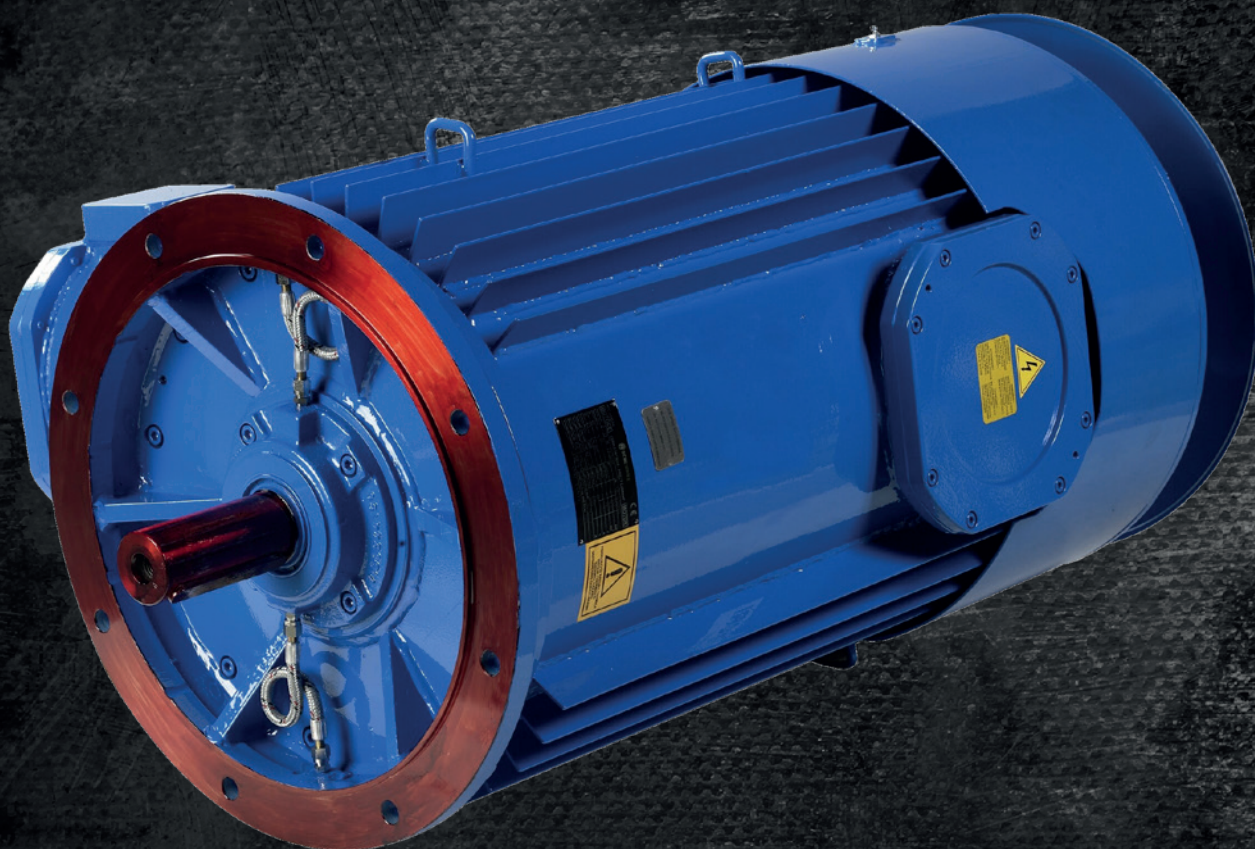




*C Series / Sizes C7 - C23*

## **FLAMEPROOF DC MOTORS**

For Hazardous Areas



## A dynamic, strong and ambitious Group

Orange1 Holding is an international renown Group, one of the most important European manufacturers of single-phase and three-phase asynchronous electric motors. It has an annual capacity of more than 1 million motors and 5 million electric stators. The group, established in 1971 by Leone Donazzan, chaired today by his son Armando Donazzan, is strongly focused on technological innovation, performance and customization to meet individual clients requirements.





## **SICME** | ORANGE1

Sicme Orange1 has born from the merge of Sicme Motori and Magnetic. Sicme Motori, founded in 1967, produces high quality DC motors and it represents a benchmark of excellence for its technology providing the best economical solutions for many different applications. Since 2002 it has been cooperating actively with the Institute of Electrical Engineering of the Polytechnic of Turin and it has been one of the world's largest producers of wind generators. In 2008, it has developed motors with ASR technology, the most revolutionary type of electric machine in the world, and in 2014 developed an innovative range of synchronous reluctance motors IE4 with a specific patent. A company with a 40 years history, well-known around the world for the high quality and product technology, it produces Asynchronous motors up to 3700 Kw, Synchronous motors up to 2700 Kw, Hydroelectric Generators up to 3000 Kw, Mini-Wind generators up to 200 Kw and Wind Turbines up to 5000 Kw. Magnetic Motors, founded in 1973, manufactures electrical machines specifically designed to be used for variable speed application. The company is located in Montebello Vicentino, Vicenza – Italy.

## PRODUCTION PLANTS

| LOCATION                                                           | MOTORS PRODUCTION                                                                   |
|--------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>MONTEBELLO VIC.NO - ITALY</b><br>36054 (VI)<br>Via del Lavoro 7 | AC VECTORIAL MOTORS<br>DC MOTORS<br>BRUSHLESS MOTORS<br>TORQUE MOTORS               |
| <b>TORINO - ITALY</b><br>10156 (TO)<br>Strada del Francese 130     | AC VARIABLE SPEED MOTORS<br>DC MOTORS<br>GENERATORS<br>SERVICE<br>RELUCTANCE MOTORS |

## General

Flameproof DC motors C Series has been expressly designed for a fully reliable operation and in conformity of safety prescriptions as requested by the regulation in force for electrical installations in dangerous environments.

- Group: II (not mine)
- Category: 2 (high protection)
- Type of explosive atmosphere: G (gas, steams, smokes)
- Execution: Ex d IIB For frame size C7-C11-C13-C16-C19-C23  
Ex d IIC Only for frame size C7C
- Temperature Class: T4 for duty from S1 to S9
- Protection Degree: IP55 For motor frame C7 - C7C - C13 - C23  
IP56 For motor frame C11 - C16 - C19

## Motor design

Standards : IEC 60034 – IEC 60079-0 – IEC 60079-1  
 Supply : Batteries, Ward-Leonard control  
 Insulation : Class H  
 Temperature rise : Class F, B  
 Ambient temperature : -20°C - + 60°C  
 Minimum stocking temperature: - 50°C  
 Maximum working temperature: 40° C (from 41°C to 60° C with derating)  
 Altitude of installation : 1000 m asl (up to 4000 m asl with derating)  
 Max. surface temperature : +135°C (temperature class T4)  
 Vibration grade : A or B according with 60034-14  
 Type of cooling : IC 411  
 (IEC 60034-6: self-ventilated totally enclosed motor, frame externally cooled)  
 Protection Degree : according to IEC 60034-5  
 Mounting : according to IEC 60034-7  
 Main terminal box : at left side, DE view

## Options available

Thermal protectors (NC contact)  
 PTC thermal protector  
 PT100 thermistors  
 Tachometer (explosion-proof type)  
 Pulse generator (explosion-proof type)  
 Anti-condensation heater (excluding frame C7)  
 Tropicalization of windings

