

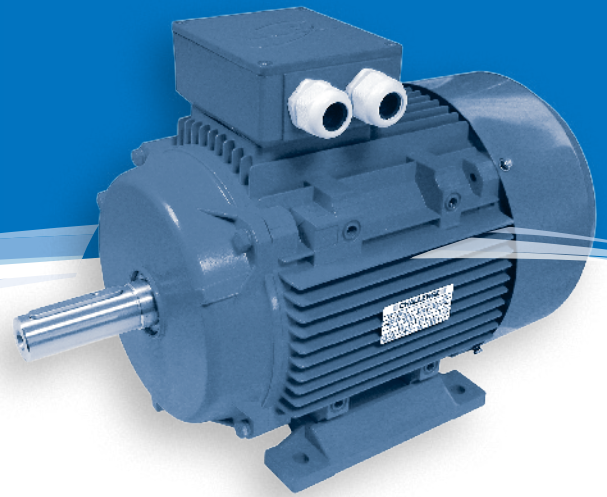


Electric Motors

ENGLISH
ISSUE 2

www.challengept.com





Features

Three phase motors

- 2, 4, 6 and 8 pole up to 315kW available complying to IEC 60034,
- IEC 60034 specifies energy-efficiency classes for single-speed, three-phase, cage-induction motors with 2, 4 or 6 poles. It classifies three classes: IE1 (standard), IE2 (high) and IE3 (premium). For each class the efficiency is defined for a rated output range from 0.75 to 375 kW. In the European Community the IE2 class is mandatory for all new motors since 16 June 2011. The IE3 class became mandatory from 1 January 2015
- Premium efficiency - complying with IE3 efficiency levels according to IEC60034-30
- From frame size 56 to 355
- Manufactured from high grade cast aluminium alloy or GG25 Cast Iron with engineered grade plastic terminal boxes
- Multi-mount detachable feet as standard
- Full range of mounting positions available
- Voltage ratings of 380v / 400v / 415v
- 50 Hz or 60 Hz rated frequencies

Single phase motors

- Manufactured from high grade cast aluminium alloy with engineered grade plastic terminal boxes
- Fully comply with IEC 60034
- Frames sizes 56 - 100
- Voltage ratings of 110v / 220v / 230v / 240v
- 50 Hz and 60 Hz rated frequencies
- Available with permanent capacitors or as capacitor start – capacitor run

General Information

CHALLENGE series three phase asynchronous AC electric motors, Are totally enclosed fan cooled (IC-411) squirrel caged type, With IP55 enclosure protection, Class F insulation and SI continuous Duty/Rating.

The motors are manufactured from high grade die cast aluminium alloy and come with multi-mount detachable feet as standard, which allows for various mounting positions to be achieved.

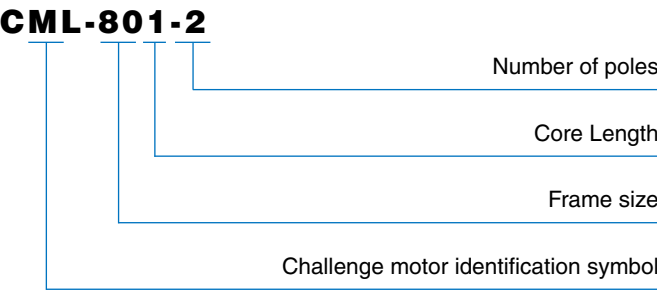
The temperature ratings are -15° C to +40° degrees C to a maximum altitude of 1000 metres above sea level.

CHALLENGE motors have voltage ratings of 380v / 400v / 415v.

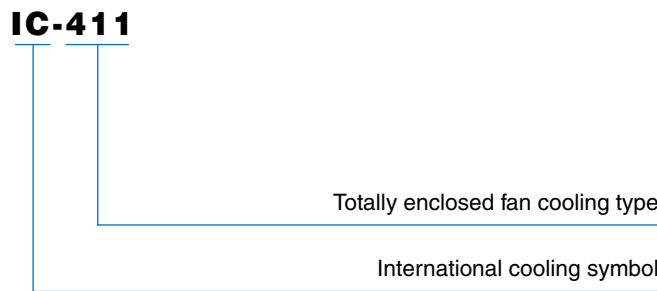
They have a rated frequency of 50Hz and 60Hz. Connection is STAR up to and including 3kW and from 4kW and above the connection is DELTA, allowing for STAR/DELTA starting.

Designation

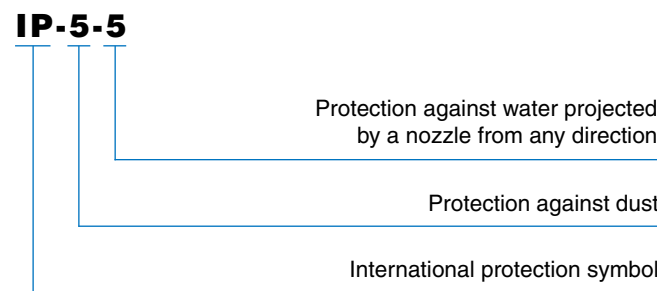
Motor Identification Symbol



Cooling Method



Protection Class



Standards and Regulations



CE Marking

Our three phase induction motors comply with the requirements of the following international standard:

IEC 60034

Together with the Low Voltage Directive 73/23 (1973), modified by the Directive 93/68 (1993) and the EMC-Directive 89/336.

They comply with the requirements of the EC Directive Machines 89/392. In accordance with this Directive induction motors are components intended solely for integration into other machines. Commissioning is forbidden until conformity of the end product with this Directive is proved!

The  symbol was applied for the first time in 1995.



Mechanical Design

Degrees of protection

Degrees of protection for mechanical machines are designated in accordance with IEC 60034-5 by the letters **IP** and two characteristic numerals.

First numeral:	
Protection against contact and ingress of foreign bodies	
IP	Description
0	No special protection
1	Protection against solid foreign bodies larger than 50 mm (Example: inadvertent contact with a hand)
2	Protection against solid foreign bodies larger than 12 mm (Example: inadvertent contact with fingers)
3	Protection against solid foreign bodies larger than 2.5 mm (Example: Wires, tools)
4	Protection against solid foreign bodies larger than 1 mm (Example: Wires, bands)
5	Protection against dust (harmful deposits of dust)
6	Complete protection against dust. Is not described for electrical machines to IEC 34-5.

Second numeral:	
Protection against ingress of water	
IP	Description
0	No special protection
1	Protection against vertically falling water drops (condensation)
2	Protection against dropping water when inclined by up to 15°
3	Protection against waterspray at up to 60° from vertical
4	Protection against water splashed from any direction
5	Protection against water projected by a nozzle from any direction
6	Protection against heavy seas or water projected in powerful jets
7	Protection when submerged between 0.15 m and 1 m
8	Protection when continuously submerged in water at conditions agreed between the manufacturer and the user

Challenge motors conform to protection IP 55 / IEC 60034-5.

The standard design for horizontal mounting is suitable for indoor and protected outdoor installation, climate group temperature ratings -15° C to +40° C.

For unprotected outdoor installations, including all installations in severe climatic conditions such as high humidity, large storms, extremely dusty or aggressive industrial environments etc, as well as all vertical mountings, require special protective measures as recommended below:

- Protective cowl (for vertical *shaft-down* motors)
- For vertical *shaft-up* motors additional bearing seal and flange drainage
- Special paint finish
- Treatment of winding with protective moisture-proof varnish
- Anti-condensation heating
- Condensation drain holes

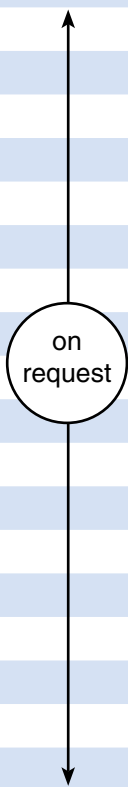
The special measures to be applied have to be agreed with the factory once the conditions of installation have been settled.

The corresponding conditions of installation have to be clearly indicated in the order.

Conditions of Installation

Challenge motors are designed for operation at altitudes ≤ 1000 m above sea level and at ambient temperatures of up to 40° C. Exceptions are indicated on the rating plate.

Permissible temperature rises to various standards

Standard/Regulation	Temperature of coolant	Permissible temperature rise in K (measured by resistance method) Temperature class		
		B	F	H
VDE 0530 part 1	40	80	105	125
International IEC 34-1	40	80	105	125
Britain BS 2613	40	80	105	
Canada CSA	40	80	105	
USA NEMA and ANSI	40	80	105	
Italy CEI	40	80	105	
Sweden SEN	40	80	105	
Norway NEK	40	80	105	
Belgium NBN	40	80	105	
France NF	40	80	105	
Switzerland SEV	40	80	105	
India IS	40	80	-	
Germanischer Lloyd ¹⁾	45	75	90	
American Bureau of Shipping ¹⁾	50	70	95	
Bureau Veritas ¹⁾	45	70	100	
Norske Veritas ¹⁾	45	70	90 ²⁾	
Lloyds Register ¹⁾	45	70	90	
Registro Italiano Navale ¹⁾	45	70	90	
Korean Register ¹⁾	50	70	90	
China Classification Society ¹⁾	45	75	95	

¹⁾ Classification societies for marine motors

²⁾ Only with special approval

Standards and Regulations

The motors comply with the relevant Standards and Regulations

Title Electrical	IEC	EU CENELEC	D DIN/VDE	I CEI/UNEL	GB BS	F NFC	E UNE
General stipulations for electrical machines	60034-1	EN 60034-1	DIN EN 60034-1	CEI EN 60034-1	4999-1 4999-69	51-200 51-111	UNE EN 60034-1
Rotating electrical machines: methods for determining losses and efficiency using tests	60034-2	HD 53 2	DIN EN 60034-2	CEI EN 60034-2	4999-34	51-112	UNE EN 60034-2
Terminal markings and direction of rotation of rotating electrical machines	60034-8	HD 53 8 S4	DIN VDE 0530-8	CEI 2-8	4999-3	51-118	20113-8-96
Starting performance	60034-12	EN 60034-12	DIN EN 6034-12	CEI EN 60034-12	4999-112		UNE EN 60034-12
Standard voltages	60038	HD 472 S1	DIN IEC 60038	CEI 8-6			
Insulating materials	60085		DIN IEC 60085	CEI 15-26			

