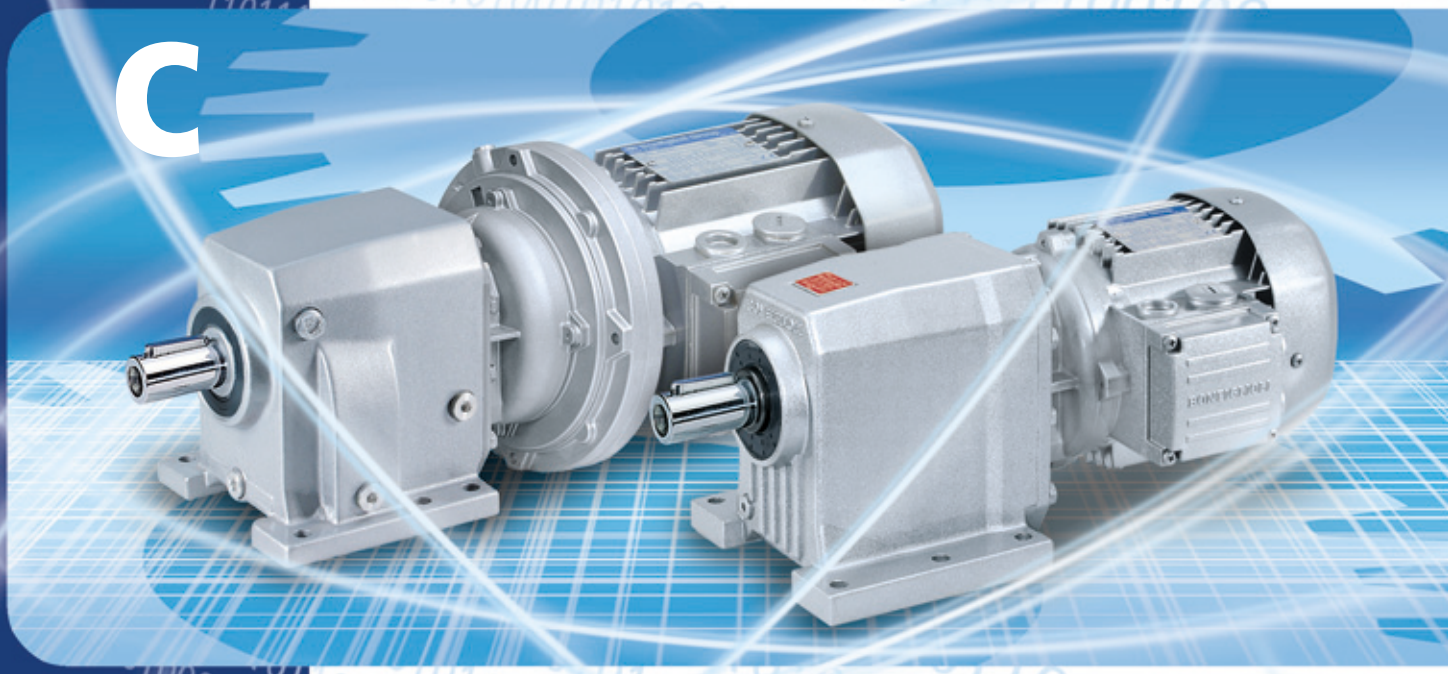
Industry Process
and Automation Solutions

BONFIGLIOLI
RIDUTTORI

C



GB

BONFIGLIOLI

### Soluzioni Specifiche per il Controllo e la Trasmissione di Potenza

Diversificazione dell'offerta, automazione dei processi produttivi e qualità, hanno fatto di Bonfiglioli un grande protagonista del settore. Punti fondamentali della filosofia Bonfiglioli sono: le soluzioni integrate, la competenza, l'innovazione tecnologica e una produzione protesa a perseguire gli standards più elevati di qualità. La gamma di prodotti Bonfiglioli si prefigge di soddisfare i massimi requisiti in termini di processo industriale e soluzione di automazione, come pure di soluzioni per applicazioni mobili.

### Specific Solutions for Power Transmission and Motion Control

Product diversification, process automation, and quality have enabled Bonfiglioli to play a leading role in the industry. Bonfiglioli's policy focuses on integrated solutions, competence and innovative technology as key factors, indispensable to ensure customer satisfaction, while production is aimed at achieving the highest standards. Bonfiglioli product portfolio aims at meeting the toughest and most sophisticated requirement for Industrial Process and Automation Solution and for Mobile Equipment Solutions.

### Individuelle Lösungen für Antriebstechnik und Motion Control

Eine breite Produktpalette, weitgehende Prozessautomatisierung und ein hohes Qualitätsniveau haben es Bonfiglioli ermöglicht, eine führende Rolle in der Industrie einzunehmen. Die Politik von Bonfiglioli konzentriert sich auf integrierte Lösungen, hohe Kompetenz und innovative Technik als die Hauptfaktoren, die für die Sicherung der Kundenzufriedenheit unverzichtbar sind, während sich die Produktion an höchsten Standards orientiert. Die Bonfiglioli-Produktpalette zielt darauf ab, den härtesten und kompliziertesten Anforderungen für verfahrenstechnische und Automatisierungslösungen sowie für Lösungen in mobilen Maschinen gerecht zu werden.

### Solutions spécifiques pour la transmission de l'énergie et le contrôle du mouvement

La diversification des produits, l'automation des procédés et la qualité ont permis à Bonfiglioli de jouer un rôle directeur dans son secteur industriel. La politique de Bonfiglioli est toute concentrée sur la mise au point de solutions intégrées, de compétences et d'une technologie innovatrice en tant que facteurs clés, indispensables pour garantir la satisfaction du client, tandis que la production vise à atteindre les standards de production les plus élevés. La gamme des produits Bonfiglioli vise à répondre aux exigences les plus rigides et rigoureuses quant aux solutions pour les procédés industriels et d'automatisation ainsi qu'aux solutions pour les équipements mobiles.



# SUMMARY



Revisions
Refer to page 74 for the catalogue revision index.
Visit www.bonfiglioli.com to search for catalogues with up-to-date revisions.

# 1 GENERAL INFORMATION

## 1.1 SYMBOLS AND UNITS OF MEASURE

**An** **[N]** The **admissible thrust load** represents the force which can be applied axially to the gear unit's shaft, along with the rated radial load.

**$f_S$** **-** The **service factor** is a coefficient representing the severity of the duty for the operating cycle.

**$f_{TP}$** **-** The **adjusting factor** takes into account the influence of the ambient temperature in calculating the computational torque. This factor is relevant for worm gear units.

**i** **-** The **gear ratio** is expressed as the relationship of the input shaft speed to the output shaft speed.

$$i = \frac{n_1}{n_2}$$

**I** **-** The **intermittence** is defined as follows:

$$I = \frac{t_f}{t_f + t_r} \cdot 100$$

**$J_c$** **[$Kgm^2$]** **Moment of inertia of the driven load.**

**$J_m$** **[$Kgm^2$]** **Moment of inertia of the motor.**

**$J_R$** **[$Kgm^2$]** **Moment of inertia of the gear unit.**

**K** **-** The load **acceleration factor** is used to calculate the service factor, and is defined as follows:

$$K = \frac{J_c}{J_m}$$

**$K_R$** **-** The **transmission factor** is a computational parameter, proportional to the tension generated by an external transmission keyed to the gear unit shaft.

**$M_2$** **[Nm]** Net **output torque**

**$Mn_2$** **[Nm]** The **rated torque** at the output shaft.
The catalogue value is calculated for a service factor $f_S$= 1.

**$Mr_2$** **[Nm]** The application's **required torque** .
This should always be less than or equal to the gear unit's rated torque $Mn_2$.

**$Mc_2$** **[Nm]** **Computational torque**. This is a virtual parameter used to select the gear unit, by means of the equation:

$$M_{c2} = M_{r2} \cdot f_s$$

**n** **[$min^{-1}$]** **Shaft speed.**

**$Pn_1$** **[kW]** **Rated power** at the input shaft, calculated for a service factor $f_S$ = 1.

**$P_R$** **[kW]** The application's **required power** .

**$R_C$** **[N]** The **computational radial load** is generated by an external transmission and, for the input and output shafts respectively, can be calculated from the following equations:

$$R_{c1}[N] = \frac{2000 \cdot M_1[Nm] \cdot K_r}{d\,[mm]} \quad ; \quad R_{c2}[N] = \frac{2000 \cdot M_2[Nm] \cdot K_r}{d\,[mm]}$$

| | | |
|---|---|---|
| $R_N$ | **[N]** | The **admissible radial load** should always be more than or equal to the computational radial load. The point value is given in the catalogue for each unit's gear frame size and transmission ratio, and refers to the shaft's centre line. |
| **S** | **-** | The **safety factor** is defined as follows: |

$$S = \frac{Mn_2}{M_2} = \frac{Pn_1}{P_1}$$

| | | |
|---|---|---|
| $t_a$ | **[°C]** | **Ambient temperature.** |
| $t_f$ | **[min]** | The **operating time** is the total duration of the work cycle phases. |
| $t_r$ | **[min]** | The **rest time** is the interval of no work between two phases. |
| $Z_r$ | **-** | **Number** of starts per hour. |
| $\eta_d$ | **-** | The **dynamic efficiency** is expressed as the ratio between the power measured at the output shaft and that applied to the input shaft: |

$$\eta_d = \frac{P_2}{P_1} \cdot 100 \qquad [\%]$$

| | |
|---|---|
| $[\,]_1$ | This value refers to the input shaft. |
| $[\,]_2$ | This value refers to the output shaft. |

**Danger.** May cause slight injury to persons.

## 1.2 INTRODUCTION TO THE ATEX DIRECTIVES

### 1.2.1 EXPLOSIVE ATMOSPHERE

Under the provisions of Directive 94/9/EC, an explosive atmosphere is defined as a mixture:

a. of **flammable substances**, whether gas, vapour, mist or dust;
b. with **air**;
c. in certain **atmospheric conditions**;
d. in which, following ignition, combustion spreads to the entire unburned mixture (note that in the case of dust, the entire quantity of dust is not always completely burnt after combustion).

An atmosphere which may potentially be transformed into an explosive atmosphere due to operating and/or ambient conditions is defined as a **potentially explosive atmosphere**. The products governed by Directive 94/9/EC are intended for use only in a potentially explosive atmosphere defined in this way.

### 1.2.2 EUROPEAN HARMONISED ATEX STANDARDS

The European Union has issued two harmonisation guidelines in the area of health and safety. These directives are known as ATEX 100a and ATEX 137.

Directive ATEX 100a (EU/94/9/EC) stipulates the minimum safety requirements for products intended for use in explosion risk areas within the member countries of the European Union. The directive also assigns such equipment to **categories**, which are defined by the directive itself.

Directive ATEX 137 (EU/99/92/EC) defines the minimum health and safety requirements for the workplace, for working conditions and for the handling of products and materials in explosion risk areas. The directive also divides the workplace into **zones** and defines the criteria for the application of product **categories** in said zones.
The following table describes the **zones** into which the user of a plant, in which an explosive atmosphere may occur, is required to divide the equipment application areas.

| Zones | | Formation frequency of a potentially explosive atmosphere | Type of danger |
|---|---|---|---|
| Gaseous atmosphere G | Dusty atmosphere D | | |
| 0 | 20 | Present continuously or for long periods | Permanent |
| 1 | 21 | Likely to occur in normal operation occasionally | Potential |
| 2 | 22 | Not likely to occur in normal operation but if it does occur will persist for short period only | Minimal |

**BONFIGLIOLI RIDUTTORI gear units selectedin this catalogue are suitable for installation in zones 1, 21, 2 and22, as highlightedin grey in the above table.**
**Electric motors described in this catalogue are certified in category 2D (125°C max. temperature) and**
**therefore suitable for installation in zones 21 and 22.**

As from 1 July 2003 the ATEX directives come into force throughout the entire European Union, and replace existing conflicting national and European laws on explosive atmospheres.
It should be emphasised that, for the first time, the directives also govern mechanical, hydraulic and pneumatic equipment, and not only electrical equipment as has been the case so far.
With regard to the Machinery Directive 98/37/EC it should be noted that directive 94/9/EC is a set of extremely specific requirements dedicated to the dangers deriving from potentially explosive atmospheres, whereas the Machinery Directive contains only very general explosion safety requirements (Annex I).
Consequently, as regards protection against explosion in potentially explosive atmospheres, Directive 94/9/EC (ATEX 100a) takes precedence over the Machinery Directive. The requirements of the Machinery Directive apply to all other risks regarding machinery.

## *1.2.3 LEVELS OF PROTECTION FOR THE VARIOUS CATEGORIES OF EQUIPMENT*

The various categories of equipment must be able to operate in conformity with the Manufacturer's operational specifications, at certain defined levels of protection.

| Protection level | Category | | Type of protection | Operating conditions |
|---|---|---|---|---|
| | Group I | Group II | | |
| Very high | M1 | | Two independent means of protection or safety capable of operating even when two independent faults occur | The equipment remains powered and operational even in the presence of an explosive atmosphere |
| Very high | | **1** | Two independent means of protection or safety capable of operating even when two independent faults occur | The equipment remains powered and operational in zones 0, 1, 2 (G) and/or zones 20, 21, 22 (D) |
| High | M2 | | Protection suitable for normal operation and heavy duty conditions | Power to the equipment is shut off in the presence of a potentially explosive atmosphere |
| High | | **2** | Protection suitable for normal operation and frequent faults or equipment in which malfunction is normal. | The equipment remains powered and operational in zones 1, 2 (G) and/or zones 21, 22 (D) |
| Normal | | **3** | Protection suitable for normal operation | The equipment remains powered and operational in zones 2 (G) and/or 22 (D) |

## *1.2.4 DEFINITION OF GROUPS (EN 1127-1)*

**Group I** Applies to equipment intended for use underground in parts of mines and those parts of surface installations of such mines, liable to be endangered by firedamp and/or combustible dust.

**Group II** Applies to equipment intended for use in other places liable to be endangered by explosive atmospheres.

BONFIGLIOLI RIDUTTORI products may not therefore be installed in mines, classified in **Group I** and in **Group II**, category 1.

To summarise, the classification of equipment into groups, categories and zones is illustrated in the table below, whereby the availability of BONFIGLIOLI RIDUTTORI products is highlighted in grey.

| **Group** | **I** mines, firedamp | | **II** other potentially explosive areas (gas, dust) | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Category** | M1 | M2 | 1 | | 2 | | 3 | |
| **Atmosphere**[1] | | | G | D | G | D | G | D |
| **Zone** | | | 0 | 20 | 1 | 21 | 2 | 22 |
| **Type of protection gear unit** | | | | | c, k | c, k | c, k | c, k |
| **Type of protection motor** | | | | | d, e | IP6X + temp.max | n(A) | IP5X o IP6X + temp. max |

(1) **G** = gas **D** = dust

This catalogue describes BONFIGLIOLI RIDUTTORI **gear units and gearmotor**, intended for use in potentially explosive atmospheres, with limitation to categories 2 and 3.
The products described herein conform to the minimum safety requirements of European Directive 94/9/EC, which is part of the directives known as ATEX (ATmosphères EXplosibles).

### 1.2.5 DECLARATION OF CONFORMITY

The Declaration of Conformity, a copy of which is available in this catalogue, is the document which attests to the conformity of the product to Directive 94/9/EC.
The validity of the Declaration is bound to observance of the instructions given in the User, Installation and Service Manual for safe use of the product throughout its service life.
The instructions regarding ambient conditions are of particular importance inasmuch as failure to observe them during operation of the product renders the certificate null and void.
In case of doubt regarding the validity of the certificate of conformity, contact the BONFIGLIOLI RIDUTTORI technical department.

## 1.3 USE, INSTALLATION AND MAINTENANCE

The instructions for safe storage, handling and use of the product are given in the unit's User, Installation and Service Manual.
This can be downloaded from www.bonfiglioli.com/atex.html where the manual is available in PDF format in a number of languages.
This document must be kept in a suitable place, in the vicinity of the installed gear unit, as a reference for all persons authorised to work with or on the product throughout its service life.

The Manufacturer reserves the right to modify, supplement or improve the Manual, in the interests of the User.

## 1.4 SELECTING THE TYPE OF EQUIPMENT

### 1.4.1 SELECTION PROCEDURE:

Determine the application service factor $f_S$ in relation to the type of load (K factor), number of starts per hour $Z_r$ and hours of operation per day.

Now determine the power required at the motor shaft:

$$P_{r1} = \frac{M_{r2} \cdot n_2}{9550 \cdot \eta_d} \quad [kW]$$

The efficiency value « $\eta_d$ » can be determined as follows (approximately):

| | $\eta_d$ |
|---|---|
| **1** | 0.98 |
| **2** | 0.96 |
| **3** | 0.93 |
| **4** | 0.90 |

The selection procedure now depends on the type of gear unit, as follows:

a. gear unit equipped with IEC motor fitting
b. gear unit equipped with solid input shaft.

Proceed as follows:

### 1.4.2 SELECTING A GEARMOTOR

a. Determine service factor $\mathbf{f_s}$ as formerly specified.
b. Determine power required at gearbox input shaft:

$$P_{r1} = \frac{M_{r2} \cdot n_2}{9550 \cdot \eta_d} \quad [kW]$$

c. Consult the gearmotor rating charts and locate the table corresponding to normalised power $\mathbf{P_n}$:

$$P_n \geq P_{r1}$$

Unless otherwise specified, power $\mathbf{P_n}$ of motors indicated in the catalogue refers to continuous duty S1. For motors used in conditions other than S1, the type of duty required by reference to CEI 2-3/IEC 34-1 Standards must be mentioned. For duties from S2 to S8 in particular and for motor frame 132 or smaller, extra power output can be obtained with respect to continuous duty.
Accordingly the following condition must be satisfied:

$$P_n \geq \frac{P_{r1}}{f_m}$$

The adjusting factor $\mathbf{f_m}$ can be obtained from table here after.

