

ADK

THREE PHASE INDUCTION MOTORS



EFF2

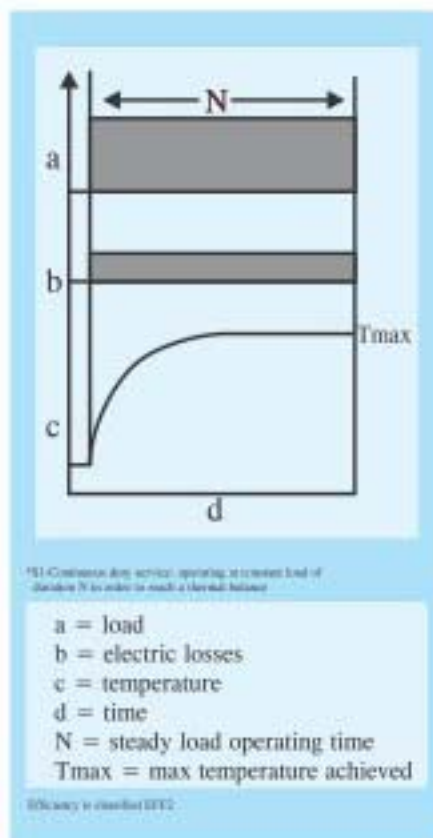
ENERGY SAVING ▪ HIGH EFFICIENCY

General Description

Standard	: IEC
Frame Size	: 80 to 355
Characteristic	: Class F, Duty S1, IC 411, IP 55
Terminal Box Position	: On top or sides
Application	: Machining tolling, fan, water pump, compressor transportation, agriculture, food processing, etc.

Technical Characteristic

- Motors are built according to international standards regulations; each size through out the construction forms is calculated with reference to the tables of standards IEC 72-1;
- The shapes built per IEC 34-7, are B3, B5, B14, B35
- Motor asynchronous three-phase are closed and externally ventilated.
- Frames are of cast iron, Frame 132 and below can also be of aluminum casting alloy.
- The cage rotor is dynamically balanced according to IEC 34-14 and ISO 8821 norms.
- Lamination sheets are not in normal iron, but FeV magnetic lamination.
- All motors are multiple voltage 230V/400V or 400/690V, and multiple frequency 50/60 Hz, F class insulation, Continuous duty service S1*, IP55 protection.



Performance Characteristic

The General electrical specification are listed in the performance charts that follow. To understand their contents, the following general definitions are provided

- **Rated Power:** It is the mechanical power measured at the shaft expressed, according to the latest indications of international standards.
- **Committees, In Watts or KWatts,** However, in the engineering sector it is still common to refer to power in terms of HP.
- **Rated Voltage:** The voltage to be applied to the motor terminals
- **Synchronous speed:** is expressed in rpm and it is obtained by the formula $HZ \text{ Frequency} \times 120 / \text{nr of poles}$
- **Rated Torque:** C_n is expressed in Nm, and it corresponds to the rated power and rated rpm. It is given by the multiplication of the force for the arm (distance) and it is measured in Nm because the force is expressed in Newton and the distance in meters.
- **Starting Torque (or locked rotor torque):** C_s is the torque that the motor can provide with the rotor at a standstill and the rated power supply.
- **Maximum Torque:** C_{max} is the maximum torque developed by the motor at the rated power supply, at a certain speed. It represents also the value of the resistant torque after which the motor stops. It is indicated the relation between C_{max} and C_n (C_{max}/C_n)
- **Efficiency:** is expressed in % and it is given by the relation between the output Power and the electric losses of the motor, that is the input power absorbed by the motor.
- **Power factor or cos :** it represent the coseno of the voltage and current gap angle
- **Rated Current:** I_n is the rated current, expressed in ampere, Absorbed by the motor when supplies at rated voltage and giving the rated Power. For other voltage supplies the absorbed rated current can be considered inversely proportional to the voltage supply. For instance: Motors can face also temporary overloads, with current increases of 1.5 times the rated current for at least 2 minutes
- **Stating current (or locked rotor current):** In the performance charts the starting current I_s is indicated as a multiple value of the rated current (I_s/I_n).
- **Noise:** The noise is expressed in dB (A). The measures must be taken in accordance with the standards ISO 1680-2, in order to find the sound power level
- **LwA** measured at 1m of distance from the perimeter of the machine. EN 60034-9 standard describes the acousic Power limits to be respected, indicating the maximum sound power level LwA.
- The noise values indicated in the performance charts that follow are referred to a no-load motor working, supplied at 50 Hz and with tolerance of +3dB (A).