Mechanical							
Dimensions and output ratings	60072		DIN EN 50347	UNEL 13113			
Mounting dimensions and relationship frame sizes-output ratings, IM B3	60072	HD 231	DIN 42673-1	UNEL 13113	499-10 51-110	51-105 51-104	20106-1/26 1980
Mounting dimensions and relationship frame sizes-output ratings, IM B5	60072	HD 231	DIN 42677-1	UNEL 13117		20106-2-74	
Mounting dimensions and relationship frame sizes-output ratings, IM B14	60072	HD 231	DIN 42677-1	UNEL 13118	499-10 51-110	51-105 51-104	20106-2-IC-80
Cylindrical shaft ends for electric motors	60072	HD 231	DIN 748-3	UNEL 13502	4999-10	51-111	
Degrees of protection	60034-5	EN 60034-5	DIN IE60034-5	CEI IE60034-5	4999-20	EN 60034-5	20111-5
Methods of cooling	60034-6	EN 60034-6	DIN EN60034-6	CEI EN60034-6	4999-21		EN 60034-6
Mounting arrangements	60034-7	EN 60034-7	DIN EN60034-7	CEI EN60034-7	4999-22	51-117	EN 60034-7
Noise limits	60034-9	EN 60034-9	DIN EN60034-9	CEI EN60034-9	4999-51	51-119	EN 60034-9
Mechanical vibration	60034-14	EN 60034-14	DIN EN60034-14	CEI EN60034-14	4999-50	51-111	EN 60034-14
Mounting flanges			DIN 42948	UNEL 13501			
Tolerances of mounting and shaft extensions			DIN 42955	UNEL 13501/ 13502			
Classification of environmental conditions	600721-2-1		DIN IEC 60721-2-1	CEI 75-1			
Mechanical vibration; balancing	21940		ISO 21940-32:2012				

Starting Options

Connection

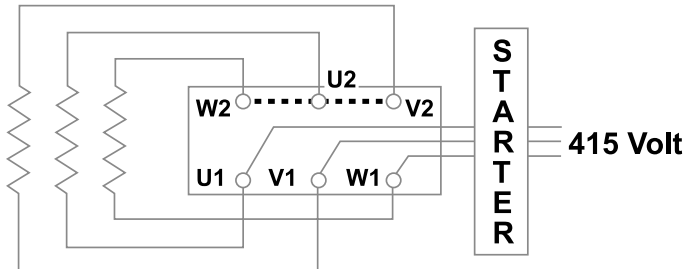
A motor's rated voltage must agree with the power supply line-to-line voltage. Care must therefore be taken to ensure the correct connection to the motor terminals.

Internal connections, Voltages and VF drive selection.

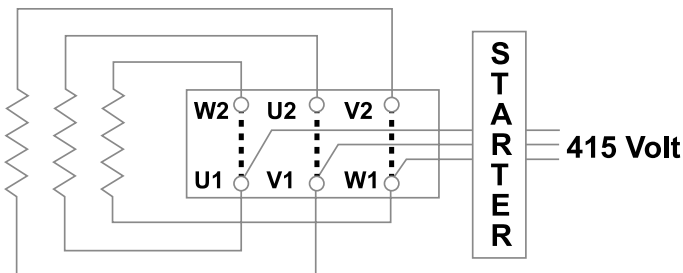
Standard terminal connections for motors 3.0 kW and below is 230 volt delta / 400 volt star. These motors are designed for 400 volt Direct On Line (D.O.L.) starting, when connected in the star configuration. They are also suitable for operation with 230 volt three phase variable frequency drives, when connected in the delta configuration.

Standard terminal connections for motors 4.0 kW and above is 400 volt delta / 690 volt star. These motors are designed for 400 volt Direct On Line (D.O.L.) starting, when connected in the delta configuration. They are also suitable for operation with 400 volt three phase variable frequency drives. Alternatively they can be operated D.O.L. in the star configuration from a 690 volt supply or with a 690 volt variable frequency drive. In this case the drive must be supplied with an output reactor to protect the winding insulation. These motors are also suitable for 400 volt star-delta starting as described below.

Motor connected for D.O.L. starting with bridges in place for star connection (3.0.kW and below)



Motor connected for D.O.L. starting with bridges in place for delta connection (4.0.kW and above)



D.O.L. Starters

When an electric motor is started by direct connection to the power supply (D.O.L.), it draws a high current, called the 'starting current', which is approximately equal in magnitude to the locked rotor current I_S . As listed in the performance data locked rotor current can be up to 8 times the rated current I_N of the motor. In circumstances where the motor starts under no load or where high starting torque is not required, it is preferable to reduce the starting current by one of the following means.

Star - Delta starting

Motors 4.0 kW and above are suitable for the star-delta starting method. Through the use of a star-delta starter, the motor terminals are connected in the star configuration during starting, and reconnected to the delta configuration when running. The benefits of this starting method are a significantly lower starting current, to a value about $\frac{1}{3}$ of the D.O.L. starting current, and a corresponding starting torque also reduced to about $\frac{1}{3}$ of its D.O.L. value. It should be noted that a second current surge occurs on changeover to the delta connection. The level of this surge will depend on the speed the motor has reached at the moment of changeover.

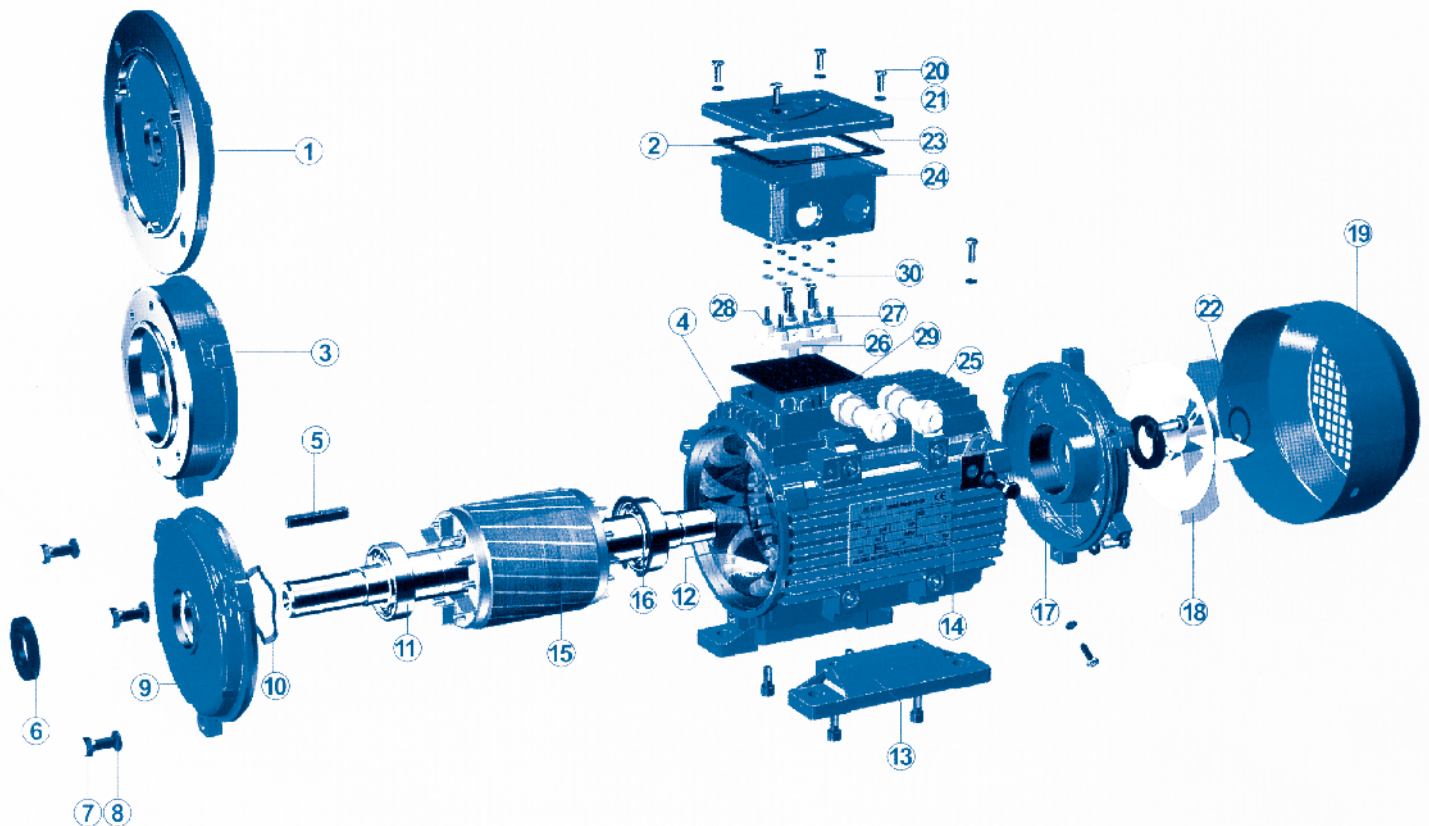
Electronic soft starters

Through the use of an electronic soft starter, which controls such parameters as current and voltage, the starting sequence can be totally controlled. The starter can be programmed to limit the amount of starting current and by limiting the rate of the current increase the startup time is extended. Where large heavy loads are to be started it is especially important to extend the startup time.

Variable frequency drives

Variable frequency drives are primarily recognized for their ability to manipulate power from a constant 3 phase 50 Hz power supply converting it to variable frequency power. This enables the speed of motor to be matched to its load in a flexible and energy efficient manner. The only way of producing starting torque equal to full load torque with full load current is by using VF drives. The functionally flexible VF drive is also commonly used to reduce energy consumption on fans, pumps and compressors and offer a simple and repeatable method of changing speeds or flow rates.

Components

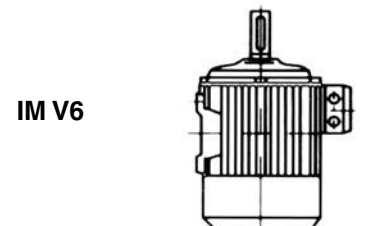
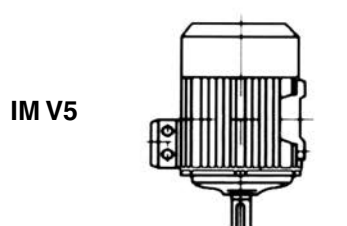
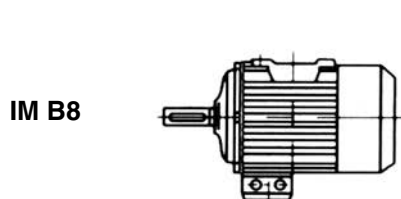
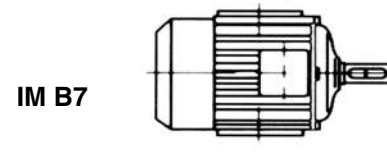
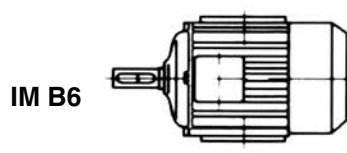
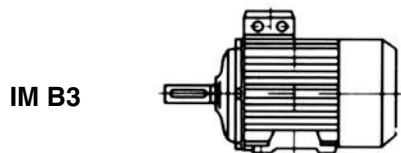


