

# Ex d/de Zone 1 flameproof motors



Frame sizes 90 to 315



# Specification and Introduction



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## W Zone 1 Flameproof Specification

Specification	Standard product	Option
<b>Frame sizes</b>	90 - 315	143 - 505 (NEMA dimensions)
<b>Protection type</b>	Ex d	Ex de
<b>Enclosure</b>	IP55	IP56, IP65, IP66, IP67 or IP68
<b>Mounting option</b>	Foot (B3), Flange (B5), Face (B14) or Pad (B30)	Foot & Flange (B35), Foot & Face (B34)
	Horizontal	Vertical
<b>Terminal box position</b>	Right hand side (frame sizes 90-180)	Left hand side, Top
	Top (frame sizes 200-315)	Right hand side, left hand side
<b>Voltage</b>	3 kW and below: 220-240 / 380-415	-
	4 kW and above: 380-415	-
<b>Frequency</b>	50 Hz	60 Hz
<b>Cooling</b>	IC411	IC410 & IC418
<b>Bearing location</b>	Non drive end (frame sizes 90-180)	Drive end
	Drive end (frame sizes 200-315)	
<b>Lubrication</b>	90-180 double-shielded bearings	-
	200-315 regreasing facility	-
<b>Insulation</b>	class F	class H
<b>Temperature rise</b>	class B	class F (T3)
<b>Paint colour</b>	water blue (RAL 5021)	on request
<b>Thermal protection</b>	200-315 (by thermistors)	90-180
<b>Anti condensation heaters</b>	-	90-315
<b>Inverter Duty<sup>1)</sup></b>	Variable Torque: 10:1	Alternative speed range
	Constant Torque: 2:1	Alternative speed range
<b>Ambient temperature</b>	-20°C to +40°C	-50°C to +60°C
<b>Certification</b>	ATEX	IECEX (frames 90-180)

The above specification and options give a brief summary of features available for the W flameproof range. For a full listing of optional features, please contact Brook Crompton sales.  
<sup>1)</sup> thermistors & derate for Temperature class

### 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 quality systems.

All of our factories have been assessed to meet these requirements, a further assurance that only the highest standards of quality are accepted.

### W Ex d/de flameproof range

Brook Crompton's range of Ex d/de motors are designed, tested and manufactured in accordance with the latest Euronorm and relevant country standards.

Motors are manufactured in factories that are assessed by a European notified body (eg Baseefa (2001) Ltd), meeting rigorous quality controls

### Benefits include:

- Baseefa Ltd certified
- 3 year warranty
- Stainless steel rating & certification plate
- Certification for inverter use
- Minimum IP55 protection

### ATEX

All Ex d/de motors fully comply with the requirements of ATEX directive (94/9/EC).



## Standards

Standards					
Ex d/de motors can be manufactured to the international standards listed below:					
Region	International	UK	Europe	North America	Australia
Standard	IEC	BS, EN & IEC	EN	NEMA	AS, NZ & IEC
Outputs	IEC 60034-1	BS EN 50347-2001	EN 50347	MG 1 Part 10	AS 1359.30
Performance	IEC 60034-1	BS EN 50347-2001 BS EN 60034-1	EN 60034-1	MG 1 Part 12	AS 1359.101
Dimensions	IEC 60072-1	BS EN 50347	EN 50347	MG 1 Part 4	AS 1359.10
Mounting	IEC 60034-7	BS EN 60034-7	EN 60034-7	MG 1 Part 4	AS 1359.107
Degrees of protection	IEC 60034-5	BS EN 60034-5	EN 60034-5	MG 1 1.26B	AS 1359.20
Ex d	IEC 60079-0 IEC 60079-1	BS EN 60079-0 BS EN 60079-1	EN 60079-0 EN 60079-1	*	
Ex de	IEC 60079-0 IEC 60079-1 IEC 60079-7	BS EN 60079-0 BS EN 60079-1 BS EN 60079-7	EN 60079-0 EN 60079-1 EN 60079-7	*	

Standard motor complies Motors complying with IEC 60034-1 also comply with many of the national standards of other European countries, eg CEI 203 (Italy), NBN7 (Belgium), NEN 3173 (Netherlands), SEN 2601 01 (Sweden).  
Optional \* Motors to NEMA standards have CSA approval and generally comply with Canadian standards.

## 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. See Specification (page 2) for alternatives.

## 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)	ATEX
<b>Reference numbers</b>	73/23/EEC 93/68/EEC 2006/95/EC	89/392/EEC 98/37/EEC 2006/42/EEC	89/336/EEC 92/31/EEC 93/68/EEC 2004/108/EC	94/9/EC
<b>Motor CE marked</b>	Yes	No	No	Yes
<b>Standards</b>	EN 60034	Not applicable	EN 60034-1	EN 60079-0 EN 60079-1 EN 60079-7
<b>Documentation for customers' technical file</b>	Declaration of conformity	Certificate of incorporation	Statement <sup>(1)</sup>	Declaration of conformity
<b>Safety instructions with every motor</b>	Yes	Yes	-	Yes
<b>Comment</b>	Relevant electrical equipment operating between 50 to 1000 volts AC	Statement <sup>(2)</sup>	Component	Hazardous atmosphere equipment - mandatory

<sup>(1)</sup> 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  
<sup>(2)</sup> 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 of Directive 2006/42/EEC.

# Specification



## 4 Ex d

### Ex d flameproof motors

Frame Sizes W-EF90 to W-EF315

Groups I, IIA/IIB or IIC

Suitable for use in Zone 1

Code: **Ex d IIB T4 Gb** or **Ex d IIC T4 Gb \***

or

Suitable for use in Category M2

Code: **I M2 Ex d I Mb**

### General

These motors are designated Ex d flameproof and are designed for operation in Zone 1 hazardous areas. They comply with all relevant national and international standards. They are of a rugged cast iron construction, certified to withstand an internal explosion. Outputs range from 0.37kW to 200kW with smaller or larger outputs available on request.

### Temperature class

Standard motors are suitable for applications classified T4. In addition, T5 (frames 90-180) can be supplied, although this may involve reduced outputs. Motors for T3 can be supplied with higher outputs.

### Terminal box

Constructed of cast iron, the terminal box forms its own flameproof enclosure capable of containing an internal explosion without transmitting it to the surrounding atmosphere or to the motor.

### Cable entries

IIA/IIB motors are supplied with one of the following methods of entry:

- One threaded entry to metric, imperial, BSP, or NPT standards suitable for a certified compression gland or other certified entry device (eg to suit armoured cable), or
- Loose leads without terminal box combined with armoured or braided or flexible conduit.

\* IIC motors are supplied as option 2 only.

### Earthing terminals

All motors are fitted with internal and external earthing terminals. These are provided with a washer and an anti-vibration washer.

### Additional design features

NEMA dimensions

Multi-speed

Variable speed

Enclosure to: IP56, IP65, IP67 or IP68

Anti-condensation heaters

Thermostats or thermistors

EEMUA pub. no. 132-1988

Loose leads via barrier gland

### Impact covers

Designed to prevent the ingress of falling foreign bodies, impact covers are fitted on motors when mounted vertically, shaft down.

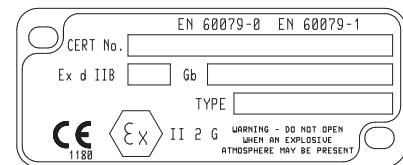
Vertically mounted motors fitted with impact cover		
European frame	BS frame	Increase in 'L' dim
W-EF90-100L	W-EF90-100L	26
W-EF112M	W-EF112M	38
W-EF132S/M	W-EF132S/M	40
W-EF160-180L	W-EF160-180	40.5
WU-EF200L	W-EF200L	45
WU-EF225S	W-EF225S	45
WU-EF225M	W-EF225M	45
WU-EF250MNE	W-EF250S	45
WU-EF280SNE	W-EF250M	48
WU-EF280MNE	W-EF280S	48
WU-EF315SNE	W-EF280M	48
WU-EF315MNE	W-EF315S	48
WU-EF315M	W-EF315M	53
WU-EF315L	W-EF315L	53

### Certification

The motors are certified by a European notified body who also grant the QAN (Quality Assurance Notification) for design and manufacturing facilities..

ATEX Certificate Numbers		
Frame size	Certificate number	
	IIA/IIB	IIC*
W-EF90	Baseefa02ATEX0013X	-
W-EF100	Baseefa02ATEX0015X	-
W-EF112	Baseefa02ATEX0017X	-
W-EF132	Baseefa02ATEX0019X	-
W-EF160	Baseefa02ATEX0021X	-
W-EF180	Baseefa02ATEX0023X	-
W-EF200L	BAS02ATEX2111X	BAS02ATEX2113X
W-EF225S	BAS02ATEX2111X	BAS02ATEX2113X
W-EF225M	BAS02ATEX2114X	BAS02ATEX2116X
W-EF250S	BAS02ATEX2114X	BAS02ATEX2116X
WU-EF250ME	BAS02ATEX2114X	BAS02ATEX2116X
W-EF250M	BAS02ATEX2117X	BAS02ATEX2119X
WU-EF280SE	BAS02ATEX2117X	BAS02ATEX2119X
W-EF280S	BAS02ATEX2117X	BAS02ATEX2119X
WU-EF280ME	BAS02ATEX2117X	BAS02ATEX2119X
W-EF280M	BAS02ATEX2120X	BAS02ATEX2122X
WU-EF315SE	BAS02ATEX2120X	BAS02ATEX2122X
W-EF315S	BAS02ATEX2120X	BAS02ATEX2122X
WU-EF315ME	BAS02ATEX2120X	BAS02ATEX2122X
W-EF315M	BAS02ATEX2123X	BAS02ATEX2125X
WU-EF315M	BAS02ATEX2123X	BAS02ATEX2125X
W-EF315L	BAS02ATEX2123X	BAS02ATEX2125X
WU-EF315L	BAS02ATEX2123X	BAS02ATEX2125X

IECEx Certificate Numbers		
Frame size	Certificate number	
	IIA/IIB	IIC
W-EF90 to W-EF180	IECEx BAS 11.0122X	-



Example of an Ex d certification plate

Ex d Motors - maximum number of terminals, terminal pin cable capacity and terminal nut tightening torque									
Frame size	Terminal box size	Max. number of mains and additional auxiliary terminals				Cable capacity (mm <sup>2</sup> )		Tightening torque (Nm)	
		3 Mains	6 Mains	9 Mains	12 Mains	Mains terminals	Auxiliary terminals	Mains terminals	Auxiliary terminals
90-112	standard	5 Aux	2 Aux	0 Aux	n/a	6 (M5)	6 (M5)	2.2	2.2
	oversize <sup>(1)</sup>	6 Aux	4 Aux	2 Aux	n/a	16 (M6)	6 (M5)	4.2	2.2
132-160	standard	6 Aux	4 Aux	2 Aux	n/a	16 (M6)	6 (M5)	4.2	2.2
	oversize <sup>(2)</sup>	6 Aux	6 Aux	0 Aux	n/a	25 (M8)	6 (M5)	11.3	2.2
180	standard	6 Aux	6 Aux	0 Aux	n/a	25 (M8)	6 (M5)	11.3	2.2
200-250S <sup>(4)</sup> 200-250M <sup>(5)</sup>	standard	8 Aux	4 Aux	n/a	n/a	50 (M8)	2.5 (M4)	4	3
	oversize <sup>(3)</sup>	19 Aux	10 Aux	7 Aux	4 Aux	50 (M8)	2.5 (M4)	4	3
	oversize <sup>(3)</sup>	14 Aux	6 Aux	n/a	n/a	70 (M10)	2.5 (M4)	6	3
250M-315S <sup>(4)</sup> 280S-315M <sup>(5)</sup>	standard	19 Aux	10 Aux	7 Aux	4 Aux	50 (M8)	2.5 (M4)	4	3
	standard	14 Aux	6 Aux	n/a	n/a	70 (M10)	2.5 (M4)	6	3
315M/L	standard	n/a	n/a	n/a	13 Aux	50 (M8)	2.5 (M4)	4	3
	standard	n/a	19 Aux	n/a	n/a	70 (M10)	2.5 (M4)	6	3
	standard	25 Aux	19 Aux	6 Aux	n/a	185 (M12)	2.5 (M4)	12	3

<sup>(1)</sup> 132-160 frame t.box. <sup>(2)</sup> 180 frame t.box. <sup>(3)</sup> 250M-315S t.box. <sup>(4)</sup> BS frame ref. <sup>(5)</sup> European frame ref.

# Specification



## Ex de

### Ex de flameproof motors with increased safety terminals

Frame sizes W-EF90 to W-EF315  
 Groups I, IIA/IIB or IIC  
 Suitable for use in Zone 1  
 Code: **Ex de IIB T4 Gb** or **Ex de IIC T4 Gb**  
 or  
 Suitable for use in Category M2  
 Code: **I M2 Ex de I Mb**

### General

Ex de motors are of a rugged cast iron construction. These motors differ from Ex d only in the terminal and terminal box configuration. The method of cable termination is favoured by many organisations throughout mainland Europe, and an increasing number of users in the UK, for use both on and offshore. The use of increased safety (not flameproof) terminals / cable entry has certain advantages:

- Surface corrosion in the terminal box is not a threat to safety
- Increased safety entries are easier to connect and there is no need to ensure a flameproof connection as the safety is assured by increased safety terminals and the IP55 terminal box protection
- Earthing inside the box is possible using the external armouring or braid
- A flameproof gland is not required

### Terminal box

The cast iron terminal box (although similar in design) is not flameproof. Increased safety Ex e terminals are fitted and the box enclosure, which employs gaskets, has IP55 weatherproof protection.

