
Low Voltage

General Performance

High efficiency aluminum motors

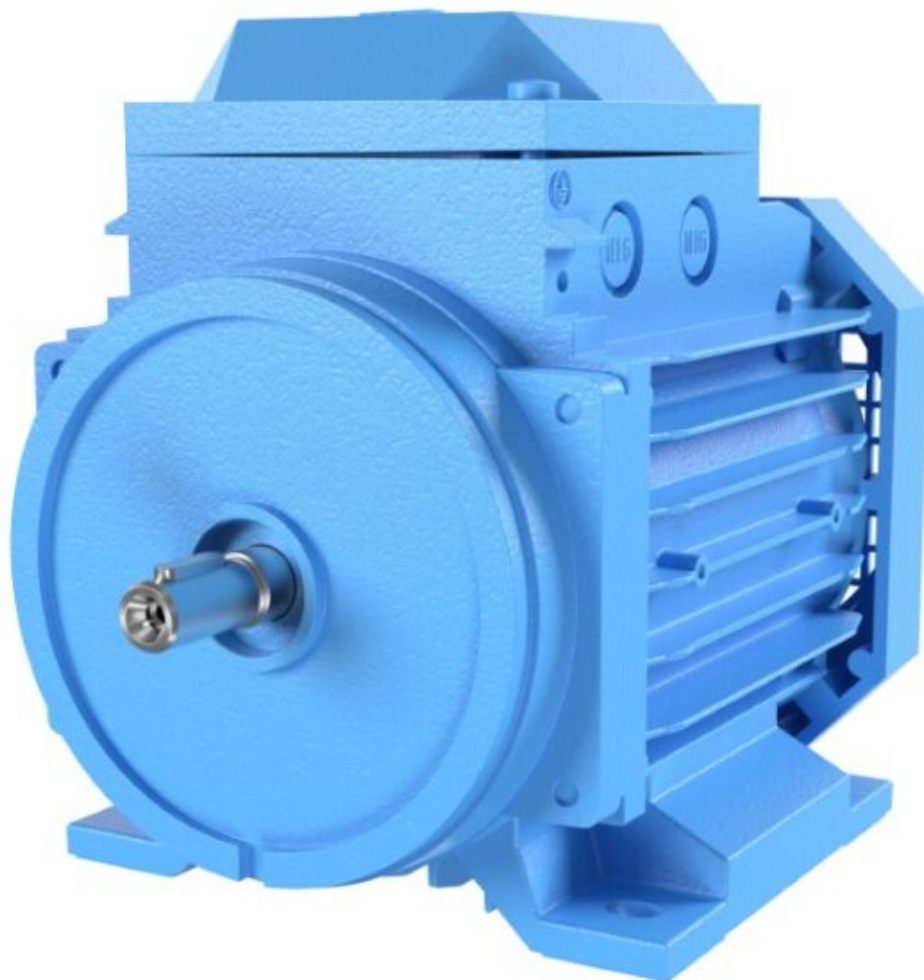
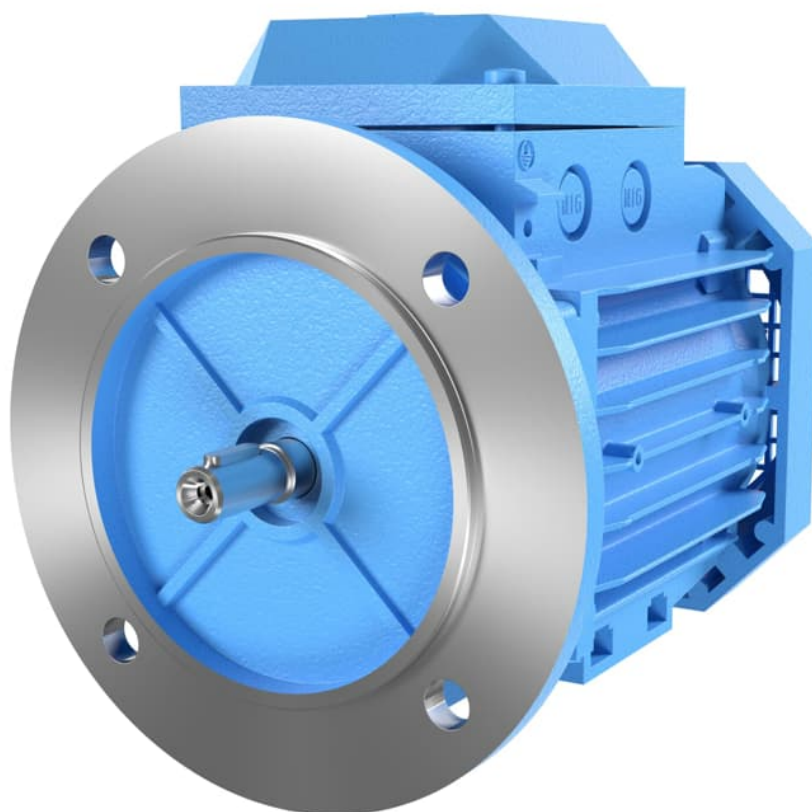