- | | | |
|---------------------------|----------------------------|------------------------------|
| 1. B5 Flange | 11. Bearing | 21. Washer |
| 2. Gasket | 12. Stator | 22. Fan clamp |
| 3. B14 Flange | 13. Multimount Feet | 23. Terminal box lid |
| 4. Housing | 14. Name plate | 24. Terminal box base |
| 5. Key | 15. Rotor | 25. Cable gland |
| 6. Oil Seal | 16. Circlip | 26. Terminal board |
| 7. Bolt | 17. Rear end shield | 27. Brass lug |
| 8. Spring washer | 18. Fan | 28. Brass nut |
| 9. Front endshield | 19. Fan cowl | 29. Earth mark |
| 10. Wave washer | 20. Screw | 30. Brass washer |

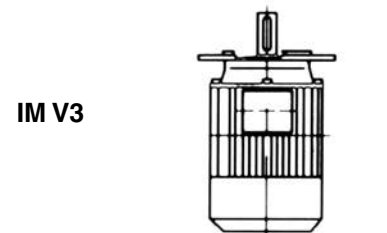
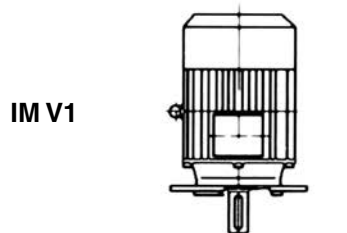
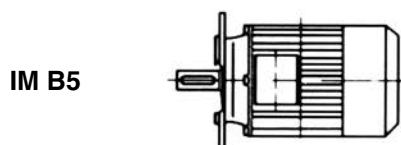
Mounting Arrangements

Mounting arrangements to IEC 60034-7

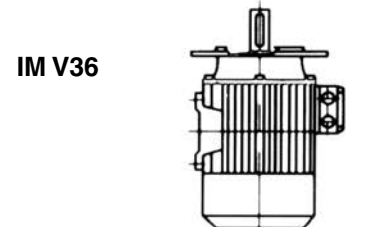
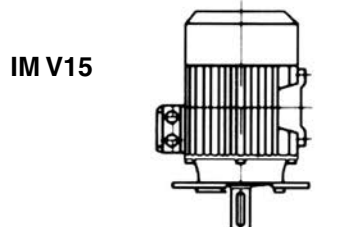
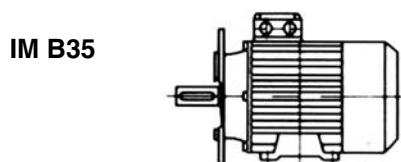
IM B3 = Foot mounted



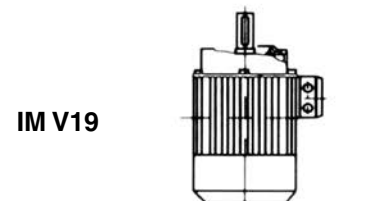
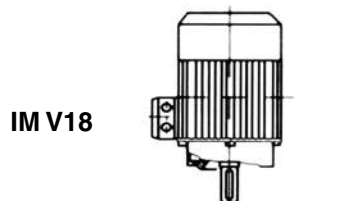
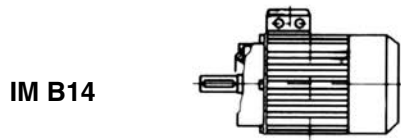
IM B5 = Flange mounted



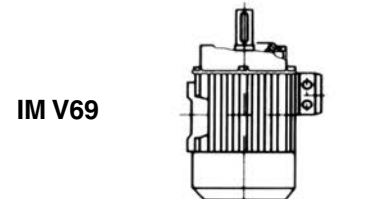
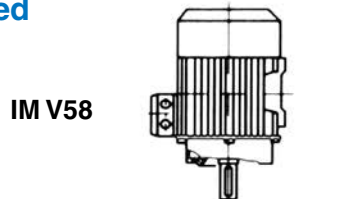
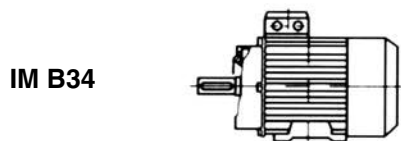
IM B35 = Foot & flange mounted



IM B14 = Reduced flange mounted



IM B34 = Foot & reduced flange mounted



Technical Data IE3

3000/3600rpm, 2-pole, 50/60Hz, IP55

Type	Nominal Output 50Hz		Speed 50Hz Rpm	Rated current 50Hz In A			Power Factor 50Hz Cosφ 10%	Efficiency at 50Hz				Rated torque 50Hz Nm	Starting current	Starting torque
	Frame Size	kW		380V	400V	415V		Class	Load					
									100%	75%	50%			
EML 80M1-2	80M	0.75	2882	1.68	1.59	1.54	0.83	IE3	81.4	81.4	78.2	2.47	7	3.1
EML 80M2-2	80M	1.1	2883	2.43	2.31	2.23	0.83	IE3	83	83	80.4	3.7	7.6	3.5
EML 90S -2	90S	1.5	2901	3.2	3.04	2.93	0.84	IE3	84.8	84.8	82.7	4.91	7.8	3.5
EML 90L-2	90L	2.2	2901	4.56	4.33	4.17	0.85	IE3	86.2	86.2	85.1	7.36	8.4	3.6
EML 100L-2	100L	3	2906	6.04	5.73	5.53	0.87	IE3	87.2	87.2	85.9	9.8	8.4	3.6
EML 112M-2	112M	4	2918	7.65	7.27	7	0.9	IE3	88.1	88.1	87.9	13.4	8.4	2.5
EML 132S2	132S	5.5	2941	10.7	10.2	9.83	0.87	IE3	89.2	89.2	87.9	18.2	8.1	2.4
EML 132S2-2	132S	7.5	2938	14.2	13.5	13	0.89	IE3	90.1	90.1	89.6	24.2	8.2	2.5
EML 132M-2	132M	11	2930	20.6	19.6	18.9	0.89	IE3	91.2	91.2	91.2	36.5	7.7	2.5
EML 160M1-2	160M	15	2955	27.8	26.4	25.5	0.89	IE3	91.9	91.9	91.5	48.2	8.2	2.4
EML 160M2-2	160M	18.5	2954	33.7	32	30.8	0.9	IE3	92.4	92.4	92.3	60.3	8.2	2.4
EML 160L1-2	160L	22	2954	39.9	37.9	36.6	0.9	IE3	92.7	92.7	92.7	72.3	8.2	2.4
EML 160L2-2	160L	22	2963	40.8	38.7	37.3	0.88	IE3	92.7	92.7	91.7	72.1	7.8	2.1
EML 180M1-2	180M	30	2958	54.1	51.4	49.5	0.9	IE3	93.3	93.3	92.7	96.3	7.1	1.9
EML 180M2-2	180M	30	2973	57.2	54.3	52.4	0.85	IE3	93.3	93.3	92	95.8	7.5	2.1
EML 200L1-2	200L	37	2973	69	65.5	63.1	0.87	IE3	93.7	93.7	92.7	120	7.4	2.1
EML 200L1-2	200L	45	2972	83.3	79.1	76.3	0.87	IE3	94	94	93.3	144	7.3	2.2
EML 200L1-2	200L	45	2976	82	77.9	75.1	0.89	IE3	94	94	93.1	144	7.2	1.7
EML 225M1-2	225M	55	2975	99.2	94.3	90.9	0.89	IE3	94.3	94.3	93.7	179	7.2	1.8
EML 225M1-2	225M	55	2980	98.2	93.3	90	0.9	IE3	94.3	94.3	93.7	179	7.5	1.8
EML 250M1-2	250M	75	2981	134	128	123	0.9	IE3	94.8	94.8	94	239	8.2	2.1
EML 250M1-2	250M	75	2982	133	126	122	0.9	IE3	94.8	94.8	93.8	239	7.5	1.8
EML 280S-2	280S	90	2981	159	151	145	0.91	IE3	95	95	94.3	287	7.3	1.8
EML 280M1-2	280M	110	2983	194	184	177	0.91	IE3	95.3	95.3	94.7	353	8	2
EML 280M2-2	280M	110	2983	196	186	180	0.89	IE3	95.3	95.3	94	358	6.9	1.7
EML 315S-2	315S	132	2983	235	224	216	0.89	IE3	95.5	95.5	94.4	418	7.1	1.8
EML 315M-2	315M	160	2983	284	270	260	0.89	IE3	95.7	95.7	94.4	513	7.1	1.8
EML 315L1-2	315L	200	2984	356	339	326	0.89	IE3	95.8	95.8	94.9	644	7.1	1.9
EML 315L2-2	315L	250	2983	443	420	405	0.9	IE3	95.8	95.8	94.7	800	6.8	1.7
EML 355M2-2	355M	315	2983	554	526	507	0.9	IE3	95.8	95.8	94.8	1014	6.9	1.8
EML 355L1-2	355L	355	2986	626	595	573	0.9	IE3	95.8	95.8	95	1133	7.9	2.2
EML 355L2-2	355L	375	2986	659	626	603	0.9	IE3	95.8	95.8	95.2	1200	7.8	2.2

From frame sizes 180 to 200 the motor can be supplied in a cast iron construction (ref CMC).

Every effort has been taken to ensure that the data listed in this catalogue is correct. Challenge accepts no liability for any inaccuracies or damage caused.

