

Motors for High Ambient Temperatures

Hot and Humid - Motor for the toughest environments



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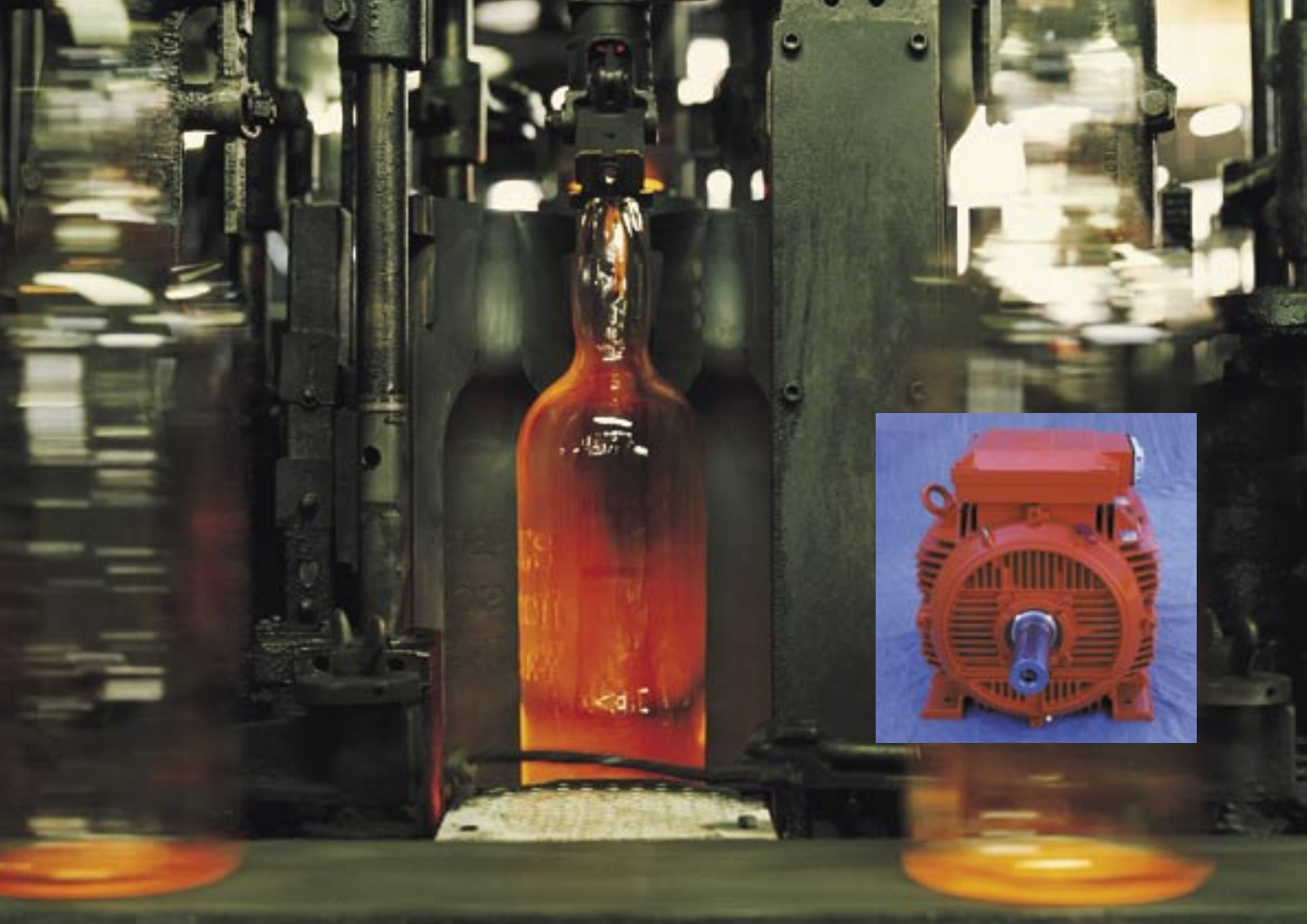
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A high performance motor with off-the-shelf availability

Motors capable of withstanding extreme temperatures – often combined with intense humidity and corrosive environments – are crucial to many industrial processes. The metallurgical, wood and food industries, brick and glass manufacturing, drying sheds and bakeries – to name but a few – have always depended on high-priced, custom-designed motors. Until now.