ABB offers a comprehensive range of reliable and high efficiency motors. ABB's general performance IE2, IE3 efficiency motors are best suited for applications where simplicity and off-the-shelf availability are paramount.

General performance IE2, IE3 high efficiency aluminum motors Sizes 71 to 90

| | |
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IEC Low Voltage Aluminum Motors

Flexible, light and corrosion resistant

ABB's 'made in India' Aluminum motors are optimally tailored for a range of applications, including machine tools, food & beverage, and HVAC systems. Crafted with precision, these motors are engineered to meet demands of applications with low weight and corrosion-resistant equipment. They stand for a seamless blend of energy efficiency and unwavering reliability, catering to the demands of diverse industries.

Available in IE2 & IE3 efficiency classes,
71-90 framesize with output ranging from 0.18 - 2.2kW.

Key Features



Reliable

Better heat dissipation, makes it more reliable for longer life



Better Finish

High pressure die-casted components (HPDC) for precise finish



Durable

Shot blasted aluminum components & C3 corrosion class painting system



Flexible

Due to low weight, used in machineries to add flexibility to the system



Circularity

Aluminum a highly sustainable 'green' metal, can be recycled after end of the life

Technical data

IE2 high efficiency aluminum motors

Technical data for totally enclosed squirrel cage three phase induction motors

IP 55 - IC 411 - Insulation class F, temperature rise class B, IE2 efficiency class according to IEC 60034-30-1:2014, IS 12615:2018

TEFC, 415V, 50Hz, IP55, IC411, Ambt. 50 deg, Rise Class B (70 deg)

| Output KW | Frame Size | Speed r/min | Efficiency | | | Power factor cos Ø | Current | | Torque | | | Moment of inertia J=1/4GD ² kgm ² | Weight kg |
|----------------------|------------|----------------|----------------------|--------------------|--------------------|--------------------------|--------------------|--------------------------------|----------------------|--------------------------------|--------------------------------|--|--------------|
| | | | Full load 100% | 3/4 load 75% | 1/2 load 50% | | I _n , A | I _s /I _n | T _n Nm | T _s /T _n | T _b /T _n | | |
| | | | | | | | | | | | | | |
| 3000 r/min = 2 poles | | | 415V, 50Hz | | | | | | | | | | |
| 0.37 | M2AAX71MA2 | 2760 | 72.2 | 72.9 | 70.3 | 0.79 | 0.90 | 5.0 | 1.3 | 2.0 | 2.4 | 0.00033 | 5 |
| 0.55 | M2AAX71MB2 | 2785 | 74.8 | 75.5 | 73.0 | 0.79 | 1.30 | 5.0 | 1.9 | 2.2 | 2.7 | 0.00041 | 6 |
| 0.75 | M2AAX80MA2 | 2820 | 77.4 | 78.0 | 75.7 | 0.79 | 1.70 | 6.0 | 2.5 | 2.3 | 2.8 | 0.00067 | 9 |
| 1.1 | M2AAX80MB2 | 2840 | 79.6 | 80.0 | 77.9 | 0.77 | 2.5 | 6.0 | 3.7 | 2.5 | 3.0 | 0.00088 | 10 |
| 1.5 | M2AAX90SA2 | 2875 | 81.3 | 82.0 | 80.3 | 0.83 | 3.1 | 6.0 | 5.0 | 2.3 | 3.0 | 0.00208 | 13 |
| 2.2 | M2AAX90LA2 | 2878 | 83.2 | 84.0 | 82.6 | 0.84 | 4.4 | 7.0 | 7.3 | 2.5 | 3.1 | 0.00274 | 16 |