Technical Data IE3

1500/1800rpm, 4-pole, 50/60Hz, IP55

Type	Nominal Output 50Hz		Speed 50Hz Rpm	Rated current 50Hz In A			Power Factor 50Hz Cosφ 10%	Efficiency at 50Hz				Rated torque 50Hz Nm	Starting current	Starting torque
	Frame Size	Kw		380V	400V	415V		Class	Load					
									100%	75%	50%			
EML 80M1-4	80M	0.75	1441	1.79	1.7	1.64	0.77	IE3	82.9	82.9	80.1	4.94	6.3	2.8
EML 90S1-4	90S	1.1	1450	2.55	2.42	2.33	0.78	IE3	84.5	84.5	81.6	7.36	7.2	3
EML 90S2-4	90L	1.5	1449	3.4	3.23	3.11	0.78	IE3	85.6	85.6	83.2	9.83	7.4	3.2
EML 100L1-4	100L	2.2	1462	4.75	4.51	4.35	0.81	IE3	86.9	86.9	85.8	14.6	8	2.7
EML 100L2-4	100L	3	1460	6.28	5.97	5.75	0.83	IE3	87.8	87.8	87.3	19.5	8.1	2.9
EML 112M-4	112M	4	1459	8.36	7.94	7.65	0.82	IE3	88.7	88.7	88.2	26.9	8	2.7
EML 132S-4	132S	5.5	1470	11.4	10.8	10.4	0.82	IE3	89.6	89.6	89.6	36.4	6.9	2.2
EML 132M1-4	132M	7.5	1467	15.2	14.4	13.9	0.83	IE3	90.4	90.4	90.4	48.6	6.8	2.3
EML 132M2-4	132M	11	1468	22.8	21.6	20.9	0.8	IE3	91.4	91.4	91.4	72.8	7.4	2.8
EML 160M1-4	160M	11	1476	21.7	20.7	19.9	0.84	IE3	91.4	91.4	91.4	72.4	7.3	2.4
EML 160M2-4	160L	15	1476	29.2	27.8	26.8	0.85	IE3	92.1	92.1	92.1	96.5	7.5	2.5
EML 180M1-4	180M	18.5	1477	36.8	35	33.7	0.83	IE3	92.6	92.6	92.3	121	7.1	2.2
EML 180L1-4	180L	22	1478	43.8	41.6	40.1	0.82	IE3	93	93	92.7	145	7.5	2.4
EML 180L2-4	180L	30	1475	57.8	54.9	53	0.84	IE3	93.6	93.6	93.4	193	6.9	2.2
EML 200L1-4	200L	30	1482	57.1	54.2	52.3	0.85	IE3	93.6	93.6	93.5	192	8	2.6
EML 200L2-4	200L	37	1481	69.8	66.3	63.9	0.86	IE3	93.9	93.9	93.8	240	7.7	2.6
EML 225S-4	225S	37	1483	70.8	67.2	64.8	0.85	IE3	93.9	93.9	93.8	240	7.1	2.2
EML 225M1-4	225M	45	1484	85	80.7	77.8	0.85	IE3	94.2	94.2	94.2	288	7.5	2.4
EML 225M2-4	225M	55	1485	104	99	95.4	0.85	IE3	94.6	94.6	94.5	360	8	2.7
EML 250M1-4	250M	55	1488	103	97.7	94.2	0.86	IE3	94.6	94.6	94.2	359	7.1	2
EML 250M2-4	250M	75	1487	140	133	128	0.86	IE3	95	95	94.5	479	7	2
EML 280S-4	280S	75	1489	137	130	126	0.87	IE3	95	95	94.2	478	6.3	2.1
EML 280M1-2	280M	90	1489	163	155	149	0.88	IE3	95.2	95.2	94.8	574	6.1	2
EML 280M2-2	280M	110	1488	198	188	181	0.88	IE3	95.5	95.5	95.1	718	6	2.1
EML 315S-4	315S	110	1489	204	194	187	0.86	IE3	95.5	95.5	94.7	717	7.1	2
EML 315M-4	315M	132	1489	243	231	223	0.86	IE3	95.6	95.6	95	837	7.3	2.1
EML 315L1-4	315L	160	1489	290	275	265	0.88	IE3	95.9	95.9	95.4	1028	7.3	2.2
EML 315L2-4	315L	200	1489	363	345	332	0.87	IE3	96	96	95.5	1291	7.2	2.2
EML 355M-4	355M	250	1491	446	424	408	0.89	IE3	96	96	96	1600	7.1	1.9
EML 355L1-4	355L	315	1491	557	529	510	0.9	IE3	96	96	96	2030	7.1	1.9
EML 355L2-4	355L	355	1491	629	598	576	0.89	IE3	96	96	96	2268	7.2	2
EML 355L3-4	355L	375	1491	663	630	607	0.9	IE3	96	96	96	2403	6.8	1.9

Technical Data IE3

1000/1200rpm, 6-pole, 50/60Hz, IP55

Type	Nominal Output 50Hz		Speed 50Hz Rpm	Rated current 50Hz In A			Power Factor 50Hz Cosφ 10%	Efficiency at 50Hz				Rated torque 50Hz Nm	Starting current	Starting torque
	Frame Size	Kw		380V	400V	415V		Class	Load					
									100%	75%	50%			
EML 90S-6	90S	0.75	953	2.1	2	1.92	0.69	IE3	78.9	78.9	76.2	7.47	5.6	3.2
EML 90L-6	90L	1.1	947	2.99	2.84	2.74	0.69	IE3	81	81	77.3	11.3	5.4	3.2
EML 100L-6	100L	1.5	972	3.82	3.62	3.49	0.72	IE3	82.5	82.5	78.8	14.7	6.6	2.6
EML 112M-6	112M	2.2	963	5.31	5.04	4.86	0.75	IE3	84.3	84.3	83.7	22.2	6.5	2.7
EML 132S-6	132S	3	973	6.95	6.6	6.37	0.77	IE3	85.6	85.6	85.6	29.3	5.6	1.9
EML 132M1-6	132M	4	975	9.14	8.68	8.37	0.77	IE3	86.8	86.8	86.8	40.2	6	2.1
EML 132M2-6	132M	5.5	975	12.4	11.8	11.4	0.77	IE3	88	88	88	54.9	6.2	2.2
EML 160M-6	160M	7.5	978	15.7	14.9	14.4	0.82	IE3	89.1	89.1	89.1	72.8	5.6	1.8
EML 160L1-6	160L	9.3	980	19.6	18.7	18	0.8	IE3	89.8	89.8	89.3	90.9	6.1	2
EML 160L2-6	160L	11	980	23	21.9	21.1	0.8	IE3	90.3	90.3	89.9	109	6.1	2.1
EML 180L1-6	180L	15	984	31.9	30.3	29.2	0.78	IE3	91.2	91.2	90.6	145	6.9	2.4
EML 180L2-6	180L	18.5	983	38.7	36.7	35.4	0.79	IE3	91.7	91.7	91.1	181	6.6	2.3
EML 200L1-6	200L	18.5	986	38.6	36.6	35.3	0.8	IE3	91.7	91.7	91.7	181	6.3	2.1
EML 200L2-6	200L	22	985	45.3	43	41.4	0.8	IE3	92.2	92.2	92.2	217	6.1	2.1
EML 200L3-6	200L	30	985	62	58.9	56.8	0.79	IE3	92.9	92.9	92.4	289	6.2	2.2
EML 225M1-6	225M	30	987	58.8	55.9	53.9	0.83	IE3	92.9	92.9	92.4	289	6.8	2.1
EML 225M2-6	225M	37	987	72.3	68.7	66.2	0.83	IE3	93.3	93.3	92.7	361	6.9	2.2
EML 250M1-6	250M	37	987	72	68.4	65.9	0.84	IE3	93.3	93.3	93.2	361	6.6	2.2
EML 250M2-6	250M	45	987	87	82.6	79.6	0.84	IE3	93.7	93.7	93.4	433	6.6	2.2
EML 280S-6	280S	45	989	88.6	84.1	81.1	0.82	IE3	93.7	93.7	92.8	432	6	1.7
EML 280M1-6	280M	55	989	106	101	97.3	0.84	IE3	94.1	94.1	93.5	533	6	1.8
EML 280M2-6	280M	75	990	143	136	131	0.84	IE3	94.6	94.6	94.1	719	6.6	2
EML 315S-6	315S	75	991	147	139	135	0.82	IE3	94.6	94.6	94.4	720	6	1.8
EML 315M-6	315M	90	992	176	168	161	0.82	IE3	95	95	94.7	864	6.1	1.9
EML 315L1-6	315L	110	992	214	203	196	0.82	IE3	95.3	95.3	94.8	1080	6.4	2
EML 315L2-6	315L	132	992	257	244	235	0.82	IE3	95.5	95.5	95.1	1258	6.5	2.1
EML 355M1-6	355M	160	992	302	287	277	0.84	IE3	95.8	95.8	95.4	1543	6.6	2
EML 355M2-6	355M	200	992	378	359	346	0.84	IE3	95.8	95.8	95.6	1938	6.8	2.1
EML 355L1-6	355L	250	992	470	446	430	0.84	IE3	95.8	95.8	95.7	2404	6.9	2.2

Technical Data IE3

750/900rpm, 8-pole, 50/60Hz, IP55,

Type	Nominal Output 50Hz		Speed 50Hz Rpm	Rated current 50Hz In A			Power Factor 50Hz Cosφ 10%	Efficiency at 50Hz				Rated torque 50Hz Nm	Starting current	Starting torque
	Frame Size	Kw		380V	400V	415V		Class	Load					
									100%	75%	50%			
EML 100L-6	100L	0.75	721	2.17	2.06	1.99	0.7	IE3	75	75	73.8	9.88	5.1	1.9
EML 100L-6	100L	1.1	719	3.03	2.88	2.77	0.71	IE3	77.7	77.7	74.8	14.9	5	1.9
EML 112M-6	112M	1.5	710	3.93	3.74	3.6	0.73	IE3	79.7	79.7	79.1	20.1	5	1.8
EML 132S-6	132S	2.2	725	5.67	5.38	5.19	0.72	IE3	81.9	81.9	81.9	29.5	5	1.8
EML 132M1-6	132M	3	725	7.57	7.19	6.93	0.72	IE3	83.6	83.6	83.6	39.4	5	1.8
EML 160M-6	160M	4	730	9.94	9.45	9.11	0.72	IE3	85	85	85	53.8	5.3	1.7
EML 160M-6	160M	5.5	730	13.2	12.6	12.1	0.73	IE3	86.5	86.5	86.5	73.4	5.3	1.7
EML 160L1-6	160L	7.5	728	17.5	16.7	16.1	0.74	IE3	87.8	87.8	87.7	98	5.4	1.8
EML 180L1-6	180L	11	730	25	23.7	22.9	0.75	IE3	89.3	89.3	89.1	147	6.4	1.7
EML 180L1-6	180L	15	730	33.6	31.9	30.7	0.75	IE3	90.4	90.4	89.7	195	6.6	1.8
EML 200L1-6	200L	15	739	34.7	32.9	31.8	0.73	IE3	90.4	90.4	88.7	193	5.5	1.9
EML 200L1-6	200L	18.5	738	42.2	40	38.6	0.73	IE3	91.1	91.1	89.2	242	5.2	1.8
EML 225S-6	225S	18.5	738	39.1	37.1	35.8	0.79	IE3	91.1	91.1	90.5	241	5.2	1.7
EML 225M1-6	225M	22	738	45.7	43.4	41.9	0.8	IE3	91.5	91.5	91.1	290	5.2	1.7
EML 225M1-6	225M	30	739	62.7	59.5	57.4	0.79	IE3	92.4	92.4	91.4	386	5.6	1.9
EML 250M1-6	250M	30	739	61.1	58	55.9	0.81	IE3	92.4	92.4	92.2	386	5.3	1.8
EML 250M1-6	250M	37	740	76.1	72.3	69.7	0.8	IE3	92.9	92.9	92.4	482	5.7	2
EML 280S-6	280S	37	742	75.7	71.9	69.3	0.8	IE3	92.9	92.9	92	480	5.8	1.8
EML 280M1-6	280M	45	742	92	87.4	84.2	0.8	IE3	93.5	93.5	92.6	576	5.6	1.8
EML 280M2-6	280M	55	741	112	106	103	0.79	IE3	93.9	93.8	93	721	5.5	1.8
EML 315S-6	315S	55	742	121	115	111	0.75	IE3	92.5	92.5	91.4	720	5.2	1.7
EML 315S-6	315S	75	743	163	154	149	0.75	IE3	93.1	93.1	92.1	960	5.3	1.8
EML 315S-6	315S	90	743	194	184	177	0.76	IE3	93.4	93.4	92.6	1151	5.4	1.9
EML 315L1-6	315L	110	742	230	219	211	0.78	IE3	93.7	93.7	93.3	1440	5.3	1.8
EML 315L1-6	315L	132	743	266	253	244	0.8	IE3	94	94	93.8	1679	5.3	1.7
EML 355M2-6	355M	110	743	216	206	198	0.82	IE3	93.7	93.7	93.3	1439	6.1	1.4
EML 355M2-6	355M	132	742	254	242	233	0.84	IE3	94	94	93.5	1679	5.9	1.4
EML 355M2-6	355M	150	742	288	274	264	0.84	IE3	94.2	94.2	93.8	1920	5.9	1.4
EML 355M2-6	355M	160	742	308	292	282	0.84	IE3	94.3	94.3	93.7	2444	6.2	1.5
EML 355M2-6	355M	185	742	352	335	323	0.84	IE3	94.5	94.5	94	2399	6.1	1.5
EML 355L1-6	355L	200	742	380	361	348	0.85	IE3	94.6	94.6	94	2591	6.3	1.6
EML 355L1-6	355L	220	743	418	397	382	0.85	IE3	94.6	94.6	94	2878	6.5	1.6

Every effort has been taken to ensure that the data listed in this catalogue is correct. Challenge accepts no liability for any inaccuracies or damage caused.

