



Keeping Industry Turning

Series 10 IE3

Frame sizes 80 to 355

Introduction

2

Specification

Specification			
	Standard product		Option
Frame material	80 - 160 aluminium		-
	80 - 355 cast iron		-
Enclosure	IP55		IP56, IP65
Mounting option	Foot (B3), Flange (B5), Face (B14)		-
	Foot & Flange (B35), Foot & Face (B34)		-
Terminal box position	Top		-
Voltage	3 kW and below: 230 / 400		-
	4 kW and above: 400 / 690		-
Frequency	50 Hz		60 Hz
Cooling	IC411		-
Bearing location	Aluminium (80 - 160): non drive end		-
	Cast iron (80 - 355): drive end		-
Lubrication	80 - 225: double-shielded bearings		-
	250 - 355: through greasing		-
Insulation	class F		-
Temperature rise	class B		-
Paint colour	water blue (RAL 5021)		-
Heaters	Aluminium (80 - 160):	-	110 - 115 volts or 220 - 240 volts
	Cast iron (80 - 355):	220 - 240 volts	110 - 115 volts
Thermal protection - IE3	Aluminium (80 - 160): Thermistors		-
	Cast iron (80 - 355): Thermistors		-
Inverter Duty (with derate)	Variable Torque:	10:1	-
	Constant Torque:	2:1	-
Ambient temperature	-30°C to + 40°C		-

The above specification and options give a brief summary of features available for the Series 10 IE3 range. For a full listing of optional features, please contact Brook Crompton sales.

Brook Crompton Keeping Industry Turning

Brook Crompton, the original innovator in electric motor development, is a leading provider of energy efficient electric motors. With over 110 years' technical & design expertise, UK-based Brook Crompton delivers consistently reliable electric motors to a global market.

Trusted to power limitless industrial activities across diverse market sectors, the robust design of Brook Crompton's electric motors drives fans, pumps, compressors, conveyors and more, every second, of every day, of every year.

Driven by technology and innovation, Brook Crompton has one of the widest available ranges of electric motors for operation in hazardous atmospheres and hostile environments.

Renowned for their adaptability, Brook Crompton's extensive motor stock can be modified to suit the needs of different market sectors, with technical support from the company's knowledgeable team readily available to ensure the correct selection of motors for any application. For bespoke situations and complete flexibility, Brook Crompton will design and manufacture to meet individual customer specifications.

Brook Crompton has a long-standing reputation for efficient customer service, supporting customers worldwide through its global network. Specialist Brook Crompton Motor Centres operate alongside approved product distributors throughout the UK, mainland Europe, Middle East, Canada, USA, and Asia Pacific.

Shaping the future of electric motors, Brook Crompton is focused on the development of new products that improve energy efficiency, offer lower cost of ownership throughout the motor lifetime and reduce environmental impact.

Brook Crompton, the original innovator in electric motors.

Quality assurance

Stringent quality procedures are observed from first design to finished product in accordance with the ISO9001 documented quality systems.

All factories have been assessed to meet these requirements.

Series 10 IE3

The Brook Crompton Series 10 range is a high quality standard range of electric motors with a specification suitable for most industrial applications.

It covers outputs from 0.75kW up to 375kW in frame sizes 80 to 355.

Benefits include:

- Full output range to meet your requirements
- Efficiencies comply with EN60034-30 (IE3)
- Robust construction for long life
- Mountings: foot, flange, face or combination
- Multi-mount - aluminium range
- Integral feet cast iron - 80 to 355 frame.
- Euro voltage: up to 3kW 230/400V; 4kW and above 400/690V
- Dual frequency (50 / 60Hz)
- IP55
- Metal fan cover
- Metric entries
- Thermal protection fitted as standard
- 220-240V heaters std on the cast iron range
- Inverter duty

Standards

Standards	
Series 10 motors are manufactured to the international standards listed below:	
Performance	IEC 60034-1
Dimensions	IEC 60072-1
Mounting	IEC 60034-7
Enclosure protection	IEC 60034-5
Vibration	IEC 60034-14 (grade A)
Noise	IEC60034-9

Environment Enclosure

All motors have degrees of IP protection as defined in IEC EN 60034-5. The normal arrangement is IP55. See Specification (page 2) for alternatives.

Motor cooling

Motors are cooled in accordance with IEC 60034-6. The normal arrangement is IC411 (Totally Enclosed Fan Ventilated) via a fan mounted at the non-drive end.

European directives

The following European directives apply:

Directives

Compliance with European directives applying to AC induction motors				
Directives	Low voltage (LV)	Machinery (MD)	Electromagnetic compatibility (EMC)	Energy related products (ErP)
Reference numbers	2014/35/EU [previously 73/23/EEC, 93/68/EEC & 2006/95/EC]	2006/42/EC [previously 89/392/EEC, 93/44/EEC, 98/37/EC & 98/79/EC]	2014/30/EU [previously 89/336/EEC, 92/31/EEC, 93/68/EEC & 2004/108/EC]	2009/125/EC [previously 92/42/EEC, 96/57/EC, 2000/55/EC & 2005/32/EC]
Motor CE marked	Yes	No	No	Yes
Standards	EN 60034	Not applicable	EN 60034-1	EN 60034-30
Documentation for customers' technical file	Declaration of conformity	Declaration of incorporation	Statement ⁽¹⁾	Declaration of conformity
Safety instructions with every motor	Yes	Yes	Yes	-
Comment	Relevant electrical equipment operating between 50 to 1000 volts AC	Statement ⁽²⁾	Component	Minimum efficiency levels for motor outputs 0.75 - 375 kW 2-6 pole

⁽¹⁾ Motors operating from a correctly applied, sinusoidal (AC) supply meet the requirements of the EMC directive and are within the limits specified in standard EN 60034-1

⁽²⁾ When installed in accordance with our customer safety and installation and maintenance instructions, they can be put into service only when the machinery into which they are being incorporated, has been declared to be in conformity with the machinery directive in accordance with Article 4(2) and Annex IIB of that Directive (98/37/EEC)

Minimum Energy Performance Standard

The EU MEPS scheme sets **mandatory** minimum efficiency levels for most single speed 3ph induction motors up to 375 kW rated up to 1000V.

Commission Regulation (EC) No. 640/2009 & amendment 4/2015 covers 2, 4 & 6 pole single speed 3ph induction motors from 0.75 to 375kW, rated up to 1000V based on continuous duty operation. Aiming to reduce energy consumption throughout Europe and the rest of the world, it comes into effect in stages.

The effect of this is to maximise potential savings in electric motor driven systems.

Base of the regulation is an international IEC 60034-30 standard. It defines the following efficiency classes :

- IE2** - High Efficiency
- IE3** - Premium Efficiency

Efficiency levels in Europe (Time Line)

Mandatory from:

Since 1st January 2015:

Minimum efficiency requirement at IE3 level for 7.5 - 375kW motors or IE2 level for motors equipped with an appropriate variable speed drive.

From 1st January 2017:

Minimum efficiency requirement at IE3 level for 0.75 - 375kW motors or IE2 level for motors equipped with an appropriate variable speed drive.

