



Keeping Industry Turning

Marine motors

Frame sizes 80 to 355

Specification and Introduction

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Marine duty motors

The motors described in this catalogue are designed and rated for use on board merchant ships built anywhere in the world and in accordance with the requirements of the major marine classification authorities.

These requirements generally concern limits to winding temperature rises with given ambient temperatures, which determine the motor frame size for a given output. For certain larger motors, some authorities specify normalised shaft steel to give greater consistency.

The requirements for witnessed tests, type tests, certification etc, differ between authorities and can all be accommodated. However, these exceptional demands must be made clear at the time of ordering. The table opposite gives a list of the major classifying authorities and a summary of their specific requirements. Other classifications available on request, please contact Brook Crompton for details.

Construction and materials

Brook Crompton motors can be offered for marine use in either aluminium or cast iron material, the choice being determined by factors such as weight, appearance, efficiency, applications etc. There are differences in the availability of some features (see table opposite), however, the quality of materials used in the motors and the tolerances applied to their manufacture are consistently high. The paint finish and winding protection are chosen to suit the harsh marine environments in which the motors have to perform.

For more information on the W Aluminium range of motors, please see catalogue 20112E

For more information on the W Cast iron range of motors, please see catalogue 20113E

Brook Crompton

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 MotorCentres 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.

Standards for TEFV and open drip proof						
Classifying authority	Service	Ambient temp °C	Permissible temp rise K		Key special requirements	
			Class B	Class F	Normalised shaft steel	Witnessed tests for essential service
Lloyds Register of Shipping (LRS)	Restricted	40	75	90		
	Unrestricted	45	70	90	≥75kW	≥100kW
Det Norske Veritas (DNV)	Restricted	35*	80	100	≥65mm shaft dia	≥100kW
	Unrestricted	45	70	90		
Germanischer Lloyd (GL)	Restricted	40	80	100		
	Unrestricted	45	75	95	≥75kW	>100kW
American Bureau of Shipping (ABS)	Non-essential	40	80	105		
	Essential	50	70	95	-	≥100kW
Korean Register of Shipping (KRS)	Essential and non-essential	50	70	90	All motors	All motors ⁽¹⁾
Chinese Classification Societies (CCS)	Essential and non-essential	50	70	90	**	**
	Auxiliaries	45	75	95		
Bureau Veritas (BV)	Restricted	40	80	100	≥100kW	≥100kW Essential
	Essential	50	70	90		
Registro Italiano Navale (RINA)	Non-essential	40	80	100		
	Essential	50	70	90	All motors	≥100kW
Nippon Kaiji Kyokai (NKK)	Essential and non-essential	45	75+	95+	-	All motors for essential service

* Refrigerated holds only: +5°C allowed on non-ventilated, totally enclosed motors
 ** Refer to Brook Crompton ⁽¹⁾ Discretion of local surveyor

Marine motor features		
	W cast iron	W aluminium
Frequency	50/60Hz	50/60Hz
Enclosure	IP55	IP55
Cooling method	IEC411 TEFV *	IEC411 TEFV *
T-box position	80 - 90 right	Top
	90-355 top	
Lubrication	200-355 through greasing	Available on request
Balance	80-180 Grade A	Grade B
	200-355 Grade A	
Bearings	Ball/ball C3 clearance	Ball/ball C3 clearance
Drain holes	160-315	80-180
Temperature rise	Class B (80°C)	Class B (80°C)
Insulation class	Class F (155°C)	Class F (155°C)
Duty cycle	S1 continuous rated	S1 continuous rated
Earth facility	Internal and external	Internal and external
Thermal protection	200-355 fitted as standard	Available on request

* TEFV - Totally Enclosed Fan Ventilated

Specification

Insulation and thermal rating

Brook Crompton motors are manufactured using Class F insulating materials, giving a maximum operating temperature, including ambients of 145°C. Class H insulation, 165°C maximum temperature is available as an option.

Motor ratings depend upon:

- ambient temperature
- type of service
- maximum operating temperature, ie Class B (120°C), Class F (145°C)
- certifying authorities' special arrangements
- supply variations, ie tolerance on voltage and frequency

To simplify selection, it is assumed that standard supply conditions of voltage are +/-10%. Refer to output data on pages 6-11.

Ambient temperatures

If low (< -30°C) or high (> 55°C), ambient temperatures are to be experienced, it may be necessary to use special materials, eg grease, shaft steel etc. This depends largely on the operational requirements of the vessel or its equipment.