## Certifications

| Frame Size  | Execution<br>+<br>Temperature Class | ATEX<br>Certificate No.  | IECEX<br>Certificate No.<br>Issue No :1 | TR CU Ex<br>Certificate N°<br>0188484 | CHINA        | INMETRO    |
|-------------|-------------------------------------|--------------------------|-----------------------------------------|---------------------------------------|--------------|------------|
| <b>C 7</b>  | II 2G Ex d IIB T4                   | BVI 15 ATEX 0061 X Rev.1 | IECEX EPS 15.0048                       | RU C-IT.HA65.B.00478/20               | -            | BVC20.3802 |
| <b>C 7C</b> | II 2G Ex d IIC T4                   | BVI 15 ATEX 0061 X Rev.1 | IECEX EPS 15.0048                       | -                                     | -            | BVC20.3802 |
| <b>C 11</b> | II 2G Ex d IIB T4                   | BVI 15 ATEX 0061 X Rev.1 | IECEX EPS 15.0048                       | RU C-IT.HA65.B.00478/20               | -            | BVC20.3802 |
| <b>C 13</b> | II 2G Ex d IIB T4                   | BVI 15 ATEX 0061 X Rev.1 | IECEX EPS 15.0048                       | RU C-IT.HA65.B.00478/20               | -            | BVC20.3802 |
| <b>C 16</b> | II 2G Ex d IIB T4                   | BVI 15 ATEX 0061 X Rev.1 | IECEX EPS 15.0048                       | RU C-IT.HA65.B.00478/20               | CNEx19.2490X | BVC20.3802 |
| <b>C 19</b> | II 2G Ex d IIB T4                   | BVI 15 ATEX 0061 X Rev.1 | IECEX EPS 15.0048                       | RU C-IT.HA65.B.00478/20               | -            | BVC20.3802 |
| <b>C 23</b> | II 2G Ex d IIB T4                   | BVI 15 ATEX 0061 X Rev.1 | IECEX EPS 15.0048                       | RU C-IT.HA65.B.00478/20               | CNEx18.2639X | BVC20.3802 |

## General prospectus for C Series motors according to ATEX Std (IEC 60079-0 and IEC 60079-1)

|                                                                      |                             |          |                              |                    |                    |                                       |
|----------------------------------------------------------------------|-----------------------------|----------|------------------------------|--------------------|--------------------|---------------------------------------|
| Group                                                                | II (not mines)              |          |                              |                    |                    |                                       |
| Category                                                             | 2 (high protection)         |          |                              |                    |                    |                                       |
| Type of atmosphere                                                   | G (gas, steams, smokes)     |          |                              |                    |                    |                                       |
| Motor type                                                           | C7                          | C7C      | C11                          | C13                | C16                | C19 C23                               |
| Execution                                                            | Ex d IIB                    | Ex d IIC | Ex d IIB                     |                    |                    | Ex d IIB and Ex d IIB + H2 Ex d IIB   |
| Class of surface temperature                                         | T4                          |          | T4                           | T4                 | T4                 | T4                                    |
| Method of Cooling (IEC60034-6)                                       | IC411                       |          |                              |                    |                    |                                       |
| Method of Cooling (SICME ORANGE1 code)                               | CvEd                        |          |                              |                    |                    |                                       |
| Protection Degree (IEC)                                              | 55                          |          | 56                           | 55                 | 56                 | 56 55                                 |
| Minimum working temperature                                          | -20 °C                      |          |                              |                    |                    |                                       |
| Maximum working temperature                                          | +60 °C                      |          |                              |                    |                    |                                       |
| Maximum armature voltage                                             | 440V <sub>DC</sub>          |          | 500V <sub>DC</sub>           | 500V <sub>DC</sub> | 500V <sub>DC</sub> | 750V <sub>DC</sub> 500V <sub>DC</sub> |
| Maximum armature current (up to 40°C ambient temperature)            | 18A <sub>DC</sub>           |          | 49A <sub>DC</sub>            | 49A <sub>DC</sub>  | 86A <sub>DC</sub>  | 155A <sub>DC</sub> 200A <sub>DC</sub> |
| Maximum armature current (for 60°C ambient temperature)              | 15,5A <sub>DC</sub>         |          | 43A <sub>DC</sub>            | 43A <sub>DC</sub>  | 76A <sub>DC</sub>  | 135A <sub>DC</sub> 175A <sub>DC</sub> |
| Maximum motor power                                                  | 1,2kW                       |          | 2,4kW                        | 6kW                | 14kW               | 25kW 35kW                             |
| Maximum motor speed                                                  | 3600rpm                     |          | 3000rpm                      | 3000rpm            | 3600rpm            | 3200rpm 2500rpm                       |
| Temperature rise class                                               | B or F                      |          |                              |                    |                    |                                       |
| Nr. and max section of cables from armature to terminal board        | 6x2,5mm <sup>2</sup>        |          | 6x25mm <sup>2</sup>          |                    |                    | 6x50mm <sup>2</sup>                   |
| Terminal board installed into the terminal box                       | 50x32 6 leads M4            |          | 70x45 6 leads M6             |                    |                    | 115x70 6 leads M10                    |
| Main Terminal box entry cable                                        | NPT ½                       |          | From NPT 1 to NPT 2          |                    |                    | From NPT 1 ½ to NPT 2 ½               |
|                                                                      | From M16x1,5 to M33x1,5     |          | From M20x1,5 to M50x1,5      |                    |                    | From M25x1,5 to M75x1,5               |
| Auxiliary terminal box entry cable (for heaters, thermistors)        | N/A                         |          | From NPT 1 to NPT 2          |                    |                    | From NPT 1 ½ to NPT 2 ½               |
|                                                                      |                             |          | From M20x1,5 to M50x1,5      |                    |                    | From M20x1,5 to M75x1,5               |
| Nr. and theoretical section supply cables into the main terminal box | 3x6mm <sup>2</sup> + ground |          | 3x35mm <sup>2</sup> + ground |                    |                    | 3x70mm <sup>2</sup> + ground          |

## Space Heaters

| Frame Size | Absorbed power                            |
|------------|-------------------------------------------|
| C7         | N/A                                       |
| C11 – C13  | No. 1 x 42W – 230 V 50/60 Hz single phase |
| C16 - C19  | No. 2 x 42W – 230 V 50/60 Hz single phase |
| C23        | No. 1 x 99W – 230 V 50/60 Hz single phase |



## Output Data

### Constant torque and/or constant power speed regulation

Constant torque speed regulation below nominal speed is possible in the ratio 1:2 (for duty S1).

This ratio can be increased up to 1:4 for application when load resistant torque is not constant when speed reduces (this is the case, for example, of centrifugal machines such as some pump and fan).

For higher ratio please ask SICME ORANGE1.

Constant power speed regulation above nominal speed (by reducing the field current at constant armature voltage) is possible up to 120% of nominal speed.