| Output KW | Frame Size | Speed r/min | Efficiency | | | Power factor cos Ø | Current | | Torque | | | Moment of inertia J=1/4GD² kgm² | Weight kg |
|----------------------|------------|----------------|----------------------|--------------------|--------------------|--------------------------|--------------------|--------------------------------|----------------------|--------------------------------|--------------------------------|--|--------------|
| | | | Full load 100% | 3/4 load 75% | 1/2 load 50% | | I _n , A | I _s /I _n | T _n Nm | T _s /T _n | T _b /T _n | | |
| | | | | | | | | | | | | | |
| 1500 r/min = 4 poles | | | 415V, 50Hz | | | | | | | | | | |
| 0.25 | M2AAX71MA4 | 1395 | 68.5 | 67.5 | 62.1 | 0.65 | 0.9 | 5.0 | 1.7 | 1.9 | 2.2 | 0.00059 | 5 |
| 0.37 | M2AAX71MB4 | 1395 | 72.7 | 72.0 | 67.0 | 0.65 | 1.10 | 5.0 | 2.5 | 1.9 | 2.2 | 0.00076 | 6 |
| 0.55 | M2AAX80MA4 | 1415 | 77.1 | 76.0 | 71.0 | 0.71 | 1.40 | 5.0 | 3.7 | 2.2 | 2.8 | 0.00156 | 8 |
| 0.75 | M2AAX80MB4 | 1425 | 79.6 | 78.5 | 74.3 | 0.67 | 1.97 | 6.0 | 5.0 | 3.0 | 3.5 | 0.00247 | 12 |
| 1.1 | M2AAX90SA4 | 1430 | 81.4 | 80.6 | 76.8 | 0.74 | 2.55 | 6.0 | 7.3 | 3.0 | 3.5 | 0.00372 | 14 |
| 1.5 | M2AAX90LA4 | 1430 | 82.8 | 82.2 | 79.4 | 0.73 | 3.47 | 6.0 | 10.0 | 3.0 | 3.5 | 0.00462 | 16 |

| Output KW | Frame Size | Speed r/min | Efficiency | | | Power factor cos Ø | Current | | Torque | | | Moment of inertia J=1/4GD² kgm² | Weight kg |
|----------------------|------------|----------------|----------------------|--------------------|--------------------|--------------------------|--------------------|--------------------------------|----------------------|--------------------------------|--------------------------------|--|--------------|
| | | | Full load 100% | 3/4 load 75% | 1/2 load 50% | | I _n , A | I _s /I _n | T _n Nm | T _s /T _n | T _b /T _n | | |
| | | | | | | | | | | | | | |
| 1000 r/min = 6 poles | | | 415V, 50Hz | | | | | | | | | | |
| 0.18 | M2AAX71MA6 | 900 | 56.6 | 54.6 | 47.6 | 0.62 | 0.64 | 3.5 | 1.9 | 2.0 | 2.1 | 0.00082 | 5 |
| 0.25 | M2AAX71MB6 | 900 | 61.6 | 61.3 | 55.8 | 0.62 | 1.00 | 3.5 | 2.65 | 2.0 | 2.1 | 0.00105 | 6 |
| 0.37 | M2AAX80MA6 | 910 | 69.0 | 68.1 | 63.1 | 0.62 | 1.20 | 4.0 | 3.9 | 2.0 | 2.4 | 0.00173 | 9 |
| 0.55 | M2AAX80MB6 | 910 | 73.1 | 72.8 | 69.2 | 0.66 | 1.60 | 4.0 | 5.8 | 2.1 | 2.5 | 0.00274 | 10 |
| 0.75 | M2AAX90SA6 | 945 | 75.9 | 74.3 | 69.2 | 0.62 | 2.2 | 4.5 | 7.6 | 2.4 | 3.2 | 0.00438 | 14 |
| 1.1 | M2AAX90LA6 | 935 | 78.1 | 77.3 | 73.3 | 0.63 | 3.1 | 4.5 | 11.2 | 2.3 | 2.9 | 0.00507 | 17 |

