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## Low Voltage

Flameproof motors for explosive gas atmospheres



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# Low voltage flameproof motors for explosive atmospheres

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# General Information

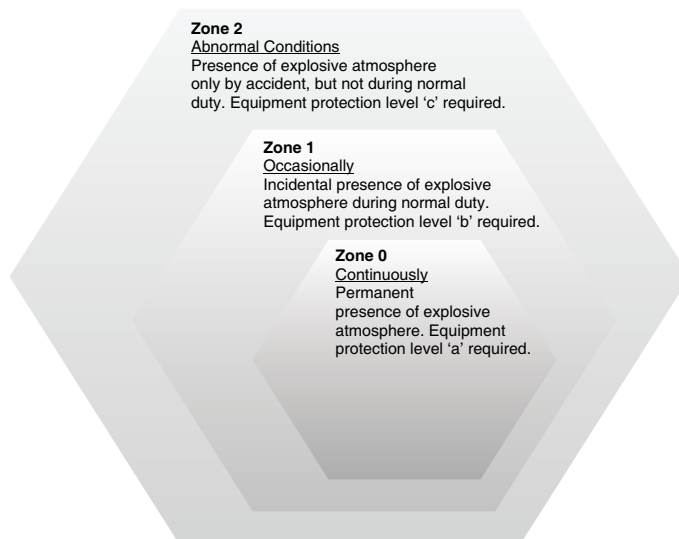
## Introduction

The use of electrical motors in potentially explosive atmospheres is quite frequent these days. These motors have to be constructed in such a way that there is no risk of an explosion. An Explosion occurs when the following situations occur:

- presence of potentially explosive atmosphere
- existence of a source of ignition
- possibility of transmission of the explosion

## Classification of Hazardous Environment

According to IS: 5572, Hazardous areas are classified in the following ways depending on the degree of probability of the presence of hazardous atmosphere.



Zone Criteria presence of gas

Zone 0 Continuously or very long period

Zone 1 Present in normal operations

Zone 2 Unlikely, but if present, only for a short time

In Zone 0, no electrical motors can be installed. Most common motor for Zone 1 is the flameproof design, but it can also be used in Zone 2.

## Application Groups

Depending on the intended use, explosion-proof electrical operating equipment is divided into two major groups:

Group I Equipment for coal mines (only specially designed motors for mines can be used)

Group II Electrical equipment for use other than mines (surface industry)

Group II motors with flameproof enclosures are still further divided into gas groups:

II A ~120 gases and vapors, e.g. butane / petroleum / propane

II B ~30 gases and vapors, e.g. ethylene / dimethyl ether

II C limited number of gases and vapors, e.g. hydrogen  $H_2$  / acetylene  $C_2H_2$  / carbon disulfide  $CS_2$

### Temperature Classes

Combustible gas or vapour and explosion-protected electrical equipment are divided into temperature of the gas up to T6 with regard to the ignition temperature of the gas or vapour and the maximum surface temperature of the component.

| Temperature class | Ignition temperature for the gas / vapour °C |      | Maximum permitted temperature of electrical equipment °C |
|-------------------|----------------------------------------------|------|----------------------------------------------------------|
| T1                | >450                                         |      | 450                                                      |
| T2                | >300                                         | <450 | 300                                                      |
| T3                | >200                                         | <300 | 200                                                      |
| T4                | >135                                         | <200 | 135                                                      |
| T5                | >100                                         | <135 | 100                                                      |
| T6                | >85                                          | <100 | 85                                                       |

### Flame proof motors, type "db"

ABB motors of flame proof design (type M2JAP) are TEFC, 3 phase squirrel cage induction motor (as per IS/IEC 60079-1:2014) for operation in hazardous location classified as Zone 1 and Zone 2 areas as per IS:5572

The motor enclosure has been designed in such a way that no internal explosion can be transmitted to the explosive atmosphere surrounding the machine. The enclosure must withstand, without damage, any pressure levels caused by an internal explosion, the shape, length and gap of part assembly joints at shaft opening, cable entries, etc., shall be designed to allow for throttling and cooling of hot gases escaping outside. The standard emphasise the impact of an explosive atmosphere (for instance, explosion pressure) over constructional requirements of such apparatus.

Range: 0.18 kW to 55 kW

Frame: M2JAP 80 to 250 frame

Pole: 2 to 8 Pole

### Features

Motors suitable for high ambient temperature 45°C.

Keeps an explosion which takes place inside the enclosure from propagating through gaps to the ambient.

Withstands the explosion pressure created inside the enclosures.

Benefits when dealing with special operating modes such as heavy starts and special applications.

All surface temperatures are selected to comply with the temperature class.

Suitability for use in temperature classes T1 to T4.

Can be used both in Zone 1 and Zone 2.

## Technical data for Ex db IIB/IIC T4 Gb

IE2 Ex db cast iron motors, 3000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B, Amb. 45 deg,

IE2 efficiency class according to IEC 60034-30-1:2014

| Output<br>KW         | Motor Type   | Product code   | Speed<br>r/min | Efficiency           |                    |                    | Power<br>factor<br>cos Ø | Current            |                                | Torque               |                                |                                | Moment of<br>inertia<br>J=1/4GD²<br>kgm² | Weight<br>kg |
|----------------------|--------------|----------------|----------------|----------------------|--------------------|--------------------|--------------------------|--------------------|--------------------------------|----------------------|--------------------------------|--------------------------------|------------------------------------------|--------------|
|                      |              |                |                | Full<br>load<br>100% | 3/4<br>load<br>75% | 1/2<br>load<br>50% |                          | I <sub>n</sub> , A | I <sub>s</sub> /I <sub>n</sub> | T <sub>n</sub><br>Nm | T <sub>s</sub> /T <sub>n</sub> | T <sub>b</sub> /T <sub>n</sub> |                                          |              |
|                      |              |                |                |                      |                    |                    |                          |                    |                                |                      |                                |                                |                                          |              |
| 3000 r/min = 2 poles |              |                |                | 415V, 50Hz           |                    |                    |                          |                    |                                |                      |                                |                                |                                          |              |
| 0.75                 | M2JAP80MB2   | 3GJA081320-CIN | 2900           | 77.4                 | 75.4               | 70.3               | 0.68                     | 2.2                | 6.5                            | 2.47                 | 3.7                            | 4.5                            | 0.00082                                  | 45           |
| 1.1                  | M2JAP80MC2   | 3GJA081330-CIN | 2880           | 81.8                 | 81.6               | 79.1               | 0.77                     | 2.33               | 7.7                            | 3.63                 | 3.7                            | 3.7                            | 0.00101                                  | 47           |
| 1.5                  | M2JAP90SLB2  | 3GJA091020-CIN | 2905           | 83.4                 | 83.6               | 81.7               | 0.86                     | 2.84               | 7.5                            | 4.92                 | 2.9                            | 3                              | 0.00254                                  | 55           |
| 2.2                  | M2JAP90SLC2  | 3GJA091030-CIN | 2878           | 83.2                 | 83.9               | 82.3               | 0.87                     | 4.3                | 6.5                            | 7.3                  | 2.6                            | 3.1                            | 0.0028                                   | 56           |
| 3.7                  | M2JAP100LC2  | 3GJA101530-CIN | 2920           | 85.5                 | 85.1               | 83                 | 0.87                     | 6.7                | 9                              | 12.2                 | 3                              | 3.6                            | 0.00728                                  | 75           |
| 5.5                  | M2JAP132SMB2 | 3GJA131220-CIN | 2875           | 87                   | 87.2               | 85.8               | 0.86                     | 9.56               | 7.5                            | 18.13                | 2.7                            | 2.9                            | 0.0128                                   | 102          |
| 7.5                  | M2JAP132SMC2 | 3GJA131230-CIN | 2890           | 88.1                 | 88.3               | 87                 | 0.87                     | 13.3               | 8.4                            | 24.74                | 2.6                            | 4.1                            | 0.0136                                   | 104          |
| 9.3                  | M2JAP160MLJ2 | 3GJA161490-CIN | 2931           | 88.9                 | 89                 | 87.9               | 0.89                     | 16.4               | 7.1                            | 30.3                 | 2.8                            | 3.4                            | 0.043                                    | 213          |
| 11                   | M2JAP160MLA2 | 3GJA161410-CIN | 2936           | 89.4                 | 89.6               | 88.4               | 0.84                     | 20.5               | 7.1                            | 35.8                 | 2.8                            | 3.4                            | 0.043                                    | 213          |
| 15                   | M2JAP160MLB2 | 3GJA161420-CIN | 2934           | 90.6                 | 90.6               | 89.5               | 0.86                     | 27.5               | 7.6                            | 48.8                 | 3.1                            | 3.6                            | 0.052                                    | 222          |
| 18.5                 | M2JAP160MLC2 | 3GJA161430-CIN | 2939           | 91.7                 | 92.1               | 91.5               | 0.89                     | 31.9               | 7.9                            | 60.15                | 3.4                            | 3.6                            | 0.062                                    | 233          |
| 22                   | M2JAP180MLA2 | 3GJA181410-CIN | 2943           | 92                   | 92.4               | 92                 | 0.89                     | 38                 | 7.4                            | 71.3                 | 2.7                            | 3.5                            | 0.089                                    | 265          |
| 30                   | M2JAP200MLA2 | 3GJA201410-CIN | 2958           | 92.8                 | 93.3               | 93                 | 0.87                     | 52.3               | 7.5                            | 97.1                 | 2.6                            | 3.5                            | 0.15                                     | 310          |
| 37                   | M2JAP200MLC2 | 3GJA201430-CIN | 2958           | 93.6                 | 93.9               | 93.4               | 0.88                     | 63.1               | 8                              | 119                  | 2.5                            | 3.3                            | 0.19                                     | 340          |
| 45                   | M2JAP225SMB2 | 3GJA221220-CIN | 2970           | 93.9                 | 94                 | 93.1               | 0.86                     | 78.1               | 7.6                            | 145                  | 2.6                            | 3.2                            | 0.26                                     | 400          |
| 55                   | M2JAP250SMA2 | 3GJA251210-CIN | 2977           | 94.2                 | 94.2               | 93.2               | 0.86                     | 94                 | 7.7                            | 176.7                | 2.2                            | 3.3                            | 0.49                                     | 460          |

