

TECO



CÔNG TY TNHH YAWACO

Địa chỉ : C96 Đường D35, Làng chuyên gia The Oasis, Khu phố 4, Phường An Phú, TX Thuận An, Bình Dương
MST : 3702739527 www.yawaco.com
Mail : yawacohcm@gmail.com DD: 0849118118



AESV / AESU / AESV-LA SERIES **SQUIRREL CAGE INDUCTION MOTOR**

AESV1S / AESU1S / AESV1S-LA (IE1) STANDARD EFFICIENCY
AESV2S / AESU2S / AESV2S-LA (IE2) HIGH EFFICIENCY
AESV3S / AESU3S / AESV3S-LA (IE3) PREMIUM EFFICIENCY

BACKGROUND

ABOUT TECO

TECO Singapore provides a total solution of motors and drives ever since it was established in 1972.

TECO Westinghouse Motor Company comprises the experience of Westinghouse, a leader in the motor industry since 1888 and TECO, a multinational conglomerate with over 50 years of motor experience. TECO Singapore itself was established in 1972 and has also set-up subsidiaries in Thailand, Malaysia, Indonesia, Vietnam and India.

By realizing the potential for precision products, especially in electronic and electrical equipment, TECO embarked a foothold in Singapore and becomes a hub for manufacturing and distribution of Electric Motors for the entire South-East Asia since 1972. TECO Singapore has established overseas manufacturing facilities and offices in Thailand, Malaysia, Indonesia, Vietnam and India.

Today, TECO is the one of the top 5 motor manufacturers in the world. Our motors are widely deployed in the industrial sectors and government projects including Singapore Mass Rapid Transit (SMRT), Land Transport Authority (LTA), Public Utilities Board (PUB), Housing Development Board (HDB) and Jurong Town Council (JTC) and Changi Airport.

INTRODUCTION TO IEC 60034-30-1

Electric motor application in the industry consumes between 30% and 40% of the generated electrical energy worldwide. Improving efficiency of the complete drive system is therefore a major concern in the energy-efficiency efforts.

Many different energy efficiency standards for cage induction motors from different countries were already in use (NEMA, EPACT, CSA, CEMEP, COPANT, AS/NZS, JIS, GB and others) before IEC came up with an efficiency standard. It became increasingly difficult for manufacturers to design motors for a global market and for customers to understand differences and similarities of standards in different countries, therefore IEC 60034-30-1 was developed for global standards for easy reference.

IEC 60034-30-1: Efficiency classes of single-Speed, Three Phase, Cage-induction motor (IE-code)

As part of a concerted effort worldwide to reduce energy consumption, CO2 emissions and the impact of industrial operations on the environment, TECO is committed to produce International Energy-Efficiency Class (IE) motors in order to reduce the energy consumed and in turn reduce greenhouse gas emissions. TECO's V-series are designed, manufactured and tested to meet latest European and International standard. The New V Series, which comprise of full range of Efficiency Classes IE1, IE2 & IE3 Motors.

WHAT DOES THIS STANDARD COVERS?

It specifies efficiency classes for single-speed, three-phase, 50Hz and 60 Hz, cage-induction motors that have:

- Rated Voltage above 50V up to 1000V;
- Rated Output Power between 0.12kW and 1000kW;
- Either 2, 4, 6 or 8 pole;
- Rated either duty type S1 (continuous duty) or S3 (intermittent periodic duty) with a rated cycle duration factor of 80% or higher;
- Capable of operating direct on-line;
- Rated for operating conditions in accordance with IEC 60034-1, clause 6.

INTRODUCTION TO SINGAPORE MINIMUM EFFICIENCY PERFORMANCE STANDARD (MEPS)

In September 2016, Singapore ratified the Paris Agreement and formalized its pledge to reduce its emissions intensity by 36% below 2005 levels by 2030 and stabilize its emissions with the aim of peaking around 2030.

RATIONALE & BENEFIT OF MEPS FOR MOTORS

- ✓ Transform the market towards more efficient motors
- ✓ Reduce total life-cycle cost for end-users
- ✓ Reduce energy use and greenhouse gas emissions

SCOPE OF MEPS IN SINGAPORE

Single Speed 3-Phase Induction Motors:

- 50Hz
- 2, 4 and 6 Pole
- Rated Output Power from 0.75 kW to 375 kW
- Rated Voltage up to 1,000 V
- Rated on the basis of continuous duty operation

EXCLUSIONS OF MEPS

- a) Motors specifically designed to operate
 - Where ambient air temperature exceed 60°C
 - In maximum operating temperature above 400°C
 - Where ambient air temperatures are less than -30°C for any motor or less than 0°C for a motor with water cooling
 - In potentially explosive environment
- b) Motors that operate wholly immersed in a liquid
- c) Multi-speed motors, brake motors and torque motors
- d) Motors that are completely integrated into a product where the motors' energy performance cannot be tested independently from the product (e.g. chiller compressor)
- e) Motors supplied exclusively to a 3rd party who will incorporate the motors into equipment that will be exported to other countries

ELECTRICAL DESIGN

Type: Squirrel Cage Induction Motor
Ratings: 0.55 kW ~ 375 kW

Duty Rating

All motors have a maximum continuous duty rating of S1 under rated load. For duty cycles other than S1 please refer to TECO.

Supply Voltage

Stock motors are designed for operation as below:
2.2kW and below : 220~240V/ 380~415V 3 phase /50Hz
3 kW and above : 380~415V 3 phase /50Hz

Insulation System

All motors are design with Class F insulation and Class B temperature rise at ambient temperature of 40° C. For any other insulation system other than standard Class F insulation or Class B temperature rise at higher ambient temperature than standard 40° C, please refer to TECO.

Inverter Duty

All motors are design to be suitable for Inverter use, comply with IEC 60034-17 : 2006. For intensive use of Inverter duty operations complying to IEC60034-25, please refer to TECO.

Standards

IEC 60034-1 Rotating electrical machines - Part 1: Rating and performance.

IEC 60034-2-1 Rotating electrical machines - Part 2-1: Standard methods for determining losses and efficiency from tests

IEC 60034-5 Rotating electrical machines - Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) - classification.

IEC 60034-6 Rotating electrical machines - Part 6: Methods of cooling (IC code).

IEC 60034-7 Rotating electrical machines - Part 7: Classification of types of enclosures and mounting arrangements (IM code).

IEC 60034-8 Rotating electrical machines - Part 8: Terminal markings and direction of rotation.

IEC 60034-9 Rotating electrical machines - Part 9: Noise limits.

IEC 60034-11-1 Rotating electrical machines - Part 11-1: Thermal protection.

IEC 60034-12 Rotating electrical machines - Part 12: Starting performance of single-speed three-phase cage induction motors.

IEC 60034-14 Rotating electrical machines - Part 14: Mechanical vibration of certain machines - Limits of vibration.

IEC 60034-17 : 2006 Rotating electrical machines - Part 17: Cage induction motors when fed from converters - Application guide.

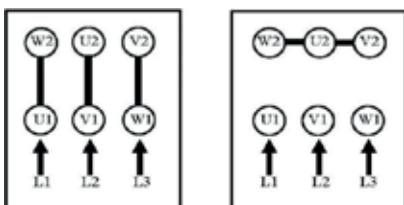
IEC 60034-30-1 Rotating electrical machines - Part 30:Efficiency classes for single-speed three-phase cage induction motors.