Thermal protection devices

To protect motor windings against a variety of operational malfunctions, motors and associated control gear can be fitted with protection devices. Thermistors which are temperature dependant, semi-conductor devices which are embedded in the motor windings, are in fact fitted as standard in many larger frame sizes. [See standards table on page 2]



Tropical protection

Standard motors will operate satisfactorily in the tropical environments experienced by many ships.

Where environmental conditions are conducive to the formation of fungal growth, algae or condensation, totally enclosed motors with extra tropic proof treatments are recommended as additional protection. The use of drain holes to assist in the release of any condensation is also recommended.

Where the motor is to be left standing for long periods of time in damp conditions, or subject to condensation forming atmospheres, it is recommended that anti-condensation heaters are fitted and energised to prevent condensation forming in the motor enclosure.

For more arduous applications, Brook Crompton has additional solutions, eg Argus tropical treatment, which enables the motor to operate satisfactorily in extreme tropical conditions.

Argus 55

The Argus 55 specification has been applied to most of Brook Cromptons marine motor range. This specification has been designed to enable the motor to operate and survive in the most arduous maritime conditions, and includes the following features as standard:

- IP55 weatherproof protection
- Anti-corrosive paint systems to suit each constructional material
- Stainless steel nameplate
- C3 clearance bearings
- internal and external earth terminals
- Tapped hole in shaft end

Performance data

4 W Aluminium construction - 50Hz

Marine classification authorities impose differing restrictions on equipment use, and limits on ambient temperatures and on motor winding temperature rises (see standards table on page 4).

These restrictions can all be met by choosing the correct marine rating (1), (2) or (3) from the right hand table and selecting the appropriate motor frame below for that rating against the required output and speed.

Marine ratings		Unrestricted/essential		Restricted/non-essential	
Use/service	Temperature rise class	B	F	B	F
LRS (Lloyds)	(3)	(3)	(1)	(3)	(1)
DNV (Norway)	(3)	(3)	(1)	(2)	(1)
GL (Germany)	(3)	(3)	(1)	(2)	(1)
BV (France)	(3)	(3)	(1)	(2)	(1)
RINA (Italy)	(3)	(3)	(1)	(2)	(1)
ABS (USA)	(3)	(3)	(1)	(2)	(1)
KRS (Korea)	(3)	(3)	(1)	(3)	(1)
CCS (China)	(3)	(3)	(1)	(3)	(1)
NKK (Japan)	(3)	(3)	(1)	(3)	(1)

Maximum continuous output (kW) against selected rating, frame size and speed

Frame size	3000min ⁻¹ [2 pole]			1500min ⁻¹ [4 pole]			1000min ⁻¹ [6 pole]			750min ⁻¹ [8 pole]		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
80M	1.35	1.2	1.1	0.82	0.75	0.7	0.55	0.5	0.48	-	-	-
90S	1.75	1.6	1.5	1.2	1.1	1.05	0.75	0.7	0.66	0.37	0.34	0.33
90L	2.4	2.2	2.1	1.6	1.45	1.4	1.1	1.0	0.95	0.55	0.5	0.48
100L	3.6	3.2	3.0	-	-	-	1.8	1.6	1.5	-	-	-
100LA	-	-	-	2.6	2.3	2.2	-	-	-	0.9	0.8	0.75
100LB	-	-	-	3.6	3.2	3.0	-	-	-	1.35	1.2	1.1
112M	4.4	4.0	3.8	4.4	4.0	3.8	2.6	2.3	2.2	1.5	1.3	1.2
132S	-	-	-	6.6	6.0	5.5	3.3	3.0	2.8	2.6	2.3	2.2
132SA	6.6	6.0	5.5	-	-	-	-	-	-	-	-	-
132SB	9.0	8.2	7.5	-	-	-	-	-	-	-	-	-
132M	-	-	-	8.6	8.0	7.5	-	-	-	3.6	3.2	3.0
132MA	-	-	-	-	-	-	4.4	4.0	3.8	-	-	-
132MB	-	-	-	-	-	-	6.0	5.5	5.2	-	-	-
160M	-	-	-	13.5	12	11	8.2	7.5	7.2	-	-	-
160MA	13.5	12	11	-	-	-	-	-	-	4.4	4.0	3.8
160MB	18	16.5	15	-	-	-	-	-	-	6.0	5.5	5.2
160L	20	18.5	17.5	16.5	15	14	12	11	10.5	8.2	7.5	7.0
180M	25	23	22	20	18.5	17.5	-	-	-	-	-	-
180L	-	-	-	24	22	21	16.5	15	14.3	12	11	10.5

For more information on the W Aluminium range of motors, please see catalogue 20112E

