907	0,76	<b>0,72</b>	0,63	0,50	65,3	<b>70,0</b>	75,8	75,2	7,9	3,4	2,0	2,0	0,0035	20																						
NMST 90L6	1,1	1,5	2,9	↘	906	0,77	<b>0,74</b>	0,66	0,55	69,3	<b>72,9</b>	76,1	51,8	11,6	3,8	2,0	2,2	0,0045	24																						
NMST 100L6	1,5	2	3,8	↘	930	0,77	<b>0,74</b>	0,66	0,55	77,2	<b>77,2</b>	80,6	77,1	15,4	4,8	2,0	2,2	0,0094	32																						
NMST 112M6	2,2	3	5,4	↘	938	0,81	<b>0,76</b>	0,68	0,55	76,5	<b>78,0</b>	80,7	79,0	22,4	5,3	2,3	2,5	0,0161	44																						
NMST 132S6	3	4	6,9	Δ	950	0,82	<b>0,78</b>	0,70	0,57	79,8	<b>80,0</b>	80,1	78,6	30,2	5,6	2,2	2,4	0,0299	64																						
NMST 132M6	4	5,5	8,9	Δ	955	0,83	<b>0,80</b>	0,71	0,59	80,4	<b>81,4</b>	80,8	80,0	40,0	5,6	2,2	2,5	0,0356	74																						
NMST 132M6	5,5	7,5	11,9	Δ	952	0,83	<b>0,80</b>	0,72	0,56	83,0	<b>83,1</b>	83,1	81,8	55,2	6,7	2,3	2,8	0,0420	85																						
NMST 160M6	7,5	10	15,6	Δ	964	0,85	<b>0,82</b>	0,73	0,60	82,5	<b>84,7</b>	84,2	80,1	74,3	6,7	2,6	2,8	0,0776	106																						
NMST 160Lb6	11	15	22,1	Δ	960	0,85	<b>0,83</b>	0,79	0,69	83,3	<b>86,4</b>	88,2	87,7	109,4	6,0	2,3	2,9	0,1085	124																						
NMST 180Lb6	15	20	29,3	Δ	967	0,85	<b>0,84</b>	0,81	0,72	87,1	<b>88,0</b>	88,0	86,7	148,1	6,5	2,4	2,7	0,1636	172																						
NMST 200L6	18,5	25	36,8	Δ	972	0,84	<b>0,82</b>	0,77	0,65	86,8	<b>88,6</b>	88,8	89,4	181,8	6,0	2,1	2,8	0,2291	218																						
NMST 200L6	22	30	42,9	Δ	970	0,84	<b>0,83</b>	0,79	0,70	87,7	<b>89,2</b>	89,3	88,5	216,6	6,2	2,2	3,3	0,2725	238																						
NMST 225M6	30	40	57,0	Δ	980	0,83	<b>0,84</b>	0,81	0,75	88,1	<b>90,5</b>	90,8	88,7	292,3	5,9	2,7	2,4	0,6592	350																						
NMST 225Md6	37	50	69,3	Δ	975	0,85	<b>0,85</b>	0,83	0,78	88,6	<b>90,7</b>	90,8	89,5	362,4	6,1	2,4	2,5	0,8042	400																						