CONNECTION DIAGRAM

Direct-On-Line

For motor rating 2.2kW and below:
Low Voltage : 220~240V
High Voltage : 380~415V

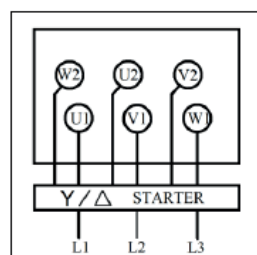
For motor rating 3kW and above:
Low Voltage : 380~415V



Star-Delta

Connect U1,V1,W1,U2,V2 & W2 to Star-Delta starter panel.

Power Supply Voltage (L1,L2,L3) to be connected to voltage indicated in Delta configuration column on the motor nameplate.



MECHANICAL DESIGN

Type: Squirrel Cage Induction Motor

Frame: 80M to 355C

Enclosure: Totally Enclosed Fan Cooled (TEFC), Totally Enclosed Air Over (TEAO)

Ingress Protection

Stock motors are design to meet Ingress Protection of IP55, other special requirement please refer to TECO.

Drive Method

Stock motors are design for both Direct Coupling and Belt Drive use from frame size 80M to 250M. However, for 2 Pole Motor design for both Direct Coupling and Belt Drive is from Frame size 80M to 200L only. For belt drive application for other frame size, please refer to TECO.

Bearings

High Quality Deep Groove Ball Sealed Bearings are use for our stock motor from frame size 80 to 225M and Vacuum De-Gassed High Quality Deep Groove Ball Open Bearings are use for stock motor from frame Size 250M to 355C. Any special bearings, please refer to TECO.

Lubrication

Both our sealed and open type bearing are grease lubricated.

Construction

Frame: High Grade Cast Iron

End Bracket: High Grade Cast Iron

External Fan: Polypropylene

Fan Cover: Pressed Steel

Shaft: Carbon Steel

Lead: 6 Leads

Iron Core: High Grade, Insulated, Cold Rolled,
Electro Magnetic Steel Plate

Terminal Box

Stock motor are fitted with pressed steel T-Box for Frame 80M to 180M and Cast Iron T-Box for Frame 200L to 355M. T-Box are designed for provision of rotation by 90° to every direction that enable cable entry from 4 directions.

Finishing

Stock motor are completed with Phenolic Rust Proof Base Plus Lacquer Surface Finished Painting as standard:

Gray Color (Munsell 7.5B 3.5/0.5) (IE 1)

Blue Color (Munsell 5PB 3/8) (IE 2)

Green Color (Munsell 7.5GY 4.5/3.5) (IE 3)

Any other colour finishing, please refer to TECO.

Lifting Device

All motor from Frame Size 90 and above comes with lifting lugs for lifting purposes.

Standards

IEC 60072-1 Dimensions and output series for rotating electrical machines - Part 1: Frame numbers 56 to 400 and flange numbers 55 to 1080.

SPECIAL ENHANCEMENT

The following enhancement are also available. Please refer to TECO.

- ✓ IP 56
- ✓ Class 'H' Insulation
- ✓ Inverter Duty Wire
- ✓ Special Paint Finishes
- ✓ Special Shaft Extensions
- ✓ Dual Speed
- ✓ Smoke Spill Duty
- ✓ Stainless Steel Hardware
- ✓ Conversion of sealed bearing to open bearing

OPTIONAL ACCESSORIES

Thermal Protection Accessories

- ✓ PTC Thermistors
- ✓ Resistance Temperature Detectors (RTD)
- ✓ Thermostat

Moisture Protection Accessories

- ✓ Space Heater

IE 1 PERFORMANCE DATA (2 POLE)

Motor Type: AESV1S / AESU1S / AESV1S-LA



OUTPUT		FULL LOAD rpm	FRAME No.	EFFICIENCY			POWER FACTOR			CURRENT				TORQUE			ROTOR GD ² kg-m ²	APPROX. WEIGHT kg	
kW	HP			FULL LOAD (%)	3/4 LOAD (%)	1/2 LOAD (%)	FULL LOAD (%)	3/4 LOAD (%)	1/2 LOAD (%)	FULL LOAD (A)			LRC (A) 400V	FULL LOAD kg-m	LOCKED ROTOR %FLT	PULL-UP %FLT			BREAK-DOWN %FLT
										VOLTAGE									
								380	400	415									
0.75	1	2800	80M	72.1	71.6	68.8	88.0	81.0	68.0	1.80	1.71	1.64	11	0.261	235	210	255	0.005	15.0
1.1	1.5	2810	80M	75.0	75.9	74.5	87.5	81.0	70.0	2.55	2.42	2.33	17	0.381	265	235	290	0.006	16.0
1.5	2	2850	90S	77.2	77.2	75.3	88.0	82.0	70.5	3.35	3.19	3.07	21	0.512	225	210	290	0.010	21.0
2.2	3	2855	90L	79.7	80.7	79.7	89.0	84.0	74.0	4.71	4.48	4.31	33	0.750	240	230	310	0.013	25.0
3	4	2890	100L	81.5	82.0	80.5	89.0	85.0	76.0	6.28	5.97	5.75	50	1.010	215	195	280	0.022	34.5
3.7	5	2880	112M	82.6	83.6	81.6	90.0	87.0	79.0	7.56	7.18	6.92	62	1.250	240	180	320	0.042	44.0
4	5.5	2910	112M	83.1	84.1	83.1	90.5	87.5	79.5	8.08	7.68	7.40	67	1.337	200	170	325	0.042	44.0
5.5	7.5	2900	132S	84.7	83.7	81.3	88.0	85.5	79.0	11.2	10.7	10.3	69	1.845	170	150	235	0.057	55.0
7.5	10	2895	132S	86.0	86.0	84.5	82.0	80.0	76.0	16.2	15.4	14.8	91	2.521	170	145	225	0.063	56.0
11	15	2945	160M	87.6	87.6	85.6	89.0	85.5	77.5	21.4	20.4	19.6	176	3.634	225	140	280	0.154	94.0
15	20	2940	160M	88.7	89.2	88.2	91.0	90.0	85.5	28.2	26.8	25.9	210	4.964	220	135	260	0.192	109
18.5	25	2940	160L	89.3	89.8	89.3	92.0	90.0	85.5	34.2	32.5	31.3	291	6.123	270	190	310	0.237	124
22	30	2945	180M	89.9	89.9	88.9	90.0	88.0	83.5	41.3	39.2	37.8	314	7.269	220	175	280	0.283	161
30	40	2955	200L	90.7	90.2	87.7	84.5	79.0	71.0	59.5	56.5	54.5	441	9.878	185	140	275	0.521	212
37	50	2955	200L	91.2	91.2	90.2	88.5	87.0	81.0	69.6	66.2	63.8	527	12.18	195	135	270	0.663	242
45	60	2955	225MA	91.7	91.2	89.7	91.5	90.0	86.0	81.5	77.4	74.6	600	14.82	150	130	260	1.074	275
55	75	2970	250MA	92.1	92.1	91.1	91.0	90.0	85.5	99.7	94.7	91.3	697	18.02	135	115	295	1.343	354
75	100	2970	280SA	92.7	92.7	91.4	87.0	85.0	80.0	141	134	129	1072	24.57	130	120	260	1.759	458
90	125	2965	280MA	93.0	92.8	91.9	87.0	84.0	76.5	169	161	155	1288	29.53	140	120	290	2.023	485
110	150	2965	315SA	93.5	93.5	92.8	89.0	87.0	81.1	201	191	184	1400	36.10	140	120	230	3.002	613
132	175	2970	315MA	93.7	93.7	93.0	89.5	88.5	83.5	239	227	219	1570	43.24	145	120	230	4.400	750
(160)	(215)	2970	315MA	94.0	94.0	93.2	91.5	90.5	86.0	283	269	259	2050	52.42	210	175	240	5.200	800
160	215	2970	315LA	94.0	94.0	93.2	91.5	90.5	86.0	283	269	259	2050	52.42	210	175	240	5.200	806
200	270	2970	315LA	94.0	94.0	93.4	92.0	91.0	87.5	351	334	322	2500	65.52	210	175	240	6.400	926
(220)	(300)	2970	315CA	94.4	94.0	92.8	90.5	89.0	83.5	391	372	358	2800	72.07	150	125	270	7.200	1380
220	300	2970	355MA	94.4	94.0	92.8	90.5	89.0	83.5	391	372	358	2800	72.07	150	125	270	7.200	1185
(250)	(335)	2972	315CA	94.6	94.1	93.0	92.0	91.0	87.5	436	415	400	3100	81.85	150	125	270	8.400	1500
250	335	2972	355MA	94.6	94.1	93.0	92.0	91.0	87.5	436	415	400	3100	81.85	150	125	270	8.400	1305
(315)	(420)	2975	315DA	94.8	94.4	93.5	92.5	91.5	88.0	546	518	500	3900	103.0	160	130	280	10.40	1720
315	420	2975	355LA	94.8	94.4	93.5	92.5	91.5	88.0	546	518	500	3900	103.0	160	130	280	10.40	1525
375	500	2980	355CA	94.8	94.8	93.7	92.0	90.5	86.5	653	621	598	4500	122.4	150	125	280	12.40	2340