Performance data

W Aluminium construction - 60Hz

Maximum continuous output (kW) against selected rating, frame size and speed												
Frame size	3600min ⁻¹ (2 pole)			1800min ⁻¹ (4 pole)			1200min ⁻¹ (6 pole)			900min ⁻¹ (8 pole)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
80M	1.6	1.45	1.3	0.98	0.9	0.84	0.66	0.6	0.58	-	-	-
90S	2.1	1.9	1.8	1.45	1.3	1.25	0.9	0.84	0.79	0.44	0.41	0.39
90L	2.9	2.6	2.5	1.9	1.75	1.7	1.3	1.2	1.15	0.66	0.6	0.58
100L	4.3	3.9	3.6	-	-	-	2.1	1.9	1.8	-	-	-
100LA	-	-	-	3.2	2.8	2.7	-	-	-	1.1	0.95	0.9
100LB	-	-	-	4.3	3.8	3.6	-	-	-	1.6	1.45	1.3
112M	5.3	4.8	4.5	5.3	4.8	4.5	3.1	2.7	2.5	1.8	1.5	1.4
132S	-	-	-	7.9	7.2	6.6	3.9	3.6	3.4	3.1	2.7	2.5
132SA	7.9	7.2	6.6	-	-	-	-	-	-	-	-	-
132SB	10.8	9.8	9.0	10.3	9.6	9.0	-	-	-	-	-	-
132M	-	-	-	-	-	-	-	-	-	4.3	3.8	3.6
132MA	-	-	-	-	-	-	5.3	4.8	4.5	-	-	-
132MB	-	-	-	-	-	-	7.2	6.6	6.2	-	-	-
160M	-	-	-	16	14.5	13	9.8	9.0	8.6	-	-	-
160MA	16	14.5	13	-	-	-	-	-	-	5.3	4.8	4.5
160MB	22	20	18	-	-	-	-	-	-	7.2	6.6	6.2
160L	24	22	21	20	18	17	14.5	13	12.5	9.8	9.0	8.6
180M	30	28	26	24	22	21	-	-	-	-	-	-
180L	-	-	-	29	26	25	20	18	17	14.5	13	12.5

For more information on the W Aluminium range of motors, please see catalogue 20112E

Performance data

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W Cast iron construction - 50Hz

Marine classification authorities impose differing restrictions on equipment use, and limits on ambient temperatures and on motor winding temperature rises (see standards table on page 4).

These restrictions can all be met by choosing the correct marine rating (1), (2) or (3) from the right hand table and selecting the appropriate motor frame below for that rating against the required output and speed.

Marine ratings		Unrestricted/essential		Restricted/non-essential	
Use/service		B	F	B	F
Temperature rise class					
LRS	(Lloyds)	(3)	(1)	(3)	(1)
DNV	(Norway)	(3)	(1)	(2)	(1)
GL	(Germany)	(3)	(1)	(2)	(1)
BV	(France)	(3)	(1)	(2)	(1)
RINA	(Italy)	(3)	(1)	(2)	(1)
ABS	(USA)	(3)	(1)	(2)	(1)
KRS	(Korea)	(3)	(1)	(3)	(1)
CCS	(China)	(3)	(1)	(3)	(1)
NKK	(Japan)	(3)	(1)	(3)	(1)