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<sub>s</sub> / I<sub>n</sub> = Starting current  
T<sub>s</sub> / T<sub>n</sub> = Locked rotor torque  
T<sub>b</sub> / T<sub>n</sub> = Breakdown

## Technical data for Ex db IIB/IIC T4 Gb

IE2 Ex db cast iron motors, 1500 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B, Amb. 45 deg,

IE2 efficiency class according to IEC 60034-30-1:2014

| Output<br>KW         | Motor Type   | Product code   | Speed<br>r/min | Efficiency           |                    |                    | Power<br>factor<br>cos Ø | Current            |                                | Torque               |                                |                                | Moment of<br>inertia<br>J=1/4GD²<br>kgm² | Weight<br>kg |
|----------------------|--------------|----------------|----------------|----------------------|--------------------|--------------------|--------------------------|--------------------|--------------------------------|----------------------|--------------------------------|--------------------------------|------------------------------------------|--------------|
|                      |              |                |                | Full<br>load<br>100% | 3/4<br>load<br>75% | 1/2<br>load<br>50% |                          | I <sub>n</sub> , A | I <sub>s</sub> /I <sub>n</sub> | T <sub>n</sub><br>Nm | T <sub>s</sub> /T <sub>n</sub> | T <sub>b</sub> /T <sub>n</sub> |                                          |              |
| 1500 r/min = 4 poles |              |                |                | 415V, 50Hz           |                    |                    |                          |                    |                                |                      |                                |                                |                                          |              |
| 0.55                 | M2JAP80MA4   | 3GJA082310-CIN | 1445           | 77.1                 | 75.9               | 70.9               | 0.66                     | 1.52               | 6.4                            | 3.62                 | 3.6                            | 3.7                            | 0.00237                                  | 49           |
| 0.75                 | M2JAP80MD4   | 3GJA082340-CIN | 1435           | 79.6                 | 79                 | 75.7               | 0.72                     | 1.86               | 6                              | 4.98                 | 3.6                            | 3.7                            | 0.00287                                  | 40           |
| 1.1                  | M2JAP90SLB4  | 3GJA092020-CIN | 1430           | 81.4                 | 81.7               | 79.2               | 0.78                     | 2.34               | 7.5                            | 7.2                  | 3.9                            | 4.2                            | 0.0039                                   | 55           |
| 1.5                  | M2JAP90SLD4  | 3GJA092040-CIN | 1432           | 82.8                 | 83                 | 80.7               | 0.78                     | 3.3                | 6.7                            | 10                   | 3.2                            | 3.5                            | 0.00437                                  | 58           |
| 2.2                  | M2JAP100LC4  | 3GJA102530-CIN | 1450           | 84.3                 | 83.7               | 80.3               | 0.75                     | 4.98               | 7.8                            | 14.5                 | 3.5                            | 4.3                            | 0.00831                                  | 69           |
| 3.7                  | M2JAP112MB4  | 3GJA112320-CIN | 1445           | 86.3                 | 87.1               | 86.6               | 0.74                     | 7.6                | 7                              | 24.33                | 2.7                            | 3.4                            | 0.0188                                   | 81           |
| 5.5                  | M2JAP132SMB4 | 3GJA132220-CIN | 1460           | 88.3                 | 88.3               | 86.6               | 0.79                     | 11.3               | 7.1                            | 35.9                 | 2.5                            | 3.4                            | 0.0296                                   | 107          |
| 7.5                  | M2JAP132SMC4 | 3GJA132230-CIN | 1460           | 89                   | 89.3               | 88                 | 0.78                     | 14.3               | 7.6                            | 49.3                 | 2.2                            | 3.4                            | 0.0327                                   | 110          |
| 9.3                  | M2JAP160MLJ4 | 3GJA162490-CIN | 1460           | 89.3                 | 89.8               | 89.3               | 0.81                     | 17.9               | 8                              | 60.83                | 2.7                            | 3.4                            | 0.088                                    | 232          |
| 11                   | M2JAP160MLC4 | 3GJA162430-CIN | 1465           | 90.6                 | 90.7               | 89.6               | 0.8                      | 21.3               | 8.5                            | 71.4                 | 3.2                            | 3.9                            | 0.096                                    | 232          |
| 15                   | M2JAP160MLE4 | 3GJA162450-CIN | 1470           | 91.5                 | 91.8               | 91.1               | 0.82                     | 27.8               | 8.2                            | 97.52                | 3.2                            | 3.5                            | 0.13                                     | 255          |
| 18.5                 | M2JAP180MLA4 | 3GJA182410-CIN | 1476           | 91.8                 | 92.1               | 91.3               | 0.81                     | 36                 | 7.5                            | 119.7                | 2.7                            | 3.3                            | 0.19                                     | 277          |
| 22                   | M2JAP180MLB4 | 3GJA182420-CIN | 1476           | 92.2                 | 92.3               | 91.4               | 0.8                      | 41.7               | 8.2                            | 142                  | 3                              | 3.6                            | 0.23                                     | 296          |
| 30                   | M2JAP200MLB4 | 3GJA202420-CIN | 1473           | 92.5                 | 93.1               | 92.9               | 0.83                     | 53.6               | 7                              | 194                  | 2.6                            | 2.8                            | 0.34                                     | 340          |
| 37                   | M2JAP225SMB4 | 3GJA222220-CIN | 1482           | 93.6                 | 93.5               | 92.4               | 0.83                     | 67.2               | 7.6                            | 238                  | 3.1                            | 3.2                            | 0.42                                     | 390          |
| 45                   | M2JAP225SMC4 | 3GJA222230-CIN | 1479           | 93.8                 | 94.1               | 93.6               | 0.85                     | 79.6               | 7                              | 291                  | 2.8                            | 2.9                            | 0.49                                     | 425          |
| 55                   | M2JAP250SMA4 | 3GJA252210-CIN | 1480           | 94.5                 | 94.8               | 94.4               | 0.83                     | 98.8               | 7.5                            | 355                  | 2.7                            | 3.3                            | 0.72                                     | 415          |