Performance data

4

3000 min⁻¹ (2 pole), aluminium construction

P _N		n min ⁻¹	Type	I _N			h 1.0 P _N	Cos Ø 1.0 P _N	M _N Nm	M _A M _N	M _S M _N	M _K M _N	I _A I _N	J kgm ²	L _{PA} dB(A)	kg
kW	hp			230 V A	400 V A	690 V A										
0.75	1.0	2865	P-DA80MA	2.85	1.64	-	80.7	0.82	2.5	2.3	1.5	2.3	6.8	0.0011	52	10.5
1.1	1.5	2885	P-DA80MB	4.02	2.31	-	82.7	0.83	3.7	2.2	1.5	2.3	7.3	0.0013	53	12.5
1.5	2.0	2885	P-DA90SA	5.32	3.06	-	84.2	0.84	5.0	2.2	1.5	2.3	7.6	0.0019	55	16.0
2.2	3.0	2895	P-DA90LA	7.56	4.35	-	85.9	0.85	7.3	2.2	1.4	2.3	7.8	0.0022	55	18.0
3.0	4.0	2915	P-DA100LA	9.94	5.71	-	87.1	0.87	9.9	2.2	1.4	2.3	8.1	0.0043	55	26.0
4.0	5.5	2895	P-DA112MA	-	7.45	4.32	88.1	0.88	13.2	2.2	1.4	2.3	8.3	0.0088	55	35.0
5.5	7.5	2925	P-DA132SA	-	10.1	5.86	89.2	0.88	18.0	2.0	1.2	2.3	8.0	0.0169	56	55.0
7.5	10	2925	P-DA132SB	-	13.7	7.92	90.1	0.88	24.5	2.0	1.2	2.3	7.8	0.0229	56	62.0
11.0	15	2930	P-DA160MA	-	19.6	11.3	91.2	0.89	35.9	2.0	1.2	2.3	7.9	0.0627	63	86.0
15.0	20	2930	P-DA160MB	-	26.5	15.3	91.9	0.89	48.9	2.0	1.2	2.3	8.0	0.0658	63	94.0
18.5	25	2930	P-DA160LA	-	32.5	18.8	92.4	0.89	60.3	2.0	1.1	2.3	8.1	0.0968	65	117

P-DA frame nomenclature indicates an IE3 efficiency motor

Performance data

1500 min⁻¹ (4 pole), aluminium construction

5

P _N		n min ⁻¹	Type	I _N			h 1.0 P _N	Cos Ø 1.0 P _N	M _N Nm	M _A M _N	M _S M _N	M _K M _N	I _A I _N	J kgm ²	L _{PA} dB(A)	kg
kW	hp			230 V A	400 V A	690 V A										
0.75	1.0	1425	P-DA80MB	3.04	1.75	-	82.5	0.75	5.0	2.3	1.6	2.3	6.5	0.0017	41	14.0
1.1	1.5	1420	P-DA90SA	4.32	2.48	-	84.1	0.76	7.4	2.3	1.6	2.3	6.6	0.0024	41	16.0
1.5	2.0	1420	P-DA90LA	5.73	3.30	-	85.3	0.77	10.1	2.3	1.6	2.3	6.9	0.0031	41	19.0
2.2	3.0	1455	P-DA100LA	7.86	4.52	-	86.7	0.81	14.4	2.3	1.5	2.3	7.5	0.0078	41	26.5
3.0	4.0	1450	P-DA100LB	10.5	6.02	-	87.7	0.82	19.8	2.3	1.5	2.3	7.6	0.0087	41	30.5
4.0	5.5	1445	P-DA112MA	-	7.95	4.61	88.6	0.82	26.4	2.2	1.5	2.3	7.7	0.0122	42	36.0
5.5	7.5	1445	P-DA132SA	-	10.7	6.19	89.6	0.83	36.3	2.0	1.4	2.3	7.5	0.0384	48	47.0
7.5	10	1460	P-DA132MA	-	14.3	8.26	90.4	0.84	49.1	2.0	1.4	2.3	7.4	0.0487	50	63.0
11.0	15	1455	P-DA160MA	-	20.4	11.8	91.4	0.85	72.2	2.2	1.4	2.3	7.5	0.110	52	90.0
15.0	20	1455	P-DA160LA	-	27.3	15.8	92.1	0.86	98.5	2.2	1.4	2.3	7.5	0.114	52	113

P-DA frame nomenclature indicates an IE3 efficiency motor

Performance data

6

1000 min⁻¹ (6 pole), aluminium construction

P _N		n min ⁻¹	Type	I _N			h 1.0 P _N	Cos Ø 1.0 P _N	M _N Nm	M _A M _N	M _S M _N	M _K M _N	I _A I _N	J kgm ²	L _{PA} dB(A)	kg
kW	hp			230 V A	400 V A	690 V A										
0.75	1.0	935	P-DA90SA	3.36	1.93	-	78.9	0.71	7.7	2.0	1.5	2.1	5.8	0.0033	44	21.0
1.1	1.5	935	P-DA90LA	4.67	2.69	-	81.0	0.73	11.2	2.0	1.3	2.1	5.9	0.0045	44	26.0
1.5	2.0	950	P-DA100LA	6.25	3.60	-	82.5	0.73	15.1	2.0	1.3	2.1	6.0	0.0092	44	31.5
2.2	3.0	940	P-DA112MA	8.85	5.09	-	84.3	0.74	22.4	2.0	1.3	2.1	6.0	0.0144	45	37.0
3.0	4.0	960	P-DA132SA	11.9	6.84	-	85.6	0.74	29.8	2.0	1.3	2.1	6.2	0.0383	46	47.0
4.0	5.5	960	P-DA132MA	-	8.99	5.21	86.8	0.74	39.8	2.0	1.3	2.1	6.8	0.0489	46	57.0
5.5	7.5	960	P-DA132MB	-	12.0	6.97	88.0	0.75	54.7	2.0	1.3	2.1	7.1	0.0585	46	63.0
7.5	10	970	P-DA160MA	-	15.4	8.92	89.1	0.79	73.8	2.0	1.3	2.1	6.7	0.13	53	85.0
11.0	15	970	P-DA160LA	-	22.0	12.7	90.3	0.80	108	2.0	1.2	2.1	6.9	0.15	53	108

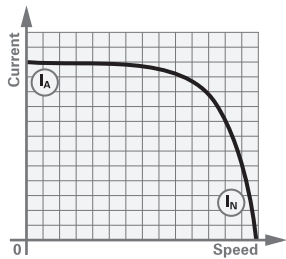
P-DA frame nomenclature indicates an IE3 efficiency motor

Performance data notes

Speed / torque & speed /current curves

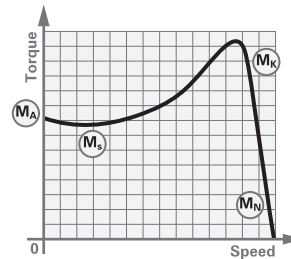
DOL starting

Typical speed/current curve



- (I_A) Starting current
- (I_N) Full load current
- (M_A) Starting torque or locked rotor torque
- (M_S) Pull up torque or run up torque
- (M_K) Pull out torque or breakdown torque
- (M_N) Full load torque

Typical speed/torque curve



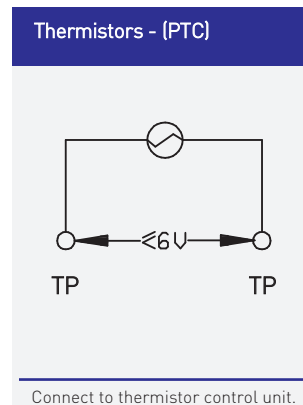
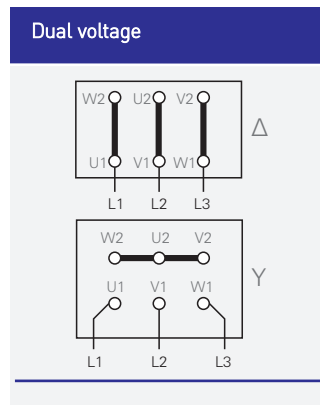
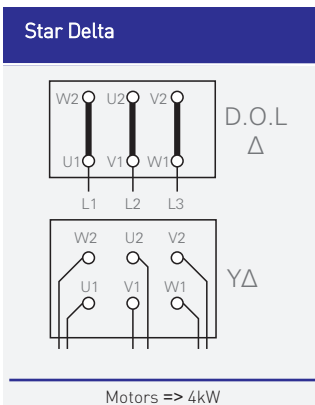
During the run up period in Star, there must be an adequate excess of motor torque over the load torque. The change to Delta must not occur until the motor is near the operating speed. Refer to Brook Crompton for running up against a load in excess of 70% full load during Star Delta starting.