Maximum continuous output (kW) against selected rating, frame size and speed												
Frame size	3000min ⁻¹ (2 pole)			1500min ⁻¹ (4 pole)			1000min ⁻¹ (6 pole)			750min ⁻¹ (8 pole)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
80M	1.2	1.0	0.96	0.75	0.7	0.65	0.55	0.55	0.48	0.25	0.23	0.22
90S	1.5	1.4	1.3	1.1	1.0	0.96	0.75	0.7	0.65	0.37	0.34	0.32
90L	2.2	2.0	1.9	1.5	1.4	1.3	1.1	1.0	0.96	0.55	0.5	0.48
100L	3.0	2.8	2.6	-	-	-	1.5	1.4	1.3	-	-	-
100LA	-	-	-	2.2	2.0	1.9	-	-	-	0.75	0.7	0.65
100LB	-	-	-	3.0	2.8	2.6	-	-	-	1.1	1.0	0.96
112M	4.0	3.8	3.6	4.0	3.8	3.6	2.2	2.1	2.0	1.5	1.4	1.3
132S	-	-	-	5.5	5.3	5.0	3.0	2.8	2.7	2.2	2.0	1.9
132SA	5.5	5.3	5.0	-	-	-	-	-	-	-	-	-
132SB	7.5	7.2	6.8	-	-	-	-	-	-	-	-	-
132M	-	-	-	7.5	7.2	6.8	-	-	-	3.0	2.8	2.7
132MA	-	-	-	-	-	-	4.0	3.8	3.6	-	-	-
132MB	-	-	-	-	-	-	5.5	5.3	5.0	-	-	-
160M	-	-	-	12	10.5	10	7.5	7.2	6.8	-	-	-
160MA	11	10.5	10	-	-	-	-	-	-	4.4	3.8	3.6
160MB	15	14.3	13.7	-	-	-	-	-	-	5.5	5.3	5.0
160L	18.5	17.7	16.8	16	14.3	13.7	11	10.5	10	7.5	7.2	6.8
180M	22	21	20	20	17.7	16.8	-	-	-	-	-	-
180L	-	-	-	23	21	20	15	14.3	13.7	11	10.5	10
200LG	32	30	28	-	-	-	19.5	18.5	17	-	-	-
200LN	39	37	34	32	30	28	23.5	22.0	20.5	16	15	14
225SN	-	-	-	39	37	34	-	-	-	19.5	18.5	17
225MN	48	45	42	48	45	42	32	30	28	23.5	22	20.5
250SN	58	55	51	58	55	51	39	37	34	32	30	28
250MN	79	75	70	79	75	70	48	45	42	39	37	34
280SN	95	90	84	95	90	84	58	55	51	48	45	42
280MN	116	110	102	116	110	102	79	75	70	58	55	51
315SN	140	132	123	140	132	123	95	90	84	79	75	70
315MN	159	150	140	159	150	140	116	110	102	95	90	84
315LG	169	160	149	169	160	149	-	-	-	-	-	-
315LN	196	185	172	196	185	172	140	132	123	116	110	102

Performance data

W Cast iron construction - 60Hz

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Maximum continuous output (kW) against selected rating, frame size and speed												
Frame size	3600min-1 (2 pole)			1800min-1 (4 pole)			1200min-1 (6 pole)			900min-1 (8 pole)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
80M	1.25	1.15	1.1	0.86	0.8	0.75	0.63	0.58	0.55	0.29	0.26	0.25
90S	1.7	1.6	1.5	1.25	1.15	1.1	0.86	0.8	0.75	0.43	0.39	0.37
90L	2.5	2.3	2.2	1.7	1.6	1.5	1.25	1.15	1.1	0.63	0.58	0.55
100L	3.5	3.2	3.0	-	-	-	1.7	1.6	1.5	-	-	-
100LA	-	-	-	2.5	2.3	2.2	-	-	-	0.86	0.8	0.75
100LB	-	-	-	3.5	3.2	3.0	-	-	-	1.25	1.15	1.1
112M	4.6	4.4	4.0	4.6	4.4	4.0	2.5	2.4	2.3	1.7	1.6	1.5
132S	-	-	-	6.4	6.1	5.8	3.5	3.2	3.0	2.5	2.4	2.3
132SA	6.3	6.1	5.8	-	-	-	-	-	-	-	-	-
132SB	8.6	8.3	7.8	-	-	-	-	-	-	-	-	-
132M	-	-	-	8.6	8.3	7.8	-	-	-	3.5	3.2	3.1
132MA	-	-	-	-	-	-	4.6	4.4	4.0	-	-	-
132MB	-	-	-	-	-	-	6.3	6.1	5.8	-	-	-
160M	-	-	-	13	12	11.5	8.6	8.3	7.8	-	-	-
160MA	13	12	11.5	-	-	-	-	-	-	4.6	4.4	4.0
160MB	17	16	15.5	-	-	-	-	-	-	6.3	6.1	5.8
160L	21	20	19	17	16	15.5	13	12	11.5	8.6	8.3	7.8
180M	25	24	23	21	20	19	-	-	-	-	-	-
180L	-	-	-	25	24	23	17	16	15.5	13	12	11.5
200LG	38	36	33	-	-	-	23.5	22	20.5	-	-	-
200LN	47	44	41	38	36	33	28	26.5	24.5	19	18	16.5
225SN	-	-	-	47	44	41	-	-	-	23.5	22	20.5
225MN	57	54	50	57	54	50	38	36	33	28	26.5	24.5
250SN	70	66	61	70	66	61	47	44	41	38	36	33
250MN	95	90	83	95	90	83	57	54	50	47	44	41
280SN	114	108	100	114	108	100	70	66	61	57	54	50
280MN	139	132	122	139	132	122	95	90	83	70	66	61
315SN	167	158	147	167	158	147	114	108	100	95	90	83
315MN	190	179	167	190	179	167	139	132	122	114	108	100
315LG	202	191	178	202	191	178	-	-	-	-	-	-
315LN	234	221	206	234	221	206	167	158	147	139	132	122

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