### *1.4.3 GEAR UNIT WITH MOTOR FITTING*

- with reference to the rating charts, identify the gear unit which, for the required speed $n_2$, provides a rated power $Pn_1$ such that:

$$Pn_1 \geq Pr_1 \times f_s$$

- Select an electric motor rated:

$$P_1 \geq Pr_1$$

- Finally, check that the motor/gear unit combination generates a safety factor equal to or greater than the service factor for the application in question, in other words:

$$S = \frac{P_{n1}}{P_1} \geq f_s$$

- If the selected gear unit is of type C112, C212 or C312 with ratio i > 40 ,operating with a number of hourly starts Z > 30 ,correct the service factor taken from the graph by a factor of 1.2.
**Finally, check that the recalculatedservice factor $f_s$ still satisfies the condition S $\geqslant$ $f_s$.**

### *1.4.4 SPEED REDUCER WITH SOLID INPUT SHAFT*

- Calculate the value of the computational torque:

$$Mc_2 = Mr_2 \times f_s \times f_{tp}$$

| $f_{tp}$ | | | | |
|---|---|---|---|---|
| Helical gear units C, A, F, S | Worm gear units VF, W | | | |
| $f_{tp} = 1$ | Type of load | Ambient temperature [°C] | | |
| | | 20° | 30° | 40° |
| | **K1** uniform load | 1.00 | 1.00 | 1.06 |
| | **K2** moderate shock load | 1.00 | 1.02 | 1.12 |
| | **K3** heavy shock load | 1.00 | 1.04 | 1.17 |

- for the speed $n_2$ closest to that required, select the gear unit with a rated torque $Mn_2$ equal to or greater than the computational torque $Mc_2$, in other words:

$$M_{n2} \geq M_{c2}$$

### 1.4.5 POST-SELECTION CHECKS

Once the gear unit or gearmotor has been selected, we recommend checking the selection as follows:

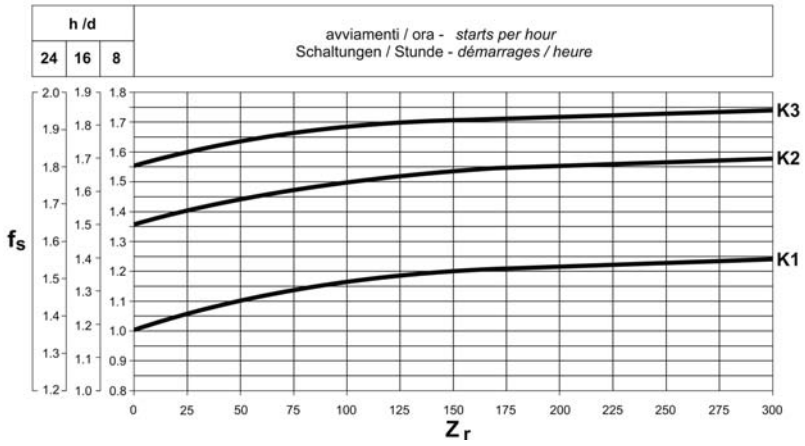
- **Momentary peak torque**
  The momentary peak torque is of the order of 200% of the rated torque $Mn_2$. Check that the point value of the peak torque satisfies this condition and equip the installation with a torque limiter if necessary.
- **Radial load**
  The catalogue gives the values of the maximum admissible radial load for both the input shaft « $Rn_1$ » and the output shaft « $Rn_2$ ». These values refer to a load applied at the shafts' centre lines and must always be greater than the actually applied load. See paragraph: Radial loads.
- **Thrust load**
  Check that the thrust component of the load does not exceed the maximum admissible value as given in the paragraph: Thrust loads.

### 1.4.6 OPERATING CONDITIONS FOR ATEX-SPECIFIED EQUIPMENT

- Ambient temperature -20°C < to < +40°C.
- The gear unit must be installed in the mounting position specified in the order and given on the nameplate. Any deviation from this requirement must be approved in advance by BONFIGLIOLI RIDUTTORI.
- Do not under any circumstances install the gear unit with its shaft in an inclined orientation, unless previously authorised to do so by the BONFIGLIOLI RIDUTTORI Technical Service Department.
- The speed of the motor mounted to the gear unit must not exceed n = 1500 $min^{-1}$.
- Should the gearbox be connected to an inverter driven motor the latter must be explicitly suitable for the purpose and used in full compliance with the instructions set forth by the manufacturer. Under no circumstances the setting of the inverter shall allow the motor to exceed the maximum speed permitted (1500 $min^{-1}$) or overload the gearbox itself.
- All the instructions in the User Manual (www.bonfiglioli.com/atex.html) regarding installation, use and routine maintenance of the unit must be followed in full.

## *1.4.7 SERVICE FACTOR - [ $f_s$ ]*

This factor is the numeric value describing reducer service duty. It takes into consideration, with unavoidable approximation, daily operating conditions, load variations and overloads connected with reducer application.
In the graph below, after selecting proper “daily working hours” column, the service factor is given by intersecting the number of starts per hour and one of the K1, K2 or K3 curves.
K_ curves are linked with the service nature (approximately: uniform, medium and heavy) through the acceleration factor of masses K, connected to the ratio between driven masses and motor inertia values.
Regardless of the value given for the service factor, we would like to remind that in some applications, which for example involve lifting of parts, failure of the reducer may expose the operators to the risk of injuries.
If in doubt, please contact our Technical Service Department.




**Acceleration factor of masses - [K]**

This parameter serves for selecting the right curve for the type of load. The value is given by the following ratio:

$$K = \frac{J_c}{J_m}$$

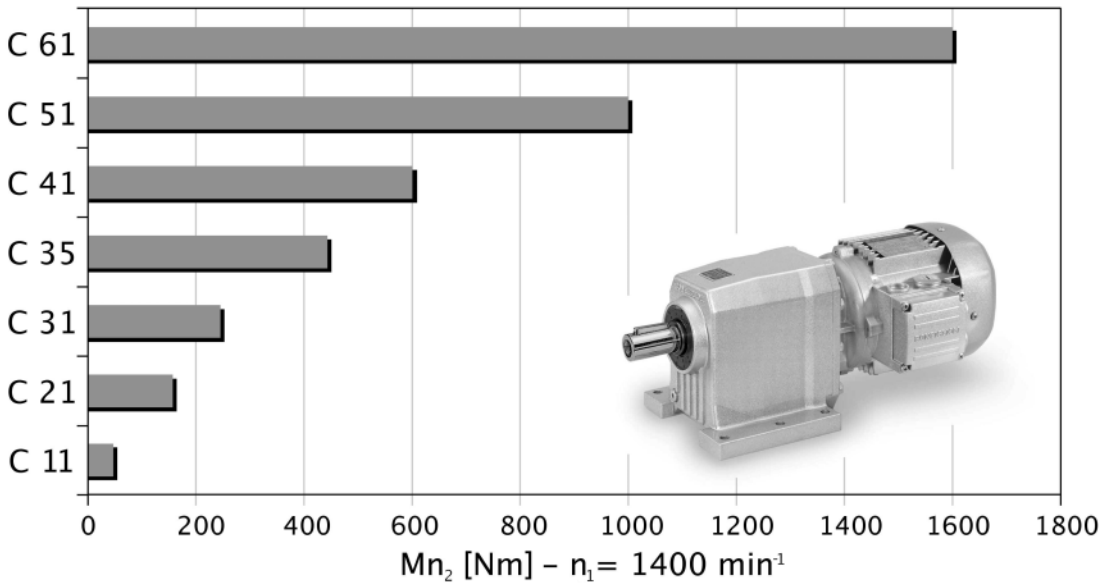
where:

$J_c$ moment of inertia of driven masses referred to motor shaft
$J_m$ moment of inertia of motor

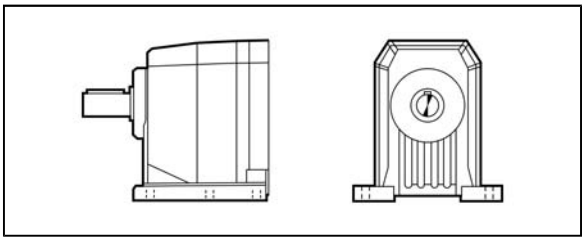
## 2 C SERIES HELICAL IN-LINE UNITS FOR POTENTIALLY EXPLOSIVE ENVIRONMENTS

### 2.1 CONSTRUCTION OF ATEX-SPECIFIED EQUIPMENT

- Equipped with service plugs for periodic lubricant level checks.
- Factory-charged with lubricant, depending on the mounting position specified in the order.
- Viton® seal rings as standard.
- Double seal rings on the output shaft.
- No plastic component parts.
- Nameplate indication of the product category and type of protection.



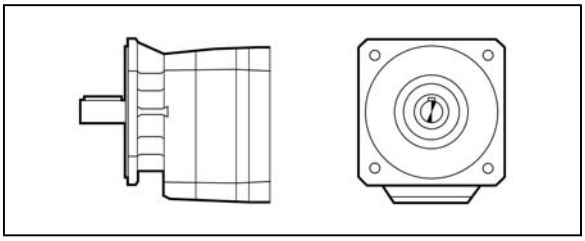
## *2.2 VERSIONS*



**P**

**Foot mounted**

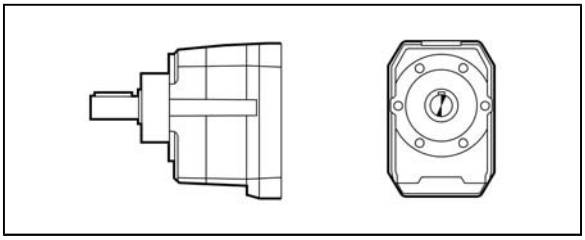
**C11...C61**



**F**

**Flange mounted**

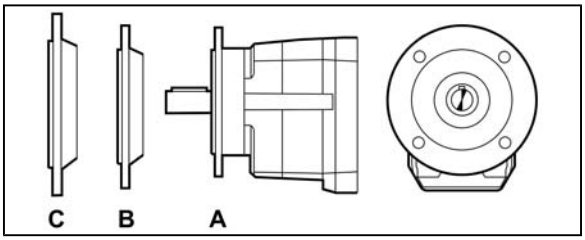
**C11...C31**



**U**

**UNIBOX- universal housing**

**C11...C61**




**UF**

**UNIBOX bolt-on flange**

**C11...C61**

## 2.3 ORDERING NUMBERS

### 2.3.1 VARIANTS OF GEAR UNIT

**C** **51** **2** **P** **51.4** **P100** **B3** **2D3D-130**

OPTIONS

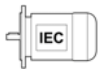
MOUNTING POSITION
P: **B3** (Default), **B6, B7, B8, VA, VB**
F/U/UF: **B5** (Default), **B51, B53, B52, V1, V3**

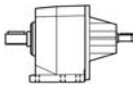
INPUT CONFIGURATION

**S05**
**S1**
**S2**
**S3**



**P63** **P71** **P80** **P90** **P100** **P112** **P132** **P160** **P180**



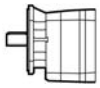



**HS**

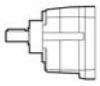
GEAR RATIO

VERSION

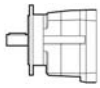
**P**
(C11...C61)



**F**
(C11...C31)



**U**
**(C11...C61)**



**UFA**
**UFB**
**UFC**
(C11...C61)

REDUCTIONS
**2**, **3**, **4**

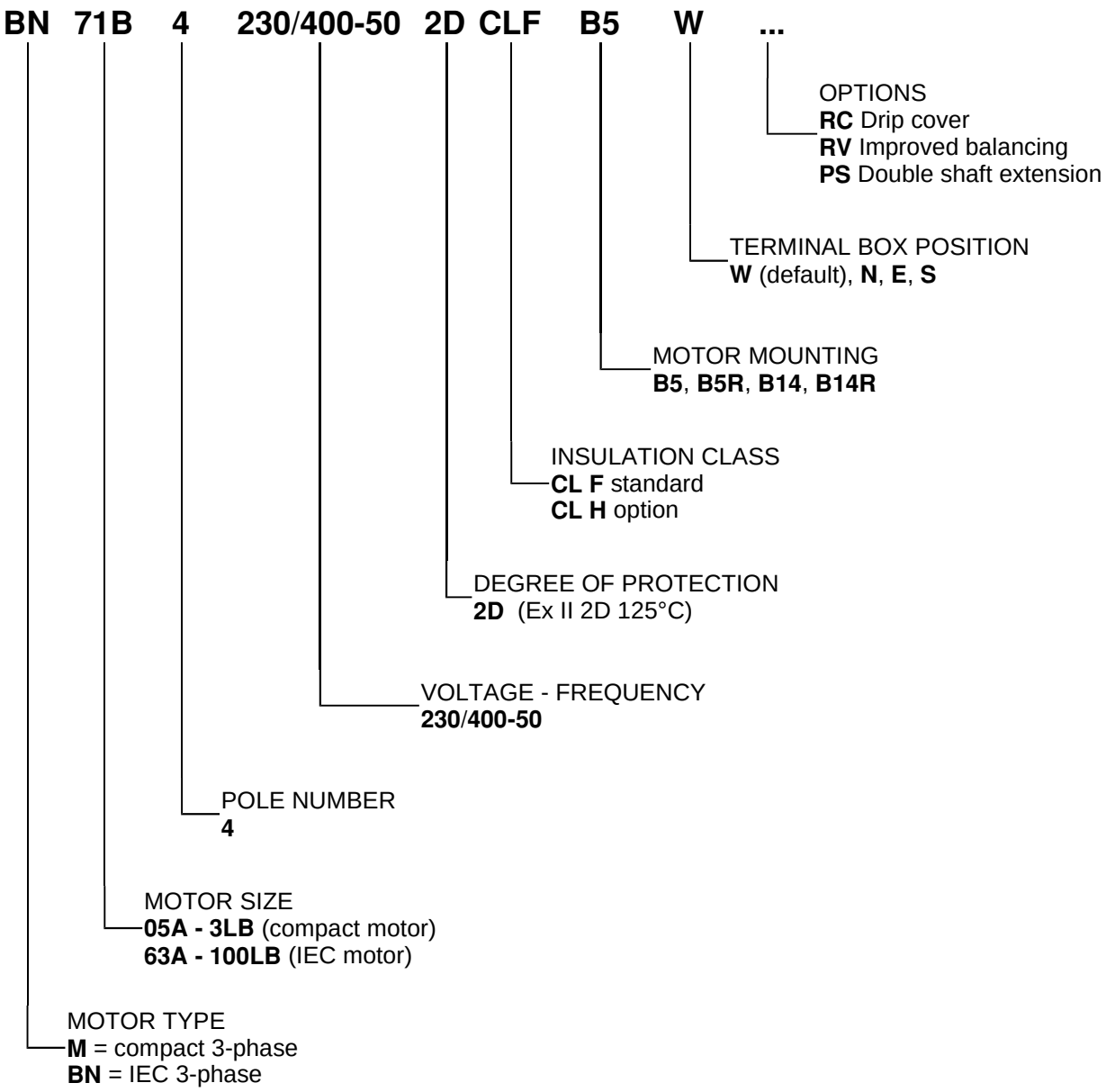
GEAR FRAME SIZE
**11, 21, 31, 35, 41, 51, 61**

PRODUCT SERIES: **C** = helical in-line

**Options**
The applicability of the various options is indicated in the technical data tables according to the specific configuration and gear ratio.

| | |
|---|---|
| **2D3D-160** | The gear unit can be installed in zones 21 and 22 (categories 2D and 3D). The unit's surface temperature is less than 160°C. |
| **2D3D-130** | The gear unit can be installed in zones 21 and 22 (categories 2D and 3D). The unit's surface temperature is less than 130°C. |
| **2G3G-T3** | The gear unit can be installed in zones 1 and 2 (categories 2G and 3G). The temperature class is T3 (max. 200 °C). |
| **2G3G-T4** | The gear unit can be installed in zones 1 and 2 (categories 2G and 3G). The temperature class is T4 (max. 135 °C). |