Performance figures are subject to IEC tolerances. Performance figures are based on a 400 volt winding.

$$J \text{ (WK}^2 \text{ or WR}^2) = \frac{GD^2}{4}$$

$$J \text{ in lb ft}^2 = \frac{\text{kgm}^2}{0.042}$$

Connection diagrams



Performance data

8

3000 min⁻¹ (2 pole), cast iron construction

Rated power
Full load speed in revolutions per minute
Frame reference and size
Full load current at rated voltage
Efficiency
Power factor
Full load torque
Direct on line starting torque ratio
Direct on line pull up torque
Direct on line pull out torque
Direct on line starting current ratio
Rotor inertia Wk²
Mean sound pressure level @ 1m on no load
Weight

P _N		n min ⁻¹	Type	I _N			h 1.0 P _N	Cos Ø 1.0 P _N	M _N Nm	M _A M _N	M _S M _N	M _K M _N	I _A I _N	J kgm ²	L _{PA} dB(A)	kg
kW	hp			230 V A	400 V A	690 V A										
0.75	1.0	2860	P-DF80MA	2.85	1.64	-	80.7	0.82	2.50	2.3	2.3	2.3	7.0	0.0015	67	22
1.1	1.5	2860	P-DF80MB	4.02	2.31	-	82.7	0.83	3.67	2.2	2.2	2.3	7.3	0.0017	67	24
1.5	2.0	2870	P-DF90SA	5.32	3.06	-	84.2	0.84	4.99	2.2	2.2	2.3	7.6	0.0022	78	25
2.2	3.0	2870	P-DF90LA	7.56	4.35	-	85.9	0.85	7.32	2.2	2.2	2.3	7.6	0.0030	78	27
3.0	4.0	2880	P-DF100LA	9.94	5.71	-	87.1	0.87	9.95	2.2	2.2	2.3	7.8	0.0057	74	39
4.0	5.5	2890	P-DF112MA	-	7.45	4.32	88.1	0.88	13.2	2.2	2.2	2.3	8.3	0.0076	75	48
5.5	7.5	2900	P-DF132SA	-	10.1	5.86	89.2	0.88	18.1	2.0	2.0	2.3	8.3	0.0165	77	68
7.5	10	2900	P-DF132SB	-	13.7	7.92	90.1	0.88	24.7	2.0	2.0	2.3	7.9	0.0206	77	75
11.0	15	2940	P-DF160MA	-	19.6	11.3	91.2	0.89	35.7	2.0	2.0	2.3	8.1	0.0649	79	142
15.0	20	2940	P-DF160MB	-	26.5	15.3	91.9	0.89	48.7	2.0	2.0	2.3	8.1	0.0788	79	154
18.5	25	2940	P-DF160LA	-	32.5	18.8	92.4	0.89	60.1	2.0	2.0	2.3	8.2	0.0973	79	170
22.0	30	2950	P-DF180MA	-	38.5	22.3	92.7	0.89	71.2	2.0	2.0	2.3	8.2	0.1488	80	206
30.0	40	2960	P-DF200LA	-	52.1	30.2	93.3	0.89	96.8	2.0	2.0	2.3	7.6	0.2269	82	271
37.0	50	2960	P-DF200LB	-	64.0	37.1	93.7	0.89	119	2.0	2.0	2.3	7.6	0.2870	82	305
45.0	60	2970	PU-DF225M	-	77.6	45.0	94.0	0.89	145	2.0	2.0	2.3	7.7	0.3559	84	362
55.0	75	2970	PU-DF250M	-	94.6	54.8	94.3	0.89	177	2.0	2.0	2.3	7.7	0.5454	80	482
75.0	100	2980	PU-DF280S	-	128	74.5	94.7	0.89	240	1.8	1.8	2.3	7.1	0.8046	81	680
90.0	125	2980	PU-DF280MA	-	154	89.1	95.0	0.89	288	1.8	1.8	2.3	7.1	1.01	81	695
110.0	150	2980	PU-DF315SA	-	185	107	95.2	0.90	353	1.8	1.8	2.3	7.1	1.46	84	875
132.0	175	2980	PU-DF315MA	-	222	129	95.4	0.90	423	1.8	1.8	2.3	7.1	1.61	84	1050
160.0	215	2980	PU-DF315LA	-	265	154	95.6	0.91	513	1.8	1.8	2.3	7.2	2.02	84	1142
200.0	270	2980	PU-DF315LB	-	331	192	95.8	0.91	641	1.8	1.8	2.2	7.2	2.26	84	1223
250.0	335	2980	PU-DF355M	-	414	240	95.8	0.91	801	1.6	1.6	2.2	7.2	5.53	85	1822
315.0	430	2980	PU-DF355LA	-	522	302	95.8	0.91	1009	1.6	1.6	2.2	7.2	6.78	85	1960
355.0	475	2980	PU-DF355LBX †	-	588	341	95.8	0.91	1138	1.6	1.6	2.2	7.2	6.78	85	2580
375.0	504	2980	PU-DF355LCX †	-	621	360	95.8	0.91	1202	1.6	1.6	2.2	7.2	8.02	85	2630

P/PU-DF frame nomenclature indicates an IE3 efficiency motor
† See dimension pages 18 & 19

Performance data

1500 min⁻¹ (4 pole), cast iron construction

9

P _N		n min ⁻¹	Type	I _N			h 1.0 P _N	Cos φ 1.0 P _N	M _N Nm	M _A M _N	M _S M _N	M _K M _N	I _A I _N	J kgm ²	L _{PA} dB(A)	kg
kW	hp			230 V A	400 V A	690 V A										
0.75	1.0	1420	P-DF80MB	3.04	1.75	-	82.5	0.75	5.0	2.3	2.3	2.3	6.6	0.0037	58	18
1.1	1.5	1420	P-DF90SA	4.26	2.45	-	84.1	0.77	7.4	2.3	2.3	2.3	6.8	0.0037	66	26
1.5	2.0	1420	P-DF90LA	5.59	3.21	-	85.3	0.79	10.1	2.3	2.3	2.3	7.0	0.0049	66	29
2.2	3.0	1440	P-DF100LA	7.86	4.52	-	86.7	0.81	14.6	2.3	2.3	2.3	7.6	0.0096	62	38
3.0	4.0	1440	P-DF100LB	10.5	6.02	-	87.7	0.82	19.9	2.3	2.3	2.3	7.6	0.0133	62	45
4.0	5.5	1450	P-DF112MA	-	7.85	4.55	88.6	0.83	26.3	2.2	2.2	2.3	7.7	0.0184	64	53
5.5	7.5	1460	P-DF132SA	-	10.5	6.11	89.6	0.84	36.3	2.0	2.0	2.3	7.9	0.0367	67	71
7.5	10	1460	P-DF132MA	-	14.3	8.26	90.4	0.84	49.1	2.0	2.0	2.3	7.5	0.0519	67	86
11.0	15	1470	P-DF160MA	-	20.4	11.8	91.4	0.85	71.5	2.2	2.2	2.2	7.7	0.1266	69	145
15.0	20	1470	P-DF160LA	-	27.3	15.8	92.1	0.86	97.4	2.2	2.2	2.2	7.8	0.1741	69	167
18.5	25	1475	P-DF180MA	-	33.5	19.4	92.6	0.86	120	2.0	2.0	2.2	7.8	0.2583	72	205
22.0	30	1475	P-DF180LA	-	39.7	23.0	93.0	0.86	142	2.0	2.0	2.2	7.8	0.2943	72	228
30.0	40	1475	P-DF200L	-	53.8	31.2	93.6	0.86	194	2.0	2.0	2.2	7.3	0.4509	75	298
37.0	50	1480	P-DF255S	-	66.1	38.3	93.9	0.86	239	2.0	2.0	2.2	7.4	0.7032	76	358
45.0	60	1480	PU-DF225M	-	80.2	46.5	94.2	0.86	290	2.0	2.0	2.2	7.4	0.8233	76	387
55.0	75	1480	PU-DF250MA	-	97.6	56.6	94.6	0.86	355	2.2	2.2	2.2	7.4	1.03	73	504
75.0	100	1485	PU-DF280S	-	129	75.1	95.0	0.88	482	2.0	2.0	2.2	6.9	2.13	75	650
90.0	125	1485	PU-DF280MA	-	155	89.9	95.2	0.88	579	2.0	2.0	2.2	6.9	2.57	75	720
110.0	150	1480	PU-DF315S	-	189	110	95.4	0.88	710	2.0	2.0	2.2	7.0	3.71	80	955
132.0	175	1480	PU-DF315M	-	226	131	95.6	0.88	852	2.0	2.0	2.2	7.0	4.28	80	1185
160.0	215	1480	PU-DF315LA	-	271	157	95.8	0.89	1032	2.0	2.0	2.2	7.1	5.18	80	1230
200.0	270	1480	PU-DF315LB	-	338	196	96.0	0.89	1291	2.0	2.0	2.2	7.1	5.85	80	1314
250.0	335	1490	PU-DF355M	-	418	242	96.0	0.90	1602	2.0	2.0	2.2	7.1	8.79	80	1830
315.0	430	1490	PU-DF355LA	-	526	305	96.0	0.90	2019	2.0	2.0	2.2	7.1	12.20	80	2340
355.0	475	1490	PU-DF355LBX [†]	-	607	352	96.0	0.88	2275	1.7	1.7	2.2	7.0	13.66	80	2390
375.0	504	1490	PU-DF355LCX [†]	-	641	371	96.0	0.88	2404	1.7	1.7	2.2	7.0	14.15	80	2480