Efficiency values are measured according to IEC 60034-2-1; 2007, IS 15999(Part2 Sec1):2011
Please note that the values are not comparable without knowing the testing method. ABB has
calculated the efficiency values according to indirect method, stray load losses (additional losses)
determined from measuring.

I_s / I_n = Starting current
T_s / T_n = Locked rotor torque
T_b / T_n = Breakdown

Technical data

IE3 premium efficiency aluminum motors

Technical data for totally enclosed squirrel cage three phase induction motors

IP 55 - IC 411 - Insulation class F, temperature rise class B, IE3 efficiency class according to IEC 60034-30-1:2014, IS 12615:2018

TEFC, 415V, 50Hz, IP55, IC411, Ambt. 50 deg, Rise Class B (70 deg)

| Output KW | Frame Size | Speed r/min | Efficiency | | | Power factor cos Ø | Current | | Torque | | | Moment of inertia J=1/4GD² kgm² | Weight kg |
|----------------------|------------|----------------|----------------------|--------------------|--------------------|--------------------------|--------------------|--------------------------------|----------------------|--------------------------------|--------------------------------|--|--------------|
| | | | Full load 100% | 3/4 load 75% | 1/2 load 50% | | I _n , A | I _s /I _n | T _n Nm | T _s /T _n | T _b /T _n | | |
| | | | | | | | | | | | | | |
| 3000 r/min = 2 poles | | | 415V, 50Hz | | | | | | | | | | |
| 0.37 | M2AAX71MC2 | 2790 | 75.5 | 75.4 | 72.7 | 0.72 | 0.95 | 5.5 | 1.3 | 2.1 | 2.5 | 0.00033 | 5 |
| 0.55 | M2AAX71MB2 | 2782 | 78.1 | 78.4 | 76.4 | 0.73 | 1.35 | 5.5 | 1.9 | 2.1 | 2.6 | 0.00041 | 6 |
| 0.75 | M2AAX80MC2 | 2870 | 80.7 | 80.0 | 76.7 | 0.76 | 1.7 | 6.5 | 2.5 | 2.8 | 3.6 | 0.00080 | 9 |
| 1.1 | M2AAX80MD2 | 2865 | 82.7 | 83.3 | 81.9 | 0.80 | 2.3 | 7.0 | 3.7 | 2.8 | 3.6 | 0.00119 | 11 |
| 1.5 | M2AAX90SB2 | 2882 | 84.2 | 84.6 | 83.0 | 0.83 | 3 | 6.0 | 5.0 | 2.7 | 3.3 | 0.00224 | 15 |
| 2.2 | M2AAX90LB2 | 2890 | 85.9 | 86.7 | 85.8 | 0.88 | 4.4 | 7.0 | 7.3 | 3.0 | 3.5 | 0.00304 | 18 |