### Cable entries

For the reception of a cable entry device chosen in accordance with a recognised code of practice, which ensures the IP integrity of the terminal box.

### Additional design features

- NEMA dimensions
- Multi-speed
- Anti-condensation heaters
- Thermostats or thermistors
- Brake motors 90-180 frames (IIB only)

### Impact covers

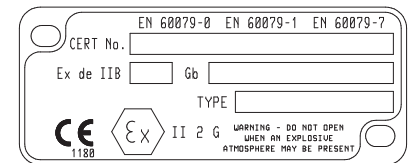
Designed to prevent the ingress of falling foreign bodies, impact covers are fitted on motors when mounted vertically, shaft down. (see page 6 for the increase in length on shaft down motors).

### Certification

The motors are certified by a European notified body who also grant the QAN (Quality Assurance Notification) for design and manufacturing facilities.

ATEX Certificate Numbers		
Frame size	Certificate number	
	IIA/IIB	IIC
W-EF90	Baseefa02ATEX0014X	
W-EF100	Baseefa02ATEX0016X	
W-EF112	Baseefa02ATEX0018X	
W-EF132	Baseefa02ATEX0020X	Baseefa10ATEX0150X
W-EF160	Baseefa02ATEX0022X	
W-EF180	Baseefa02ATEX0024X	
W-EF200L	BAS02ATEX2112X	BAS02ATEX2113X
W-EF225S	BAS02ATEX2112X	BAS02ATEX2113X
W-EF225M	BAS02ATEX2115X	BAS02ATEX2116X
W-EF250S	BAS02ATEX2115X	BAS02ATEX2116X
WU-EF250ME	BAS02ATEX2115X	BAS02ATEX2116X
W-EF250M	BAS02ATEX2118X	BAS02ATEX2119X
WU-EF280SE	BAS02ATEX2118X	BAS02ATEX2119X
W-EF280S	BAS02ATEX2118X	BAS02ATEX2119X
WU-EF280ME	BAS02ATEX2118X	BAS02ATEX2119X
W-EF280M	BAS02ATEX2121X	BAS02ATEX2122X
WU-EF315SE	BAS02ATEX2121X	BAS02ATEX2122X
W-EF315S	BAS02ATEX2121X	BAS02ATEX2122X
WU-EF315ME	BAS02ATEX2121X	BAS02ATEX2122X
W-EF315M	BAS02ATEX2124X	BAS02ATEX2125X
WU-EF315M	BAS02ATEX2124X	BAS02ATEX2125X
W-EF315L	BAS02ATEX2124X	BAS02ATEX2125X
WU-EF315L	BAS02ATEX2124X	BAS02ATEX2125X

IECEX Certificate Numbers		
Frame size	Certificate number	
	IIA/IIB	IIC
W-EF90 to W-EF180	IECEX BAS 11.0122X	IECEX BAS 10.0075X



Example of an Ex de certification plate

Ex de Motors - maximum number of terminals, terminal pin cable capacity and terminal nut tightening torque

Frame size	Terminal box size	Max. number of mains and auxiliary terminals				Cable capacity [mm <sup>2</sup> ]		Tightening torque [Nm]	
		3 Mains	6 Mains	9 Mains	12 Mains	Main terminals <sup>(4)</sup>	Auxiliary terminals	Main terminals	Auxiliary terminals
90-112	standard	2 Aux	n/a	n/a	n/a	2.5	2.5	2	2
	oversize <sup>(1)</sup>	4 Aux	2 Aux	0 Aux	n/a	6	2.5	6.5	2
132-160	standard	4 Aux	2 Aux	0 Aux	n/a	6	2.5	6.5	2
	oversize <sup>(2)</sup>	4 Aux	2 Aux	0 Aux	n/a	16	2.5	9.5	2
180	standard	4 Aux	2 Aux	0 Aux	n/a	16	2.5	9.5	2
200-250S <sup>(4)</sup>	standard	8 Aux	4 Aux	n/a	n/a	35 (M8)	2.5 (M4)	3	3
	oversize <sup>(3)</sup>	19 Aux	10 Aux	7 Aux	4 Aux	35 (M8)	2.5 (M4)	3	3
200-250M <sup>(5)</sup>	standard	8 Aux	4 Aux	n/a	n/a	120 (M10)	2.5 (M4)	5	3
	oversize <sup>(3)</sup>	14 Aux	6 Aux	n/a	n/a	120 (M10)	2.5 (M4)	5	3
250M-315S <sup>(4)</sup>	standard	19 Aux	10 Aux	7 Aux	4 Aux	35 (M8)	2.5 (M4)	3	3
	oversize <sup>(3)</sup>	14 Aux	6 Aux	n/a	n/a	120 (M10)	2.5 (M4)	5	3
280S-315M <sup>(5)</sup>	standard	19 Aux	10 Aux	7 Aux	4 Aux	35 (M8)	2.5 (M4)	3	3
	oversize <sup>(3)</sup>	14 Aux	6 Aux	n/a	n/a	120 (M10)	2.5 (M4)	5	3
315M/L	standard	n/a	n/a	n/a	13 Aux	35 (M8)	2.5 (M4)	3	3
	standard	n/a	19 Aux	n/a	n/a	120 (M10)	2.5 (M4)	5	3
	standard	25 Aux	19 Aux	6 Aux	n/a	240 (M12)	2.5 (M4)	12	3

<sup>(1)</sup> 132-160 frame t.box. <sup>(2)</sup> 180 frame t.box. <sup>(3)</sup> 250M-315S t.box. <sup>(4)</sup> BS frame ref. <sup>(5)</sup> European frame ref.

<sup>(4)</sup> mains terminal sizes quoted are for terminal pillar, not terminal head screw size

# Performance data



## 6 3000 min<sup>-1</sup> (2 pole)

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 starting current ratio      Direct on line pull up torque ratio      Direct on line pull up torque      Star delta starting torque ratio (I)      Star delta starting current ratio      Star delta pull up torque      Rotor inertia Wkg      Mean sound pressure level @ 1m on no load

P <sub>N</sub> kW (hp)	n min <sup>-1</sup>	Type	I <sub>N</sub>			η		Cos φ		M <sub>N</sub> Nm	M <sub>A</sub> M <sub>N</sub>	I <sub>A</sub> I <sub>N</sub>	M <sub>K</sub> M <sub>N</sub>	M <sub>S</sub> M <sub>N</sub>	M <sub>A</sub> M <sub>N</sub> Y	I <sub>A</sub> I <sub>N</sub> Y	M <sub>S</sub> M <sub>N</sub> Y	J kgm <sup>2</sup>	L <sub>PA</sub> dB(A)
			380 V A	400 V A	415 V A	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>											
1.1 (1.5)	2850	W-EF90SG <sup>(1)</sup>	2.5	2.38	2.38	<b>79.3</b> 79.5 77.3	<b>0.84</b> 0.78 0.64			3.7	2.1	6.0	2.7	1.9	-	-	-	0.0012	68
1.5 (2.0)	2850	W-EF90SG <sup>(1)</sup>	3.4	3.2	3.2	<b>79.4</b> 80.4 78.6	<b>0.85</b> 0.80 0.70			5.0	2.2	6.1	2.8	2.0	-	-	-	0.0012	68
2.2 (3.0)	2860	W-EF90LM <sup>(1)</sup>	4.7	4.5	4.5	<b>81.8</b> 82.6 80.2	<b>0.87</b> 0.83 0.74			7.3	2.5	6.3	3.0	2.2	-	-	-	0.0015	68
3.0 (4.0)	2890	W-EF100LR <sup>(1)</sup>	6.0	5.7	5.7	<b>85.5</b> 85.5 83.0	<b>0.89</b> 0.85 0.77			9.9	3.1	8.5	3.5	2.8	-	-	-	0.0060	71
4.0 (5.5)	2900	W-EF112MG <sup>(1)</sup>	8.2	7.8	7.8	<b>84.2</b> 84.4 81.4	<b>0.88</b> 0.86 0.75			13.2	2.4	7.5	3.0	2.1	0.72	2.4	0.60	0.0065	69
5.5 (7.5)	2910	W-EF132SF <sup>(1)</sup>	10.6	10.1	10.1	<b>87.0</b> 87.0 85.0	<b>0.90</b> 0.87 0.80			18.0	2.5	8.0	2.8	2.2	0.75	2.4	0.70	0.0136	71
7.5 (10)	2895	W-EF132SJ <sup>(1)</sup>	14.2	13.5	13.5	<b>88.0</b> 88.0 87.0	<b>0.91</b> 0.89 0.82			24.7	2.5	8.2	3.0	2.3	0.75	2.5	0.70	0.0156	71
11 (15)	2935	W-EF160MF <sup>(1)</sup>	20.7	19.7	19.7	<b>90.5</b> 90.8 89.7	<b>0.89</b> 0.86 0.79			35.8	2.2	8.5	3.0	1.8	0.65	2.5	0.60	0.044	73
15 (20)	2935	W-EF160MJ <sup>(1)</sup>	27.7	26.3	26.3	<b>91.3</b> 91.5 91.2	<b>0.90</b> 0.88 0.80			48.8	2.2	8.0	3.1	1.9	0.65	2.6	0.60	0.045	73
18.5 (25)	2940	W-EF160LR <sup>(1)</sup>	34	32	32	<b>91.8</b> 92.1 91.3	<b>0.91</b> 0.89 0.81			60.1	2.4	8.7	3.2	1.9	0.78	2.7	0.65	0.056	73
22 (30)	2945	W-EF180ML <sup>(1)</sup>	39	37	37	<b>92.2</b> 92.2 91.5	<b>0.92</b> 0.91 0.86			71.3	2.1	8.4	2.9	1.8	0.60	2.5	0.55	0.104	72

<sup>(1)</sup> European and BS frame reference - see pages 14-15 for dimensions

# Performance data



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3000 min<sup>-1</sup> (2 pole)

P <sub>N</sub> kW (hp)	n min <sup>-1</sup>	Type	I <sub>N</sub>			η		Cos φ		M <sub>N</sub> Nm	M <sub>A</sub> M <sub>N</sub>	I <sub>A</sub> I <sub>N</sub>	M <sub>K</sub> M <sub>N</sub>	M <sub>S</sub> M <sub>N</sub>	M <sub>A</sub> M <sub>N</sub> Y	I <sub>A</sub> I <sub>N</sub> Y	M <sub>S</sub> M <sub>N</sub> Y	J kgm <sup>2</sup>	L <sub>PA</sub> dB(A)
			380 V A	400 V A	415 V A	1.0 P <sub>N</sub> 0.75 P <sub>N</sub>	0.75 P <sub>N</sub> 0.5 P <sub>N</sub>	1.0 P <sub>N</sub> 0.75 P <sub>N</sub>	0.75 P <sub>N</sub> 0.5 P <sub>N</sub>										
30 (40)	2935	WU-EF200LN <sup>(2)</sup> W-EF200LN <sup>(3)</sup>	55	52	50	92.9 93.0 92.0	0.89 0.86 0.80		98	2.4	7.5	2.9	2.1	0.75	2.4	0.60	0.23	73	
37 (50)	2935	WU-EF200LN <sup>(2)</sup> W-EF200LN <sup>(3)</sup>	68	64	62	93.3 93.3 92.0	0.89 0.86 0.80		120	2.4	7.5	2.9	2.1	0.75	2.4	0.60	0.23	73	
45 (60)	2955	WU-EF225MN <sup>(2)</sup> W-EF225MN <sup>(3)</sup>	81	77	74	93.9 93.7 92.5	0.90 0.88 0.83		145	2.3	7.8	2.8	1.9	0.65	2.5	0.50	0.47	75	
55 (75)	2955	WU-EF250MNE <sup>(2)</sup> W-EF250SN <sup>(3)</sup>	98	93	90	94.4 94.2 93.0	0.90 0.88 0.83		178	2.3	7.8	2.8	1.9	0.65	2.5	0.50	0.56	75	
75 (100)	2960	WU-EF280SNE <sup>(2)</sup> W-EF280MN <sup>(3)</sup>	133	129	122	95.2 94.9 93.4	0.90 0.88 0.83		242	2.2	7.8	3.0	2.0	0.65	2.5	0.50	0.8	77	
90 (125)	2960	WU-EF280MNE <sup>(2)</sup> W-EF280SN <sup>(3)</sup>	159	151	146	95.3 95.0 93.5	0.90 0.88 0.83		290	2.2	7.8	3.0	2.0	0.65	2.5	0.5	0.9	77	
110 (150)	2978	WU-EF315SNE <sup>(2)</sup> W-EF280MN <sup>(3)</sup>	194	184	177	95.8 95.4 94.0	0.90 0.88 0.83		353	2.2	7.8	2.9	1.8	0.65	2.5	0.45	1.4	78	
132 (175)	2978	WU-EF315MNE <sup>(2)</sup> W-EF315SN <sup>(3)</sup>	233	221	213	95.8 95.4 94.0	0.90 0.88 0.83		423	2.2	7.8	2.9	1.8	0.65	2.5	0.45	1.7	78	
150 (200)	2890	WU-EF315MN <sup>(2)</sup> W-EF315MN <sup>(3)</sup>	260	247	238	96.2 95.8 94.3	0.91 0.89 0.85		481	2.0	7.8	2.75	1.7	0.60	2.5	0.45	2.4	80	
160 (215)	2890	WU-EF315MP <sup>(2)</sup> W-EF315MP <sup>(3)</sup>	277	264	254	96.3 95.9 94.4	0.91 0.89 0.85		513	2.0	7.8	2.75	1.7	0.60	2.5	0.45	2.6	80	
185 (250)	2980	WU-EF315LN <sup>(2)</sup> W-EF315LN <sup>(3)</sup>	320	304	294	96.4 96.2 94.8	0.91 0.89 0.85		593	2.0	7.8	2.75	1.7	0.60	2.5	0.45	2.8	80	
200 (270)	2978	WU-EF315LN <sup>(2)</sup> W-EF315LN <sup>(3)</sup>	346	329	317	96.4 96.2 94.8	0.91 0.89 0.85		641	1.85	7.2	2.5	1.6	0.55	2.3	0.42	2.8	80	