P/PU-DF frame nomenclature indicates an IE3 efficiency motor
[†] See dimension pages 18 & 19

Performance data

10

1000 min⁻¹ (6 pole), cast iron construction

P _N		n min ⁻¹	Type	I _N			h 1.0 P _N	Cos φ 1.0 P _N	M _N Nm	M _A M _N	M _S M _N	M _K M _N	I _A I _N	J kgm ²	L _{PA} dB(A)	kg
kW	hp			230 V A	400 V A	690 V A										
0.75	1.0	920	P-DF90SA	3.31	1.91	-	78.9	0.72	7.8	2.0	2.0	2.1	6.0	0.0051	63	27
1.1	1.5	920	P-DF90LA	4.67	2.69	-	81.0	0.73	11.4	2.0	2.0	2.1	6.0	0.0070	63	31
1.5	2.0	950	P-DF100LA	6.09	3.50	-	82.5	0.75	15.1	2.0	2.0	2.1	6.5	0.0126	56	39
2.2	3.0	950	P-DF112MA	8.62	4.96	-	84.3	0.76	22.1	2.0	2.0	2.1	6.6	0.0241	62	47
3.0	4.0	970	P-DF132SA	11.6	6.7	-	85.6	0.76	29.5	2.0	2.0	2.1	6.8	0.0393	65	63
4.0	5.5	970	P-DF132MA	-	8.75	5.07	86.8	0.76	39.4	2.0	2.0	2.1	6.8	0.0502	65	72
5.5	7.5	970	P-DF132MB	-	11.7	6.79	88.0	0.77	54.1	2.0	2.0	2.1	7.0	0.0699	65	80
7.5	10	975	P-DF160MA	-	15.6	9.03	89.1	0.78	73.5	2.0	2.0	2.1	7.0	0.1330	65	133
11.0	15	975	P-DF160LA	-	22.3	12.9	90.3	0.79	108	2.0	2.0	2.1	7.2	0.1724	65	160
15.0	20	975	P-DF180LA	-	29.3	17.0	91.2	0.81	147	2.0	2.0	2.1	7.3	0.3568	69	220
18.5	25	975	P-DF200LA	-	36.0	20.8	91.7	0.81	181	2.0	2.0	2.1	7.3	0.5053	72	274
22.0	30	975	P-DF200LB	-	42.0	24.3	92.2	0.82	215	2.0	2.0	2.1	7.4	0.5873	72	295
30.0	40	980	PU-DF225M	-	57.5	33.4	92.9	0.81	292	2.0	2.0	2.1	6.9	0.9068	72	358
37.0	50	980	PU-DF250M	-	68.1	39.5	93.3	0.84	361	2.0	2.0	2.1	7.1	1.41	70	470
45.0	60	980	PU-DF280S	-	80.6	46.7	93.7	0.86	439	2.0	2.0	2.0	7.3	2.25	72	600
55.0	75	980	PU-DF280MA	-	98.1	56.9	94.1	0.86	536	2.0	2.0	2.0	7.3	2.63	72	645
75.0	100	990	PU-DF315SA	-	135	78.0	94.6	0.85	723	2.0	2.0	2.0	6.6	3.72	75	940
90.0	125	990	PU-DF315MA	-	163	94.5	94.9	0.84	868	2.0	2.0	2.0	6.7	4.32	75	1040
110.0	150	990	PU-DF315LA	-	196	114	95.1	0.85	1061	2.0	2.0	2.0	6.7	5.21	75	1110
132.0	175	990	PU-DF315LB	-	232	135	95.4	0.86	1273	2.0	2.0	2.0	6.8	6.18	75	1240
160.0	215	990	PU-DF355MA	-	281	163	95.6	0.86	1543	1.8	1.8	2.0	6.8	11.07	79	2450
200.0	270	990	PU-DF355MB	-	346	201	95.8	0.87	1929	1.8	1.8	2.0	6.8	13.48	79	2500
250.0	335	990	PU-DF355LAX [†]	-	433	251	95.8	0.87	2412	1.8	1.8	2.0	6.8	18.82	79	2590
280.0	375	990	PU-DF355LBX [†]	-	485	281	95.8	0.87	2701	1.8	1.8	2.0	6.8	-	79	2600
315.0	420	990	PU-DF355LCX [†]	-	552	320	95.8	0.86	3039	1.8	1.8	2.0	6.8	20.84	79	2655
355.0	480	990	PU-DF355LDX [†]	-	622	361	95.8	0.86	3424	1.8	1.8	2.0	6.8	21.85	79	2680
375.0	504	990	PU-DF355LEX [†]	-	657	381	95.8	0.86	3617	1.8	1.8	2.0	6.8	22.95	80	2720

P/PU-DF frame nomenclature indicates an IE3 efficiency motor

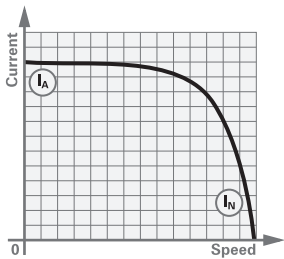
[†]See dimension pages 18 & 19

Performance data notes

Speed / torque & speed /current curves

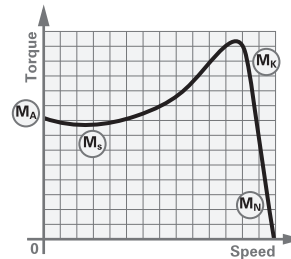
DOL starting

Typical speed/current curve



- (I_A) Starting current
- (I_N) Full load current
- (M_A) Starting torque or locked rotor torque
- (M_S) Pull up torque or run up torque
- (M_K) Pull out torque or breakdown torque
- (M_N) Full load torque

Typical speed/torque curve



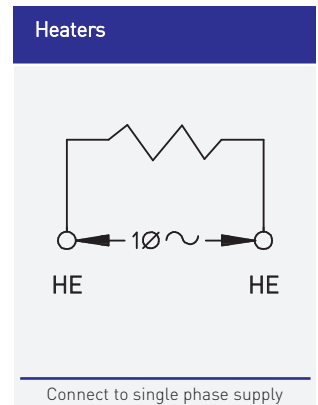
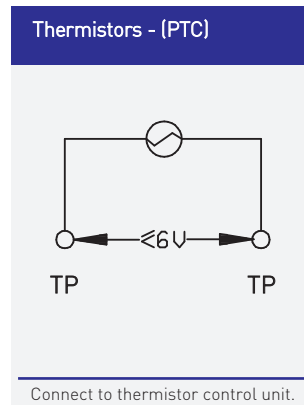
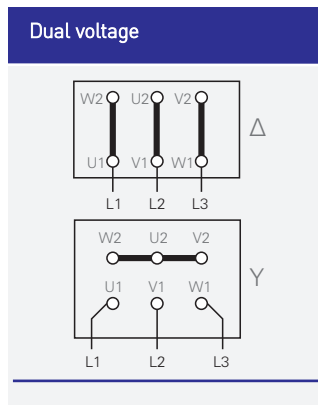
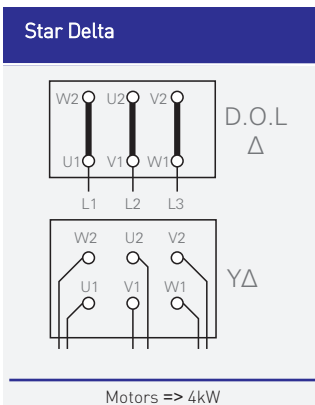
During the run up period in Star, there must be an adequate excess of motor torque over the load torque. The change to Delta must not occur until the motor is near the operating speed. Refer to Brook Crompton for running up against a load in excess of 70% full load during Star Delta starting.