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<sub>s</sub> / I<sub>n</sub> = Starting current  
T<sub>s</sub> / T<sub>n</sub> = Locked rotor torque  
T<sub>b</sub> / T<sub>n</sub> = Breakdown

## Technical data for Ex db IIB/IIC T4 Gb

IE2 Ex db cast iron motors, 1000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B, Amb. 45 deg,

IE2 efficiency class according to IEC 60034-30-1:2014

| Output<br>KW         | Motor Type   | Product code   | Speed<br>r/min | Efficiency           |                    |                    | Power<br>factor<br>cos Ø | Current            |                                | Torque               |                                |                                | Moment of<br>inertia<br>J=1/4GD²<br>kgm² | Weight<br>kg |
|----------------------|--------------|----------------|----------------|----------------------|--------------------|--------------------|--------------------------|--------------------|--------------------------------|----------------------|--------------------------------|--------------------------------|------------------------------------------|--------------|
|                      |              |                |                | Full<br>load<br>100% | 3/4<br>load<br>75% | 1/2<br>load<br>50% |                          | I <sub>n</sub> , A | I <sub>s</sub> /I <sub>n</sub> | T <sub>n</sub><br>Nm | T <sub>s</sub> /T <sub>n</sub> | T <sub>b</sub> /T <sub>n</sub> |                                          |              |
| 1000 r/min = 6 poles |              |                |                | 415V, 50Hz           |                    |                    |                          |                    |                                |                      |                                |                                |                                          |              |
| 0.25                 | M2JAP80MJ6   | 3GJA083390-CIN | 941            | 61.6                 | 58.9               | 50.9               | 0.6                      | 0.79               | 2.6                            | 2.52                 | 1.6                            | 2.1                            | 0.0019                                   | 44           |
| 0.37                 | M2JAP80MA6   | 3GJA083310-CIN | 930            | 67.6                 | 67.4               | 62.8               | 0.65                     | 1.11               | 4.3                            | 3.8                  | 2.5                            | 2.7                            | 0.00187                                  | 44           |
| 0.55                 | M2JAP80MB6   | 3GJA083320-CIN | 925            | 73.1                 | 73.9               | 70                 | 0.69                     | 1.53               | 3.9                            | 5.6                  | 2                              | 2.4                            | 0.00239                                  | 46           |
| 0.75                 | M2JAP90SLC6  | 3GJA093030-CIN | 942            | 75.9                 | 75.2               | 69.8               | 0.62                     | 2.22               | 4                              | 7.46                 | 2.9                            | 3.1                            | 0.00392                                  | 56           |
| 1.1                  | M2JAP90SLE6  | 3GJA093050-CIN | 940            | 78.2                 | 78.1               | 74.5               | 0.64                     | 2.9                | 3.9                            | 11.1                 | 2.1                            | 2.5                            | 0.006                                    | 59           |
| 1.5                  | M2JAP100L6   | 3GJA103500-CIN | 955            | 81.4                 | 81.5               | 79.3               | 0.68                     | 3.72               | 4.4                            | 15.04                | 1.6                            | 2.9                            | 0.00873                                  | 67           |
| 2.2                  | M2JAP112MC6  | 3GJA113330-CIN | 952            | 84.2                 | 85.5               | 84.9               | 0.7                      | 5.1                | 4                              | 22.1                 | 1.3                            | 1.9                            | 0.0196                                   | 82           |
| 3.7                  | M2JAP132SMJ6 | 3GJA133290-CIN | 960            | 84.3                 | 84.3               | 81                 | 0.69                     | 8.8                | 7                              | 36.8                 | 1.6                            | 2.2                            | 0.0299                                   | 106          |
| 5.5                  | M2JAP132SMF6 | 3GJA133260-CIN | 965            | 86                   | 85.9               | 83.9               | 0.76                     | 11.3               | 5.8                            | 54.0                 | 1.7                            | 2.5                            | 0.084                                    | 106          |
| 7.5                  | M2JAP160MLA6 | 3GJA163410-CIN | 967            | 87.8                 | 88.3               | 87.6               | 0.77                     | 15.4               | 6.9                            | 74.03                | 1.9                            | 3.2                            | 0.126                                    | 253          |
| 9.3                  | M2JAP160MLJ6 | 3GJA163490-CIN | 970            | 88.1                 | 88.4               | 87.2               | 0.77                     | 21.6               | 7.4                            | 92                   | 2.6                            | 3.5                            | 0.116                                    | 253          |
| 11                   | M2JAP160MLB6 | 3GJA163420-CIN | 974            | 90.1                 | 90.7               | 89.8               | 0.79                     | 21.6               | 7.4                            | 108                  | 2.5                            | 3.9                            | 0.126                                    | 253          |
| 15                   | M2JAP180MLB6 | 3GJA183420-CIN | 975            | 89.8                 | 90.3               | 89.3               | 0.8                      | 29.3               | 7.2                            | 147                  | 2                              | 3.3                            | 0.25                                     | 304          |
| 18.5                 | M2JAP200MLA6 | 3GJA203410-CIN | 984            | 91                   | 91.2               | 90.2               | 0.8                      | 35.6               | 6.7                            | 180                  | 2.6                            | 3.3                            | 0.37                                     | 300          |
| 22                   | M2JAP200MLB6 | 3GJA203420-CIN | 984            | 91.6                 | 91.8               | 91                 | 0.81                     | 42.3               | 7.0                            | 213                  | 2.9                            | 3.3                            | 0.43                                     | 320          |
| 30                   | M2JAP225SMB6 | 3GJA223220-CIN | 986            | 92.2                 | 92.4               | 91.6               | 0.81                     | 57.3               | 7.8                            | 291                  | 3                              | 3.2                            | 0.64                                     | 385          |
| 37                   | M2JAP250SMA6 | 3GJA253210-CIN | 991            | 92.2                 | 92.5               | 91.8               | 0.81                     | 68.9               | 6.7                            | 357                  | 2.8                            | 3.3                            | 1.16                                     | 455          |

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<sub>s</sub> / I<sub>n</sub> = Starting current  
T<sub>s</sub> / T<sub>n</sub> = Locked rotor torque  
T<sub>b</sub> / T<sub>n</sub> = Breakdown

## Technical data for Ex db IIB/IIC T4 Gb

IE2 Ex db cast iron motors, 750 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B, Amb. 45 deg,