NMST 250M6	37	50	70,9	Δ	980	0,85	<b>0,83</b>	0,81	0,72	89,8	<b>90,8</b>	90,8	89,3	360,6	5,5	2,1	2,3	0,9008	442																						
NMST 280S6	45	60	83,6	Δ	990	0,85	<b>0,82</b>	0,80	0,75	94,5	<b>94,8</b>	95,1	94,9	434,1	6,0	2,1	2,4	1,5940	585																						
NMST 280S6	55	75	101,8	Δ	990	0,85	<b>0,82</b>	0,80	0,75	94,8	<b>95,1</b>	95,4	95,2	530,6	6,0	2,2	2,4	1,5980	625																						
NMST 280M6	75	100	138,4	Δ	990	0,85	<b>0,82</b>	0,81	0,76	95,1	<b>95,4</b>	95,7	95,5	723,5	6,0	2,1	2,3	1,8315	705																						
NMST 315S6	75	100	133,5	Δ	990	0,87	<b>0,85</b>	0,82	0,77	95,1	<b>95,4</b>	95,7	95,5	723,5	6,0	1,8	2,3	2,2620	790																						
NMST 315Ma6	90	125	158,0	Δ	990	0,88	<b>0,86</b>	0,83	0,78	95,3	<b>95,6</b>	95,8	95,7	868,2	6,0	1,8	2,3	2,6707	850																						
NMST 315Ma6	110	150	195,0	Δ	990	0,88	<b>0,85</b>	0,84	0,79	95,6	<b>95,8</b>	96,0	95,9	1061,1	6,5	2,0	2,3	3,2155	930																						
NMST 315M6	132	180	228,1	Δ	990	0,89	<b>0,87</b>	0,83	0,78	95,7	<b>96,0</b>	96,2	96,1	1273,3	6,6	2,0	2,4	3,7604	1028																						
NMST 315Lk6	160	220	275,9	Δ	990	0,89	<b>0,87</b>	0,84	0,79	95,9	<b>96,2</b>	96,4	96,3	1543,4	6,2	1,9	2,3	4,5082	1212																						
NMST 355S6	160	220	279,1	Δ	990	0,88	<b>0,86</b>	0,83	0,78	96,0	<b>96,2</b>	96,4	96,3	1543,4	5,5	1,8	2,2	4,9211	1360																						
NMST 355S6	185	250	326,6	Δ	990	0,87	<b>0,85</b>	0,82	0,77	95,9	<b>96,2</b>	96,4	96,3	1784,6	5,5	1,8	2,2	5,3332	1470																						
NMST 355S6	200	270	348,6	Δ	990	0,88	<b>0,86</b>	0,83	0,78	96,0	<b>96,3</b>	96,5	96,4	1929,3	5,6	1,8	2,1	5,9923	1480																						
NMST 355S6	250	340	453,8	Δ	988	0,85	<b>0,83</b>	0,81	0,71	92,2	<b>95,8</b>	93,8	93,6	2416,5	5,5	1,8	2,1	7,3695	1542																						
NMST 355L6	315	430	571,8	Δ	989	0,86	<b>0,83</b>	0,81	0,70	93,9	<b>95,8</b>	95,7	94,1	3041,7	5,8	1,8	2,2	9,9995	1930																						