### *2.3.2 VARIANTS OF ELECTRIC MOTOR*

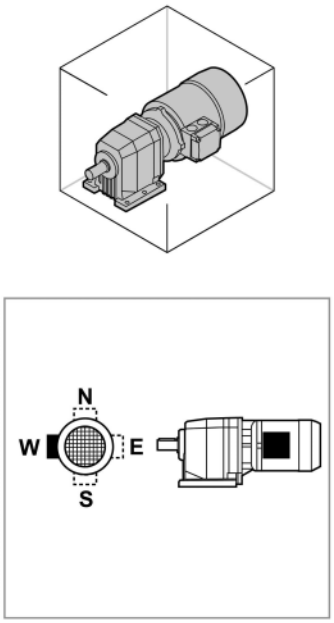


## 2.4 MOUNTING POSITION

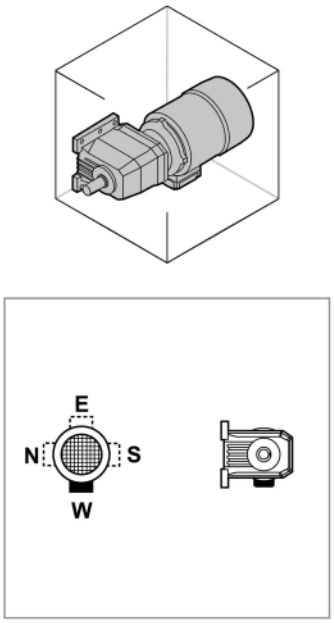
### 2.4.1 C_P

**C□□□P**

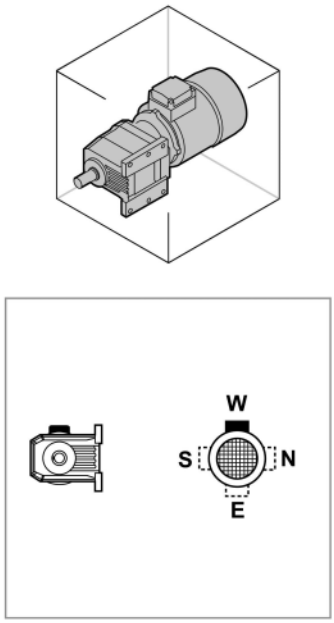
**B3**



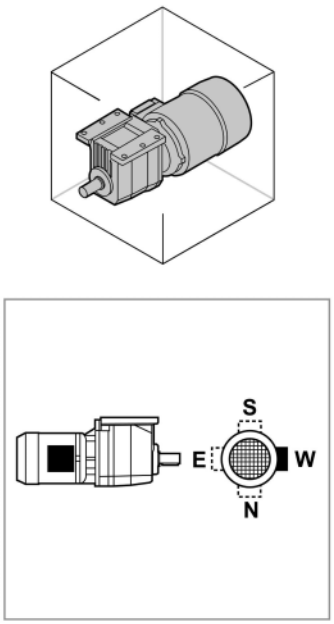

**B6**



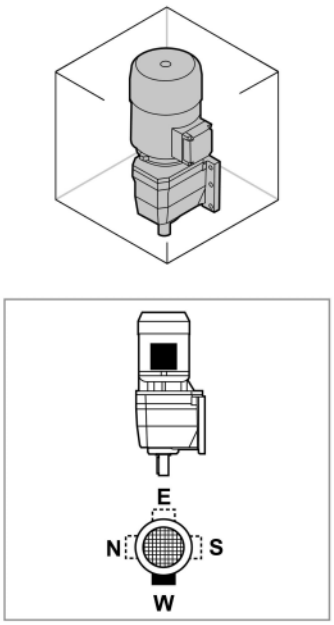

**B7**



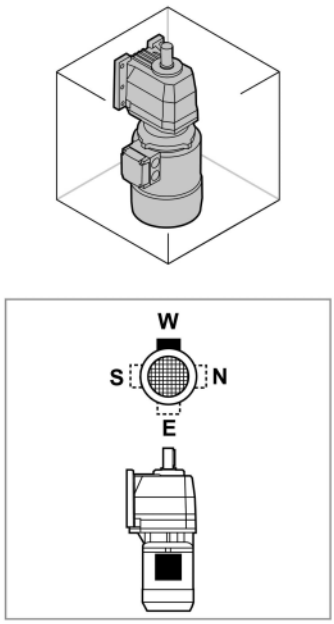

**B8**




**V5**



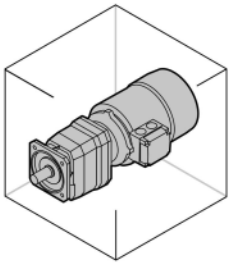

**V6**

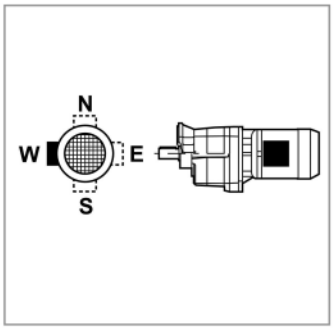


### *2.4.2 C_F*

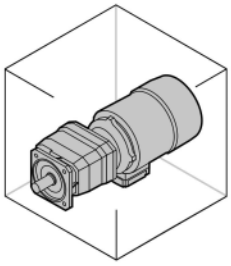
## C□□□F

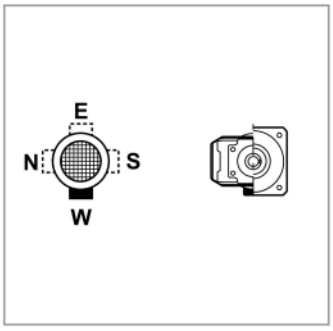
### B5



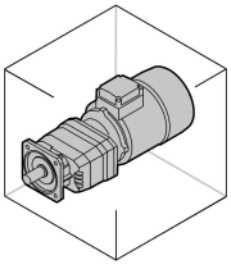


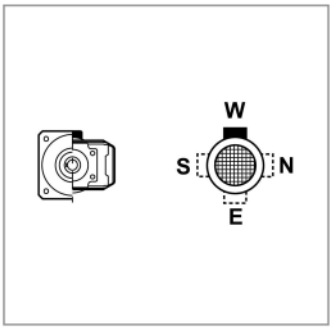

### B51



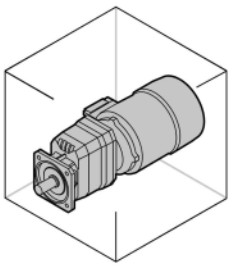


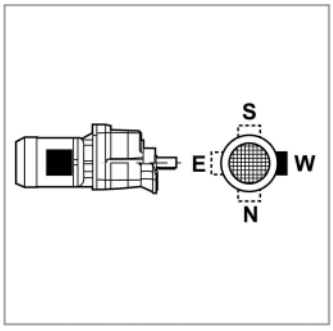

### B53



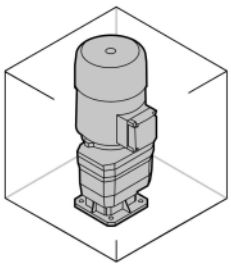


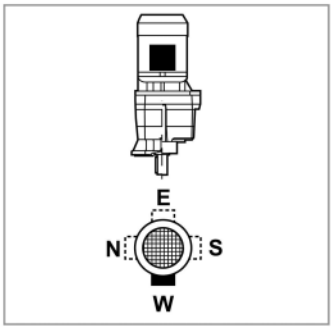

### B52



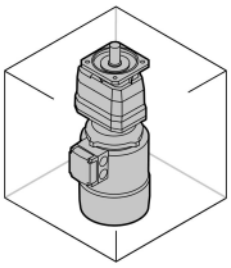



### V1






### V3



## 2.5 LUBRICATION

The gear units are factory-charged with long-life synthetic lubricant in the quantity suitable for the mounting position specified in the order.
For transportation purposes these units are equipped with closed filler plugs. A vented plug, which the User must replace before putting the unit into service, is supplied along with each unit.
Type C11, C21and C31 gear units are not equipped with spill-type level plugs. Proceed as described in the User Manual when checking the minimum lubricant level.

[l]

| | P | | | | | | F | | | | | | U - UF | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B3 | B6 | B7 | B8 | V5 | V6 | B5 | B51 | B53 | B52 | V1 | V3 | B5 | B51 | B53 | B52 | V1 | V3 |
| C 11 2 | 0.50 | 0.45 | 0.40 | 0.60 | 0.50 | 0.70 | 0.45 | 0.40 | 0.35 | 0.55 | 0.45 | 0.60 | 0.45 | 0.40 | 0.35 | 0.55 | 0.40 | 0.60 |
| C 21 2 | 0.70 | 0.65 | 0.70 | 0.80 | 0.85 | 1.2 | 0.65 | 0.65 | 0.65 | 0.75 | 0.80 | 1.1 | 0.65 | 0.60 | 0.65 | 0.75 | 0.75 | 0.95 |
| C 21 3 | 1.0 | 1.0 | 1.2 | 1.2 | 1.3 | 1.5 | 1.0 | 1.0 | 1.2 | 1.2 | 1.2 | 1.4 | 0.95 | 0.95 | 1.1 | 1.1 | 1.1 | 1.3 |
| C 31 2 | 1.0 | 1.0 | 1.0 | 1.2 | 1.5 | 1.5 | 1.0 | 1.0 | 1.0 | 1.2 | 1.4 | 1.4 | 0.95 | 0.95 | 0.95 | 1.2 | 1.3 | 1.3 |
| C 31 3 | 1.0 | 1.0 | 1.2 | 1.2 | 1.3 | 1.5 | 1.0 | 1.0 | 1.2 | 1.2 | 1.2 | 1.4 | 0.95 | 0.95 | 1.1 | 1.1 | 1.1 | 1.3 |
| C 35 2 | 1.6 | 1.5 | 1.5 | 1.3 | 2.1 | 2.4 | - | - | - | - | - | - | 1.6 | 1.5 | 1.5 | 1.3 | 2.1 | 2.4 |
| C 35 3 | 1.5 | 1.4 | 1.5 | 1.3 | 2.0 | 2.3 | - | - | - | - | - | - | 1.5 | 1.4 | 1.5 | 1.3 | 2.0 | 2.3 |
| C 35 4 | 2.3 | 2.1 | 2.3 | 2.1 | 2.7 | 3.1 | - | - | - | - | - | - | 2.3 | 2.1 | 2.3 | 2.1 | 2.7 | 3.1 |
| C 41 2 | 2.2 | 2.0 | 2.1 | 1.9 | 2.7 | 3.4 | - | - | - | - | - | - | 2.2 | 2.0 | 2.1 | 1.9 | 2.7 | 3.4 |
| C 41 3 | 2.1 | 1.9 | 2.1 | 1.9 | 2.6 | 3.2 | - | - | - | - | - | - | 2.1 | 1.9 | 2.1 | 1.9 | 2.6 | 3.2 |
| C 41 4 | 2.8 | 2.6 | 2.8 | 2.6 | 3.5 | 3.9 | - | - | - | - | - | - | 2.8 | 2.6 | 2.8 | 2.6 | 3.5 | 3.9 |
| C 51 2 | 3.1 | 3.0 | 3.1 | 3.0 | 4.3 | 5.0 | - | - | - | - | - | - | 3.1 | 3.0 | 3.1 | 3.0 | 4.3 | 5.0 |
| C 51 3 | 3.0 | 2.8 | 3.1 | 3.0 | 4.1 | 4.9 | - | - | - | - | - | - | 3.0 | 2.8 | 3.1 | 3.0 | 4.1 | 4.9 |
| C 51 4 | 4.3 | 4.1 | 4.4 | 4.2 | 5.4 | 6.1 | - | - | - | - | - | - | 4.3 | 4.1 | 4.4 | 4.2 | 5.4 | 6.1 |
| C 61 2 | 4.2 | 4.0 | 4.2 | 4.1 | 6.0 | 6.7 | - | - | - | - | - | - | 4.2 | 4.0 | 4.2 | 4.1 | 6.0 | 6.7 |
| C 61 3 | 4.2 | 4.0 | 4.2 | 4.1 | 6.0 | 6.7 | - | - | - | - | - | - | 4.2 | 4.0 | 4.2 | 4.1 | 6.0 | 6.7 |
| C 61 4 | 6.1 | 5.9 | 6.1 | 6.0 | 7.9 | 8.6 | - | - | - | - | - | - | 6.1 | 5.9 | 6.1 | 6.0 | 7.9 | 8.6 |

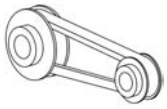
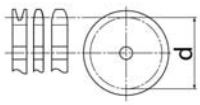
SHELL Tivela oil S 320

## 2.6 ADMISSIBLE OVERHUNG LOADS

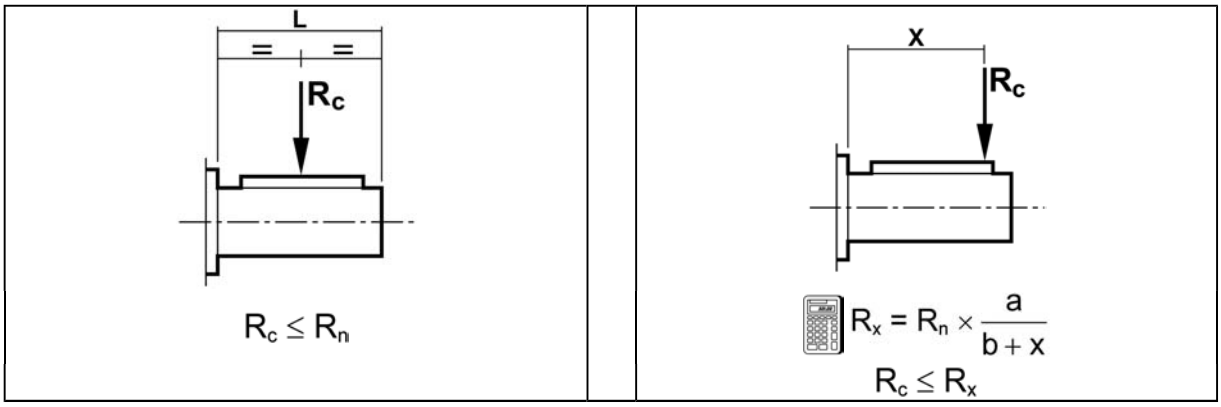
### 2.6.1 RADIAL LOADS

#### 2.6.1.1 CALCULATING THE RESULTING OVERHUNG LOAD

External transmissions keyed onto input and/or output shaft generate loads that act radially onto same shaft.
Resulting shaft loading must be compatible with both the bearing and the shaft capacity.
Namely shaft loading ($R_{c1}$ for input shaft, $R_{c2}$ for output shaft), must be equal or lower than admissible overhung load capacity for shaft under study ($R_{n1}$ for input shaft, $R_{n2}$ for output shaft). OHL capability listed in the rating chart section.
In the formulas given below, index (1) applies to parameters relating to input shaft, whereas index (2) refers to output shaft.
The load generated by an external transmission can be calculated with close approximation by the following equation:

| $R_c = \frac{2000 \times M \times K_r}{d}$ | |
|---|---|
| **$K_r$ = 1** |  |
| **$K_r$ = 1.25** |  |
| **$K_r$ = 1.5 - 2.0** |  |
| | |
| **M** [Nm] |  |
| **d** [mm] |  |

### 2.6.1.2 OVERHUNG LOADING VERIFICATION




### 2.6.1.3 LOAD LOCATION FACTOR

| | Output shaft | | | Input shaft | | |
|---|---|---|---|---|---|---|
| | **a** | **b** | **c** | **a** | **b** | **c** |
| **C112** | 46 | 26 | 450 | - | - | - |
| **C212** | 53 | 28 | 550 | 40 | 20 | 350 |
| **C213** | 53 | 28 | 550 | - | - | - |
| **C312** | 60.5 | 30.5 | 750 | 41.5 | 21.5 | 350 |
| **C313** | 60.5 | 30.5 | 750 | - | - | - |
| **C352–C353** | 69.5 | 34.5 | 800 | 51.5 | 26.5 | 450 |
| **C354** | 69.5 | 34.5 | 800 | - | - | - |
| **C412–C413** | 69.5 | 34.5 | 850 | 51.5 | 26.5 | 450 |
| **C414** | 69.5 | 34.5 | 850 | 40 | 20 | 350 |
| **C512–C513** | 76.5 | 36.5 | 900 | 51.5 | 26.5 | 450 |
| **C514** | 76.5 | 36.5 | 900 | 41.5 | 21.5 | 350 |
| **C612–C613** | 95.5 | 45.5 | 1000 | 57.5 | 27.5 | 450 |
| **C614** | 95.5 | 45.5 | 1000 | 51.5 | 26.5 | 450 |

### 2.6.1.4 THRUST LOADS $An_1$, $An_2$

Permissible thrust loads on input [$A_{n1}$] and output [$A_{n2}$] shafts are obtained from the radial loading for the shaft under consideration [$R_{n1}$] and [$R_{n2}$] through the following equation:

$$A_{n1} = R_{n1} \cdot 0{,}2$$

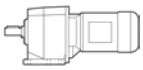
$$A_{n2} = R_{n2} \cdot 0{,}2$$

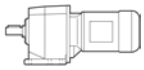
The thrust loads calculated through these formulas apply to thrust forces occurring at the same time as rated radial loads. In the only case that no overhung load acts on the shaft the value of the admissible thrust load [$A_n$] amounts to 50% of rated OHL [$R_n$] on same shaft.

Where thrust loads exceed permissible value or largely prevail over radial loads, contact Bonfiglioli Riduttori for an in-depth analysis of the application.

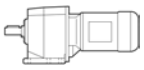
## 2.7 GEARMOTOR RATING CHARTS

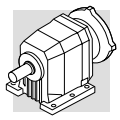
### 2.7.1 0.12 kW

| 0.12 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  IEC |
| 1.5 | 709 | 1.4 | 884.9 | 10000 | C514_884.9 S05 M05A4 | C514_884.9 P63 BN63A4 |
| 1.6 | 647 | 1.5 | 808.0 | 10000 | C514_808.0 S05 M05A4 | C514_808.0 P63 BN63A4 |
| 1.6 | 638 | 2.5 | 796.1 | 16000 | C614_796.1 S05 M05A4 | C614_796.1 P63 BN63A4 |
| 1.8 | 589 | 1.0 | 735.9 | 7000 | C414_735.9 S05 M05A4 | C414_735.9 P63 BN63A4 |
| 1.8 | 582 | 2.8 | 726.3 | 16000 | C614_726.3 S05 M05A4 | C614_726.3 P63 BN63A4 |
| 1.8 | 575 | 1.7 | 717.7 | 10000 | C514_717.7 S05 M05A4 | C514_717.7 P63 BN63A4 |
| 2.0 | 538 | 1.1 | 671.3 | 7000 | C414_671.3 S05 M05A4 | C414_671.3 P63 BN63A4 |
| 2.0 | 536 | 3.0 | 668.8 | 16000 | C614_668.8 S05 M05A4 | C614_668.8 P63 BN63A4 |
| 2.0 | 525 | 1.9 | 655.4 | 10000 | C514_655.4 S05 M05A4 | C514_655.4 P63 BN63A4 |
| 2.1 | 489 | 3.3 | 610.1 | 16000 | C614_610.1 S05 M05A4 | C614_610.1 P63 BN63A4 |
| 2.2 | 482 | 2.1 | 602.0 | 10000 | C514_602.0 S05 M05A4 | C514_602.0 P63 BN63A4 |
| 2.2 | 477 | 1.3 | 595.8 | 7000 | C414_595.8 S05 M05A4 | C414_595.8 P63 BN63A4 |
| 2.3 | 457 | 3.5 | 571.2 | 16000 | C614_571.2 S05 M05A4 | C614_571.2 P63 BN63A4 |
| 2.4 | 440 | 2.3 | 549.7 | 10000 | C514_549.7 S05 M05A4 | C514_549.7 P63 BN63A4 |
| 2.4 | 435 | 1.4 | 543.5 | 7000 | C414_543.5 S05 M05A4 | C414_543.5 P63 BN63A4 |
| 2.5 | 419 | 1.1 | 523.5 | 6500 | C354_523.5 S05 M05A4 | C354_523.5 P63 BN63A4 |
| 2.6 | 407 | 2.5 | 508.0 | 10000 | C514_508.0 S05 M05A4 | C514_508.0 P63 BN63A4 |
| 2.7 | 395 | 1.5 | 493.5 | 7000 | C414_493.5 S05 M05A4 | C414_493.5 P63 BN63A4 |
| 2.8 | 371 | 2.7 | 463.9 | 10000 | C514_463.9 S05 M05A4 | C514_463.9 P63 BN63A4 |
| 2.9 | 367 | 1.2 | 458.4 | 6500 | C354_458.4 S05 M05A4 | C354_458.4 P63 BN63A4 |
| 2.9 | 361 | 1.7 | 450.2 | 7000 | C414_450.2 S05 M05A4 | C414_450.2 P63 BN63A4 |
| 3.1 | 335 | 1.8 | 418.5 | 7000 | C414_418.5 S05 M05A4 | C414_418.5 P63 BN63A4 |
| 3.1 | 334 | 1.3 | 417.6 | 6500 | C354_417.6 S05 M05A4 | C354_417.6 P63 BN63A4 |
| 3.2 | 333 | 3.0 | 415.7 | 10000 | C514_415.7 S05 M05A4 | C514_415.7 P63 BN63A4 |
| 3.4 | 306 | 2.0 | 381.8 | 7000 | C414_381.8 S05 M05A4 | C414_381.8 P63 BN63A4 |
| 3.5 | 304 | 3.3 | 379.6 | 10000 | C514_379.6 S05 M05A4 | C514_379.6 P63 BN63A4 |
| 3.5 | 303 | 1.5 | 377.9 | 6500 | C354_377.9 S05 M05A4 | C354_377.9 P63 BN63A4 |
| 3.8 | 276 | 1.6 | 344.3 | 6500 | C354_344.3 S05 M05A4 | C354_344.3 P63 BN63A4 |
| 3.9 | 267 | 2.1 | 333.4 | 7000 | C414_333.4 S05 M05A4 | C414_333.4 P63 BN63A4 |
| 4.1 | 255 | 1.8 | 318.9 | 6500 | C354_318.9 S05 M05A4 | C354_318.9 P63 BN63A4 |
| 4.3 | 244 | 2.5 | 304.2 | 7000 | C414_304.2 S05 M05A4 | C414_304.2 P63 BN63A4 |
| 4.5 | 233 | 1.9 | 290.6 | 6500 | C354_290.6 S05 M05A4 | C354_290.6 P63 BN63A4 |
| 4.8 | 225 | 1.1 | 274.7 | 5500 | C313_274.7 S05 M05A4 | C313_274.7 P63 BN63A4 |
| 5.0 | 211 | 2.6 | 263.0 | 7000 | C414_263.0 S05 M05A4 | C414_263.0 P63 BN63A4 |
| 5.1 | 204 | 2.2 | 255.0 | 6500 | C354_255.0 S05 M05A4 | C354_255.0 P63 BN63A4 |
| 5.3 | 202 | 1.1 | 247.3 | 5500 | C313_247.3 S05 M05A4 | C313_247.3 P63 BN63A4 |
| 5.5 | 192 | 3.1 | 239.9 | 7000 | C414_239.9 S05 M05A4 | C414_239.9 P63 BN63A4 |
| 5.6 | 186 | 2.4 | 232.3 | 6500 | C354_232.3 S05 M05A4 | C354_232.3 P63 BN63A4 |
| 6.1 | 176 | 1.4 | 215.6 | 5500 | C313_215.6 S05 M05A4 | C313_215.6 P63 BN63A4 |
| 6.3 | 170 | 3.1 | 209.1 | 7000 | C413_209.1 S05 M05A4 | C413_209.1 P63 BN63A4 |
| 6.3 | 168 | 2.7 | 206.4 | 6500 | | C353_206.4 P63 BN63A4 |
| 6.7 | 159 | 1.6 | 194.1 | 5500 | C313_194.1 S05 M05A4 | C313_194.1 P63 BN63A4 |
| 7.0 | 153 | 2.8 | 188.0 | 6500 | | C353_188.0 P63 BN63A4 |
| 7.0 | 152 | 1.6 | 186.0 | 5500 | C313_186.0 S05 M05A4 | C313_186.0 P63 BN63A4 |
| 7.3 | 146 | 1.1 | 178.5 | 5000 | C213_178.5 S05 M05A4 | C213_178.5 P63 BN63A4 |
| 7.8 | 137 | 1.8 | 167.5 | 5500 | C313_167.5 S05 M05A4 | C313_167.5 P63 BN63A4 |
| 8.1 | 132 | 3.3 | 162.0 | 6500 | | C353_162.0 P63 BN63A4 |
| 8.2 | 132 | 1.3 | 160.7 | 5000 | C213_160.7 S05 M05A4 | C213_160.7 P63 BN63A4 |
| 8.6 | 124 | 1.3 | 151.7 | 5000 | C213_151.7 S05 M05A4 | C213_151.7 P63 BN63A4 |
| 8.8 | 121 | 2.0 | 148.4 | 5500 | C313_148.4 S05 M05A4 | C313_148.4 P63 BN63A4 |
| 9.6 | 112 | 1.4 | 136.5 | 5000 | C213_136.5 S05 M05A4 | C213_136.5 P63 BN63A4 |
| 9.8 | 109 | 2.1 | 133.6 | 5500 | C313_133.6 S05 M05A4 | C313_133.6 P63 BN63A4 |
| 10.7 | 100 | 2.3 | 122.4 | 5500 | C313_122.4 S05 M05A4 | C313_122.4 P63 BN63A4 |
| 10.7 | 100 | 1.6 | 122.2 | 5000 | C213_122.2 S05 M05A4 | C213_122.2 P63 BN63A4 |
| 11.9 | 90 | 2.5 | 110.2 | 5500 | C313_110.2 S05 M05A4 | C313_110.2 P63 BN63A4 |
| 11.9 | 90 | 1.8 | 110.0 | 5000 | C213_110.0 S05 M05A4 | C213_110.0 P63 BN63A4 |
| 12.7 | 85 | 2.7 | 103.3 | 5500 | C313_103.3 S05 M05A4 | C313_103.3 P63 BN63A4 |
| 13.1 | 82 | 1.9 | 100.2 | 5000 | C213_100.2 S05 M05A4 | C213_100.2 P63 BN63A4 |
| 14.1 | 76 | 2.8 | 93.0 | 5500 | C313_93.0 S05 M05A4 | C313_93.0 P63 BN63A4 |