Note:

1. The above are typical values based on test according to IEC 60034-2-1 :2007.(DY)
2. Tolerance according to IEC 60034-1.
3. Breakdown & Locked rotor torques are show as average expected voltages
4. Efficiency, power factor, speed and torque are the same for other voltages.
Current values vary inversely with voltage
5. Output in () is for Optional Frame size upon request
6. Frame size 315C, 315D, & 355C: only suitable for IM B3 and IM B35
7. Noise according to IEC 60034-9.
8. Data subject to change without prior notice.



IE 1 PERFORMANCE DATA (4 POLE)

Motor Type: AESV1S / AESU1S / AESV1S-LA

OUTPUT		FULL LOAD rpm	FRAME No.	EFFICIENCY			POWER FACTOR			CURRENT				TORQUE				ROTOR GD ² kg-m ²	APPROX. WEIGHT kg
kW	HP			FULL LOAD (%)	3/4 LOAD (%)	1/2 LOAD (%)	FULL LOAD (%)	3/4 LOAD (%)	1/2 LOAD (%)	FULL LOAD (A)			LRC (A)	FULL LOAD kg-m	LOCKED ROTOR %FLT	PULL-UP %FLT	BREAK-DOWN %FLT		
										VOLTAGE									
								380	400	415	400V								
0.55	0.75	1425	80M	70.0	68.9	62.1	73.0	62.5	50.0	1.65	1.57	1.51	9.0	0.376	220	200	265	0.007	15.0
0.75	1	1425	80M	72.1	71.6	68.3	77.0	66.0	52.5	2.05	1.95	1.88	12	0.512	240	215	275	0.009	16.0
1.1	1.5	1425	90S	75.0	75.0	68.1	79.0	68.5	55.5	2.82	2.68	2.58	17	0.751	220	165	235	0.014	18.0
1.5	2	1425	90L	77.2	77.2	74.2	81.0	72.5	59.0	3.64	3.46	3.34	23	1.024	230	175	240	0.017	20.0
2.2	3	1435	100L	79.7	79.7	77.2	79.5	71.0	57.0	5.28	5.01	4.83	39	1.492	210	185	300	0.033	30.0
3	4	1445	100L	81.5	80.9	77.5	85.0	76.0	63.0	6.58	6.25	6.02	52	2.020	250	180	300	0.046	32.5
3.7	5	1445	112M	82.6	82.6	80.6	82.0	74.5	64.0	8.30	7.88	7.60	62	2.491	220	180	290	0.059	38.0
4	5.5	1445	112M	83.1	83.6	81.7	82.0	76.0	64.0	8.92	8.47	8.17	60	2.693	190	180	260	0.065	38.0
5.5	7.5	1465	132S	84.7	84.7	83.2	82.5	75.5	63.5	12.0	11.4	11.0	86	3.653	235	190	315	0.103	53.5
7.5	10	1460	132M	86.0	86.5	85.0	86.0	81.5	71.5	15.4	14.6	14.1	109	4.998	215	175	295	0.133	67.0
11	15	1465	160M	87.6	88.1	87.1	86.5	82.5	74.5	22.1	21.0	20.2	155	7.306	200	150	255	0.271	94.0
15	20	1465	160L	88.7	88.7	87.2	86.0	80.5	71.0	29.9	28.4	27.4	217	9.962	215	155	265	0.396	119
18.5	25	1475	180M	89.3	89.3	88.8	86.0	83.5	76.5	36.6	34.8	33.5	220	12.20	165	125	220	0.611	161
22	30	1475	180L	89.9	89.9	88.9	84.0	80.5	72.5	44.3	42.0	40.5	299	14.51	195	150	230	0.712	176
30	40	1475	200L	90.7	91.2	90.7	86.5	83.5	76.5	58.1	55.2	53.2	444	19.79	240	185	275	1.220	227
37	50	1480	225SC	91.2	90.7	89.7	85.0	81.5	74.5	72.5	68.9	66.4	489	24.33	190	160	245	1.649	277
45	60	1475	225MC	91.7	92.2	91.2	85.5	83.0	76.5	87.2	82.8	79.8	523	29.68	175	145	220	1.731	290
55	75	1485	250MC	92.1	92.1	91.1	87.0	85.0	79.5	104	99.1	95.5	714	36.04	220	110	230	2.755	399
75	100	1480	280SB	92.7	92.7	92.2	84.5	81.0	73.5	145	138	133	948	49.31	175	165	275	4.224	508
90	125	1480	280MB	93.0	93.2	92.5	85.5	82.5	72.5	172	163	157	1164	59.17	175	165	270	4.943	557
110	150	1480	315SB	93.5	93.5	92.9	86.5	83.8	76.2	207	196	189	1350	72.32	190	155	250	6.635	671
132	175	1480	315MB	93.7	93.7	93.2	86.5	83.0	74.5	247	235	227	1570	86.78	200	165	250	8.400	750
(160)	(215)	1482	315MB	94.0	94.0	93.4	87.5	84.5	77.0	296	281	271	2000	105.0	200	165	250	10.00	810
160	215	1482	315LB	94.0	94.0	93.4	87.5	84.5	77.0	296	281	271	2000	105.0	200	165	250	10.00	816
200	270	1482	315LB	94.0	94.1	93.6	88.5	86.0	79.0	365	347	334	2500	131.3	210	175	250	13.20	986
(220)	(300)	1484	315CB	94.5	94.5	93.7	89.5	88.0	82.5	395	375	362	2840	144.2	200	165	250	19.20	1420
220	300	1484	355MB	94.5	94.5	93.7	89.5	88.0	82.5	395	375	362	2840	144.2	200	165	250	19.20	1225
(250)	(335)	1485	315CB	94.6	94.5	93.8	89.5	87.5	82.0	449	426	411	3150	163.8	200	165	260	21.20	1500
250	335	1485	355MB	94.6	94.5	93.8	89.5	87.5	82.0	449	426	411	3150	163.8	200	165	260	21.20	1305
(315)	(420)	1485	315DB	94.9	94.9	94.4	90.0	88.0	82.5	560	532	513	4100	206.4	200	165	260	26.40	1780
315	420	1485	355LB	94.9	94.9	94.4	90.0	88.0	82.5	560	532	513	4100	206.4	200	165	260	26.40	1585
375	500	1486	355CB	94.9	94.9	94.4	89.5	88.0	82.0	671	637	614	4500	245.5	200	165	270	34.80	2340

