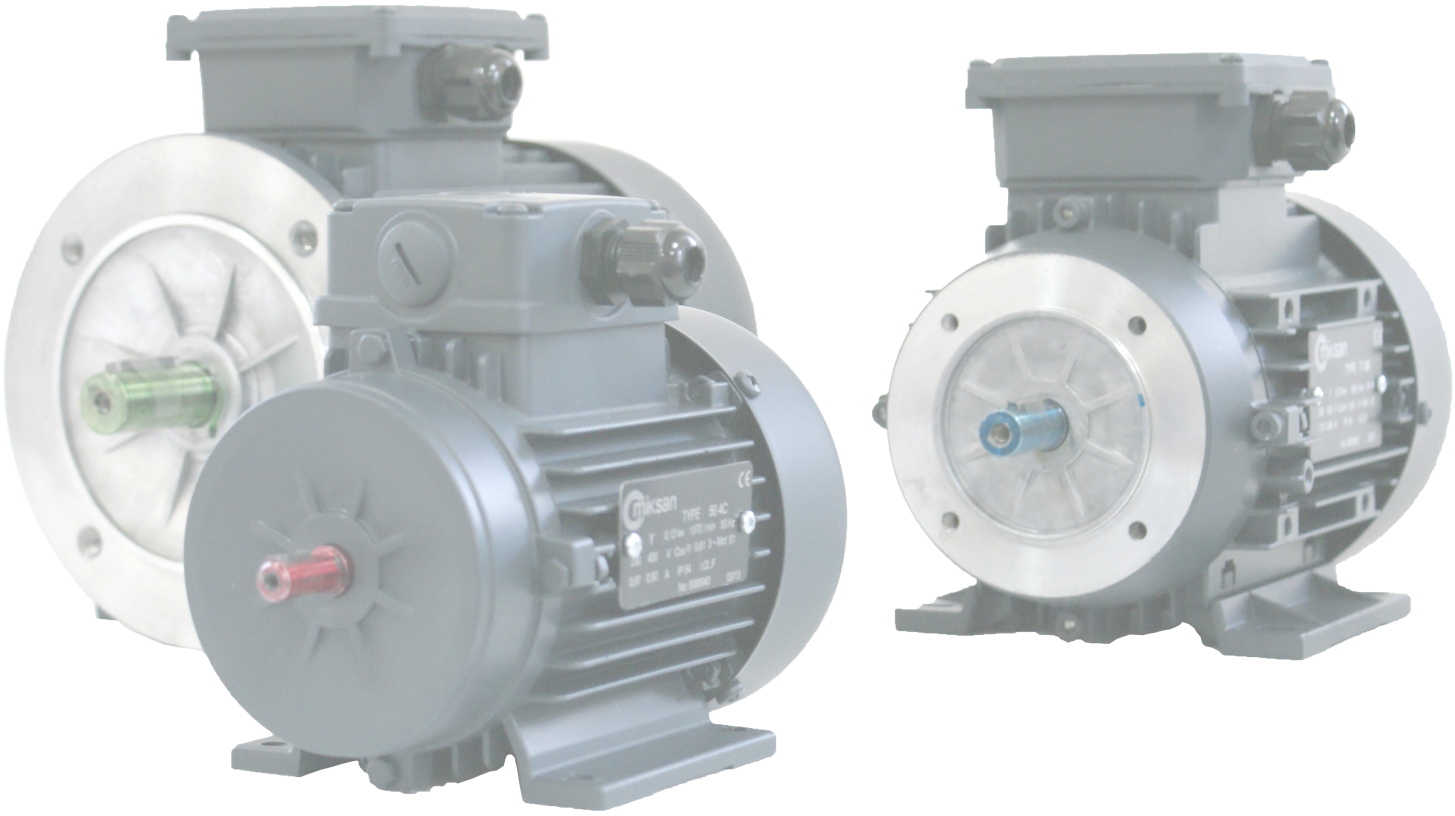
miksan MOTOR

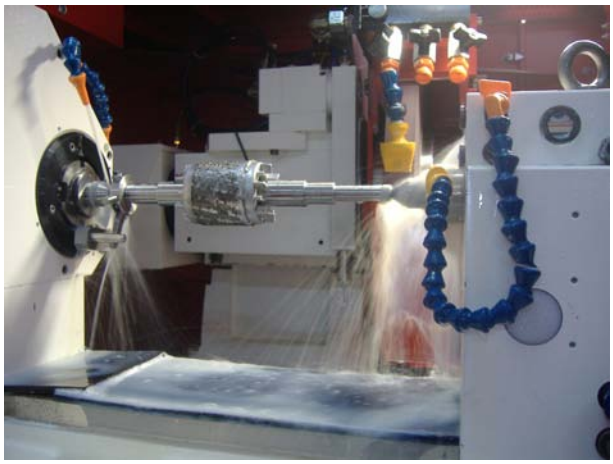


ASYNCHRONOUS MOTOR CATALOGUE

CONTENTS

About Us

MİKSAN Motor Sanayi ve Ticaret A.Ş. Founded in Hasköy, Istanbul in 1977 to producing 71 frame squirrel cage electric motors.
In 1982, Miksan Motor began manufacturing immersion pump to meet domestic markets demand. In 2003, we extend our product range with vibration motors and have launched a new factory in Bulgaria within a borders of the European Union. This leads to increase in production capacity, improve distribution and decrease delivery time significantly.
In 2012, our factory has been moved to Beylikdüzü, Istanbul. Currently, within the area of 6000m², we produce the general purpose asynchronous electric motors (56 to 132 frames three-phase and 56 to 100 frame single phase with permanent capacitor), the electric motors for special applications with specially designed shaft and flange, vibration motos and immersion pumps.
All of our products meet all the requirements of the related IEC, DIN and TSE standards.



Fairs

Miksan Motor family requlary attends the most important national and international metal working and machinery exhibitions of the world. These fairs allow us to keep in touch with our customers and to exhibit our new products. (Please visit our web page for attended fairs. www.miksanmotor.com)

Relevant Standards

This catalogue deals with mechanical and electrical features of asynchronous squirrel cage motors, general and definite purpose industrial use induction motors of frame size ranging from 56 to 132.

All the Miksan Motor motors are designed, manufactured and tested in accordance with the following standards.

STANDARDS	TS	IEC	DIN/EN
Rating and Performance	TS 3067 TS 3205 EN 60 034-1	**60034-1**	DIN EN 60 034-1
Standard methods for determining losses and efficiency from test	TS 3206 EN 60 034-2-1	**60034-2-1**	DIN EN 60 034-2-1
Degrees of protection provided by the integral design of rotating electrical machines (IP Code)	TS 3209 EN 60 034-5	**60034-5**	DIN EN 60 034-5
Methods of cooling (IC Code)	TS 3210 EN 60 034-6	**60034-6**	DIN EN 60 034-6
Symbols for types of construction and mounting arrangements	TS 3211 EN 60 034-7	**60034-7**	DIN EN 60 034-7
Terminal markings and direction of rotation	TS 3212 EN 60 034-8	**60034-8**	DIN EN 60 034-8
Noise limits	TS 3213 EN 60 034-9	**60034-9**	DIN EN 60 034-9
Thermal protection classes	TS 3583	**60034-11**	DIN EN 60 034-11
Mechanical vibration: Measurement, evaluation and limits	TS 3067	**60034-14**	DIN EN 60 034-14

MECHANICAL CONSTRUCTION

Frames
Motor Frames are made of die-cast aluminium alloy,which is fasten to stator by shrink fitting method. This application provides rigid structure and cooling surface. Special dimensions are also avaliable upon customer requests.

End-shields
End-shields and the flanges are made of aluminium alloy which is pressure die-casting and resistable to corrosion. End-shields attach to the frame, serving to support the stator and rotor.

Also, end-shields are the parts of the motor housing which support the bearings.

Customized design upon customer requests are available.

Terminal Box
The terminal boxes of frame sizes 56 to 90 are injection mould, high-grade reinforced polymide and frame sizes 90 to 132 are pressure die-cast in corrosion resistant aluminium alloy.

Motor feets are detachable, which can be mounted on three sides, for providing flexibility for different mounting types. This feature allows terminal box assembly on the desired side.

Cooling Fan
Standard Miksan Motor motors contain plastic fan which is connected to the motor shaft and operates inside a steel protection cover. Aluminium fan can also be manufactured upon customer request.

Painting
All of our standard motors are painted with RAL 7016, single-component synthetic painting.
Please contact us for different color requests.

Bearings
Our standard motors are equipped with deep grove ball bearings with 2Z shields.

Types of roller bearing at the single phase motors

Frame Size	Pole Number	Drive-end Bearing (DE)	Non-drive end Bearing (NDE)
56	2 - 4	6201-2Z C3	6201-2Z C3
63	2 - 4	6202-2Z C3	6202-2Z C3
71	2 - 4	6202-2Z C3	6202-2Z C3
80	2 - 4	6204-2Z C3	6204-2Z C3

Types of roller bearing at three phase motors

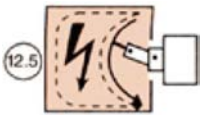
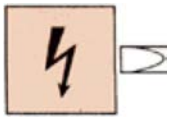
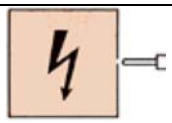
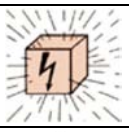
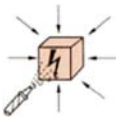
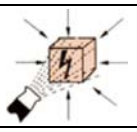
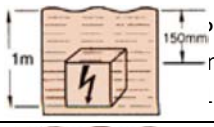
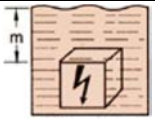
Frame Size	Pole Number	Drive-end Bearing (DE)	Non-drive end Bearing (NDE)
56	2 - 4	6201-2Z C3	6201-2Z C3
63	2 - 4	6202-2Z C3	6202-2Z C3
71	2 - 4 - 6	6202-2Z C3	6202-2Z C3
80	2 - 4 - 6 - 8	6204-2Z C3	6204-2Z C3
90S - 90L	2 - 4 - 6	6205-2Z C3	6205-2Z C3
100	2 - 4 - 6	6206-2Z C3	6206-2Z C3
112	2 - 4 - 6	6206-2Z C3	6206-2Z C3
132S - 132M	2 - 4	6208-2Z C3	6208-2Z C3

DEGREE OF PROTECTION -IP CLASS

The protection degrees are specified in accordance with DIN EN 60034-5 Standards.

The first number refers the protection level against contact and ingress of foreign bodies and second number refers the protection level against liquids.

Our standard motors comply with IP 55 degree of protection, suitable for use in dusty and damp enviroments. For other protection levels, please contact with us.

First Characteristic Numeral		Second Characteristic Numeral	
1	 Protected against a solid object greater than 50mm.	*1*	 Protected against vertically falling drops of water.
2	 Protected against a solid object greater than 12.5mm.	*2*	 Protected against vertically falling drops of water with enclosure tilted up to 15° from the vertical.
3	 Protected against a solid object greater than 2.5mm.	*3*	 Protected against sprays of water up to 60° from the vertical.
4	 Protected against a solid object greater than 1mm.	*4*	 Protected against water splashed from all directions.
5	 Dust protected. Limited ingress of dust permitted.	*5*	 Protected against jets of water.
6	 Dust tight. No ingress of dust.	*6*	 Protected against strong jets of water.
		7	 Protection against the effects of immersion in water between 15cm and 1m for 30 minutes.
		8	 Protection against the effects of immersion in water under pressure for long periods.

ELECTRICAL CONNECTION

Standard 3-phase motors can be connected with star (Y) or delta (Δ) method.