Performance figures are subject to IEC tolerances. Performance figures are based on a 400 volt winding.

$$J \text{ (WK}^2 \text{ or WR}^2) = \frac{GD^2}{4}$$

$$J \text{ in lb ft}^2 = \frac{\text{kgm}^2}{0.042}$$

Connection diagrams

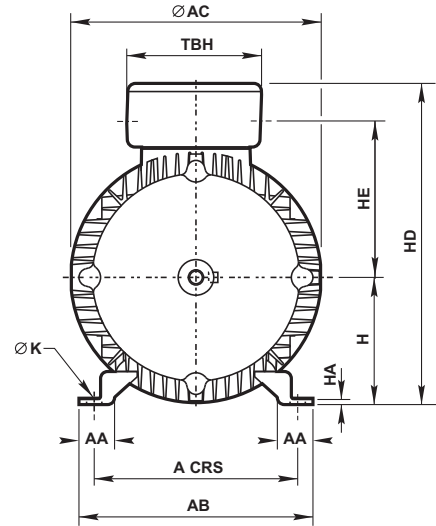
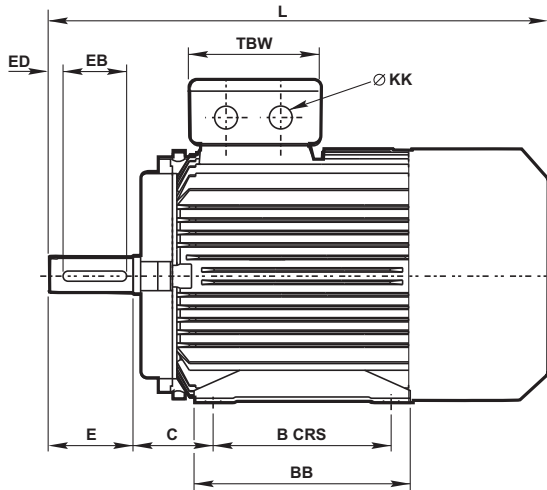


Dimensions

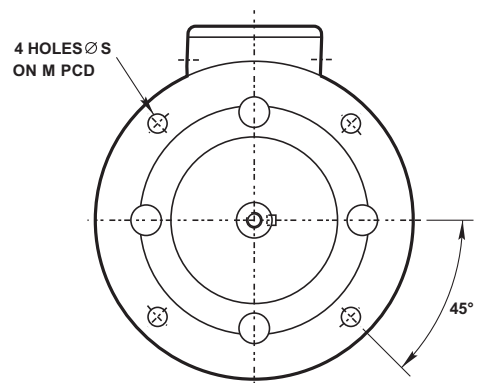
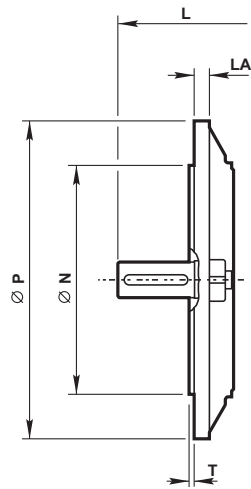
12

Foot, flange and face mounting - frame sizes 80 to 160 aluminium (P-DA)

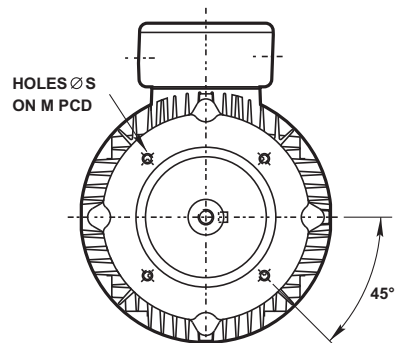
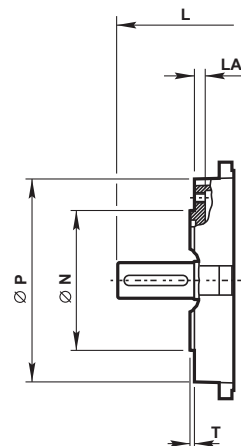
IM B3
IM 1001
Mounting options



IM B5 / IM B35 / IM V1
IM 3001/IM 2001/IM3011
Mounting options



IM B14/IM B34
IM 3601/IM 2101
Mounting options



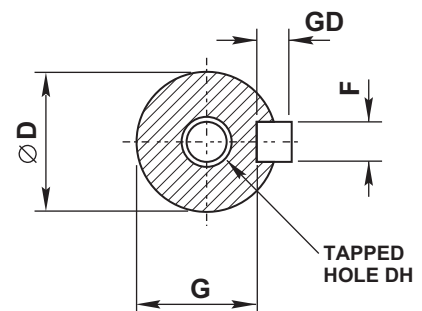
Dimensions

Foot, flange and face mounting - frame sizes 80 to 160 aluminium (P-DA)

General																
Type	Terminal box															
Aluminium	A	B	C	H	K	L	AA	AB	AC	BB	HA	HD	HE	TBW	TBH	KK
P-DA80M	125	100	50	80	10	300	35	156	175	132	8	220	195	100	100	1 x CM20
P-DA90S	140	100	56	90	10	350	37	180	195	175	11	255	230	105	105	1 x CM25
P-DA90L	140	125	56	90	10	380	37	180	195	175	11	255	230	105	105	1 x CM25
P-DA100L	160	140	63	100	12	430	40	190	215	176	11.5	270	245	105	105	1 x CM25
P-DA112M	190	140	70	112	12	450	41	230	240	180	12	300	265	114	121	2 x CM25
P-DA132S	216	140	89	132	12	470	51	270	275	180	12	345	310	114	121	2 x CM25
P-DA132M	216	178	89	132	12	510	51	270	275	216	12	345	310	114	121	2 x CM25
P-DA160M	254	210	108	160	14.5	620	55	305	330	260	18.5	420	380	160	170	2 x CM32
P-DA160L	254	254	108	160	14.5	665	55	305	330	305	18.5	420	380	160	170	2 x CM32

Flange & Face												
Type	IM B5 / IM V1 mounting						IM B14 mounting					
	M	N	P	S	T	LA	M	N	P	S	T	LA
P-DA80M	165	130	200	12	3.5	12	100	80	120	M6	3.0	-
P-DA90S	165	130	200	12	3.5	11	115	95	140	M8	3.0	14
P-DA90L	165	130	200	12	3.5	11	115	95	140	M8	3.0	14
P-DA100L	215	180	250	14.5	4.0	13	130	110	160	M8	3.5	15
P-DA112M	215	180	250	14.5	4.0	14	130	110	160	M8	3.5	15
P-DA132S	265	230	300	14.5	4.0	14	165	130	200	M10	4.0	17
P-DA132M	265	230	300	14.5	4.0	14	165	130	200	M10	4.0	17
P-DA160M	300	250	350	18.5	5.0	15	-	-	-	-	-	-
P-DA160L	300	250	350	18.5	5.0	15	-	-	-	-	-	-

Shaft								
Type	D	E	F	G	GD	EB	ED	DH
P-DA80	19	40	6	15.5	6	30	5	M6
P-DA90	24	50	8	20	7	40	5	M8
P-DA100	28	60	8	24	7	45	7.5	M10
P-DA112M	28	60	8	24	7	45	7.5	M10
P-DA132	38	80	10	33	8	60	10	M12
P-DA160	42	110	12	37	8	90	10	M16

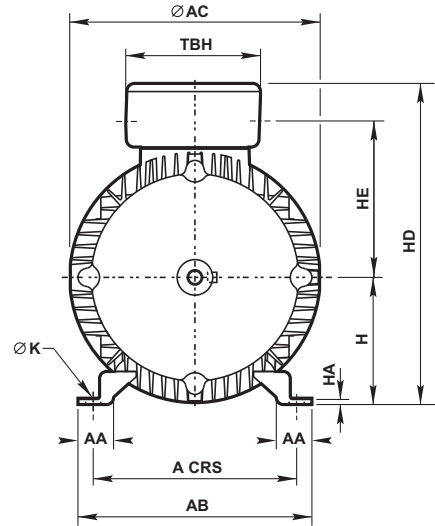
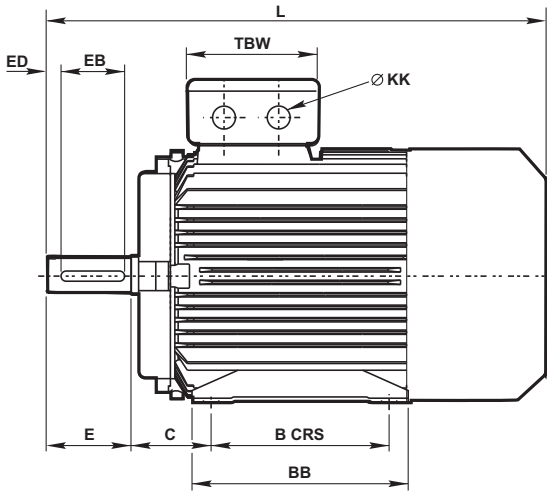