| Output KW | Frame Size | Speed r/min | Efficiency | | | Power factor cos Ø | Current | | Torque | | | Moment of inertia J=1/4GD² kgm² | Weight kg |
|----------------------|------------|----------------|----------------------|--------------------|--------------------|--------------------------|--------------------|--------------------------------|----------------------|--------------------------------|--------------------------------|--|--------------|
| | | | Full load 100% | 3/4 load 75% | 1/2 load 50% | | I _n , A | I _s /I _n | T _n Nm | T _s /T _n | T _b /T _n | | |
| | | | | | | | | | | | | | |
| 1500 r/min = 4 poles | | | 415V, 50Hz | | | | | | | | | | |
| 0.25 | M2AAX71MD4 | 1415 | 73.5 | 70.4 | 63.9 | 0.64 | 0.72 | 4.6 | 1.68 | 2.3 | 2.5 | 0.00075 | 7 |
| 0.37 | M2AAX71MC4 | 1415 | 77.3 | 76.0 | 67.0 | 0.65 | 1.02 | 4.6 | 2.5 | 2.5 | 2.8 | 0.00098 | 8 |
| 0.55 | M2AAX80MC4 | 1435 | 80.8 | 80.0 | 75.0 | 0.70 | 1.35 | 6.0 | 3.7 | 2.5 | 2.8 | 0.00195 | 11 |
| 0.75 | M2AAX80MD4 | 1445 | 82.5 | 81.1 | 77.1 | 0.70 | 2.05 | 4.5 | 5.0 | 3.5 | 3.9 | 0.00309 | 14 |
| 1.1 | M2AAX90SB4 | 1435 | 84.1 | 83.7 | 81.0 | 0.70 | 2.60 | 6.0 | 7.3 | 3.0 | 3.7 | 0.00397 | 15 |
| 1.5 | M2AAX90LB4 | 1431 | 85.3 | 85.2 | 82.9 | 0.75 | 3.50 | 6.0 | 10.0 | 3.5 | 3.9 | 0.00486 | 18 |

| Output KW | Frame Size | Speed r/min | Efficiency | | | Power factor cos Ø | Current | | Torque | | | Moment of inertia J=1/4GD² kgm² | Weight kg |
|----------------------|------------|----------------|----------------------|--------------------|--------------------|--------------------------|--------------------|--------------------------------|----------------------|--------------------------------|--------------------------------|--|--------------|
| | | | Full load 100% | 3/4 load 75% | 1/2 load 50% | | I _n , A | I _s /I _n | T _n Nm | T _s /T _n | T _b /T _n | | |
| | | | | | | | | | | | | | |
| 1000 r/min = 6 poles | | | 415V, 50Hz | | | | | | | | | | |
| 0.18 | M2AAX71MC6 | 931 | 63.9 | 60.9 | 55.0 | 0.65 | 0.70 | 3.3 | 1.85 | 2.3 | 2.6 | 0.00103 | 6 |
| 0.25 | M2AAX71MD6 | 931 | 68.6 | 65.6 | 59.3 | 0.65 | 0.82 | 3.6 | 2.56 | 2.5 | 2.8 | 0.00140 | 8 |
| 0.37 | M2AAX80MC6 | 931 | 73.5 | 73.0 | 67.0 | 0.65 | 1.15 | 3.9 | 3.8 | 2.5 | 2.8 | 0.00220 | 10 |
| 0.55 | M2AAX80MD6 | 935 | 77.2 | 77.0 | 71.5 | 0.59 | 1.70 | 4.5 | 5.6 | 2.8 | 3.3 | 0.00349 | 13 |
| 0.75 | M2AAX90SB6 | 940 | 78.9 | 77.5 | 73.2 | 0.63 | 2.1 | 4.5 | 7.6 | 2.3 | 3.0 | 0.00487 | 18 |
| 1.1 | M2AAX90LB6 | 945 | 81.0 | 79.7 | 75.4 | 0.61 | 3.1 | 4.5 | 11.1 | 3.0 | 3.6 | 0.00676 | 21 |

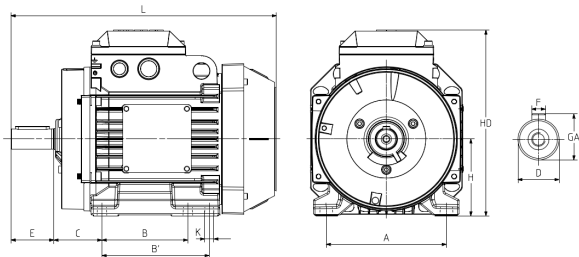
Efficiency values are measured according to IEC 60034-2-1; 2007, IS 15999(Part2/Sec1):2011
Please note that the values are not comparable without knowing the testing method. ABB has calculated the efficiency values according to indirect method, stray load losses (additional losses) determined from measuring.