Figure 1 Star Connection

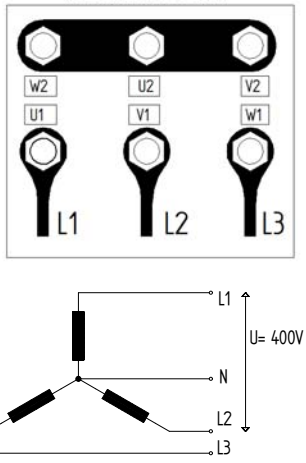
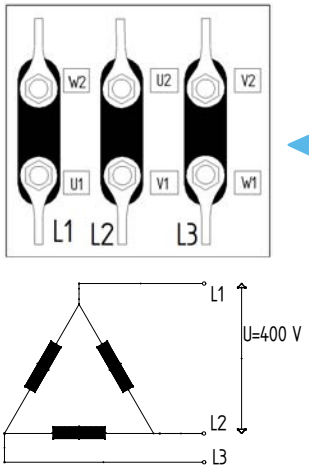
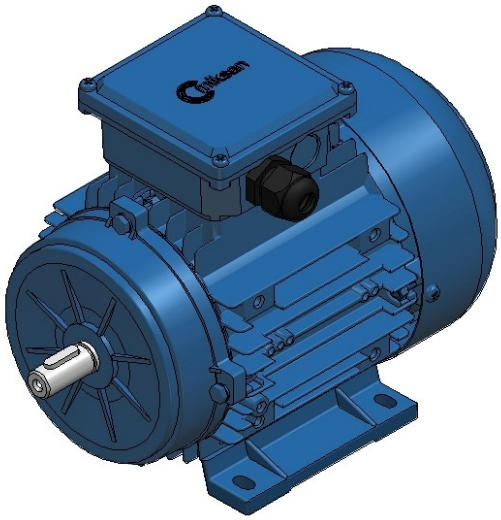


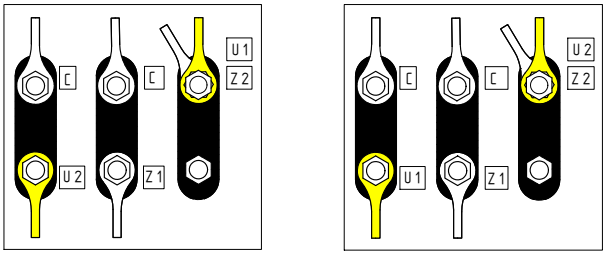
Figure 2 Delta Connection





Single– phase motors

FIGURE 3 : SINGLE-PHASE MOTOR CONNECTION



Frontal View (Shaft Side)

Frontal View (Shaft Side)

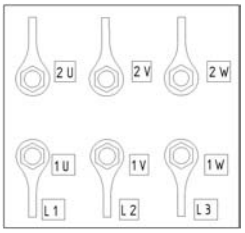


Figure 4 : Terminal connection of Multi-speed Motors at low speed

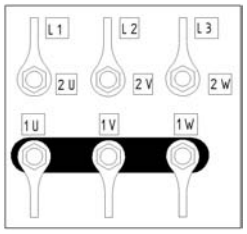
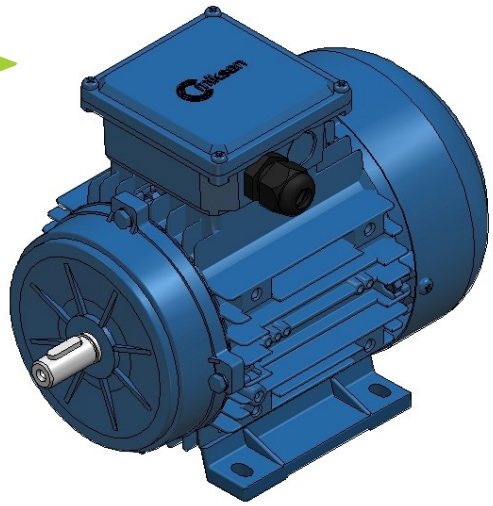


Figure 5 : Terminal connection of Multi-speed Motors at high speed

Multi-speed motors



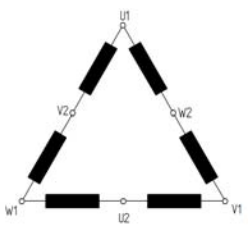


Figure 6 : Delta (Δ) low-speed connection

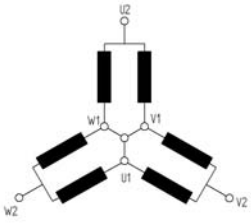


Figure 7 : Double star (YY) high speed connection

VOLTAGE AND FREQUENCY

Our three phase motors are designed for 400V, 50 Hz as standard and our single-phase motors are designed for 230V, 50 Hz.

Miksan Motor also manufactures motors with different voltages and frequencies upon request.

Motors manufactured to operate at rated frequency of 50 Hz can also used at 60 Hz. The approximate ratios to obtain the new performance values at 60 Hz are given in the following table.

50 Hz	60 Hz				
Rated Voltage V	Supply Voltage V	Full Load Working Values			
		Power	Speed	I_N	M_N
230	220	0,95	1,2	1	0,79
	230	1	1,2	1	0,83
	240	1,05	1,2	1	0,86
	255	1,1	1,2	1	0,92
400	380	0,95	1,2	1	0,79
	400	1	1,2	1	0,83
	415	1,05	1,2	1	0,86
	440	1,1	1,2	1	0,92
	460	1,15	1,2	1	0,96

TOLERANCES

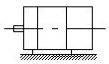
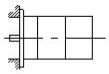
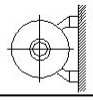
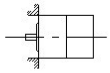
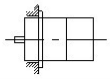
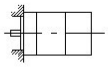
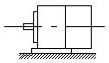
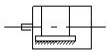
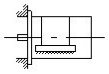
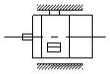
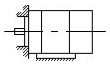
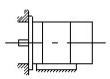
According to IEC 60034-1, catalogue values are permitted to deviate the real values as follow;

Speed (η)	$\Delta n = \pm 20\% (n_S - n_N)$, $P_N > 1$ kW $\Delta n = \pm 30\% (n_S - n_N)$, $P_N \leq 1$ kW
Efficiency % (n)	$\Delta n = -15\% (100 - n_N)$, $P_N \leq 150$ kW $\Delta n = \pm 10\% (100 - n_N)$, $P_N > 150$ kW
Power Factor (cosϕ)	$\Delta \cos\phi = -1/6 (1 - \cos\phi)$
Locked Rotor Current (I_L/I_N)	$\Delta (I_L/I_N) = +20\% (I_L/I_N)$
Locked Rotor Torque (M_L/M_N)	min. $(M_L/M_N) = -15\% (M_L/M_N)$ max. $(M_L/M_N) = +25\% (M_L/M_N)$
Breakdown Torque (M_K/M_N)	$\Delta (M_K/M_N) = -10\% (M_K/M_N)$
Pull-up Torque (M_P/M_N)	$\Delta (M_P/M_N) = -15\% (M_P/M_N)$
Moment of Inertia (J) [kgm^2]	$\Delta J = \pm 10\% J$
Noise Level (LPA) [dB]	Δ LPA = +3 dB (A)

CONSTRUCTION TYPES AND MOUNTING ARRANGEMENTS

Type of construction and mounting arrangements according to TS3211 EN 60034-7 ;

Designation for machine with horizontal shaft (IM B…),

Designation	Sketch	Construction				Mounting arrangement (Horizontal shaft)
		Number of endshields bearings	Feet	Flange	Other details	
IM B3		2	With feet	-	-	Mounted by feet, feet down
IM B5		2	-	With flange	Endshield flange at D-end with access to back	Mounted on D-end side of flange
IM B6		2	With feet	-	-	Mounted by feet, feet left(viewed from D-end)
IM B7		2	With feet	-		Mounted by feet, feet right(viewed from D-end)
IM B8		2	With feet	-	-	Mounted by feet, feet up
IM B9		1	-	-	No endshield or bearing at D-end	Mounted on end face of frame at D-end
IM B10		2	-	With flange	Special flange at D-end	Mounted on D-end side of flange
IM B14		2	-	With flange	Endshield spigot, No access to back, Flange at D-end	Mounted on D-end side of flange
IM B15		1	With feet	-	No endshield or bearing at D-end, Additional mounting provisions on D-end of frame	Mounted by feet, feet down, with additional mounting on end face of frame
IM B20		2	With raised feet	-	-	Mounted by feet, feet down
IM B25		2	With raised feet	With flange	Endshield flange at D-end with access to back	Mounted by feet, feet down, with additional mounting on flange
IM B30		2	-	-	3 or 4 pads on endshield(s) of frame	Pad mounted
IM B34		2	With feet	With flange	Endshield spigot, No access to back, Flange at D-end	Mounted by feet, feet down, with additional mounting on D-end side of flange
IM B35		2	With feet	With flange	Endshield flange at D-end with access to back	Mounted by feet, feet down, with additional mounting on D-end side of flange

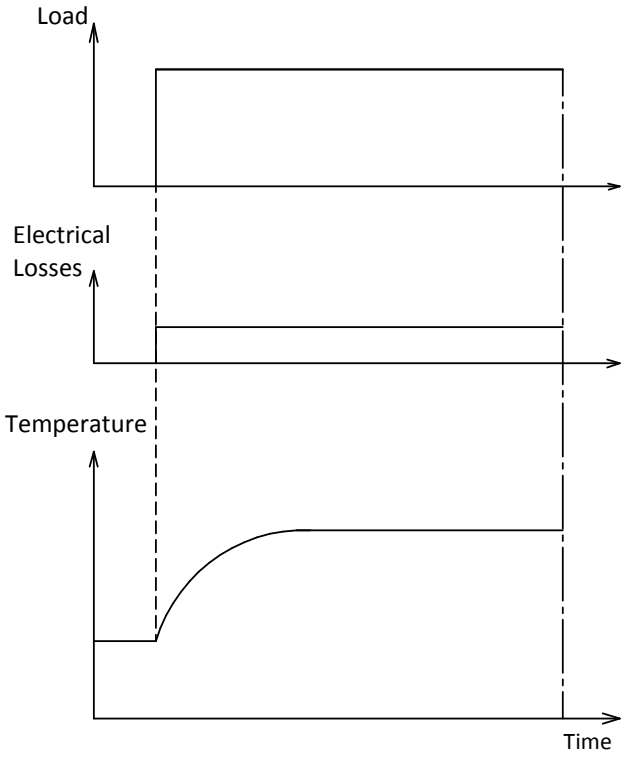
Designation for machine with vertical shaft (IM V…),

Designation	Sketch	Construction				Mounting arrangements (Vertical shaft)
		Number of endshields bearings	Feet	Flange	Other details	
IM V1		2	-	With flange	Endshield flange at D-end with access to back	Mounted on D-end side of flange, D-end down
IM V2		2	-	With flange	Endshield flange at N-end with access to back	Mounted on N-end side of flange, D-end up
IM V3		2	-	With flange	Endshield flange at D-end with access to back	Mounted on D-end side of flange, D-end down
IM V4		2	-	With flange	Endshield flange at N-end with access to back	Mounted on N-end side of flange, D-end down
IM V5		2	With feet	-	-	Mounted by feet, D-end down
IM V6		2	With feet	-	-	Mounted by feet, D-end up
IM V8		1	-	-	No endshield or bearing at D-end	Mounted on end face of frame at D-end, D-end down
IM V9		1	-	-	No endshield or bearing at D-end	Mounted on end face of frame at D-end, D-end up
IM V10		2	-	With flange	Special flange at D-end	Mounted on D-end side of flange, D-end down
IM V14		2	-	With flange	Special flange at D-end	Mounted on D-end side of flange, D-end up
IM V15		2	With feet	With flange	Endshield flange at D-end with access to back	Mounted by feet, with additional mounting on D-end side of flange, D-end down
IM V16		2	-	With flange	Special flange at D-end	Mounted on N-end side of flange, D-end up
IM V17		2	With feet	With flange	Endshield spigot no access to back, Flange at D-end	Mounted by feet, with additional mounting on D-end side of flange, D-end down
IM V18		2	-	With flange	Endshield spigot no access to back, Flange at D-end	Mounted on D-end side of flange, D-end down
IM V19		2	-	With flange	Endshield spigot no access to back, Flange at D-end	Mounted on D-end side of flange, D-end up
IM V30		2	-	-	3 or 4 pads on endshield(s) or frame	Pad-mounted, D-end down
IM V31		2	-	-	3 or 4 pads on endshield(s) or frame	Pad-mounted, D-end up
IM V35		2	With feet	With flange	Endshield flange at D-end with access to back	Mounted by feet, with additional mounting on D-end side of flange, D-end up
IM V37		2	With feet	With flange	Endshield spigot no access to back, Flange at D-end	Mounted by feet, with additional mounting on D-end side of flange, D-end up