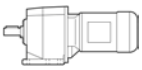
| 0.12 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  IEC |
| 14.5 | 74 | 2.1 | 90.2 | 5000 | C213_90.2 S05 M05A4 | C213_90.2 P63 BN63A4 |
| 15.9 | 68 | 2.2 | 82.6 | 5000 | C213_82.6 S05 M05A4 | C213_82.6 P63 BN63A4 |
| 15.9 | 68 | 3.3 | 82.6 | 5500 | C313_82.6 S05 M05A4 | C313_82.6 P63 BN63A4 |
| 17.6 | 61 | 2.4 | 74.4 | 5000 | C213_74.4 S05 M05A4 | C213_74.4 P63 BN63A4 |
| 17.6 | 61 | 3.3 | 74.3 | 5500 | C313_74.3 S05 M05A4 | C313_74.3 P63 BN63A4 |
| 19.6 | 56 | 2.8 | 66.8 | 5500 | C312_66.8 S05 M05A4 | C312_66.8 P63 BN63A4 |
| 19.8 | 55 | 1.0 | 66.2 | 2000 | C112_66.2 S05 M05A4 | C112_66.2 P63 BN63A4 |
| 20.1 | 53 | 2.7 | 65.3 | 5000 | C213_65.3 S05 M05A4 | C213_65.3 P63 BN63A4 |
| 20.7 | 53 | 2.0 | 63.3 | 5000 | C212_63.3 S05 M05A4 | C212_63.3 P63 BN63A4 |
| 21.8 | 50 | 2.8 | 60.2 | 5500 | C312_60.2 S05 M05A4 | C312_60.2 P63 BN63A4 |
| 22.0 | 50 | 1.3 | 59.6 | 2000 | C112_59.6 S05 M05A4 | C112_59.6 P63 BN63A4 |
| 22.3 | 48 | 2.8 | 58.8 | 5000 | C213_58.8 S05 M05A4 | C213_58.8 P63 BN63A4 |
| 23.0 | 47 | 1.9 | 57.0 | 5000 | C212_57.0 S05 M05A4 | C212_57.0 P63 BN63A4 |
| 23.7 | 46 | 1.2 | 55.2 | 2000 | C112_55.2 S05 M05A4 | C112_55.2 P63 BN63A4 |
| 23.9 | 45 | 2.5 | 54.7 | 5000 | C212_54.7 S05 M05A4 | C212_54.7 P63 BN63A4 |
| 26.4 | 41 | 1.5 | 49.7 | 2000 | C112_49.7 S05 M05A4 | C112_49.7 P63 BN63A4 |
| 26.6 | 41 | 2.4 | 49.3 | 5000 | C212_49.3 S05 M05A4 | C212_49.3 P63 BN63A4 |
| 27.5 | 40 | 1.3 | 47.6 | 2000 | C112_47.6 S05 M05A4 | C112_47.6 P63 BN63A4 |
| 31 | 36 | 1.7 | 42.9 | 2000 | C112_42.9 S05 M05A4 | C112_42.9 P63 BN63A4 |
| 35 | 31 | 1.7 | 37.0 | 2000 | C112_37.0 S05 M05A4 | C112_37.0 P63 BN63A4 |
| 39 | 28 | 2.1 | 33.4 | 2000 | C112_33.4 S05 M05A4 | C112_33.4 P63 BN63A4 |
| 40 | 27 | 1.9 | 32.8 | 2000 | C112_32.8 S05 M05A4 | C112_32.8 P63 BN63A4 |
| 44 | 25 | 2.2 | 29.5 | 2000 | C112_29.5 S05 M05A4 | C112_29.5 P63 BN63A4 |
| 52 | 21 | 2.4 | 25.4 | 2000 | C112_25.4 S05 M05A4 | C112_25.4 P63 BN63A4 |
| 57 | 19.0 | 2.6 | 22.8 | 2000 | C112_22.8 S05 M05A4 | C112_22.8 P63 BN63A4 |
| 64 | 17.1 | 2.7 | 20.6 | 2000 | C112_20.6 S05 M05A4 | C112_20.6 P63 BN63A4 |
| 70 | 15.4 | 3.0 | 18.6 | 2000 | C112_18.6 S05 M05A4 | C112_18.6 P63 BN63A4 |
| 76 | 14.3 | 3.1 | 17.2 | 2000 | C112_17.2 S05 M05A4 | C112_17.2 P63 BN63A4 |
| 85 | 12.9 | 3.3 | 15.5 | 2000 | C112_15.5 S05 M05A4 | C112_15.5 P63 BN63A4 |
| 98 | 11.1 | 3.6 | 13.4 | 2000 | C112_13.4 S05 M05A4 | C112_13.4 P63 BN63A4 |
| 108 | 10.0 | 3.9 | 12.1 | 2000 | C112_12.1 S05 M05A4 | C112_12.1 P63 BN63A4 |
| 130 | 8.4 | 4.3 | 10.1 | 2000 | C112_10.1 S05 M05A4 | C112_10.1 P63 BN63A4 |
| 145 | 7.5 | 4.6 | 9.1 | 1950 | C112_9.1 S05 M05A4 | C112_9.1 P63 BN63A4 |
| 172 | 6.3 | 5.1 | 7.6 | 1850 | C112_7.6 S05 M05A4 | C112_7.6 P63 BN63A4 |
| 191 | 5.7 | 5.4 | 6.9 | 1790 | C112_6.9 S05 M05A4 | C112_6.9 P63 BN63A4 |

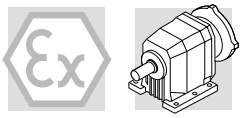
### *2.7.2 0.18 kW*

| 0.18 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  IEC |
| 1.6 | 956 | 1.0 | 808.0 | 10000 | C514_808.0 S05 M05B4 | C514_808.0 P63 BN63B4 |
| 1.7 | 942 | 1.7 | 796.1 | 16000 | C614_796.1 S05 M05B4 | C614_796.1 P63 BN63B4 |
| 1.8 | 859 | 1.9 | 726.3 | 16000 | C614_726.3 S05 M05B4 | C614_726.3 P63 BN63B4 |
| 1.8 | 849 | 1.2 | 717.7 | 10000 | C514_717.7 S05 M05B4 | C514_717.7 P63 BN63B4 |
| 2.0 | 791 | 2.0 | 668.8 | 16000 | C614_668.8 S05 M05B4 | C614_668.8 P63 BN63B4 |
| 2.0 | 775 | 1.3 | 655.4 | 10000 | C514_655.4 S05 M05B4 | C514_655.4 P63 BN63B4 |
| 2.2 | 722 | 2.2 | 610.1 | 16000 | C614_610.1 S05 M05B4 | C614_610.1 P63 BN63B4 |
| 2.2 | 712 | 1.4 | 602.0 | 10000 | C514_602.0 S05 M05B4 | C514_602.0 P63 BN63B4 |
| 2.3 | 676 | 2.4 | 571.2 | 16000 | C614_571.2 S05 M05B4 | C614_571.2 P63 BN63B4 |
| 2.4 | 650 | 1.5 | 549.7 | 10000 | C514_549.7 S05 M05B4 | C514_549.7 P63 BN63B4 |
| 2.5 | 616 | 2.6 | 521.1 | 16000 | C614_521.1 S05 M05B4 | C614_521.1 P63 BN63B4 |
| 2.6 | 601 | 1.7 | 508.0 | 10000 | C514_508.0 S05 M05B4 | C514_508.0 P63 BN63B4 |
| 2.7 | 584 | 1.0 | 493.5 | 7000 | C414_493.5 S05 M05B4 | C414_493.5 P63 BN63B4 |
| 2.8 | 549 | 1.8 | 463.9 | 10000 | C514_463.9 S05 M05B4 | C514_463.9 P63 BN63B4 |
| 2.9 | 547 | 2.9 | 462.0 | 16000 | C614_462.0 S05 M05B4 | C614_462.0 P63 BN63B4 |
| 2.9 | 533 | 1.1 | 450.2 | 7000 | C414_450.2 S05 M05B4 | C414_450.2 P63 BN63B4 |
| 3.1 | 499 | 3.2 | 421.5 | 16000 | C614_421.5 S05 M05B4 | C614_421.5 P63 BN63B4 |
| 3.2 | 495 | 1.2 | 418.5 | 7000 | C414_418.5 S05 M05B4 | C414_418.5 P63 BN63B4 |
| 3.2 | 492 | 2.0 | 415.7 | 10000 | C514_415.7 S05 M05B4 | C514_415.7 P63 BN63B4 |



# 0.18 kW

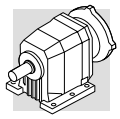
| $n_2$ min$^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  IEC |
|---|---|---|---|---|---|---|
| 3.5 | 452 | 1.3 | 381.8 | 7000 | C414_381.8 S05 M05B4 | C414_381.8 P63 BN63B4 |
| 3.5 | 449 | 2.2 | 379.6 | 10000 | C514_379.6 S05 M05B4 | C514_379.6 P63 BN63B4 |
| 3.5 | 447 | 1.0 | 377.9 | 6500 | C354_377.9 S05 M05B4 | C354_377.9 P63 BN63B4 |
| 3.8 | 407 | 1.1 | 344.3 | 6500 | C354_344.3 S05 M05B4 | C354_344.3 P63 BN63B4 |
| 4.0 | 394 | 1.4 | 333.4 | 7000 | C414_333.4 S05 M05B4 | C414_333.4 P63 BN63B4 |
| 4.0 | 386 | 2.6 | 326.1 | 10000 | C514_326.1 S05 M05B4 | C514_326.1 P63 BN63B4 |
| 4.1 | 377 | 1.2 | 318.9 | 6500 | C354_318.9 S05 M05B4 | C354_318.9 P63 BN63B4 |
| 4.3 | 360 | 1.7 | 304.2 | 7000 | C414_304.2 S05 M05B4 | C414_304.2 P63 BN63B4 |
| 4.4 | 352 | 2.8 | 297.8 | 10000 | C514_297.8 S05 M05B4 | C514_297.8 P63 BN63B4 |
| 4.5 | 344 | 1.3 | 290.6 | 6500 | C354_290.6 S05 M05B4 | C354_290.6 P63 BN63B4 |
| 5.0 | 312 | 3.2 | 263.8 | 10000 | C514_263.8 S05 M05B4 | C514_263.8 P63 BN63B4 |
| 5.0 | 311 | 1.8 | 263.0 | 7000 | C414_263.0 S05 M05B4 | C414_263.0 P63 BN63B4 |
| 5.2 | 302 | 1.5 | 255.0 | 6500 | C354_255.0 S05 M05B4 | C354_255.0 P63 BN63B4 |
| 5.5 | 284 | 2.1 | 239.9 | 7000 | C414_239.9 S05 M05B4 | C414_239.9 P63 BN63B4 |
| 5.7 | 275 | 1.6 | 232.3 | 6500 | C354_232.3 S05 M05B4 | C354_232.3 P63 BN63B4 |
| 6.3 | 253 | 2.1 | 209.1 | 7000 | C413_209.1 S05 M05B4 | C413_209.1 P63 BN63B4 |
| 6.4 | 250 | 1.8 | 206.4 | 6500 | | C353_206.4 P63 BN63B4 |
| 6.8 | 235 | 1.1 | 194.1 | 5500 | C313_194.1 S05 M05B4 | C313_194.1 P63 BN63B4 |
| 6.9 | 231 | 2.6 | 190.8 | 7000 | C413_190.8 S05 M05B4 | C413_190.8 P63 BN63B4 |
| 7.0 | 228 | 1.9 | 188.0 | 6500 | | C353_188.0 P63 BN63B4 |
| 7.1 | 225 | 1.1 | 186.0 | 5500 | C313_186.0 S05 M05B4 | C313_186.0 P63 BN63B4 |
| 7.3 | 218 | 2.4 | 179.9 | 7000 | C413_179.9 S05 M05B4 | C413_179.9 P63 BN63B4 |
| 7.9 | 202 | 1.2 | 167.5 | 5500 | C313_167.5 S05 M05B4 | C313_167.5 P63 BN63B4 |
| 8.0 | 199 | 3.0 | 164.1 | 7000 | C413_164.1 S05 M05B4 | C413_164.1 P63 BN63B4 |
| 8.1 | 196 | 2.2 | 162.0 | 6500 | | C353_162.0 P63 BN63B4 |
| 8.9 | 179 | 1.3 | 148.4 | 5500 | C313_148.4 S05 M05B4 | C313_148.4 P63 BN63B4 |
| 8.9 | 179 | 2.5 | 147.6 | 6500 | | C353_147.6 P63 BN63B4 |
| 9.1 | 176 | 2.9 | 145.6 | 7000 | C413_145.6 S05 M05B4 | C413_145.6 P63 BN63B4 |
| 9.4 | 169 | 2.5 | 139.8 | 6500 | | C353_139.8 P63 BN63B4 |
| 9.9 | 162 | 1.4 | 133.6 | 5500 | C313_133.6 S05 M05B4 | C313_133.6 P63 BN63B4 |
| 10.4 | 154 | 2.9 | 127.3 | 6500 | | C353_127.3 P63 BN63B4 |
| 10.8 | 148 | 1.6 | 122.4 | 5500 | C313_122.4 S05 M05B4 | C313_122.4 P63 BN63B4 |
| 10.8 | 148 | 1.1 | 122.2 | 5000 | C213_122.2 S05 M05B4 | C213_122.2 P63 BN63B4 |
| 10.9 | 146 | 3.4 | 120.6 | 7000 | C413_120.6 S05 M05B4 | C413_120.6 P63 BN63B4 |
| 11.8 | 135 | 3.0 | 111.5 | 6500 | | C353_111.5 P63 BN63B4 |
| 12.0 | 133 | 1.7 | 110.2 | 5500 | C313_110.2 S05 M05B4 | C313_110.2 P63 BN63B4 |
| 12.0 | 133 | 1.2 | 110.0 | 5000 | C213_110.0 S05 M05B4 | C213_110.0 P63 BN63B4 |
| 12.8 | 125 | 1.8 | 103.3 | 5500 | C313_103.3 S05 M05B4 | C313_103.3 P63 BN63B4 |
| 13.0 | 123 | 3.5 | 101.6 | 6500 | | C353_101.6 P63 BN63B4 |
| 13.2 | 121 | 1.3 | 100.2 | 5000 | C213_100.2 S05 M05B4 | C213_100.2 P63 BN63B4 |
| 14.2 | 112 | 1.9 | 93.0 | 5500 | C313_93.0 S05 M05B4 | C313_93.0 P63 BN63B4 |
| 14.6 | 109 | 1.4 | 90.2 | 5000 | C213_90.2 S05 M05B4 | C213_90.2 P63 BN63B4 |
| 16.0 | 100 | 1.5 | 82.6 | 5000 | C213_82.6 S05 M05B4 | C213_82.6 P63 BN63B4 |
| 16.0 | 100 | 2.2 | 82.6 | 5500 | C313_82.6 S05 M05B4 | C313_82.6 P63 BN63B4 |
| 17.8 | 90 | 1.6 | 74.4 | 5000 | C213_74.4 S05 M05B4 | C213_74.4 P63 BN63B4 |
| 17.8 | 90 | 2.2 | 74.3 | 5500 | C313_74.3 S05 M05B4 | C313_74.3 P63 BN63B4 |
| 19.8 | 83 | 1.9 | 66.8 | 5500 | C312_66.8 S05 M05B4 | C312_66.8 P63 BN63B4 |
| 20.2 | 79 | 1.8 | 65.3 | 5000 | C213_65.3 S05 M05B4 | C213_65.3 P63 BN63B4 |
| 20.9 | 78 | 1.3 | 63.3 | 5000 | C212_63.3 S05 M05B4 | C212_63.3 P63 BN63B4 |
| 21.9 | 74 | 1.9 | 60.2 | 5500 | C312_60.2 S05 M05B4 | C312_60.2 P63 BN63B4 |
| 22.4 | 71 | 1.9 | 58.8 | 5000 | C213_58.8 S05 M05B4 | C213_58.8 P63 BN63B4 |
| 23.2 | 70 | 1.3 | 57.0 | 5000 | C212_57.0 S05 M05B4 | C212_57.0 P63 BN63B4 |
| 24.1 | 68 | 1.7 | 54.7 | 5000 | C212_54.7 S05 M05B4 | C212_54.7 P63 BN63B4 |
| 25.2 | 65 | 3.2 | 52.4 | 5500 | C312_52.4 S05 M05B4 | C312_52.4 P63 BN63B4 |
| 26.6 | 62 | 1.0 | 49.7 | 2000 | C112_49.7 S05 M05B4 | C112_49.7 P63 BN63B4 |
| 26.8 | 61 | 1.6 | 49.3 | 5000 | C212_49.3 S05 M05B4 | C212_49.3 P63 BN63B4 |
| 31 | 54 | 2.4 | 43.3 | 4890 | C212_43.3 S05 M05B4 | C212_43.3 P63 BN63B4 |
| 31 | 53 | 1.2 | 42.9 | 2000 | C112_42.9 S05 M05B4 | C112_42.9 P63 BN63B4 |
| 34 | 48 | 2.4 | 39.0 | 4740 | C212_39.0 S05 M05B4 | C212_39.0 P63 BN63B4 |
| 36 | 46 | 1.1 | 37.0 | 2000 | C112_37.0 S05 M05B4 | C112_37.0 P63 BN63B4 |
| 36 | 45 | 3.0 | 36.8 | 4670 | C212_36.8 S05 M05B4 | C212_36.8 P63 BN63B4 |
| 40 | 41 | 1.4 | 33.4 | 2000 | C112_33.4 S05 M05B4 | C112_33.4 P63 BN63B4 |
| 40 | 41 | 3.2 | 33.1 | 4520 | C212_33.1 S05 M05B4 | C212_33.1 P63 BN63B4 |
| 40 | 41 | 1.3 | 32.8 | 2000 | C112_32.8 S05 M05B4 | C112_32.8 P63 BN63B4 |