Dimensions

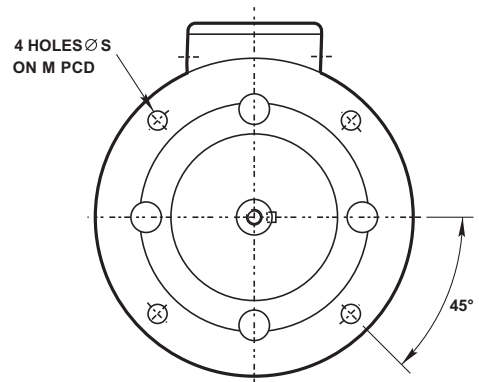
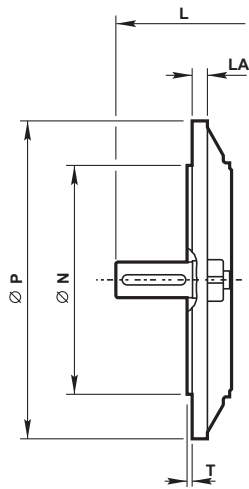
14

Foot, flange and face mounting - frame sizes 80 to 160 cast iron (P-DF)

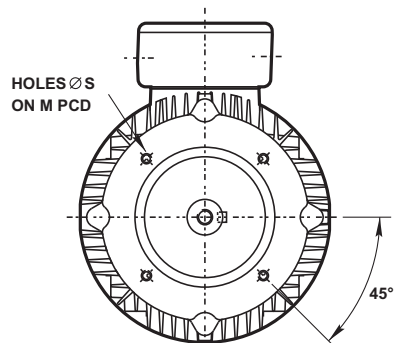
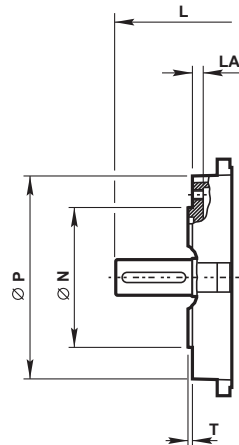
IM B3
IM 1001
Mounting options



IM B5 / IM B35 / IM V1
IM 3001 / IM 2001 / IM 3011
Mounting options



IM B14 / IM B34
IM 3601 / IM 2101
Mounting options



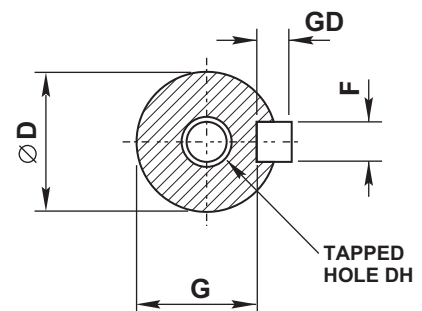
Dimensions

Foot, flange and face mounting - frame sizes 80 to 160 cast iron (P-DF)

General																
Type	Terminal box															
Cast iron	A	B	C	H	K	L	AA	AB	AC	BB	HA	HD	HE	TBW	TBH	KK
P-DF80M	125	100	50	80	10	340	34	160	162	160	10	230	110	92	92	1 x M25
P-DF90S	140	100	56	90	10	355	36	176	178	165	12	250	125	100	100	1 x M25
P-DF90L	140	125	56	90	10	385	36	176	178	195	12	250	125	100	100	1 x M25
P-DF100L	160	140	63	100	12	435	40	200	200	200	14	280	140	100	100	1 x M25
P-DF112M	190	140	70	112	12	440	45	226	216	200	15	302	150	108	116	2 x M25
P-DF132S	216	140	89	132	12	465	55	262	254	186	18	345	180	108	116	2 x M25
P-DF132M	216	178	89	132	12	505	55	262	254	224	18	345	180	108	116	2 x M25
P-DF160M	254	210	108	160	14.5	695	65	314	336	320	20	450	220	162	218	2 x M32
P-DF160L	254	254	108	160	14.5	740	65	314	336	365	20	450	220	162	218	2 x M32

Flange & Face												
Type	IM B5 / IM V1 mounting						IM B14 mounting					
	M	N	P	S	T	LA	M	N	P	S	T	LA
P-DF80M	165	130	200	12	3.5	12	100	80	120	M6	3.0	-
P-DF90S	165	130	200	12	3.5	12	115	95	140	M8	3.0	14
P-DF90L	165	130	200	12	3.5	12	115	95	140	M8	3.0	14
P-DF100L	215	180	250	14.5	4.0	13	130	110	160	M8	3.5	15
P-DF112M	215	180	250	14.5	4.0	14	130	110	160	M8	3.5	15
P-DF132S	265	230	300	14.5	4.0	14	-	-	-	-	-	-
P-DF132M	265	230	300	14.5	4.0	14	-	-	-	-	-	-
P-DF160M	300	250	350	18.5	5.0	15	-	-	-	-	-	-
P-DF160L	300	250	350	18.5	5.0	15	-	-	-	-	-	-

Shaft								
Type	D	E	F	G	GD	EB	ED	DH
P-DF80	19	40	6	15.5	6	28	6	M6
P-DF90	24	50	8	20	7	40	5	M8
P-DF100	28	60	8	24	7	50	5	M10
P-DF112M	28	60	8	24	7	50	5	M10
P-DF132	38	80	10	33	8	63	8	M12
P-DF160	42	110	12	37	8	90	9	M16

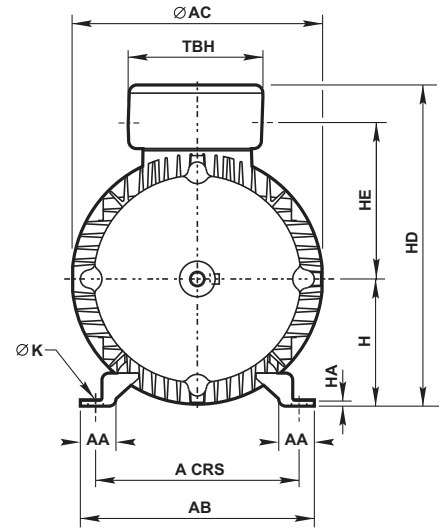
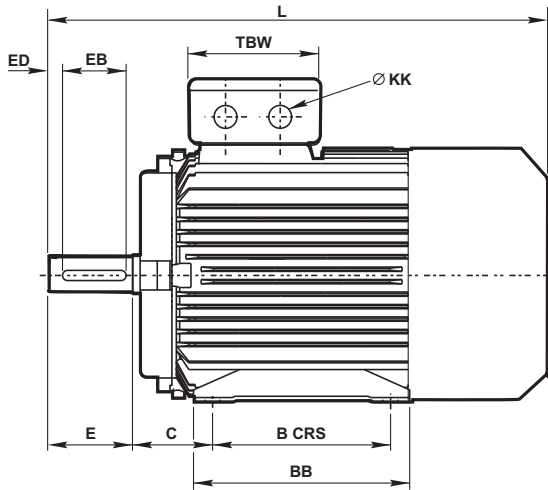


Dimensions

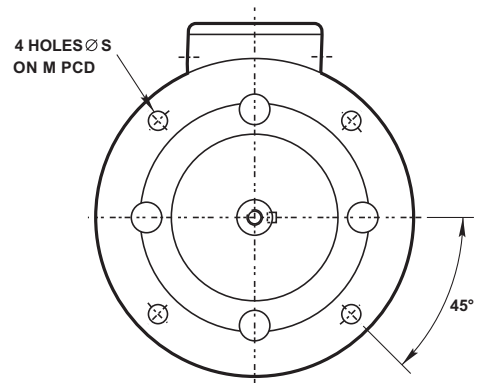
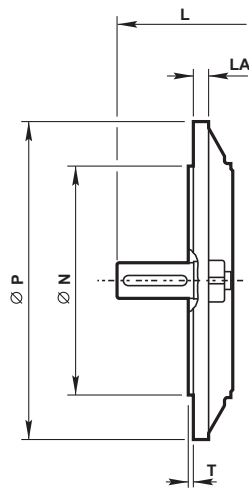
16