For higher values please ask SICME ORANGE1

### Motor selection for 110Vdc supply voltage by battery

| Frame Size |        | Rpm  | Power output [kW] - Vs. ambient temp. |         |         | Absorbed current<br>at 40°C<br>[A] | Nominal torque<br>at 40°C<br>[Nm] | Efficiency at full<br>load<br>[%] |
|------------|--------|------|---------------------------------------|---------|---------|------------------------------------|-----------------------------------|-----------------------------------|
|            |        |      | at 40°C                               | at 45°C | at 50°C |                                    |                                   |                                   |
| C 7L       | C 7CL* | 1730 | 0,52                                  | 0,5     | 0,49    | 6,9                                | 2,9                               | 65                                |
| C 11S      | N/A    |      | 1,15                                  | 1,1     | 1,08    | 12,9                               | 6,3                               | 78,2                              |
| C 11M      |        |      | 1,45                                  | 1,4     | 1,36    | 16                                 | 8                                 | 80                                |
| C 11L      |        |      | 1,8                                   | 1,74    | 1,7     | 19,2                               | 9,9                               | 83                                |
| C 13S      |        | 1820 | 1,9                                   | 1,84    | 1,8     | 21,5                               | 10                                | 78,6                              |
| C 13M      |        |      | 2,1                                   | 2,03    | 2       | 25,4                               | 11                                | 75                                |
| C 13L      |        |      | 2,7                                   | 2,6     | 2,5     | 30                                 | 14,2                              | 74                                |
| C 16S      |        |      | 3,9                                   | 3,78    | 3,65    | 44,5                               | 20,5                              | 78                                |
| C16M       |        |      | 5,2                                   | 5       | 4,9     | 58,2                               | 27,3                              | 80                                |
| C16L       |        |      | 6,5                                   | 6,3     | 6,1     | 69                                 | 34,1                              | 84                                |
| C19S       |        |      | 6,2                                   | 6       | 5,8     | 75                                 | 32,5                              | 74,2                              |
| C19M       |        |      | 7,8                                   | 7,55    | 7,3     | 90,2                               | 40,9                              | 78                                |
| C 19L      |        |      | 8,8                                   | 8,5     | 8,2     | 101                                | 46,2                              | 78,2                              |
| C 23S      | 9,8    |      | 9,5                                   | 9,2     | 112     | 51,4                               | 78,7                              |                                   |
| C 23M      | 13,2   |      | 12,8                                  | 12,3    | 144     | 69,3                               | 82                                |                                   |
| C 23L      | 15,8   |      | 15,3                                  | 14,8    | 158     | 82,9                               | 83                                |                                   |

### Motor selection for 125Vdc supply voltage by battery

| Frame Size |        | Rpm  | Power output [kW] - Vs. ambient temp. |         |         | Absorbed current<br>at 40°C<br>[A] | Nominal torque<br>at 40°C<br>[Nm] | Efficiency at full<br>load<br>[%] |
|------------|--------|------|---------------------------------------|---------|---------|------------------------------------|-----------------------------------|-----------------------------------|
|            |        |      | at 40°C                               | at 45°C | at 50°C |                                    |                                   |                                   |
| C 7L       | C 7CL* | 1770 | 0,63                                  | 0,61    | 0,59    | 6,9                                | 3,4                               | 69                                |
| C 11S      | N/A    |      | 1,25                                  | 1,2     | 1,17    | 12,8                               | 6,7                               | 75,7                              |
| C 11M      |        |      | 1,6                                   | 1,55    | 1,5     | 15,9                               | 8,6                               | 78,5                              |
| C 11L      |        |      | 2                                     | 1,94    | 1,9     | 19,2                               | 10,8                              | 82                                |
| C 13S      |        |      | 1870                                  | 2,1     | 2,03    | 1,96                               | 21,5                              | 10,7                              |
| C 13M      |        | 2,5  |                                       | 2,4     | 2,3     | 25,5                               | 12,8                              | 79,5                              |
| C 13L      |        | 3,1  |                                       | 3       | 2,9     | 30                                 | 15,8                              | 81                                |
| C 16S      |        | 4,6  |                                       | 4,45    | 4,3     | 45                                 | 23,5                              | 80                                |
| C16M       |        | 6    |                                       | 5,8     | 5,6     | 58                                 | 30,6                              | 82                                |
| C16L       |        | 7,5  |                                       | 7,26    | 7       | 69                                 | 38,3                              | 86                                |
| C19S       |        | 7,2  |                                       | 7       | 6,7     | 75                                 | 36,8                              | 76                                |
| C19M       |        | 9,2  |                                       | 8,9     | 8,6     | 90                                 | 47                                | 80                                |
| C 19L      |        | 10,3 |                                       | 10      | 9,6     | 101                                | 52,6                              | 80,6                              |
| C 23S      | 11,5   | 11,1 |                                       | 10,7    | 113     | 58,7                               | 81,4                              |                                   |
| C 23M      | 15,5   | 15   |                                       | 14,5    | 144     | 79,2                               | 85                                |                                   |
| C 23L      | 18,2   | 17,6 |                                       | 17      | 158     | 92,9                               | 91                                |                                   |

Notes: N/A: Not Available

Voltage acceptable tolerance +/-10%

Tolerance on speed as per EN 60034-1

\* This motor is certified IIC

## Output Data

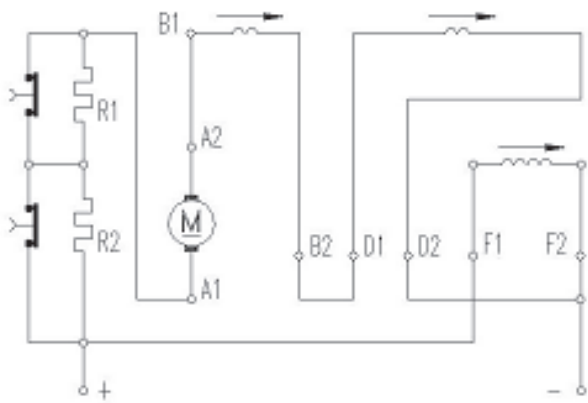
SICME ORANGE1 DC motors C Series are not suitable for direct starting.

In case of power supply by battery, a 2-steps starting resistance must be connected in series with the armature circuit, in order to reduce the starting current values within acceptable limits.

The starting resistance must be connected during the starting phase only, and it must be disconnected once the starting phase occurred.

As an example, a scheme of motor starting with connecting-disconnecting 2-steps starting resistance is given below.

Values of starting resistances are given in the table (general information).

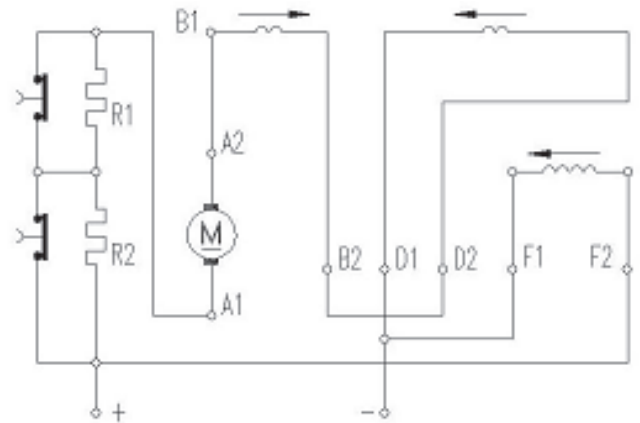


Clockwise direction of rotation

R1-R2 : starting resistances

A1-A2 : armature winding

B1-B2 : commutating winding (inside the motor)