IE2 efficiency class according to IEC 60034-30-1:2014

| Output<br>KW        | Motor Type   | Product code   | Speed<br>r/min | Efficiency           |                    |                    | Power<br>factor<br>cos Ø | Current            |                                | Torque               |                                |                                | Moment of<br>inertia<br>J=1/4GD²<br>kgm² | Weight<br>kg |
|---------------------|--------------|----------------|----------------|----------------------|--------------------|--------------------|--------------------------|--------------------|--------------------------------|----------------------|--------------------------------|--------------------------------|------------------------------------------|--------------|
|                     |              |                |                | Full<br>load<br>100% | 3/4<br>load<br>75% | 1/2<br>load<br>50% |                          | I <sub>n</sub> , A | I <sub>s</sub> /I <sub>n</sub> | T <sub>n</sub><br>Nm | T <sub>s</sub> /T <sub>n</sub> | T <sub>b</sub> /T <sub>n</sub> |                                          |              |
| 750 r/min = 8 poles |              |                |                | 415V, 50Hz           |                    |                    |                          |                    |                                |                      |                                |                                |                                          |              |
| 0.18                | M2JAP80MA8   | 3GJA084310-CIN | 685            | 45.9                 | 44.5               | 36.8               | 0.57                     | 0.72               | 3                              | 2.5                  | 2.1                            | 2.6                            | 0.0019                                   | 45           |
| 0.25                | M2JAP80MB8   | 3GJA084320-CIN | 690            | 50.6                 | 50.4               | 44.6               | 0.59                     | 0.97               | 3.1                            | 3.47                 | 2.1                            | 2.4                            | 0.0024                                   | 46           |
| 0.37                | M2JAP90SLB8  | 3GJA094020-CIN | 710            | 56.1                 | 53.9               | 46.1               | 0.54                     | 1.5                | 3                              | 4.9                  | 2                              | 2.4                            | 0.0044                                   | 55           |
| 0.55                | M2JAP90SLC8  | 3GJA094030-CIN | 680            | 61.7                 | 62.6               | 58                 | 0.57                     | 2.11               | 2.7                            | 7.72                 | 1.6                            | 1.9                            | 0.0049                                   | 56           |
| 0.75                | M2JAP100LA8  | 3GJA104510-CIN | 710            | 72.5                 | 70.9               | 65.7               | 0.56                     | 2.56               | 3.7                            | 10                   | 1.9                            | 2.8                            | 0.0072                                   | 64           |
| 1.1                 | M2JAP100LB8  | 3GJA104520-CIN | 705            | 74.9                 | 74.5               | 70.8               | 0.61                     | 3.18               | 3.5                            | 14.8                 | 1.7                            | 2.4                            | 0.00871                                  | 67           |
| 1.5                 | M2JAP112MC8  | 3GJA114330-CIN | 713            | 79.6                 | 80.7               | 79.7               | 0.63                     | 4.1                | 3.8                            | 20.1                 | 1.4                            | 2.2                            | 0.0198                                   | 81           |
| 2.2                 | M2JAP132SMA8 | 3GJA134210-CIN | 720            | 77.6                 | 76.5               | 73                 | 0.59                     | 6.69               | 4.8                            | 29.1                 | 1.7                            | 3                              | 0.0299                                   | 106          |
| 3.7                 | M2JAP160MLJ8 | 3GJA164490-CIN | 723            | 81.4                 | 81.4               | 79.5               | 0.67                     | 9.5                | 6                              | 48.8                 | 1.7                            | 2.7                            | 0.133                                    | 251          |
| 5.5                 | M2JAP160MLB8 | 3GJA164420-CIN | 725            | 86.3                 | 86.5               | 85                 | 0.69                     | 13.6               | 6.1                            | 72.5                 | 2                              | 3.4                            | 0.133                                    | 251          |
| 7.5                 | M2JAP160MLC8 | 3GJA164430-CIN | 721            | 85.3                 | 85.3               | 83.5               | 0.67                     | 19                 | 6                              | 99.4                 | 1.8                            | 3.1                            | 0.133                                    | 251          |
| 9.3                 | M2JAP180MLJ8 | 3GJA184490-CIN | 725            | 86.3                 | 86.3               | 83.6               | 0.62                     | 21.6               | 5.9                            | 122.5                | 2.1                            | 2.9                            | 0.226                                    | 298          |
| 11                  | M2JAP180MLB8 | 3GJA184420-CIN | 725            | 88.4                 | 88.4               | 86.9               | 0.7                      | 25.3               | 6.1                            | 145                  | 2.2                            | 3.3                            | 0.245                                    | 298          |
| 15                  | M2JAP200MLA8 | 3GJA204410-CIN | 735            | 90                   | 89.4               | 88.3               | 0.77                     | 30.2               | 7.2                            | 195                  | 2.4                            | 3.5                            | 0.45                                     | 315          |
| 18.5                | M2JAP225SMA8 | 3GJA224210-CIN | 735            | 90                   | 90.1               | 88.7               | 0.72                     | 40.2               | 6.1                            | 240                  | 1.9                            | 3.3                            | 0.61                                     | 370          |
| 22                  | M2JAP225SMB8 | 3GJA224220-CIN | 733            | 90.7                 | 91                 | 90.1               | 0.75                     | 45                 | 6.8                            | 287                  | 2.1                            | 3.1                            | 0.68                                     | 350          |
| 30                  | M2JAP250SMA8 | 3GJA254210-CIN | 736            | 91.7                 | 91.9               | 90.9               | 0.77                     | 60                 | 7                              | 389                  | 2.2                            | 3.1                            | 1.25                                     | 420          |

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<sub>s</sub> / I<sub>n</sub> = Starting current  
T<sub>s</sub> / T<sub>n</sub> = Locked rotor torque  
T<sub>b</sub> / T<sub>n</sub> = Breakdown

## Technical data for Ex db IIB/IIC T4 Gb

IE3 Ex db cast iron motors, 3000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B, Amb. 45 deg,