Cable Entry and Bearing Sizes

Cable Entry

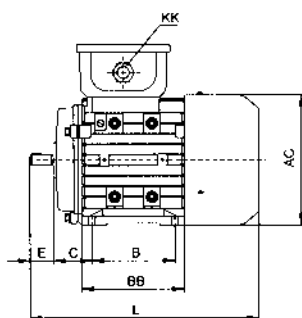
Classified number	Frame size	Max .fl.amps	Entry size
1	63-80	2.6	1 x M20x1.5
2	90	6.8	1 x M25x1.5
3	100-132	15.4	2 x M32x1.5
4	160-180	42.5	2 x M40x1.5
5	200	84.2	2 x M50x1.5

Bearing Size

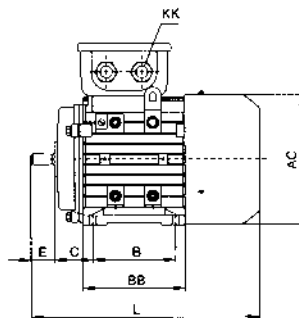
Frame size	Poles	Drive End	Non-Drive End
56	2 to 4	6201 2RS-C3 (6201 ZZ-C3)	6201 2RS-C3 (6201 ZZ-C3)
63	2 to 6	6201 2RS-C3 (6201 ZZ-C3)	6201 2RS-C3 (6201 ZZ-C3)
71	2 to 8	6202 2RS-C3 (6202 ZZ-C3)	6202 2RS-C3 (6202 ZZ-C3)
80	2 to 8	6204 2RS-C3 (6204 ZZ-C3)	6204 2RS-C3 (6204 ZZ-C3)
90	2 to 8	6205 2RS-C3 (6205 ZZ-C3)	6205 2RS-C3 (6205 ZZ-C3)
100	2 to 8	6206 2RS-C3 (6206 ZZ-C3)	6206 2RS-C3 (6206 ZZ-C3)
112	2 to 8	6206 2RS-C3 (6206 ZZ-C3)	6206 2RS-C3 (6206 ZZ-C3)
132	2 to 8	6208 2RS-C3 (6208 ZZ-C3)	6208 2RS-C3 (6208 ZZ-C3)
160	2 to 8	6309 2RS-C3 (6309 ZZ-C3)	6309 2RS-C3 (6309 ZZ-C3)
180	2 to 8	6311 ZZ-C3	6311 ZZC3
200	2 to 8	6312 ZZ-C3	6312 ZZC3

Mounting and Overall Dimensions

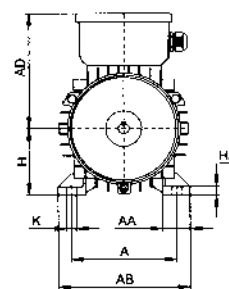
IM B3 Foot mounted frame size 56 to 200



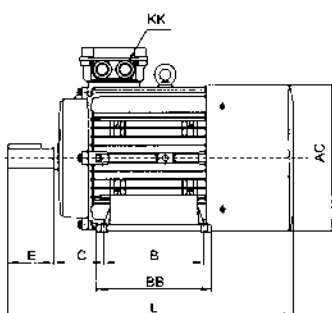
56-90



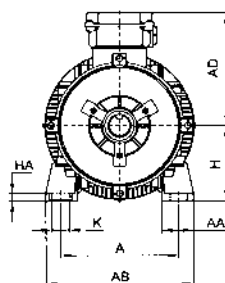
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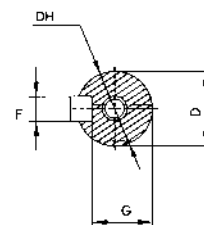
56-160



180-200



180-200

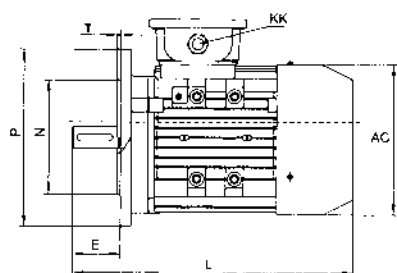
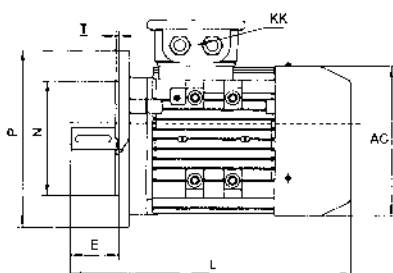
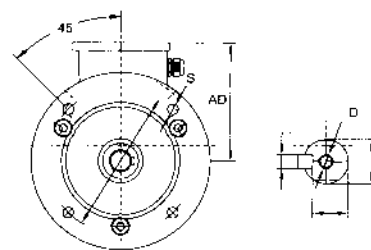
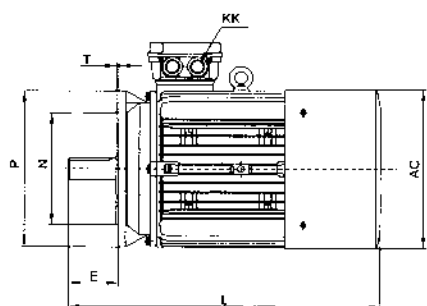
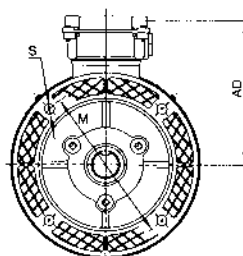
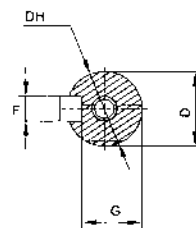


Frame Size	Mounting Dimensions																		Overall Dimensions
	A	AA	AB	BB	HA	AC	AD	B	C	D	DH	E	F	G	H	K	KK		L
																	Metric	PG	
56	90	23	115	88	7	110	100	71	36	9	M4x12	20	3	7.2	56	5.8	1-M20X1.5	1-PG11	199
63	100	24	135	100	7	130	111	80	40	11	M4x12	23	4	8.5	63	7.0	1-M20X1.5	1-PG11	217
71	112	26	150	110	8	145	118	90	45	14	M5x12	30	5	11	71	7.0	1-M20X1.5	1-PG11	245
80	125	35	165	125	9	175	134	100	50	19	M6x16	40	6	15.5	80	10.0	1-M25X1.5	1-PG16	287
90S	140	37	180	125	10	195	140	100	56	24	M8x19	50	8	20.0	90	10.0	1-M25X1.5	1-PG16	315
90L	140	37	180	150	10	195	140	125	56	24	M8x19	50	8	20.0	90	10.0	1-M25X1.5	1-PG16	340
100L	160	40	205	172	11	215	160	140	63	28	M10x22	60	8	24.0	100	12.0	1-M32X1.5	1-PG21	385
112M	190	41	230	181	12	240	178	140	70	28	M10x22	60	8	24.0	112	12.0	2-M32X1.5	2-PG21	400
132S	216	51	270	186	15	275	206	140	89	38	M12x28	80	10	33.0	132	12.0	2-M32X1.5	2-PG21	483
132M	216	51	270	224	15	275	206	178	89	38	M12x28	80	10	33.0	132	12.0	2-M32X1.5	2-PG21	510
160M	254	55	320	260	18	330	255	210	108	42	M16x36	110	12	37.0	160	15.0	2-M40X1.5	2-PG29	615
160L	254	55	320	304	18	330	255	254	108	42	M16x36	110	12	37.0	160	16.0	2-M40X1.5	2-PG29	670
180M	279	75	350	315	18	355	272	241	121	48	M16x36	110	14	42.5	180	15	2-M32x1.5	2-PG29	765
180L	279	75	350	315	18	355	272	279	121	48	M16x36	110	14	42.5	180	15	2-M32x1.5	2-PG29	765
200L	318	100	398	355	24	355	272	305	133	55	M20x42	110	16	49	200	19	2-M32x1.5	2-PG36	790

All dimensions in millimetres unless otherwise stated. Every effort has been taken to ensure that the data listed in this catalogue is correct. Challenge accepts no liability for any inaccuracies or damage caused.

Mounting and Overall Dimensions

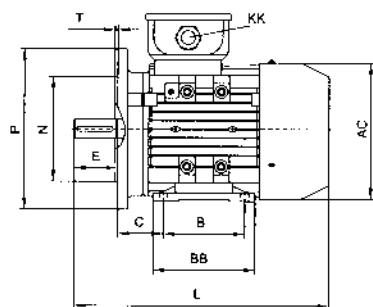
IM B5 Flange mounted frame size 56 to 200