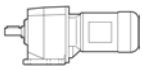
| 0.18 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N | | IEC |
| 45 | 37 | 3.4 | 29.6 | 4380 | C212_29.6 S05 M05B4 | C212_29.6 P63 BN63B4 |
| 45 | 37 | 1.5 | 29.5 | 2000 | C112_29.5 S05 M05B4 | C112_29.5 P63 BN63B4 |
| 52 | 31 | 1.6 | 25.4 | 2000 | C112_25.4 S05 M05B4 | C112_25.4 P63 BN63B4 |
| 58 | 28 | 1.8 | 22.8 | 2000 | C112_22.8 S05 M05B4 | C112_22.8 P63 BN63B4 |
| 64 | 26 | 1.8 | 20.6 | 2000 | C112_20.6 S05 M05B4 | C112_20.6 P63 BN63B4 |
| 71 | 23 | 2.0 | 18.6 | 2000 | C112_18.6 S05 M05B4 | C112_18.6 P63 BN63B4 |
| 77 | 21 | 2.1 | 17.2 | 2000 | C112_17.2 S05 M05B4 | C112_17.2 P63 BN63B4 |
| 85 | 19.1 | 2.2 | 15.5 | 2000 | C112_15.5 S05 M05B4 | C112_15.5 P63 BN63B4 |
| 98 | 16.6 | 2.4 | 13.4 | 2000 | C112_13.4 S05 M05B4 | C112_13.4 P63 BN63B4 |
| 109 | 14.9 | 2.6 | 12.1 | 2000 | C112_12.1 S05 M05B4 | C112_12.1 P63 BN63B4 |
| 131 | 12.4 | 2.9 | 10.1 | 2000 | C112_10.1 S05 M05B4 | C112_10.1 P63 BN63B4 |
| 146 | 11.2 | 3.1 | 9.1 | 1940 | C112_9.1 S05 M05B4 | C112_9.1 P63 BN63B4 |
| 173 | 9.4 | 3.4 | 7.6 | 1830 | C112_7.6 S05 M05B4 | C112_7.6 P63 BN63B4 |
| 192 | 8.5 | 3.6 | 6.9 | 1780 | C112_6.9 S05 M05B4 | C112_6.9 P63 BN63B4 |

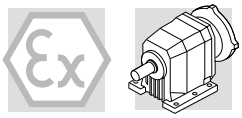
### *2.7.3 0.25 kW*

| 0.25 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N | | IEC |
| 1.7 | 1311 | 1.2 | 796.1 | 16000 | C614_796.1 S05 M05C4 | C614_796.1 P71 BN71A4 |
| 1.8 | 1196 | 1.3 | 726.3 | 16000 | C614_726.3 S05 M05C4 | C614_726.3 P71 BN71A4 |
| 2.0 | 1102 | 1.5 | 668.8 | 16000 | C614_668.8 S05 M05C4 | C614_668.8 P71 BN71A4 |
| 2.2 | 1005 | 1.6 | 610.1 | 16000 | C614_610.1 S05 M05C4 | C614_610.1 P71 BN71A4 |
| 2.2 | 992 | 1.0 | 602.0 | 10000 | C514_602.0 S05 M05C4 | C514_602.0 P71 BN71A4 |
| 2.3 | 941 | 1.7 | 571.2 | 16000 | C614_571.2 S05 M05C4 | C614_571.2 P71 BN71A4 |
| 2.4 | 905 | 1.1 | 549.7 | 10000 | C514_549.7 S05 M05C4 | C514_549.7 P71 BN71A4 |
| 2.5 | 858 | 1.9 | 521.1 | 16000 | C614_521.1 S05 M05C4 | C614_521.1 P71 BN71A4 |
| 2.6 | 837 | 1.2 | 508.0 | 10000 | C514_508.0 S05 M05C4 | C514_508.0 P71 BN71A4 |
| 2.8 | 764 | 1.3 | 463.9 | 10000 | C514_463.9 S05 M05C4 | C514_463.9 P71 BN71A4 |
| 2.9 | 761 | 2.1 | 462.0 | 16000 | C614_462.0 S05 M05C4 | C614_462.0 P71 BN71A4 |
| 3.1 | 694 | 2.3 | 421.5 | 16000 | C614_421.5 S05 M05C4 | C614_421.5 P71 BN71A4 |
| 3.2 | 685 | 1.5 | 415.7 | 10000 | C514_415.7 S05 M05C4 | C514_415.7 P71 BN71A4 |
| 3.5 | 625 | 1.6 | 379.6 | 10000 | C514_379.6 S05 M05C4 | C514_379.6 P71 BN71A4 |
| 3.6 | 610 | 2.6 | 370.1 | 16000 | C614_370.1 S05 M05C4 | C614_370.1 P71 BN71A4 |
| 3.9 | 556 | 2.9 | 337.7 | 16000 | C614_337.7 S05 M05C4 | C614_337.7 P71 BN71A4 |
| 4.0 | 549 | 1.0 | 333.4 | 7000 | C414_333.4 S05 M05C4 | C414_333.4 P71 BN71A4 |
| 4.0 | 537 | 1.9 | 326.1 | 10000 | C514_326.1 S05 M05C4 | C514_326.1 P71 BN71A4 |
| 4.3 | 501 | 1.2 | 304.2 | 7000 | C414_304.2 S05 M05C4 | C414_304.2 P71 BN71A4 |
| 4.4 | 497 | 3.2 | 301.7 | 16000 | C614_301.7 S05 M05C4 | C614_301.7 P71 BN71A4 |
| 4.4 | 490 | 2.0 | 297.8 | 10000 | C514_297.8 S05 M05C4 | C514_297.8 P71 BN71A4 |
| 5.0 | 434 | 2.3 | 263.8 | 10000 | C514_263.8 S05 M05C4 | C514_263.8 P71 BN71A4 |
| 5.0 | 433 | 1.3 | 263.0 | 7000 | C414_263.0 S05 M05C4 | C414_263.0 P71 BN71A4 |
| 5.2 | 420 | 1.1 | 255.0 | 6500 | C354_255.0 S05 M05C4 | C354_255.0 P71 BN71A4 |
| 5.5 | 397 | 2.5 | 240.9 | 10000 | C514_240.9 S05 M05C4 | C514_240.9 P71 BN71A4 |
| 5.5 | 395 | 1.5 | 239.9 | 7000 | C414_239.9 S05 M05C4 | C414_239.9 P71 BN71A4 |
| 5.7 | 383 | 1.2 | 232.3 | 6500 | C354_232.3 S05 M05C4 | C354_232.3 P71 BN71A4 |
| 6.1 | 365 | 2.7 | 216.7 | 10000 | C513_216.7 S05 M05C4 | C513_216.7 P71 BN71A4 |
| 6.3 | 352 | 1.5 | 209.1 | 7000 | C413_209.1 S05 M05C4 | C413_209.1 P71 BN71A4 |
| 6.4 | 347 | 1.3 | 206.4 | 6500 | | C353_206.4 P71 BN71A4 |
| 6.7 | 333 | 3.0 | 197.9 | 10000 | C513_197.9 S05 M05C4 | C513_197.9 P71 BN71A4 |
| 6.9 | 321 | 1.9 | 190.8 | 7000 | C413_190.8 S05 M05C4 | C413_190.8 P71 BN71A4 |
| 7.0 | 316 | 1.3 | 188.0 | 6500 | | C353_188.0 P71 BN71A4 |
| 7.3 | 303 | 1.7 | 179.9 | 7000 | C413_179.9 S05 M05C4 | C413_179.9 P71 BN71A4 |
| 7.5 | 296 | 3.3 | 175.8 | 10000 | C513_175.8 S05 M05C4 | C513_175.8 P71 BN71A4 |
| 8.0 | 276 | 2.2 | 164.1 | 7000 | C413_164.1 S05 M05C4 | C413_164.1 P71 BN71A4 |
| 8.1 | 272 | 1.6 | 162.0 | 6500 | | C353_162.0 P71 BN71A4 |
| 8.9 | 248 | 1.8 | 147.6 | 6500 | | C353_147.6 P71 BN71A4 |
| 9.1 | 245 | 2.1 | 145.6 | 7000 | C413_145.6 S05 M05C4 | C413_145.6 P71 BN71A4 |
| 9.4 | 235 | 1.8 | 139.8 | 6500 | | C353_139.8 P71 BN71A4 |

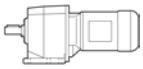


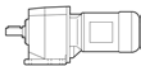
# 0.25 kW

| $n_2$ min$^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  IEC |
|---|---|---|---|---|---|---|
| 9.9 | 225 | 1.0 | 133.6 | 5500 | C313_133.6 S05 M05C4 | C313_133.6 P71 BN71A4 |
| 9.9 | 223 | 2.6 | 132.9 | 7000 | C413_132.9 S05 M05C4 | C413_132.9 P71 BN71A4 |
| 10.4 | 214 | 2.1 | 127.3 | 6500 | | C353_127.3 P71 BN71A4 |
| 10.8 | 206 | 1.1 | 122.4 | 5500 | C313_122.4 S05 M05C4 | C313_122.4 P71 BN71A4 |
| 10.9 | 203 | 2.4 | 120.6 | 7000 | C413_120.6 S05 M05C4 | C413_120.6 P71 BN71A4 |
| 11.8 | 188 | 2.2 | 111.5 | 6500 | | C353_111.5 P71 BN71A4 |
| 12.0 | 185 | 1.2 | 110.2 | 5500 | C313_110.2 S05 M05C4 | C313_110.2 P71 BN71A4 |
| 12.0 | 185 | 3.1 | 110.1 | 7000 | C413_110.1 S05 M05C4 | C413_110.1 P71 BN71A4 |
| 12.8 | 174 | 1.3 | 103.3 | 5500 | C313_103.3 S05 M05C4 | C313_103.3 P71 BN71A4 |
| 12.9 | 172 | 2.8 | 102.3 | 7000 | C413_102.3 S05 M05C4 | C413_102.3 P71 BN71A4 |
| 13.0 | 171 | 2.5 | 101.6 | 6500 | | C353_101.6 P71 BN71A4 |
| 14.1 | 157 | 3.5 | 93.3 | 7000 | C413_93.3 S05 M05C4 | C413_93.3 P71 BN71A4 |
| 14.2 | 156 | 1.4 | 93.0 | 5500 | C313_93.0 S05 M05C4 | C313_93.0 P71 BN71A4 |
| 14.4 | 155 | 2.6 | 91.9 | 6500 | | C353_91.9 P71 BN71A4 |
| 14.6 | 152 | 1.0 | 90.2 | 5000 | C213_90.2 S05 M05C4 | C213_90.2 P71 BN71A4 |
| 15.8 | 141 | 2.8 | 83.8 | 6500 | | C353_83.8 P71 BN71A4 |
| 16.0 | 139 | 1.1 | 82.6 | 5000 | C213_82.6 S05 M05C4 | C213_82.6 P71 BN71A4 |
| 16.0 | 139 | 1.6 | 82.6 | 5500 | C313_82.6 S05 M05C4 | C313_82.6 P71 BN71A4 |
| 16.2 | 137 | 3.4 | 81.5 | 7000 | C413_81.5 S05 M05C4 | C413_81.5 P71 BN71A4 |
| 17.0 | 130 | 3.0 | 77.6 | 6500 | | C353_77.6 P71 BN71A4 |
| 17.8 | 125 | 1.2 | 74.4 | 5000 | C213_74.4 S05 M05C4 | C213_74.4 P71 BN71A4 |
| 17.8 | 125 | 1.6 | 74.3 | 5500 | C313_74.3 S05 M05C4 | C313_74.3 P71 BN71A4 |
| 18.7 | 119 | 3.2 | 70.7 | 6500 | | C353_70.7 P71 BN71A4 |
| 19.8 | 115 | 1.4 | 66.8 | 5500 | C312_66.8 S05 M05C4 | C312_66.8 P71 BN71A4 |
| 20.2 | 110 | 1.3 | 65.3 | 5000 | C213_65.3 S05 M05C4 | C213_65.3 P71 BN71A4 |
| 21.9 | 103 | 1.4 | 60.2 | 5500 | C312_60.2 S05 M05C4 | C312_60.2 P71 BN71A4 |
| 22.4 | 99 | 1.4 | 58.8 | 5000 | C213_58.8 S05 M05C4 | C213_58.8 P71 BN71A4 |
| 24.1 | 94 | 1.2 | 54.7 | 5000 | C212_54.7 S05 M05C4 | C212_54.7 P71 BN71A4 |
| 25.2 | 90 | 2.3 | 52.4 | 5500 | C312_52.4 S05 M05C4 | C312_52.4 P71 BN71A4 |
| 26.8 | 85 | 1.2 | 49.3 | 4910 | C212_49.3 S05 M05C4 | C212_49.3 P71 BN71A4 |
| 28.0 | 81 | 2.7 | 47.2 | 5500 | C312_47.2 S05 M05C4 | C312_47.2 P71 BN71A4 |
| 29.2 | 78 | 2.6 | 45.3 | 5500 | C312_45.3 S05 M05C4 | C312_45.3 P71 BN71A4 |
| 31 | 74 | 1.7 | 43.3 | 4750 | C212_43.3 S05 M05C4 | C212_43.3 P71 BN71A4 |
| 32 | 70 | 3.1 | 40.7 | 5500 | C312_40.7 S05 M05C4 | C312_40.7 P71 BN71A4 |
| 34 | 67 | 1.7 | 39.0 | 4610 | C212_39.0 S05 M05C4 | C212_39.0 P71 BN71A4 |
| 36 | 63 | 2.1 | 36.8 | 4540 | C212_36.8 S05 M05C4 | C212_36.8 P71 BN71A4 |
| 37 | 62 | 3.1 | 36.1 | 5500 | C312_36.1 S05 M05C4 | C312_36.1 P71 BN71A4 |
| 40 | 57 | 0.9 | 33.4 | 2000 | C112_33.4 S05 M05C4 | C112_33.4 P71 BN71A4 |
| 40 | 57 | 2.3 | 33.1 | 4430 | C212_33.1 S05 M05C4 | C212_33.1 P71 BN71A4 |
| 45 | 51 | 2.5 | 29.6 | 4300 | C212_29.6 S05 M05C4 | C212_29.6 P71 BN71A4 |
| 45 | 51 | 1.1 | 29.5 | 2000 | C112_29.5 S05 M05C4 | C112_29.5 P71 BN71A4 |
| 49 | 46 | 2.6 | 26.7 | 4170 | C212_26.7 S05 M05C4 | C212_26.7 P71 BN71A4 |
| 52 | 44 | 1.2 | 25.4 | 2000 | C112_25.4 S05 M05C4 | C112_25.4 P71 BN71A4 |
| 54 | 42 | 2.8 | 24.3 | 4060 | C212_24.3 S05 M05C4 | C212_24.3 P71 BN71A4 |
| 58 | 39 | 1.3 | 22.8 | 2000 | C112_22.8 S05 M05C4 | C112_22.8 P71 BN71A4 |
| 60 | 38 | 3.1 | 21.9 | 3940 | C212_21.9 S05 M05C4 | C212_21.9 P71 BN71A4 |
| 64 | 35 | 1.3 | 20.6 | 2000 | C112_20.6 S05 M05C4 | C112_20.6 P71 BN71A4 |
| 66 | 34 | 3.2 | 20.0 | 3840 | C212_20.0 S05 M05C4 | C212_20.0 P71 BN71A4 |
| 71 | 32 | 1.4 | 18.6 | 2000 | C112_18.6 S05 M05C4 | C112_18.6 P71 BN71A4 |
| 73 | 31 | 3.4 | 18.0 | 3720 | C212_18.0 S05 M05C4 | C212_18.0 P71 BN71A4 |
| 77 | 29 | 1.5 | 17.2 | 2000 | C112_17.2 S05 M05C4 | C112_17.2 P71 BN71A4 |
| 85 | 27 | 1.6 | 15.5 | 2000 | C112_15.5 S05 M05C4 | C112_15.5 P71 BN71A4 |
| 98 | 23 | 1.7 | 13.4 | 2000 | C112_13.4 S05 M05C4 | C112_13.4 P71 BN71A4 |
| 109 | 21 | 1.9 | 12.1 | 2000 | C112_12.1 S05 M05C4 | C112_12.1 P71 BN71A4 |
| 131 | 17.3 | 2.1 | 10.1 | 1980 | C112_10.1 S05 M05C4 | C112_10.1 P71 BN71A4 |
| 146 | 15.6 | 2.2 | 9.1 | 1920 | C112_9.1 S05 M05C4 | C112_9.1 P71 BN71A4 |
| 173 | 13.1 | 2.4 | 7.6 | 1820 | C112_7.6 S05 M05C4 | C112_7.6 P71 BN71A4 |
| 192 | 11.8 | 2.6 | 6.9 | 1760 | C112_6.9 S05 M05C4 | C112_6.9 P71 BN71A4 |