750 rpm																		8 POLES																		400 V				50 Hz	
TYPE		Rated Output		Rated Current		Rated Speed		Power Factor				Efficiency				Rated Torque		Starting Current		Starting Torque		Breakdown Torque		Moment of Inertia		Weight															
Frame Size		kW		PS		I <sub>N</sub> A		n rpm		Cos φ				η				M <sub>N</sub> Nm		I <sub>k</sub> /I <sub>N</sub>		M <sub>k</sub> /M <sub>N</sub>		M <sub>D</sub> /M <sub>N</sub>		J <sub>MOT</sub> kgm <sup>2</sup>		kg													
NMST 90L8	0,55	0,75	2,1	↘	673	0,78	<b>0,61</b>	0,61	0,48	58,2	<b>61,0</b>	61,4	58,5	7,8	3,0	1,6	1,8	0,0045	18																						
NMST 100L8	0,75	1	2,8	↘	689	0,75	<b>0,64</b>	0,58	0,46	57,9	<b>61,0</b>	62,5	58,2	10,4	3,0	1,6	1,8	0,0073	21																						
NMST 100L8	1,1	1,5	3,8	↘	691	0,73	<b>0,66</b>	0,63	0,43	61,4	<b>63,0</b>	64,3	60,8	15,2	3,2	1,7	2,0	0,0094	33																						
NMST 112M8	1,5	2	4,8	↘	705	0,72	<b>0,62</b>	0,61	0,49	71,9	<b>73,0</b>	73,1	70,2	20,3	4,2	2,1	2,2	0,0161	44																						
NMST 132S8	2,2	3	5,7	Δ	700	0,78	<b>0,74</b>	0,66	0,54	71,7	<b>75,0</b>	75,4	74,2	30,0	4,2	2,0	2,3	0,0352	65																						
NMST 132M8	3	4	7,6	Δ	707	0,73	<b>0,74</b>	0,63	0,52	79,5	<b>77,0</b>	80,2	79,0	40,5	4,4	2,1	2,3	0,0419	73																						
NMST 160M8	4	5,5	9,3	Δ	714	0,77	<b>0,75</b>	0,66	0,55	82,0	<b>83,0</b>	83,0	81,5	53,5	4,5	1,9	2,3	0,0782	80																						
NMST 160M8	5,5	7,5	12,7	Δ	715	0,76	<b>0,75</b>	0,65	0,55	80,0	<b>83,5</b>	80,3	78,8	73,5	5,3	2,1	2,6	0,0978	115																						
NMST 160Lb8	7,5	10	17,1	Δ	722	0,76	<b>0,75</b>	0,65	0,56	81,0	<b>84,5</b>	82,5	80,0	99,2	5,5	2,2	2,6	0,1316	140																						
NMST 180Lb8	11	15	23,3	Δ	720	0,80	<b>0,78</b>	0,71	0,61	82,0	<b>87,5</b>	83,2	83,0	145,9	5,5	2,0	2,7	0,2273	192																						
NMST 200L8	15	20	31,0	Δ	730	0,81	<b>0,79</b>	0,73	0,63	86,6	<b>88,5</b>	87,2	84,9	196,2	6,0	2,1	2,9	0,4118	242																						
NMST 225S8	18,5	25	38,0	Δ	728	0,84	<b>0,79</b>	0,82	0,65	85,9	<b>89,0</b>	88,3	86,2	242,7	6,0	1,9	2,7	0,5964	260																						
NMST 225M8	22	30	41,9	Δ	730	0,84	<b>0,81</b>	0,73	0,64	86,1	<b>93,6</b>	87,1	85,4	287,8	6,0	1,9	2,7	0,7147	354																						
NMST 250M8	30	40	60,7	Δ	737	0,84	<b>0,77</b>	0,74	0,65	89,2	<b>92,7</b>	89,9	87,2	388,7	6,0	1,9	2,6	0,9927	450																						
NMST 280S8	37	50	74,6	Δ	736	0,81	<b>0,78</b>	0,69	0,61	89,9	<b>91,8</b>	90,2	88,3	480,1	4,8	1,8	2,3	1,6303	575																						
NMST 280M8	45	60	90,3	Δ	732	0,83	<b>0,78</b>	0,71	0,63	89,3	<b>92,2</b>	90,3	88,3	587,1	4,8	1,8	2,2	1,7776	640																						
NMST 315S8	55	75	110,0	Δ	738	0,84	<b>0,78</b>	0,76	0,66	90,0	<b>92,5</b>	91,1	88,1	711,7	5,0	2,0	2,3	2,2620	600																						
NMST 315Ma8	75	100	147,2	Δ	740	0,79	<b>0,79</b>	0,78	0,67	91,5	<b>93,1</b>	93,2	89,6	967,9	5,7	1,8	2,2	3,0339	700																						
NMST 315Ma8	90	125	176,1	Δ	741	0,79	<b>0,79</b>	0,77	0,66	91,4	<b>93,4</b>	93,0	92,4	1159,9	5,7	1,8	2,2	3,5788	870																						
NMST 315M8	110	150	211,8	Δ	740	0,80	<b>0,80</b>	0,80	0,71	90,0	<b>93,7</b>	92,7	92,4	1419,6	5,8	1,7	2,1	4,3052	960																						
NMST 315L8	132	180	253,4	Δ	741	0,80	<b>0,80</b>	0,77	0,65	90,9	<b>94,0</b>	91,7	90,7	1701,2	6,2	1,8	2,0	5,1439	1070																						
NMST 355S8	132	180	253,4	Δ	740	0,80	<b>0,80</b>	0,80	0,71	91,4	<b>94,0</b>	95,3	97,9	1703,5	5,5	1,9	2,0	5,6506	1470																						
NMST 355S8	160	220	306,1	Δ	740	0,80	<b>0,80</b>	0,80	0,73	91,6	<b>94,3</b>	93,3	94,8	2064,9	5,5	1,9	2,0	6,6347	1690																						
NMST 355L8	185	250	354,0	Δ	740	0,80	<b>0,80</b>	0,80	0,73	93,9	<b>94,3</b>	94,7	96,0	2387,5	5,5	1,8	2,0	7,6510	1790																						
NMST 355L8	200	270	396,3	Δ	740	0,77	<b>0,77</b>	0,80	0,70	93,9	<b>94,6</b>	95,7	96,1	2581,1	5,4	1,8	2,0	8,2159	1850																						