<sup>(2)</sup> European frame reference - see pages 16-17 for dimensions

<sup>(3)</sup> BS frame reference - see pages 18-19 for dimensions

# Performance data



8

1500 min<sup>-1</sup> (4 pole)

Rated power $P_N$ kW (hp)	Full load speed in revolutions per minute $n$ min <sup>-1</sup>	Frame reference and size Type	Full load current at rated voltage $I_N$			Efficiency $\eta$		Power factor $\cos \phi$	Full load torque $M_N$ Nm	Direct on line starting torque ratio $\frac{M_A}{M_N}$	Direct on line starting current ratio $\frac{I_A}{I_N}$	Direct on line pull four torque ratio $\frac{M_K}{M_N}$	Direct on line pull up torque ratio $\frac{M_S}{M_N}$	Star delta starting torque ratio <sup>(1)</sup> $\frac{M_A}{M_N}$ Y	Star delta starting current ratio $\frac{I_A}{I_N}$ Y	Star delta pull up torque ratio $\frac{M_S}{M_N}$ Y	Rotor inertia $W_{K2}$ J kgm <sup>2</sup>	Mean sound pressure level @ 1m on no load $L_{PA}$ dB(A)
			380 V A	400 V A	415 V A	$\frac{1.0 P_N}{0.75 P_N}$ $\frac{1.0 P_N}{0.75 P_N}$	$\frac{1.0 P_N}{0.75 P_N}$ $\frac{1.0 P_N}{0.75 P_N}$											
0.55 (0.75)	1420	W-EF90SG <sup>(1)</sup>	1.42	1.36	1.36	$\left\{ \begin{array}{l} 77.0 \\ 76.5 \\ 72.1 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.76 \\ 0.67 \\ 0.53 \end{array} \right\}$		3.7	2.2	6.1	2.5	2.0	-	-	-	0.0025	52
0.75 (1.0)	1420	W-EF90SG <sup>(1)</sup>	1.94	1.85	1.85	$\left\{ \begin{array}{l} 77.1 \\ 77.4 \\ 75.4 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.76 \\ 0.66 \\ 0.55 \end{array} \right\}$		5.0	2.2	6.1	2.5	2.0	-	-	-	0.0025	52
1.1 (1.5)	1420	W-EF90SG <sup>(1)</sup>	2.78	2.65	2.65	$\left\{ \begin{array}{l} 78.9 \\ 79.4 \\ 78.0 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.76 \\ 0.66 \\ 0.55 \end{array} \right\}$		7.4	2.2	6.0	2.5	2.0	-	-	-	0.0025	52
1.5 (2.0)	1420	W-EF90LK <sup>(1)</sup>	3.7	3.6	3.6	$\left\{ \begin{array}{l} 79.0 \\ 79.4 \\ 77.0 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.77 \\ 0.69 \\ 0.55 \end{array} \right\}$		10.1	2.3	6.5	2.8	2.0	-	-	-	0.0029	52
2.2 (3.0)	1420	W-EF100LJ <sup>(1)</sup>	5.2	4.9	4.9	$\left\{ \begin{array}{l} 81.5 \\ 82.0 \\ 82.0 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.79 \\ 0.72 \\ 0.60 \end{array} \right\}$		14.8	2.0	5.7	2.1	1.8	-	-	-	0.0048	53
3.0 (4.0)	1425	W-EF100LS <sup>(1)</sup>	7.0	6.6	6.6	$\left\{ \begin{array}{l} 83.5 \\ 84.5 \\ 84.0 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.78 \\ 0.71 \\ 0.58 \end{array} \right\}$		20.1	2.1	6.3	2.3	2.0	-	-	-	0.0063	53
4.0 (5.5)	1430	W-EF112MK <sup>(1)</sup>	8.9	8.5	8.5	$\left\{ \begin{array}{l} 84.2 \\ 84.5 \\ 82.3 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.81 \\ 0.74 \\ 0.60 \end{array} \right\}$		26.7	2.0	6.5	2.5	1.7	0.62	1.9	0.49	0.012	60
5.5 (7.5)	1450	W-EF132SJ <sup>(1)</sup>	11.7	11.1	11.1	$\left\{ \begin{array}{l} 87.0 \\ 87.5 \\ 86.0 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.82 \\ 0.76 \\ 0.64 \end{array} \right\}$		36.2	2.4	7.5	2.9	2.1	0.70	2.1	0.60	0.023	67
7.5 (10)	1445	W-EF132MS <sup>(1)</sup>	15.5	14.8	14.8	$\left\{ \begin{array}{l} 88.2 \\ 88.5 \\ 88.0 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.83 \\ 0.79 \\ 0.68 \end{array} \right\}$		49.6	2.6	7.7	3.1	2.3	0.75	2.3	0.65	0.029	67
11 (15)	1470	W-EF160MJ <sup>(1)</sup>	22.1	21.0	21.0	$\left\{ \begin{array}{l} 91.0 \\ 91.2 \\ 90.5 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.83 \\ 0.79 \\ 0.67 \end{array} \right\}$		71.5	2.2	7.6	2.6	2.0	0.60	2.3	0.45	0.068	67
15 (20)	1465	W-EF160LR <sup>(1)</sup>	29.6	28.2	28.2	$\left\{ \begin{array}{l} 91.3 \\ 91.6 \\ 91.0 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.84 \\ 0.79 \\ 0.68 \end{array} \right\}$		97.8	2.2	7.5	2.6	2.0	0.60	2.2	0.45	0.084	67
18.5 (25)	1465	W-EF180MJ <sup>(1)</sup>	35	34	34	$\left\{ \begin{array}{l} 92.0 \\ 92.3 \\ 91.5 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.86 \\ 0.84 \\ 0.78 \end{array} \right\}$		121	2.4	7.3	2.8	2.0	0.73	2.3	0.65	0.153	70
22 (30)	1465	W-EF180LM <sup>(1)</sup>	42	40	40	$\left\{ \begin{array}{l} 92.3 \\ 92.9 \\ 92.5 \end{array} \right\}$	$\left\{ \begin{array}{l} 0.86 \\ 0.84 \\ 0.78 \end{array} \right\}$		143	2.5	7.6	2.9	2.1	0.75	2.3	0.62	0.175	70

<sup>(1)</sup> European and BS frame reference - see pages 14-15 for dimensions



# Performance data



1500 min<sup>-1</sup> (4 pole)

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 starting current ratio      Direct on line pull up torque ratio      Direct on line pull up torque      Star delta starting torque ratio (I)      Star delta starting current ratio      Star delta pull up torque      Rotor inertia Wkg      Mean sound pressure level @ 1m on no load

P <sub>N</sub> kW (hp)	n min <sup>-1</sup>	Type	I <sub>N</sub>			η		Cos φ		M <sub>N</sub> Nm	M <sub>A</sub> M <sub>N</sub>	I <sub>A</sub> I <sub>N</sub>	M <sub>K</sub> M <sub>N</sub>	M <sub>S</sub> M <sub>N</sub>	M <sub>A</sub> M <sub>N</sub> Y	I <sub>A</sub> I <sub>N</sub> Y	M <sub>S</sub> M <sub>N</sub> Y	J kgm <sup>2</sup>	L <sub>PA</sub> dB(A)
			380 V A	400 V A	415 V A	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>												
30 (40)	1470	WU-EF200LN <sup>(2)</sup> W-EF200LN <sup>(3)</sup>	56	53	51	93.2 93.2 92.3	0.87 0.85 0.77		195	2.3	7.3	3.2	1.9	0.70	2.3	0.55	0.40	65	
37 (50)	1470	WU-EF225SN <sup>(2)</sup> W-EF225SN <sup>(3)</sup>	70	66	64	93.6 93.6 92.5	0.85 0.85 0.77		240	2.3	7.3	3.2	1.9	0.70	2.3	0.55	0.53	66	
45 (60)	1475	WU-EF225MN <sup>(2)</sup> W-EF225MN <sup>(3)</sup>	84	80	77	94.2 94.2 93.0	0.86 0.84 0.75		292	2.7	7.7	3.2	1.9	0.75	2.5	0.55	0.65	67	
55 (75)	1475	WU-EF250MNE <sup>(2)</sup> W-EF250SN <sup>(3)</sup>	103	98	94	94.6 94.6 93.5	0.86 0.84 0.75		357	2.7	7.7	3.2	1.9	0.75	2.5	0.55	0.75	67	
75 (100)	1475	WU-EF280SNE <sup>(2)</sup> W-EF250MN <sup>(3)</sup>	138	131	126	94.9 94.8 93.5	0.87 0.85 0.75		486	2.4	7.4	2.7	1.9	0.72	2.3	0.54	1.4	69	
90 (125)	1475	WU-EF280MNE <sup>(2)</sup> W-EF280SN <sup>(3)</sup>	165	157	151	95.2 95.1 93.8	0.87 0.85 0.75		583	2.5	7.4	2.8	2.0	0.75	2.4	0.55	1.6	69	
110 (150)	1480	WU-EF315SNE <sup>(2)</sup> W-EF280MN <sup>(3)</sup>	201	191	184	95.6 95.5 94.0	0.87 0.85 0.77		710	2.4	7.7	2.6	2.0	0.70	2.5	0.50	3.2	71	
132 (175)	1482	WU-EF315MNE <sup>(2)</sup> W-EF315SN <sup>(3)</sup>	241	229	220	95.8 95.6 94.2	0.87 0.85 0.77		852	2.4	7.7	2.6	2.0	0.70	2.5	0.50	3.7	71	
150 (200)	1485	WU-EF315MN <sup>(2)</sup> W-EF315MN <sup>(3)</sup>	270	257	247	95.9 95.7 94.7	0.88 0.86 0.78		965	2.4	7.8	2.7	2.0	0.70	2.5	0.50	4.4	73	
160 (215)	1487	WU-EF315MP <sup>(2)</sup> W-EF315MP <sup>(3)</sup>	288	274	264	95.9 95.7 94.7	0.88 0.86 0.78		1029	2.4	7.8	2.7	2.0	0.70	2.5	0.50	4.7	73	
185 (250)	1487	WU-EF315LN <sup>(2)</sup> W-EF315LN <sup>(3)</sup>	333	316	305	96.0 95.8 95.0	0.88 0.86 0.78		1190	2.4	7.8	2.7	2.0	0.70	2.5	0.50	5.5	73	
200 (270)	1485	WU-EF315LN <sup>(2)</sup> W-EF315LN <sup>(3)</sup>	360	342	329	96.0 95.8 95.0	0.88 0.86 0.78		1286	2.3	7.6	2.6	1.9	0.65	2.4	0.45	5.5	73	

<sup>(2)</sup> European frame reference - see pages 16-17 for dimensions

<sup>(3)</sup> BS frame reference - see pages 18-19 for dimensions

# Performance data



10 1000 min<sup>-1</sup> (6 pole)

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 starting current ratio      Direct on line pull up torque ratio      Direct on line pull up torque      Star-delta starting torque ratio<sup>(1)</sup>      Star-delta starting current ratio      Star-delta pull up torque      Rotor inertia Wkg      Mean sound pressure level @ 1m on no load