Note:

1. The above are typical values based on test according to IEC 60034-2-1 :2007.(DY)
2. Tolerance according to IEC 60034-1.
3. Breakdown & Locked rotor torques are show as average expected voltages
4. Efficiency, power factor, speed and torque are the same for other voltages.
Current values vary inversely with voltage
5. Output in () is for Optional Frame size upon request
6. Frame size 315C, 315D, & 355C: only suitable for IM B3 and IM B35
7. Noise according to IEC 60034-9.
8. Data subject to change without prior notice.

IE 1 PERFORMANCE DATA (6 POLE)

Motor Type: AESV1S / AESU1S / AESV1S-LA



OUTPUT		FULL LOAD rpm	FRAME No.	EFFICIENCY			POWER FACTOR			CURRENT				TORQUE				ROTOR GD ² kg-m ²	APPROX. WEIGHT kg
kW	HP			FULL LOAD (%)	3/4 LOAD (%)	1/2 LOAD (%)	FULL LOAD (%)	3/4 LOAD (%)	1/2 LOAD (%)	FULL LOAD (A)			LRC (A)	FULL LOAD kg-m	LOCKED ROTOR %FLT	PULL-UP %FLT	BREAK-DOWN %FLT		
										VOLTAGE									
								380	400	415	400V								
0.55	0.75	915	80M	67.5	67.0	62.0	72.0	60.5	48.0	1.72	1.63	1.57	8.0	0.585	220	210	225	0.012	18.0
0.75	1	935	90S	70.0	67.2	62.9	71.0	60.5	48.0	2.29	2.18	2.10	11	0.780	190	175	285	0.017	22.5
1.1	1.5	935	90L	72.9	71.0	66.1	68.5	57.0	44.5	3.35	3.18	3.06	17	1.145	220	205	260	0.023	25.0
1.5	2	935	100L	75.2	75.2	69.8	75.0	65.0	52.0	4.04	3.84	3.70	21	1.561	200	170	235	0.035	29.0
2.2	3	950	112M	77.7	77.7	74.8	73.5	63.0	50.0	5.85	5.56	5.36	34	2.253	205	195	270	0.058	39.0
3	4	965	132S	79.7	79.7	77.3	72.5	63.5	50.0	7.89	7.49	7.22	45	3.025	195	185	270	0.097	54.0
3.7	5	960	132M	80.9	80.9	75.9	75.5	65.5	53.5	9.20	8.74	8.43	61	3.750	180	160	230	0.114	58.0
4	5.5	960	132M	81.4	81.9	80.4	77.5	69.5	56.5	9.63	9.15	8.82	59	4.054	190	175	275	0.131	58.0
5.5	7.5	965	132M	83.1	82.6	81.1	72.0	63.5	50.0	14.0	13.3	12.8	92	5.546	210	160	280	0.171	70.0
7.5	10	960	160M	84.7	83.7	81.3	81.5	76.5	66.0	16.5	15.7	15.1	94	7.602	210	185	255	0.363	99.0
11	15	965	160L	86.4	86.9	85.9	81.5	76.0	65.0	23.7	22.5	21.7	155	11.09	245	230	270	0.558	129
15	20	970	180L	87.7	88.2	87.7	82.0	79.5	73.5	31.7	30.1	29.0	178	15.05	195	140	210	1.342	181
18.5	25	975	200L	88.6	88.6	87.6	82.5	79.0	70.5	38.5	36.5	35.2	223	18.46	200	185	220	1.604	222
22	30	975	200L	89.2	89.7	89.7	82.0	78.5	69.5	45.7	43.4	41.8	296	21.95	210	180	220	1.912	242
30	40	975	225MC	90.2	90.2	87.2	86.0	83.5	76.0	58.8	55.8	53.8	344	29.94	175	155	210	2.442	285
37	50	975	250MC	90.8	90.8	89.8	85.5	81.0	73.0	72.4	68.8	66.3	451	36.92	185	180	220	3.373	354
45	60	980	280SB	91.4	91.5	90.7	82.5	79.5	71.0	90.7	86.1	83.0	597	44.68	150	140	230	4.400	443
55	75	980	280MB	91.9	92.0	91.3	83.5	80.5	72.0	109	103	99.7	680	54.61	150	140	235	5.290	490
75	100	985	315SB	92.6	92.7	92.1	84.5	81.5	72.5	146	138	133	900	74.09	160	130	230	9.323	671
90	125	985	315MB	93.0	93.0	92.5	84.5	81.5	72.0	174	165	159	1070	88.90	175	145	230	12.80	730
(110)	(150)	988	315MB	93.5	93.5	93.0	84.5	81.5	72.5	212	201	194	1295	108.3	175	145	230	15.60	810
110	150	988	315LB	93.5	93.5	93.0	84.5	81.5	72.5	212	201	194	1295	108.3	175	145	230	15.60	816
132	175	988	315LB	93.7	93.7	93.2	84.0	80.0	71.0	255	242	233	1530	130.0	210	175	240	17.20	946
(160)	(215)	988	315LB	94.0	94.0	93.4	84.8	81.6	73.5	305	290	279	1950	157.6	210	175	240	23.20	1096
160	215	988	355MB	94.0	94.0	93.4	86.0	83.0	75.0	301	286	275	2050	157.6	180	160	300	27.28	1315
(200)	(270)	988	315CB	94.2	94.2	93.8	85.5	83.0	74.0	377	358	345	2360	197.0	200	165	240	30.80	1650
200	270	988	355MB	94.2	94.2	93.8	85.5	83.0	74.0	377	358	345	2360	197.0	200	165	240	30.80	1455
(220)	(300)	988	315CB	94.5	94.5	94.0	86.5	84.5	78.0	409	388	374	2550	216.7	180	160	240	35.20	1740
220	300	988	355MB	94.5	94.5	94.0	86.5	84.5	78.0	409	388	374	2550	216.7	180	160	240	35.20	1545
(250)	(335)	988	315DB	94.6	94.6	94.2	86.5	85.0	78.5	464	441	425	2900	246.2	200	165	240	41.20	1860
250	335	988	355LB	94.6	94.6	94.2	86.5	85.0	78.5	464	441	425	2900	246.2	200	165	240	41.20	1665
315	420	990	355CB	94.8	94.8	94.4	87.5	85.5	79.0	577	548	528	3800	309.6	210	175	240	56.00	2600