Foot and flange mounting - frame sizes 180 to 355 cast iron (P/PU-DF)

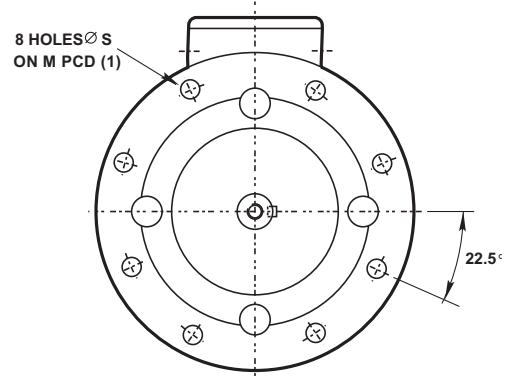
IM B3
IM 1001
Mounting options



IM B5 / IM B35 / IM V1
IM 3001/IM 2001/IM 3011
Mounting options



Up to 200 frame



8 holes at 22.5° for flanges to suit 225 frames and above to European specification

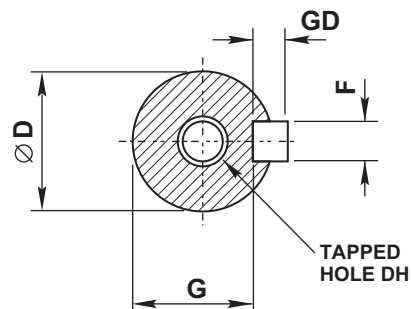
Dimensions

Foot and flange mounting - frame sizes 180 to 355 cast iron (P/PU-DF)

General																			
Type																Terminal box			
Cast iron	A	B	C	H	K	4 Pole +		2 Pole		AA	AB	AC	BB	HA	HD	HE	TBW	TBH	KK
P-DF180M	279	241	121	180	14.5	755	755	70	349	376	341	22	490	240	162	218	2 x M32		
P-DF180L	279	279	121	180	14.5	785	785	70	349	376	371	22	490	240	162	218	2 x M32		
P-DF200L	318	305	133	200	18.5	850	850	70	388	420	434	25	530	250	192	260	2 x M50		
PU-DF225S	356	286	149	225	18.5	880	-	75	431	463	373	28	575	282	192	260	2 x M50		
PU-DF225M	356	311	149	225	18.5	902	875	75	431	463	393	28	575	282	192	260	2 x M50		
PU-DF250M	406	349	168	250	24	1020	1020	80	484	505	450	30	645	315	230	305	2 x M63		
PU-DF280S	457	368	190	280	24	1050	1050	85	542	563	516	35	706	340	230	305	2 x M63		
PU-DF280M	457	419	190	280	24	1110	1110	85	542	563	536	35	706	340	230	305	2 x M63		
PU-DF315S	508	406	216	315	28	1320	1255	120	628	640	630	45	875	440	280	400	2 x M63		
PU-DF315M	508	457	216	315	28	1508	1445	120	628	640	680	45	875	440	280	400	2 x M63		
PU-DF315L	508	508	216	315	28	1508	1445	120	628	640	680	45	875	440	280	400	2 x M63		
PU-DF355M	610	560	254	355	28	1685	1615	120	730	710	750	52	1010	545	330	215	2 x M63		
PU-DF355L	610	630	254	355	28	1685	1615	120	730	710	750	52	1010	545	330	215	2 x M63		

Flange						
Type	IM B5 / IM V1, IM B35 mounting					
Cast iron	M	N	P	S	T	LA
P-DF180M/L	300	250	350	18.5	5	15
P-DF200L	350	300	400	18.5	5	17
PU-DF225S/M	400	350	450	18.5	5	20
PU-DF250	500	450	550	18.5	5	22
PU-DF280	500	450	550	18.5	5	22
PU-DF315S/M/L †	600	550	660	24	6	25
PU-DF355M/L †	740	680	800	24	6	30

† Available as B35 or V1 mounting only. B5 not suitable



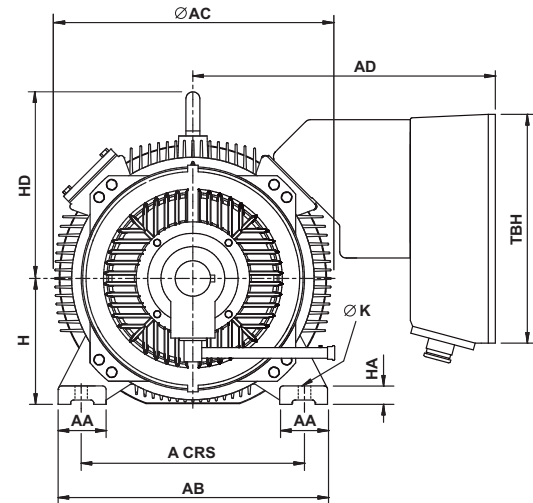
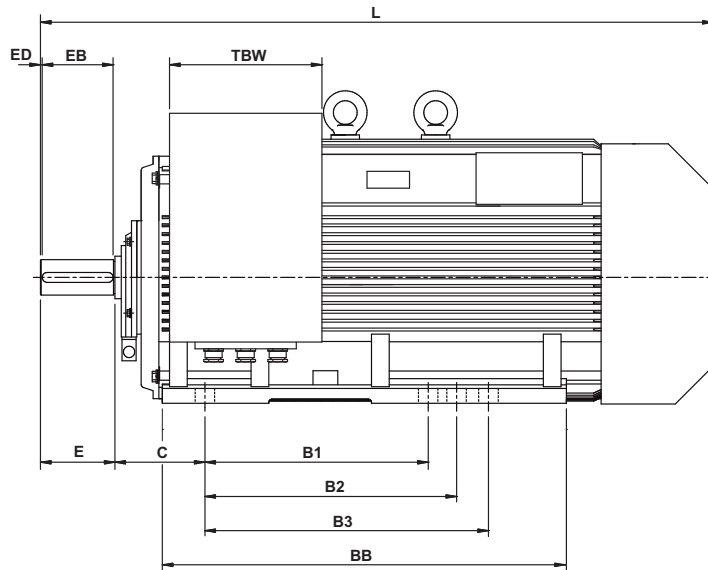
Shaft																
Type	4 pole +								2 pole							
Cast iron	D	E	F	G	GD	EB	ED	DH	D	E	F	G	GD	EB	ED	DH
P-DF180M/L	48	110	14	42.5	9	90	9	M16	48	110	14	42.5	9	90	9	M16
PU-DF200L	55	110	16	49	10	90	9	M20	55	110	16	49	10	90	9	M20
PU-DF225S	60	140	18	53	11	110	14	M20	-	-	-	-	-	-	-	-
PU-DF225M	60	140	18	53	11	110	14	M20	55	110	16	49	10	90	9	M20
PU-DF250M	65	140	18	58	11	110	14	M20	60	140	18	53	11	110	14	M20
PU-DF280S/M	75	140	20	67.5	12	110	14	M20	65	140	18	58	11	110	14	M20
PU-DF315S/M/L	80	170	22	71	14	140	14	M20	65	140	18	58	11	110	14	M20
PU-DF355M/L	100	210	28	90	16	200	5	M24	75	140	20	67.5	12	130	5	M20

Dimensions

18

Foot mounted - frame size 355X cast iron (PU-DF)

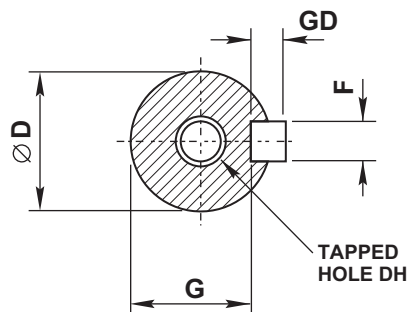
IM B3
IM 1001
Mounting options



Dimensions

Foot mounted - frame size 355X cast iron (PU-DF)