P <sub>N</sub> kW (hp)	n min <sup>-1</sup>	Type	I <sub>N</sub>			η		Cos φ		M <sub>N</sub> Nm	M <sub>A</sub> M <sub>N</sub>	I <sub>A</sub> I <sub>N</sub>	M <sub>K</sub> M <sub>N</sub>	M <sub>S</sub> M <sub>N</sub>	M <sub>A</sub> M <sub>N</sub> Y	I <sub>A</sub> I <sub>N</sub> Y	M <sub>S</sub> M <sub>N</sub> Y	J kgm <sup>2</sup>	L <sub>PA</sub> dB(A)
			380 V A	400 V A	415 A	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>												
0.37 (0.5)	925	W-EF90SG <sup>(1)</sup>	1.14	1.09	1.09	71.0 72.1 69.2	0.69 0.60 0.48			3.8	1.9	4.5	2.7	1.9	-	-	-	0.0025	65
0.55 (0.75)	925	W-EF90SG <sup>(1)</sup>	1.66	1.58	1.58	72.9 78.8 72.1	0.69 0.62 0.47			5.7	2.3	4.5	2.5	2.0	-	-	-	0.0025	65
0.75 (1.0)	920	W-EF90SG <sup>(1)</sup>	2.23	2.12	2.12	74.0 75.1 72.5	0.69 0.59 0.45			7.8	2.0	4.1	2.4	2.0	-	-	-	0.0025	65
1.1 (1.5)	920	W-EF90LS <sup>(1)</sup>	3.5	3.3	3.3	74.8 74.5 71.5	0.64 0.54 0.41			11.4	2.4	5.0	2.8	2.0	-	-	-	0.0036	65
1.5 (2.0)	930	W-EF100LR <sup>(1)</sup>	4.5	4.3	4.3	78.5 79.0 78.5	0.64 0.54 0.42			15.4	2.0	4.2	2.3	2.0	-	-	-	0.0061	59
2.2 (3.0)	945	W-EF112MK <sup>(1)</sup>	6.1	5.8	5.8	78.0 78.3 76.5	0.70 0.62 0.50			22.2	1.8	4.9	2.3	1.7	-	-	-	0.0119	59
3.0 (4.0)	965	W-EF132SG <sup>(1)</sup>	7.4	7.1	7.1	86.0 86.0 84.0	0.71 0.64 0.52			29.7	2.2	6.5	2.7	1.7	-	-	-	0.0249	58
4.0 (5.5)	960	W-EF132ML <sup>(1)</sup>	9.5	9.0	9.0	86.5 86.5 86.0	0.74 0.67 0.55			39.8	2.1	6.2	2.6	1.6	0.65	2.0	0.55	0.0288	58
5.5 (7.5)	960	W-EF132MR <sup>(1) (4)</sup>	13.4	12.7	12.7	86.5 86.5 85.5	0.72 0.67 0.55			54.7	2.1	6.2	2.6	1.6	0.65	2.0	0.55	0.0326	58
7.5 (10)	975	W-EF160MM <sup>(1)</sup>	16.8	16.0	16.0	90.0 90.5 89.0	0.75 0.70 0.59			73.5	2.1	7.0	2.8	2.0	0.55	2.1	0.50	0.105	58
11 (15)	975	W-EF160LV <sup>(1)</sup>	24.2	23.3	23.3	91.0 91.0 89.5	0.75 0.70 0.58			108	2.0	7.5	2.8	1.9	0.60	2.5	0.50	0.137	58
15 (20)	975	W-EF180LM <sup>(1)</sup>	32	31	31	91.0 91.0 89.5	0.78 0.73 0.60			147	2.4	6.5	2.8	2.2	0.65	2.2	0.60	0.239	59

<sup>(1)</sup> European and BS frame reference - see pages 14-15 for dimensions

<sup>(4)</sup> T3 temperature class only

# Performance data



1000 min<sup>-1</sup> (6 pole)

11

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 starting current ratio      Direct on line pull up torque ratio      Direct on line pull up torque      Star-delta starting torque ratio (I)      Star-delta starting current ratio      Star-delta pull up torque      Rotor inertia Wkg      Mean sound pressure level @ 1m on no load

P <sub>N</sub> kW (hp)	n min <sup>-1</sup>	Type	I <sub>N</sub>			η		Cos φ		M <sub>N</sub> Nm	M <sub>A</sub> M <sub>N</sub>	I <sub>A</sub> I <sub>N</sub>	M <sub>K</sub> M <sub>N</sub>	M <sub>S</sub> M <sub>N</sub>	M <sub>A</sub> M <sub>N</sub> Y	I <sub>A</sub> I <sub>N</sub> Y	M <sub>S</sub> M <sub>N</sub> Y	J kgm <sup>2</sup>	L <sub>PA</sub> dB(A)
			380 V A	400 V A	415V A	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>										
18.5 (25)	975	W-UEF200LN <sup>(2)</sup> W-EF200LN <sup>(3)</sup>	39	37	35	{ 91.0 91.0 90.0 }	{ 0.80 0.76 0.67 }		181	2.6	6.0	2.1	2.0	0.77	1.8	0.45	0.6	62	
22 (30)	975	W-UEF200LN <sup>(2)</sup> W-EF200LN <sup>(3)</sup>	46	43	42	{ 91.5 91.5 90.5 }	{ 0.80 0.76 0.67 }		215	2.6	6.0	2.1	2.0	0.77	1.8	0.45	0.6	62	
30 (40)	980	W-UEF225MN <sup>(2)</sup> W-EF225MN <sup>(3)</sup>	61	58	56	{ 92.7 92.7 91.7 }	{ 0.80 0.76 0.67 }		292	2.2	6.5	2.4	2.0	0.65	2.0	0.55	1.1	63	
37 (50)	980	W-UEF250MNE <sup>(2)</sup> W-EF250SN <sup>(3)</sup>	74	70	67	{ 93.2 93.2 92.0 }	{ 0.82 0.78 0.69 }		361	2.2	6.5	2.4	2.0	0.65	2.0	0.55	1.3	63	
45 (60)	985	WU-EF280SNE <sup>(2)</sup> W-EF250MN <sup>(3)</sup>	88	84	81	{ 93.4 93.3 92.3 }	{ 0.83 0.79 0.71 }		436	2.5	6.0	2.0	1.8	0.75	1.9	0.4	2.55	65	
55 (75)	985	WU-EF280MNE <sup>(2)</sup> W-EF280MN <sup>(3)</sup>	107	102	98	{ 93.8 93.6 92.6 }	{ 0.83 0.79 0.71 }		533	2.5	6.1	2.0	1.9	0.75	1.85	0.4	2.9	65	
75 (100)	985	WU-EF315SNE <sup>(2)</sup> W-EF280MN <sup>(3)</sup>	144	137	132	{ 94.3 94.1 93.0 }	{ 0.84 0.80 0.72 }		727	3.0	7.0	2.6	2.1	0.90	2.1	0.6	5.0	68	
90 (125)	985	WU-EF315MNE <sup>(2)</sup> W-EF315SN <sup>(3)</sup>	172	164	158	{ 94.5 94.3 93.4 }	{ 0.84 0.80 0.72 }		872	3.0	7.0	2.6	2.1	0.90	2.1	0.6	6.0	68	
110 (150)	985	WU-EF315MN <sup>(2)</sup> W-EF315MN <sup>(3)</sup>	207	197	190	{ 94.8 94.7 93.8 }	{ 0.85 0.81 0.73 }		1066	2.8	6.7	2.0	1.9	0.80	2.1	0.55	6.1	70	
132 (175)	985	WU-EF315LN <sup>(2)</sup> W-EF315LN <sup>(3)</sup>	248	236	227	{ 95.0 94.9 94.1 }	{ 0.85 0.81 0.73 }		1280	2.8	6.7	2.0	1.9	0.80	2.1	0.55	7.3	70	

<sup>(2)</sup> European frame reference - see pages 16-17 for dimensions

<sup>(3)</sup> BS frame reference - see pages 18-19 for dimensions

# Performance data



12 750 min<sup>-1</sup> (8 pole)

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 starting current ratio      Direct on line pull up torque ratio      Direct on line pull up torque      Star-delta starting torque ratio (I)      Star-delta starting current ratio      Rotor inertia Wk<sup>2</sup>      Mean sound pressure level @ 1m on no load

P <sub>N</sub> kW (hp)	n min <sup>-1</sup>	Type	I <sub>N</sub>			η		Cos φ		M <sub>N</sub> Nm	M <sub>A</sub> M <sub>N</sub>	I <sub>A</sub> I <sub>N</sub>	M <sub>K</sub> M <sub>N</sub>	M <sub>S</sub> M <sub>N</sub>	M <sub>A</sub> M <sub>N</sub> Y	I <sub>A</sub> I <sub>N</sub> Y	M <sub>S</sub> M <sub>N</sub> Y	J kgm <sup>2</sup>	L <sub>PA</sub> dB(A)
			380 V A	400 V A	415 A	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>												
0.37 (0.5)	690	W-EF90SG <sup>(1)</sup>	1.73	1.65	1.65	0.59 55.4 46.9	0.55 0.45 0.36			5.1	1.9	3.0	2.5	2.1	-	-	-	0.0025	50
0.55 (0.75)	690	W-EF90LM <sup>(1)</sup>	2.42	2.31	2.31	62.5 60.7 55.2	0.55 0.47 0.36			7.6	1.8	3.2	2.1	1.7	-	-	-	0.0032	50
0.75 (1.0)	690	W-EF100LR <sup>(1)</sup>	2.77	2.64	2.64	69.5 68.0 61.0	0.59 0.49 0.40			10.4	1.8	3.2	2.1	1.7	-	-	-	0.0061	48
1.1 (1.5)	690	W-EF100LS <sup>(1)</sup>	3.9	3.7	3.7	71.5 70.5 68.0	0.60 0.51 0.39			15.2	1.8	3.2	2.1	1.7	-	-	-	0.0063	48
1.5 (2.0)	710	W-EF112MK <sup>(1)</sup>	5.6	5.3	5.3	70.0 67.0 62.0	0.59 0.48 0.38			20.2	1.9	3.5	2.1	1.7	-	-	-	0.0119	53
2.2 (3.0)	720	W-EF132SM <sup>(1)</sup>	6.2	5.9	5.9	82.5 83.0 80.0	0.65 0.57 0.45			29.2	1.6	5.0	2.4	1.5	-	-	-	0.0306	61
3.0 (4.0)	720	W-EF132MR <sup>(1)</sup>	8.2	7.8	7.8	84.0 84.0 82.0	0.66 0.58 0.45			39.8	1.6	5.0	2.4	1.4	-	-	-	0.0326	61
4.0 (5.5)	725	W-EF160ME <sup>(1)</sup>	10.4	9.9	9.9	86.0 86.0 84.0	0.68 0.64 0.51			52.7	1.6	5.5	2.5	1.4	0.50	1.7	0.45	0.0837	53
5.5 (7.5)	725	W-EF160MM <sup>(1)</sup>	13.9	13.2	13.2	87.0 87.0 85.5	0.69 0.65 0.52			72.4	1.6	5.7	2.2	1.5	0.50	1.7	0.45	0.105	53
7.5 (10)	725	W-EF160LV <sup>(1)</sup>	18.2	17.3	17.3	88.0 88.0 86.0	0.71 0.65 0.52			98.8	1.6	6.0	2.5	1.4	0.50	1.8	0.45	0.137	53
11 (15)	730	W-EF180LM <sup>(1)</sup>	26.7	25.4	25.4	88.0 88.0 86.0	0.71 0.65 0.52			144	2.0	5.4	2.5	1.7	0.63	1.4	0.55	0.239	58

<sup>(1)</sup> European and BS frame reference - see pages 14-15 for dimensions

# Performance data



750 min<sup>-1</sup> (8 pole)

13

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 starting current ratio      Direct on line pull up torque ratio      Direct on line pull up torque      Star delta starting torque ratio (I)      Star delta starting current ratio      Star delta pull up torque      Rotor inertia Wk<sup>2</sup>      Mean sound pressure level @ 1m on no load

P <sub>N</sub> kW (hp)	n min <sup>-1</sup>	Type	I <sub>N</sub>			η		Cos φ		M <sub>N</sub> Nm	M <sub>A</sub> M <sub>N</sub>	I <sub>A</sub> I <sub>N</sub>	M <sub>K</sub> M <sub>N</sub>	M <sub>S</sub> M <sub>N</sub>	M <sub>A</sub> M <sub>N</sub> Y	I <sub>A</sub> I <sub>N</sub> Y	M <sub>S</sub> M <sub>N</sub> Y	J kgm <sup>2</sup>	L <sub>PA</sub> dB(A)
			380 V A	400 V A	415V A	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>	1.0 P <sub>N</sub> 0.75 P <sub>N</sub> 0.5 P <sub>N</sub>											
15 (20)	730	WU-EF200LN <sup>(2)</sup> W-EF200LN <sup>(3)</sup>	35	33	32	90.0 90.0 88.5	0.73 0.66 0.54		196	2.0	5.5	2.4	1.6	0.45	1.6	0.35	0.48	60	
18.5 (25)	730	WU-EF225SN <sup>(2)</sup> W-EF225SN <sup>(3)</sup>	43	40	39	90.5 90.5 89.5	0.73 0.66 0.54		242	2.0	5.5	2.4	1.6	0.50	1.6	0.35	0.75	60	
22 (30)	730	WU-EF225MN <sup>(2)</sup> W-EF225MN <sup>(3)</sup>	50	47	45	91.5 91.5 89.0	0.74 0.66 0.54		288	2.0	6.0	2.4	1.6	0.45	1.7	0.35	1.23	62	
30 (40)	735	WU-EF250MNE <sup>(2)</sup> W-EF250SN <sup>(3)</sup>	67	64	61	92.0 92.0 90.0	0.74 0.67 0.55		390	1.7	6.0	2.4	1.6	0.40	1.7	0.35	1.47	62	
37 (50)	735	WU-EF280SNE <sup>(2)</sup> W-EF250MN <sup>(3)</sup>	81	77	74	92.5 92.5 91.5	0.75 0.68 0.56		481	1.7	6.0	2.4	1.6	0.40	1.7	0.35	2.55	63	
45 (60)	735	WU-EF280MNE <sup>(2)</sup> W-EF280SN <sup>(3)</sup>	98	93	90	93.0 92.8 91.6	0.75 0.69 0.57		585	1.7	6.0	2.4	1.4	0.40	1.7	0.30	2.9	63	
55 (75)	740	WU-EF315SNE <sup>(2)</sup> W-EF280MN <sup>(3)</sup>	119	113	109	93.5 93.3 92.0	0.75 0.70 0.58		710	2.5	6.0	2.0	1.5	0.60	1.7	0.35	5.0	64	
75 (100)	740	WU-EF315MNE <sup>(2)</sup> W-EF315SN <sup>(3)</sup>	159	151	146	94.1 93.9 92.2	0.76 0.72 0.60		968	2.5	6.0	2.0	1.5	0.60	1.7	0.35	6.0	64	
90 (125)	740	WU-EF315MN <sup>(2)</sup> W-EF315MN <sup>(3)</sup>	188	179	172	94.4 94.2 93.4	0.77 0.73 0.64		1161	2.4	6.0	2.0	1.8	0.65	1.7	0.45	6.1	65	
110 (150)	740	WU-EF315LN <sup>(2)</sup> W-EF315LN <sup>(3)</sup>	227	218	210	94.6 94.4 93.6	0.77 0.73 0.64		1419	2.4	6.0	2.0	1.8	0.65	1.7	0.45	7.3	65	