56-90

100-160

56-160

180-200

180-200


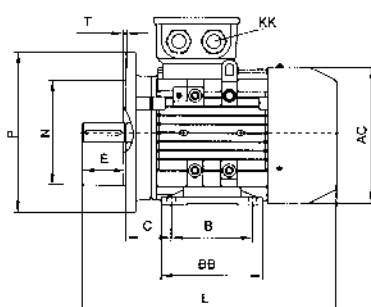
Frame Size	Mounting Dimensions														Overall Dimensions					
	HA	AC	AD	B	C	D	DH	E	F	G	H	K	KK		L	M	N	P	S	T
													Metric	PG						
56	7	110	100	71	36	9	M4x12	20	3	7.2	56	5.8	1-M20x1.5	1-PG11	199	100	80	120	7	3.0
63	7	130	111	80	40	11	M4x12	23	4	8.5	63	7.0	1-M20x1.5	1-PG11	217	115	95	140	10	3.0
71	8	145	118	90	45	14	M5x12	30	5	11	71	7.0	1-M20x1.5	1-PG11	245	130	110	160	12	3.5
80	9	175	134	100	50	19	M6x16	40	6	15.5	80	10.0	1-M25x1.5	1-PG16	287	165	130	200	12	3.5
90S	10	195	140	100	56	24	M8x19	50	8	20.0	90	10.0	1-M25x1.5	1-PG16	315	165	130	200	12	3.5
90L	10	195	140	125	56	24	M8x19	50	8	20.0	90	10.0	1-M25x1.5	1-PG16	340	165	130	200	12	3.5
100L	11	215	160	140	63	28	M10x22	60	8	24.0	100	12.0	1-M32x1.5	1-PG21	385	215	180	250	15	4.0
112M	12	240	178	140	70	28	M10x22	60	8	24.0	112	12.0	2-M32x1.5	2-PG21	400	215	180	250	15	4.0
132S	15	275	206	140	89	38	M12x28	80	10	33.0	132	12.0	2-M32x1.5	2-PG21	483	265	230	300	15	4.0
132M	15	275	206	178	89	38	M12x28	80	10	33.0	132	12.0	2-M32x1.5	2-PG21	510	265	230	300	15	4.0
160M	18	330	255	210	108	42	M16x36	110	12	37.0	160	15.0	2-M40x1.5	2-PG29	615	300	250	350	19	5.0
160L	18	330	255	254	108	42	M16x36	110	12	37.0	160	16.0	2-M40x1.5	2-PG29	670	300	250	350	19	5.0
180M	18	355	272	241	121	48	M16x36	110	14	42.5	180	15	2-M32x1.5	2-PG29	765	300	250	350	19	5.0
180L	18	355	272	279	121	48	M16x36	110	14	42.5	180	15	2-M32x1.5	2-PG29	765	300	250	350	19	5.0
200L	24	355	272	305	133	55	M20x42	110	16	49	200	19	2-M32x1.5	2-PG36	790	350	300	400	19	5.0

Mounting and Overall Dimensions

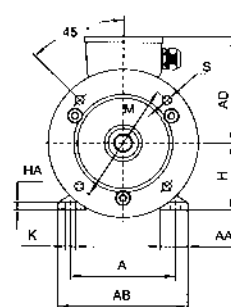
IM B35 Foot and flange mounted frame size 56 to 200



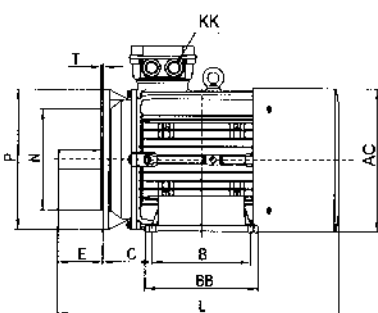
56-90



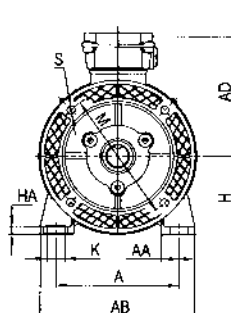
100-160



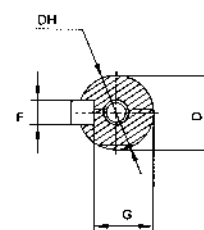
56-160



180-200



180-200

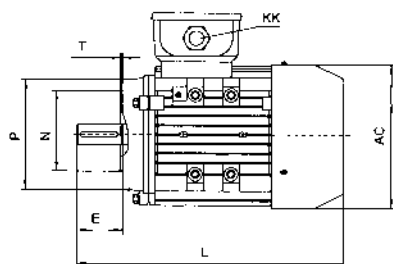
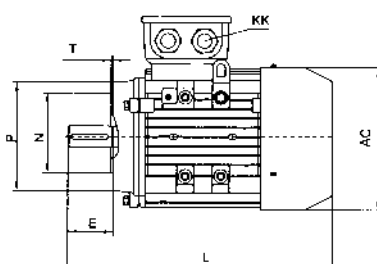
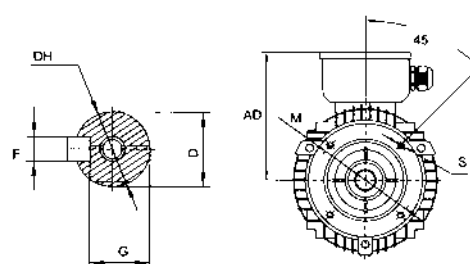


Frame Size	Mounting Dimensions																		Overall Dimensions					
	A	AA	AB	BB	HA	AC	AD	B	C	D	DH	E	F	G	H	K	KK		L	M	N	P	S	T
																	Metric	PG						
56	90	23	115	88	7	110	100	71	36	9	M4X12	20	3	7.2	56	5.8	1-M20X1.5	1-PG11	199	100	80	120	7	3.0
63	100	24	135	100	7	130	111	80	40	11	M4X12	23	4	8.5	63	7.0	1-M20X1.5	1-PG11	217	115	95	140	10	3.0
71	112	26	150	110	8	145	118	90	45	14	M5X12	30	5	11	71	7.0	1-M20X1.5	1-PG11	245	130	110	160	12	3.5
80	125	35	165	125	9	175	134	100	50	19	M6X16	40	6	15.5	80	10.0	1-M25X1.5	1-PG16	287	165	130	200	12	3.5
90S	140	37	180	125	10	195	140	100	56	24	M8X19	50	8	20.0	90	10.0	1-M25X1.5	1-PG16	315	165	130	200	12	3.5
90L	140	37	180	150	10	195	140	125	56	24	M8X19	50	8	20.0	90	10.0	1-M25X1.5	1-PG16	340	165	130	200	12	3.5
100L	160	40	205	172	11	215	160	140	63	28	M10X22	60	8	24.0	100	12.0	1-M32X1.5	1-PG21	385	215	180	250	15	4.0
112M	190	41	230	181	12	240	178	140	70	28	M10X22	60	8	24.0	112	12.0	2-M32X1.5	2-PG21	400	215	180	250	15	4.0
132S	216	51	270	186	15	275	206	140	89	38	M12X28	80	10	33.0	132	12.0	2-M32X1.5	2-PG21	483	265	230	300	15	4.0
132M	216	51	270	224	15	275	206	178	89	38	M12X28	80	10	33.0	132	12.0	2-M32X1.5	2-PG21	510	265	230	300	15	4.0
160M	254	55	320	260	18	330	255	210	108	42	M16X36	110	12	37.0	160	15.0	2-M40X1.5	2-PG29	615	300	250	350	19	5.0
160L	254	55	320	304	18	330	255	254	108	42	M16X36	110	12	37.0	160	16.0	2-M40X1.5	2-PG29	670	300	250	350	19	5.0
180M	279	75	350	315	18	355	272	241	121	48	M16X36	110	14	42.5	180	15	2-M32x1.5	2-PG29	765	300	250	350	19	5.0
180L	279	75	350	315	18	355	272	279	121	48	M16X36	110	14	42.5	180	15	2-M32x1.5	2-PG29	765	300	250	350	19	5.0
200L	318	100	398	355	24	355	272	305	133	55	M20X42	110	16	49	200	19	2-M32X1.5	2-PG36	790	350	300	400	19	5.0

All dimensions in millimetres unless otherwise stated. Every effort has been taken to ensure that the data listed in this catalogue is correct. Challenge accepts no liability for any inaccuracies or damage caused.

Mounting and Overall Dimensions

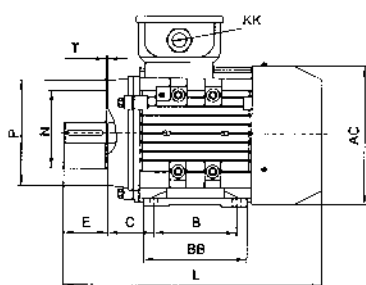
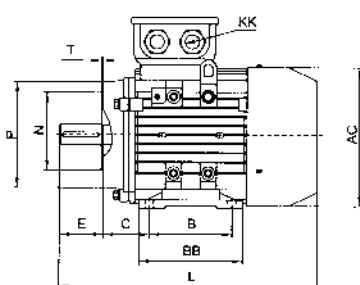
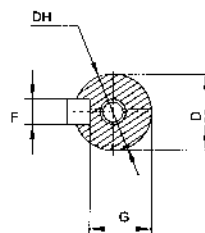
IM B14A Reduced flange mounted frame size 56 to 160


56-90

100-160

56-160

Frame Size	Mounting Dimensions									Overall Dimensions					
	AC	AD	D	DH	E	F	G	KK		L	M	N	P	S	T
								Metric	PG						
56	110	100	9	M4x12	20	3	7.2	1-M20x1.5	1-PG11	199	65	50	80	M5	2.5
63	130	111	11	M4x12	23	4	8.5	1-M20x1.5	1-PG11	217	75	60	90	M5	2.5
71	145	118	14	M5x12	30	5	11.0	1-M20x1.5	1-PG11	245	85	70	105	M6	2.5
80	175	134	19	M6x16	40	6	15.5	1-M25x1.5	1-PG16	297	100	80	120	M6	3.0
90S	195	140	24	M8x19	50	8	20.0	1-M25x1.5	1-PG16	315	115	95	140	M8	3.0
90L	195	140	24	M8x19	50	8	20.0	1-M25x1.5	1-PG16	340	115	95	140	M8	3.0
100L	215	160	28	M10x22	60	8	24.0	1-M32x1.5	1-PG21	385	130	110	160	M8	3.5
112M	240	178	28	M10x22	60	8	24.0	2-M32x1.5	2-PG21	400	130	110	160	M8	3.5
132S	275	206	38	M12x28	80	10	33.0	2-M32x1.5	2-PG21	483	165	130	200	M10	3.5
132M	275	206	38	M12x28	80	10	33.0	2-M32x1.5	2-PG21	510	165	130	200	M10	3.5
160M	330	255	42	M16x36	110	12	37.0	2-M40x1.5	2-PG29	615	215	180	250	M12	4.0
160L	330	255	42	M16x36	110	12	37.0	2-M40x1.5	2-PG29	670	215	180	250	M12	4.0

Mounting and Overall Dimensions

IM B3 B14A Reduced flange and foot mounted frame size 56 to 160

**56-90****90-160****56-160**

Frame Size	Mounting Dimensions									Overall Dimensions					
	AC	AD	D	DH	E	F	G	KK		L	M	N	P	S	T
								Metric	PG						
56	110	100	9	M4x12	20	3	7.2	1-M20x1.5	1-PG11	199	65	50	80	M5	2.5
63	130	111	11	M4x12	23	4	8.5	1-M20x1.5	1-PG11	217	75	60	90	M5	2.5
71	145	118	14	M5x12	30	5	11.0	1-M20x1.5	1-PG11	245	85	70	105	M6	2.5
80	175	134	19	M6x16	40	6	15.5	1-M25x1.5	1-PG16	297	100	80	120	M6	3.0
90S	195	140	24	M8x19	50	8	20.0	1-M25x1.5	1-PG16	315	115	95	140	M8	3.0
90L	195	140	24	M8x19	50	8	20.0	1-M25x1.5	1-PG16	340	115	95	140	M8	3.0
100L	215	160	28	M10x22	60	8	24.0	1-M32x1.5	1-PG21	385	130	110	160	M8	3.5
112M	240	178	28	M10x22	60	8	24.0	2-M32x1.5	2-PG21	400	130	110	160	M8	3.5
132S	275	206	38	M12x28	80	10	33.0	2-M32x1.5	2-PG21	483	165	130	200	M10	3.5
132M	275	206	38	M12x28	80	10	33.0	2-M32x1.5	2-PG21	510	165	130	200	M10	3.5
160M	330	255	42	M16x36	110	12	37.0	2-M40x1.5	2-PG29	615	215	180	250	M12	4.0
160L	330	255	42	M16x36	110	12	37.0	2-M40x1.5	2-PG29	670	215	180	250	M12	4.0

Single Phase General Information

CHALLENGE series single phase AC electric motors, Are totally enclosed fan cooled (**IC-411**) squirrel caged type, With **IP55** enclosure protection, Class **F** insulation and **S1** continuous Duty/ Rating.