ABB's new motors for demanding environments come to you straight from stock. What's more, the features described later in this brochure guarantee trouble-free operation in temperatures of up to 90°C.

Better in every way

ABB motors for demanding environments are made to an entirely new design based on the latest research into some of today's most gruelling production processes. Modeled on ABB's proven motor technology/platform, they incorporate

many of its tried and tested features, like lower bearing temperatures, longer lubrication intervals, and improved greasing systems. But we didn't stop there. We added several key attributes for greater energy-efficiency, longer lifetime and lower operating costs. And to give our motors variable speed control capability, we made full use of ABB's know-how and experience as the world's largest supplier of industrial automation systems.

The result is a rugged and reliable motor that will outperform and outlast many custom-designed competitors, at a demonstrably lower operating cost.

They thrive year after year in environments where other motors flag after just a few months

Our new motors are designed from the bottom up to withstand the punishing conditions found in many processes



– extreme temperatures, 100% relative humidity and highly corrosive environments. Constructed entirely in cast iron and/or aluminum and coated with a tough, multi-layer epoxy surface treatment, our motors are fully protected against corrosion, inside and out.

Greater reliability and lower operating costs

Small energy losses, high efficiency and the use of C4-clearance bearings are some of the factors behind the outstanding reliability and low overall operating costs of our new motors. What's more, they're readily available from stock, which means deliveries from 24 to 72 hours for most sizes. And we hardly need to remind you what rapid consignments and high operating security mean in terms of avoiding long, damaging downtimes.

The high quality of our motors is preserved by professional

maintenance. ABB motors are equipped with stainless steel adapters for bearing condition monitoring according to the SPM Method.

Shock pulse measurement is the easiest and most reliable way to prevent lubrication deficiencies, alignment errors or mechanical overloads, and it gives very early warning of developing bearing damage.

It's the small details that make the difference

A standard motor that can be adapted to suit your needs

The M3BPV motor for demanding environments is available in a standard configuration, capable of operating in temperatures of up to 90°C, equipped with cooling fan, top-mounted terminal box, separate stainless steel lubrication information plate, high-temperature grease, class H insulation, thermistors, IP55 with drainage holes, rustproof stators and rotors, C4-clearance bearings, stainless steel nipples for re-greasing and ready for frequency converter operation. The motor can be ordered in a variety of configurations for easy adaptation to a range of conditions:

- With or without terminal box.
- Terminal box mounted on the right side, left side or on top.
- With or without cooling fan.
- With or without stainless steel nipples for re-greasing.
- With or without standby heating system.

Sizes 112 and 132 (M3APV) are supplied with an aluminum frame. Basic technical data, dimension drawings and variant codes are to be found on the following pages. For any further technical information please contact ABB.

Lubrication system with grease outlet plug.
Grease nipples in stainless steel.
Permanently greased bearings optional.

Class H insulation for high temperature resistance.

Shields with more effective cooling flanges.

New, improved bearing shields for longer lifetime.