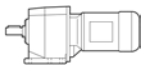


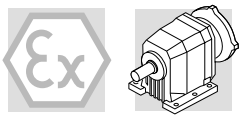
## 2.7.4 0.37 kW

| 0.37 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  IEC |
| **2.0** | 1582 | 1.0 | 668.8 | 16000 | **C614_668.8 S1 M1SD4** | **C614_668.8 P71 BN71B4** |
| **2.2** | 1444 | 1.1 | 610.1 | 16000 | **C614_610.1 S1 M1SD4** | **C614_610.1 P71 BN71B4** |
| **2.4** | 1352 | 1.2 | 571.2 | 16000 | **C614_571.2 S1 M1SD4** | **C614_571.2 P71 BN71B4** |
| **2.6** | 1233 | 1.3 | 521.1 | 16000 | **C614_521.1 S1 M1SD4** | **C614_521.1 P71 BN71B4** |
| **3.0** | 1093 | 1.5 | 462.0 | 16000 | **C614_462.0 S1 M1SD4** | **C614_462.0 P71 BN71B4** |
| **3.3** | 997 | 1.6 | 421.5 | 16000 | **C614_421.5 S1 M1SD4** | **C614_421.5 P71 BN71B4** |
| **3.3** | 984 | 1.0 | 415.7 | 10000 | **C514_415.7 S1 M1SD4** | **C514_415.7 P71 BN71B4** |
| **3.6** | 898 | 1.1 | 379.6 | 10000 | **C514_379.6 S1 M1SD4** | **C514_379.6 P71 BN71B4** |
| **3.7** | 876 | 1.8 | 370.1 | 16000 | **C614_370.1 S1 M1SD4** | **C614_370.1 P71 BN71B4** |
| **4.1** | 799 | 2.0 | 337.7 | 16000 | **C614_337.7 S1 M1SD4** | **C614_337.7 P71 BN71B4** |
| **4.2** | 772 | 1.3 | 326.1 | 10000 | **C514_326.1 S1 M1SD4** | **C514_326.1 P71 BN71B4** |
| **4.5** | 714 | 2.2 | 301.7 | 16000 | **C614_301.7 S1 M1SD4** | **C614_301.7 P71 BN71B4** |
| **4.6** | 705 | 1.4 | 297.8 | 10000 | **C514_297.8 S1 M1SD4** | **C514_297.8 P71 BN71B4** |
| **5.0** | 651 | 2.5 | 275.3 | 16000 | **C614_275.3 S1 M1SD4** | **C614_275.3 P71 BN71B4** |
| **5.2** | 624 | 1.6 | 263.8 | 10000 | **C514_263.8 S1 M1SD4** | **C514_263.8 P71 BN71B4** |
| **5.7** | 570 | 1.8 | 240.9 | 10000 | **C514_240.9 S1 M1SD4** | **C514_240.9 P71 BN71B4** |
| **5.7** | 568 | 1.1 | 239.9 | 7000 | **C414_239.9 S1 M1SD4** | **C414_239.9 P71 BN71B4** |
| **5.7** | 564 | 2.8 | 238.3 | 16000 | **C614_238.3 S1 M1SD4** | **C614_238.3 P71 BN71B4** |
| **6.3** | 514 | 3.1 | 217.4 | 16000 | **C614_217.4 S1 M1SD4** | **C614_217.4 P71 BN71B4** |
| **6.3** | 520 | 1.9 | 216.7 | 10000 | **C513_216.7 S1 M1SD4** | **C513_216.7 P71 BN71B4** |
| **6.6** | 502 | 1.1 | 209.1 | 7000 | **C413_209.1 S1 M1SD4** | **C413_209.1 P71 BN71B4** |
| **6.9** | 475 | 2.1 | 197.9 | 10000 | **C513_197.9 S1 M1SD4** | **C513_197.9 P71 BN71B4** |
| **7.2** | 458 | 1.3 | 190.8 | 7000 | **C413_190.8 S1 M1SD4** | **C413_190.8 P71 BN71B4** |
| **7.6** | 431 | 1.2 | 179.9 | 7000 | **C413_179.9 S1 M1SD4** | **C413_179.9 P71 BN71B4** |
| **7.8** | 422 | 2.3 | 175.8 | 10000 | **C513_175.8 S1 M1SD4** | **C513_175.8 P71 BN71B4** |
| **8.3** | 394 | 1.5 | 164.1 | 7000 | **C413_164.1 S1 M1SD4** | **C413_164.1 P71 BN71B4** |
| **8.5** | 389 | 1.1 | 162.0 | 6500 | **C353_162.0 S1 M1SD4** | **C353_162.0 P71 BN71B4** |
| **8.5** | 385 | 2.6 | 160.5 | 10000 | **C513_160.5 S1 M1SD4** | **C513_160.5 P71 BN71B4** |
| **9.3** | 354 | 1.3 | 147.6 | 6500 | **C353_147.6 S1 M1SD4** | **C353_147.6 P71 BN71B4** |
| **9.3** | 354 | 2.7 | 147.4 | 10000 | **C513_147.4 S1 M1SD4** | **C513_147.4 P71 BN71B4** |
| **9.4** | 349 | 1.4 | 145.6 | 7000 | **C413_145.6 S1 M1SD4** | **C413_145.6 P71 BN71B4** |
| **9.8** | 335 | 1.3 | 139.8 | 6500 | **C353_139.8 S1 M1SD4** | **C353_139.8 P71 BN71B4** |
| **10.2** | 323 | 3.1 | 134.6 | 10000 | **C513_134.6 S1 M1SD4** | **C513_134.6 P71 BN71B4** |
| **10.3** | 319 | 1.9 | 132.9 | 7000 | **C413_132.9 S1 M1SD4** | **C413_132.9 P71 BN71B4** |
| **10.8** | 305 | 1.4 | 127.3 | 6500 | **C353_127.3 S1 M1SD4** | **C353_127.3 P71 BN71B4** |
| **11.0** | 298 | 3.1 | 124.4 | 10000 | **C513_124.4 S1 M1SD4** | **C513_124.4 P71 BN71B4** |
| **11.4** | 289 | 1.7 | 120.6 | 7000 | **C413_120.6 S1 M1SD4** | **C413_120.6 P71 BN71B4** |
| **12.3** | 267 | 1.5 | 111.5 | 6500 | **C353_111.5 S1 M1SD4** | **C353_111.5 P71 BN71B4** |
| **12.4** | 264 | 2.2 | 110.1 | 7000 | **C413_110.1 S1 M1SD4** | **C413_110.1 P71 BN71B4** |
| **13.4** | 245 | 1.9 | 102.3 | 7000 | **C413_102.3 S1 M1SD4** | **C413_102.3 P71 BN71B4** |
| **13.5** | 244 | 1.7 | 101.6 | 6500 | **C353_101.6 S1 M1SD4** | **C353_101.6 P71 BN71B4** |
| **14.7** | 224 | 2.4 | 93.3 | 7000 | **C413_93.3 S1 M1SD4** | **C413_93.3 P71 BN71B4** |
| **14.9** | 221 | 1.8 | 91.9 | 6500 | **C353_91.9 S1 M1SD4** | **C353_91.9 P71 BN71B4** |
| **16.4** | 201 | 2.0 | 83.8 | 6500 | **C353_83.8 S1 M1SD4** | **C353_83.8 P71 BN71B4** |
| **16.6** | 200 | 1.1 | 82.6 | 5500 | **C313_82.6 S1 M1SD4** | **C313_82.6 P71 BN71B4** |
| **16.8** | 196 | 2.4 | 81.5 | 7000 | **C413_81.5 S1 M1SD4** | **C413_81.5 P71 BN71B4** |
| **17.7** | 186 | 2.1 | 77.6 | 6500 | **C353_77.6 S1 M1SD4** | **C353_77.6 P71 BN71B4** |
| **18.4** | 178 | 2.7 | 74.4 | 7000 | **C413_74.4 S1 M1SD4** | **C413_74.4 P71 BN71B4** |
| **18.4** | 180 | 1.1 | 74.3 | 5500 | **C313_74.3 S1 M1SD4** | **C313_74.3 P71 BN71B4** |
| **19.4** | 170 | 2.2 | 70.7 | 6500 | **C353_70.7 S1 M1SD4** | **C353_70.7 P71 BN71B4** |
| **21.3** | 154 | 2.9 | 64.3 | 7000 | **C413_64.3 S1 M1SD4** | **C413_64.3 P71 BN71B4** |
| **22.1** | 149 | 2.5 | 62.0 | 6500 | **C353_62.0 S1 M1SD4** | **C353_62.0 P71 BN71B4** |
| **23.4** | 141 | 3.2 | 58.7 | 7000 | **C413_58.7 S1 M1SD4** | **C413_58.7 P71 BN71B4** |
| **24.2** | 136 | 2.5 | 56.5 | 6500 | **C353_56.5 S1 M1SD4** | **C353_56.5 P71 BN71B4** |
| **26.1** | 128 | 1.6 | 52.4 | 5500 | **C312_52.4 S1 M1SD4** | **C312_52.4 P71 BN71B4** |
| **26.6** | 123 | 3.5 | 51.5 | 7000 | **C413_51.5 S1 M1SD4** | **C413_51.5 P71 BN71B4** |
| **28.4** | 116 | 2.9 | 48.2 | 6500 | **C353_48.2 S1 M1SD4** | **C353_48.2 P71 BN71B4** |
| **29.0** | 116 | 1.9 | 47.2 | 5500 | **C312_47.2 S1 M1SD4** | **C312_47.2 P71 BN71B4** |
| **30** | 111 | 1.8 | 45.3 | 5500 | **C312_45.3 S1 M1SD4** | **C312_45.3 P71 BN71B4** |
| **31** | 105 | 2.9 | 43.9 | 6500 | **C353_43.9 S1 M1SD4** | **C353_43.9 P71 BN71B4** |
| **32** | 106 | 1.2 | 43.3 | 4530 | **C212_43.3 S1 M1SD4** | **C212_43.3 P71 BN71B4** |

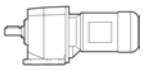
| 0.37 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  IEC |
| 34 | 100 | 2.2 | 40.7 | 5500 | C312_40.7 S1 M1SD4 | C312_40.7 P71 BN71B4 |
| 35 | 95 | 1.2 | 39.0 | 4410 | C212_39.0 S1 M1SD4 | C212_39.0 P71 BN71B4 |
| 36 | 91 | 3.3 | 38.1 | 6500 | C353_38.1 S1 M1SD4 | C353_38.1 P71 BN71B4 |
| 37 | 90 | 1.5 | 36.8 | 4360 | C212_36.8 S1 M1SD4 | C212_36.8 P71 BN71B4 |
| 38 | 88 | 2.2 | 36.1 | 5500 | C312_36.1 S1 M1SD4 | C312_36.1 P71 BN71B4 |
| 39 | 83 | 3.4 | 34.7 | 6500 | C353_34.7 S1 M1SD4 | C353_34.7 P71 BN71B4 |
| 41 | 81 | 1.6 | 33.1 | 4240 | C212_33.1 S1 M1SD4 | C212_33.1 P71 BN71B4 |
| 42 | 80 | 2.6 | 32.5 | 5500 | C312_32.5 S1 M1SD4 | C312_32.5 P71 BN71B4 |
| 46 | 73 | 2.7 | 29.8 | 5500 | C312_29.8 S1 M1SD4 | C312_29.8 P71 BN71B4 |
| 46 | 73 | 1.7 | 29.6 | 4130 | C212_29.6 S1 M1SD4 | C212_29.6 P71 BN71B4 |
| 51 | 66 | 2.9 | 26.8 | 5500 | C312_26.8 S1 M1SD4 | C312_26.8 P71 BN71B4 |
| 51 | 65 | 1.8 | 26.7 | 4010 | C212_26.7 S1 M1SD4 | C212_26.7 P71 BN71B4 |
| 55 | 62 | 3.0 | 25.1 | 5500 | C312_25.1 S1 M1SD4 | C312_25.1 P71 BN71B4 |
| 56 | 59 | 1.9 | 24.3 | 3910 | C212_24.3 S1 M1SD4 | C212_24.3 P71 BN71B4 |
| 61 | 55 | 3.2 | 22.6 | 5500 | C312_22.6 S1 M1SD4 | C312_22.6 P71 BN71B4 |
| 63 | 54 | 2.1 | 21.9 | 3830 | C212_21.9 S1 M1SD4 | C212_21.9 P71 BN71B4 |
| 68 | 49 | 3.5 | 20.1 | 5440 | C312_20.1 S1 M1SD4 | C312_20.1 P71 BN71B4 |
| 68 | 49 | 2.2 | 20.0 | 3740 | C212_20.0 S1 M1SD4 | C212_20.0 P71 BN71B4 |
| 74 | 46 | 1.0 | 18.6 | 1950 | C112_18.6 S1 M1SD4 | C112_18.6 P71 BN71B4 |
| 76 | 44 | 2.4 | 18.0 | 3630 | C212_18.0 S1 M1SD4 | C212_18.0 P71 BN71B4 |
| 80 | 42 | 1.0 | 17.2 | 2000 | C112_17.2 S1 M1SD4 | C112_17.2 P71 BN71B4 |
| 86 | 39 | 2.6 | 15.8 | 3500 | C212_15.8 S1 M1SD4 | C212_15.8 P71 BN71B4 |
| 89 | 38 | 1.1 | 15.5 | 2000 | C112_15.5 S1 M1SD4 | C112_15.5 P71 BN71B4 |
| 96 | 35 | 2.7 | 14.3 | 3390 | C212_14.3 S1 M1SD4 | C212_14.3 P71 BN71B4 |
| 102 | 33 | 1.2 | 13.4 | 2000 | C112_13.4 S1 M1SD4 | C112_13.4 P71 BN71B4 |
| 110 | 30 | 3.0 | 12.4 | 3260 | C212_12.4 S1 M1SD4 | C212_12.4 P71 BN71B4 |
| 113 | 30 | 1.3 | 12.1 | 2000 | C112_12.1 S1 M1SD4 | C112_12.1 P71 BN71B4 |
| 123 | 27 | 3.3 | 11.2 | 3160 | C212_11.2 S1 M1SD4 | C212_11.2 P71 BN71B4 |
| 136 | 25 | 1.5 | 10.1 | 1930 | C112_10.1 S1 M1SD4 | C112_10.1 P71 BN71B4 |
| 151 | 22 | 1.6 | 9.1 | 1870 | C112_9.1 S1 M1SD4 | C112_9.1 P71 BN71B4 |
| 180 | 18.7 | 1.7 | 7.6 | 1780 | C112_7.6 S1 M1SD4 | C112_7.6 P71 BN71B4 |
| 199 | 16.8 | 1.8 | 6.9 | 1730 | C112_6.9 S1 M1SD4 | C112_6.9 P71 BN71B4 |

### *2.7.5 0.55 kW*

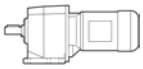
| 0.55 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  IEC |
| 3.0 | 1598 | 1.0 | 462.0 | 16000 | C614_462.0 S1 M1LA4 | C614_462.0 P80 BN80A4 |
| 3.3 | 1458 | 1.1 | 421.5 | 16000 | C614_421.5 S1 M1LA4 | C614_421.5 P80 BN80A4 |
| 3.7 | 1280 | 1.3 | 370.1 | 16000 | C614_370.1 S1 M1LA4 | C614_370.1 P80 BN80A4 |
| 4.1 | 1168 | 1.4 | 337.7 | 16000 | C614_337.7 S1 M1LA4 | C614_337.7 P80 BN80A4 |
| 4.6 | 1043 | 1.5 | 301.7 | 16000 | C614_301.7 S1 M1LA4 | C614_301.7 P80 BN80A4 |
| 5.0 | 952 | 1.7 | 275.3 | 16000 | C614_275.3 S1 M1LA4 | C614_275.3 P80 BN80A4 |
| 5.2 | 912 | 1.1 | 263.8 | 10000 | C514_263.8 S1 M1LA4 | C514_263.8 P80 BN80A4 |
| 5.7 | 833 | 1.2 | 240.9 | 10000 | C514_240.9 S1 M1LA4 | C514_240.9 P80 BN80A4 |
| 5.8 | 824 | 1.9 | 238.3 | 16000 | C614_238.3 S1 M1LA4 | C614_238.3 P80 BN80A4 |
| 6.3 | 752 | 2.1 | 217.4 | 16000 | C614_217.4 S1 M1LA4 | C614_217.4 P80 BN80A4 |
| 6.4 | 767 | 1.3 | 216.7 | 10000 | C513_216.7 S1 M1LA4 | C513_216.7 P80 BN80A4 |
| 7.0 | 700 | 1.4 | 197.9 | 10000 | C513_197.9 S1 M1LA4 | C513_197.9 P80 BN80A4 |
| 7.9 | 622 | 1.6 | 175.8 | 10000 | C513_175.8 S1 M1LA4 | C513_175.8 P80 BN80A4 |
| 8.4 | 581 | 1.0 | 164.1 | 7000 | C413_164.1 S1 M1LA4 | C413_164.1 P80 BN80A4 |
| 8.6 | 568 | 1.8 | 160.5 | 10000 | C513_160.5 S1 M1LA4 | C513_160.5 P80 BN80A4 |
| 9.4 | 522 | 1.8 | 147.4 | 10000 | C513_147.4 S1 M1LA4 | C513_147.4 P80 BN80A4 |
| 10.3 | 477 | 2.1 | 134.6 | 10000 | C513_134.6 S1 M1LA4 | C513_134.6 P80 BN80A4 |
| 10.4 | 470 | 1.3 | 132.9 | 7000 | C413_132.9 S1 M1LA4 | C413_132.9 P80 BN80A4 |
| 11.1 | 440 | 2.1 | 124.4 | 10000 | C513_124.4 S1 M1LA4 | C513_124.4 P80 BN80A4 |
| 11.4 | 427 | 1.1 | 120.6 | 7000 | C413_120.6 S1 M1LA4 | C413_120.6 P80 BN80A4 |
| 12.1 | 402 | 2.5 | 113.6 | 10000 | C513_113.6 S1 M1LA4 | C513_113.6 P80 BN80A4 |
| 12.4 | 395 | 1.0 | 111.5 | 6500 | C353_111.5 S1 M1LA4 | C353_111.5 P80 BN80A4 |