<sup>(2)</sup> European frame reference - see pages 16-17 for dimensions

<sup>(3)</sup> BS frame reference - see pages 18-19 for dimensions

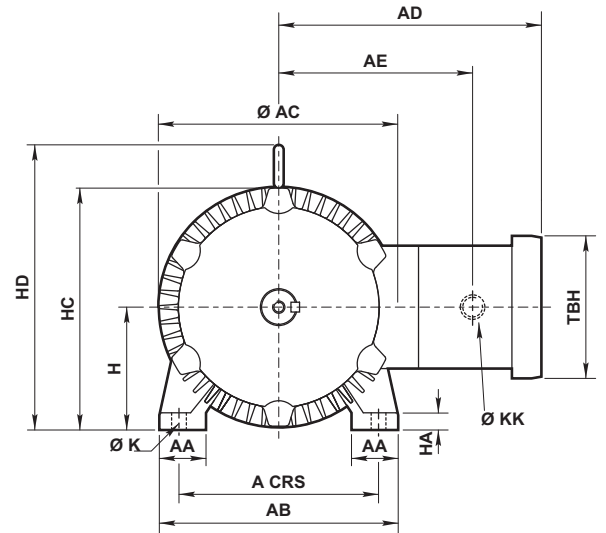
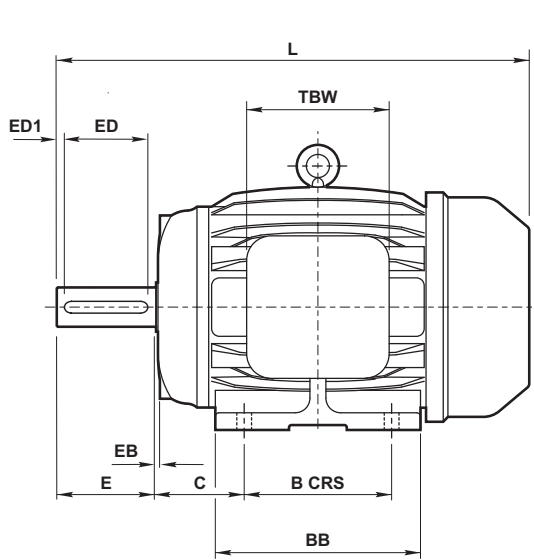
# Dimensions - European / BS specification



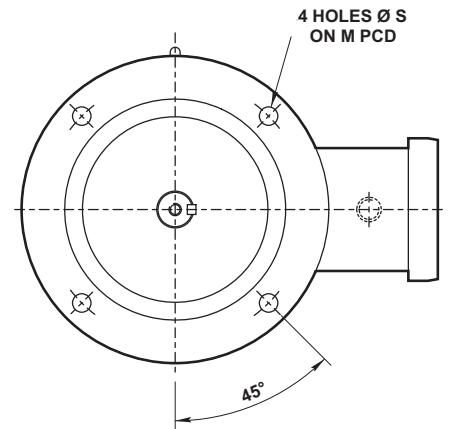
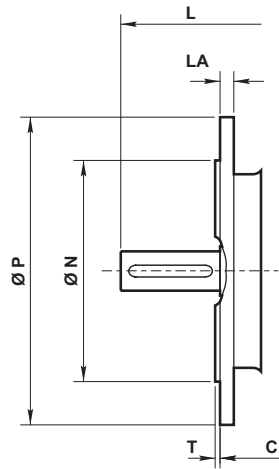
14

Foot, flange and face mounting - frame sizes 90 to 180

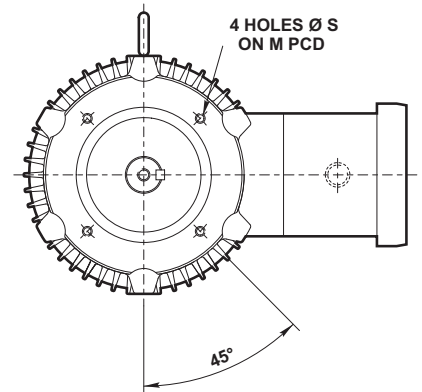
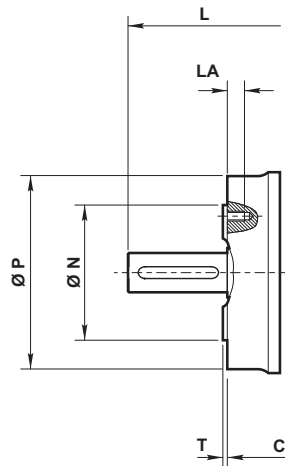
IM B3  
IM 1001  
Mounting options



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



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



# Dimensions - European / BS specification



## Foot, flange and face mounting - frame sizes 90 to 180

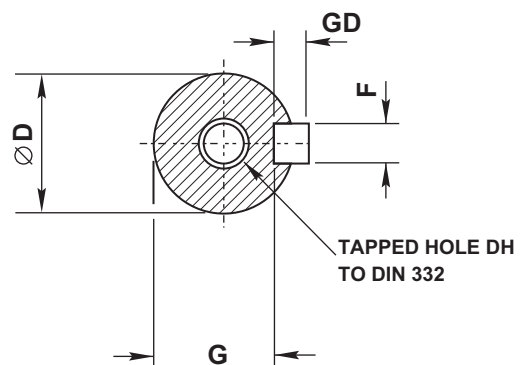
General Type	A	B	C	H	K	L <sup>(1)</sup>	AA	AB	AC	AD	AE	BB	HA	HC	HD	Terminal box		
																TBW	TBH	KK
W-EF90S	140	100	56	90	10	309	38	175	188	230	169	127	12	188	236	140	140	1 x CM20
W-EF90L	140	125	56	90	10	334	38	175	188	230	169	152	12	188	236	140	140	1 x CM20
W-EF100L <sup>(2)</sup>	160	140	63	100	12	394	38	194	196	241	179	187	14	205	252	140	140	1 x CM20
W-EF112M	190	140	70	112	12	391	38	229	240	260	198	179	16	239	282	140	140	1 x CM25
W-EF132S	216	140	89	132	12	467	52	260	258	289	221	178	19	272	318	171.5	171.5	1 x CM25
W-EF132M	216	178	89	132	12	505	52	260	258	289	221	216	19	272	318	171.5	171.5	1 x CM25
W-EF160M	254	210	108	160	15	605	64	318	318	316	248	267	19	328	375	171.5	171.5	1 x CM32
W-EF160L	254	254	108	160	15	650	64	318	318	316	248	311	19	328	375	171.5	171.5	1 x CM32
W-EF180M	279	241	121	180	15	664	76	356	365	343	275	298	19	380	440	197	197	1 x CM32
W-EF180L	279	279	121	180	15	702	76	356	365	343	275	337	19	380	440	197	197	1 x CM32

[1] For vertical mounted, shaft down motors, see table on page 4 for increase on overall length due to the fitting of an impact canopy.

[2] On frame W-EF100L, the foot hole centres 'B' are not central within the feet 'BB', but are offset 11mm towards the drive end.

Flange & Face Type	IM B5 mounting						IM B14 mounting					
	M	N	P	S	T	LA	M	N	P	S	T	LA
	W-EF90S/L	165	130	200	12	3.5	12	115	95	140	M8	3
W-EF100L	215	180	250	15	4	11	130	110	160	M8	3.5	19
W-EF112M	215	180	250	15	4	11	130	110	160	M8	3.5	19
W-EF132S/M	265	230	300	15	4	12	165	130	200	M10	3.5	19
W-EF160M/L	300	250	350	19	5	13	215	180	250	M12	4	19
W-EF180M/L	300	250	350	19	5	15	-	-	-	-	-	-

Shaft										
Type	D	E	F	G	GD	EB	ED1	ED	DH	
W-EF90S/L	24	50	8	20	7	2	5	40	M8 x 19	
W-EF100L	28	60	8	24	7	2	5	50	M10 x 22	
W-EF112M	28	60	8	24	7	1.6	5	50	M10 x 22	
W-EF132S/M	38	80	10	33	8	2	5	70	M12 x 28	
W-EF160M/L	42	110	12	37	8	4.8	5	100	M16 x 36	
W-EF180M/L	48	110	14	42.5	9	4.8	5	100	M16 x 36	



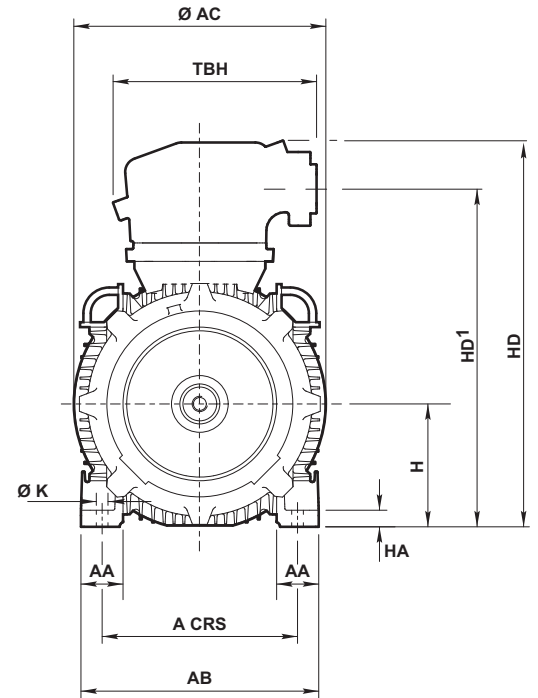
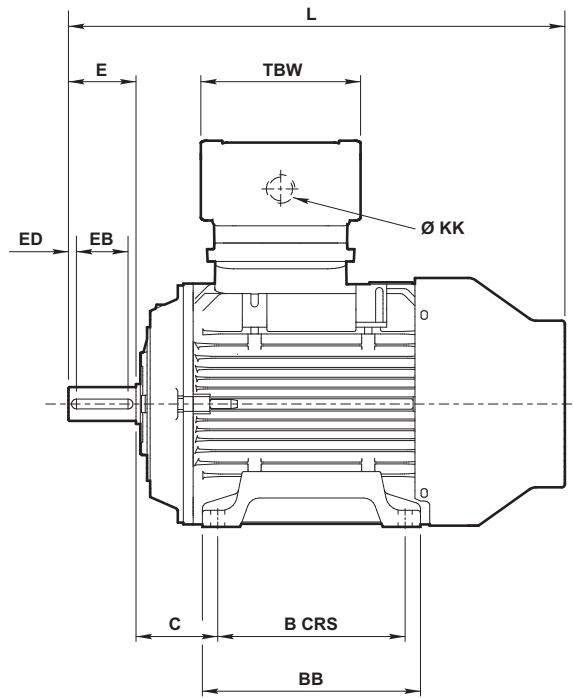
# Dimensions - European specification