Counter-clockwise direction of rotation

F1-F2 : field winding

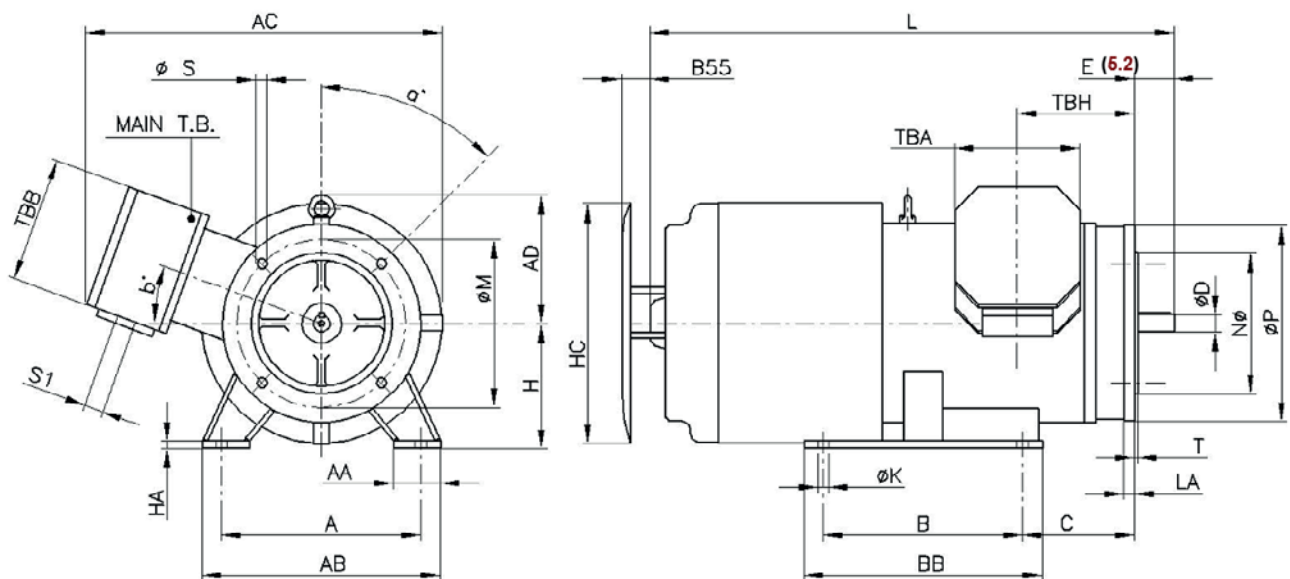
D1-D2 : stabilizing series

## General Information

| Nominal torque at 40°C [Nm] | Starting resistances [Ω] |           |           | Armat. Resist. [Ω] | Rotor PD2 [kgm²] | Weight [kg] | Noise level [dBA]* | Protection Degree |      |
|-----------------------------|--------------------------|-----------|-----------|--------------------|------------------|-------------|--------------------|-------------------|------|
|                             | Amb. Temp.               | 110Vdc    | 125Vdc    |                    |                  |             |                    | IIB               | IIC  |
| C 7L                        | 50°C                     | 2,5+2,5   | 3+3       | 2,5                | 0,015            | 55          | 80                 | IP55              | IP55 |
| C 7CL                       | 40°C                     | 2,2+2,2   | 2,6+2,6   |                    |                  |             |                    |                   |      |
| C 11S                       | 50°C                     | 1,4+1,4   | 1,65+1,65 | 0,9                | 0,075            | 116         | 80                 | IP55              | N/A  |
|                             | 40°C                     | 1,25+1,25 | 1,5+1,5   |                    |                  |             |                    |                   |      |
| C 11M                       | 50°C                     | 1,2+1,2   | 1,4+1,4   | 0,54               | 0,085            | 122         | 80                 | IP55              | N/A  |
|                             | 40°C                     | 1,1+1,1   | 1,3+1,3   |                    |                  |             |                    |                   |      |
| C 11L                       | 50°C                     | 1,0+1,0   | 1,2+1,2   | 0,39               | 0,1              | 130         | 80                 | IP55              | N/A  |
|                             | 40°C                     | 0,95+0,95 | 1,1+1,1   |                    |                  |             |                    |                   |      |
| C 13S                       | 50°C                     | 0,96+0,96 | 1,1+1,1   | 0,237              | 0,21             | 170         | 80                 | IP55              | N/A  |
|                             | 40°C                     | 0,90+0,90 | 1,05+1,05 |                    |                  |             |                    |                   |      |
| C 13M                       | 50°C                     | 0,80+0,80 | 0,96+0,96 | 0,209              | 0,25             | 178         | 80                 | IP55              | N/A  |
|                             | 40°C                     | 0,76+0,76 | 0,87+0,87 |                    |                  |             |                    |                   |      |
| C 13L                       | 50°C                     | 0,70+0,70 | 0,8+0,8   | 0,15               | 0,3              | 188         | 80                 | IP55              | N/A  |
|                             | 40°C                     | 0,65+0,65 | 0,75+0,75 |                    |                  |             |                    |                   |      |
| C 16S                       | 50°C                     | 0,48+0,48 | 0,55+0,55 | 0,1                | 0,45             | 210         | 80                 | IP56              | N/A  |
|                             | 40°C                     | 0,45+0,45 | 0,5+0,5   |                    |                  |             |                    |                   |      |
| C16M                        | 50°C                     | 0,37+0,37 | 0,42+0,42 | 0,059              | 0,5              | 230         | 80                 | IP56              | N/A  |
|                             | 40°C                     | 0,35+0,35 | 0,4+0,4   |                    |                  |             |                    |                   |      |
| C16L                        | 50°C                     | 0,32+0,32 | 0,36+0,36 | 0,04               | 0,58             | 265         | 80                 | IP56              | N/A  |
|                             | 40°C                     | 0,30+0,30 | 0,34+0,34 |                    |                  |             |                    |                   |      |
| C19S                        | 50°C                     | 0,29+0,29 | 0,33+0,33 | 0,043              | 1                | 370         | 80                 | IP56              | N/A  |
|                             | 40°C                     | 0,27+0,27 | 0,31+0,31 |                    |                  |             |                    |                   |      |
| C19M                        | 50°C                     | 0,24+0,24 | 0,28+0,28 | 0,03               | 1,1              | 395         | 80                 | IP56              | N/A  |
|                             | 40°C                     | 0,23+0,23 | 0,26+0,26 |                    |                  |             |                    |                   |      |
| C 19L                       | 50°C                     | 0,22+0,22 | 0,25+0,25 | 0,02               | 1,3              | 420         | 80                 | IP56              | N/A  |
|                             | 40°C                     | 0,20+0,20 | 0,23+0,23 |                    |                  |             |                    |                   |      |
| C 23S                       | 50°C                     | 0,20+0,20 | 0,22+0,22 | 0,021              | 2,6              | 580         | 80                 | IP55              | N/A  |
|                             | 40°C                     | 0,18+0,18 | 0,21+0,21 |                    |                  |             |                    |                   |      |
| C 23M                       | 50°C                     | 0,16+0,16 | 0,18+0,18 | 0,013              | 2,9              | 635         | 80                 | IP55              | N/A  |
|                             | 40°C                     | 0,15+0,15 | 0,17+0,17 |                    |                  |             |                    |                   |      |
| C 23L                       | 50°C                     | 0,14+0,14 | 0,16+0,16 | 0,011              | 3,4              | 675         | 80                 | IP55              | N/A  |
|                             | 40°C                     | 0,13+0,13 | 0,15+0,15 |                    |                  |             |                    |                   |      |

\*Note Tolerance +3 -0 dB(A)