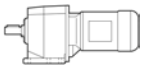


## 0.55 kW

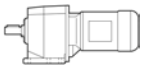
| $n_2$ min$^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  IEC |
|---|---|---|---|---|---|---|
| **12.5** | 390 | 1.5 | 110.1 | 7000 | **C413_110.1 S1 M1LA4** | **C413_110.1 P80 BN80A4** |
| **13.5** | 362 | 1.3 | 102.3 | 7000 | **C413_102.3 S1 M1LA4** | **C413_102.3 P80 BN80A4** |
| **13.6** | 360 | 2.5 | 101.8 | 10000 | **C513_101.8 S1 M1LA4** | **C513_101.8 P80 BN80A4** |
| **13.6** | 360 | 1.2 | 101.6 | 6500 | **C353_101.6 S1 M1LA4** | **C353_101.6 P80 BN80A4** |
| **14.8** | 330 | 1.6 | 93.3 | 7000 | **C413_93.3 S1 M1LA4** | **C413_93.3 P80 BN80A4** |
| **14.8** | 329 | 3.0 | 93.0 | 10000 | **C513_93.0 S1 M1LA4** | **C513_93.0 P80 BN80A4** |
| **15.0** | 325 | 1.2 | 91.9 | 6500 | **C353_91.9 S1 M1LA4** | **C353_91.9 P80 BN80A4** |
| **16.5** | 296 | 1.3 | 83.8 | 6500 | **C353_83.8 S1 M1LA4** | **C353_83.8 P80 BN80A4** |
| **16.9** | 289 | 1.6 | 81.5 | 7000 | **C413_81.5 S1 M1LA4** | **C413_81.5 P80 BN80A4** |
| **17.3** | 283 | 3.1 | 79.9 | 10000 | **C513_79.9 S1 M1LA4** | **C513_79.9 P80 BN80A4** |
| **17.8** | 275 | 1.4 | 77.6 | 6500 | **C353_77.6 S1 M1LA4** | **C353_77.6 P80 BN80A4** |
| **18.6** | 263 | 1.9 | 74.4 | 7000 | **C413_74.4 S1 M1LA4** | **C413_74.4 P80 BN80A4** |
| **19.5** | 250 | 1.5 | 70.7 | 6500 | **C353_70.7 S1 M1LA4** | **C353_70.7 P80 BN80A4** |
| **21.5** | 228 | 2.0 | 64.3 | 7000 | **C413_64.3 S1 M1LA4** | **C413_64.3 P80 BN80A4** |
| **22.2** | 220 | 1.7 | 62.0 | 6500 | **C353_62.0 S1 M1LA4** | **C353_62.0 P80 BN80A4** |
| **23.5** | 208 | 2.2 | 58.7 | 7000 | **C413_58.7 S1 M1LA4** | **C413_58.7 P80 BN80A4** |
| **24.4** | 200 | 1.7 | 56.5 | 6500 | **C353_56.5 S1 M1LA4** | **C353_56.5 P80 BN80A4** |
| **26.8** | 182 | 2.4 | 51.5 | 7000 | **C413_51.5 S1 M1LA4** | **C413_51.5 P80 BN80A4** |
| **28.7** | 170 | 2.0 | 48.2 | 6500 | **C353_48.2 S1 M1LA4** | **C353_48.2 P80 BN80A4** |
| **29.4** | 166 | 2.5 | 47.0 | 7000 | **C413_47.0 S1 M1LA4** | **C413_47.0 P80 BN80A4** |
| **30** | 164 | 1.2 | 45.3 | 5500 | **C312_45.3 S1 M1LA4** | **C312_45.3 P80 BN80A4** |
| **31** | 155 | 2.0 | 43.9 | 6500 | **C353_43.9 S1 M1LA4** | **C353_43.9 P80 BN80A4** |
| **34** | 147 | 1.5 | 40.7 | 5500 | **C312_40.7 S1 M1LA4** | **C312_40.7 P80 BN80A4** |
| **36** | 135 | 2.3 | 38.1 | 6500 | **C353_38.1 S1 M1LA4** | **C353_38.1 P80 BN80A4** |
| **38** | 133 | 1.0 | 36.8 | 4070 | **C212_36.8 S1 M1LA4** | **C212_36.8 P80 BN80A4** |
| **38** | 131 | 1.5 | 36.1 | 5500 | **C312_36.1 S1 M1LA4** | **C312_36.1 P80 BN80A4** |
| **40** | 123 | 2.3 | 34.7 | 6500 | **C353_34.7 S1 M1LA4** | **C353_34.7 P80 BN80A4** |
| **42** | 120 | 1.1 | 33.1 | 3970 | **C212_33.1 S1 M1LA4** | **C212_33.1 P80 BN80A4** |
| **42** | 118 | 1.7 | 32.5 | 5500 | **C312_32.5 S1 M1LA4** | **C312_32.5 P80 BN80A4** |
| **46** | 108 | 1.8 | 29.8 | 5500 | **C312_29.8 S1 M1LA4** | **C312_29.8 P80 BN80A4** |
| **47** | 107 | 1.2 | 29.6 | 3890 | **C212_29.6 S1 M1LA4** | **C212_29.6 P80 BN80A4** |
| **52** | 97 | 2.0 | 26.8 | 5500 | **C312_26.8 S1 M1LA4** | **C312_26.8 P80 BN80A4** |
| **52** | 96 | 1.2 | 26.7 | 3800 | **C212_26.7 S1 M1LA4** | **C212_26.7 P80 BN80A4** |
| **55** | 91 | 2.0 | 25.1 | 5500 | **C312_25.1 S1 M1LA4** | **C312_25.1 P80 BN80A4** |
| **57** | 88 | 1.3 | 24.3 | 3720 | **C212_24.3 S1 M1LA4** | **C212_24.3 P80 BN80A4** |
| **61** | 82 | 2.2 | 22.6 | 5480 | **C312_22.6 S1 M1LA4** | **C312_22.6 P80 BN80A4** |
| **63** | 79 | 1.5 | 21.9 | 3630 | **C212_21.9 S1 M1LA4** | **C212_21.9 P80 BN80A4** |
| **69** | 73 | 2.3 | 20.1 | 5300 | **C312_20.1 S1 M1LA4** | **C312_20.1 P80 BN80A4** |
| **69** | 72 | 1.5 | 20.0 | 3560 | **C212_20.0 S1 M1LA4** | **C212_20.0 P80 BN80A4** |
| **76** | 65 | 2.5 | 18.1 | 5140 | **C312_18.1 S1 M1LA4** | **C312_18.1 P80 BN80A4** |
| **77** | 65 | 1.6 | 18.0 | 3460 | **C212_18.0 S1 M1LA4** | **C212_18.0 P80 BN80A4** |
| **87** | 57 | 1.7 | 15.8 | 3350 | **C212_15.8 S1 M1LA4** | **C212_15.8 P80 BN80A4** |
| **89** | 56 | 2.7 | 15.6 | 4930 | **C312_15.6 S1 M1LA4** | **C312_15.6 P80 BN80A4** |
| **97** | 52 | 1.8 | 14.3 | 3260 | **C212_14.3 S1 M1LA4** | **C212_14.3 P80 BN80A4** |
| **98** | 51 | 3.0 | 14.0 | 4770 | **C312_14.0 S1 M1LA4** | **C312_14.0 P80 BN80A4** |
| **111** | 45 | 2.0 | 12.4 | 3160 | **C212_12.4 S1 M1LA4** | **C212_12.4 P80 BN80A4** |
| **112** | 45 | 3.1 | 12.3 | 4590 | **C312_12.3 S1 M1LA4** | **C312_12.3 P80 BN80A4** |
| **124** | 40 | 2.2 | 11.2 | 3070 | **C212_11.2 S1 M1LA4** | **C212_11.2 P80 BN80A4** |
| **124** | 40 | 3.5 | 11.1 | 4450 | **C312_11.1 S1 M1LA4** | **C312_11.1 P80 BN80A4** |
| **143** | 35 | 2.4 | 9.6 | 2950 | **C212_9.6 S1 M1LA4** | **C212_9.6 P80 BN80A4** |
| **152** | 33 | 1.1 | 9.1 | 1640 | **C112_9.1 S1 M1LA4** | **C112_9.1 P80 BN80A4** |
| **159** | 31 | 2.5 | 8.7 | 2860 | **C212_8.7 S1 M1LA4** | **C212_8.7 P80 BN80A4** |
| **181** | 28 | 1.2 | 7.6 | 1690 | **C112_7.6 S1 M1LA4** | **C112_7.6 P80 BN80A4** |
| **201** | 25 | 1.2 | 6.9 | 1670 | **C112_6.9 S1 M1LA4** | **C112_6.9 P80 BN80A4** |

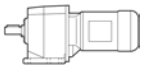
### 2.7.6 0.75 kW

| 0.75 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  IEC |
| **4.1** | 1567 | 1.0 | 337.7 | 16000 | **C614_337.7 S2 M2SA4** | **C614_337.7 P80 BN80B4** |
| **4.6** | 1400 | 1.1 | 301.7 | 16000 | **C614_301.7 S2 M2SA4** | **C614_301.7 P80 BN80B4** |
| **5.1** | 1278 | 1.3 | 275.3 | 16000 | **C614_275.3 S2 M2SA4** | **C614_275.3 P80 BN80B4** |
| **5.9** | 1106 | 1.4 | 238.3 | 16000 | **C614_238.3 S2 M2SA4** | **C614_238.3 P80 BN80B4** |
| **6.4** | 1009 | 1.6 | 217.4 | 16000 | **C614_217.4 S2 M2SA4** | **C614_217.4 P80 BN80B4** |
| **7.1** | 941 | 1.1 | 197.9 | 10000 | **C513_197.9 S2 M2SA4** | **C513_197.9 P80 BN80B4** |
| **8.0** | 836 | 1.2 | 175.8 | 10000 | **C513_175.8 S2 M2SA4** | **C513_175.8 P80 BN80B4** |
| **8.7** | 764 | 1.3 | 160.5 | 10000 | **C513_160.5 S2 M2SA4** | **C513_160.5 P80 BN80B4** |
| **9.5** | 702 | 1.4 | 147.4 | 10000 | **C513_147.4 S2 M2SA4** | **C513_147.4 P80 BN80B4** |
| **10.4** | 641 | 1.6 | 134.6 | 10000 | **C513_134.6 S2 M2SA4** | **C513_134.6 P80 BN80B4** |
| **11.3** | 592 | 1.6 | 124.4 | 10000 | **C513_124.4 S2 M2SA4** | **C513_124.4 P80 BN80B4** |
| **12.3** | 541 | 1.9 | 113.6 | 10000 | **C513_113.6 S2 M2SA4** | **C513_113.6 P80 BN80B4** |
| **12.7** | 524 | 1.1 | 110.1 | 7000 | **C413_110.1 S2 M2SA4** | **C413_110.1 P80 BN80B4** |
| **13.8** | 484 | 1.9 | 101.8 | 10000 | **C513_101.8 S2 M2SA4** | **C513_101.8 P80 BN80B4** |
| **15.0** | 444 | 1.2 | 93.3 | 7000 | **C413_93.3 S2 M2SA4** | **C413_93.3 P80 BN80B4** |
| **15.1** | 442 | 2.2 | 93.0 | 10000 | **C513_93.0 S2 M2SA4** | **C513_93.0 P80 BN80B4** |
| **17.2** | 388 | 1.2 | 81.5 | 7000 | **C413_81.5 S2 M2SA4** | **C413_81.5 P80 BN80B4** |
| **17.5** | 380 | 2.3 | 79.9 | 10000 | **C513_79.9 S2 M2SA4** | **C513_79.9 P80 BN80B4** |
| **18.0** | 369 | 1.1 | 77.6 | 6500 | **C353_77.6 S2 M2SA4** | **C353_77.6 P80 BN80B4** |
| **18.8** | 354 | 1.4 | 74.4 | 7000 | **C413_74.4 S2 M2SA4** | **C413_74.4 P80 BN80B4** |
| **19.2** | 347 | 2.6 | 72.9 | 10000 | **C513_72.9 S2 M2SA4** | **C513_72.9 P80 BN80B4** |
| **19.8** | 336 | 1.1 | 70.7 | 6500 | **C353_70.7 S2 M2SA4** | **C353_70.7 P80 BN80B4** |
| **21.7** | 307 | 2.7 | 64.6 | 10000 | **C513_64.6 S2 M2SA4** | **C513_64.6 P80 BN80B4** |
| **21.8** | 306 | 1.5 | 64.3 | 7000 | **C413_64.3 S2 M2SA4** | **C413_64.3 P80 BN80B4** |
| **22.6** | 295 | 1.3 | 62.0 | 6500 | **C353_62.0 S2 M2SA4** | **C353_62.0 P80 BN80B4** |
| **23.7** | 281 | 3.0 | 59.0 | 10000 | **C513_59.0 S2 M2SA4** | **C513_59.0 P80 BN80B4** |
| **23.9** | 279 | 1.6 | 58.7 | 7000 | **C413_58.7 S2 M2SA4** | **C413_58.7 P80 BN80B4** |
| **24.8** | 269 | 1.3 | 56.5 | 6500 | **C353_56.5 S2 M2SA4** | **C353_56.5 P80 BN80B4** |
| **27.2** | 245 | 1.8 | 51.5 | 7000 | **C413_51.5 S2 M2SA4** | **C413_51.5 P80 BN80B4** |
| **27.4** | 243 | 3.3 | 51.2 | 10000 | **C513_51.2 S2 M2SA4** | **C513_51.2 P80 BN80B4** |
| **29.1** | 229 | 1.5 | 48.2 | 6500 | **C353_48.2 S2 M2SA4** | **C353_48.2 P80 BN80B4** |
| **29.8** | 223 | 1.9 | 47.0 | 7000 | **C413_47.0 S2 M2SA4** | **C413_47.0 P80 BN80B4** |
| **32** | 209 | 1.5 | 43.9 | 6500 | **C353_43.9 S2 M2SA4** | **C353_43.9 P80 BN80B4** |
| **34** | 198 | 1.1 | 40.7 | 5500 | **C312_40.7 S2 M2SA4** | **C312_40.7 P80 BN80B4** |
| **35** | 192 | 2.1 | 40.3 | 7000 | **C413_40.3 S2 M2SA4** | **C413_40.3 P80 BN80B4** |
| **37** | 181 | 1.7 | 38.1 | 6500 | **C353_38.1 S2 M2SA4** | **C353_38.1 P80 BN80B4** |
| **38** | 175 | 2.1 | 36.8 | 7000 | **C413_36.8 S2 M2SA4** | **C413_36.8 P80 BN80B4** |
| **39** | 175 | 1.1 | 36.1 | 5500 | **C312_36.1 S2 M2SA4** | **C312_36.1 P80 BN80B4** |
| **40** | 165 | 1.7 | 34.7 | 6500 | **C353_34.7 S2 M2SA4** | **C353_34.7 P80 BN80B4** |
| **43** | 158 | 1.3 | 32.5 | 5500 | **C312_32.5 S2 M2SA4** | **C312_32.5 P80 BN80B4** |
| **45** | 149 | 2.4 | 31.2 | 7000 | **C413_31.2 S2 M2SA4** | **C413_31.2 P80 BN80B4** |
| **47** | 145 | 1.3 | 29.8 | 5500 | **C312_29.8 S2 M2SA4** | **C312_29.8 P80 BN80B4** |
| **49** | 137 | 2.0 | 28.7 | 6490 | **C353_28.7 S2 M2SA4** | **C353_28.7 P80 BN80B4** |
| **49** | 136 | 2.5 | 28.5 | 7000 | **C413_28.5 S2 M2SA4** | **C413_28.5 P80 BN80B4** |
| **52** | 130 | 1.5 | 26.8 | 5500 | **C312_26.8 S2 M2SA4** | **C312_26.8 P80 BN80B4** |
| **54** | 124 | 2.0 | 26.2 | 6320 | **C353_26.2 S2 M2SA4** | **C353_26.2 P80 BN80B4** |
| **56** | 122 | 1.5 | 25.1 | 5460 | **C312_25.1 S2 M2SA4** | **C312_25.1 P80 BN80B4** |
| **62** | 110 | 1.6 | 22.6 | 5310 | **C312_22.6 S2 M2SA4** | **C312_22.6 P80 BN80B4** |
| **63** | 105 | 2.3 | 22.1 | 6050 | **C353_22.1 S2 M2SA4** | **C353_22.1 P80 BN80B4** |
| **64** | 106 | 1.1 | 21.9 | 3430 | **C212_21.9 S2 M2SA4** | **C212_21.9 P80 BN80B4** |
| **69** | 96 | 2.2 | 20.2 | 5890 | **C353_20.2 S2 M2SA4** | **C353_20.2 P80 BN80B4** |
| **70** | 98 | 1.7 | 20.1 | 5150 | **C312_20.1 S2 M2SA4** | **C312_20.1 P80 BN80B4** |
| **70** | 97 | 1.1 | 20.0 | 3380 | **C212_20.0 S2 M2SA4** | **C212_20.0 P80 BN80B4** |
| **77** | 88 | 1.9 | 18.1 | 5000 | **C312_18.1 S2 M2SA4** | **C312_18.1 P80 BN80B4** |
| **78** | 88 | 1.2 | 18.0 | 3290 | **C212_18.0 S2 M2SA4** | **C212_18.0 P80 BN80B4** |
| **88** | 77 | 1.3 | 15.8 | 3210 | **C212_15.8 S2 M2SA4** | **C212_15.8 P80 BN80B4** |
| **90** | 76 | 2.0 | 15.6 | 4800 | **C312_15.6 S2 M2SA4** | **C312_15.6 P80 BN80B4** |
| **98** | 69 | 1.4 | 14.3 | 3120 | **C212_14.3 S2 M2SA4** | **C212_14.3 P80 BN80B4** |
| **100** | 68 | 2.2 | 14.0 | 4660 | **C312_14.0 S2 M2SA4** | **C312_14.0 P80 BN80B4** |
| **113** | 60 | 1.5 | 12.4 | 3030 | **C212_12.4 S2 M2SA4** | **C212_12.4 P80 BN80B4** |
| **114** | 60 | 2.3 | 12.3 | 4490 | **C312_12.3 S2 M2SA4** | **C312_12.3 P80 BN80B4** |