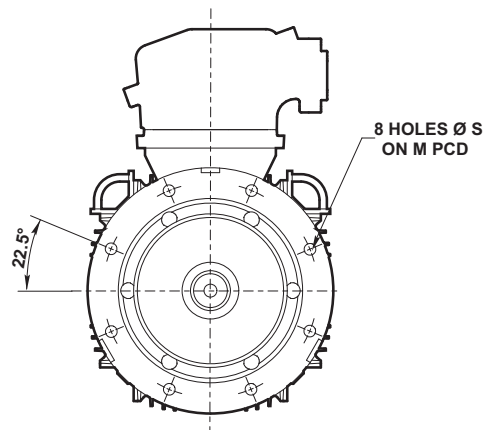
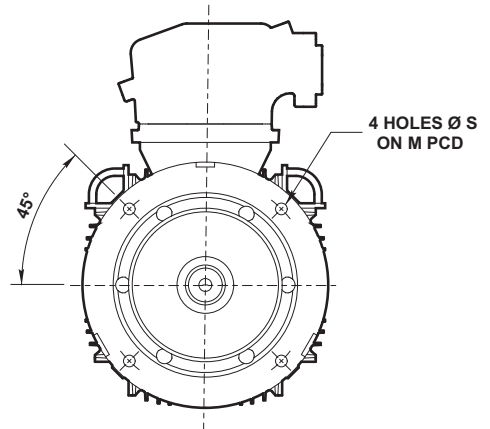
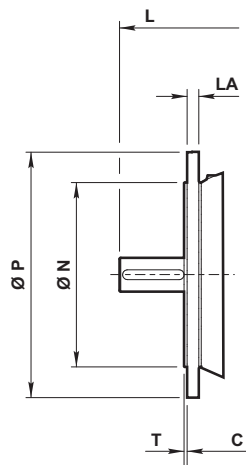
16

Foot and flange mounting - frame sizes 200 to 315L

IM B3  
IM 1001  
Mounting options



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



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



# Dimensions - European specification



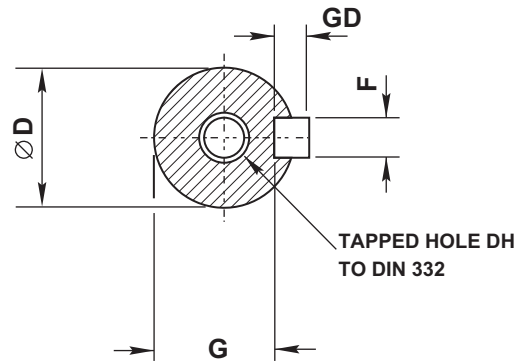
## Foot and flange mounting - frame sizes 200 to 315L

General Type	A	B	C	H	K	4 pole +		2 pole		Terminal box									
						L <sup>(1)</sup>	L <sup>(1)</sup>	AA	AB	AC	BB	HA	HD	HD'	TBW	TBH	KK		
WU-EF200LN	318	305	133	200	M16	810	810	63	386	410	355	27	636	548	332	260	1 x CM40 + 1 x CM20		
WU-EF225SN	356	286	149	225	M16	875	845	70	426	410	349	25	661	573	332	260	1 x CM40 + 1 x CM20		
WU-EF225MN	356	311	149	225	M16	915	885	70	426	448	374	25	680	598	332	260	1 x CM40 + 1 x CM20		
WU-EF250MNE	406	349	168	250	M20	985	985	79	482	448	419	28	706	623	332	260	1 x CM40 + 1 x CM20		
WU-EF280SNE	457	368	190	280	M20	1065	1065	83	540	508	438	35	800	721	392	335	1 x CM50 + 1 x CM20		
WU-EF280MNE	457	419	190	280	M20	1070	1070	83	540	508	487	35	800	721	392	335	1 x CM50 + 1 x CM20		
WU-EF315SNE	508	406	216	315	M24	1145	1115	89	597	563	483	38	865	756	392	335	1 x CM50 + 1 x CM20		
WU-EF315MNE	508	457	216	315	M24	1215	1185	89	597	563	533	38	865	756	392	335	1 x CM50 + 1 x CM20		
WU-EF315MN	508	457	216	315	M24	1245	1215	89	597	640	533	38	960	821	459	384	1 x CM63 + 1 x CM20		
WU-EF315LN	508	508	216	315	M24	1315	1285	89	597	640	583	38	960	821	459	384	1 x CM63 + 1 x CM20		

[1] For vertical mounted, shaft down motors, see table on page 4 for increase on overall length due to the fitting of an impact canopy.

Shaft Type	4 pole +								2 pole							
	D	E	F	G	GD	EB	ED	DH	D	E	F	G	GD	EB	ED	DH
WU-EF200LN	55	110	16	49	10	100	5	M20 x 42	55	110	16	49	10	100	5	M20 x 42
WU-EF225SN	60	140	18	53	11	125	5	M20 x 42	-	-	-	-	-	-	-	-
WU-EF225MN	60	140	18	53	11	125	5	M20 x 42	55	110	16	49	10	100	5	M20 x 42
WU-EF250MNE	65	140	18	58	11	125	5	M20 x 42	60	140	18	53	11	125	5	M20 x 42
WU-EF280SNE	75	140	20	67.5	12	125	5	M20 x 42	65	140	18	53	11	125	5	M20 x 42
WU-EF280MNE	75	140	20	67.5	12	125	5	M20 x 42	65	140	18	58	11	125	5	M20 x 42
WU-EF315SNE	80	170	22	71	14	160	5	M20 x 42	65	140	18	58	11	125	5	M20 x 42
WU-EF315MNE	80	170	22	71	14	160	5	M20 x 42	65	140	18	58	11	125	5	M20 x 42
WU-EF315MN	80	170	22	71	14	160	5	M20 x 42	65	140	18	58	11	125	5	M20 x 42
WU-EF315LN	80	170	22	71	14	160	5	M20 x 42	65	140	18	58	11	125	5	M20 x 42

Flange Type	IM B5, IM B35 mounting					
	M	N	P	S	T	LA
WU-EF200LN	350	300	400	4 x 19	5	19
WU-EF225SN	400	350	450	8 x 19	5	19
WU-EF225MN	400	350	450	8 x 19	5	19
WU-EF250MNE	500	450	550	8 x 19	5	25
WU-EF280SNE	500	450	550	8 x 19	5	25
WU-EF280MNE	500	450	550	8 x 19	5	25
WU-EF315SNE	600	550	660	8 x 24	6	29
WU-EF315MNE	600	550	660	8 x 24	6	29
WU-EF315MN	600	550	660	8 x 24	6	29
WU-EF315LN	600	550	660	8 x 24	6	29



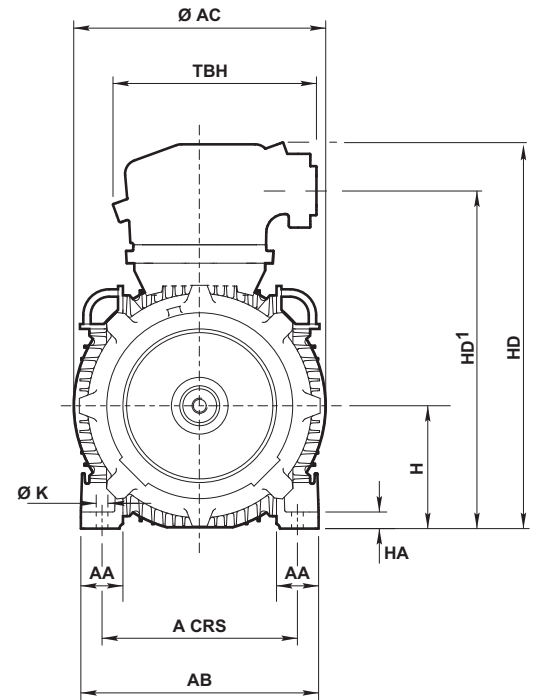
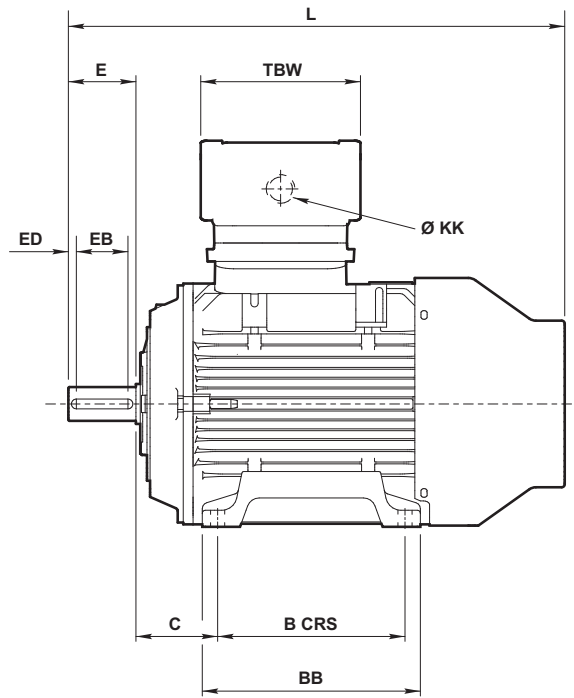
# Dimensions - BS specification



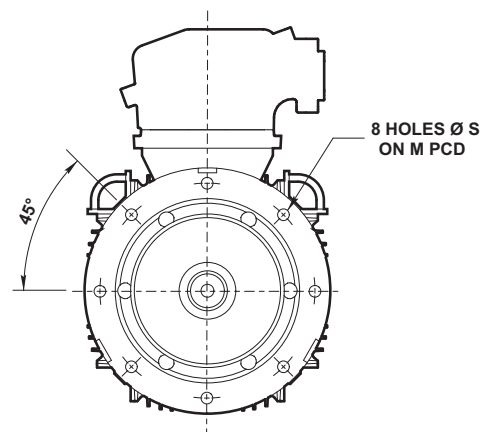
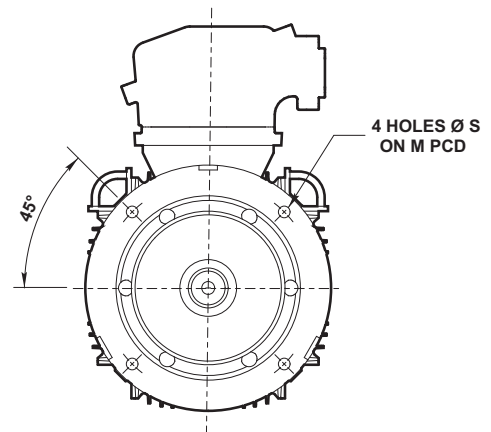
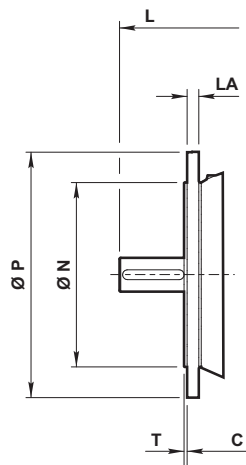
18

Foot and flange mounting - frame sizes 200 to 315L

IM B3  
IM 1001  
Mounting options



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



8 holes at 0° for flanges to suit 225 frames and above to British specification

# Dimensions - BS specification



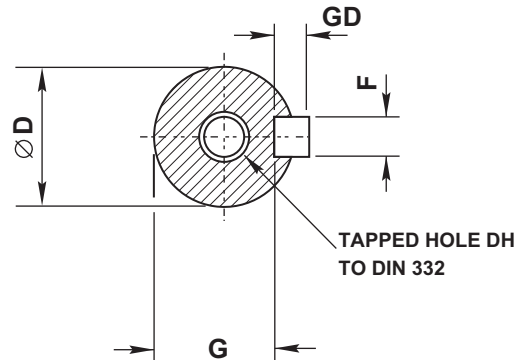
## Foot and flange mounting - frame sizes 200 to 315L

General Type															Terminal box			
	A	B	C	H	K	4 pole + L <sup>(1)</sup>		2 pole L <sup>(1)</sup>		AA	AB	AC	BB	HA	HD	HD'	TBW	TBH
W-EF200LN	318	305	133	200	M16	810	810	63	386	410	355	27	636	548	332	260	1 x CM40 + 1 x CM20	
W-EF225SN	356	286	149	225	M16	875	845	70	426	410	349	25	661	573	332	260	1 x CM40 + 1 x CM20	
W-EF225MN	356	311	149	225	M16	915	885	70	426	448	374	25	680	598	332	260	1 x CM40 + 1 x CM20	
W-EF250SN	406	311	168	250	M20	985	985	79	482	448	381	28	705	623	332	260	1 x CM40 + 1 x CM20	
W-EF250MN	406	349	168	250	M20	1030	1030	79	482	508	419	28	770	661	392	335	1 x CM50 + 1 x CM20	
W-EF280SN	457	368	190	280	M20	1100	1070	83	540	508	438	35	800	721	392	335	1 x CM50 + 1 x CM20	
W-EF280MN	457	419	190	280	M20	1145	1115	83	540	563	487	35	830	721	392	335	1 x CM50 + 1 x CM20	
W-EF315SN	508	406	216	315	M24	1215	1185	89	597	563	483	38	865	756	392	335	1 x CM63 + 1 x CM20	
W-EF315MN	508	457	216	315	M24	1245	1215	89	597	640	533	38	960	821	459	384	1 x CM63 + 1 x CM20	
W-EF315LN	508	508	216	315	M24	1315	1285	89	597	640	583	38	960	821	459	384	1 x CM63 + 1 x CM20	

(1) For vertical mounted, shaft down motors, see table on page 4 for increase on overall length due to the fitting of an impact canopy.

