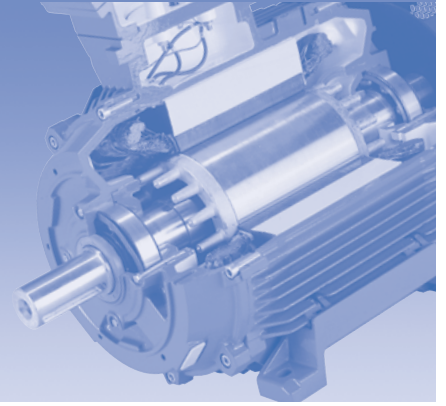


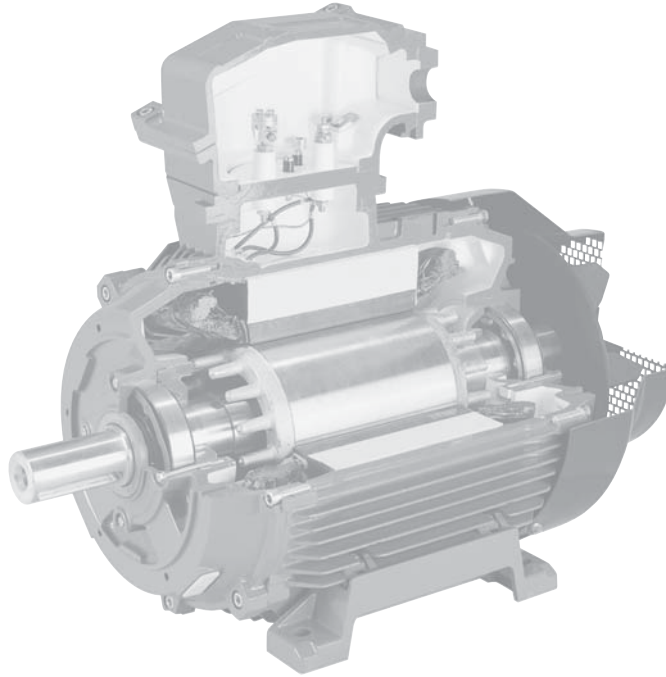
EEx d/de flameproof motors



Frames 90 - 315L

EEx d/de flameproof motors

90 - 315L



Brook Crompton

Brook Crompton is a leading manufacturer of electric motors for the global industrial market, with motor solutions which benefit a wide range of customers.

Our products are used in almost every industrial activity including water treatment, building services, chemical/petrochemicals, general processing and manufacturing where they drive fans, pumps, compressors and conveyors, amongst other things.

Brook Crompton incorporates many well known names including Brook Motors, Crompton Parkinson, Electrodrives, Newman, Bull Electric and Hawker Siddeley Electric Motors.

We have extensive stocks of motors around the world, backed-up by a network of distributors, ensuring excellent local support wherever needed.

Quality assurance

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

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

EEx d/de flameproof motors

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

We have over 90 years' technical and design experience in this most specialised market and are able to ensure the correct selection of motors for any application, taking into full account the two most important factors to be considered - safety and economy.

Brook Crompton's range of EEx 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, PTB), meeting rigorous quality controls.

Efficiency

Brook Crompton are an approved manufacturer of ac electric motors within the UK Government's Enhanced Capital Allowance scheme (ECA). A wide range of single and multi-speed motors are included on the UK Energy Technology List. Please check the ECA scheme website: www.eca.gov.uk at time of purchase for current listing.

Benefits include:

- Baseefa (2001) Ltd certified
- Full 2-year guarantee
- Stainless steel rating and certification plate
- Certification for inverter use
- Certificate of Grant of Patent on the bearing cap
- IP55 protection

ATEX

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

Standards and environment

Standards

Standards						
EExd/de motors can be manufactured to the international standards listed below:						
Region	International	UK	Europe	USA	Canada*	Australia
Standard	IEC	BS & EN	EN	NEMA	NEMA	AS, NZS & IEC
Outputs	IEC 60034-1	EN 50347 BS 5000 part 10 App A	EN 50347	MG 1 Part 10	MG 1 Part 10	AS 1359.30 IEC 60034-1
Performance	IEC 60034-1	EN 60034-1	EN 60034-1	MG 1 Part 12	MG 1 Part 12	AS 1359.101 IEC 60034-1
Dimensions	IEC 60072-1	EN 50347	EN 50347	MG 1 Part 4	MG 1 Part 4	AS 1359.10 IEC 60072-1
Mounting	IEC 60034-7	EN 60034-7	EN 60034-7	MG 1 Part 4	MG 1 Part 4	AS 1359.107 IEC 60034-7
Degrees of protection	IEC 60034-5	EN 60034-5	EN 60034-5	MG 1 1.26B	MG 1 1.26B	AS 1359.20 IEC 60034-5
EEx d	IEC 60079-0 IEC 60079-1	EN 50014 EN 50018	EN 50014 EN 50018	National Electrical Code Article 500	IEC 60079-0 IEC 60079-1	
EEx de	IEC 60079-0 IEC 60079-1 IEC 60079-7	EN 50015 EN 50018 EN 50019	EN 50015 EN 50018 EN 50019	National Electrical Code Article 500	IEC 60079-0 IEC 60079-1 IEC 60079-7	

standard motor complies
 optional

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)

Environment Enclosure

All motors have degrees of IP protection as defined in IEC/EN 60034-5.