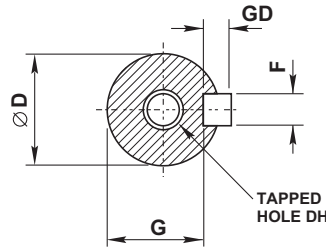
General																			
Type	4 Pole +													2 Pole			Terminal box		
Cast iron	A	B1	B2	B3	C	H	K	L	L	AA	AB	AC	BB	HA	HD	AD	TBW	TBH	KK
PU-DF355MX / LX	630	630	710	800	254	355	35	1905	1865	135	760	754	1140	55	535	860	430	640	2 x M63



Shaft									2 pole							
Type	4 pole +								2 pole							
Cast iron	D	E	F	G	GD	EB	ED	DH	D	E	F	G	GD	EB	ED	DH
PU-DF355MX / LX	100	210	28	90	16	200	5	M24	75	140	20	67.5	12	130	5	M20

Dimension pages notes & mounting codes

Shaft		
Dim D	Tol	Limits
11 to 14	j6	+0.008 -0.003
19 to 28	j6	+0.009 -0.004
38 to 48	k6	+0.018 +0.002
55 to 80	m6	+0.030 +0.011
85 to 110	m6	+0.035 +0.013



All dimensions in millimetres

Cable entry can be arranged in any one of four positions at 90° intervals

Dimensions should not be used for installation purposes unless specially endorsed

B5 mounted motors have suffix '-D' in the frame reference, eg P-DA132MA-D and B3/B5 mounted motors have suffix '-H' in the frame reference, eg P-DA132MA-H

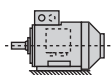
B14 mounted motors have suffix 'C' in the frame reference, eg P-DA132MA-C and B3/B14 mounted motors have suffix '-H' in the frame reference, eg P-DA132MA-H

Flange		
Dim N	IEC 60072	
	Tol	Limits
110	j6	+0.013 -0.009
130	j6	+0.014 -0.011
230 to 250	j6	+0.016 -0.013
300	j6	+0.016 -0.016
350	j6	+0.018 -0.018
450	j6	+0.020 -0.020
550	j6	+0.022 -0.022
680	js6	+0.025 -0.025

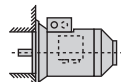
Face		
Dim N	IEC 60072	
	Tol	Limits
70 and 80	j6	+0.012 -0.007
95 and 110	j6	+0.013 -0.009
130	j6	+0.014 -0.011
230	j6	+0.016 -0.013

Mounting codes

Horizontal shaft:



**IM B3
IM 1001**
foot mounted



**IM B5
IM 3001**
flange at DE
no feet



**IM B6
IM 1051**
foot wall mounted with
feet on left-hand side
when viewed from DE



**IM B7
IM 1061**
foot wall mounted with
feet on right-hand side
when viewed from DE

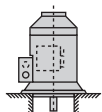


**IM B8
IM 1071**
ceiling mounted
with feet
above motor

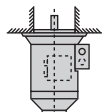


**IM B14
IM 3601**
face at DE
no feet

Vertical shaft:



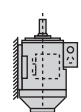
**IM V1
IM 3011**
flange at DE
shaft down
no feet



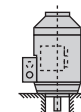
**IM V3
IM 3031**
flange at DE
shaft up
no feet



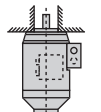
**IM V5
IM 1011**
vertical foot
wall mounted
shaft down



**IM V6
IM 1031**
vertical foot
wall mounted
shaft up



**IM V18
IM 3611**
face at DE
shaft down
no feet



**IM V19
IM 3631**
face at DE
shaft up
no feet

Technical information

Mechanical

21

Bearing arrangements

Bearing references and oilseals for horizontally mounted motors only						
Type		Poles	Bearings ⁽¹⁾		Oilseals ⁽²⁾	
Aluminium	Cast iron		Drive end	Non-drive end	Drive end	Non-drive end
P-DA80M	-	All	6204ZZ	6204ZZ	20 x 35 x 7	20 x 35 x 7
P-DA90S/L	-	2P & 6P	6205ZZ	6205ZZ	25 x 40 x 7	25 x 40 x 7
P-DA90S/L	-	4P	6205ZZ	6203ZZ	25 x 40 x 7	17 x 28 x 6
P-DA100L	-	All	6206ZZ	6206ZZ	30 x 45 x 7	30 x 45 x 7
P-DA112M	-	All	6206ZZ	6206ZZ	30 x 45 x 7	30 x 45 x 7
P-DA132S/M	-	All	6208ZZ	6208ZZ	40 x 62 x 7	40 x 62 x 7
P-DA160M/L	-	All	6309ZZ	6309ZZ	45 x 62 x 10	45 x 62 x 10
P-DF80M	-	All	6204ZZ	6204ZZ	20 x 35 x 5	20 x 35 x 5
P-DF90S/L	-	All	6205ZZ	6205ZZ	25 x 40 x 5	25 x 40 x 5
P-DF100L	-	All	6206ZZ	6206ZZ	30 x 47 x 7	30 x 47 x 7
P-DF112M	-	All	6306ZZ	6306ZZ	30 x 47 x 7	30 x 47 x 7
P-DF132S/M	-	All	6308ZZ	6308ZZ	40 x 62 x 8	40 x 62 x 8
P-DF160M/L	-	All	6309ZZ	6309ZZ	45 x 62 x 8	45 x 62 x 8
P-DF180M/L	-	All	6311ZZ	6311ZZ	55 x 72 x 8	55 x 72 x 8
P-DF200L	-	All	6312ZZ	6312ZZ	60 x 80 x 8	60 x 80 x 8
PU-DF225S/M	-	All	6313ZZ	6313ZZ	65 x 90 x 10	65 x 90 x 10
PU-DF250M	-	2	6314	6314	70 x 90 x 10	70 x 90 x 10
PU-DF250M	-	4 up	6315	6314	75 x 100 x 10	70 x 90 x 10
PU-DF280S/M	-	2	6315	6315	75 x 100 x 10	75 x 100 x 10
PU-DF280S/M	-	4 up	6317	6317	85 x 110 x 12	85 x 110 x 12
PU-DF315S/M/L	-	2	6317	6317	85 x 110 x 12	85 x 110 x 12
PU-DF315S/M/L	-	4 up	6319	6319	95 x 120 x 12	95 x 120 x 12
PU-DF355M/L	-	2	6319	6319	95 x 120 x 12	95 x 120 x 12
PU-DF355M/L	-	4 up	6324	6324	120 x 140 x 12	110 x 140 x 12
PU-DF355MX / LX	-	2	6319	6319	95 x 120 x 12	95 x 120 x 12
PU-DF355MX / LX	-	4 up	6324	6324	120 x 140 x 12	120 x 140 x 12

⁽¹⁾ Frame sizes 80-225 have sealed for life bearings with C3 clearances. Frame sizes 250-355 bearings have regreasing facilities with C3 clearance.

⁽²⁾ Sizes given are in mm and represent bore x outside diameter x width.

The seal material used on all frame sizes and all polarity is nitrile rubber (NBR).

Relubrication intervals for operating temperature up to 70°C x 10 ⁸ hours								
Type	3000 min ⁻¹		1500 min ⁻¹		1000 min ⁻¹		750 min ⁻¹	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
PU-DF250M	1.1	0.7	3.3	2.1	5.0	3.2	5.0	3.2
PU-DF280S	1.2	0.8	3.9	2.5	5.6	3.6	5.6	3.6
PU-DF280M	1.2	0.8	3.9	2.5	5.6	3.6	5.6	3.6
PU-DF315S	0.8	0.5	3.7	2.4	5.4	3.5	5.4	3.5
PU-DF315M	0.8	0.5	3.7	2.4	5.4	3.5	5.4	3.5
PU-DF315L	0.8	0.5	3.7	2.4	5.4	3.5	5.4	3.5
PU-DF355M	0.5	0.3	3.1	2.0	5.0	3.2	5.0	3.2
PU-DF355L	0.5	0.3	3.1	2.0	5.0	3.2	5.0	3.2
PU-DF355MX	-	-	3.3	2.1	4.0	2.6	4.0	2.6
PU-DF355LX	-	-	3.3	2.1	4.0	2.6	4.0	2.6

Sealed for life bearings are fitted with a premium quality grease to ensure exceptional reliability under a wide range of operating conditions. Under normal operating conditions, a grease life of more than 25,000 hours can be achieved.

The regreasing time should be reduced if the bearing operating temperature is in excess of 70°C.



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