The motors are manufactured from high grade die cast aluminium alloy with a terminal box constructed of engineering grade plastic and come with multi-mount detachable feet as standard, which allows for various mounting positions to be achieved.

The temperature ratings are -15° C to +40° degrees C to a maximum altitude of 1000 metres above sea level.

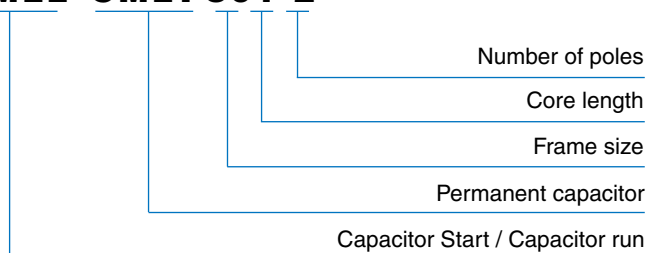
CHALLENGE motors have voltage ratings of:
110v / 220v / 230v / 240v.

They have a rated frequency of 50Hz and 60Hz.

Designation

Motor Identification Symbol

CMLL CMLY 801-2



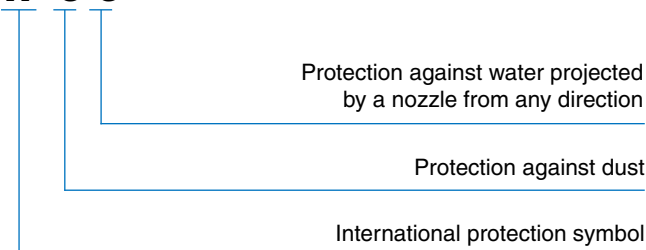
Cooling Method

IC-411



Protection Class

IP-5-5



Standards and Regulations



CE Marking

Our single phase induction motors comply with the requirements of the following international standard:

IEC 60034

Together with the Low Voltage Directive 73/23 (1973), modified by the Directive 93/68 (1993) and the EMC-Directive 89/336.

They comply with the requirements of the EC Directive Machines 89/392. In accordance with this Directive induction motors are components intended solely for integration into other machines. Commissioning is forbidden until conformity of the end product with this Directive is proved!

The  symbol was applied for the first time in 1995.

Technical Data Single Phase

CMLY Single phase motors with permanent capacitors

Type	Output		Current (A)	Speed rev/min	Efficiency n% 100%	Power Factor Cos 10%	Ts Tn	Tmax Tn	Is In	Capacity (UF)	Moment (J) kgm ²	Weight kg
	kW	hp										
CMLY561-2	0.09	0.12	0.7	2720	55	0.90	0.60	1.7	3.6	10	0.00010	3.4
CMLY562-2	0.12	0.18	1.0	2720	55	0.90	0.60	1.7	3.6	14	0.00012	3.7
CMLY631-2	0.18	0.25	1.47	2760	60	0.92	0.66	1.7	3.7	10	0.000150	4.1
CMLY632-2	0.25	0.37	1.91	2760	60	0.92	0.66	1.7	3.7	10	0.000163	4.5
CMLY711-2	0.37	0.5	3.12	2800	65	0.92	0.71	1.7	3.7	16	0.000350	6.4
CMLY712-2	0.55	0.75	3.63	2800	65	0.92	0.74	1.7	3.9	20	0.000460	6.6
CMLY801-2	0.75	1	5.50	2810	67	0.92	0.75	1.7	3.9	25	0.000970	8.3
CMLY802-2	1.1	1.5	7.52	2820	67	0.95	0.77	1.7	4.3	30	0.001090	9.1
CMLY90S-2	1.5	2	10.75	2840	72	0.95	0.78	1.7	4.8	40	0.002690	13.5
CMLY90L-2	2.2	3	13.10	2840	73	0.95	0.80	1.7	4.8	50	0.003080	15.6
CMLY100L-2	3	4	16.8	2800	79	0.99	0.80	1.9	4.8	60	0.01260	20.0
CMLY561-4	0.06	0.08	0.65	1360	55	0.90	0.61	1.7	3.1	5	0.00030	3.4
CMLY562-4	0.09	0.12	0.85	1360	55	0.90	0.61	1.7	3.1	6.3	0.00040	3.6
CMLY63M	0.12	0.18	1.40	1340	60	0.9	0.68	1.7	3.2	8	0.000170	4.1
CMLY632-4	0.18	0.25	1.52	1340	60	0.9	0.68	1.7	3.3	10	0.000230	4.6
CMLY711-4	0.25	0.37	2.2	1370	62	0.92	0.73	1.7	3.4	12.5	0.000400	6.3
CMLY712-4	0.37	0.5	2.80	1370	62	0.92	0.75	1.7	3.4	12.5	0.000570	7.3
CMLY801-4	0.55	0.75	4.51	1400	63	0.92	0.78	1.7	3.5	20	0.001400	9.8
CMLY802-4	0.75	1	5.2	1400	65	0.92	0.78	1.7	3.7	25	0.001600	10.5
CMLY90S-4	1.1	1.5	8.85	1410	70	0.95	0.80	1.7	4	30	0.002830	13.6
CMLY90L-4	1.5	2	9.51	1410	71	0.95	0.80	1.7	4.6	40	0.003590	16.8
CMLY100L1-4	2.2	3	14.0	1420	79	0.85	0.82	1.9	4.8	50	0.00540	20.0
CMLY100L2-4	3	4	16.7	1420	79	0.98	0.83	1.9	4.8	60	0.00670	21.5

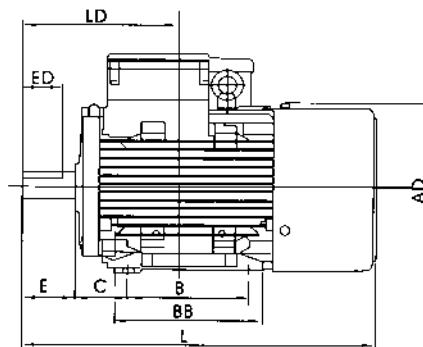
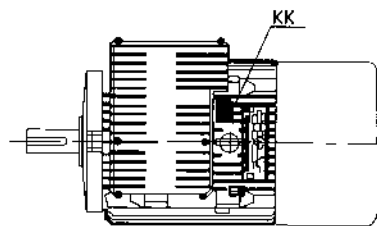
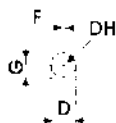
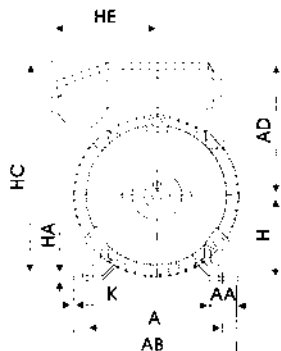
CMLL Single phase motors with capacitor start - capacitor run

Type	Output		Current (A)	Speed rev/min	Efficiency n% 100%	Power Factor Cos 10%	Ts Tn	Tmax Tn	Is In	Moment (J) kgm ²	Weight kg
	kW	hp									
CMLL711-2	0.37	0.50	2.73	2760	69	0.92	1.8	1.8	5.8	0.000610	6.5
CMLL712-2	0.55	0.75	3.88	2780	72	0.92	1.8	1.8	5.4	0.000720	7.2
CMLL801-2	0.75	1	5.15	2800	75	0.92	1.8	1.7	5.7	0.000970	8.5
CMLL802-2	1.1	1.5	7.02	2800	78	0.95	1.8	1.7	5.6	0.001100	9.5
CMLL90S-2	1.5	2	9.40	2800	78	0.95	1.7	1.7	6.0	0.002960	13.2
CMLL90L-2	2.2	3	13.70	2800	82	0.95	1.7	1.7	6.2	0.003240	14.5
CMLL100L1-2	3.0	4	18.40	2820	83	0.95	1.7	1.7	6.4	0.003930	21.0
CMLL711-4	0.25	0.37	1.99	1360	65	0.92	1.8	1.8	6.0	0.000910	6.7
CMLL712-4	0.37	0.55	2.81	1370	67	0.92	1.8	1.8	5.7	0.000100	7.4
CMLL801-4	0.55	0.75	4.00	1400	70	0.92	1.8	1.7	5.4	0.001700	8.8
CMLL802-4	0.75	1.0	5.30	1400	71	0.92	1.8	1.7	5.5	0.001960	10.0
CMLL90S-4	1.1	1.5	7.20	1400	76	0.95	1.7	1.7	5.7	0.003050	13.5
CMLL90L-4	1.5	2	9.57	1400	78	0.95	1.7	1.7	6.0	0.003890	16.6
CMLL100L1-4	2.2	3	13.85	1410	80	0.95	1.7	1.7	6.1	0.005100	24.0
CMLL100L1-4	3	4	18.17	1420	83	0.95	1.7	1.7	6.4	0.006300	28.2

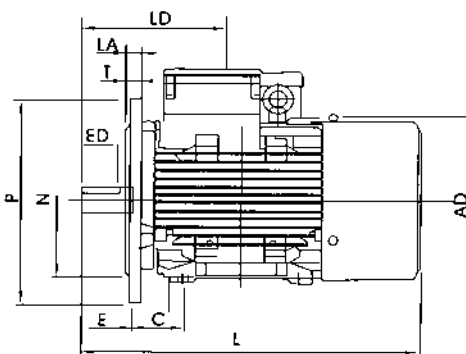
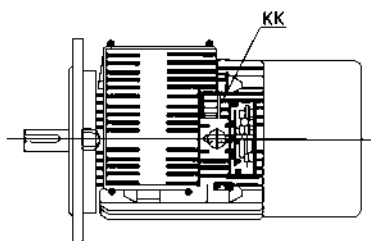
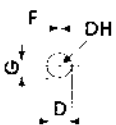
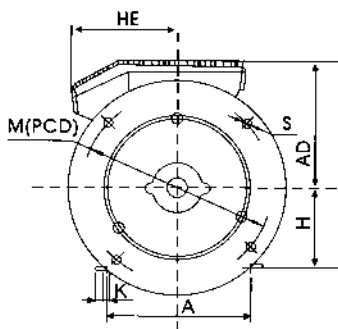
Every effort has been taken to ensure that the data listed in this catalogue is correct. Challenge accepts no liability for any inaccuracies or damage caused.