Motor cooling

Motors are cooled in accordance with IEC/EN 60034-6. The normal arrangement is IC411 (Totally Enclosed Fan Ventilated) via a fan mounted at the non-drive end. Alternative methods of cooling available on request.

European directives

Four European directives apply in varying degrees to ac induction motors. Brook Crompton comply in the following manner:

Compliance with European directives applying to AC induction motors				
Directives	Low voltage (LV)	Machinery (MD)	Electromagnetic compatibility (EMC)	ATEX
Reference numbers	73/23/EEC 93/68/EEC	89/392/EEC 91/368/EEC 93/44/EEC 93/68/EEC	89/336/EEC 92/31/EEC 93/68/EEC	94/9/EC
Motor CE marked	Yes	No	No	YES
Standards	EN 60034	Not applicable	EN 60034-1	EN 50014 EN 50018 EN 50019
Documentation for customers' technical file	Declaration of conformity	Certificate of incorporation	Statement ⁽¹⁾	Declaration of conformity
Safety instructions with every motor	Yes	Yes	Yes	Yes
Comment	Relevant electrical equipment operating between up to 1000 volts AC	Statement ⁽²⁾	Component	Hazardous atmosphere equipment - mandatory

⁽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)

EEx d specification



EEx d flameproof motors

Frame Sizes W-EF90 to W-EF315

Groups IIA/IIB or IIC

Suitable for use in Zone 1

Code: EEx d IIB T4 or EEx d IIC T4*

General

These motors are designated EEx d flameproof and are designed for operation in Zone 1 hazardous areas. They comply with all relevant national and international standards. There 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 and T6 can be supplied although they 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, IP67 or IP68

Anti-condensation heaters

Thermostats or thermistors

EEMUA pub. no. 132-1988

Impact covers

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

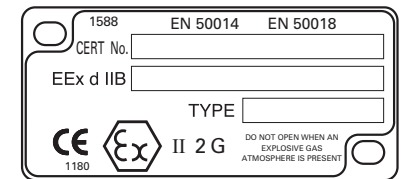
Vertically mounted motors fitted with impact cover

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
W-UEF200L	W-EF200L	45
W-UEF225S	W-EF225S	45
W-UEF225M	W-EF225M	45
W-UEF250MNE	W-EF250S	45
W-UEF280SNE	W-EF250M	48
W-UEF280MNE	W-EF280S	48
W-UEF315SNE	W-EF280M	48
W-UEF315MNE	W-EF315S	48
W-UEF315M	W-EF315M	53
W-UEF315L	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.

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
W-UEF250ME	BAS02ATEX2114X	BAS02ATEX2116X
W-EF250M	BAS02ATEX2117X	BAS02ATEX2119X
W-UEF280SE	BAS02ATEX2117X	BAS02ATEX2119X
W-EF280S	BAS02ATEX2117X	BAS02ATEX2119X
W-UEF280ME	BAS02ATEX2117X	BAS02ATEX2119X
W-EF280M	BAS02ATEX2120X	BAS02ATEX2122X
W-UEF315SE	BAS02ATEX2120X	BAS02ATEX2122X
W-EF315S	BAS02ATEX2120X	BAS02ATEX2122X
W-UEF315ME	BAS02ATEX2120X	BAS02ATEX2122X
W-EF315M	BAS02ATEX2123X	BAS02ATEX2125X
W-UEF315M	BAS02ATEX2123X	BAS02ATEX2125X
W-EF315L	BAS02ATEX2123X	BAS02ATEX2125X
W-UEF315L	BAS02ATEX2123X	BAS02ATEX2125X



Example of certification plate

EEx 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 ²)		Tightening torque (Nm)	
		3 Mains	6 Mains	9 Mains	12 Mains	Mains terminals	Auxiliary terminals	Mains terminals	Auxiliary terminals
90-112	90-112	5 Aux	2 Aux	0 Aux	N/A	6 (M5)	6 (M5)	2.2	2.2
	132-160	6 Aux	4 Aux	2 Aux	N/A	16 (M6)	6 (M5)	4.2	2.2
132-160	132-160	6 Aux	4 Aux	2 Aux	N/A	16 (M6)	6 (M5)	4.2	2.2
	180	6 Aux	6 Aux	0 Aux	N/A	25 (M8)	6 (M5)	11.3	2.2
180	180	6 Aux	6 Aux	0 Aux	N/A	25 (M8)	6 (M5)	11.3	2.2
200-250S ¹	200-250S	8 Aux	4 Aux	N/A	N/A	50 (M8)	2.5 (M4)	4	3
200-250M ²	250M-315S	19 Aux	10 Aux	7 Aux	4 Aux	50 (M8)	2.5 (M4)	4	3
250M-315S ¹	250M-315S	14 Aux	6 Aux	N/A	N/A	70 (M10)	2.5 (M4)	6	3
280S-315M ²	250M-315S	14 Aux	6 Aux	N/A	N/A	70 (M10)	2.5 (M4)	6	3
315M/L	315M/L	N/A	N/A	N/A	13 Aux	50 (M8)	2.5 (M4)	4	3
	315M/L	N/A	19 Aux	N/A	N/A	70 (M10)	2.5 (M4)	6	3
	315M/L	25 Aux	19 Aux	6 Aux	N/A	185 (M12)	2.5 (M4)	12	3