DUTY TYPES

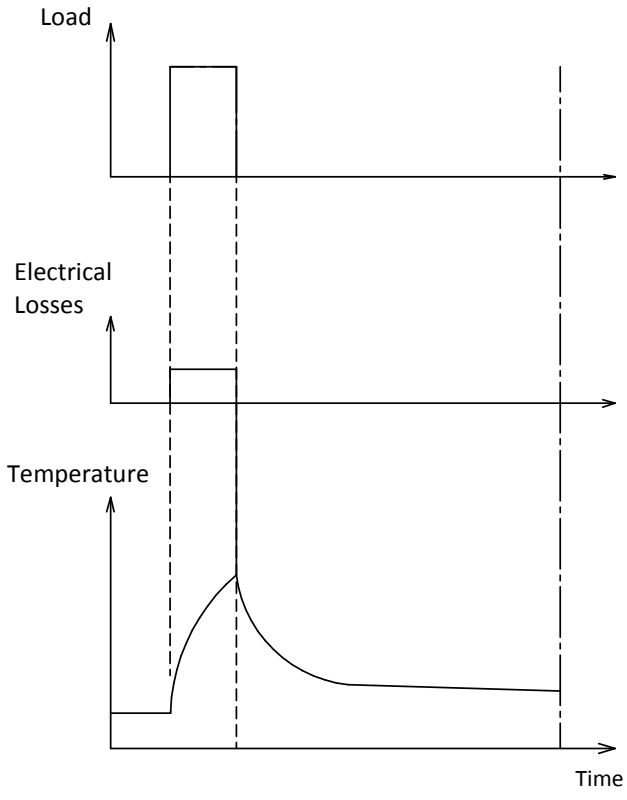
S1– CONTINUOS DUTY

The motor operates at constant load for enough time to reach thermal equilbrium.



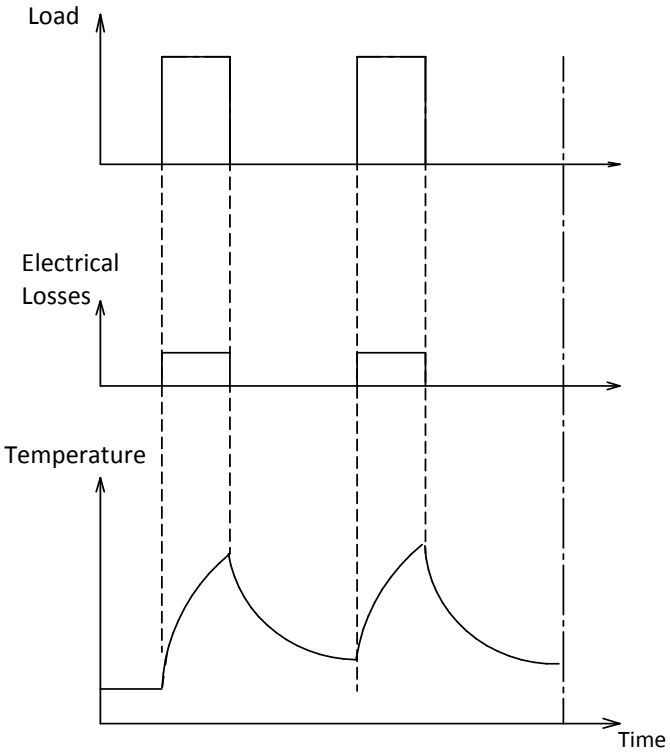
S2– SHORT-TIME DUTY

The motor operates at constant load for less time than required to reach thermal equilibrium, followed by a rest period for the motor to cool down.



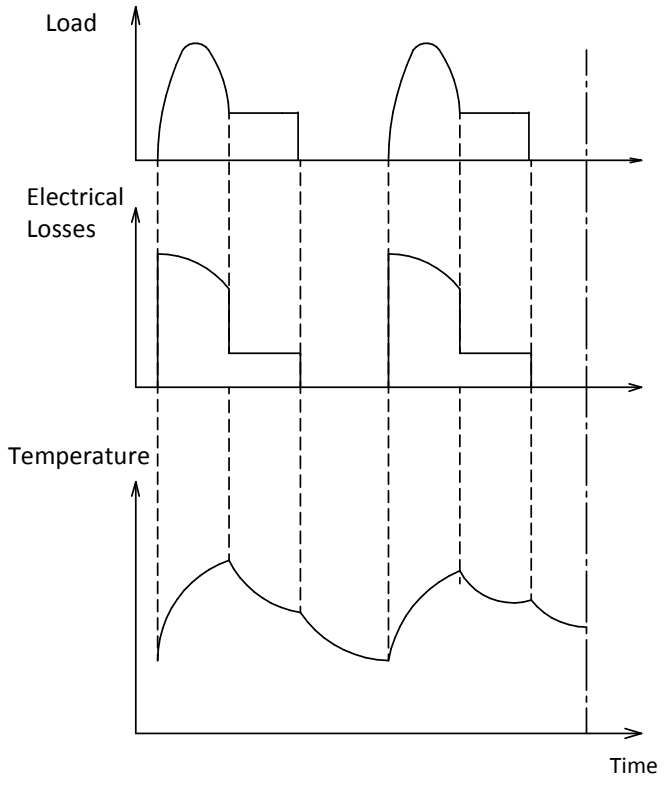
S3– INTERMITTENT PERIODIC DUTY

The motor operates at sequence of identical duty cycles and rest cycles with constant load.
In this type of duty the starting current has no significant effect on the temperature rise.



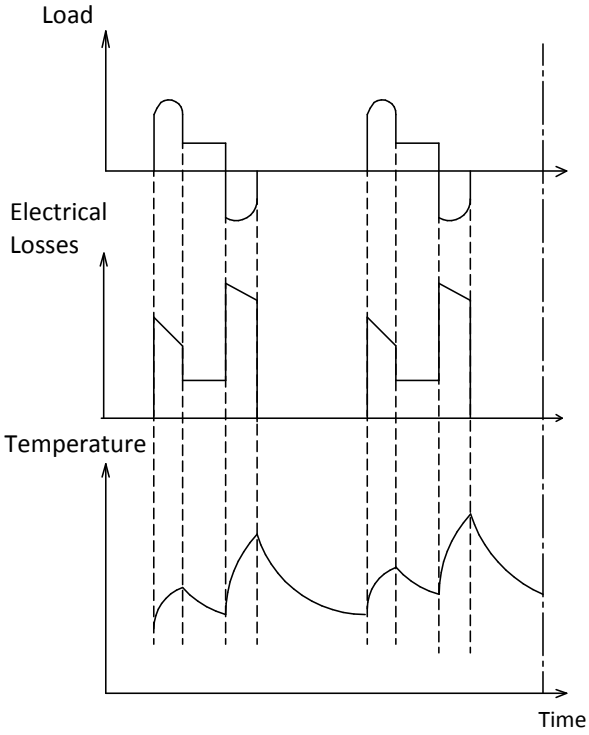
S4– INTERMITTENT PERIODIC DUTY WITH STARTING

The motor operates at sequential, identical start, run and rest cycles with constant load. In this type of duty, there is a significant period of starting and starting current has a little effect on temperature rise. Due to very short operation periods, thermal balance cannot be reached.



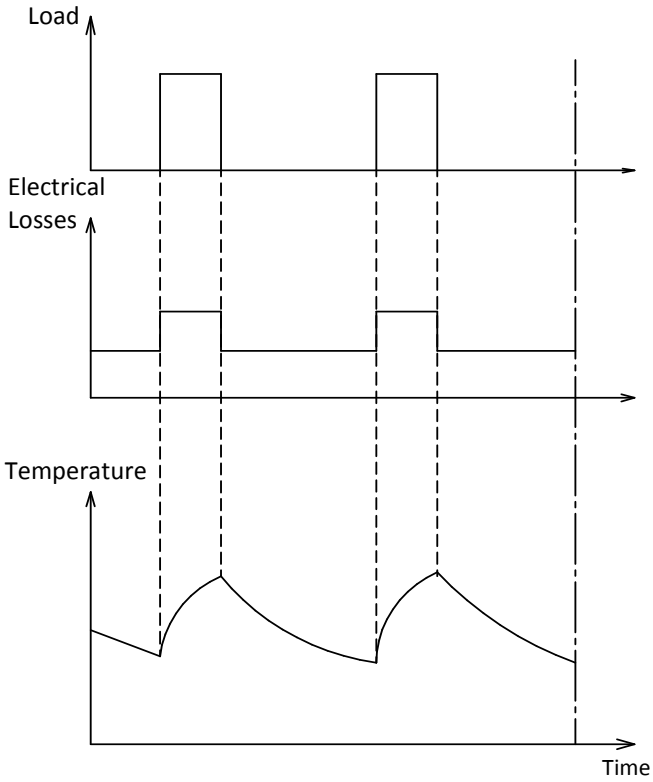
S5– INTERMITTENT PERIODIC DUTY WITH ELECTRIC BRAKING

The motor operates at a sequence of identical cycles that composed of a period of starting, a period of operation at constant load, a period with instenteneous electrical braking and rest and de-energized period.



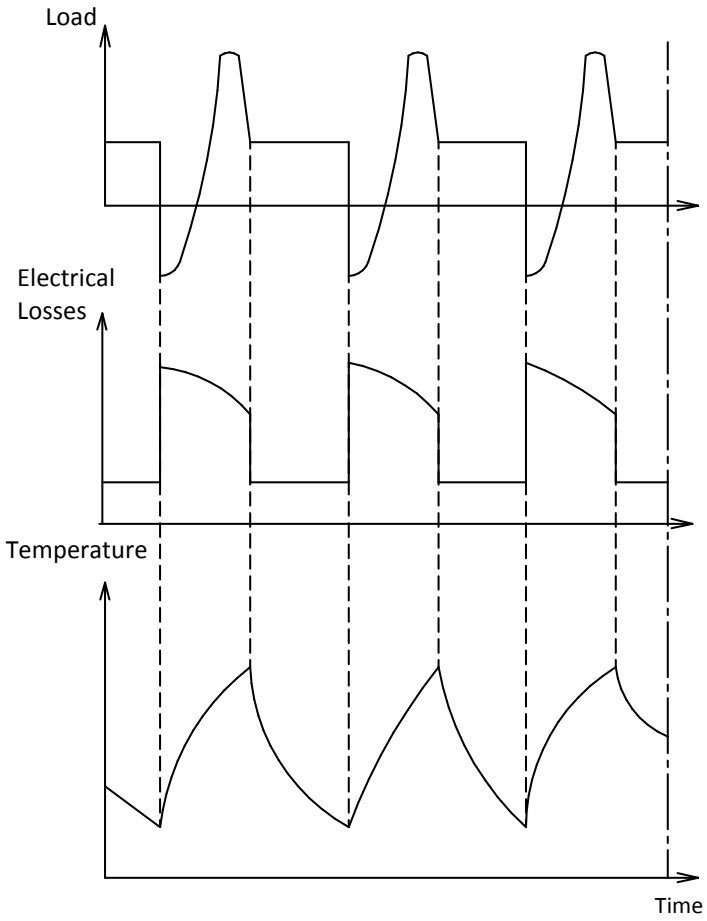
S6– CONTINUOUS OPERATION WITH INTERMITTENT LOAD

The motors operating cycle composed of identical, sequential period of starting, a period of operating at constant load and a period of operation at no-load. There is no rest and de-energized period.



S7– CONTINUOUS OPERATION WIITH INTERMITTENT LOAD

The motor operates at a sequence of identical duty cycles that composed of a period of starting, a period of operation at constant load and a period of electric braking. There is no de-energized and rest period.



Our standard motors are designed for duty type S1. Please contact us for different duty types.

SPEED CONTROL OF ASYNCHRONOUS MOTORS

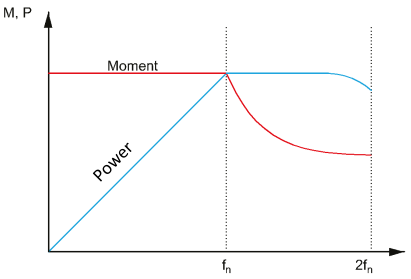
Synchronous speed is the theoretical speed of a motor based on the rotating magnetic field. The synchronous speed of a motor is based on the supply frequency and the number of poles in the motor winding. It can expressed as:

$$n = 60 * \frac{f}{p}$$

Where f is a supply frequency and P is the pair number of poles.