I_s / I_n = Starting current
T_s / T_n = Locked rotor torque
T_b / T_n = Breakdown

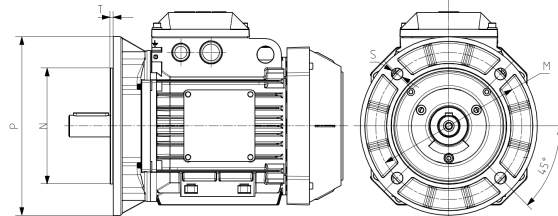
Dimension drawings

General performance IE2, IE3 high efficiency aluminum motors Sizes 71 - 90

Foot-mounted motor IM1001, B3



Flange-mounted motor IM 3001, B5



| Motor Size | D Poles | | GA Poles | | F Poles | | E Poles | | L max Poles | | A | B | B' | C | HD | K | H | M | N | P | S | T |
|--|------------|-----|-------------|------|------------|-----|------------|-----|----------------|-------------------|-----|-----|-----|----|-----|----|----|-----|-----|-----|----|-----|
| | 2 | 4-8 | 2 | 4-8 | 2 | 4-8 | 2 | 4-8 | 2 | 4-8 | | | | | | | | | | | | |
| General performance aluminum motors | | | | | | | | | | | | | | | | | | | | | | |
| 71M | 14 | 14 | 16.0 | 16.0 | 5 | 5 | 30 | 30 | 257 | 257 ¹⁾ | 112 | 90 | - | 45 | 180 | 7 | 71 | 130 | 110 | 160 | 10 | 3.5 |
| 80M | 19 | 19 | 21.5 | 21.5 | 6 | 6 | 40 | 40 | 266 | 266 ²⁾ | 125 | 100 | - | 50 | 194 | 10 | 80 | 165 | 130 | 200 | 12 | 3.5 |
| 90SL | 24 | 24 | 27 | 27.0 | 8 | 8 | 50 | 50 | 309 | 309 ³⁾ | 140 | 100 | 125 | 56 | 218 | 10 | 90 | 165 | 130 | 200 | 12 | 3.5 |

1) IE3: M2AAX71C4,D6 L=270

2) IE2: M2AAX80B4,B6, IE3: M2AAX80D2,C4,D6 L=294

IE3: M2AAX80D4 L=304

3) IE2: M2AAX90LA4B4,LA6, IE3:M2AAX90LB2,LB4,SB6 L=331

IE3: M2AAX90LB6 L=349

Above table gives the main dimensions in mm.