IE3 efficiency class according to IEC 60034-30-1:2014

| Output<br>KW         | Motor Type   | Product code   | Speed<br>r/min | Efficiency           |                    |                    | Power<br>factor<br>cos Ø | Current            |                                | Torque               |                                |                                | Moment of<br>inertia<br>J=1/4GD²<br>kgm² | Weight<br>kg |
|----------------------|--------------|----------------|----------------|----------------------|--------------------|--------------------|--------------------------|--------------------|--------------------------------|----------------------|--------------------------------|--------------------------------|------------------------------------------|--------------|
|                      |              |                |                | Full<br>load<br>100% | 3/4<br>load<br>75% | 1/2<br>load<br>50% |                          | I <sub>n</sub> , A | I <sub>s</sub> /I <sub>n</sub> | T <sub>n</sub><br>Nm | T <sub>s</sub> /T <sub>n</sub> | T <sub>b</sub> /T <sub>n</sub> |                                          |              |
| 3000 r/min = 2 poles |              |                |                | 415V, 50Hz           |                    |                    |                          |                    |                                |                      |                                |                                |                                          |              |
| 0.75                 | M2JAP80MD2   | 3GJA081340-DIN | 2872           | 80.7                 | 81.6               | 80.3               | 0.86                     | 1.58               | 7.6                            | 2.5                  | 3.3                            | 4                              | 0.0012                                   | 49           |
| 1.1                  | M2JAP80MG2   | 3GJA081370-DIN | 2870           | 82.7                 | 83.2               | 81.9               | 0.84                     | 2.31               | 7.4                            | 3.65                 | 3.3                            | 3.8                            | 0.00121                                  | 49           |
| 1.5                  | M2JAP90SLB2  | 3GJA091020-DIN | 2897           | 84.2                 | 85.8               | 85.2               | 0.89                     | 2.83               | 8                              | 4.94                 | 3.5                            | 3.9                            | 0.0031                                   | 60           |
| 2.2                  | M2JAP90LC2   | 3GJA091530-DIN | 2908           | 85.9                 | 86.4               | 85.1               | 0.89                     | 3.9                | 8.4                            | 7.27                 | 3.4                            | 3.8                            | 0.0044                                   | 63           |
| 3.7                  | M2JAP100LKB2 | 3GJA101820-DIN | 2900           | 87.8                 | 87.6               | 87                 | 0.89                     | 6.6                | 8.5                            | 12.2                 | 2.7                            | 2.9                            | 0.0086                                   | 75           |
| 5.5                  | M2JAP132SMF2 | 3GJA131260-DIN | 2909           | 90.8                 | 91.4               | 90.8               | 0.9                      | 9.3                | 7.8                            | 18.2                 | 2.6                            | 3.6                            | 0.0218                                   | 124          |
| 7.5                  | M2JAP132SMG2 | 3GJA131270-DIN | 2914           | 91.6                 | 92.3               | 92.1               | 0.9                      | 12.6               | 8                              | 24.7                 | 2.8                            | 3.7                            | 0.0218                                   | 124          |
| 9.3                  | M2JAP160MLJ2 | 3GJA161490-DIN | 2946           | 90.7                 | 91                 | 90.2               | 0.9                      | 15.9               | 7.7                            | 30.14                | 2.7                            | 3.7                            | 0.0513                                   | 213          |
| 11                   | M2JAP160MLA2 | 3GJA161410-DIN | 2946           | 91.2                 | 91.8               | 91.3               | 0.9                      | 18.8               | 7.7                            | 35.52                | 2.8                            | 3.9                            | 0.057                                    | 225          |
| 15                   | M2JAP160MLB2 | 3GJA161420-DIN | 2960           | 91.9                 | 92                 | 91.4               | 0.86                     | 26.2               | 8.7                            | 48.54                | 3.1                            | 4.1                            | 0.063                                    | 232          |
| 18.5                 | M2JAP160MLC2 | 3GJA161430-DIN | 2952           | 92.4                 | 92.9               | 92.3               | 0.89                     | 31.1               | 9.6                            | 59.74                | 3.6                            | 4.2                            | 0.076                                    | 246          |
| 22                   | M2JAP180MLA2 | 3GJA181410-DIN | 2959           | 92.7                 | 93.1               | 92.5               | 0.89                     | 36.7               | 8.4                            | 71                   | 3.6                            | 4.1                            | 0.11                                     | 282          |
| 30                   | M2JAP200MLA2 | 3GJA201410-DIN | 2961           | 93.3                 | 93.6               | 93.3               | 0.87                     | 51.1               | 8.1                            | 96.8                 | 2.8                            | 3.3                            | 0.182                                    | 332          |
| 37                   | M2JAP200MLB2 | 3GJA201420-DIN | 2963           | 93.7                 | 94.1               | 93.9               | 0.88                     | 62.1               | 8.8                            | 119.37               | 3.3                            | 3.6                            | 0.222                                    | 359          |
| 45                   | M2JAP225SMA2 | 3GJA221210-DIN | 2970           | 94                   | 93.9               | 92.9               | 0.85                     | 78.3               | 7.7                            | 144.69               | 2.7                            | 3.3                            | 0.296                                    | 405          |
| 55                   | M2JAP250SMA2 | 3GJA251210-DIN | 2970           | 94.3                 | 94.1               | 93.5               | 0.89                     | 92.1               | 7.3                            | 177                  | 2.5                            | 3.1                            | 0.426                                    | 470          |

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<sub>s</sub> / I<sub>n</sub> = Starting current  
T<sub>s</sub> / T<sub>n</sub> = Locked rotor torque  
T<sub>b</sub> / T<sub>n</sub> = Breakdown

## Technical data for Ex db IIB/IIC T4 Gb

IE3 Ex db cast iron motors, 1500 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B, Amb. 45 deg,

IE3 efficiency class according to IEC 60034-30-1:2014

| Output<br>KW         | Motor Type   | Product code   | Speed<br>r/min | Efficiency           |                    |                    | Power<br>factor<br>cos Ø | Current            |                                | Torque               |                                |                                | Moment of<br>inertia<br>J=1/4GD²<br>kgm² | Weight<br>kg |
|----------------------|--------------|----------------|----------------|----------------------|--------------------|--------------------|--------------------------|--------------------|--------------------------------|----------------------|--------------------------------|--------------------------------|------------------------------------------|--------------|
|                      |              |                |                | Full<br>load<br>100% | 3/4<br>load<br>75% | 1/2<br>load<br>50% |                          | I <sub>n</sub> , A | I <sub>s</sub> /I <sub>n</sub> | T <sub>n</sub><br>Nm | T <sub>s</sub> /T <sub>n</sub> | T <sub>b</sub> /T <sub>n</sub> |                                          |              |
| 1500 r/min = 4 poles |              |                |                | 415V, 50Hz           |                    |                    |                          |                    |                                |                      |                                |                                |                                          |              |
| 0.55                 | M2JAP80MLD4  | 3GJA082440-DIN | 1444           | 83.3                 | 84.1               | 83                 | 0.79                     | 1.16               | 6.6                            | 3.6                  | 2.9                            | 3.5                            | 0.0028                                   | 49           |
| 0.75                 | M2JAP80MLG4  | 3GJA082470-DIN | 1445           | 82.5                 | 82.5               | 79.9               | 0.77                     | 1.72               | 7                              | 4.94                 | 2.8                            | 3.4                            | 0.0033                                   | 50           |
| 1.1                  | M2JAP90SLC4  | 3GJA092030-DIN | 1440           | 84.1                 | 83.9               | 81.7               | 0.78                     | 2.34               | 7.6                            | 7.25                 | 3.9                            | 4.2                            | 0.0067                                   | 61           |
| 1.5                  | M2JAP90LD4   | 3GJA092540-DIN | 1446           | 85.3                 | 86.0               | 85.0               | 0.76                     | 3.1                | 8.2                            | 9.95                 | 3.6                            | 4.8                            | 0.0072                                   | 62           |
| 2.2                  | M2JAP100LKA4 | 3GJA102810-DIN | 1455           | 86.7                 | 86.9               | 85.5               | 0.84                     | 4.22               | 8                              | 14.4                 | 3.5                            | 4.3                            | 0.0146                                   | 79           |
| 3.7                  | M2JAP112MF4  | 3GJA112360-DIN | 1458           | 88.4                 | 88.7               | 87.8               | 0.76                     | 7.7                | 7.9                            | 24.2                 | 2.6                            | 3.3                            | 0.0188                                   | 81           |
| 5.5                  | M2JAP132SMF4 | 3GJA132260-DIN | 1462           | 89.6                 | 89.9               | 88.8               | 0.82                     | 10.6               | 7.3                            | 35.79                | 2.1                            | 3.4                            | 0.0401                                   | 119          |
| 7.5                  | M2JAP132SMG4 | 3GJA132270-DIN | 1460           | 90.4                 | 90.9               | 90.2               | 0.82                     | 14.4               | 7.3                            | 49                   | 2.2                            | 3.3                            | 0.0401                                   | 119          |
| 9.3                  | M2JAP160MLJ4 | 3GJA162490-DIN | 1470           | 91                   | 90.6               | 89.1               | 0.81                     | 17.9               | 8.2                            | 60.4                 | 2.7                            | 3.4                            | 0.0992                                   | 240          |
| 11                   | M2JAP160MLA4 | 3GJA162410-DIN | 1479           | 91.4                 | 91.6               | 90.7               | 0.81                     | 20.5               | 8.2                            | 71.2                 | 2.9                            | 3.6                            | 0.11                                     | 240          |
| 15                   | M2JAP160MLB4 | 3GJA162420-DIN | 1478           | 92.1                 | 92.1               | 91.1               | 0.81                     | 27.3               | 8.8                            | 96.87                | 3.3                            | 4                              | 0.135                                    | 259          |
| 18.5                 | M2JAP180MLA4 | 3GJA182410-DIN | 1482           | 92.6                 | 93.1               | 92.6               | 0.82                     | 34.6               | 7.8                            | 119.17               | 2.8                            | 3                              | 0.219                                    | 291          |
| 22                   | M2JAP180MLB4 | 3GJA182420-DIN | 1482           | 93                   | 93.6               | 93.4               | 0.8                      | 41.3               | 8                              | 142                  | 3                              | 3.3                            | 0.217                                    | 296          |
| 30                   | M2JAP200MLA4 | 3GJA202410-DIN | 1485           | 93.6                 | 93.8               | 93.1               | 0.83                     | 53.6               | 7.5                            | 193                  | 2.9                            | 3.5                            | 0.385                                    | 360          |
| 37                   | M2JAP225SMA4 | 3GJA222210-DIN | 1483           | 93.9                 | 93.9               | 93.4               | 0.81                     | 67.7               | 7.6                            | 238.38               | 3.4                            | 3.4                            | 0.427                                    | 394          |
| 45                   | M2JAP225SMB4 | 3GJA222220-DIN | 1483           | 94.2                 | 94.3               | 93.8               | 0.82                     | 81                 | 8.6                            | 290                  | 3.5                            | 3.8                            | 0.525                                    | 431          |
| 55                   | M2JAP250SMA4 | 3GJA252210-DIN | 1484           | 94.6                 | 94.5               | 93.7               | 0.82                     | 98.6               | 7.5                            | 354                  | 3.2                            | 3.6                            | 0.694                                    | 442          |