Designation	1st Numeral	2nd Numeral	General Description
	Protection against contact and against ingress of foreign bodies	Protection against water	
IP21	Protection against contact by finger with electrically live or moving parts inside the enclosure Protection against ingress of solid foreign bodies with a diameter greater than 12mm	Dripping water falling vertically	Drip Proof
IP22		Dripping water falling at an angle up to 15° from the vertical	Drip Proof
IP23		Water falling as spray at an angle up to 60° from the vertical	Drip Proof
IP44	Protection against contact with live or moving parts by tools wires or other objects of thickness greater than 1mm. Protection against the ingress of solid foreign bodies with a diameter greater than 1mm	Water splashed against the machine from any direction shall have no harmful effect	T.E.F.V or T.E.N.V
IP55	Complete protection against contact with live or moving parts. Protection against harmful deposits of dust. The ingress of dust is not totally prevented. But does not accumulate in an amount sufficient to impair operation of the machine	Water projected by a nozzle against the machine from any direction shall have no harmful effect	T.E.F.V or T.E.N.V Weatherproof or dustproof or hoseproof
IP56		Machine protected against conditions on a ship's deck	T.E.N.V. Deck Watertight

Working Conditions

Humidity : The electrical equipment must be able to work with a relative humidity between 30 and 95% (without condensation). Damaging effects of occasional condensation must be avoided by adequate equipment design or, by additional measures (for example, built-in heating or air conditioning equipment, drainage holes).

Altitude and temperature : the powers indicated are intended for regular use at altitudes below 1000 mt above sea level and a room temperature between +5°C and 40°C for motors having a rated power below 0.6KW, or between -15°C and 40°C for motors having a rated power equal to or greater than 0.6KW (IEC 34-1); For working conditions rather than those specified (higher altitude and/or temperature) the power decreases of 10% each 10°C of higher temperature, and of 8% for each 1000mt of higher altitude. It is not necessary to reduce the rated power if at an altitude higher than 1000mt and lower than 2000mt there is a max ambient temperature of 30°C or, in altitude from 2000 mt to 3000 mt there is max ambient temperature of 19°C.

Voltage-Frequency : The maximum variation of the supply voltage is $\pm 10\%$. Within this tolerance the motors supply the rated power.

Speed-torque : Variable-speed applications are not allowed.

Insulation : the stator winding is made of resin coated copper wire and insulation materials in F class, that provide high protection against electrical and mechanical stresses.

It is possible to have :

1. Protection for motors with a shaft power greater than equal to 0.5KW with continuous S1 service. This protection may be achieved by means of a thermal cut-out relay, which automatically control a knife switch.
2. Protection against peak currents by magnetic relay that controls an automatic knife switch, or by fuses; these must be set to the locked rotor current.
3. If the application requires, protection against excessive speed of the electric motor, for example, if the mechanical load may drive the electric motor itself and thereby create a hazardous situation.

If special conditions or synchronized operation with other machines or parts of machines require it protection against power failures or dips by means of a minimum voltage relay that controls an automatic power knife switch.

The max temperatures (T_{max}) for insulation classes defined by EN 60034-1 standard are

Class	ΔT (°C)	T_{max} (°C)
A	60+5°	105
E	75+5°	120
B	80+5°	130
F	105+5°	155
H	125	180

Motors protection : protections must be chosen based on the specific running conditions, according to standard EN 60204-1.

STANDARDS COMPLIANCE

Environment conditions

Altitude above sea level: up to 1000m;

Ambient temperature: up to 40 C (The minimum ambient temperature is -15 C)

Relative humidity: up to 90%; Rated frequency : 50Hz;

Rated voltage:

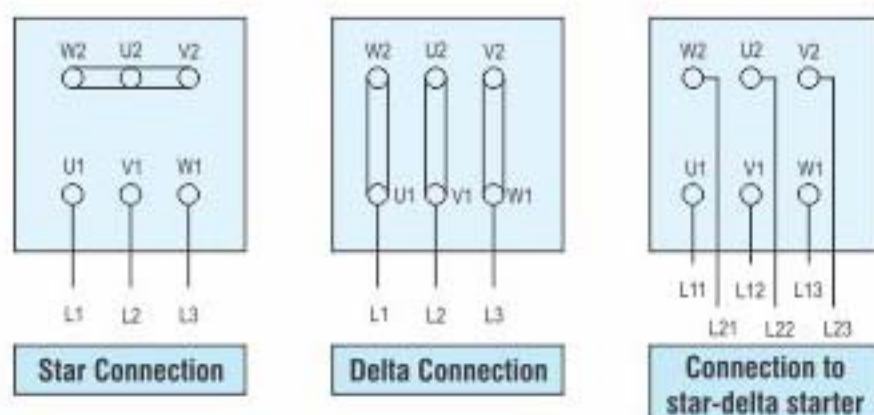
220V, 230V, 240V, 380V, 400V, 415V, 660V, 690V, 720V,

220V/380V/230V/400V, 380V/660V, 400V/690V, 240V/415V, and

415V/720V.