Nowadays, with a variable frequency drive its possible to modulate the speed of a induction motors. In general, two basic types of inverter exist, which are totally different in their behavior, V/f control or vector control. Preferred method should be choosen according to the application.

The main control variables of the asynchronous motors are voltage and frequency, while torque and flux are the function of them. This coupling effects caused motors' dynamic response to slow down. Increasing the frequency without changing the voltage cause on immediate decrease in flux and torque. The constant V/f method requires magnitude and frequency of the voltage applied to the stator of a motor maintain at a constant ratio. So, V/f control method increase voltage in order to compensate the decrease in torque and maintain stability at voltage/frequency ratio, but it can not compensate slight delay at dynamic response. Also, at low frequencies, voltage must be boosted in order to compensate the effect of the stator resistance.



Today various inverters work with vector control method. This method can be used to vary the speed of an motor over a wide range. Vector control occurs as the motor parameters entered to the inverter even motor works idle with inverter for obtaining the accurate parameters.In vector control method, stator currents' divided to its components; torque and flux. Vector control method, minimizes the response time, causing AC motor, that does not require maintance with more durability, getting ahead of DC motor once.

It should be noted that, for preventing faulty signal at system, which works with PLC, should use inverter with a filter. Also, in practice the cable length must be as short as possible. Long cable can cause signals with different frequency entering to the system. For that reason, nowadays motor coupled with inverter begin to exist.

Additionally, the inverter fed induction motors starting time should be setted. Long starting time under loaded condition can cause burning at motor. Please contact us for detailed information about inverter and parameters.

Note: Working at low speed can decrease the cooling effect of the fans , so external fan may be needed.

ELECTRICAL INFORMATION

Safety Instructions

- Do not operate the motor with missing part.
- The motor must be disconnected from the power supply and be completely stopped before conducting any installation or maintance.
- Qualified personnel should perform the electrical installation of the motor.
- The electrical connection part of the motor must not contact with liquid.
- Motor should operate at nameplate voltage and frequency.
- Under normal conditions, all of the metal parts must be grounded with the help of the ground terminal inside the terminal box by using appropriate cable. Ungrounded metal parts pose a risk to human life.
- To prevent the risk of electric shock and for high mechanical protection, bolts of the terminal box must be tightened.
- Please make sure that all protective precautions against contact with moving or live parts are taken.
- Periodically check all the electrical and mechanical connections' tightness.

Electrical Connections

- Installation of the electrical cables must be performed by an authorized electrician as it does not touch the motor housing or piping.
- Check the values of voltage, frequency, number of phase and current data from the nameplate and ensure proper electrical connection. Otherwise, electric motor will not work properly.
- Electrical connection of the motor varies with power and voltage of the motor. Forexample, (Y) 400V/230V (Δ) motor, must have star connection with 400V phase to phase voltage and have delta connection with 230V phase to phase voltage.
- Wrong connection type can cause burning or low efficiency at the motor.

During Operation

- If the direction of rotation is reverse, please change the two of the phase cables positions.
- Please observe and record the supply current. If the supply current is lower than nameplate current, motor is working under load-free condition. Higher supply current than label value, poses a danger. Possible reason for excessive supply current are; damaged bearings, lack of phase and unbalanced voltage between the phases. Using thermic relay and proper fuse may prevent these problems.

Voltage Level and Frequency

- Voltage level for standard Miksan Motor is indicated on the information pages. (According to EN 60034-1, voltage tolerance is ±10%)
- Motor with different voltage level and frequency can be design upon customer request. Please contact with our technical department for special applications.

Cable Selection

- Voltage fluctation at the system and current carrying capacity of the cable must be considered during the cable selectiion.
- Voltage drop calculation;

3 PHASE LOAD- 230 V/400 V $$\%e = 0{,}0124 \cdot \frac{P \cdot L}{S}$$

1 PHASE LOAD 230 V $$\%e = 0{,}074 \cdot \frac{P \cdot L}{S}$$

%e : Voltage Drop
P : Power (kW)
L : Lenght of the Cable (m)
S : Cables Cross-section Area (mm^2)

- Voltage drop percentage of an interior wiring, for continuous greatest current and voltage between the terminal box and consumption tool shoud not exceed 3% according to the standards.
- As mentioned before, operating at non-nominal voltage value may cause burned-motor.

Motor Protection via PTC and Thermistor

Resistance of PTC temperature sensors that are placed inside the winding, varies with the temperature. Ends of the PTC have to be connected to Thermistor relay as illustrated in Figure-20. They halt the motor, if the temperature of winding exceeds the limit. The resistance of PTC increases after the nominal temperature and stops the motor by switching off the circuit.

Miksan Motor motors have F class isolation that allows a raise of 105 ˚C in winding temperature and maximum ambient temperature of the 40˚C.

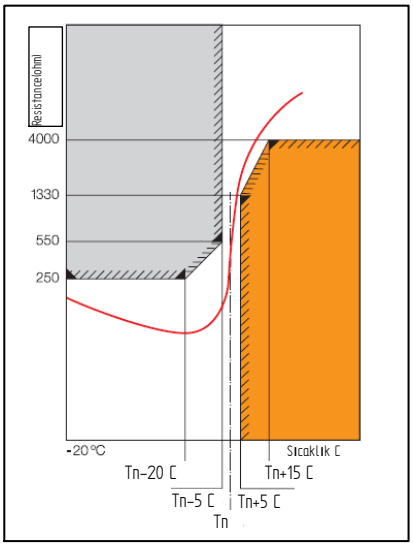


Figure 21 - Resistance—Temperature Curve for used PTC

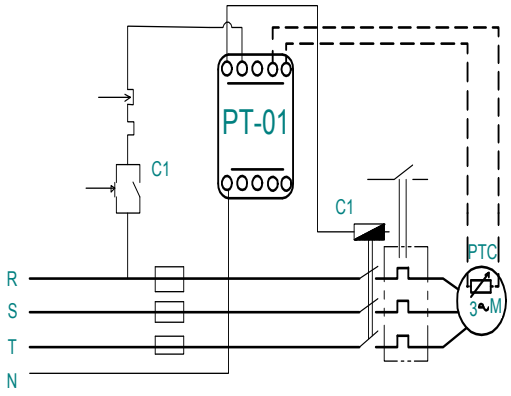
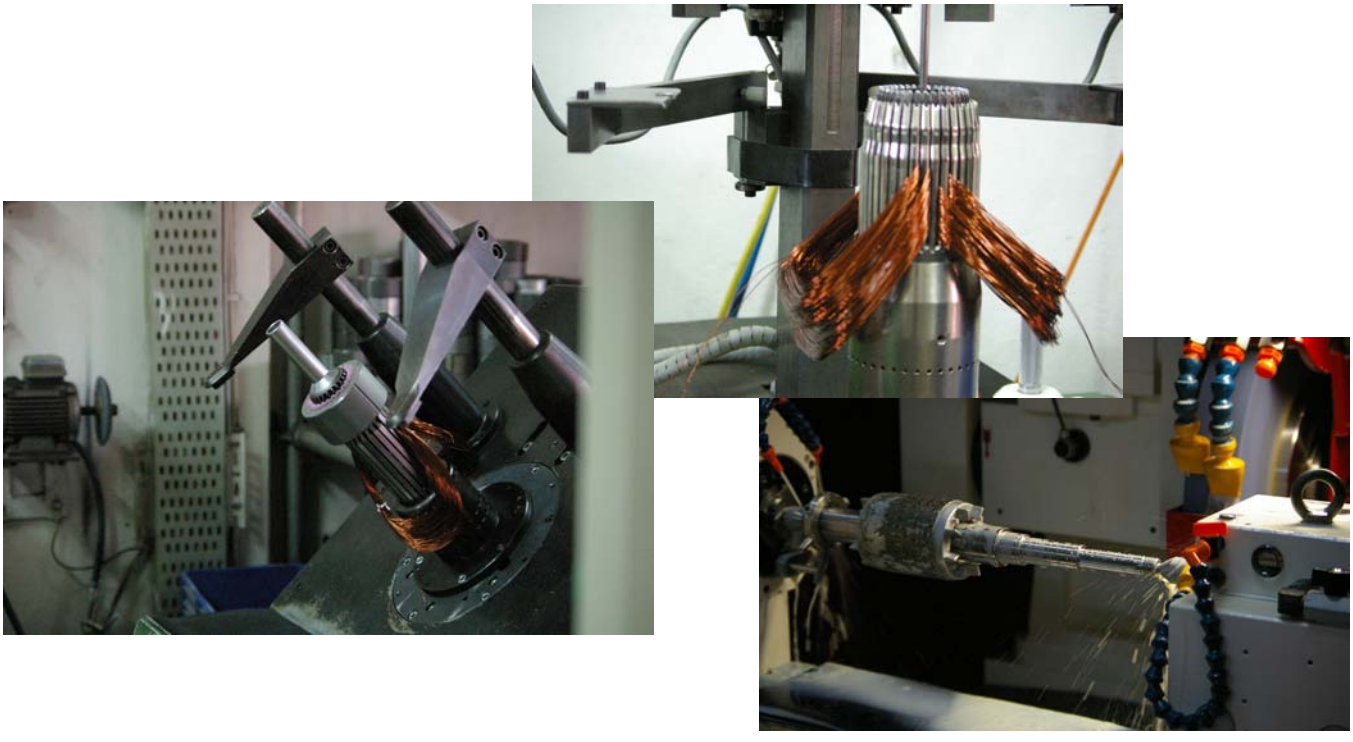


Figure 20– Thermistor—Relay Connection



Efficiency and Losses of Asynchronous Motors

Losses at induction motor can classified as; stator losses, rotor losses, friction and vantilation losses.

The CEMEP has developed an standard in 2011, the EFF efficiency rating will no longer be valid and are to be replaced with the new efficiency level according to IEC Standard 60034-30.

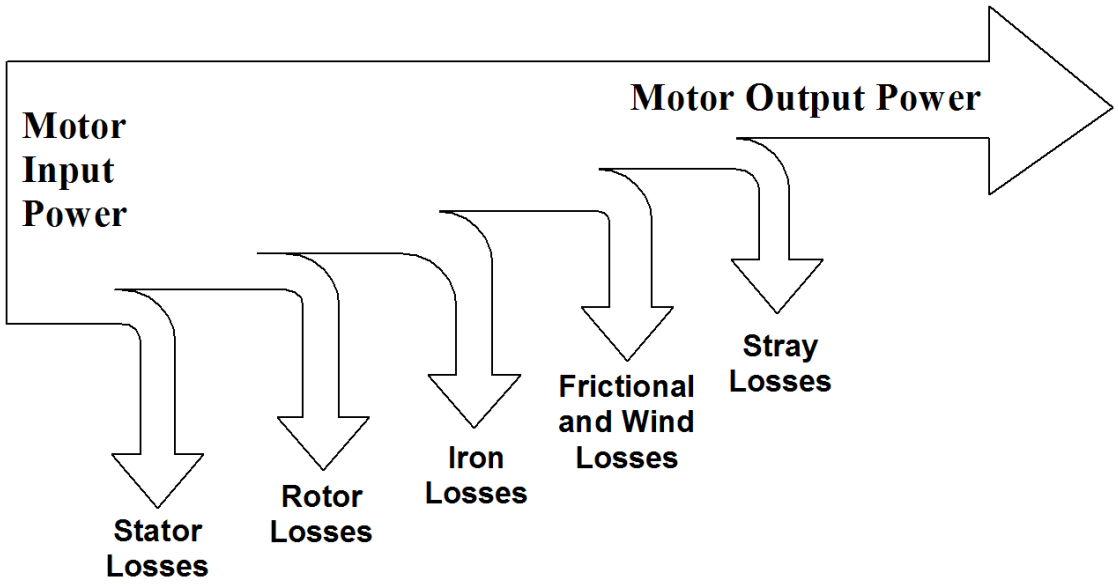
According to IEC 60034-30 ;

IE1 : Standard Efficiency Level
IE2 : High Efficiency Level
IE3 : Premium Efficiency Level
IE4 : Super Premium Efficiency Level

In June 2011, IE2 became the mandatory minimum efficiency class for new motors placed on the market. On January 1, 2015 IE3 became compulsory for single speed induction motors in the range 7.5 to 375KW and IE3 will be the mandatory minimum efficiency class for all of the AC motor at 1 January 2017.