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<sub>s</sub> / I<sub>n</sub> = Starting current  
T<sub>s</sub> / T<sub>n</sub> = Locked rotor torque  
T<sub>b</sub> / T<sub>n</sub> = Breakdown

## Technical data for Ex db IIB/IIC T4 Gb

IE3 Ex db cast iron motors, 1000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B, Amb. 45 deg,

IE3 efficiency class according to IEC 60034-30-1:2014

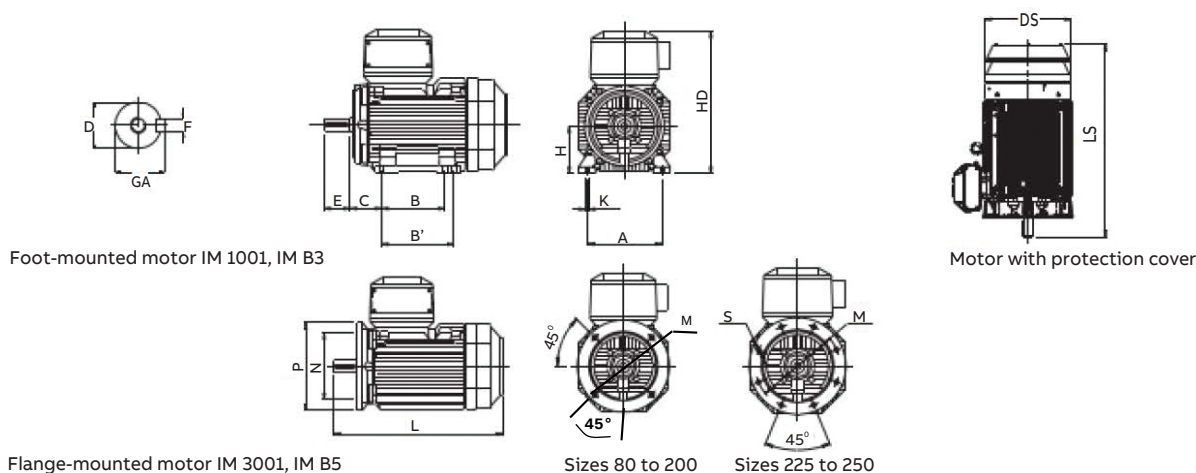
| Output<br>KW         | Motor Type   | Product code   | Speed<br>r/min | Efficiency           |                    |                    | Power<br>factor<br>cos Ø | Current            |                                | Torque               |                                |                                | Moment of<br>inertia<br>J=1/4GD²<br>kgm² | Weight<br>kg |  |
|----------------------|--------------|----------------|----------------|----------------------|--------------------|--------------------|--------------------------|--------------------|--------------------------------|----------------------|--------------------------------|--------------------------------|------------------------------------------|--------------|--|
|                      |              |                |                | Full<br>load<br>100% | 3/4<br>load<br>75% | 1/2<br>load<br>50% |                          | I <sub>n</sub> , A | I <sub>s</sub> /I <sub>n</sub> | T <sub>n</sub><br>Nm | T <sub>6</sub> /T <sub>n</sub> | T <sub>b</sub> /T <sub>n</sub> |                                          |              |  |
| 1000 r/min = 6 poles |              |                |                | 415V, 50Hz           |                    |                    |                          |                    |                                |                      |                                |                                |                                          |              |  |
| 0.25                 | M2JAP80MA6   | 3GJA083310-DIN | 941            | 72.6                 | 70.7               | 65                 | 0.6                      | 0.79               | 2.6                            | 2.52                 | 1.5                            | 2.1                            | 0.0019                                   | 44           |  |
| 0.37                 | M2JAP80MD6   | 3GJA083340-DIN | 935            | 74.4                 | 74.7               | 71.6               | 0.68                     | 1                  | 4.7                            | 3.75                 | 3                              | 3.5                            | 0.0028                                   | 47           |  |
| 0.55                 | M2JAP80MLG6  | 3GJA083470-DIN | 941            | 80.6                 | 80.7               | 78.6               | 0.6                      | 1.58               | 4.6                            | 5.6                  | 2                              | 2.4                            | 0.0044                                   | 51           |  |
| 0.75                 | M2JAP90SLD6  | 3GJA093040-DIN | 945            | 78.9                 | 79.8               | 78.2               | 0.73                     | 1.7                | 4.7                            | 7.57                 | 2.3                            | 3                              | 0.0056                                   | 58           |  |
| 1.1                  | M2JAP90LF6   | 3GJA093560-DIN | 949            | 81                   | 82.4               | 81.8               | 0.73                     | 2.5                | 5                              | 11.1                 | 2.3                            | 3.1                            | 0.0068                                   | 61           |  |
| 1.5                  | M2JAP100LE6  | 3GJA103550-DIN | 963            | 82.5                 | 82.7               | 80.8               | 0.65                     | 3.8                | 5.7                            | 14.9                 | 3                              | 3.7                            | 0.012                                    | 74           |  |
| 2.2                  | M2JAP112MJ6  | 3GJA113390-DIN | 964            | 84.3                 | 84.2               | 82                 | 0.66                     | 5.3                | 6.2                            | 21.8                 | 2.5                            | 3.6                            | 0.0196                                   | 82           |  |
| 3.7                  | M2JAP132SMJ6 | 3GJA133290-DIN | 975            | 86.5                 | 86.7               | 86                 | 0.68                     | 8.8                | 7.5                            | 36.2                 | 1.9                            | 2.7                            | 0.0416                                   | 106          |  |
| 5.5                  | M2JAP132SMH6 | 3GJA133280-DIN | 968            | 88                   | 88.6               | 88                 | 0.63                     | 13.5               | 5.2                            | 54.1                 | 2                              | 2.9                            | 0.0654                                   | 118          |  |
| 7.5                  | M2JAP160MLA6 | 3GJA163410-DIN | 976            | 89.1                 | 89.7               | 89.4               | 0.76                     | 15.4               | 6.1                            | 73.1                 | 1.5                            | 3.3                            | 0.089                                    | 225          |  |
| 9.3                  | M2JAP160MLJ6 | 3GJA163490-DIN | 970            | 89.8                 | 90.1               | 89.3               | 0.77                     | 18.7               | 7.1                            | 92                   | 2.1                            | 3                              | 0.128                                    | 259          |  |
| 11                   | M2JAP160MLB6 | 3GJA163420-DIN | 977            | 90.3                 | 91                 | 90.6               | 0.77                     | 22                 | 6.9                            | 107.29               | 1.8                            | 3.4                            | 0.138                                    | 259          |  |
| 15                   | M2JAP180MLA6 | 3GJA183410-DIN | 980            | 91.2                 | 91.7               | 91.1               | 0.77                     | 29.6               | 5.5                            | 146                  | 1.7                            | 2.9                            | 0.212                                    | 288          |  |
| 18.5                 | M2JAP200MLA6 | 3GJA203410-DIN | 990            | 91.7                 | 91.8               | 90.9               | 0.81                     | 34.5               | 7.8                            | 178.6                | 2.8                            | 3.5                            | 0.496                                    | 340          |  |
| 22                   | M2JAP200MLB6 | 3GJA203420-DIN | 990            | 92.2                 | 92.2               | 91                 | 0.79                     | 41.9               | 7.8                            | 212.2                | 2.9                            | 3.8                            | 0.585                                    | 367          |  |
| 30                   | M2JAP225SMA6 | 3GJA223210-DIN | 989            | 92.9                 | 92.6               | 91                 | 0.73                     | 61.8               | 8                              | 290                  | 3.1                            | 3.7                            | 0.724                                    | 419          |  |
| 37                   | M2JAP250SMA6 | 3GJA253210-DIN | 990            | 93.3                 | 93.6               | 93.2               | 0.79                     | 69.8               | 7                              | 357                  | 2.6                            | 3.4                            | 1.3                                      | 503          |  |