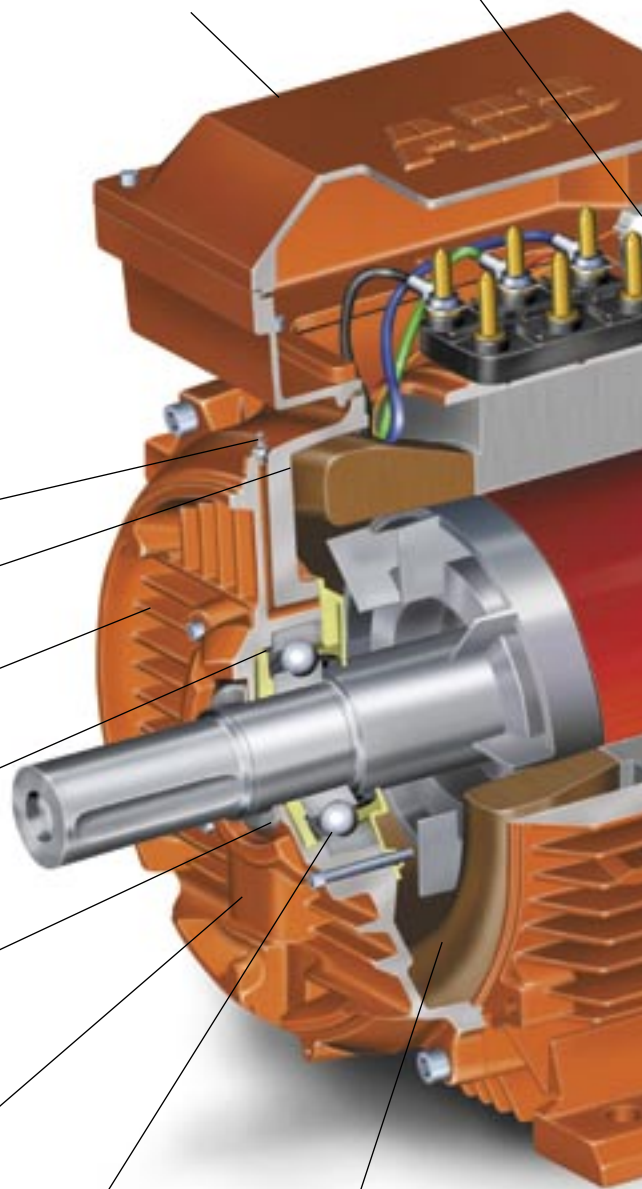
Reliable gamma shaft seal protects the bearing.

Ready for vibration measurements.

Bearings with C4-clearance as standard.

Built-in thermistors for temperature monitoring.

Newly constructed terminal box, roomy and easy to work with.



Optional standby heating systems.

Rating plate and separate lubrication information plate in stainless steel. Always readable.

Equipped with stainless steel SPM adapters for bearing condition monitoring.

Ready for frequency converter duty.

Highest energy-efficiency class (Eff 1) means major savings.

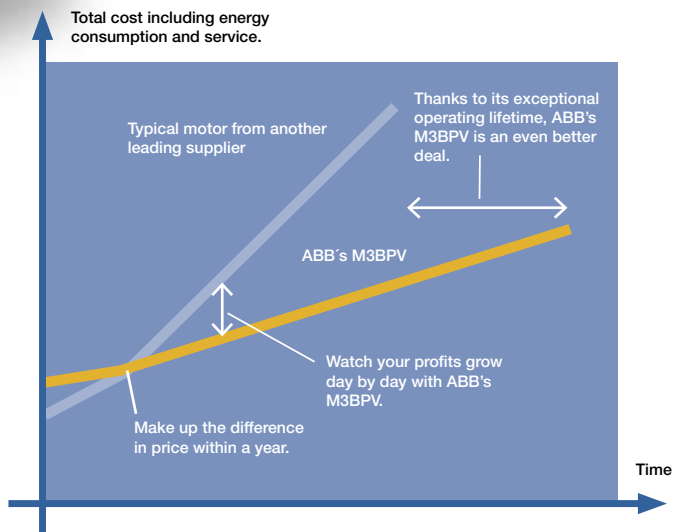
Heavy-duty steel fan cover.

2 years guarantee for greater security.

High-efficiency cooling fan.

Reliable anti-corrosion treatment.