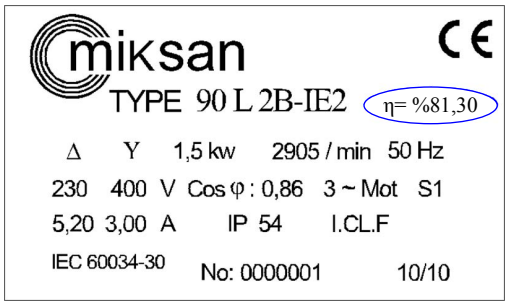
According to new standards additional losses is estimated as 1%-2,5% of input power at rated load for motors between 0,1 and 1000 Kw. Also stator and rotor losses should determined at temperature rise +25 ˚C.

Note: These regulation excludes; motors used with variable speed drive, motors that can not be tested without the appliances they are used for, motors with rated voltage higher than 1000V, motors that has more than 6 pole and motors without S1 duty type.



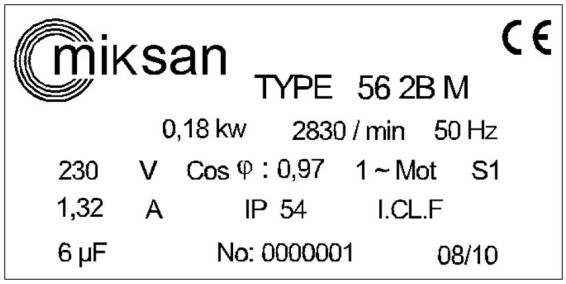
(kW)	2 pole (3000 d/d)				4 pole (1500 d/d)				6 pole (1000 d/d)			
	IE2	IE2	IE3	IE3	IE2	IE2	IE3	IE3	IE2	IE2	IE3	IE3
	(Nom.)	(Min.)	(Nom.)	(Min.)	(Nom.)	(Min.)	(Nom.)	(Min.)	(Nom.)	(Min.)	(Nom.)	(Min.)
0,75	77,4	**74,0**	80,7	**77,8**	79,6	**76,5**	82,5	**79,9**	75,9	**72,3**	78,9	**75,7**
1,1	79,6	**76,5**	82,7	**80,1**	81,4	**78,6**	84,1	**81,7**	78,1	**74,8**	81,0	**78,2**
1,5	81,3	**78,5**	84,2	**81,8**	82,8	**80,2**	85,3	**83,1**	79,8	**76,8**	82,5	**79,9**
2,2	83,2	**80,7**	85,9	**83,8**	84,3	**81,9**	86,7	**84,7**	81,8	**79,1**	84,3	**81,9**
3	84,6	**82,3**	87,1	**85,2**	85,5	**83,3**	87,7	**85,9**	83,3	**80,8**	85,6	**83,4**
4	85,8	**83,7**	88,1	**86,3**	86,6	**84,6**	88,6	**86,9**	84,6	**82,3**	86,8	**84,8**
5,5	87,0	**85,1**	89,2	**87,6**	87,7	**85,9**	89,6	**88,0**	86,0	**83,9**	88,0	**86,2**
7,5	88,1	**86,3**	90,1	**88,6**	88,7	**87,0**	90,4	**89,0**	87,2	**85,3**	89,1	**87,5**
11	89,4	**87,8**	91,2	**89,9**	89,8	**88,3**	91,4	**90,1**	88,7	**87,0**	90,3	**88,8**
15	90,3	**88,8**	91,9	**90,7**	90,6	**89,2**	92,1	**90,9**	89,7	**88,2**	91,2	**89,9**
18,5	90,9	**89,5**	92,4	**91,3**	91,2	**89,9**	92,6	**91,5**	90,4	**89,0**	91,7	**90,5**
22	91,3	**90,0**	92,7	**91,6**	91,6	**90,3**	93,0	**92,0**	90,9	**89,5**	92,2	**91,0**
30	92,0	**90,8**	93,3	**92,3**	92,3	**91,1**	93,6	**92,6**	91,7	**90,5**	92,9	**91,8**
37	92,5	**91,4**	93,7	**92,8**	92,7	**91,6**	93,9	**93,0**	92,2	**91,0**	93,3	**92,3**
45	92,9	**91,8**	94,0	**93,1**	93,1	**92,1**	94,2	**93,3**	92,7	**91,6**	93,7	**92,8**
55	93,2	**92,2**	94,3	**93,4**	93,5	**92,5**	94,6	**93,8**	93,1	**92,1**	94,1	**93,2**
75	93,8	**92,9**	94,7	**93,9**	94,0	**93,1**	95,0	**94,3**	93,7	**92,8**	94,6	**93,8**
90	94,1	**93,2**	95,0	**94,3**	94,2	**93,3**	95,2	**94,5**	94,0	**93,1**	94,9	**94,1**
110	94,3	**93,4**	95,2	**94,5**	94,5	**93,7**	95,4	**94,7**	94,3	**93,4**	95,1	**94,4**
132	94,6	**93,8**	95,4	**94,7**	94,7	**93,9**	95,6	**94,9**	94,6	**93,8**	95,4	**94,7**
160	94,8	**94,0**	95,6	**94,9**	94,9	**94,1**	95,8	**95,2**	94,8	**94,0**	95,6	**94,9**
200	95,0	**94,3**	95,8	**95,2**	95,1	**94,4**	96,0	**95,4**	95,0	**94,3**	95,8	**95,2**

MOTOR NAMEPLATE



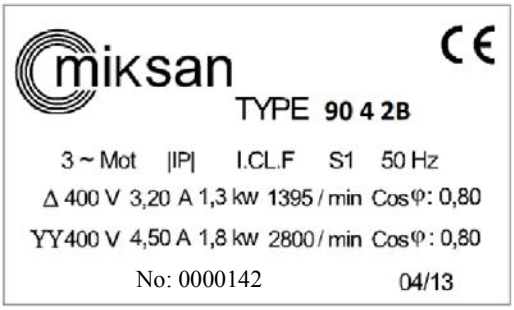
CONTENT	DESCRIPTION	CONTENT	DESCRIPTION
TYPE 90 L	Motor frame type, L : large frame	2905 rpm	Rated speed
2B-IE2	Pole number - efficiency class	50 Hz	Rated frequency
Δ	Delta connection	cosϕ	Power factor
Y	Star connection	3 ~ Mot	Phase number
230	Phase to phase voltage at delta connection	S1	Duty type
400	Phase to phase voltage at star connection	IP	Protection class
5,2 A	Line current in delta connection	I.CL.F	Isolation class
3 A	Line current in star connection	IEC 60034-30	Standard code
1,5 kW	Output power	NO,10/10	Serial number and production date

Three phase motor nameplate



CONTENT	DESCRIPTION	CONTENT	DESCRIPTION
TYPE 56 2B	Motor frame type	2905 rpm	Rated speed
M	Single phase	50 Hz	Rated frequency
230 V	Phase-neutral voltage	cosϕ	Power factor
1,32 A	Total current	1 ~ Mot	Phase number
0,18 kW	Output power	S1	Duty type
NO,08/10	Serial number and production date	IP	Protection class
6 µ F	Capacitor capacity	I.CL.F	Isolation class

Single phase motor nameplate



CONTENT	DESCRIPTION	CONTENT	DESCRIPTION
TYPE 90	Motor frame type	YY 400 V	Star-star connection
4 2B	Pole number	4,5 A	High speed current
Δ 400 V	Delta connection, slow speed	1,8 kW	Output of high speeed
3,2 A	Low speeds current	2800	Speed of high speed
1,3 kW	Low speed output	cosϕ	High speeds power factor
1395	Low speed rated speed	S1	Duty type
cosϕ	Low speed power factor	IP	Protection class
		I.CL.F	Isolation class
		NO,14/13	Serial number and production date

Multi-speed motor nameplate

MULTI SPEED MOTORS

The multi speed motors allow two outputs and speeds from a single frame with constant frequency. Multi speed motors can be equipped with two sets of winding or one winding. So, they can divided into two different winding types; Dahlander (pole changing) wound and two seperate windings (dual wound).

Dahlander winding enables alteration of the pole number of three-phase motor at ratio of 1 to 2 and thus the speed can be varied at 2:1. There is no such a restriction on the two seperate winding.

At multi speed motor, two layer wound is used and it caused a decrease in output power compare to the standard three phase squirrel cage motors. You can find detailed technical information at rating and performance pages.

Dahlander motors can be connected by Δ/YY to obtain constant torque or by Y/YY to obtain constant power, variable torque. Some typical application of constant torque dahlender motors are compressor and machine tools. Variable torque dahlander motors are mainly used at pump and fan applications.

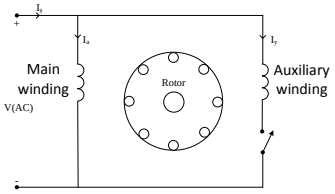
SINGLE PHASE MOTORS

Single phase motors have the same mechanical properties and standards as three phase motors. Single phase motors are used with single phase AC supply by changing stator winding. Miksan Motor produces single phase motors up to frame size 80.

There are two different types of single phase motor; permanent split capacitor motor or capacitor start/capacitor run motor.

All of the single phase Miksan Motor motors are permanent split capacitor motors which have one capacitor mounted in the terminal box, permanently connected in series with the auxiliary winding.

The direction of rotation of a single phase motor can be reversed by swaping the yellow wire in the terminal box. You can see connection diagram below.



Note: Single phase motors must not run at no load for long periods to prevent losses.

SPECIAL APPLICATION MOTORS

Being a supplier of custom made electric motors for many years, Miksan Motor is able to offer a several particular electric motor ranges for various specific demands.

Some of the Miksan Motor special application motors are;

Oil-immersed Motor

The main fields of application of oil-immersed motors are hydraulic systems.

Oil-immersed motors provide higher output power compared to the same size standard motors since the oil-immersed motor cools the oil constantly.

High-Speed Electric Motor

High-speed electric motors generally used in wood, glass and metal processing (CNC) machines.

Various high-speed motors have been designed and manufactured to meet our customers' high speed requirements.

Special Application motor

Miksan Motor can manufacture cast iron housing and cast iron flanges upon customer request.

Motors designed for variable frequencies

Miksan Motor is able to supply a frequency inverter fed induction motor. To provide abilitiy for operating at different frequency, new stator design should be made. Please contact our technical department for your requests.

Water-Cooled Motors

The motor cooling at water-cooled motors is ensured by a jacket where the water flow uniformly between the stator and motor frame.

This cooling system is very efficient method of transferring heat away from the motor.

Water-cooled motors' compact design and low noise level make them suitable for dialysis systems.