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<sub>s</sub> / I<sub>n</sub> = Starting current  
T<sub>s</sub> / T<sub>n</sub> = Locked rotor torque  
T<sub>b</sub> / T<sub>n</sub> = Breakdown

## Dimension drawings

Flameproof motors, Ex db, Sizes 80 - 250



Flameproof motors Ex db, foot-mounted IM 1001 / IM B3, flange-mounted IM 3001 / IM B5.

| Motor<br>size     | IM 1001, IM B3 AND IM 3001, IM B5 |     |             |      |            |     |            |     |                    |                    | IM 1001, IM B3  |     |     |     |     | IM 3001, IM B5 |      |     |     |     | Protective roof |      |     |             |     |
|-------------------|-----------------------------------|-----|-------------|------|------------|-----|------------|-----|--------------------|--------------------|-----------------|-----|-----|-----|-----|----------------|------|-----|-----|-----|-----------------|------|-----|-------------|-----|
|                   | D<br>poles                        |     | GA<br>poles |      | F<br>poles |     | E<br>poles |     | L max<br>poles     |                    | O <sup>1)</sup> | A   | B   | B'  | C   | HD             | K    | H   | M   | N   | P               | S    | DS  | LS<br>poles |     |
|                   | 2                                 | 4-8 | 2           | 4-8  | 2          | 4-8 | 2          | 4-8 | 2                  | 4-8                |                 |     |     |     |     |                |      |     |     |     |                 |      |     | 2           | 4-8 |
|                   | 2                                 | 4-8 | 2           | 4-8  | 2          | 4-8 | 2          | 4-8 | 2                  | 4-8                | 2               | 4-8 | 2   | 4-8 |     |                |      |     |     |     |                 |      |     |             |     |
| 80                | 19                                | 19  | 21.5        | 21.5 | 6          | 6   | 40         | 40  | 409                | 409                | 20              | 125 | 100 | 112 | 50  | 296            | 10   | 80  | 165 | 130 | 200             | 12   | 157 | 444         | 444 |
| 90                | 24                                | 24  | 27          | 27   | 8          | 8   | 50         | 50  | 440                | 440                | 20              | 140 | 100 | 125 | 56  | 315            | 10   | 90  | 165 | 130 | 200             | 12   | 185 | 475         | 475 |
| 100               | 28                                | 28  | 31          | 31   | 8          | 8   | 60         | 60  | 501                | 501                | 25              | 160 | 140 | 160 | 63  | 343            | 12   | 100 | 215 | 180 | 250             | 14.5 | 200 | 536         | 536 |
| 112               | 28                                | 28  | 31          | 31   | 8          | 8   | 60         | 60  | 485                | 485                | 25              | 190 | 140 | –   | 70  | 355            | 12   | 112 | 215 | 180 | 250             | 14.5 | 213 | 526         | 526 |
| 132               | 38                                | 38  | 41          | 41   | 10         | 10  | 80         | 80  | 531 <sup>(3)</sup> | 531 <sup>(3)</sup> | 30              | 216 | 140 | 178 | 89  | 392            | 12   | 132 | 265 | 230 | 300             | 14.5 | 274 | 582         | 582 |
| 132 <sup>2)</sup> | 38                                | 38  | 41          | 41   | 10         | 10  | 80         | 80  | 576                | 576                | 30              | 216 | 140 | 178 | 89  | 392            | 12   | 132 | 265 | 230 | 300             | 14.5 | 274 | 627         | 627 |
| 160               | 42                                | 42  | 45          | 45   | 12         | 12  | 110        | 110 | 808                | 808                | 45              | 254 | 210 | 254 | 108 | 495            | 14.5 | 160 | 300 | 250 | 350             | 18.5 | 328 | 852         | 852 |
| 180               | 48                                | 48  | 51.5        | 51.5 | 14         | 14  | 110        | 110 | 826                | 826                | 50              | 279 | 241 | 279 | 121 | 535            | 14.5 | 180 | 300 | 250 | 350             | 18.5 | 359 | 876         | 876 |
| 200               | 55                                | 55  | 59          | 59   | 16         | 16  | 110        | 110 | 774                | 774                | 70              | 318 | 267 | 305 | 133 | 616            | 18.5 | 200 | 350 | 300 | 400             | 18.5 | 414 | 844         | 844 |
| 200 <sup>2)</sup> | 55                                | 55  | 59          | 59   | 16         | 16  | 110        | 110 | 824                | 824                | 70              | 318 | 267 | 305 | 133 | 616            | 18.5 | 200 | 350 | 300 | 400             | 18.5 | 414 | 844         | 844 |
| 225               | 55                                | 60  | 59          | 64   | 16         | 18  | 110        | 140 | 841                | 871                | 80              | 356 | 286 | 311 | 149 | 663            | 18.5 | 225 | 400 | 350 | 450             | 18.5 | 462 | 921         | 951 |
| 225 <sup>2)</sup> | 55                                | 60  | 59          | 64   | 16         | 18  | 110        | 140 | 871                | 901                | 80              | 356 | 286 | 311 | 149 | 663            | 18.5 | 225 | 400 | 350 | 450             | 18.5 | 462 | 921         | 951 |
| 250               | 60                                | 65  | 64          | 69   | 18         | 18  | 140        | 140 | 875                | 875                | 90              | 406 | 311 | 349 | 168 | 726            | 24   | 250 | 500 | 450 | 550             | 18.5 | 506 | 965         | 965 |
| 250 <sup>2)</sup> | 60                                | 65  | 64          | 69   | 18         | 18  | 140        | 140 | 895                | 895                | 90              | 406 | 311 | 349 | 168 | 726            | 24   | 250 | 500 | 450 | 550             | 18.5 | 506 | 965         | 965 |