## Dimensions – Foot & flange mounted motor Horizontal B34 (IM2101) or B35 (IM2001) Vertical V15 (IM2011)

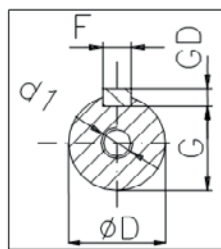
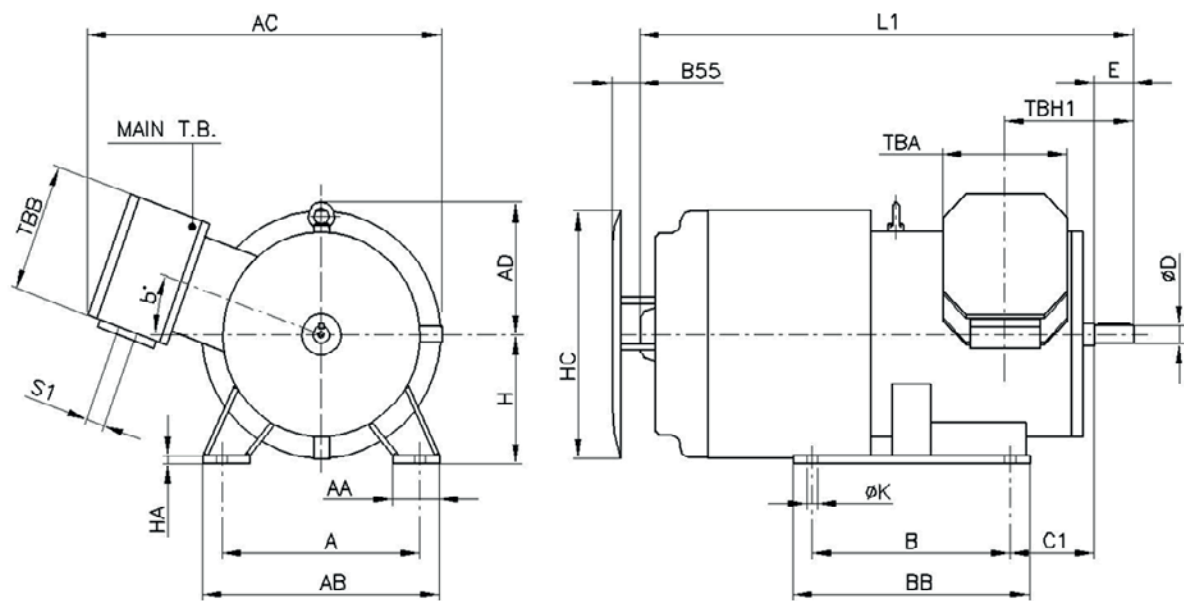


**B34 (IM2101):** Flange with screwed holes

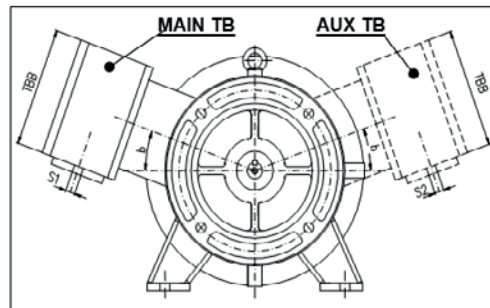
**B35 (IM 2001):** Flange with through holes

**5.2** This dimension corresponds to shaft extension too

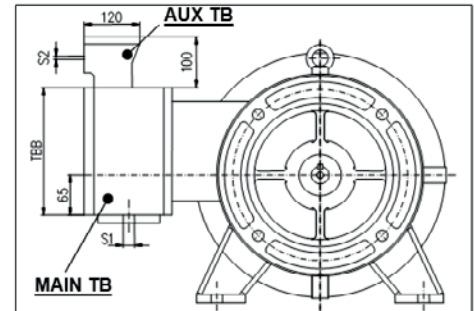
## Dimensions – Foot mounted motor – Horizontal B3 (IM1001) or V5 (IM1011)



SHAFTSECTION

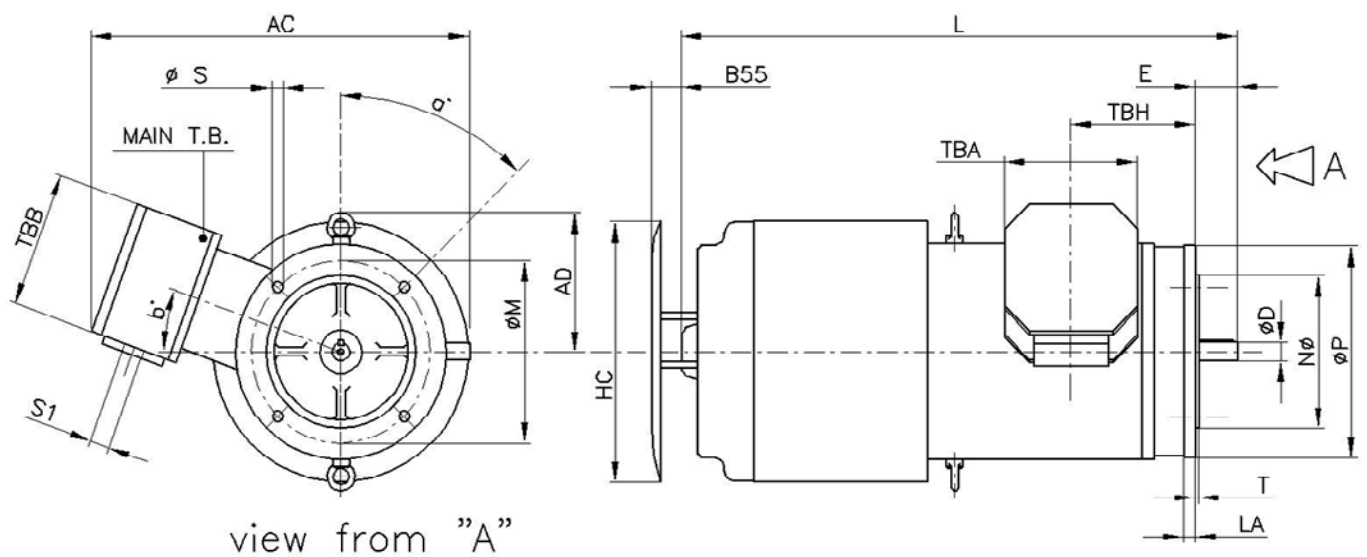


AUX TB POSITION FOR C11 to C19  
(if requested by purchase order)



AUX TB POSITION FOR C 23  
(if requested by purchase order)