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## DIMENSIONS - B3 FOOT MOUNTING

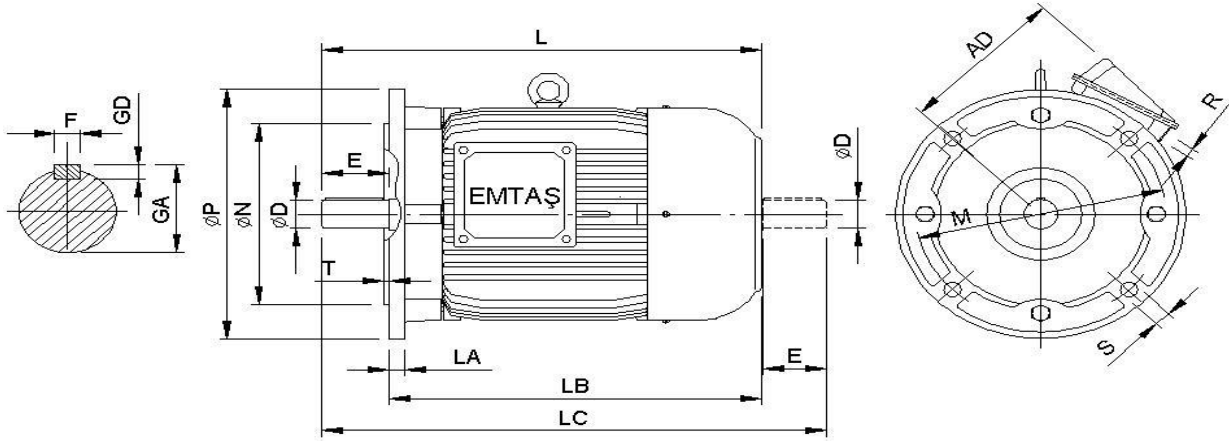


TYPE	POLES	H	A	B	C	AB	AC	AD	BB	HC	HD	K	L	LC	ØD	E	F	GA	GD	R	DB	
NMST 90S	2,4,6,8	90	140	100	56	185	176	127	130	178	-	10	299	360	24	50	8	27	7	2 x Pg13,5		
NMST 90L		125	150	324					385													
NMST 100L		100	160	63					200				194	138								175
NMST 112M		112	190	140	70	235	218	176	180	221	262	12	385									
NMST 132S		132	216	178	89	270	258	207	180	261	309	15	454	540	38	80	10	41	8	2 x Pg21	*	
NMST 132M	4,6,8			210					218				492	578								
NMST 160M		160	254	254	108	318	310	236	304	315	373	15	613	729	42	110	12	45	9			
NMST 160lb	2,4,6,8			241					327	354	411		651	772	48		14	51,5				
NMST 180M	2,4	180	279	279	121	360	348	250	327	354	411											
NMST 180lb	4,6,8			279					327	354	411											
NMST 200L	2,4,6,8	200	318	305	133	400	385	319	365	394	460		759	876	55		16	59	10	2 x Pg29		
NMST 225S	4,8			286					346				793	940	60	140	18	64	11			
NMST 225M	2	225	356	311	149	436	434	300	371	442	504	19	788	908	55	110	16	59	10			
NMST 225Md	4,6,8												60	140	18	64	11					
	2												818	965	55	110	16	59	10			
	4,6,8												848	995	60							
NMST 250M	2	250	406	349	168	485	480	345	410	490	552	24	907	1057	65	140	18	64	11	2 x Pg36	M20	
	4,6,8												65	18	64		11					
NMST 280S	2												893,5	1038,5	75		20	79,5	12			
	4,6,8												993,5	1138,5	65		18	69	11			
NMST 280M	2	280	457	368/419	190	541	541	413	499	560	626	24			75	140	18	69	11	2 x Pg36	M20	
	4,6,8												65	18	69		11					
	2												993,5	1138,5	75		20	79,5	12			
NMST 315S	2	315	508	406	216	620	612	501	550	621	682	28	1090	1240	70	140	20	74,5	12	2 x Pg48		
	4,6,8												1120	1298	85		170	22	90			14
NMST 315Ma	2												1090	1240	70		140	20	74,5			12
	4,6,8												1120	1298	85		170	22	90			14
NMST 315M	2												1141	1291	70		140	20	74,5			12
	4,6,8			1171					1349				85	170	22		90	14				
NMST 315L	2			1241					1391				70	140	20		74,5	12				
	4,6,8			1311					1526				85	170	22		90	14				
NMST 315Lk	4,6			1311					1526				100	210	28		106	16				
NMST 315Ld	2			1286					1436				70	140	20		74,5	12				
NMST 355S	4,6,8	355	610	500	254	718	700	552	670	705	838	28	1312	1532	100	140	20	74,5	12	2 x M63	M24	
	4,8			630					800				100	210	28		106	16				
NMST 355L	6												1442	1662	110			116				