Note:

1. The above are typical values based on test according to IEC 60034-2-1 :2007.(DY)
2. Tolerance according to IEC 60034-1.
3. Breakdown & Locked rotor torques are show as average expected voltages
4. Efficiency, power factor, speed and torque are the same for other voltages.
Current values vary inversely with voltage
5. Output in () is for Optional Frame size upon request
6. Frame size 315C, 315D, & 355C: only suitable for IM B3 and IM B35
7. Noise according to IEC 60034-9.
8. Data subject to change without prior notice.



IE 1 PERFORMANCE DATA (8 POLE)

Motor Type: AESV1S / AESU1S / AESV1S-LA

OUTPUT		FULL LOAD rpm	FRAME No.	EFFICIENCY			POWER FACTOR			CURRENT				TORQUE				ROTOR GD ² kg-m ²	APPROX. WEIGHT kg
kW	HP			FULL LOAD (%)	3/4 LOAD (%)	1/2 LOAD (%)	FULL LOAD (%)	3/4 LOAD (%)	1/2 LOAD (%)	FULL LOAD (A)			LRC (A)	FULL LOAD kg-m	LOCKED ROTOR %FLT	PULL-UP %FLT	BREAK-DOWN %FLT		
										VOLTAGE									
								380	400	415	400V								
0.18	0.25	710	80M	38.0	33.8	27.4	46.5	40.0	34.0	1.55	1.47	1.42	4.7	0.247	360	350	370	0.010	14.0
0.37	0.5	705	90S	49.7	47.4	42.2	61.5	52.0	41.5	1.84	1.75	1.68	5.0	0.511	180	170	240	0.017	20.0
0.55	0.75	700	90L	56.1	54.4	49.1	61.5	53.0	42.0	2.42	2.30	2.22	7.3	0.765	180	150	250	0.022	21.0
0.75	1	700	100L	61.2	59.9	54.9	66.0	56.5	45.5	2.82	2.68	2.58	9.4	1.043	180	160	210	0.033	23.0
1.1	1.5	690	100L	66.5	66.0	62.0	67.5	59.0	47.0	3.72	3.54	3.41	15	1.551	200	175	210	0.046	28.5
1.5	2	705	112M	70.2	69.7	66.0	67.0	59.0	46.5	4.85	4.60	4.44	20	2.070	160	135	215	0.065	35.0
2.2	3	700	132S	74.2	74.2	71.9	72.5	64.0	51.0	6.21	5.90	5.69	26	3.058	190	175	225	0.115	44.5
3	4	700	132M	77.0	77.5	75.3	73.0	65.0	52.0	8.11	7.70	7.43	34	4.170	190	175	220	0.138	49.5
3.7	5	720	160M	78.6	78.6	76.6	71.0	62.5	49.0	10.1	9.57	9.22	59	5.000	200	180	270	0.265	72.0
4	5.5	720	160M	79.2	79.5	77.4	71.5	64.0	51.5	10.7	10.2	9.83	59	5.406	200	180	270	0.265	72.0
5.5	7.5	720	160M	81.4	81.8	79.9	72.0	64.5	52.5	14.3	13.5	13.1	81	7.433	200	180	270	0.374	87.0
7.5	10	720	160L	83.1	83.6	82.0	73.5	66.5	54.5	18.7	17.7	17.1	107	10.14	200	190	270	0.530	104
11	15	725	180L	85.0	85.5	84.5	75.0	68.0	55.5	26.2	24.9	24.0	138	14.76	190	170	215	0.990	142
15	20	725	200L	86.2	86.8	85.8	76.5	70.5	59.0	34.6	32.8	31.6	164	20.13	190	170	205	1.418	196
18.5	25	730	225SC	86.9	86.9	85.9	78.0	72.0	62.0	41.5	39.4	38.0	236	24.66	185	150	200	2.093	250
22	30	730	225MC	87.4	86.9	85.5	77.0	70.5	59.0	49.7	47.2	45.5	281	29.32	200	175	210	2.442	276
30	40	730	250MC	88.3	87.8	86.3	78.5	70.5	60.0	65.8	62.5	60.2	378	39.99	190	160	210	3.475	338
37	50	735	280SB	88.8	89.2	88.6	77.5	78.5	75.0	81.7	77.6	74.8	495	48.98	130	125	210	5.553	500
45	60	735	280MB	89.2	89.6	89.1	78.0	79.2	76.0	98.3	93.4	90.0	595	59.57	135	125	210	6.760	557
55	75	735	315SB	89.7	89.7	88.8	79.0	74.3	63.3	118	112	108	700	72.81	145	125	210	8.735	681
75	100	735	315MB	90.3	90.3	89.6	80.5	76.0	66.0	157	149	144	850	99.29	160	130	220	19.60	760
90	125	735	315LB	90.7	90.7	90.0	81.0	77.0	67.5	186	177	170	1000	119.1	160	130	220	23.60	886
110	150	735	315LB	91.1	91.1	90.5	81.0	78.0	68.5	226	215	207	1250	145.6	160	130	220	30.40	986
(132)	(175)	740	315CB	91.5	91.5	90.7	79.5	74.5	60.0	276	262	252	1550	173.6	110	95	230	28.00	1550
132	175	740	355MB	91.5	91.5	90.7	79.5	74.5	60.0	276	262	252	1550	173.6	110	95	230	28.00	1355
(160)	(215)	740	315CB	91.9	91.9	91.0	80.5	75.5	65.0	329	312	301	1850	210.4	110	95	230	34.40	1650
160	215	740	355MB	91.9	91.9	91.0	80.5	75.5	65.0	329	312	301	1850	210.4	110	95	230	34.40	1455
(200)	(270)	740	315DB	92.5	92.6	91.9	81.0	76.1	65.7	406	385	371	2300	263.0	110	95	230	41.20	1800
200	270	740	355LB	92.5	92.6	91.9	81.0	76.1	65.7	406	385	371	2300	263.0	110	95	230	41.20	1605
(220)	(300)	740	315DB	92.5	92.5	92.0	80.5	75.0	64.5	449	426	411	2550	289.3	110	95	230	45.60	1900
220	300	740	355LB	92.5	92.5	92.0	80.5	75.0	64.5	449	426	411	2550	289.3	110	95	230	45.60	1705
250	335	740	355CB	92.5	92.5	92.0	83.5	80.0	71.0	492	467	450	3200	328.7	135	110	240	67.60	2400