¹ BS frame ref ² European frame ref

EEx de specification



EEx de flameproof motors with increased safety terminals

Frame sizes W-EF90 to W-EF315
 Groups IIA/IIB or IIC
 IIC (W-EF200 to W-EF315)
 Suitable for use in Zone 1
 Code: EEx de IIB T4 or EEx de IIC T4

General

Direct entry EEx de motors are of a rugged cast iron construction. These motors differ from EEx 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 EEx 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 (II B only)
- Loose leads

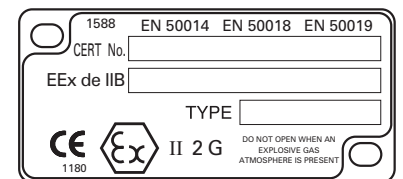


Increased safety terminals used in EEx de motors

Certification

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

Certificate Numbers			
Frame size	Certificate number		
	IIA/IIB	IIC	
W-EF90	Baseefa02ATEX0014X	-	
W-EF100	Baseefa02ATEX0016X	-	
W-EF112	Baseefa02ATEX0018X	-	
W-EF132	Baseefa02ATEX0020X	-	
W-EF160	Baseefa02ATEX0022X	-	
W-EF180	Baseefa02ATEX0024X	-	
W-EF200L	BAS02ATEX2112X	BAS02ATEX2113X	
W-EF225S	BAS02ATEX2112X	BAS02ATEX2113X	
W-EF225M	BAS02ATEX2115X	BAS02ATEX2116X	
W-EF250S	BAS02ATEX2115X	BAS02ATEX2116X	
W-UEF250ME	BAS02ATEX2115X	BAS02ATEX2116X	
W-EF250M	BAS02ATEX2118X	BAS02ATEX2119X	
W-UEF280SE	BAS02ATEX2118X	BAS02ATEX2119X	
W-EF280S	BAS02ATEX2118X	BAS02ATEX2119X	
W-UEF280ME	BAS02ATEX2118X	BAS02ATEX2119X	
W-EF280M	BAS02ATEX2121X	BAS02ATEX2122X	
W-UEF315SE	BAS02ATEX2121X	BAS02ATEX2122X	
W-EF315S	BAS02ATEX2121X	BAS02ATEX2122X	
W-UEF315ME	BAS02ATEX2121X	BAS02ATEX2122X	
W-EF315M	BAS02ATEX2124X	BAS02ATEX2125X	
W-UEF315M	BAS02ATEX2124X	BAS02ATEX2125X	
W-EF315L	BAS02ATEX2124X	BAS02ATEX2125X	
W-UEF315L	BAS02ATEX2124X	BAS02ATEX2125X	



Example of certification plate

EEx 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 ²)		Tightening torque (Nm)	
		3 Mains	6 Mains	9 Mains	12 Mains	Main terminals ¹	Auxiliary terminals	Main terminals	Auxiliary terminals
90-112	90-112	2 Aux	N/A	N/A	N/A	2.5	2.5	2	2
	132-160	4 Aux	2 Aux	0 Aux	N/A	6	2.5	6.5	2
132-160	132-160	4 Aux	2 Aux	0 Aux	N/A	6	2.5	6.5	2
	180	4 Aux	2 Aux	0 Aux	N/A	16	2.5	9.5	2
180	180	4 Aux	2 Aux	0 Aux	N/A	16	2.5	9.5	2
200-250S ²	200-250S	8 Aux	4 Aux	N/A	N/A	35 (M8)	2.5 (M4)	3	3
200-250M ³	250M-315S	19 Aux	10 Aux	7 Aux	4 Aux	35 (M8)	2.5 (M4)	3	3
	250M-315S	14 Aux	6 Aux	N/A	N/A	120 (M10)	2.5 (M4)	5	3
250M-315S ²	250M-315S	19 Aux	10 Aux	7 Aux	4 Aux	35 (M8)	2.5 (M4)	3	3
+++ 280S-315M ³	250M-315S	14 Aux	6 Aux	N/A	N/A	120 (M10)	2.5 (M4)	5	3
	315M/L	N/A	N/A	N/A	13 Aux	35 (M8)	2.5 (M4)	3	3
315M/L	315M/L	N/A	19 Aux	N/A	N/A	120 (M10)	2.5 (M4)	5	3
	315M/L	25 Aux	19 Aux	6 Aux	N/A	240 (M12)	2.5 (M4)	12	3

¹ mains terminal sizes quoted are for terminal pillar not terminal head screw size ² BS frame ref ³ European frame ref