Feet with double holes permit installation of larger back-up motor.



Technical data for high ambient motors

Basic design for cast iron and aluminum motors

Output kW	Motor Type	Product code	Speed r/min	Efficiency		Power Factor cos ϕ 100%	Current		Torque			Moment of inertia $J=1/4 GD^2$ kgm ²	Weight kg	Sound pressure level L_p dB(A)	
				Full load 100%	3/4 load 75%		I_N A	I_S/I_N	T_N Nm	T_S/T_N	T_{max}/T_N				
1500 r/min = 4-poles			400 V 50 Hz												
4	M3APV 112 M	3GAP112501-ADF	1435	85,3	86,2	0,83	8,2	7,8	26,6	3,0	3,3	0,018	39	56	
5,5	M3APV 132 S	3GAP132501-ADF	1460	88,0	88,6	0,85	10,7	8,3	36,0	2,3	3,0	0,038	55	59	
7,5	M3APV 132 M	3GAP132502-ADF	1455	88,3	89,0	0,85	14,5	6,6	49,2	2,2	3,5	0,048	66	59	
11	M3BPV 160 M	3GBP162501-ADE	1460	90,7	91,5	0,84	21,0	7,2	71,9	3,0	3,1	0,091	115	62	
15	M3BPV 160 L	3GBP162502-ADE	1455	90,8	91,8	0,84	28,5	7,4	98,5	3,3	3,2	0,102	127	62	
18,5	M3BPV 180 M	3GBP182501-ADE	1470	92,0	92,3	0,84	35	6,9	120,2	2,6	3,1	0,161	175	62	
22	M3BPV 180 L	3GBP182502-ADE	1470	92,7	93,4	0,84	41	8,4	142,9	3,6	3,0	0,225	185	63	
30	M3BPV 200 MLB	3GBP202501-ADE	1475	93,0	93,4	0,85	55	8,2	194,5	4,2	3,2	0,340	275	63	
37	M3BPV 225 SMB	3GBP222501-ADE	1480	93,4	93,4	0,84	68	8,4	238,8	3,9	3,3	0,370	330	66	
45	M3BPV 225 SMC	3GBP222502-ADE	1475	93,7	93,9	0,87	80	7,4	290,9	3,5	3,1	0,420	355	66	
55	M3BPV 250 SMB	3GBP252501-ADE	1480	94,4	94,5	0,86	98	8,7	354,8	4,2	4,3	0,720	420	67	
1000 r/min = 6-poles			400 V 50 Hz												
2,2	M3APV 112 M	3GAP113501-ADF	935	80,5	80,8	0,78	5,1	5,8	22,5	2,5	2,8	0,015	32	54	
3	M3APV 132 S	3GAP133501-ADF	965	83,7	83,9	0,78	6,6	7,4	29,7	2,6	3,0	0,031	46	61	
4	M3APV 132 MA	3GAP133502-ADF	965	85,0	85,7	0,80	8,5	7,3	39,6	3,0	3,0	0,038	53	61	
5,5	M3APV 132 MB	3GAP133503-ADF	955	84,4	85,3	0,81	11,7	7,1	55,1	2,0	2,8	0,045	61	61	
7,5	M3BPV 160 M	3GBP163501-ADE	965	87,7	88,6	0,78	15,7	6,7	74,2	2,0	3,1	0,089	135	59	
11	M3BPV 160 L	3GBP163502-ADE	965	89,0	89,7	0,77	23,5	7,1	108,6	2,4	3,0	0,107	148	59	
15	M3BPV 180 L	3GBP183501-ADE	970	90,3	91,2	0,79	30,5	6,7	147,5	2,2	2,9	0,217	185	59	
18,5	M3BPV 200 MLB	3GBP203501-ADE	980	90,6	91,1	0,82	36	7,1	180,0	3,5	2,6	0,370	260	63	
22	M3BPV 200 MLC	3GBP203502-ADE	980	91,5	91,9	0,85	41	8,1	214,3	4,1	3,1	0,430	275	63	
30	M3BPV 225 SMC	3GBP223501-ADE	985	92,6	93,0	0,83	57	8,3	290,9	4,4	3,1	0,640	345	63	
37	M3BPV 250 SMB	3GBP253501-ADE	985	93,5	93,7	0,84	68	8,0	358,0	4,0	3,5	1,160	460	63	