## Dimensions – Flange mounted motor Horizontal B5 (IM3101) or Vertical V1 (IM3001)



## Main Dimensions

| Motor type |   | Dimensions [mm] |     |     |     |     |     |     |     |      |     |    |     |     |
|------------|---|-----------------|-----|-----|-----|-----|-----|-----|-----|------|-----|----|-----|-----|
|            |   | A               | AA  | AB  | AC  | AD  | B   | BB  | C   | C1   | H   | HA | HC  | Ø K |
| C7 / C7C   | L | 165             | 57  | 241 | 347 | 122 | 140 | 175 | 74  | N.A. | 117 | 5  | 224 | 10  |
| C 11       | S | 254             | 60  | 304 | 455 | 164 | 178 | 228 | 143 | 108  | 160 | 10 | 325 | 14  |
|            | M |                 |     |     |     |     | 210 | 260 |     |      |     |    |     |     |
|            | L |                 |     |     |     |     | 254 | 304 |     |      |     |    |     |     |
| C 13       | S | 279             | 70  | 337 | 498 | 164 | 203 | 249 | 152 | 121  | 180 | 12 | 375 | 14  |
|            | M |                 |     |     |     |     | 241 | 287 |     |      |     |    |     |     |
|            | L |                 |     |     |     |     | 279 | 325 |     |      |     |    |     |     |
| C 16       | S | 318             | 70  | 382 | 542 | 250 | 228 | 278 | 163 | 133  | 212 | 22 | 465 | 18  |
|            | M |                 |     |     |     |     | 267 | 317 |     |      |     |    |     |     |
|            | L |                 |     |     |     |     | 305 | 355 |     |      |     |    |     |     |
| C 19       | S | 356             | 90  | 446 | 685 | 243 | 286 | 346 | 176 | 149  | 225 | 18 | 485 | 18  |
|            | M |                 |     |     |     |     | 311 | 371 |     |      |     |    |     |     |
|            | L |                 |     |     |     |     | 356 | 416 |     |      |     |    |     |     |
| C 23       | S | 457             | 120 | 545 | 722 | 273 | 368 | 440 | 190 | 190  | 280 | 22 | 580 | 22  |
|            | M |                 |     |     |     |     | 419 | 491 |     |      |     |    |     |     |
|            | L |                 |     |     |     |     | 457 | 529 |     |      |     |    |     |     |

| Motor type |   | Dimensions [mm] |      |          |                |          |                |          |                |          |           |          |             |          |         |       |        |     |    |      |    |
|------------|---|-----------------|------|----------|----------------|----------|----------------|----------|----------------|----------|-----------|----------|-------------|----------|---------|-------|--------|-----|----|------|----|
|            |   | L               | L1   | S1 (6.1) |                | S2 (6.1) |                | Ø D      | d1<br>(DIN332) | E        | F<br>(h9) | G        | GD<br>(h11) |          |         |       |        |     |    |      |    |
|            |   |                 |      | Tapered  | Cyl-<br>metric | Tapered  | Cyl-<br>metric |          |                |          |           |          |             |          |         |       |        |     |    |      |    |
| C7 / C7 C  | L | 540             | 540  | NPT 1 ½" | 20x1,5         | N/A      | N/A            | 19,05 j6 | M6X16          | 62       | 4,57      | 16,43    | 4,57        |          |         |       |        |     |    |      |    |
| C 11       | S | 620             | 580  | NPT 2"   | 50x1,5         | NPT 2"   | M20x1,5        | 22 j6    | M8X19          | 50       | 6         | 18.5     | 6           |          |         |       |        |     |    |      |    |
|            | M | 645             | 605  |          |                |          |                |          |                |          |           |          |             |          |         |       |        |     |    |      |    |
|            | L | 675             | 635  |          |                |          |                |          |                |          |           |          |             |          |         |       |        |     |    |      |    |
| C 13       | S | 721             | 685  |          |                |          |                | NPT 2 ½" | 75x1,5         | NPT 2 ½" | M25x1,5   | 28 j6    | M10X22      | 60       | 8       | 24    | 7      |     |    |      |    |
|            | M | 751             | 715  |          |                |          |                |          |                |          |           |          |             |          |         |       |        |     |    |      |    |
|            | L | 786             | 750  |          |                |          |                |          |                |          |           |          |             |          |         |       |        |     |    |      |    |
| C 16       | S | 810             | 775  |          |                |          |                |          |                |          |           | NPT 2 ½" | 75x1,5      | NPT 2 ½" | M25x1,5 | 32 k6 | M12X28 | 80  | 10 | 27   | 8  |
|            | M | 845             | 810  |          |                |          |                |          |                |          |           |          |             |          |         |       |        |     |    |      | 7  |
|            | L | 885             | 850  |          |                |          |                |          |                |          |           |          |             |          |         |       |        |     |    |      | 8  |
| C 19       | S | 872             | 840  | NPT 2 ½" | 75x1,5         | N/A      | M25x1,5        |          |                |          |           |          |             |          |         | 48 k6 | M16X36 | 110 | 14 | 42,5 | 9  |
|            | M | 912             | 880  |          |                |          |                |          |                |          |           |          |             |          |         |       |        |     |    |      |    |
|            | L | 957             | 925  |          |                |          |                |          |                |          |           |          |             |          |         |       |        |     |    |      |    |
| C 23       | S | 1145            | 1145 |          |                |          |                | N/A      | 75x1,5         | N/A      | M25x1,5   |          |             |          |         | 60 m6 | M20X42 | 140 | 18 | 53   | 11 |
|            | M | 1190            | 1190 |          |                |          |                |          |                |          |           |          |             |          |         |       |        |     |    |      |    |
|            | L | 1245            | 1245 |          |                |          |                |          |                |          |           |          |             |          |         |       |        |     |    |      |    |

Note (6.1) Tapered / Cyl.-Metric

## Flange & Terminal Box Dimensions

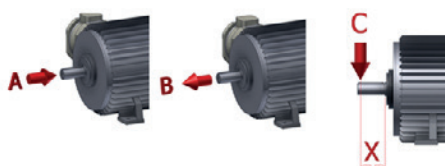
| Frame Size      | FF flange dimensions [mm] |    |     |           |     |   |          |       |          | B55 | TBH | TBA | TBB | TBH 1 | b     |
|-----------------|---------------------------|----|-----|-----------|-----|---|----------|-------|----------|-----|-----|-----|-----|-------|-------|
|                 | Fl. Size                  | LA | M   | N         | P   | T | S        | A     | Holes N. |     |     |     |     |       |       |
| <b>C7 / C7C</b> | N.A.                      | 15 | 149 | 114,31 j6 | 172 | 3 | 3/8" UNC | 45°   | 8        | -   | 132 | 140 | 140 | 132   | 22,5° |
| <b>C 11</b>     | FF-215                    | 14 | 215 | 180 j6    | 250 | 4 | 14       | 45°   | 4        | 50  | 150 | 160 | 160 | 115   | 20°   |
| <b>C 13</b>     | FF-265                    | 14 | 265 | 230 j6    | 300 | 4 | 14       | 45°   | 4        | 52  | 142 | 160 | 160 | 111   | 15°   |
| <b>C 16</b>     | FF-300                    | 15 | 300 | 250 j6    | 350 | 5 | 19       | 45°   | 4        | 58  | 138 | 160 | 160 | 108   | 20°   |
| <b>C 19</b>     | FF-300                    | 13 | 300 | 250 j6    | 350 | 5 | 19       | 45°   | 4        | 55  | 188 | 260 | 260 | 161   | 15°   |
| <b>C 23</b>     | FF-500                    | 22 | 500 | 450 j6    | 550 | 5 | 19       | 22,5° | 8        | 73  | 246 | 260 | 260 | 246   | -     |

## Bearings and lubrication

| Frame Size        | Bearing type |               | TBA               | TBB              |     | TBH 1                             |      |
|-------------------|--------------|---------------|-------------------|------------------|-----|-----------------------------------|------|
|                   | Drive End    | Non-Drive End | Grease type       | Grease q.ty [g]  |     | Bearing re-greasing intervals [h] |      |
|                   |              |               |                   | DE               | NDE | DE                                | NDE  |
| <b>C 7 / C 7C</b> | 6204-2Z-C3   | 6203-2Z-C3    | Lithium grade III | Greased for life |     | Greased for life                  |      |
| <b>C 11</b>       | 6205-2Z-C3   | 6205-2Z-C3    |                   |                  |     |                                   |      |
| <b>C 13</b>       | 6307-2Z-C3   | 6306-2Z-C3    |                   |                  |     |                                   |      |
| <b>C 16</b>       | 6308-2Z-C3   | 6307-2Z-C3    |                   |                  |     |                                   |      |
| <b>C 19</b>       | 6310-2Z-C3   | 6308-2Z-C3    |                   |                  |     |                                   |      |
| <b>C 23</b>       | NU313-C3     | 6310-2Z-C3    |                   | 30               | 20  | 6500                              | 7000 |