CONNECTION DIAGRAMS

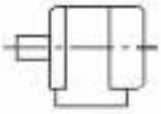
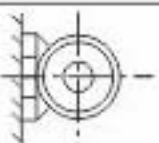
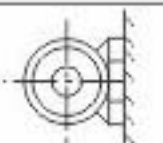
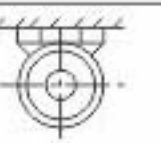
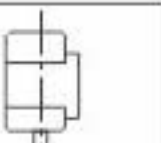
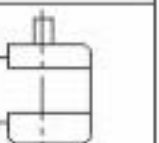
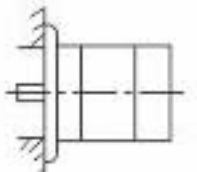
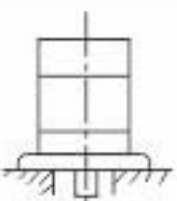
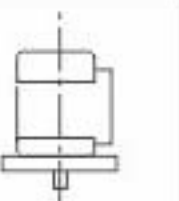
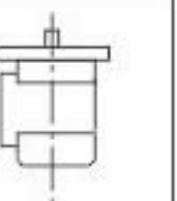
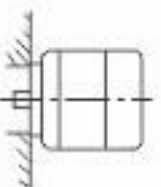
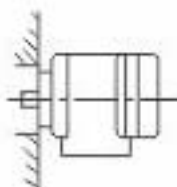
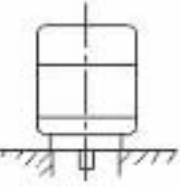
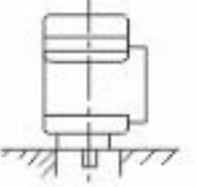
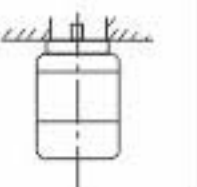
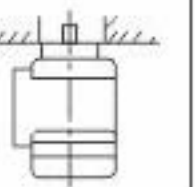
Three Phase Motor with Cage Rotor



Bearing size

Frame Size	Poles	Drive End International type	Non - Drive End International type
56	2-4	62012ZC3	62012ZC3
63	2-4	62012ZC3	62012ZC3
71	2-6	62022ZC3	62022ZC3
80	2-8	62042ZC3	62042ZC3
90	2-8	62052ZC3	62052ZC3
100	2-8	62062ZC3	62062ZC3
112	2-8	63062ZC3	63062ZC3
132	2-8	63082ZC3	63082ZC3
160	2 4-8	63092ZC3	63092ZC3
180	2 4-8	6311C3	6311C3
200	2 4-8	6312C3	6312C3
225	2 4-8	6313C3	6313C3
250	2 4-8	6314C3	6314C3
280	2 4-8	6314C3 6317C3	6314C3 6317C3
315	2 4-10	6317C3 NU319C3	6317C3 6319C3
355	2 4-10	6319C3 NU322C3	6319C3 6322C3

The mounting arrangements of the motor comply with IEC34 - 7 Recommendation. There are four basic arrangements shown as the following tables and figure.

Fundamental arrangement	B3					
Mounting arrangement	B3	B6	B7	B8	V5	V6
Diagram						
Range of Manufacture (framesize)	63-355	63-160				
Fundamental arrangement	B5			B35		
Mounting arrangement	B5	V1	V3	B35	V15	V36
Diagram						
Range of Manufacture (framesize)	63-280	63-355	63-160	63-355	63-160	
Fundamental arrangement	B14					
Mounting arrangement	B14	B34	V18	V58	V19	V69
Diagram						
Range of Manufacture (framesize)	63-132					