S, M, L : Lengths of feet  
a, b, c, d : Lengths of frames

The dimensions are in "mm". Please visit our web site ([www.elsanas.com.tr](http://www.elsanas.com.tr) or [www.emtas.com.tr](http://www.emtas.com.tr)) for the current dimensions and values.

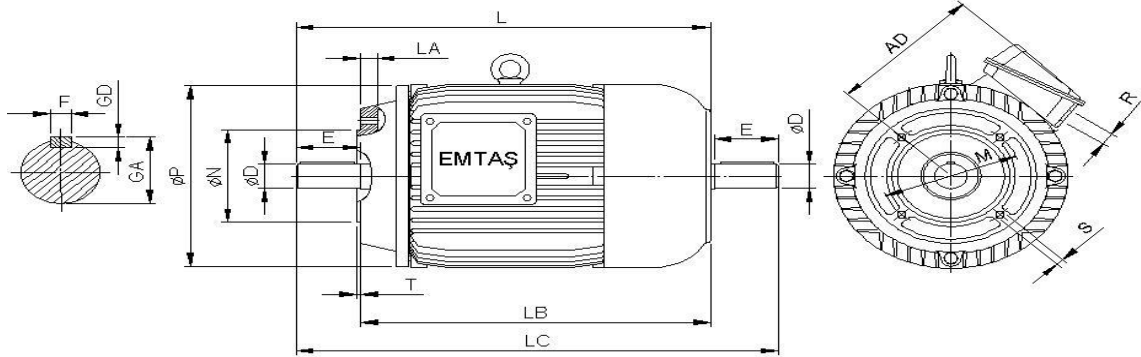
**DIMENSIONS - B5 (A) FLANGE MOUNTING**



**B5-V1-V3**

TYPE	POLES	ØP	ØN	M	S	Nr. of Holes	T	AD	L	LA	LB	LC	ØD	E	F	GA	GD	R	DB	
NMST 90S	24 FF 165	2,4,6,8	200	130	165	4	3,5	127	299	11	249	360	24	50	8	27	7	2 x Pg13,5	*	
NMST 90L			130	180	215		4	127	324		274	385								14
NMST 100L	28 FF 215		250	180	215	15	4	176	385	14	335	453	28	50						
NMST 112M		250	230	265	4															
NMST 132S	38 FF 265	4,6,8	300	230	265	19	5	236	613	18	503	729	42	110	12	45	9			
NMST 132M		300	250	300	5															
NMST 160M	42 FF 300	2,4,6,8	350	250	300	19	5	319	759	18	649	876	55	110	16	59	10			
NMST 160Lb		350	300	350	5															
NMST 180M	48 FF 300	2,4	400	300	350	19	5	300	788	18	678	908	55	110	16	59	10			
NMST 180Lb		4,6,8																		
NMST 200L	55 FF 350	2,4,6,8	450	350	400	19	5	300	848	18	708	995	60	140	18	59	10			
NMST 225S		4,8																		
NMST 225M	55 FF 400	2	450	350	400	19	5	300	818	18	708	995	60	140	18	59	10			
NMST 225Md		4,6,8																		
NMST 250M	60 FF 500	2	450	350	400	19	5	300	848	18	708	995	60	140	18	59	10			
NMST 280S		4,6,8																		
NMST 280M	65 FF 500	2	450	350	400	19	5	300	848	18	708	995	60	140	18	59	10			
NMST 280M		4,6,8																		
NMST 315S	70 FF 600	2	660	550	600	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 315Ma		4,6,8																		
NMST 315M	70 FF 600	2	660	550	600	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 315L		4,6,8																		
NMST 315Lk	70 FF 600	2	660	550	600	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 315Ld		4,6,8																		
NMST 355S	100 FF 740	4,6,8	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6	800	680	740	24	8	501	1090	24	1090	1240	70	140	22	90	14			
NMST 355L		4,8																		
NMST 355L	110 FF 740	6																		