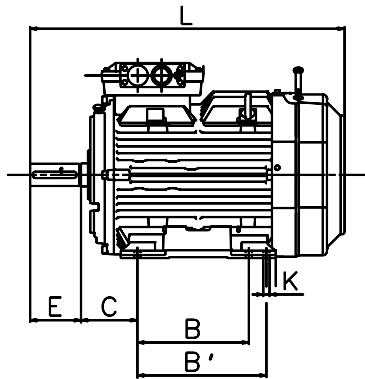
For further ordering information please contact ABB.

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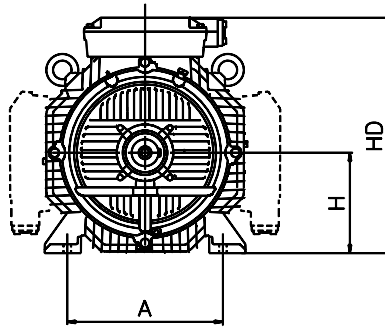
Dimension drawings

Cast iron and aluminum motors for high ambient temperatures

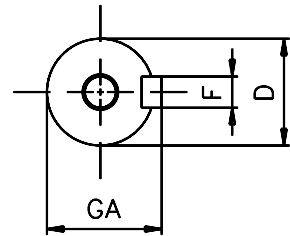
Foot-mounted motor IM 1001, B3



Side view (foot)

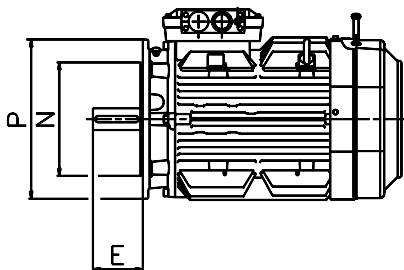


Front view (foot)

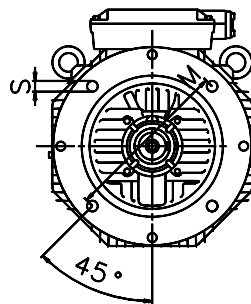


Shaft

Flange-mounted motor IM 3001, B5



Side view (flange)



Front view (flange)

IM 1001, IM B3 och IM 3001, IM B5					IM 1001, IM B3					IM 3001, IM B5						
Shaft height D	GA	F	E	L max	A	B	B'	C	HD	K	H	M	N	P	S	
Aluminum frame																
112	28	31	8	60	388	190	140	-	70	258	12	112	215	180	250	14,5
132	38	41	10	80	481,5	216	140	178	89	295,5	12	132	265	230	300	14,5
Cast iron frame																
160	42	45	12	110	643,5	254	210	254	108	382	14,5	160	300	250	350	19
180	48	51,5	14	110	700,5	279	241	279	121	422	14,5	180	300	250	350	19
200	55	59	16	110	774	318	267	305	133	506	18,5	200	350	300	400	19
225	60	64	18	140	866	356	286	311	149	552	18,5	225	400	350	450	19
250	65	69	18	140	875	406	311	349	168	605	24	250	500	450	550	19

Dimensions in m.m.

The above table shows main dimensions only. For detailed drawings please contact ABB.