PERFORMANCE DATA

2 POLE

Type	Output kW	Amps A	Speed r/min	EFF %	P.F. Cos ϕ	LRT RLT	LRA RLA	BDT RLT	Noise LwdB(A)	Weight kg
63M1-2	0.18	0.53	2720	65.0	0.80	2.3	5.5	2.2	61	14
63M2-2	0.25	0.69	2720	68.0	0.81	2.3	5.5	2.2	61	14.5
71M1-2	0.37	1.01	2755	69.0	0.81	2.3	6.1	2.2	64	15
80M1-2	0.55	1.38	2790	74.0	0.82	2.3	6.1	2.3	64	15.5
80M1-2	0.75	1.77	2845	75.0	0.83	2.2	6.1	2.3	67	16.5
80M2-2	1.1	2.46	2835	76.2	0.84	2.2	6.9	2.3	67	17.5
90S-2	1.5	3.46	2850	78.5	0.84	2.2	7.0	2.3	72	21
90L-2	2.2	4.85	2855	81.0	0.85	2.2	7.0	2.3	72	25
100L-2	3	6.34	2860	82.6	0.87	2.2	7.5	2.3	76	33
112M-2	4	8.2	2880	84.2	0.88	2.2	7.5	2.3	77	41
132S1-2	5.5	11.1	2900	85.7	0.88	2.2	7.5	2.3	80	63
132S2-2	7.5	14.9	2900	87.0	0.88	2.2	7.5	2.3	80	70
160M1-2	11	21.2	2930	88.4	0.89	2.2	7.5	2.3	86	110
160M2-2	15	28.6	2930	89.4	0.89	2.2	7.5	2.3	86	120
160L-2	18.5	34.7	2930	90.0	0.90	2.2	7.5	2.3	86	135
180M-2	22	41	2940	90.5	0.90	2.0	7.5	2.3	89	165
200L1-2	30	55.4	2950	91.4	0.90	2.0	7.5	2.3	92	218
200L2-2	37	67.9	2950	92.0	0.90	2.0	7.5	2.3	92	230
225M-2	45	82.1	2960	92.5	0.90	2.0	7.5	2.3	92	280
250M-2	55	100	2970	93.0	0.90	2.0	7.5	2.3	93	365
280S-2	75	134	2975	93.6	0.90	2.0	7.0	2.3	94	495
280M-2	90	159	2975	93.9	0.91	2.0	7.1	2.3	94	565
315S-2	110	195	2975	94.0	0.91	1.8	7.1	2.2	96	890
315M-2	132	233	2975	94.5	0.91	1.8	7.1	2.2	96	980
315L1-2	160	282	2975	94.6	0.91	1.8	7.1	2.2	99	1055
315L2-2	200	348	2975	94.8	0.92	1.8	7.1	2.2	99	1100
355M-2	250	433	2980	95.2	0.92	1.6	7.1	2.2	103	1900
355L-2	315	545	2980	95.4	0.92	1.6	7.1	2.2	103	2300

4 POLE

Type	Output kW	Amps A	Speed r/min	EFF %	P.F. Cos ϕ	LRT RLT	LRA RLA	BDT RLT	Noise LwdB(A)	Weight kg
63M1-4	0.12	0.44	1310	57	0.72	2.1	4.4	2.2	52	13
63M2-4	0.18	0.62	1310	60	0.73	2.1	4.4	2.2	52	13.5
71M1-4	0.25	0.79	1345	65	0.74	2.1	5.2	2.2	55	14
71M2-4	0.37	1.12	1340	67	0.75	2.1	5.2	2.2	55	14.5
80M1-4	0.55	1.52	1390	71	0.75	2.4	5.2	2.3	58	15
80M2-4	0.75	1.95	1380	73	0.76	2.3	6.0	2.3	58	16
90S-4	1.1	2.85	1390	76.2	0.77	2.3	6.0	2.3	61	23
90L-4	1.5	3.72	1400	78.5	0.78	2.3	6.0	2.3	61	25
100L1-4	2.2	5.09	1420	80	0.81	2.3	7.0	2.3	64	33
100L2-4	3	6.78	1410	82.6	0.82	2.3	7.0	2.3	64	35
112M-4	4	5.5	1435	84.2	0.82	2.3	7.0	2.3	65	41
132S-4	5.5	11.7	1440	85.7	0.83	2.3	7.0	2.3	71	65
132M-4	7.5	15.6	1450	87	0.84	2.3	7.0	2.3	71	76
160M-4	11	22.5	1460	88.4	0.84	2.2	7.0	2.3	75	118
160L-4	15	30	1460	89.4	0.85	2.2	7.5	2.3	75	132
180M-4	18.5	36.3	1470	90	0.86	2.2	7.5	2.3	76	164
180L-4	22	43.2	1470	90.5	0.86	2.2	7.5	2.3	76	182
200L-4	30	57.6	1470	91.4	0.86	2.2	7.2	2.3	79	245
225S-4	37	70.2	1475	92	0.87	2.2	7.2	2.3	81	258
225M-4	45	84.9	1475	92.5	0.87	2.2	7.2	2.3	81	290
250M-4	55	103	1480	93	0.87	2.2	7.2	2.3	83	388
280S-4	75	140	1340	93.6	0.88	2.2	6.8	2.3	86	510
280M-4	90	165	1340	93.9	0.88	2.2	6.8	2.3	86	606
315S-4	110	201	1480	94.5	0.88	2.1	6.9	2.2	93	910
315M-4	132	240	1480	94.8	0.88	2.1	6.9	2.2	93	1000
315L1-4	160	287	1480	94.9	0.89	2.1	6.9	2.2	97	1055
315L2-4	200	359	1480	94.9	0.89	2.1	6.9	2.2	97	1128
355M-4	250	442	1490	95.2	0.90	2.1	6.9	2.2	101	1700
355L-4	315	559	1490	95.2	0.90	2.1	6.9	2.2	101	1900