## Bearings radial load

| Motor Type        | Speed [rpm] | Only axial load A<br>"push to the motor"<br>For horizontal or vertical<br>axis motor [kN] | Only axial load B<br>"pull from the motor"<br>For horizontal or vertical<br>axis motor [kN] | Only radial load C For horizontal or vertical axis motor<br>[kN] |                      |
|-------------------|-------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------|
|                   |             |                                                                                           |                                                                                             | distance X [mm]                                                  | applicable load [kN] |
| <b>C 7 / C 7C</b> | 500         | 0                                                                                         | 1,0                                                                                         | 20 / 40                                                          | 1,0 / 0,65           |
|                   | 1000        | 0                                                                                         | 1,0                                                                                         | 20 / 40                                                          | 1,0 / 0,65           |
|                   | 1500        | 0                                                                                         | 0,8                                                                                         | 20 / 40                                                          | 0,9 / 0,65           |
|                   | 2000        | 0                                                                                         | 0,7                                                                                         | 20 / 40                                                          | 0,85 / 0,65          |
|                   | 2500        | 0                                                                                         | 0,65                                                                                        | 20 / 40                                                          | 0,75 / 0,45          |
|                   | 3000        | 0                                                                                         | 0,6                                                                                         | 20 / 40                                                          | 0,70 / 0,45          |
| <b>C 11</b>       | 3500        | 0                                                                                         | 0,55                                                                                        | 20 / 40                                                          | 0,70 / 0,45          |
|                   | 500         | 0                                                                                         | 1,4                                                                                         | 25 / 50                                                          | 1,35 / 1,3           |
|                   | 1000        | 0                                                                                         | 1,0                                                                                         | 25 / 50                                                          | 1,05 / 1,0           |
|                   | 1500        | 0                                                                                         | 0,85                                                                                        | 25 / 50                                                          | 0,9 / 0,85           |
|                   | 2000        | 0                                                                                         | 0,75                                                                                        | 25 / 50                                                          | 0,8 / 0,75           |
|                   | 2500        | 0                                                                                         | 0,7                                                                                         | 25 / 50                                                          | 0,75 / 0,70          |
| <b>C 13</b>       | 3000        | 0                                                                                         | 0,65                                                                                        | 25 / 50                                                          | 0,70 / 0,65          |
|                   | 500         | 0                                                                                         | 2,45                                                                                        | 30 / 60                                                          | 3,4 / 3,25           |
|                   | 1000        | 0                                                                                         | 1,85                                                                                        | 30 / 60                                                          | 2,6 / 1,5            |
|                   | 1500        | 0                                                                                         | 1,55                                                                                        | 30 / 60                                                          | 2,3 / 1,4            |
|                   | 2000        | 0                                                                                         | 1,35                                                                                        | 30 / 60                                                          | 2,0 / 1,4            |
|                   | 2500        | 0                                                                                         | 1,25                                                                                        | 30 / 60                                                          | 1,9 / 1,3            |
| <b>C 16</b>       | 3000        | 0                                                                                         | 1,15                                                                                        | 30 / 60                                                          | 1,4 / 0,75           |
|                   | 500         | 0                                                                                         | 3                                                                                           | 40 / 80                                                          | 3,9 / 3,7            |
|                   | 1000        | 0                                                                                         | 2,1                                                                                         | 40 / 80                                                          | 3,0 / 1,5            |
|                   | 1500        | 0                                                                                         | 1,8                                                                                         | 40 / 80                                                          | 2,6 / 1,5            |
|                   | 2000        | 0                                                                                         | 1,6                                                                                         | 40 / 80                                                          | 2,4 / 1,6            |
|                   | 2500        | 0                                                                                         | 1,4                                                                                         | 40 / 80                                                          | 1,55 / 1,0           |
| <b>C 19</b>       | 3000        | 0                                                                                         | 1,3                                                                                         | 40 / 80                                                          | 1,0 / 0,5            |
|                   | 3600        | 0                                                                                         | 1,2                                                                                         | 40 / 80                                                          | 1,0 / 0,5            |
|                   | 500         | 0                                                                                         | 4,5                                                                                         | 55 / 110                                                         | 6,0 / 5,6            |
|                   | 1000        | 0                                                                                         | 3,3                                                                                         | 55 / 110                                                         | 4,8 / 3,85           |
|                   | 1500        | 0                                                                                         | 2,8                                                                                         | 55 / 110                                                         | 4,1 / 3,85           |
|                   | 2000        | 0                                                                                         | 2,5                                                                                         | 55 / 110                                                         | 3,7 / 3,4            |
| <b>C 23</b>       | 2500        | 0                                                                                         | 2,2                                                                                         | 55 / 110                                                         | 3,4 / 3,2            |
|                   | 3000        | 0                                                                                         | 2,1                                                                                         | 55 / 110                                                         | 3,2 / 3,0            |
|                   | 3200        | 0                                                                                         | 2                                                                                           | 55 / 110                                                         | 3,1 / 2,9            |
|                   | 500         | 4,3                                                                                       | 4,3                                                                                         | 70 / 140                                                         | 25 / 24              |
|                   | 1000        | 3,2                                                                                       | 3,2                                                                                         | 70 / 140                                                         | 11/6,65              |
|                   | 1500        | 2,7                                                                                       | 2,7                                                                                         | 70 / 140                                                         | 10,5/6,25            |
| <b>C 23</b>       | 2000        | 2,3                                                                                       | 2,3                                                                                         | 70 / 140                                                         | 9,1/5,5              |
|                   | 2500        | 2,1                                                                                       | 2,1                                                                                         | 70 / 140                                                         | 5,5/3,5              |



## ATEX 2014/34/UE Directive (offprint)

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The ATEX Directive 2014/34/UE applies to all mechanical and electrical products used in areas, with both gas and dusty ambient, with a potential explosion risk.

The Directive provides for the issuance of dual certificate:

- The conformity of the prototype
- The conformity of production (evaluation of the quality management system).

The ATEX marking is COMPULSORY for all products that will be installed in potentially explosive areas within countries belonging to the European Union

## Warnings for the plant engineer

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Due the complexity and importance of the matter, is suggested that plant engineer which have to tackle a project that includes hazardous areas refer to IEC 60079 "Standard for atmosphere explosives."

2014/34/UE defines that: 'explosive atmosphere' means a mixture with air, under atmospheric conditions, of flammable substances in the form of gases, vapours, mists or dusts in which, after ignition has occurred, combustion spreads to the entire unburned mixture;

(not always, however, in the presence of dust, the entire quantity of dust is consumed by combustion).

**OUR MOTORS C SERIES ARE MADE FOR AMBIENT ONLY FOR PRESENCE OF GAS NOT FOR DUST!**

An atmosphere which could become explosive due to local conditions is defined as potentially explosive atmosphere, and it is only this kind of atmosphere that is intended for products covered by the ATEX Directive 2014/34/UE.