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Variant codes

Cast iron and aluminum motors for high ambient temperatures

Code	Variant	Motor size		
		112-132	160-180	200-250
Bearings and lubrication				
040	Heat resistant grease	S	S	S
100	Locked non-drive end	S	S	S
041	Bearings regreasable via grease nipples	R	S	S
797	Stainless steel SPM adaptors	R	S	S
195	Bearings greased for life	S	R	R
798	Stainless steel grease nipples	R	S	S
100	Ball bearings with C4-clearance	S	S	S
Branch standard designs				
178	Stainless steel/acid proof bolts	S*	S	S
425	Corrosion protected stator and rotor core	S	S	S
Cooling system				
068	Metal fan	S	R	R
075	Cooling method IC 418 (without fan)	R	R	R
792	Metal fasteners for fan cover	S	S	S
Grounding bolt				
067	External grounding bolt	R	S	S
Heating elements				
450	Heating element 100-120V	R	R	R
451	Heating element 200-240V	R	R	R
Insulation system				
014	Winding insulation class H	S	S	S
Mounting arrangements				
217	Cast iron D-end shield	S	S	S
232	Cast iron N-end shield	S	S	S
Painting				
114	Special paint color	S	S	S
Protection				
784	Gamma-seal at D-end	S	S	S
Rating and instruction plates				
003	Individual serial number	R	S	S
100	Stainless steel lubrication plate	R	S	S
098	Stainless steel rating plate	S	S	S
Stator winding and temperature sensors				
100	PTC - thermistors 180° C (3 in series)	S	S	S
Terminal box				
465	Terminal box top mounted	S	S	S
021	Terminal box left hand side	NA	R	R
180	Terminal box right hand side	NA	R	R
467	Without terminal box	R	R	R

S = Included as standard R = On request NA = Not available

* = On terminal box

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High Ambient Motors in brief

Basic design for cast iron and aluminum motors

Motor size		112	132	160	180	200	225	250
Stator	Material	Diecast aluminum alloy			Cast iron EN-GJL-200/GG 20/GRS 200			
	Paint color shade	Orange NCS2070Y60R						
	Paint thickness	Two-pack epoxy paint, thickness ≥ 70 μm						
Bearing end shields	Material	Cast iron EN-GJL -150/GG 15/GRS 150						
	Paint color shade	Orange NCS2070Y60R						
	Paint thickness	Two-pack epoxy paint, thickness ≥ 70 μm						
Bearings	D-end	6306/C4	6308/C4	6309/C4	6310/C4	6312/C4	6313/C4	6315/C4
	N-end	6206/C4	6208/C4	6309/C4	6309/C4	6310/C4	6312/C4	6313/C4
Axially-locked bearings	Inner bearing cover	N-end	N-end	N-end	N-end	N-end	N-end	N-end
Bearing seal	D-end	Gamma sealing made of viton						
	N-end	Labyrinth seal			Sealing made of viton			
Lubrication		Permanently lubricated shielded bearings			Regreasable bearings, regreasing stainless steel nipples M6x1			
SPM-adaptors		Optional			As standard with stainless steel adaptors			
Rating plate	Material	Stainless steel, SS-EN 10088, thickness 0,5 mm						
Terminal box	Frame material	Diecast aluminum alloy, base integrated with stator			Cast iron EN-GJL150/GG 15/GRS 150			
	Cover material	Diecast aluminum alloy			Cast iron EN-GJL150/GG 15/GRS 150			
	Cover screw material	Stainless steel						
Connections	Cable entries	4 x (M25 + M20), knock-out openings		2xM40	2xM40	2xM63	2xM63	2xM63
	Terminals	6 terminals for connection with cable lugs (not included)						
	Cable glands	Available as option			Cable flanges as standard, cable glands as option			
Fan	Material	Aluminum			Glass-fibre reinforced moulded polypropylene			
Fan cover	Material	Steel sheet						
	Paint color shade	Orange NCS2070Y60						
	Paint thickness	Two-pack epoxy paint, thickness ≥ 70 μm						
Stator winding	Material	Copper						
	Insulation	Insulation class H						
	Winding protection	PTC thermistors, 180°C, 3 in series						
Rotor winding	Material	Die-cast aluminum with corrosion protection painted rotor						
Balancing method		Half key balancing						
Key ways		Closed keyways						
Heating elements	On request	25W	25W	25W	25W	50W	50W	50W
Drain holes		Drain holes with plastic plugs, open on delivery						
Enclosure		IP55 with closed plastic plugs						
Cooling method		IC411						