PERFORMANCE DATA

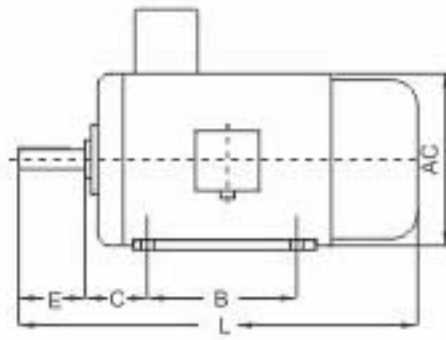
6 POLE

Type	Output kW	Amps A	Speed r/min	EFF %	P.F. Cos ϕ	<u>LRT</u> RLT	<u>LRA</u> RLA	<u>BDT</u> RLT	Noise LwdB(A)	Weight kg
71M1-6	0.18	0.74	870	56	0.66	1.9	4.0	2.0	52	14
71M2-6	0.25	0.95	870	59	0.68	1.9	4.0	2.0	52	14.5
80M1-6	0.37	1.23	880	62	0.70	1.9	4.7	2.0	54	15
80M2-6	0.55	1.7	880	65	0.72	1.9	4.7	2.1	54	16
90S-6	0.75	2.29	905	69	0.72	2.0	5.3	2.1	57	19
90L-6	1.1	3.18	905	72	0.73	2.0	5.5	2.1	57	22
100L-6	1.5	4	920	76	0.75	2.0	5.5	2.1	61	32
112M-6	2.2	5.6	935	79	0.76	2.0	6.5	2.1	65	41
132S-6	3	7.4	960	81	0.76	2.1	6.5	2.1	69	63
132M1-6	4	9.5	960	82	0.76	2.1	6.5	2.1	69	72
132M2-6	5.5	12.6	960	84	0.77	2.1	6.5	2.1	69	81
160M-6	7.5	17.2	970	86	0.77	2.0	6.5	2.1	73	118
160L-6	11	24.5	970	87.5	0.78	2.0	6.5	2.1	73	145
180L-6	15	31.6	970	89	0.81	2.0	7.0	2.1	73	178
200L1-6	18.5	38.6	980	90	0.81	2.1	7	2.1	76	200
200L2-6	22	44.7	980	90	0.83	2.0	7	2.1	76	228
225M-6	30	59.3	980	91.5	0.84	2.0	7	2.1	76	265
250M-6	37	71	980	92	0.86	2.1	7	2.1	78	370
280S-6	45	86	980	92.5	0.86	2.1	7	2	80	490
280M-6	55	103	980	92.8	0.86	2.1	7	2	80	540
315S-6	75	141	935	93.5	0.86	2.0	6.7	2	85	900
315M-6	90	169	935	93.8	0.86	2.0	6.7	2	85	980
315L1-6	110	206	935	94	0.86	2.0	6.7	2	85	1045
315L2-6	132	244	935	94.2	0.87	2.0	6.7	2	85	1100
355M1-6	160	292	990	94.5	0.88	1.9	6.7	2	92	1550
355M2-6	200	365	990	94.5	0.88	1.9	6.7	2	92	1600
355L-6	250	457	990	94.5	0.88	1.9	6.7	2	92	1700