ELECTRICAL VALUES: IE1 EFFICIENCY CLASS

TYPE	RATED OUTPUT		PERFORMANCE AT RATED OUTPUT							STARTING DATA		Breakdown Torque Ratio	Moment of interia	B3 Weight appx.
			Voltage		Speed	Current	Torque	Power Factor	Efficiency	Current Ratio	Torque Ratio			
	P_2		V		n	I_n	M_n	cos ø	η	I_s/I_n	M_s/M_n	M_k/M_n	J	
	kw	HP	Con.	V	rpm	A	Nm	-	%	-	-	-	kgm²	kg
2 POLES- 3000 RPM														
56 2A	0.09	0.12	Δ/Y	230/400	2830	0.52/0.30	0.32	0.70	64.6	3.7	3.0	3.1	0.00014	2.3
56 2B	0.12	0.16	Δ/Y	230/400	2860	0.64/0.37	0.40	0.72	68.0	5.0	3.7	3.1	0.00015	2.8
56 2C	0.18	0.25	Δ/Y	230/400	2840	0.86/0.50	0.60	0.76	70.0	5.0	3.7	3.1	0.00016	3.2
63 2A	0.18	0.25	Δ/Y	230/400	2800	1.12/0.65	0.61	0.65	65.1	4.6	2.8	2.8	0.00014	3.4
63 2B	0.25	0.34	Δ/Y	230/400	2800	1.26/0.73	0.85	0.75	68.7	4.2	2.2	3.5	0.00017	4.0
63 2C	0.37	0.50	Δ/Y	230/400	2790	1.99/1.15	1.26	0.70	68.3	4.0	2.0	3.0	0.00018	4.5
71 2A	0.37	0.50	Δ/Y	230/400	2815	1.73/1.00	1.26	0.72	73.2	4.0	2.5	2.6	0.00033	4.9
71 2B	0.55	0.75	Δ/Y	230/400	2780	2.25/1.30	1.90	0.82	76.8	4.5	2.4	2.5	0.00042	6.0
71 2C	0.75	1.0	Δ/Y	230/400	2810	3.63/2.10	2.60	0.70	70.5	4.5	2.7	2.8	0.00054	6.4
80 2A	0.75	1.0	Δ/Y	230/400	2860	3.72/2.15	2.51	0.75	72.6	4.8	3.2	3.0	0.00062	7.5
80 2B	1.1	1.5	Δ/Y	230/400	2856	4.85/2.80	3.70	0.75	76.3	5.0	2.5	3.2	0.00078	8.6
80 2C	1.5	2.0	Δ/Y	230/400	2805	6.06/3.50	5.10	0.80	78.5	4.3	2.0	2.7	0.00085	9.9
90 S2A	1.5	2.0	Δ/Y	230/400	2874	6.40/3.70	5.00	0.80	76.5	5.0	2.2	2.5	0.00127	10.4
90 L2B	2.2	3.0	Δ/Y	230/400	2870	8.31/4.80	7.37	0.82	81.2	5.2	2.0	2.2	0.00160	13.1
90 2LC	3.0	4.0	Δ/Y	230/400	2880	11.25/6.50	10.1	0.81	82.6	6.1	2.8	2.9	0.00201	15.5
100 2A	3.0	4.0	Δ/Y	230/400	2865	11.70/6.75	10.1	0.80	82.6	6.1	2.7	3.3	0.00262	16.7
100 2B	4.0	5.5	Δ	400/690	2860	8.40/4.85	13.4	0.86	84.2	7.0	3.0	3.2	0.00341	20.4
112 2A	4.0	5.5	Δ	400/690	2880	7.88/4.62	13.3	0.86	84.2	6.2	2.6	3.1	0.00453	26.3
112 2B	5.5	7.5	Δ	400/690	2885	11.00/6.35	18.3	0.88	85.7	7.0	2.8	3.4	0.00485	31.5
132 S2A	5.5	7.5	Δ	400/690	2900	11.35/6.55	18.4	0.85	86.6	6.5	2.5	2.9	0.00900	34.0
132 S2B	7.5	10.0	Δ	400/690	2905	15.00/8.66	24.7	0.87	87.0	6.5	2.5	2.8	0.01200	39.1
132 M2C	11.0	15.0	Δ	400/690	2850	19.60/11.32	36.0	0.93	87.5	7.0	2.8	3.0	0.01800	49.5
4 POLES– 1500 RPM														
56 4A	0.06	0.08	Δ/Y	230/400	1370	0.45/0.26	0.41	0.70	57.7	3.0	2.4	2.6	0.00014	2.3
56 4B	0.09	0.12	Δ/Y	230/400	1385	0.67/0.39	0.62	0.62	59.8	3.1	2.8	2.3	0.00016	2.6
56 4C	0.12	0.16	Δ/Y	230/400	1380	0.83/0.48	0.83	0.68	59.2	3.2	2.8	2.4	0.00018	3.3
63 4A	0.12	0.16	Δ/Y	230/400	1400	1.00/0.60	0.82	0.63	47.4	3.0	2.0	2.0	0.00021	3.3
63 4B	0.18	0.25	Δ/Y	230/400	1340	1.27/0.73	1.30	0.67	54.6	2.8	2.0	2.0	0.00026	3.5
63 4C	0.25	0.34	Δ/Y	230/400	1340	1.73/1.00	1.80	0.64	60.8	3.0	2.0	2.0	0.00032	4.5
71 4A	0.25	0.34	Δ/Y	230/400	1415	1.64/0.95	1.70	0.68	57.7	3.3	2.3	2.5	0.00049	4.8
71 4B	0.37	0.50	Δ/Y	230/400	1410	2.16/1.25	2.50	0.68	62.8	3.5	2.4	2.3	0.00067	5.6
71 4C	0.55	0.75	Δ/Y	230/400	1380	2.72/1.57	3.80	0.70	73.3	3.4	2.0	2.1	0.00082	6.3
80 4A	0.55	0.75	Δ/Y	230/400	1410	2.90/1.67	3.70	0.70	67.3	3.7	2.1	2.0	0.00097	7.4
80 4B	0.75	1.0	Δ/Y	230/400	1410	3.64/2.10	5.10	0.71	70.6	4.0	2.1	2.0	0.00122	8.4
80 4C	1.1	1.5	Δ/Y	230/400	1390	5.20/3.00	7.50	0.73	76.2	4.0	2.1	2.1	0.00134	10.0
90 S4A	1.1	1.5	Δ/Y	230/400	1400	4.94/2,85	7.45	0.75	76.2	4.2	2.2	2.3	0.00206	11.1
90 L4B	1.5	2.0	Δ/Y	230/400	1405	6.75/3.9	10.3	0.75	78.5	4.3	2.2	2.2	0.00263	13.0
90 L4C	2.2	3.0	Δ/Y	230/400	1420	9.69/5.60	15.1	0.80	81.0	4.5	1.9	2.5	0.00287	16.3
100 4A	2.2	3.0	Δ/Y	230/400	1410	9.00/5.20	15.1	0.76	81.0	4.9	2.4	2.5	0.00426	18.0
100 4B	3.0	4.0	Δ/Y	230/400	1420	13.00/7.50	20.3	0.73	82.6	5.3	2.1	2.5	0.00560	21.5
112 4A	4.0	5.5	Δ	400/690	1440	14.20/8.20	26.5	0.82	84.2	5.5	2.0	2.3	0.01012	28.0
112 4B	5.5	7.5	Δ/Y	230/400	1400	11.00/6.35	36.8	0.88	84.2	5.6	2.3	2.5	0.01060	28.0
132 S4A	5.5	7.5	Δ	400/690	1445	11.60/6.70	36.1	0.80	85.7	5.9	2.5	2.5	0.019	38.0
132 M4B	7.5	10.0	Δ	400/690	1450	16.00/9.25	49.5	0.80	87.0	5.9	2.5	2.5	0.026	47.2
132 M4C	9.0	12.0	Δ	400/690	1445	19.70/11.30	56.1	0.81	87.5	6.1	3.5	3.2	0.035	55.2
132 M4C	11.0	15.0	Δ	400/690	1430	22.50/12.90	72.3	0.76	88.4	6.3	3.7	3.8	0.043	56.8

TYPE	RATED OUTPUT		PERFORMANCE AT RATED OUTPUT							STARTING DATA		Breakdown Torque Ratio	Moment of interia	B3 Weight appx.
			Voltage		Speed	Current	Torque	Power Factor	Efficiency	Current Ratio	Torque Ratio			
	P_2		V		n	I_n	M_n	cos ø	η	I_s/I_n	M_s/M_n	M_k/M_n	J	
	kw	HP	Con.	V	rpm	A	Nm	-	%	-	-	-	kgm^2	kg
6 POLES– 1000 RPM														
71 6A	0.18	0.25	Δ/Y	230/400	930	1.13/0.65	1.85	0.65	57.1	3.5	1.7	2.0	0.00076	4.8
71 6B	0.25	0.34	Δ/Y	230/400	920	1.56/0.90	2.60	0.70	57.3	3.5	1.9	2.1	0.00103	5.5
80 6A	0.37	0.50	Δ/Y	230/400	930	2.00/1.20	3.80	0.67	61.3	3.7	1.9	2.2	0.00189	7.4
80 6B	0.55	0.75	Δ/Y	230/400	915	2.95/1.70	5.70	0.70	62.3	3.6	1.7	2.0	0.00248	9.0
90 S6	0.75	1.0	Δ/Y	230/400	911	4.60/2.65	7.87	0.64	70.5	3.7	1.8	1.9	0.00327	10.6
90 L6	1.1	1.5	Δ/Y	230/400	912	6.23/3.60	11.55	0.64	67.7	3.8	1.8	1.9	0.00422	13.0
100 6A	1.5	2.0	Δ/Y	230/400	935	7.61/4.40	15.40	0.65	76.2	4.5	2.0	2.0	0.00921	19.0
112 6A	2.2	3.0	Δ/Y	230/400	930	9.27/5.35	22.4	0.79	83.0	4.4	2.0	2.1	0.00922	19.1
8 POLES– 750 RPM														
80 8C	0.25	0.34	Δ/Y	230/400	695	1.90/1.10	3.44	0.62	52.9	2.7	2.5	2.7	0.00076	9.0

IE1

ELECTRICAL VALUES: IE2 EFFICIENCY CLASS

TYPE	RATED OUTPUT		PERFORMANCE AT RATED OUTPUT							STARTING DATA		Breakdown Torque Ratio	Moment of interia	B3 Weight appx.
			Voltage		Speed	Current	Torque	Power Factor	Efficiency	Current Ratio	Torque Ratio			
	P_2	P_2	V		n	I_n	M_n	cos ø	η	I_s/I_n	M_s/M_n	M_k/M_n	J	
	kw	HP	Con.	V	rpm	A	Nm	-	%	-	-	-	kgm²	kg
2 POLES- 3000 RPM														
71 2C	0.75	1.0	Δ/Y	230/400	2775	3.20/1.85	2.60	0.78	77.4	4.5	2.7	2.8	0.00054	6.8
80 2A	0.75	1.0	Δ/Y	230/400	2820	2.95/1.70	2.52	0.84	77.4	4.8	3.2	3.0	0.00062	7.7
80 2B	1.1	1.5	Δ/Y	230/400	2805	4.15/2.40	3.80	0.85	79.6	5.0	2.5	3.2	0.00078	8.9
90 S2	1.5	2.0	Δ/Y	230/400	2933	6.96/4.02	4.88	0.7	81.3	5.0	2.2	2.5	0.00127	10.7
90 L2	2.2	3.0	Δ/Y	230/400	2870	8.15/4.70	7.26	0.83	83.2	5.2	2.0	2.2	0.00160	13.4
100 2A	3.0	4.0	Δ/Y	230/400	2860	11.08/6.40	10.00	0.83	84.6	6.1	2.7	3.3	0.00262	17.0
112 2A	4.0	5.5	Δ/Y	400/690	2870	7.75/4.47	13.30	0.86	85.8	6.2	2.6	3.1	0.00453	26.6
112 2C	5.5	7.5	Δ	400/690	2870	10.2/5.88	18.10	0.88	87.0	7.0	2.8	3.4	0.00485	32.0
132 S2A	5.5	7.5	Δ	400/690	2885	10.20/5.88	18.10	0.90	87.0	6.5	2.5	2.9	0.00900	34.5
132 S2B	7.5	10.0	Δ	400/690	2870	13.50/7.80	24.62	0.92	88.10	6.5	2.5	2.8	0.01200	45.0
4 POLES- 1500 RPM														
80 4A	0.75	1.0	Δ/Y	230/400	1420	3.46/2.00	5.10	0.72	79.60	4.8	3.2	3.0	0.00062	8.1
90 S4	1.1	1.5	Δ/Y	230/400	1435	5.16/2.98	7.42	0.68	81.40	4.8	3.2	3.0	0.00062	8.6
90 L4	1.5	2.0	Δ/Y	230/400	1430	7.10/4.10	10.10	0.66	82.80	5.0	2.5	3.2	0.00078	9.3
100 4A	2.2	3.0	Δ/Y	230/400	1416	8.20/4.73	14.70	0.80	84.3	5.0	2.2	2.5	0.00127	11.2
100 4B	3.0	4.0	Δ/Y	230/400	1416	11.74/6.80	20.10	0.76	85.5	5.2	2.0	2.2	0.00160	13.7
112 4A	4.0	5.5	Δ	400/690	1440	8.39/4.84	26.40	0.81	86.6	6.1	2.7	3.3	0.00262	17.5
132 S 4A	5.5	7.5	Δ	400/690	1452	11.5/6.65	36.10	0.79	87.7	6.5	2.5	2.9	0.00900	38.1
132 M 4B	7.5	10.0	Δ	400/690	1453	16.50/9.52	49.0	0.74	88.70	6.5	2.5	2.8	0.01200	45.5
6 POLES- 1000 RPM														
90 S6	0.75	1.0	Δ/Y	230/400	919	3.81/2.20	7.80	0.66	75.90	4.8	3.2	3.0	0.00327	8.6
90 S6	1.1	1.5	Δ/Y	230/400	920	5.50/3.18	11.80	0.69	78.10	4.9	3.2	3.0	0.00462	9.8
100 6A	1.5	2.0	Δ/Y	230/400	930	6.65/3.84	15.40	0.71	79.80	5.1	3.0	3.1	0.00962	20.5
112 6A	2.2	3.0	Δ/Y	230/400	925	8.90/5.14	22.65	0.75	81.80	4.9	3.2	3.1	0.00965	21.2