Rating plate

Cast iron and aluminum motors for high ambient temperatures

The rating plate is in table form giving the values for speed, current and power factor. Motors with permanently greased bearings have bearing types and grease information on the rating plate. Motors with regreaseable bearings have a separate lubrication plate with information regarding regreasing intervals, grease amount and type of grease that can be used.

All rating and lubrication plates are made of stainless steel.



Rating plate for frame size 160.



Lubrication plate for frame sizes 160-200.

ABB Motors: total product offer

ABB offers several comprehensive ranges of AC motors and generators. We manufacture synchronous motors for even the most demanding applications, and a full range of low and high voltage induction motors. Our in-depth knowledge of virtually every type of industrial processing ensures we always specify the best solution for your needs.

Low voltage motors and generators

General purpose motors for standard applications

- Aluminum motors
- Steel motors
- Cast iron motors
- Open drip proof motors
- Brake motors
- Single phase motors
- Integral motors

Process performance motors for more demanding applications

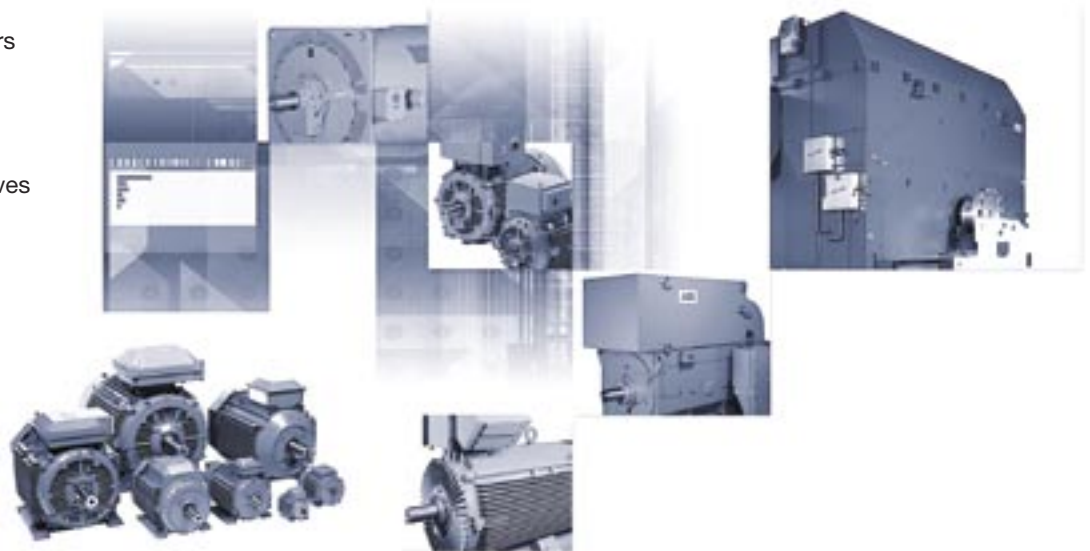
- Aluminum motors
- Cast iron motors

Other applications

- Motors for hazardous areas
- Marine motors
- Permanent magnet motors
- High speed motors
- Wind turbine generators
- NEMA motors
- Water cooled motors
- Motors for roller table drives
- Slip ring motors
- Wood dryer motors
- Fan application motors

High voltage and synchronous motors and generators

- High voltage cast iron motors
- Induction modular motors
- Slip ring motors
- Motors for hazardous areas
- Servomotors
- Synchronous motors and generators
- DC motors and generators



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