Mounting and Overall Dimensions

IM B3 frame size 56 to 100



IM B5/V1 frame size 56 to 100

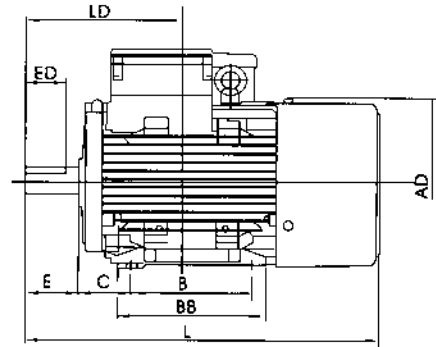
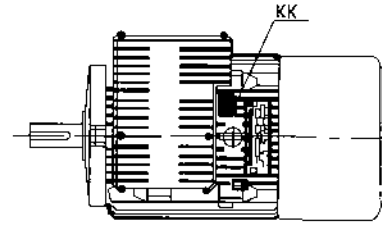
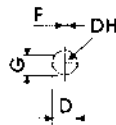
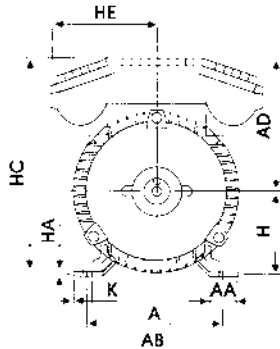


CMLY Single phase motors with permanent capacitors

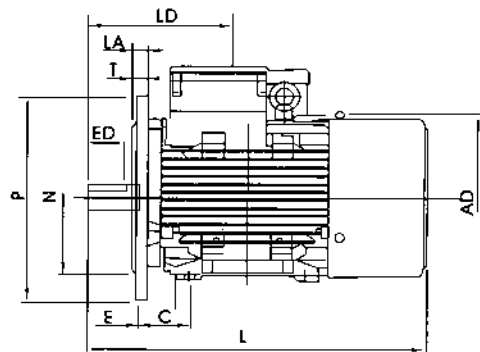
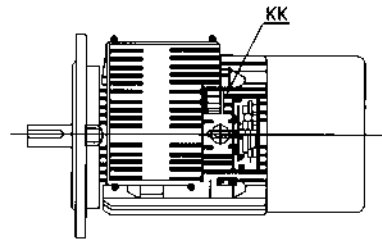
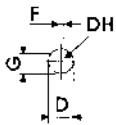
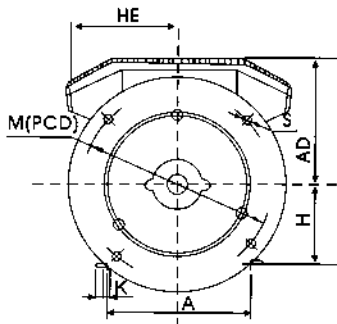
Frame	A	AA	AB	AC	AD	B	BB	C	D	DH	E	F	G	H	K	KK	L	M	N	P	S	T
56 63	100	24	135	130	115	80	115	40	11	M4 X 12	23	4	8.5	63	7	1-M20 X 1.5	217	115	95	140	10	3.0
71	112	26	150	145	120	90	125	45	14	M5 X 12	30	5	11.0	71	7	1-M20 X 1.5	245	130	130	160	10	3.5
80	125	35	165	175	145	100	135	50	19	M6 X 16	40	6	15.5	80	10	1-M25 X 1.5	300	165	165	200	12	3.5
90S	140	37	180	195	155	100	140	56	24	M8 X 19	50	8	20.0	90	10	1-M25 X 1.5	320	165	165	200	12	3.5
90L	140	37	180	195	155	125	165	56	24	M8 X 19	50	8	20.0	90	10	1-M25 X 1.5	350	165	165	200	12	3.5
100L	160	40	205	215	180	140	185	63	28	M10 X 22	60	8	24.0	100	12	1-M25 X 1.5	385	215	215	250	15	4.0

Mounting and Overall Dimensions

IM B3 frame size 71 to 100



IM B5/V1 frame size 71 to 100



CMLL Single phase motors with capacitor start - capacitor run

Frame	A	AA	AB	AC	AD	B	BB	C	D	DH	E	F	G	H	K	KK	L	M	N	P	S	T
71	112	26	150	145	120	90	125	45	14	M5 X 12	30	5	11.0	71	7	1-M20 X 1.5	245	130	110	160	10	3.5
80	125	35	165	175	145	100	135	50	19	M6 X 16	40	6	15.5	80	10	1-M25 X 1.5	300	165	130	200	12	3.5
90S	140	37	180	195	155	100	140	56	24	M8 X 19	50	8	20.0	90	10	1-M25 X 1.5	320	165	130	200	12	3.5
90L	140	37	180	195	155	125	165	56	24	M8 X 19	50	8	20.0	90	10	1-M25 X 1.5	350	165	130	200	12	3.5
100	160	40	205	215	180	140	185	63	28	M10 X 22	60	8	24.0	100	12	1-M25 X 1.5	385	215	180	250	15	4.0

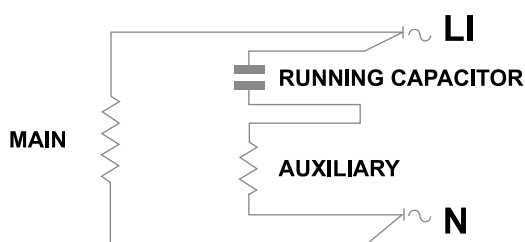
All dimensions in millimetres unless otherwise stated. Every effort has been taken to ensure that the data listed in this catalogue is correct. Challenge accepts no liability for any inaccuracies or damage caused.

Single Phase Connections

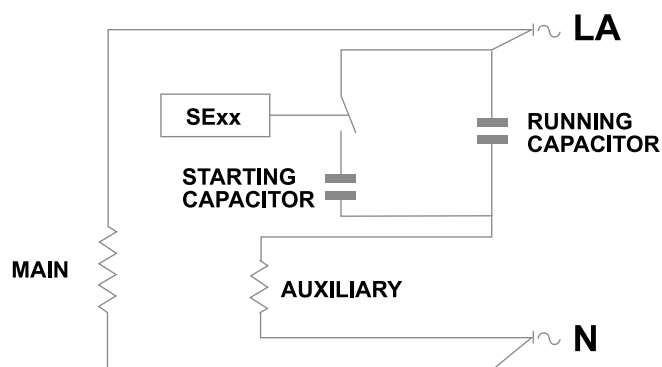
Connection

A motor's rated voltage must agree with the power supply line-to-line voltage. Care must therefore be taken to ensure the correct connection to the motor terminals.

CMLY Series



CMLL Series



SExx: electronic device for connection of starting capacitor

Notes

Pillow blocks



Flange Units



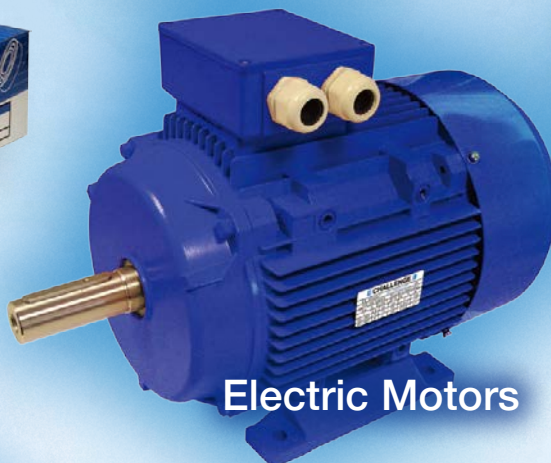
Plummer Blocks



Pop Metric Bearings



Taper Roller Bearings



Electric Motors



Clamping Elements

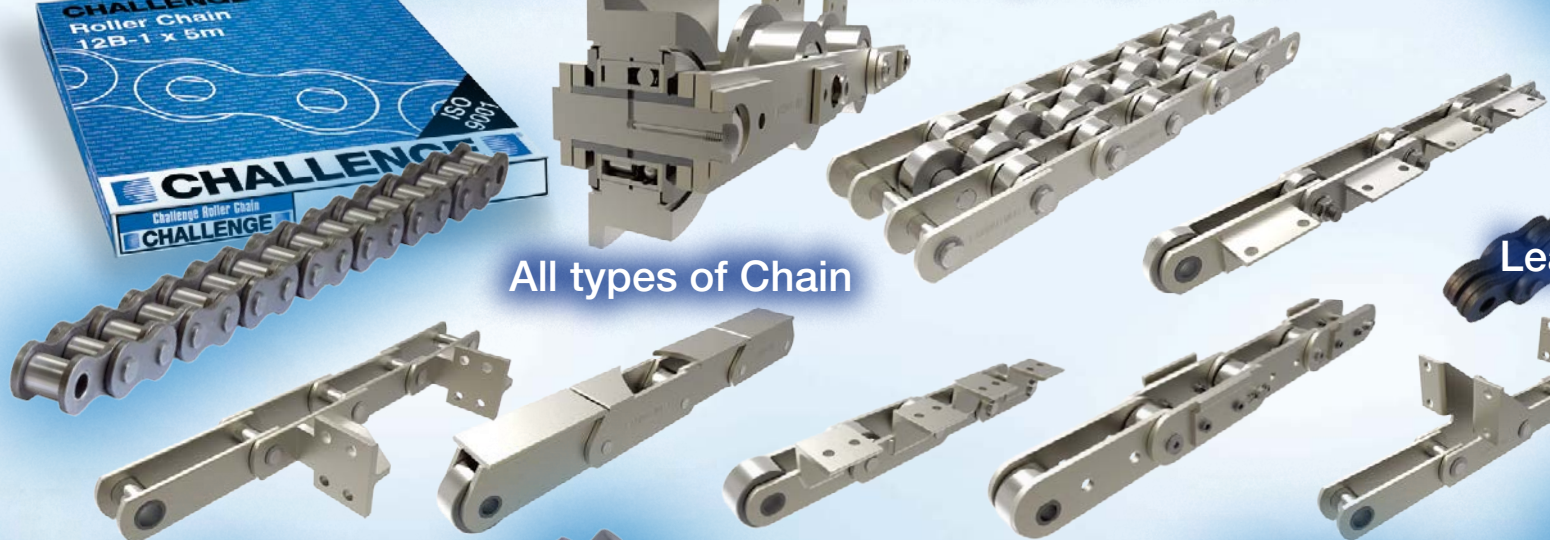
Transmission Sprockets



Conveyor Sprockets



All types of Chain



RPX Couplings

HRC Couplings

CNM Couplings

Jaw Couplings





Taper bushes

Bolt on Hubs

Taper Bore Pulleys

Shaft Mounted Speed Reducers

Weld on Hubs

FFX Couplings

Synchronous Belts

Vee Belts

Geared Drives

Torque Limiters

CRE Belts

Chain Couplings

NPX Couplings

Motor Slide Bases

Timing Pulleys



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CHALLENGE