IE2

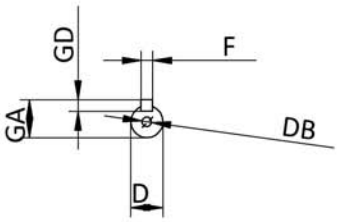
ELECTRICAL VALUES: SINGLE-PHASE MOTORS

TYPE	RATED OUTPUT		PERFORMANCE AT RATED OUTPUT						STARTING DATA		Breakdown Torque Ratio	Capacitor	B3 Weight appx.
			Voltage	Speed	Current	Torque	Power Factor	Efficiency	Current Ratio	Torque Ratio			
	P_2		V	n	I_n	M_n	cos ø	η	I_s/I_n	M_s/M_n	M_k/M_n	C	
	kw	HP	V	rpm	A	Nm	-	%	-	-	-	µF	kg
2 POLES- 3000 RPM													
56 2B M	0.18	0.25	230	2830	1.25	0.61	0.98	62.1	3.40	0.36	1.70	6	3.00
63 2B M	0.25	0.34	230	2795	1.65	0.85	0.96	66.6	3.20	0.35	3.00	8	4.20
63 2C M	0.37	0.50	230	2790	2.70	1.26	0.97	61.4	3.07	0.32	2.50	12.5	4.40
63 2E M	0.55	0.75	230	2750	3.60	1.26	0.98	70.0	2.40	0.37	3.00	15	5.35
71 2DC M	0.55	0.75	230	2820	4.00	1.88	0.98	62.5	3.15	0.35	2.35	20	5.40
71 2CC M	0.75	1.00	230	2840	5.00	2.56	0.97	65.0	2.77	0.35	1.80	20	6.35
4 POLES- 1500 RPM													
56 4B M	0.09	0.12	230	1360	0.79	0.62	0.95	51.0	2.05	0.41	1.4	4.5	2.7
56 4C M	0.12	0.16	230	1390	1.35	0.83	0.89	50.5	2.2	0.50	2.3	5	2.8
63 4C M	0.18	0.25	230	1400	1.70	1.23	0.90	64.7	2.4	0.45	1.9	8	4.05
71 4A M	0.25	0.34	230	1415	2.35	1.70	0.87	62.0	2.6	0.33	1.8	10	5.0
71 4B M	0.37	0.50	230	1420	2.60	2.48	0.95	67.8	3.4	0.38	1.8	15	5.7
80 4B M	0.55	0.75	230	1461	4.60	3.65	0.86	60.4	3.5	0.32	2.0	25	8.3
80 4C M	0.75	1.0	230	1420	4.75	5.08	0.98	70.8	3.6	0.35	1.8	30	9.0

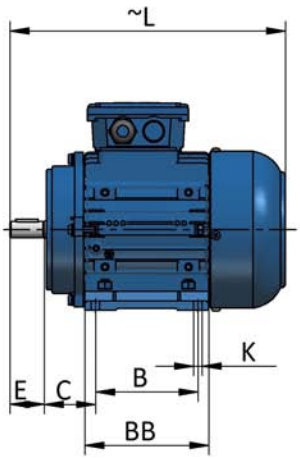
ELECTRICAL VALUES: MULTI-SPEED MOTORS

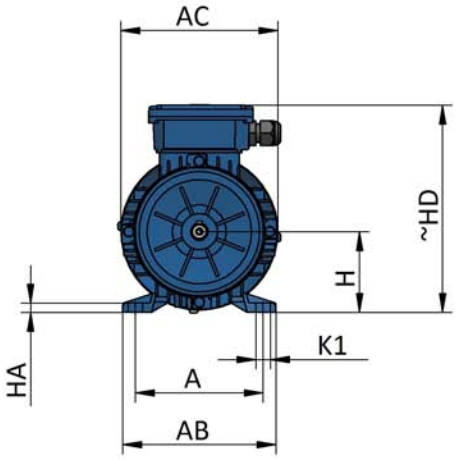
TYPE	RATED OUTPUT		PERFORMANCE AT RATED OUTPUT						STARTING DATA		Breakdown Torque Ratio	B3 Weight appx.
			Voltage		Speed	Current	Torque	Power Factor	Efficiency	Current Ratio	Torque Ratio		
	P_2		V		n	I_n	M_n	cos ø	η	I_s/I_n	M_s/M_n	M_k/M_n	
	kw	HP	Con.	V	rpm	A	Nm	-	%	-	-	-	kg
2/4 POLES - 1500/3000 RPM													
63 4/2C	0.15	0.2	Δ	400	1325	0.62	1.03	0.73	50	2.7	1.9	2.3	3.7
	0.22	0.3	YY		2775	0.55	0.75	0.90	64	3.7	1.8	2.2	
71 4/2B	0.30	0.40	Δ	400	1390	1.00	2.6	0.75	63.6	4.1	2.25	2.0	5.9
	0.44	0.6	YY		2800	1.26	1.5	0.83	60.7	5.7	2.13	2.1	
80 4/2B	0.70	0.95	Δ	400	1400	2.0	4.78	0.75	66.2	3.3	1.85	2.2	13.2
	0.85	1.15	YY		2855	2.4	2.88	0.75	72.0	1.7	1.7	2.0	
90 4/2A	1.0	1.3	Δ	400	1420	2.57	7	0.75	71.3	3.8	1.7	2.0	11.2
	1.3	1.75	YY		2842	3.47	4.5	0.77	67.4	3.7	1.8	1.8	
90 4/2B	1.3	1.75	Δ	400	1395	3.2	8.8	0.78	75.0	5.0	2.7	2.5	13.2
	1.8	2.4	YY		2800	4.5	6.1	0.83	69.5	5.3	2.65	2.1	
100 4/2A	1.8	2.4	Δ	400	1430	4.35	12.4	0.75	66.5	3.6	2.54	2.5	17.1
	2.2	1.65	YY		2870	6.4	7.5	0.70	64.0	4.0	2.48	2.8	
100 4/2B	2.4	5.5	Δ	400	1420	5.5	16.14	0.70	72.0	4.2	1.7	3.0	20.5
	3.0	7	YY		2850	7.0	9.5	0.70	69.0	2.54	1.8	2.8	
112 4/2B	3.7	5.0	Δ	400	1405	8.4	24.9	0.87	78.8	5.5	1.9	2.2	27.6
	4.4	5.9	YY		2865	11.4	15.0	0.83	75.6	5.2	1.9	2.3	
8/4 POLES - 750/1500 RPM													
71 8/4B	0.15	0.90	Δ	400	700	0.86	2.05	0.67	40	2.27	1.7	3	5.8
	0.25	0.72	YY		1410	0.75	1.7	0.79	61	3.7	1.6	3	
80 8/4B	0.35	0.47	Δ	400	690	1.7	4.85	0.70	49	2.86	1.5	2.8	9.4
	0.55	0.75	YY		1400	1.2	1.75	0.82	70	2.5	1.8	2.7	
6/4 POLES - 1000/1500 RPM													
71 6/4B	0.18	0.24	Y	400	940	0.71	1.87	0.72	50	2.75	1.85	1.6	5.7
	0.22	0.30	Y		1435	0.73	1.53	0.76	58	3.51	1.35	1.7	
8/2 POLES - 750/3000 RPM													
90 8/2C	0.4	0.55	Y	400	700	1.85	5.5	0.59	55	2.62	1.7	4.0	16.3
	1.8	2.4	Y		2870	3.85	6.0	0.90	75	5.4	1.7	3.0	