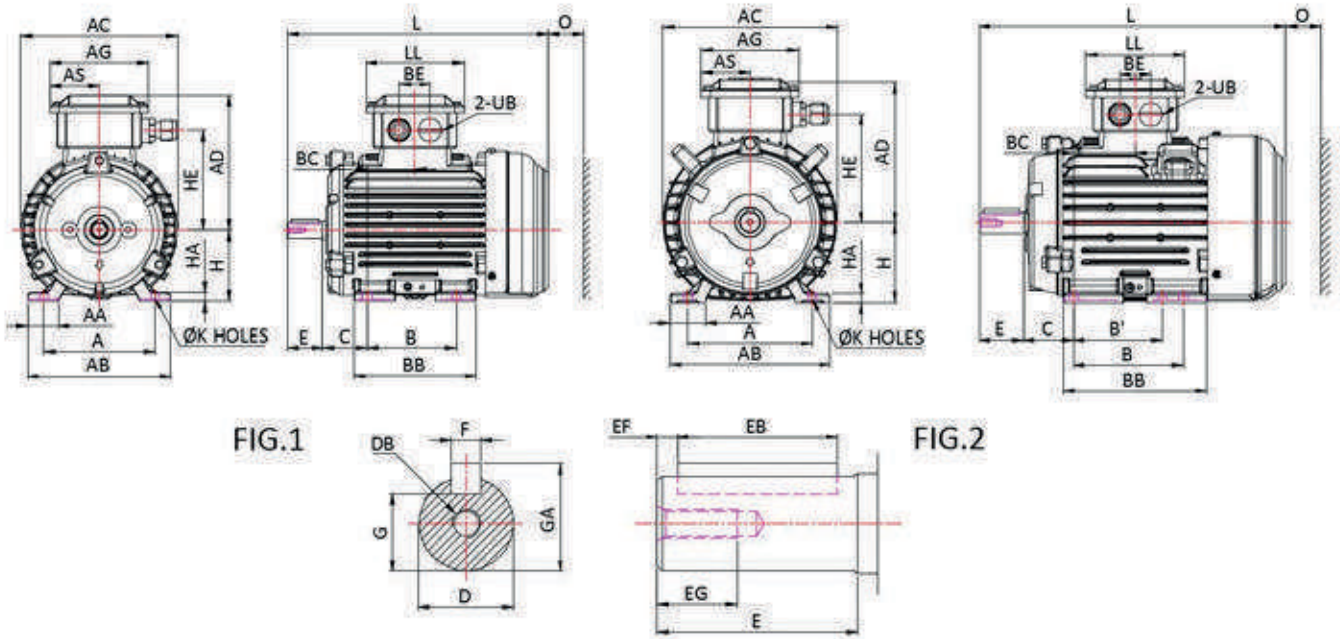
Note:

1. The above are typical values based on test according to IEC 60034-2-1 :2007.(DY)
2. Tolerance according to IEC 60034-1.
3. Breakdown & Locked rotor torques are show as average expected voltages
4. Efficiency, power factor, speed and torque are the same for other voltages.
Current values vary inversely with voltage
5. Output in () is for Optional Frame size upon request
6. Frame size 315C, 315D, & 355C: only suitable for IM B3 and IM B35
7. Noise according to IEC 60034-9.
8. Data subject to change without prior notice.

B3 OUTLINE DIMENSION

Foot Mounted(B3)
 Motor Type: AESV1S / AESV2S / AESV3S
 Frame Size: 80M to 225M

B3



OUTPUT (kW)				FRAME SIZE	FIG. NO	A	AA	AB	AC	AD	AG	AS	B	B'	BA	BA'	BB	BC	BE	C
2P	4P	6P	8P																	
0.75 1.1	0.55 0.75	0.55	0.18	80M	1	125	34.5	161	177	152	109	54.5	100	---	---	---	137	53.5	35	50
1.5	1.1	0.75	0.37	90S	2	140	40	180	197	162	109	54.5	100	---	---	---	161	69.5	35	56
2.2	1.5	1.1	0.55	90L		140	40	180	197	162	109	54.5	125	---	---	---	171	74.5	35	56
3	2.2 3	1.5	0.75 1.1	100L		160	40	200	219	178.5	125	62.5	140	---	---	---	181	72.5	40	63
3.7 4	3.7 4	2.2	1.5	112M		190	45	235	235	191	125	62.5	140	---	---	---	186	75	40	70
5.5 7.5	5.5	3	2.2	132S		216	57	263	273	208.5	125	62.5	140	---	---	---	184	65	40	89
---	7.5	3.7 4 5.5	3	132M		216	57	263	273	208.5	125	62.5	178	140	---	---	222	84	40	89
11 15	11	7.5	3.7 4 5.5	160M	3	254	60	300	317	237	166	83	210	---	57	57	250	105	60	108
18.5	15	11	7.5	160L		254	60	300	317	237	166	83	254	210	97	97	294	127	60	108
22	18.5	---	---	180M		279	65	330	354	263.5	166	83	241	---	65	65	292	120.5	60	121
---	22	15	11	180L		279	65	330	354	263.5	166	83	279	241	115	115	330	139.5	60	121
30 37	30	18.5 22	15	200L	4	318	70	378	398	329	231	110.5	305	---	82	82	353	152.5	106	133
---	37	---	18.5	225SC		356	75	431	449	355	231	110.5	286	---	98.5	98.5	371	143	106	149
45	---	---	---	225MA		356	75	431	449	355	231	110.5	311	286	110	110	396	155.5	106	149
---	45	30	22	225MC		356	75	431	449	355	231	110.5	311	286	110	110	396	155.5	106	149

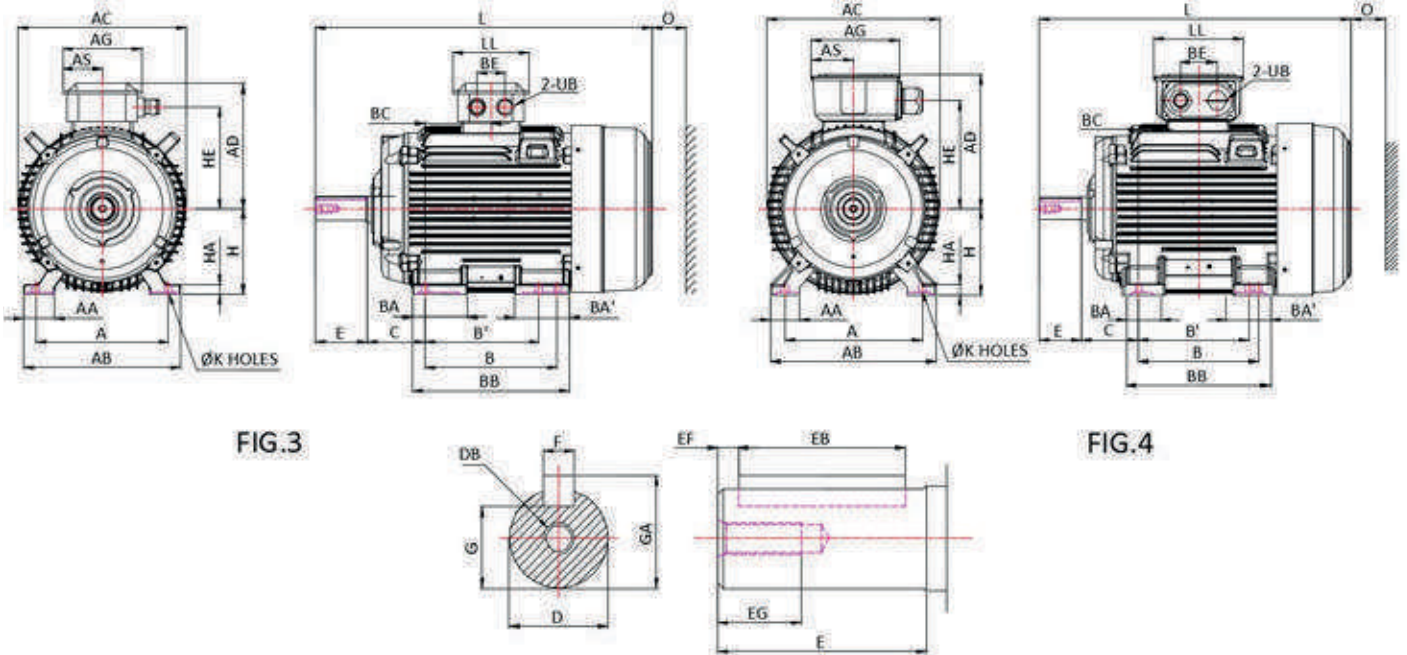
Note:

1. All dimensions are in mm.
2. Pre-packed shielded ball bearing for frame size 80M to 225M
3. Lifting Lugs provided for frame 90S to 355C
4. Data are subject to change without prior notice

B3 OUTLINE DIMENSION

B3

Foot Mounted(B3)
Motor Type: AESV1S / AESV2S / AESV3S
Frame Size: 80M to 225M



FRAME SIZE	H	HA	HE	K	L	LL	O	UB	SHAFT EXTENSION								BEARING		
									D	E	EB	EF	EG	F	G	GA	DB	DRIVE END	OPPOSITE DRIVE END
80M	80	10	115	10	292	109	40	M20x1.5	19	40	32	4	16	6	15.5	21.5	M6	6204ZZC3	6203ZZC3
90S	90	10	125	10	344	109	40	M20x1.5	24	50	40	5	19	8	20	27	M8	6205ZZC3	6204ZZC3
90L	90	10	125	10	354	109	40	M20x1.5	24	50	40	5	19	8	20	27	M8		
100L	100	12	146	12	391	125	50	M25x1.5	28	60	50	5	22	8	24	31	M10	6206ZZC3	6205ZZC3
112M	112	13	153.5	12	412.5	125	50	M25x1.5	28	60	50	5	22	8	24	31	M10	6306ZZC3	6305ZZC3
132S	132	16	171	12	456	125	50	M25x1.5	38	80	70	5	28	10	33	41	M12	6308ZZC3	6306ZZC3
132M	132	16	171	12	494	125	50	M25x1.5	38	80	70	5	28	10	33	41	M12		
160M	160	18	195	14.5	608	158	60	M32x1.5	42	110	100	5	36	12	37	45	M16	6309ZZC3	6307ZZC3
160L	160	18	195	14.5	652	158	60	M32x1.5	42	110	100	5	36	12	37	45	M16		
180M	180	20	221	14.5	672	158	70	M32x1.5	48	110	100	5	36	14	42.5	51.5	M16	6311ZZC3	6310ZZC3
180L	180	20	221	14.5	710	158	70	M32x1.5	48	110	100	5	36	14	42.5	51.5	M16		
200L	200	24	259	18.5	770	231	80	M50x1.5	55	110	100	5	42	16	49	59	M20	6312ZZC3	6212ZZC3
225SC	225	28	285	18.5	816	231	90	M50x1.5	60	140	125	7.5	42	18	53	64	M20	6313ZZC3	6213ZZC3
225MA	225	28	285	18.5	811	231	90	M50x1.5	55	110	100	5	42	16	49	59	M20	6312ZZC3	6212ZZC3
225MC	225	28	285	18.5	841	231	90	M50x1.5	60	140	125	7.5	42	18	53	64	M20	6313ZZC3	6213ZZC3

Note:

1. All dimensions are in mm.
2. Tolerance of shaft end diameter D: 1) $\varnothing 19\sim\varnothing 28:j6$, 2) $\varnothing 38\sim\varnothing 48:k6$, 3) $\varnothing 55\sim\varnothing 65:m6$
3. Tolerance of shaft center height H : +0, -0.5
4. Data are subject to change without prior notice