Shaft Type	4 pole +								2 pole							
	D	E	F	G	GD	EB	ED	DH	D	E	F	G	GD	EB	ED	DH
W-EF200LN	55	110	16	49	10	100	5	M20 x 42	55	110	16	49	10	100	5	M20 x 42
W-EF225SN	60	140	18	53	11	125	5	M20 x 42	-	-	-	-	-	-	-	-
W-EF225MN	60	140	18	53	11	125	5	M20 x 42	55	110	16	49	10	100	5	M20 x 42
W-EF250SN	70	140	20	62.5	12	125	5	M20 x 42	60	140	18	53	11	125	5	M20 x 42
W-EF250MN	70	140	20	62.5	12	125	5	M20 x 42	60	140	18	53	11	125	5	M20 x 42
W-EF280SN	80	170	22	71	14	160	5	M20 x 42	65	140	18	58	11	125	5	M20 x 42
W-EF280MN	80	170	22	71	14	160	5	M20 x 42	65	140	18	58	11	125	5	M20 x 42
W-EF315SN	85	170	22	76	14	160	5	M20 x 42	65	140	18	58	11	125	5	M20 x 42
W-EF315MN	85	170	22	76	14	160	5	M20 x 42	65	140	18	58	11	125	5	M20 x 42
W-EF315LN	85	170	22	76	14	160	5	M20 x 42	65	140	18	58	11	125	5	M20 x 42

Flange Type	IM B5, IM B35 mounting					
	M	N	P	S	T	LA
W-EF200LN	350	300	400	4 x 19	5	19
W-EF225SN	400	350	450	8 x 19	5	19
W-EF225MN	400	350	450	8 x 19	5	19
W-EF250SN	500	450	550	8 x 19	5	25
W-EF250MN	500	450	550	8 x 19	5	25
W-EF280SN	500	450	550	8 x 19	5	25
W-EF280MN	500	450	550	8 x 19	5	25
W-EF315SN	600	550	660	8 x 24	6	29
W-EF315MN	600	550	660	8 x 24	6	29
W-EF315LN	600	550	660	8 x 24	6	29



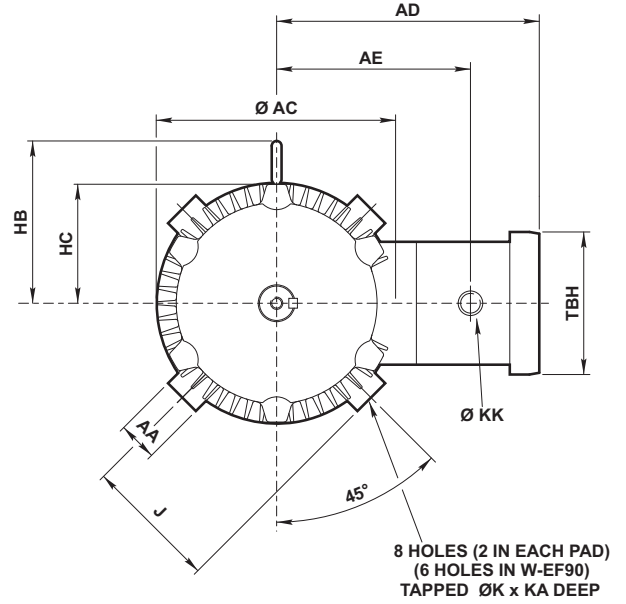
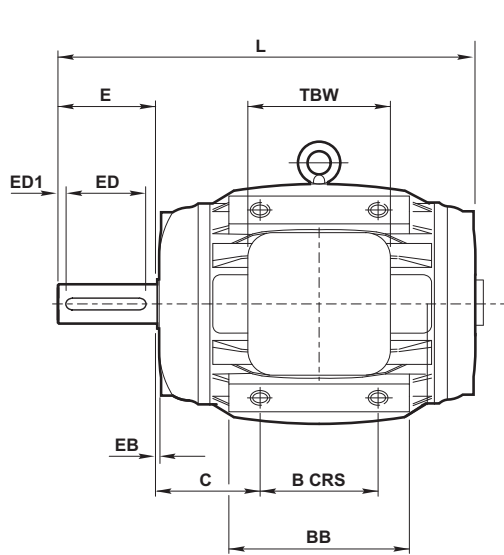
# Dimensions



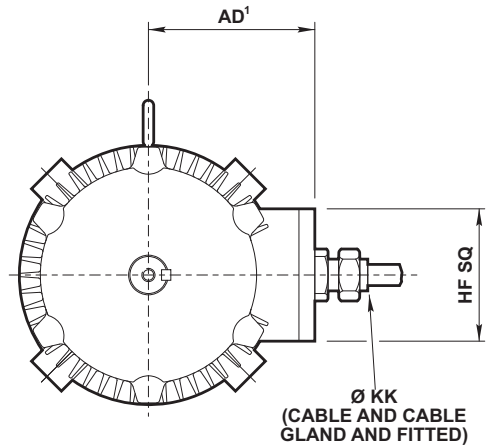
20

Pad / rod mounting - frame sizes 90 to 280M

IM B30, IM V30, IM V31  
IM 9201, IM 9211, IM 9231  
with terminal box



IM B30, IM V30, IM V31  
IM 9201, IM 9211, IM 9231  
without terminal box



# Dimensions



## Pad / rod mounting - frame sizes 90 to 280M

General Type	B	C	J	K	KA	L	AA	AC	AD	AD <sup>(1)</sup>	AE	BB	HB	HC	Terminal box			KK
															TBW	TBH	HF SQ	
W-EF90L-P	90	73.5	94	M12	12	277	19	188	230	135	169	139	146	98	140	140	115	1 x CM20
W-EF100L-P	100	83	103	M12	12	359	29	196	241	145	179	153	152	105	140	140	115	1 x CM20
W-EF112M-P	100	90	125	M12	12	344	34	240	260	164	198	140	170	127	140	140	115	1 x CM25
W-EF132M-P	140	108	141	M16	19	444	45	258	289	181	221	197	186	140	171.5	171.5	143	1 x CM25
W-EF160L-P	200	135	174	M20	21	582	45	318	316	208	248	261	215	168	171.5	171.5	143	1 x CM32
W-EF180L-P	200	160.5	195	M20	21	632	45	365	343	239	275	273	260	200	197	197	175	1 x CM32
W-EF200LF-P	224	173.5	229	M24	30	745	70	392	436	270	338	269	-	195	332 <sup>(3)</sup>	260	216	1 x CM40
W-EF225M-P <sup>(1)</sup>	224	192.5	255	M24	40	810	70	442	460	295	375	280	-	220	332 <sup>(3)</sup>	260	216	1 x CM40
W-EF225M-P <sup>(2)</sup>	224	192.5	255	M24	40	780	70	442	460	295	375	280	-	220	332 <sup>(3)</sup>	260	216	1 x CM40
W-EF250M-P	224	230.5	285	M24	40	900	80	506	510	338	413	304	-	245	392 <sup>(3)</sup>	335	270	1 x CM50
W-EF280M-P <sup>(1)</sup>	419	190	330	M30	50	1010	80	550	541	369	444	499	-	275	392 <sup>(3)</sup>	335	270	1 x CM50
W-EF280M-P <sup>(2)</sup>	419	190	330	M30	50	980	80	550	541	369	444	499	-	275	392 <sup>(3)</sup>	335	270	1 x CM50

[1] 4 pole and above.

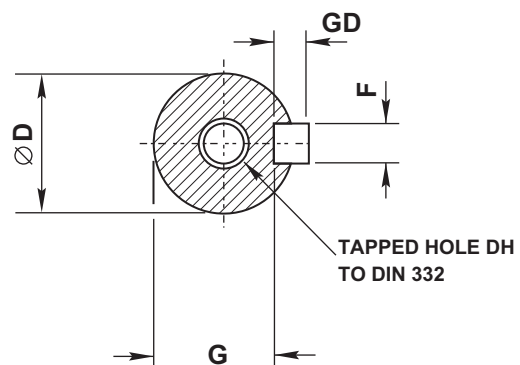
[2] 2 pole.

[3] Overall length of terminal box across gland plate.

Shaft Type	D	E	F	G	GD	EB	ED	ED1	DH
W-EF100L-P	28	60	8	24	7	2	50	5	M10 x 22
W-EF112M-P	28	60	8	24	7	1.6	50	5	M10 x 22
W-EF132M-P	38	80	10	33	8	2	70	5	M12 x 28
W-EF160L-P	42	110	12	37	8	4.8	100	5	M16 x 36
W-EF180L-P	48	110	14	42.5	9	4.8	100	5	M16 x 36
W-EF200L-P	55	110	16	49	10	5	100	5	M20 x 42
W-EF225M-P <sup>(1)</sup>	60	140	18	53	11	5	125	5	M20 x 42
W-EF225M-P <sup>(2)</sup>	55	110	16	49	10	5	100	5	M20 x 42
W-EF250M-P <sup>(1)</sup>	70	140	20	62.5	12	5	125	5	M20 x 42
W-EF250M-P <sup>(2)</sup>	60	140	18	53	11	5	125	5	M20 x 42
W-EF280M-P <sup>(1)</sup>	80	170	22	71	14	5	160	5	M20 x 42
W-EF280M-P <sup>(2)</sup>	65	140	18	58	11	5	125	5	M20 x 42

[1] 4 pole and above.

[2] 2 pole.

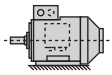


# Mounting options

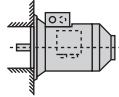


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## Horizontal shaft:



**IM B3  
IM 1001**  
foot mounted



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



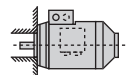
**IM B6  
IM 1051**  
foot wall mounted with  
feet on left-hand side  
when viewed from DE



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

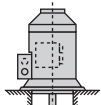


**IM B8  
IM 1071**  
ceiling mounted  
with feet  
above motor

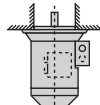


**IM B14  
IM 3601**  
face at DE  
no feet

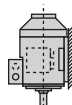
## Vertical shaft:



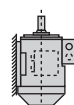
**IM V1  
IM 3011**  
flange at DE  
shaft down  
no feet



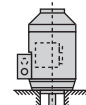
**IM V3  
IM 3031**  
flange at DE  
shaft up  
no feet



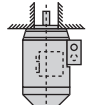
**IM V5  
IM 1011**  
vertical foot  
wall mounted  
shaft down



**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

## Approximate shipping specifications

Type		Net weight (kg)	Gross weight (kg)	Cubage (m <sup>3</sup> )
European	BS			
W-EF90S	W-EF90S	30	32	0.05
W-EF90L	W-EF90L	35	36	0.05
W-EF100L	W-EF100L	48	48	0.065
W-EF112M	W-EF112M	54	64	0.119
W-EF132S	W-EF132S	87	90	0.119
W-EF132M	W-EF132M	99	102	0.119
W-EF160M	W-EF160M	140	156	0.161
W-EF160L	W-EF160L	161	174	0.161
W-EF180M	W-EF180M	216	224	0.324
W-EF180L	W-EF180L	222	248	0.324
WU-EF200L	W-EF200L	340	370	0.324
WU-EF225S	W-EF225S	370	407	0.433
WU-EF225M	W-EF225M	445	482	0.433
WU-EF250MNE	W-EF250S	494	550	0.801
WU-EF280SNE	W-EF250M	694	750	0.831
WU-EF280MNE	W-EF280S	755	821	1.3
WU-EF315SNE	W-EF280M	890	950	1.3
WU-EF315MNE	W-EF315S	1150	1240	1.9
WU-EF315M	W-EF315M	1350	1445	1.9
WU-EF315L	W-EF315L	1550	1645	2.0

Weights listed above are approximate and based on foot mounted [B3] standard design.