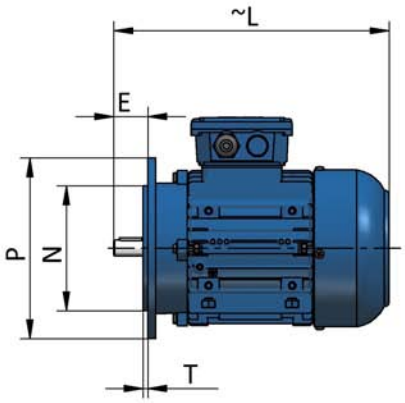
THREE-PHASE MOTORS DIMENSIONS

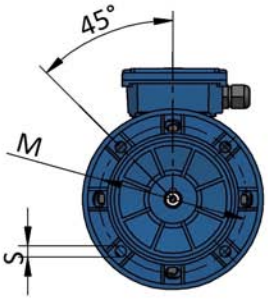


B3-B6-B7-B8-V5-V6

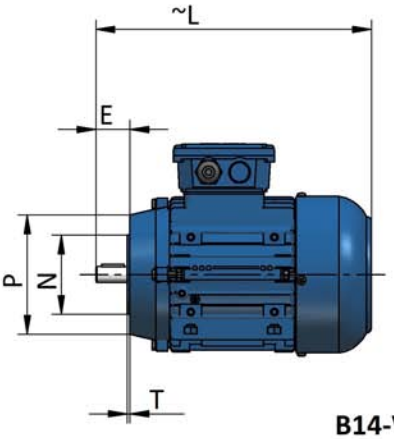


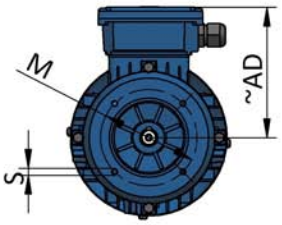






B5-V1-V3



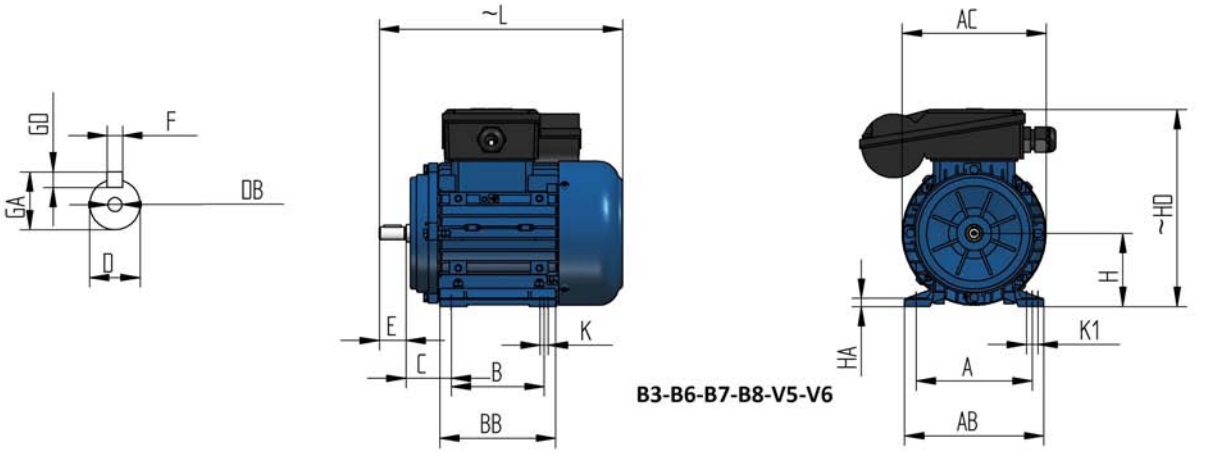


B14-V18-V19

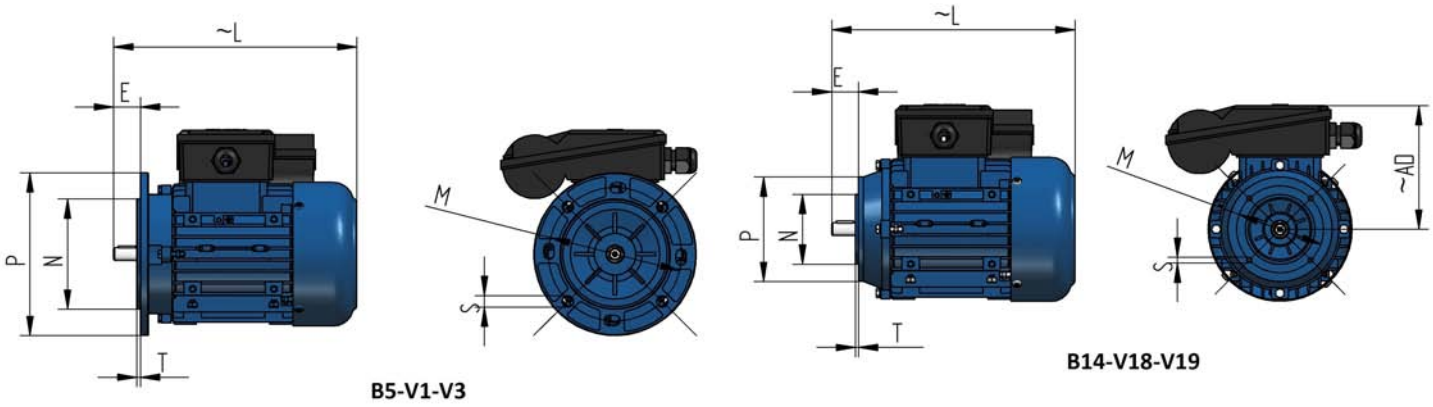
Frame Size	Number of Pole	MAIN DIMENSIONS		FOOT MOUNTED MOTORS										FLANGED MOTORS							SHAFT					CABLE ENTRY
		AC Ø	L	H	HD	HA	A	AB	K1	B	BB	KØ	C	Type of Construct.	PØ	*NØ	MØ	SØ	T	AD~	**DØ	E	DB	GA	FxGD	
56	2-4	108	182	56	143	6	90	110	7	71	81	6	36	B5 - FF 100	120	80	100	7	3	87	9	20	-	10	3x3	M16x1,5
														B14 - FT 65	78	50	65	M5	2.5							
														B14 - FT 85	105	70	85	M6	2.5							
63	2-4	122	205	63	173	7	100	120	10	80	102	7	40	B5 - FF 115	140	95	115	10	3	110	11	23	-	12.5	4x4	M16x1,5
														B14 - FT 75	90	60	75	M5	2.5							
														B14 - FT 100	120	80	100	M6	3							
71	2-4-6	139	243	71	186	8	112	135	11	90	109	7	45	B5 - FF 130	160	110	130	10	4	114	14	30	M5	16	5x5	M16x1,5
														B14 - FT 85	105	70	85	M6	2.5							
														B14 - FT 115	140	95	115	M8	3							
80	2-4-6	155	278	80	201	10.5	125	152	13	100	129	9	50	B5 - FF 165	200	130	165	12	3.5	121	19	40	M6	21.5	6x6	M16x1,5
														B14 - FT 100	122	80	100	M6	3							
														B14 - FT 130	160	110	130	M8	3,5							
90 S	2-4-6	176	300	90	221	13	140	170	13	100	131	10	56	B5 - FF 165	200	130	165	12	3.5	131	24	50	M8	27	8x8	M20x1,5
														B14 - FT 115	138	95	115	M8	3							
90 L			325							125	156			B14 - FT 130	177	110	130	M8	3,5							
100	2-4-6	195	365	100	250	14	160	192	18	140	165	12	63	B5 - FF 215	250	180	215	15	4	150	28	60	M10	31	8x8	M20x1,5
														B14 - FT 130	160	110	130	M8	3.5							
														B14 - FT 165	200	130	165	M10	3.5							
112	2-4-6	218	385	112	275	14	190	230	18	140	175	12	70	B5 - FF 215	250	180	215	14,5	4	163	28	60	M10	31	8x8	M20x1,5
														B14 - FT 130	160	110	130	M8	3.5							
														B14 - FT 165	200	130	165	M10	4							
132 S	2-4-6	250	447	132	309	16	216	260	28	140	180	12.5	96	B5 - FF 265	300	230	265	14,5	4	177	38	80	M12	41	10x8	2 x M25x1,5
132 M			493							178	218			B14 - FT 165	200	130	165	M10	3.5							

* Tolerance j6
** Tolerance j6
All dimensions are in mm.

SINGLE-PHASE MOTORS DIMENSIONS



B3-B6-B7-B8-V5-V6



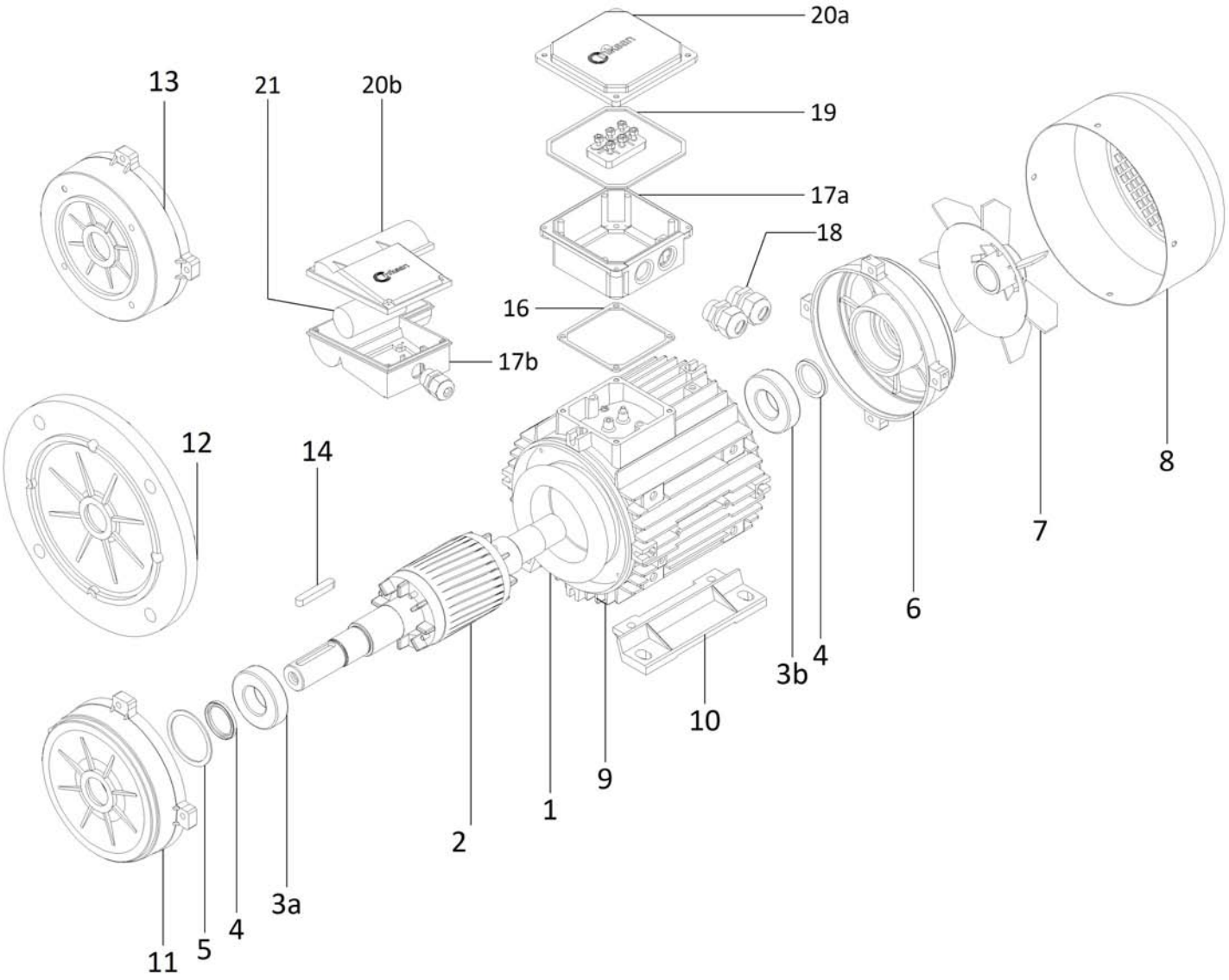
B5-V1-V3

B14-V18-V19

Frame Size	Number of Pole	MAIN DIMENSIONS		FOOT MOUNTED MOTORS										FLANGED MOTORS							SHAFT					Cable Entry
		ACø	L	H	HD	HA	A	AB	K1	B	BB	Kø	C	Yapı Şekli	Pø	*Nø	Mø	Sø	T	AD ~	** Dø	E	DB	GA	FxGD	
56	2-4	112	182.5	56	155	6	90	110	7	71	82	6	36	B5	120	80	100	7	3	84	9	20	-	10.2	3x3	M16x1,5
														B14	80	50	65	M5	2.5							
63	2-4	124	210	63	170	7	100	120	10	80	100	7	39	B5	140	95	115	10	3	107	11	23	-	12.5	4x4	M16x1,5
														B14	90	60	75	M5	2.5							
71	2-4	129	243	71	186	8	120	135	12	90	109	7	45	B5	160	110	130	10	3.5	115	14	30	M5	16	5x5	M16x1,5
														B14	105	70	85	M6	2.5							
80	2-4	157	278	80	203	10	124	152	13	100	129	9	50	B5	200	130	165	12	3.5	123	19	40	M6	21.5	6x6	M16x1,5
														B14	120	80	100	M6	3							

* Tolerance j6
** Tolerance j6
All dimensions are in mm.

SPARE PARTS



Part Number	*Description of Part*
1	Stator with Winding
2	Rotor
3a	Front Bearing
3b	Rear Bearing
4	Seal Ring
5	Wave Spring Washer
6	Rear Cover
7	Coolant Fan
8	Coolant Fan Cover
9	Motor Frame
10	Foot
11	Front Cover

Part Number	*Description of Part*
12	B5 Flange
13	B14 Flange
14	Key
15	Terminal
16	Terminal Box Lower Gasket
17a	Three-Phase Terminal Box (Lower)
17b	Single-Phase Terminal Box (Lower)
18	Cable Entry
19	Terminal Box Upper Gasket
20a	Three-Phase Terminal Box (Upper)
20b	Single-Phase Terminal Box (Upper)
21	Capacitor

MİKSAN MOTOR SANAYİ VE TİCARET A.Ş.

B.O.S.B. Bakır ve Pirinç Sanayicileri Sitesi Menekşe Cad. No:1

Beylikdüzü –34524-İstanbul

TÜRKİYE

9/ 5ŜŎflǁlůʎ2ɣ2ŧ /2ɣŧ2ǁYʎůè

We herewith declare that the design/construction of the products:

56 – 132 ŧǁl·YŜ ǎʎÎŜ oπǇKl·ǎŜ eleŎtriŎ motor

56 – 80 ŧǁl·YŜ ǎʎÎŜ мπǇKl·ǎŜ ŜfŜŎůǁʎŎ Y2ů2ǁ

Complies with the following regulations/standards:

EC Low Voltage Directive 2006/95/EC

EC Directive 2004/108/EC Electromagnetic Compatibility

With the following harmonized standards:

IEC 34-1 ; IEC 34-5 ; IEC 34-6 ; IEC34-7 ; IEC 34-8 ; IEC 34-9 ; IEC 34-12
IEC 34-14 ; IEC 38-1 ; IEC 72-1;EN 61000-6-1; EN 61000-6-2

With the following national standards:

TS EN 60034-1; TS EN 60034-2-1; TS 3209 EN 60034-5; TS EN 60034-8

TS EN 60034-9; TS EN 60034-12; TS EN 60034-14

Executive Director

Yüksel MESUT

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