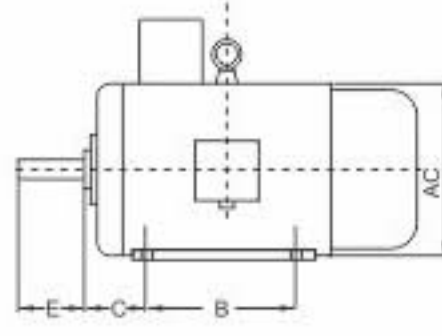
8 POLE

Type	Output kW	Amps A	Speed r/min	EFF %	P.F. Cos ϕ	<u>LRT</u> RLT	<u>LRA</u> RLA	<u>BDT</u> RLT	Noise LwdB(A)	Weight kg
80M1-8	0.18	0.83	645	51	0.61	1.8	3.3	1.9	52	22
80M2-8	0.25	1.1	645	54	0.61	1.8	3.3	1.9	52	24
90S-8	0.37	1.49	675	62	0.61	1.8	4	1.9	56	26
90L-8	0.55	2.17	680	63	0.61	1.8	4	2	56	28
100L1-8	0.75	2.43	680	70	0.67	1.8	4	2	59	30
100L2-8	1.1	3.36	680	72	0.69	1.8	5	2	59	32
112M-8	1.5	4.4	690	74	0.70	1.8	5	2	61	40
132S-8	2.2	6.0	710	79	0.71	1.8	6	2	64	64
132M-8	3	7.8	710	80	0.73	1.8	6	2	64	78
160M1-8	4	10.3	720	81	0.73	1.9	6	2	68	105
160M2-8	5.5	13.6	720	83	0.74	1.9	6	2	68	115
160L-8	7.5	17.8	720	85.5	0.75	1.9	6	2	68	145
180L-8	11	25.5	730	87.5	0.75	2	6.5	2	70	160
200L-8	15	34.1	730	88	0.76	2	6.6	2	73	228
225S-8	18.5	41.1	730	90	0.76	1.9	6.6	2	73	242
225M-8	22	48.9	730	90.5	0.78	1.9	6.6	2	73	265
250M-8	30	63	735	91	0.79	1.9	6.5	2	75	368
280S-8	37	78	740	91.5	0.79	1.9	6.6	2	76	472
280M-8	45	94	740	92	0.79	1.9	6.6	2	76	538
315S-8	55	111	735	92.8	0.81	1.8	6.6	2	82	900
315M-8	75	150	735	93.5	0.81	1.8	6.2	2	82	1000
315L1-8	90	178	735	93.8	0.82	1.8	6.4	2	82	1055
315L2-8	110	217	735	94	0.82	1.8	6.4	2	82	1118
355M1-8	132	261	740	93.7	0.82	1.8	6.4	2	90	2000
355M2-8	160	315	740	94.2	0.82	1.8	6.4	2	90	2150
355L-8	200	387	740	94.5	0.83	1.8	6.4	2	90	2250

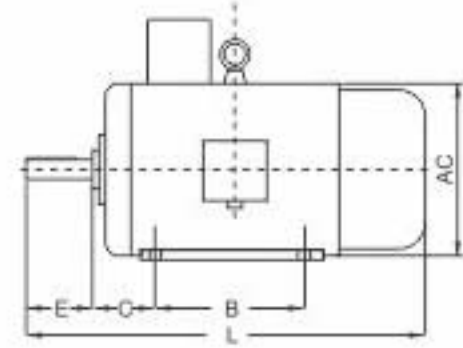
Dimension Foot Mount B3



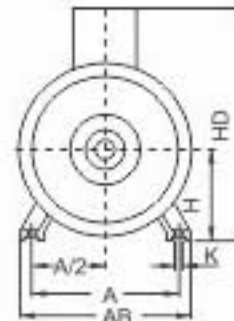
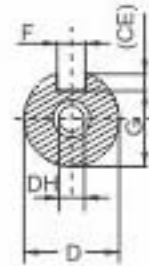
H80-90