For detail dimensions, refer to respective GAD

Motors in brief

General performance IE2, IE3 high efficiency aluminum motors in brief

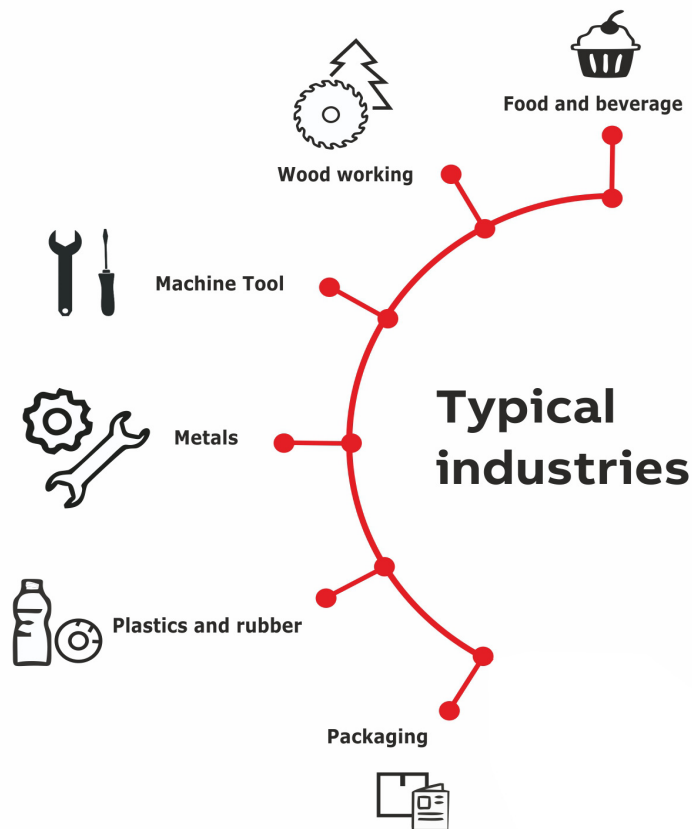
| Size | 71 | | 80 | 90 |
|---------------------|---|---|------------|--------------------|
| Stator | Material | Die-cast aluminum alloy | | |
| | Paint colour shade | Munsell blue 8B 4.5/3.25 / NCS 4822 B05G | | |
| | Surface Treatment | C3 medium according to ISO / EN 12944-5 | | |
| Feet | Integrated with stator | | | |
| | Material | | | |
| Bearing end shields | Material | Die-cast aluminum alloy | | |
| | Paint colour shade | Munsell blue 8B 4.5/3.25/NCS 4822 B05G | | |
| | Surface Treatment | C3 medium according to ISO / EN 12944-5 | | |
| Bearings | D-end | 6203-2Z/C3 | 6204-2Z/C3 | 6205-2Z/C3 |
| | N-end | 6202-2Z/C3 | 6203-2Z/C3 | 6204-2Z/C3 |
| Axially-locked | locked at D-end | With retaining ring | | With bearing cover |
| Bearing seals | Axial seal as standard, radial on request | | | |
| Lubrication | Permanently lubricated shielded bearings | | | |
| Rating plate | Material | Aluminum | | |
| Terminal Box | Frame material | Die-cast aluminum alloy | | |
| | Cover material | Die-cast aluminum alloy | | |
| | Cover screws material | Self tapping screws 8.8 | | |
| Connections | Cable entries | 2xM20 | | 1xM20, 1xM25 |
| | Cable Sizes | 4mm2 | | |
| | Terminal Stud Size | M4 | | |
| | Terminals | Upto 2HP - STAR / 3 Leads > 2 HP - DELTA / 6 Leads, (Cable lugs not included) | | |
| Fan | Material | Polypropylene, Reinforced with glass fibre | | |
| Fan Cover | Material | Polypropylene, Reinforced with glass fibre | | |
| | Paint Colour shade | Munsell blue 8B 4.5/3.25/NCS 4822 B05G | | |
| | | | | |
| Stator winding | Material | Copper | | |
| | Insulation | Insulation class F, Temperature rise class B unless otherwise stated | | |
| | Winding protection | Available as option | | |
| Rotor winding | Material | Pressure diecast aluminum | | |
| Balancing method | Half Key Balancing as Standard | | | |
| Key ways | Closed Key Way | | | |
| Enclosure | IP 55, Higher protection on request | | | |
| Cooling method | IC 411 | | | |
| Drain holes | Drain holes with closable plastic plugs, open on delivery | | | |
| Lifting lugs | Integrated with the stator | | | |

Application note

Aluminum motors are used for various applications where low weight is preferred. Aluminum has reduced weight due to its relatively low density. Also due to its anti corrosive properties & better finishing, these motors are preferred in applications like Food and Beverage that require clean environment. Better heat dissipation of Aluminum motors make it more reliable for longer operations.

With more than 130 years of manufacturing experience we make sure the motors we supply will continue to operate reliably well into the future. ABB has been manufacturing Aluminum motors globally and catering to various segments since decades.

ABB Aluminum motors are highly acclaimed in the market due to its high performance and ensuring a reliable service over the lifetime. These motors are highly efficient for energy cost savings, as well as competitive delivery times.



Notes



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