## DIMENSIONS - B14 (C) FLANGE MOUNTING

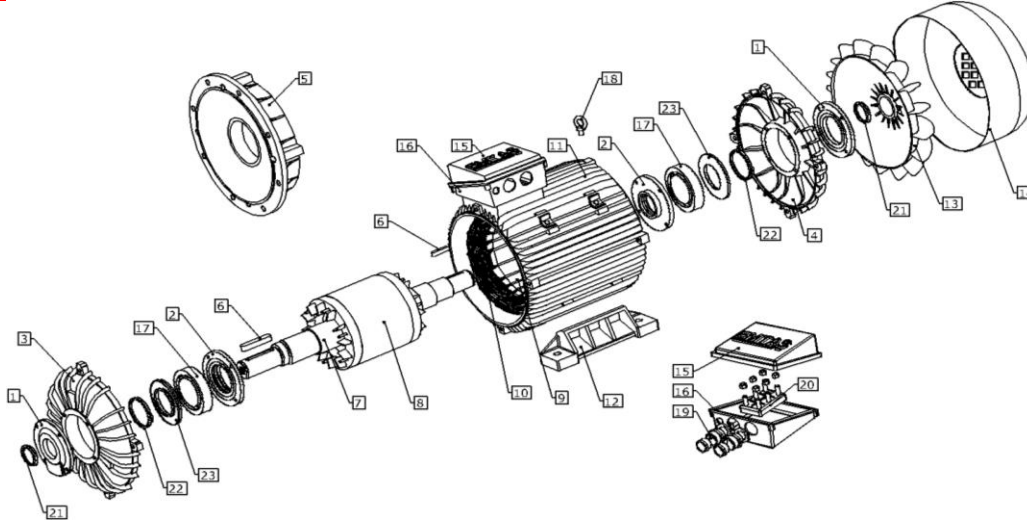


B14-V18-V19

TYPE	POLES	ØP	ØN	M	S	Nr. of Holes	T	AD	L	LA	LB	LC	ØD	E	F	GA	GD	R	DB	
NMST 90S	24 FT 115	2,4,6,8	146	95	115	M8	4	3	127	299	15,5	249	360	24	50	8	27	7	2 x Pg13,5	*
NMST 90L			162	110	130				324	274		385								
NMST 100L	28 FT 130	2,4,6,8	162	110	130	M8	4	3,5	138	386	17	326	453	28	60	8	31	7	2 x Pg13,5	*
NMST 112M			184	110	130				176	385		16,5	385							

The dimensions are in "mm". Please visit our web site ([www.elsanas.com.tr](http://www.elsanas.com.tr) or [www.emtas.com.tr](http://www.emtas.com.tr)) for the current dimensions and values.

## MOTOR COMPONENTS



1	BEARING CAP - OUTER *	13	FAN
2	BEARING CAP - INNER *	14	FAN COWL
3	END SHIELD - DE	15	TERMINAL BOX COVER
4	END SHIELD - NDE	16	TERMINAL BOX
5	B5-FLANGE	17	BEARING
6	KEY	18	LIFTING EYE
7	SHAFT	19	CABLE GLAND
8	ROTOR	20	TERMINAL TABLE
9	STATOR	21	SEAL
10	WINDING	22	CIRCLIP
11	FRAME	23	BEARING RING
12	FEET		

\* These parts are used on 225 size and bigger.



## PRODUCTION PROGRAM

**STANDART AC / POLE CHANGE  
MOTOR**



**SLIP - RING MOTOR**



**WATER COOLED  
TBM MOTOR**  
(Tunnel Boring Machine Motor)



**FORKLIFT MOTOR**



**TRACTION MOTOR**



**MARINE MOTOR**  
(Water Cooled)



**VIBRATION MOTOR**



**BRAKE MOTOR**



**VHS PUMP MOTOR**  
(Vertical Hollow Shaft Motor)  
(VHS)



**SYNCHRONOUS MOTOR**  
(PMSM - IE5)



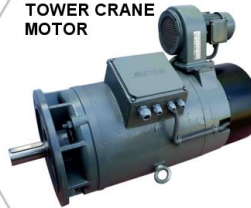
**TORQUE MOTOR**



**LOW CENTER SAW MOTOR**



**TOWER CRANE  
MOTOR**



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