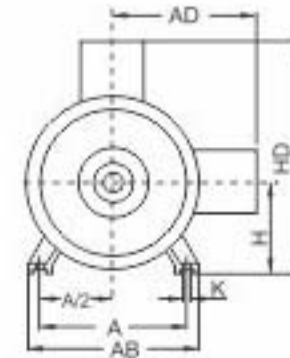
H100-132



H160-355



H63-71

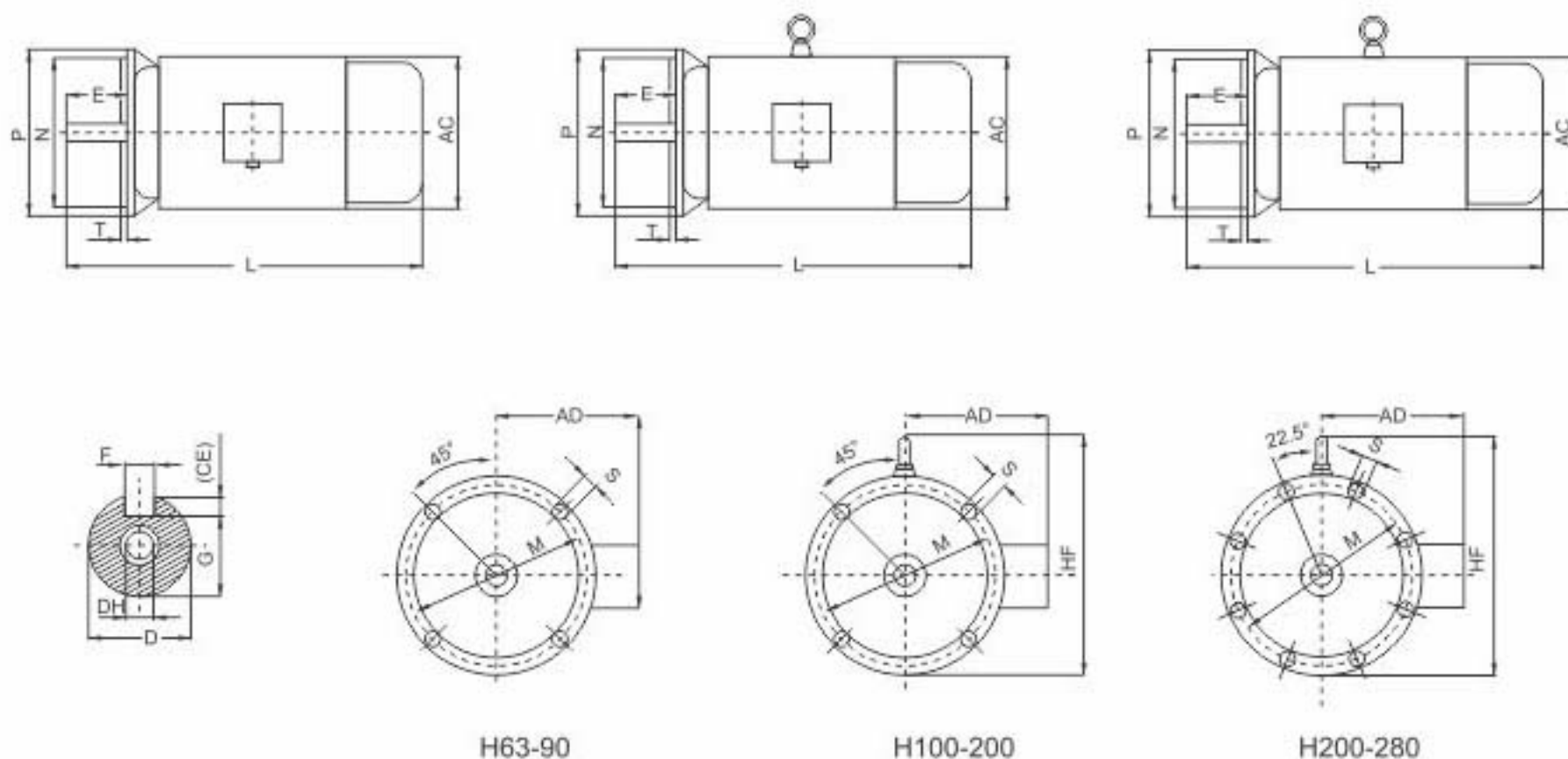


H80-355

Frame with feet and end-shield without flange

FRAME SIZE	POLES	A	A/2	B	C	D	E	F	G	H	K	AB	AC	AD	HD	L	DH*
63M	2 4	100	50	80	40	11	23	4	8.5	63	7	135	130	70	180	230	M4X12
71M	2 4 6	112	56	90	45	14	30	5	11	71	7	150	145	80	195	255	M5X12
80M	2 4 6 8	125	62.5	100	50	19	40	6	15.5	80	10	165	175	145	220	295	M6X16
90S	2 4 6 8	140	70	100	56	24	50	8	20	90	10	180	195	155	250	320	M8X19
90L	2 4 6 8	140	70	125	56	24	50	8	20	90	10	180	195	155	250	345	M8X19
100L	2 4 6 8	160	80	140	63	28	60	8	24	100	12	205	215	180	270	385	M10X22
112M	2 4 6 8	190	95	140	70	28	60	8	24	112	12	230	240	190	300	400	M10X22
132S	2 4 6 8	216	108	140	89	38	80	10	33	132	12	270	275	210	345	470	M12X28
132M	2 4 6 8	216	108	178	89	38	80	10	33	132	12	270	275	210	345	510	M12X28
160M	2 4 6 8	254	127	210	108	42	110	12	37	160	15	320	330	255	420	615	M16X36
160L	2 4 6 8	254	127	254	108	42	110	12	37	160	15	320	330	255	420	670	M16X36
180M	2 4 6 8	279	139.5	241	121	48	110	14	42.5	180	15	355	380	280	455	700	M16X36
180L	2 4 6 8	279	139.5	279	121	48	110	14	42.5	180	15	355	380	280	455	740	M16X36
200L	2 4 6 8	318	159	305	133	55	110	16	49	200	19	395	420	305	505	770	M20X42
225S	4 8	356	178	286	149	60	140	18	53	225	19	435	470	335	560	815	M20X42
225M	2	356	178	311	149	55	110	16	49	225	19	435	470	335	560	820	M20X42
	4 6 8	356	178	311	149	60	140	18	53	225	19	435	470	335	560	845	M20X42
250M	2	406	203	349	168	60	140	18	53	250	24	490	510	370	615	910	M20X42
	4 6 8	406	203	349	168	65	140	18	58	250	24	490	510	370	615	910	M20X42
280S	2	457	228.5	368	190	65	140	18	58	280	24	550	580	410	680	985	M20X42
	4 6 8	457	228.5	368	190	75	140	20	67.5	280	24	550	580	410	680	985	M20X42
280M	2	457	228.5	419	190	65	140	18	58	280	24	550	580	410	680	1035	M20X42
	4 6 8	457	228.5	419	190	75	140	20	67.5	280	24	550	580	410	680	1035	M20X42
315S	2	508	254	406	216	65	140	18	58	315	28	635	645	530	845	1160	M20X42
	4 6 8 10	508	254	406	216	80	170	22	71	315	28	635	645	530	845	1270	M20X42
315M	2	508	254	457	216	65	140	18	58	315	28	635	645	530	845	1190	M20X42
	4 6 8 10	508	254	457	216	80	170	22	71	315	28	635	645	530	845	1300	M20X42
315L	2	508	254	508	216	65	140	18	58	315	28	635	645	530	845	1190	M20X42
	4 6 8 10	508	254	508	216	80	170	22	71	315	28	635	645	530	845	1300	M20X42
355M	2	610	305	560	254	75	140	20	67.5	355	28	730	710	655	1010	1500	M20X42
	4 6 8 10	610	305	560	254	95	170	25	86	355	28	730	710	655	1010	1530	M20X42
355L	2	610	305	630	254	75	140	20	67.5	355	28	730	710	655	1010	1500	M20X42
	4 6 8 10	610	305	630	254	95	170	25	86	355	28	730	710	655	1010	1530	M20X42