## Mechanical: grease, bearings & oilseals

### Bearings and greasing arrangements

Bearings are pre-packed with a grease type dependant on frame size and re-greasing facility as detailed in table opposite:

Standard and re-greasing facilities		
Type	Standard grease	Re-greasing facility
90 - 180	EA6 Polyurea	-
200 - 315	Esso Unirex N3	Standard

Bearing references and oil seals for horizontally-mounted motors only						
Type		Bearings <sup>(1)</sup>			Oil seals <sup>(2)</sup>	
European	BS	Polarity	Drive end	Non-drive end	Drive end	Non-drive end
W-EF90S/L	W-EF90S/L	All	6205ZZ	6205ZZ	25 x 35 x 7	25 x 35 x 7
W-EF100L	W-EF100L	All	6206ZZ	6205ZZ	30 x 42 x 7	20 x 30 x 7
W-EF112M	W-EF112M	All	6306ZZ	6305ZZ	30 x 42 x 7	20 x 30 x 7
W-EF132S/M	W-EF132S/M	All	6308ZZ	6305ZZ	40 x 52 x 7	20 x 30 x 7
W-EF160M/L	W-EF160M/L	All	6309ZZ	6308ZZ	45 x 60 x 8	35 x 47 x 7
W-EF180M/L	W-EF180M/L	All	6310ZZ	6309ZZ	50 x 65 x 8	42 x 56 x 7
WU-EF200LN	W-EF200LN	All	6313	6313	65 x 90 x 10	65 x 90 x 10
WU-EF225S	W-EF225S	All	6313	6313	65 x 90 x 10	65 x 90 x 10
WU-EF225M	W-EF225M	All	6314	6314	70 x 90 x 10	70 x 90 x 10
WU-EF250MNE	W-EF250S	2	6314	6314	70 x 90 x 10	70 x 90 x 10
		4 up	6316	6316	80 x 110 x 10	80 x 110 x 10
WU-EF280SNE	W-EF250M	2	6314	6314	70 x 90 x 10	70 x 90 x 10
		4 up	6318	6318	90 x 120 x 12	90 x 120 x 12
WU-EF280MNE	W-EF280S	2	6314	6314	70 x 90 x 10	70 x 90 x 10
		4 up	6318	6318	90 x 120 x 12	90 x 120 x 12
WU-EF315SNE	W-EF280M	2	6316	6316	70 x 90 x 10	70 x 90 x 10
		4 up	6319	6319	90 x 120 x 12	90 x 120 x 12
WU-EF315MNE	W-EF315S	2	6316	6316	70 x 90 x 10	70 x 90 x 10
		4 up	6319	6319	90 x 120 x 12	90 x 120 x 12
WU-EF315M	W-EF315M	2	6316	6316	70 x 90 x 10	70 x 90 x 10
		4 up	6319	6319	90 x 120 x 10	90 x 120 x 12
WU-EF315L	W-EF315L	2	6316	6316	70 x 90 x 10	70 x 90 x 10
		4 up	6319	6319	90 x 120 x 12	90 x 120 x 12

Grease life expected at 80°C bearing temperature x 10 <sup>3</sup> hours									
Type		3000 min <sup>-1</sup>		1500 min <sup>-1</sup>		1000 min <sup>-1</sup>		750 min <sup>-1</sup>	
European	BS	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
W-EF90S/L	W-EF90S/L	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
W-EF100L	W-EF100L	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
W-EF112M	W-EF112M	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
W-EF132S/M	W-EF132S/M	30.0	23.0	30.0	30.0	30.0	30.0	30.0	30.0
W-EF160M/L	W-EF160M/L	29.0	19.0	30.0	30.0	30.0	30.0	30.0	30.0
W-EF180M/L	W-EF180M/L	24.0	16.0	30.0	30.0	30.0	30.0	30.0	30.0
WU-EF200L	W-EF200L	12.6	8.2	30.0	20.3	30.0	27.8	30.0	30.0
WU-EF225S	W-EF225S	12.6	8.2	30.0	20.3	30.0	27.8	30.0	30.0
WU-EF225M	W-EF225M	11.3	7.4	29.5	19.2	30.0	26.0	30.0	30.0
WU-EF250MNE	W-EF250S	11.3	7.4	26.3	17.1	30.0	23.6	30.0	29.3
WU-EF280SNE	W-EF250M	11.3	7.4	23.4	15.2	30.0	21.3	30.0	27.8
WU-EF280MNE	W-EF280S	11.3	7.4	23.4	15.2	30.0	21.3	30.0	27.8
WU-EF315SNE	W-EF280M	9.4	6.1	21.3	13.8	30.0	20.2	30.0	26.0
WU-EF315MNE	W-EF315S	9.4	6.1	21.3	13.8	30.0	20.3	30.0	26.0
WU-EF315M	W-EF315M	9.4	6.1	21.3	13.8	30.0	20.3	30.0	26.0
WU-EF315L	W-EF315L	9.4	6.1	21.3	13.8	30.0	20.3	30.0	26.0

<sup>(1)</sup> DE = Drive End  
<sup>(2)</sup> NDE = Non-Drive End



Maximum permissible external axial thrust and radial loads in Newtons [N]								
Type	Poles	Horizontal shaft		Vertical shaft				Maximum permissible radial load at end of shaft [standard mounting]
		Load towards motor	Load away from motor	Shaft up		Shaft down		
				Load towards motor	Load away from motor	Load towards motor	Load away from motor	
W-EF90S	2	840	1064	819	1096	872	1043	850
	4	775	999	747	1042	818	971	797
	6	627	851	599	894	670	823	685
	8	649	873	621	916	692	845	702
W-EF90L	2	837	1061	812	1100	876	1036	881
	4	771	995	738	1046	822	962	824
	6	619	843	579	903	679	803	700
	8	643	867	608	922	698	832	722
W-EF100L	2	777	1087	733	1156	846	1043	1325
	4	709	1019	653	1106	796	963	1249
	6	563	873	508	956	646	818	1181
	8	584	894	527	980	670	837	1053
W-EF112M	2	1315	1583	1257	1675	1407	1525	1788
	4	1193	1461	1084	1631	1363	1352	1659
	6	1130	1398	1046	1529	1261	1314	1610
	8	980	1248	895	1379	1111	1163	1389
W-EF132S	2	1216	1629	1124	1772	1359	1537	2729
	4	1123	1536	1015	1704	1291	1428	2759
	6	1045	1458	935	1629	1216	1348	2657
	8	867	1280	736	1480	1067	1149	2392
W-EF132M	4	1101	1514	967	1722	1309	1380	2838
	6	1029	1442	902	1638	1225	1315	2742
	6*	1019	1432	879	1648	1235	1292	2725
W-EF160M	8	860	1273	718	1487	1074	1131	2479
	2	2482	3277	2612	3543	3048	3107	3549
	4	2837	3332	2641	3641	3146	3136	3669
	6	2651	3146	2404	3533	3038	2899	3472
W-EF160L	8	2338	2833	2085	3225	2730	2580	3170
	2	2753	3248	2551	3566	3071	3046	2633
	4	2803	3298	2566	3669	3174	3061	3748
	6	2663	3158	2409	3553	3058	2904	3607
W-EF180M	8	2285	2780	1965	3273	2778	2460	3196
	2	3666	4229	3376	4683	4120	3939	4294
W-EF180L	4	3847	4410	3518	4928	4365	4080	4519
	4	3815	4377	3447	4955	4393	4009	4576
W-EF180L	6	3613	4176	3192	4835	4273	3755	4362
	8	3203	3766	2779	4422	3860	3342	3980

All figures are based on L10aah life of 20,000 hours  
 \* 5.5kW



# Technical information



## Mechanical: Axial and radial loads

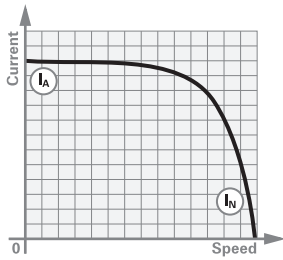
Maximum permissible external axial thrust and radial loads in Newtons (N)											
Type		Poles	Horizontal shaft		Vertical shaft				Maximum permissible radial load at end of shaft		
			Load towards motor	Load away from motor	Shaft up		Shaft down		Standard ball bearing		
European frame	BS frame					Load towards motor	Load away from motor	Load towards motor	Load away from motor	European frame	BS frame
WU-EF200LN	W-EF200LN	2	6039	5469	5538	6170	6740	4968		5765	5765
		4	6756	6186	6121	7081	7651	5551		6281	6281
		6	6833	6263	6115	7275	7845	5545		6298	6298
		8	6505	5935	5787	6947	7517	5217		5955	5955
WU-EF225S	W-EF225S	4	6692	6122	5941	7177	7747	5371		5963	5963
		6	6770	6200	5935	7371	7941	5365		5982	5982
		8	6441	5871	5606	7042	7612	5036		5648	5648
WU-EF225M	W-EF225M	2	6729	6197	6084	7082	7614	6213		6602	6602
		4	7530	6998	6745	8099	8631	6213		6868	6876
		6	7640	7108	6673	8463	8995	6141		6856	6856
		8	7293	6761	6326	8116	8648	5794		6501	6501
WU-EF250ME	W-EF250S	2	6640	6108	5837	7209	7741	5305		6262	6262
		4	9012	8418	8030	9794	10388	7436		8163	8163
		6	9391	8797	8311	10311	10905	7717		8477	8477
		8	9007	8413	7927	9927	10521	7333		8087	8087
WU-EF280SE	W-EF250M	2	6505	5911	5472	7352	7946	4878		5692	5897
		4	10241	9579	8943	11377	12039	8281		9260	9627
		6	10846	10184	9423	12157	12819	8761		9336	10182
WU-EF280ME	W-EF280S	8	10400	9738	8977	11711	12373	8315		9336	9706
		2	6268	5736	5101	7355	7887	4569		5824	5795
		4	9774	9112	8014	11534	12196	7352		9136	8842
		6	10582	9920	8704	12524	13186	8042		9698	9386
WU-EF315SE	W-EF280M	8	10136	9474	8257	12077	12739	7595		9216	8919
		2	7443	6849	5921	8957	9551	5327		6804	6804
		4	10305	9965	8299	12719	13059	7959		9443	9443
WU-EF315ME	W-EF315S	6	11190	10850	9050	13810	14150	8710		10042	10042
		8	10797	10457	8657	13417	13757	8317		9630	9630
		2	7337	6743	5654	9082	9676	5060		6680	6680
		4	10077	9737	7672	13044	13384	7332		9121	9121
WU-EF315M	W-EF315M	6	10958	10618	8419	14131	14471	8079		9734	9734
		8	10347	10007	7798	13510	13850	7458		9312	9312
		2	7398	6804	5664	9154	9748	5070		6885	6885
WU-EF315L	W-EF315L	4	10192	9852	8006	12862	13202	7666		9482	9482
		6	11060	10720	8715	13971	14311	8375		10066	10066
		8	10667	10327	8322	13578	13918	7982		9640	9640
		2	7055	6461	5050	9164	9758	4456		6603	6606
WU-EF315L	W-EF315L	4	10008	9668	7501	13123	13463	7161		9207	9207
		6	10872	10532	8207	14229	14569	7867		9801	9801
		8	10263	9923	7587	13609	13949	7247		9367	9367

All figures are based on L10aah life of 20,000 hours

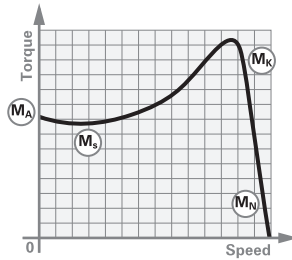


#### DOL starting

Typical speed/current curve



Typical speed/torque curve

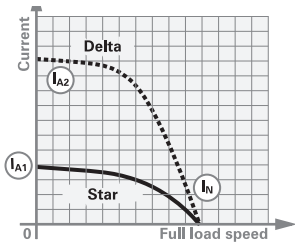


- (I<sub>A</sub>) Starting current
- (I<sub>N</sub>) Full load current
- (M<sub>A</sub>) Starting torque or locked rotor torque
- (M<sub>S</sub>) Pull up torque or run up torque
- (M<sub>K</sub>) Pull out torque or breakdown torque
- (M<sub>N</sub>) Full load torque

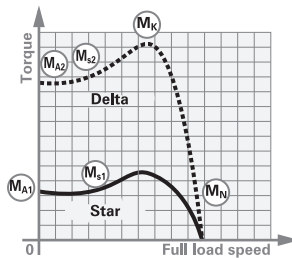
Torque/speed curves for specific motors can be supplied on request.

#### Star delta starting

Typical speed/current curve



Typical speed/torque curve



#### Notes

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.

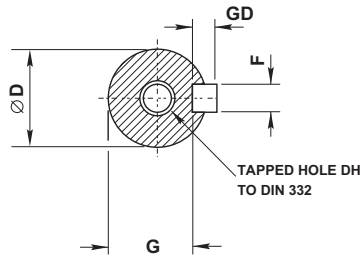
Performance figures are subject to IEC tolerances. Performance figures are based on a 400 volt winding.

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

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

## Page notes

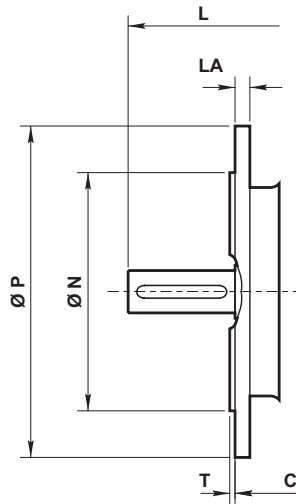
Shaft		
Dim D	Tol	Limits
11 to 14	j6	+0.008 -0.003
19 to 28	j6	+0.009 -0.004
38 to 48	k6	+0.018 +0.002
55 to 80	m6	+0.030 +0.011
85 to 110	m6	+0.035 +0.013



All dimensions in millimetres

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

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



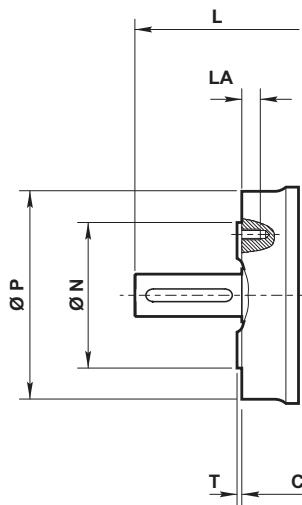
B5 mounted motors have suffix '-D' in the frame reference, eg W-EF112MG-D and B3/B5 mounted motors have suffix '-H' in the frame reference, eg W-EF112MG-H

B14 mounted motors have suffix 'C' in the frame reference, eg W-EF112MG-C and B3/B14 mounted motors have suffix '-H' in the frame reference, eg W-EF112MG-H

B30 mounted motors have suffix 'P' in the frame reference, eg W-EF112MG-P

**Dimensions should not be used for installation purposes, unless specially endorsed.**

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



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