<sup>1)</sup> Required distance from fan cover air inlet to obstacle behind motor

<sup>2)</sup> For IE3 version

<sup>3)</sup> 576 for M2JAPSMF6

### Available B14 alternatives

| Flange size | Motor Size | Flange dimension |     |     |     |
|-------------|------------|------------------|-----|-----|-----|
|             |            | P                | M   | N   | S   |
| Ft100       | 80         | 120              | 100 | 80  | M6  |
| Ft115       | 90         | 140              | 115 | 95  | M8  |
| Ft130       | 100/112    | 160              | 130 | 110 | M8  |
| Ft165       | 132        | 200              | 165 | 130 | M10 |

Above table gives the main dimensions in mm

## Flameproof motors Ex db, Sizes 80-180

| Motor size              |                       | 80                                                        | 90         | 100        | 112        | 132        | 160        | 180        |
|-------------------------|-----------------------|-----------------------------------------------------------|------------|------------|------------|------------|------------|------------|
| Stator                  | Material              | Cast iron, EN-GJL-200 or better                           |            |            |            |            |            |            |
|                         | Paint color shade     | Blue, Munsell 8B 4.5/3.25                                 |            |            |            |            |            |            |
|                         | Corrosion class       | C3                                                        |            |            |            |            |            |            |
| Feet                    |                       | Cast iron, EN-GJL-200 or better, integrated with stator   |            |            |            |            |            |            |
| Bearing end shields     | Material              | Cast iron, EN-GJL-200 or better                           |            |            |            |            |            |            |
|                         | Paint colour shade    | Blue, Munsell 8B 4.5/3.25                                 |            |            |            |            |            |            |
|                         | Corrosion class       | C3                                                        |            |            |            |            |            |            |
| Bearings                | D-end 2-8 poles       | 6205-2Z/C3                                                | 6205-2Z/C3 | 6206-2Z/C3 | 6206-2Z/C3 | 6208-2Z/C3 | 6309-2Z/C3 | 6310-2Z/C3 |
|                         | N-end 2-8 poles       | 6204-2Z/C3                                                | 6204-2Z/C3 | 6205-2Z/C3 | 6206-2Z/C3 | 6208-2Z/C3 | 6309-2Z/C3 | 6310-2Z/C3 |
| Axially locked bearings | Bearing cover         | As standard, locked at D-end                              |            |            |            |            |            |            |
| Bearing seals           |                       | Gamma ring                                                |            |            |            |            |            |            |
| Lubrication             |                       | Permanent grease lubrication                              |            |            |            |            |            |            |
| SPM nipples             |                       | -                                                         |            |            |            |            |            | As option  |
| Rating plate            | Material              | Stainless steel                                           |            |            |            |            |            |            |
| Terminal box            | Frame material        | Cast iron, EN-GJL-200 or better                           |            |            |            |            |            |            |
|                         | Cover material        | Cast iron, EN-GJL-200 or better                           |            |            |            |            |            |            |
|                         | Cover screws material | Steel 8.8, zinc electroplated and chromated               |            |            |            |            |            |            |
| Connections             | Cable entries         | 1 x M25                                                   |            | 2 x M32    |            |            | 2 x M40    |            |
|                         | Terminals             | 6 terminals for connection with cable lugs (not included) |            |            |            |            |            |            |
| Fan                     | Material              | Polypropylene. Reinforced with glass fibre.               |            |            |            |            |            |            |
| Fan cover               | Material              | Steel                                                     |            |            |            |            |            |            |
|                         | Paint color shade     | Munsell blue 8B 4.5/3.25                                  |            |            |            |            |            |            |
|                         | Corrosion class       | C3                                                        |            |            |            |            |            |            |
| Stator winding          | Material              | Copper                                                    |            |            |            |            |            |            |
|                         | Insulation            | Insulation class F                                        |            |            |            |            |            |            |
|                         | Winding protection    | 3 pcs thermistors as option                               |            |            |            |            |            |            |
| Rotor winding           | Material              | Pressure die-cast aluminum                                |            |            |            |            |            |            |
| Balancing               |                       | Half-key balancing                                        |            |            |            |            |            |            |
| Keyway                  |                       | Closed                                                    |            |            |            |            |            |            |
| Heating elements        | On request            | 25 W                                                      |            |            |            |            |            |            |
| Drain holes             |                       | -                                                         |            |            |            |            |            | Optional   |
| External earthing bolt  |                       | As standard                                               |            |            |            |            |            |            |
| Enclosure               |                       | IP 55                                                     |            |            |            |            |            |            |
| Cooling method          |                       | IC 411                                                    |            |            |            |            |            |            |

## Motors in brief

Flameproof motors Ex db, Sizes 200-250

| Motor size                            |                       | 200                                                       | 225        | 250        |
|---------------------------------------|-----------------------|-----------------------------------------------------------|------------|------------|
| Stator                                | Material              | Cast iron, EN-GJL-200 or better                           |            |            |
|                                       | Paint color shade     | Munsell blue 8B 4.5/3.25                                  |            |            |
|                                       | Corrosion class       | C3                                                        |            |            |
| Feet                                  | Material              | Cast iron, EN-GJL-200 or better, integrated with stator   |            |            |
| Bearing end shields                   | Material              | Cast iron, EN-GJL-200 or better                           |            |            |
|                                       | Paint colour shade    | Blue, Munsell 8B 4.5/3.25                                 |            |            |
|                                       | Corrosion class       | C3                                                        |            |            |
| Bearings                              | D-end 2-8 pole        | 6312-2Z/C3                                                | 6313-2Z/C3 | 6315-2Z/C3 |
|                                       | N-end 2-8 pole        | 6310-2Z/C3                                                | 6312-2Z/C3 | 6313-2Z/C3 |
| Axially locked Bearing cover bearings |                       | As standard, locked at D-end                              |            |            |
| Bearing seals                         |                       | Gamma ring                                                |            |            |
| Lubrication                           |                       | Permanent grease lubrication                              |            |            |
| SPM nipples                           |                       | As option                                                 |            |            |
| Rating plate                          | Material              | Stainless steel                                           |            |            |
| Terminal box                          | Frame material        | Cast iron, EN-GJL-200 or better                           |            |            |
|                                       | Cover material        | Cast iron, EN-GJL-200 or better                           |            |            |
|                                       | Cover screws material | Steel 8.8, zinc electroplated and chromated               |            |            |
| Connections                           | Cable-entries         | 2 x M50                                                   |            |            |
|                                       | Terminals             | 6 terminals for connection with cable lugs (not included) |            |            |
| Fan                                   | Material              | Polypropylene. Reinforced with glass fibre.               |            |            |
| Fan cover                             | Material              | Steel                                                     |            |            |
|                                       | Paint color shade     | Munsell blue 8B 4.5/3.25                                  |            |            |
|                                       | Corrosion class       | C3                                                        |            |            |
| Stator winding                        | Material              | Copper                                                    |            |            |
|                                       | Insulation            | Insulation class F                                        |            |            |
|                                       | Winding protection    | 3 pcs thermistors as option                               |            |            |
| Rotor winding                         | Material              | Pressure die-cast aluminum                                |            |            |
| Balancing                             |                       | Half key balancing                                        |            |            |
| Keyway                                |                       | Closed                                                    |            |            |
| Heating elements                      | On request            | 25 W                                                      | 60 W       |            |
| Drain holes                           |                       | Optional                                                  |            |            |
| External earthing bolt                |                       | As standard                                               |            |            |
| Enclosure                             |                       | IP 55                                                     |            |            |
| Cooling method                        |                       | IC 411                                                    |            |            |

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06/2022