Dimension Flange Mount B5



Frame without feet and end- shield with flange(IB M5)

FRAME SIZE	POLES	D	E	F	G	M	N	P	S	T	FLANGE HOLES	AC	AD	HF	L	DH*
63M	2 4	11	23	4	8.5	115	95	140	10	3	4	130	70	130	230	M4 x 12
71M	2 4 6	14	30	5	11	130	110	160	10	3.5	4	145	80	145	255	M5 x 12
80M	2 4 6 8	19	40	6	15.5	165	130	200	12	3.5	4	175	145	185	295	M6 x 16
90S	2 4 6 8	24	50	8	20	165	130	200	12	3.5	4	195	155	195	320	M8 x 19
90L	2 4 6 8	24	50	8	20	165	130	200	12	3.5	4	195	155	195	345	M8 x 19
100L	2 4 6 8	28	60	8	24	215	180	250	15	4	4	215	180	245	385	M10 x 22
112M	2 4 6 8	28	60	8	24	215	180	250	15	4	4	240	190	265	400	M10 x 22
132S	2 4 6 8	38	80	10	33	265	230	300	15	4	4	275	210	315	470	M12 x 28
132M	2 4 6 8	38	80	10	33	265	230	300	15	4	4	275	210	315	510	M12 x 28
160M	2 4 6 8	42	110	12	37	300	250	350	19	5	4	330	255	385	615	M16 x 36
160L	2 4 6 8	42	110	12	37	300	250	350	19	5	4	330	255	385	670	M16 x 36
180M	2 4 6 8	48	110	14	42.5	300	250	350	19	5	4	380	280	430	700	M16 x 36
180L	2 4 6 8	48	110	14	42.5	300	250	350	19	5	4	380	280	430	740	M16 x 36
200L	2 4 6 8	55	110	16	49	350	300	400	19	5	8	420	305	480	770	M20 x 42
225S	4 8	60	140	18	53	400	350	450	19	5	8	470	335	535	815	M20 x 42
225M	2	55	110	16	49	400	350	450	19	5	8	470	335	535	820	M20 x 42
	4 6 8	60	140	18	53	400	350	450	19	5	8	470	335	535	845	M20 x 42
250M	2	60	140	18	53	500	450	550	19	5	8	510	370	595	910	M20 x 42
	4 6 8	65	140	18	58	500	450	550	19	5	8	510	370	595	910	M20 x 42
280S	2	65	140	18	58	500	450	550	19	5	8	580	410	650	985	M20 x 42
	4 6 8	75	140	20	67.5	500	450	550	19	5	8	580	410	650	985	M20 x 42
280M	2	65	140	18	58	500	450	550	19	5	8	580	410	650	1035	M20 x 42
	4 6 8	75	140	20	67.5	500	450	550	19	5	8	580	410	650	1035	M20 x 42



PT HANEDA SUKSES MANDIRI

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Dealer:

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