B3 OUTLINE DIMENSION

Foot Mounted(B3)
 Motor Type: AESV1S / AESV2S / AESV3S
 Frame Size: 250M to 355C

B3

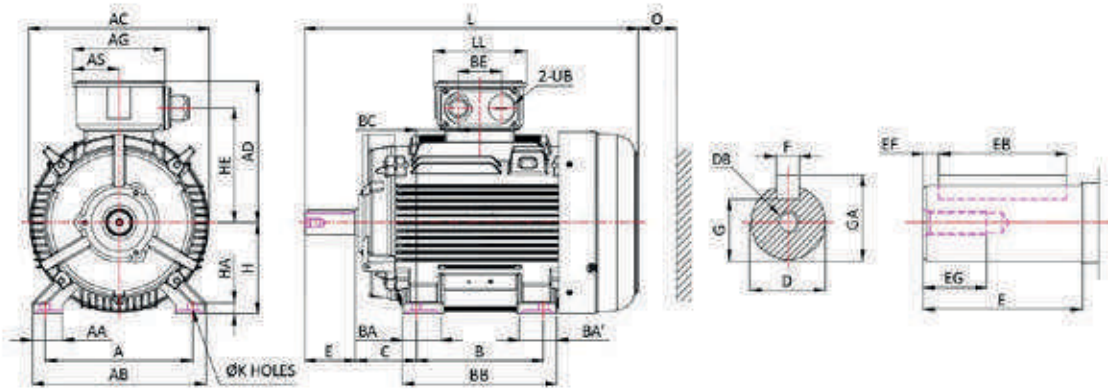


FIG.5

OUTPUT (kW)				FRAME SIZE	FIG. NO	A	AA	AB	AC	AD	AG	AS	B	B'	BA	BA'	BB	BC	BE	C
2P	4P	6P	8P																	
55	---	---	---	250MA	5	406	85	480	499	397	255	122.5	349	---	112.5	112.5	425	174.5	119	168
---	55	37	30	250MC		406	85	480	499	397	255	122.5	349	---	112.5	112.5	425	174.5	119	168
75	---	---	---	280SA	6	457	110	560	546	433	255	122.5	368	---	110	110	455	48	119	190
---	75	45	37	280SB		457	110	560	546	433	255	122.5	368	---	110	110	455	48	119	190
90	---	---	---	280MA		457	110	560	546	433	255	122.5	419	---	115	115	505	48	119	190
---	90	55	45	280MB		457	110	560	546	433	255	122.5	419	---	115	115	505	48	119	190
110	---	---	---	315SA		508	115	615	570	490	336	163	406	---	180	180	580	53	140	216
---	110	75	55	315SB		508	115	615	570	490	336	163	406	---	180	180	580	53	140	216
132 (160)	---	---	---	315MA		508	115	630	620	515	336	163	457	---	230	230	640	53	140	216
---	132 (160)	90 (110)	75	315MB		508	115	630	620	515	336	163	457	---	230	230	640	53	140	216
160 200	---	---	---	315LA		508	130	630	620	515	336	163	508	---	230	230	740	53	140	216
---	160 200	110 132 (160)	90 110	315LB		508	130	630	620	515	336	163	508	---	230	230	740	53	140	216
(220) (250)	---	---	---	315CA	508	150	650	682	590	412	189	710	---	335	335	870	68	180	216	
---	(220) (250)	(200) (220)	(132) (160)	315CB	508	150	650	682	590	412	189	710	---	335	335	870	68	180	216	
(315)	---	---	---	315DA	508	150	650	682	590	412	189	900	---	180	250	1060	68	180	216	
---	(315)	(250)	(200) (220)	315DB	508	150	650	682	590	412	189	900	---	180	250	1060	68	180	216	
220 250	---	---	---	355MA	610	150	750	682	585	412	189	---	560	310	310	910	48	180	254	
---	220 250	160 200 220	132 160	355MB	610	150	750	682	585	412	189	---	560	310	310	910	48	180	254	
315	---	---	---	355LA	610	150	750	682	585	412	189	630	---	310	310	910	48	180	254	
---	315	250	200 220	355LB	610	150	750	682	585	412	189	630	---	310	310	910	48	180	254	
375	---	---	---	355CA	610	150	750	810	645	412	189	900	---	390	390	1100	48	180	254	
---	375	315	250	355CB	610	150	750	810	645	412	189	900	---	390	390	1100	48	180	254	

Note:

1. All dimensions are in mm.
2. Open type ball bearing for frame size 250M to 355C
3. Lifting Lugs provided for frame 90S to 355C
4. Output in () is for optional frame size upon request
5. Data are subject to change without prior notice

B3

Foot Mounted(B3)
Motor Type: AESV1S / AESV2S / AESV3S
Frame Size: 250M to 355C

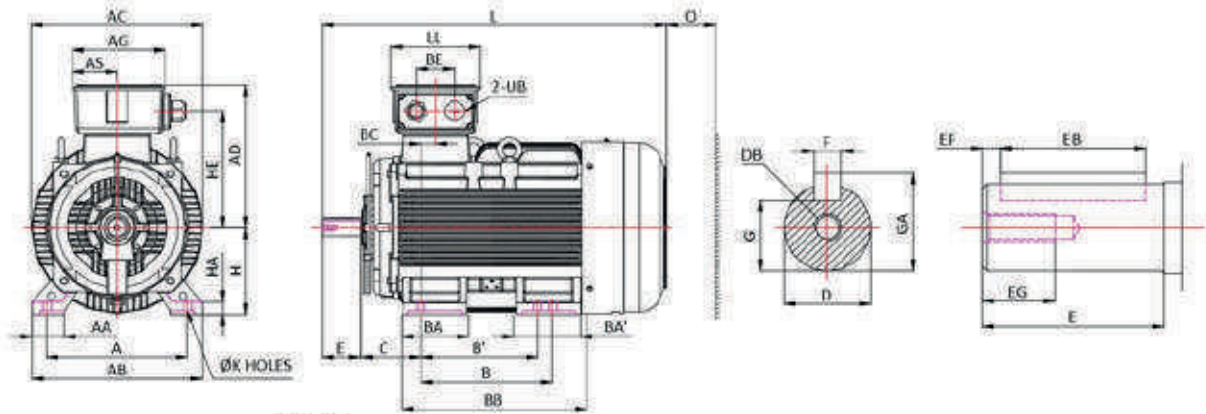


FIG.6

FRAME SIZE	H	HA	HE	K	L	LL	O	UB	SHAFT EXTENSION								BEARING		
									D	E	EB	EF	EG	F	G	GA	DB	DRIVE END	OPPOSITE DRIVE END
250MA	250	30	319	24	921	255	105	M63x1.5	60	140	125	7.5	42	18	53	64	M20	6313C3	6313C3
250MC	250	30	319	24	921	255	105	M63x1.5	65	140	125	7.5	42	18	58	69	M20	6315C3	6313C3
280SA	280	35	354.5	24	1037.5	255	140	M63X1.5	65	140	125	7.5	40	18	58	69	M20	6314C3	6314C3
280SB	280	35	354.5	24	1037.5	255	140	M63X1.5	75	140	125	7.5	40	20	67.5	79.5	M20	6318C3	6316C3
280MA	280	35	354.5	24	1087.5	255	140	M63X1.5	65	140	125	7.5	40	18	58	69	M20	6314C3	6314C3
280MB	280	35	354.5	24	1087.5	255	140	M63X1.5	75	140	125	7.5	40	20	67.5	79.5	M20	6318C3	6316C3
315SA	315	35	395	28	1162	322	180	M63X1.5	65	140	125	7.5	40	18	58	69	M20	6316C3	6314C3
315SB	315	35	395	28	1192	322	180	M63X1.5	80	170	160	5	40	22	71	85	M20	6320C3	6316C3
315MA	315	45	420	28	1243	322	180	M63X1.5	65	140	125	7.5	40	18	58	69	M20	6316C3	6314C3
315MB	315	45	420	28	1273	322	180	M63X1.5	80	170	160	5	40	22	71	85	M20	6320C3	6316C3
315LA	315	45	420	28	1346	322	180	M63X1.5	65	140	125	7.5	40	18	58	69	M20	6316C3	6314C3
315LB	315	45	420	28	1376	322	180	M63X1.5	80	170	160	5	40	22	71	85	M20	6320C3	6316C3
315CA	315	45	485	28	1484	372	200	M72X2	75	140	125	7.5	40	20	67.5	79.5	M20	6316C3	6316C3
315CB	315	45	485	28	1514	372	200	M72X2	95	170	160	5	48	25	86	100	M24	6322C3	6322C3
315DA	315	45	485	28	1674	372	200	M72X2	75	140	125	7.5	40	20	67.5	79.5	M20	6316C3	6316C3
315DB	315	45	485	28	1704	372	200	M72X2	95	170	160	5	48	25	86	100	M24	6322C3	6322C3
355MA	355	45	480	28	1717	372	230	M72X2	80	170	140	5	40	22	71	85	M20	6318C3	6318C3
355MB	355	45	480	28	1757	372	230	M72X2	100	210	180	5	48	28	90	106	M24	6322C3	6322C3
355LA	355	45	480	28	1717	372	230	M72X2	80	170	140	5	40	22	71	85	M20	6318C3	6318C3
355LB	355	45	480	28	1757	372	230	M72X2	100	210	180	5	48	28	90	106	M24	6322C3	6322C3
355CA	355	45	540	28	1795	372	230	M72X2	80	170	140	5	40	22	71	85	M20	6318C3	6318C3
355CB	355	45	540	28	1835	372	230	M72X2	100	210	180	5	48	28	90	106	M24	6322C3	6322C3

Note:

1. All dimensions are in mm.
2. Tolerance of shaft end diameter D: 1) $\varnothing 55\sim\varnothing 100$:m6
3. Tolerance of shaft center height H : 1) 80~250: +0, -0.5, 2) 280~355: +0, -1
4. Data are subject to change without prior notice