When one or more of above elements is not present, the atmosphere is no longer considered "potentially explosive".

The local authorities (fire departments, the National Inspectorate) are the competent bodies to be approached for a classification approval of a potentially explosive area.

## Warnings for the user

---

The Flameproof explosion DC motors must be serviced regularly as per the operating and maintenance manual supplied by SICME ORANGE1.

In addition, we do not forget that these machines must be able to work safely in hazardous areas, even after being subjected to maintenance operation.

Is therefore indispensable to be aware, that if the motors are in any way altered without the prior written permission of SICME ORANGE1, they lose the fundamental characteristics that makes them suitable for installation in hazardous environments and for which them were designed, built and certified.

In this case, they are no longer be classified as explosion-proof and all the symbols of identification (Ex d, II B, T4, etc..) must be removed.

## Notes:

Customers can determine whether a specific product is suitable for their needs and are thus responsible for the selection, use and results obtained by any product showed in this catalogue.

The information contained in the present catalogue does not guarantee the characteristics for the use.

The products listed in this catalogue are exclusively designed and built for industrial purpose.

For particular cases of NON-industrial environments, or where other types of protection must be provided (for example against contact with children fingers, etc.), these additional protections must be realized by the customer.

Any non-observance of the rules for installation, use and maintenance or any modification/tampering with the motor makes the guarantee invalid and exempts SICME ORANGE1 from any responsibility.

All data and indications shown in this catalogue have to be considered only as a guideline.

Any differently use of the motor from the specifications indicated in this catalogue does not involve any liability for SICME ORANGE1 as manufacturer.

SICME ORANGE1 reserves the right to modify at any time and without notice the data, the technical characteristics, the dimensions, the weights and the illustrations.

SICME ORANGE1 refuses all responsibility for direct or indirect damages caused by possible errors and/or omissions in the present catalogue.

The reproduction, even in part, of the present catalogue must be authorized in writing by SICME ORANGE1.

### **WARNING**

The motors and the electrical devices that supply them are electrical components installed on machines and industrial systems subject to high voltage.

During operation, these components can be dangerous since they are live and have non-insulated and rotating parts.

Therefore, they can be extremely harmful to personnel and objects if the instructions for the installation, use and the maintenance are not respected.

The motors are always equipped with the installation, use and maintenance instruction manual.

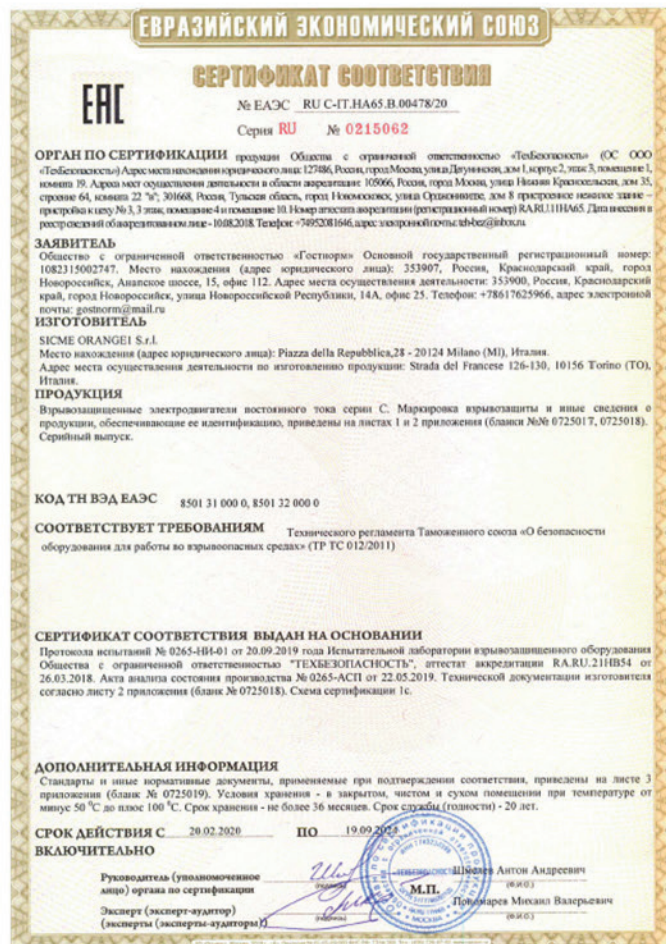
Is always necessary read and understand all the information contained in the manual before proceeding to connect and to start up the installation.

If the above documentation is lacking, please request a copy to SICME ORANGE1.

### **CAUTION**

All information, data and drawings given in this catalogue are purely indicative and may be changed without prior notice.

SICME ORANGE1 shall not be responsible if the products illustrated here are used outside limits of the specifications given.





Electrical Apparatus for Explosive Atmospheres  
**CERTIFICATE OF CONFORMITY**

Cert. No.: CNEx18.2639X

**Manufacturer** Sicme Motori S.r.l.  
Strada del Francese 130  
10156 Torino  
Italy

**Name of Product** D.C. motor

**Type of Product** C23

**Marking** Ex d IIB T4 Gb

**Drawing No.** 1080S00AA

The drawings, technical documents and the samples are verified and certified according to standard(s) for safety as below:  
GB 3836.1-2010 Explosive atmospheres - Part 1: Equipment - General requirements  
GB 3836.2-2010 Explosive atmospheres - Part 2: Equipment protection by flameproof enclosure "d"

**Note** See Annex(2 pages)

**Valid Date** From Jun 15, 2018 to Jun 14, 2023

**Issue Date** Jun 15, 2018

**Director**



**CHINA NATIONAL QUALITY SUPERVISION AND TEST CENTRE  
FOR EXPLOSION PROTECTED ELECTRICAL PRODUCTS**

Address: No.20 North Zhongjing Rd, Nanyang, Henan(473008), P.R.China  
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Note: This certificate is only valid for the products which identify with the sample(s) tested and verified. Holder(s) of this certificate have the responsibility to ensure the products complying with relevant standard(s).  
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Electrical Apparatus for Explosive Atmospheres  
**CERTIFICATE OF CONFORMITY**

Cert. No.: CNEx19.2490X

**Manufacturer** Sicme Motori S.r.l.  
Strada del Francese 130  
10156 Torino  
Italy

**Name of Product** D.C. motor

**Type of Product** C16

**Marking** Ex d IIB T4 Gb

**Drawing No.** U1060S00AA

The drawings, technical documents and the samples are verified and certified according to standard(s) for safety as below:  
GB 3836.1-2010 Explosive atmospheres - Part 1: Equipment - General requirements  
GB 3836.2-2010 Explosive atmospheres - Part 2: Equipment protection by flameproof enclosure "d"

**Note** See Annex(2 pages)

**Valid Date** From June 18, 2019 to June 17, 2024

**Issue Date** June 18, 2019

**Director**



**CHINA NATIONAL QUALITY SUPERVISION AND TEST CENTRE  
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**SICME ORANGE1 S.r.l.**

**Montebello Vicentino - HQ**

Via del Lavoro 7  
36054 - Montebello Vicentino  
(VI) Italy  
Tel: 02 8002 6000

**Torino Plant**

Str. del Francese 130  
10156 - Torino  
(TO) Italy  
Tel: 011 407 6311

[info@orange1.eu](mailto:info@orange1.eu)

[www.orange1.eu](http://www.orange1.eu)