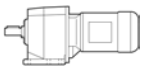
| 0.75 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  IEC |
| **125** | 54 | 1.7 | 11.2 | 2940 | **C212_11.2 S2 M2SA4** | **C212_11.2 P80 BN80B4** |
| **126** | 54 | 2.6 | 11.1 | 4350 | **C312_11.1 S2 M2SA4** | **C312_11.1 P80 BN80B4** |
| **145** | 47 | 1.8 | 9.6 | 2840 | **C212_9.6 S2 M2SA4** | **C212_9.6 P80 BN80B4** |
| **151** | 45 | 2.9 | 9.3 | 4140 | **C312_9.3 S2 M2SA4** | **C312_9.3 P80 BN80B4** |
| **161** | 42 | 1.9 | 8.7 | 2760 | **C212_8.7 S2 M2SA4** | **C212_8.7 P80 BN80B4** |
| **167** | 41 | 3.1 | 8.4 | 4010 | **C312_8.4 S2 M2SA4** | **C312_8.4 P80 BN80B4** |
| **195** | 35 | 3.3 | 7.2 | 3830 | **C312_7.2 S2 M2SA4** | **C312_7.2 P80 BN80B4** |
| **198** | 34 | 2.2 | 7.1 | 2630 | **C212_7.1 S2 M2SA4** | **C212_7.1 P80 BN80B4** |
| **220** | 31 | 2.3 | 6.4 | 2550 | **C212_6.4 S2 M2SA4** | **C212_6.4 P80 BN80B4** |

### *2.7.7 1.1 kW*

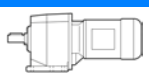
| 1.1 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  IEC |
| **6.4** | 1484 | 1.1 | 217.4 | 16000 | **C614_217.4 S2 M2SB4** | **C614_217.4 P90 BN90S4** |
| **10.4** | 939 | 1.1 | 134.6 | 10000 | **C513_134.6 S2 M2SB4** | **C513_134.6 P90 BN90S4** |
| **11.3** | 868 | 1.1 | 124.4 | 10000 | **C513_124.4 S2 M2SB4** | **C513_124.4 P90 BN90S4** |
| **12.3** | 793 | 1.3 | 113.6 | 10000 | **C513_113.6 S2 M2SB4** | **C513_113.6 P90 BN90S4** |
| **13.8** | 710 | 1.3 | 101.8 | 10000 | **C513_101.8 S2 M2SB4** | **C513_101.8 P90 BN90S4** |
| **15.1** | 649 | 1.5 | 93.0 | 10000 | **C513_93.0 S2 M2SB4** | **C513_93.0 P90 BN90S4** |
| **17.5** | 557 | 1.6 | 79.9 | 10000 | **C513_79.9 S2 M2SB4** | **C513_79.9 P90 BN90S4** |
| **19.2** | 509 | 1.8 | 72.9 | 10000 | **C513_72.9 S2 M2SB4** | **C513_72.9 P90 BN90S4** |
| **21.7** | 451 | 1.9 | 64.6 | 10000 | **C513_64.6 S2 M2SB4** | **C513_64.6 P90 BN90S4** |
| **23.7** | 412 | 2.1 | 59.0 | 10000 | **C513_59.0 S2 M2SB4** | **C513_59.0 P90 BN90S4** |
| **23.9** | 409 | 1.1 | 58.7 | 7000 | **C413_58.7 S2 M2SB4** | **C413_58.7 P90 BN90S4** |
| **27.2** | 359 | 1.2 | 51.5 | 7000 | **C413_51.5 S2 M2SB4** | **C413_51.5 P90 BN90S4** |
| **27.4** | 357 | 2.3 | 51.2 | 10000 | **C513_51.2 S2 M2SB4** | **C513_51.2 P90 BN90S4** |
| **29.8** | 328 | 1.3 | 47.0 | 7000 | **C413_47.0 S2 M2SB4** | **C413_47.0 P90 BN90S4** |
| **30.0** | 326 | 2.5 | 46.7 | 10000 | **C513_46.7 S2 M2SB4** | **C513_46.7 P90 BN90S4** |
| **32** | 306 | 1.0 | 43.9 | 6500 | **C353_43.9 S2 M2SB4** | **C353_43.9 P90 BN90S4** |
| **35** | 282 | 2.7 | 40.5 | 10000 | **C513_40.5 S2 M2SB4** | **C513_40.5 P90 BN90S4** |
| **35** | 281 | 1.5 | 40.3 | 7000 | **C413_40.3 S2 M2SB4** | **C413_40.3 P90 BN90S4** |
| **37** | 266 | 1.1 | 38.1 | 6500 | **C353_38.1 S2 M2SB4** | **C353_38.1 P90 BN90S4** |
| **38** | 258 | 2.9 | 37.0 | 10000 | **C513_37.0 S2 M2SB4** | **C513_37.0 P90 BN90S4** |
| **38** | 257 | 1.4 | 36.8 | 7000 | **C413_36.8 S2 M2SB4** | **C413_36.8 P90 BN90S4** |
| **40** | 242 | 1.2 | 34.7 | 6430 | **C353_34.7 S2 M2SB4** | **C353_34.7 P90 BN90S4** |
| **45** | 218 | 1.7 | 31.2 | 7000 | **C413_31.2 S2 M2SB4** | **C413_31.2 P90 BN90S4** |
| **47** | 210 | 3.3 | 30.1 | 10000 | **C513_30.1 S2 M2SB4** | **C513_30.1 P90 BN90S4** |
| **49** | 200 | 1.3 | 28.7 | 6190 | **C353_28.7 S2 M2SB4** | **C353_28.7 P90 BN90S4** |
| **49** | 199 | 1.7 | 28.5 | 7000 | **C413_28.5 S2 M2SB4** | **C413_28.5 P90 BN90S4** |
| **54** | 183 | 1.3 | 26.2 | 6040 | **C353_26.2 S2 M2SB4** | **C353_26.2 P90 BN90S4** |
| **56** | 179 | 1.0 | 25.1 | 5180 | **C312_25.1 S2 M2SB4** | **C312_25.1 P90 BN90S4** |
| **62** | 161 | 1.1 | 22.6 | 5050 | **C312_22.6 S2 M2SB4** | **C312_22.6 P90 BN90S4** |
| **63** | 154 | 1.6 | 22.1 | 5810 | **C353_22.1 S2 M2SB4** | **C353_22.1 P90 BN90S4** |
| **69** | 141 | 1.5 | 20.2 | 5670 | **C353_20.2 S2 M2SB4** | **C353_20.2 P90 BN90S4** |
| **70** | 143 | 1.2 | 20.1 | 4920 | **C312_20.1 S2 M2SB4** | **C312_20.1 P90 BN90S4** |
| **77** | 129 | 1.3 | 18.1 | 4790 | **C312_18.1 S2 M2SB4** | **C312_18.1 P90 BN90S4** |
| **90** | 111 | 1.4 | 15.6 | 4630 | **C312_15.6 S2 M2SB4** | **C312_15.6 P90 BN90S4** |
| **100** | 100 | 1.5 | 14.0 | 4500 | **C312_14.0 S2 M2SB4** | **C312_14.0 P90 BN90S4** |
| **113** | 88 | 1.0 | 12.4 | 2840 | **C212_12.4 S2 M2SB4** | **C212_12.4 P90 BN90S4** |
| **114** | 88 | 1.6 | 12.3 | 4350 | **C312_12.3 S2 M2SB4** | **C312_12.3 P90 BN90S4** |
| **125** | 80 | 1.1 | 11.2 | 2770 | **C212_11.2 S2 M2SB4** | **C212_11.2 P90 BN90S4** |
| **126** | 79 | 1.8 | 11.1 | 4230 | **C312_11.1 S2 M2SB4** | **C312_11.1 P90 BN90S4** |
| **145** | 69 | 1.2 | 9.6 | 2700 | **C212_9.6 S2 M2SB4** | **C212_9.6 P90 BN90S4** |
| **151** | 66 | 2.0 | 9.3 | 4030 | **C312_9.3 S2 M2SB4** | **C312_9.3 P90 BN90S4** |
| **161** | 62 | 1.3 | 8.7 | 2630 | **C212_8.7 S2 M2SB4** | **C212_8.7 P90 BN90S4** |
| **167** | 60 | 2.1 | 8.4 | 3910 | **C312_8.4 S2 M2SB4** | **C312_8.4 P90 BN90S4** |
| **195** | 51 | 2.3 | 7.2 | 3740 | **C312_7.2 S2 M2SB4** | **C312_7.2 P90 BN90S4** |
| **198** | 50 | 1.5 | 7.1 | 2510 | **C212_7.1 S2 M2SB4** | **C212_7.1 P90 BN90S4** |

| 1.1 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  |
| 217 | 46 | 2.4 | 6.5 | 3630 | C312_6.5 S2 M2SB4 | C312_6.5 P90 BN90S4 |
| 220 | 45 | 1.5 | 6.4 | 2440 | C212_6.4 S2 M2SB4 | C212_6.4 P90 BN90S4 |

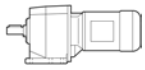
### *2.7.8 1.5 kW*

| 1.5 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  |
| 15.2 | 878 | 1.1 | 93.0 | 10000 | C513_93.0 S3 M3SA4 | C513_93.0 P90 BN90LA4 |
| 17.7 | 755 | 1.2 | 79.9 | 10000 | C513_79.9 S3 M3SA4 | C513_79.9 P90 BN90LA4 |
| 19.3 | 689 | 1.3 | 72.9 | 10000 | C513_72.9 S3 M3SA4 | C513_72.9 P90 BN90LA4 |
| 21.8 | 610 | 1.4 | 64.6 | 10000 | C513_64.6 S3 M3SA4 | C513_64.6 P90 BN90LA4 |
| 23.9 | 557 | 1.5 | 59.0 | 10000 | C513_59.0 S3 M3SA4 | C513_59.0 P90 BN90LA4 |
| 27.6 | 483 | 1.7 | 51.2 | 10000 | C513_51.2 S3 M3SA4 | C513_51.2 P90 BN90LA4 |
| 30 | 441 | 1.8 | 46.7 | 10000 | C513_46.7 S3 M3SA4 | C513_46.7 P90 BN90LA4 |
| 35 | 382 | 2.0 | 40.5 | 10000 | C513_40.5 S3 M3SA4 | C513_40.5 P90 BN90LA4 |
| 35 | 381 | 1.1 | 40.3 | 7000 | C413_40.3 S3 M3SA4 | C413_40.3 P90 BN90LA4 |
| 38 | 349 | 2.1 | 37.0 | 10000 | C513_37.0 S3 M3SA4 | C513_37.0 P90 BN90LA4 |
| 38 | 348 | 1.1 | 36.8 | 7000 | C413_36.8 S3 M3SA4 | C413_36.8 P90 BN90LA4 |
| 45 | 295 | 1.2 | 31.2 | 7000 | C413_31.2 S3 M3SA4 | C413_31.2 P90 BN90LA4 |
| 47 | 284 | 2.4 | 30.1 | 10000 | C513_30.1 S3 M3SA4 | C513_30.1 P90 BN90LA4 |
| 49 | 269 | 1.2 | 28.5 | 6870 | C413_28.5 S3 M3SA4 | C413_28.5 P90 BN90LA4 |
| 51 | 259 | 2.6 | 27.4 | 10000 | C513_27.4 S3 M3SA4 | C513_27.4 P90 BN90LA4 |
| 59 | 226 | 2.8 | 23.9 | 10000 | C513_23.9 S3 M3SA4 | C513_23.9 P90 BN90LA4 |
| 64 | 209 | 1.1 | 22.1 | 5530 | C353_22.1 S3 M3SA4 | C353_22.1 P90 BN90LA4 |
| 65 | 206 | 3.0 | 21.8 | 10000 | C513_21.8 S3 M3SA4 | C513_21.8 P90 BN90LA4 |
| 70 | 191 | 1.1 | 20.2 | 5410 | C353_20.2 S3 M3SA4 | C353_20.2 P90 BN90LA4 |
| 90 | 150 | 1.0 | 15.6 | 4410 | C312_15.6 S3 M3SA4 | C312_15.6 P90 BN90LA4 |
| 100 | 135 | 1.1 | 14.0 | 4300 | C312_14.0 S3 M3SA4 | C312_14.0 P90 BN90LA4 |
| 114 | 119 | 1.2 | 12.3 | 4180 | C312_12.3 S3 M3SA4 | C312_12.3 P90 BN90LA4 |
| 127 | 107 | 1.3 | 11.1 | 4070 | C312_11.1 S3 M3SA4 | C312_11.1 P90 BN90LA4 |
| 152 | 90 | 1.4 | 9.3 | 3900 | C312_9.3 S3 M3SA4 | C312_9.3 P90 BN90LA4 |
| 168 | 81 | 1.5 | 8.4 | 3790 | C312_8.4 S3 M3SA4 | C312_8.4 P90 BN90LA4 |
| 197 | 69 | 1.7 | 7.2 | 3640 | C312_7.2 S3 M3SA4 | C312_7.2 P90 BN90LA4 |
| 199 | 68 | 1.1 | 7.1 | 2380 | C212_7.1 S3 M3SA4 | C212_7.1 P90 BN90LA4 |
| 219 | 62 | 1.8 | 6.5 | 3540 | C312_6.5 S3 M3SA4 | C312_6.5 P90 BN90LA4 |
| 221 | 62 | 1.1 | 6.4 | 2330 | C212_6.4 S3 M3SA4 | C212_6.4 P90 BN90LA4 |

### *2.7.9 2.2 kW*

| 2.2 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |  |
| 23.9 | 817 | 1.0 | 59.0 | 10000 | C513_59.0 S3 M3LA4 | C513_59.0 P100 BN100LA4 |
| 27.6 | 709 | 1.1 | 51.2 | 10000 | C513_51.2 S3 M3LA4 | C513_51.2 P100 BN100LA4 |
| 30 | 647 | 1.2 | 46.7 | 10000 | C513_46.7 S3 M3LA4 | C513_46.7 P100 BN100LA4 |
| 35 | 561 | 1.3 | 40.5 | 10000 | C513_40.5 S3 M3LA4 | C513_40.5 P100 BN100LA4 |
| 38 | 512 | 1.4 | 37.0 | 10000 | C513_37.0 S3 M3LA4 | C513_37.0 P100 BN100LA4 |
| 47 | 417 | 1.6 | 30.1 | 10000 | C513_30.1 S3 M3LA4 | C513_30.1 P100 BN100LA4 |
| 51 | 380 | 1.8 | 27.4 | 10000 | C513_27.4 S3 M3LA4 | C513_27.4 P100 BN100LA4 |
| 59 | 331 | 1.9 | 23.9 | 10000 | C513_23.9 S3 M3LA4 | C513_23.9 P100 BN100LA4 |
| 65 | 302 | 2.1 | 21.8 | 10000 | C513_21.8 S3 M3LA4 | C513_21.8 P100 BN100LA4 |
| 168 | 118 | 1.1 | 8.4 | 3600 | C312_8.4 S3 M3LA4 | C312_8.4 P100 BN100LA4 |
| 197 | 101 | 1.1 | 7.2 | 3480 | C312_7.2 S3 M3LA4 | C312_7.2 P100 BN100LA4 |
| 219 | 91 | 1.2 | 6.5 | 3390 | C312_6.5 S3 M3LA4 | C312_6.5 P100 BN100LA4 |

### 2.7.10 3 kW

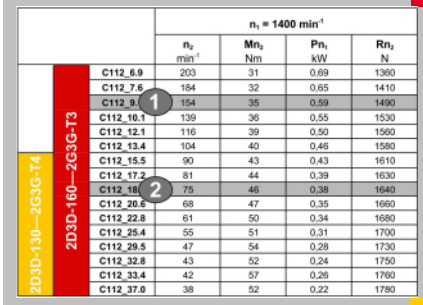
| 3 kW | | | | | | |
|---|---|---|---|---|---|---|
| $n_2$ $min^{-1}$ | $M_2$ Nm | S | i | $Rn_2$ N |  |   |
| **38** | 698 | 1.1 | 37.0 | 10000 | **C513_37.0 S3 M3LB4** | **C513_37.0 P100 BN100LB4** |
| **47** | 568 | 1.2 | 30.1 | 10000 | **C513_30.1 S3 M3LB4** | **C513_30.1 P100 BN100LB4** |
| **51** | 519 | 1.3 | 27.4 | 10000 | **C513_27.4 S3 M3LB4** | **C513_27.4 P100 BN100LB4** |
| **59** | 451 | 1.4 | 23.9 | 10000 | **C513_23.9 S3 M3LB4** | **C513_23.9 P100 BN100LB4** |
| **65** | 412 | 1.5 | 21.8 | 10000 | **C513_21.8 S3 M3LB4** | **C513_21.8 P100 BN100LB4** |

## 2.8 GEARBOX RATING CHARTS

### 2.8.1 SELECTION EXAMPLE:

1) The gear unit can be installed

- In zones **21** and **22** with surface temperature limit of **160°C**
- In zones **1** and **2** with temperature class limit **T3** (200°C)



| | | $n_1$ = 1400 min$^{-1}$ | | | |
|---|---|---|---|---|---|
| | | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_2$ N |
| 2D3D-160—2G3G-T3 | C112_6.9 | 203 | 31 | 0.69 | 1360 |
| | C112_7.6 | 184 | 32 | 0.65 | 1410 |
| | C112_9.1 (1) | 154 | 35 | 0.59 | 1490 |
| | C112_10.1 | 139 | 36 | 0.55 | 1530 |
| | C112_12.1 | 116 | 39 | 0.50 | 1560 |
| | C112_13.4 | 104 | 40 | 0.46 | 1580 |
| | C112_15.5 | 90 | 43 | 0.43 | 1610 |
| 2D3D-130—2G3G-T4 | C112_17.2 | 81 | 44 | 0.39 | 1630 |
| | C112_18.6 (2) | 75 | 46 | 0.38 | 1640 |
| | C112_20.6 | 68 | 47 | 0.35 | 1660 |
| | C112_22.8 | 61 | 50 | 0.34 | 1680 |
| | C112_25.4 | 55 | 51 | 0.31 | 1700 |
| | C112_29.5 | 47 | 54 | 0.28 | 1730 |
| | C112_32.8 | 43 | 52 | 0.24 | 1750 |
| | C112_33.4 | 42 | 57 | 0.26 | 1760 |
| | C112_37.0 | 38 | 52 | 0.22 | 1780 |

2) The gear unit can be installed

- In zones **21** and **22** with surface temperature limit of **130°C**
- In zones **21** and **22** with surface temperature limit of **160°C**
- In zones **1** and **2** with temperature class limit **T4** (135°C)
- In zones **1** and **2** with temperature class limit **T3** (200°C)

### 2.8.2 C 11 - ATEX

| IEC | | $n_1$ = 1400 min$^{-1}$ | | | |
|---|---|---|---|---|---|
| | | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_2$ N |
| 2D3D-160—2G3G-T3 | C112_6.9 | 203 | 31 | 0.69 | 1360 |
| | C112_7.6 | 184 | 32 | 0.65 | 1410 |
| | C112_9.1 | 154 | 35 | 0.59 | 1490 |
| | C112_10.1 | 139 | 36 | 0.55 | 1530 |
| | C112_12.1 | 116 | 39 | 0.50 | 1560 |
| | C112_13.4 | 104 | 40 | 0.46 | 1580 |
| 2D3D-130—2G3G-T4 | C112_15.5 | 90 | 43 | 0.43 | 1610 |
| | C112_17.2 | 81 | 44 | 0.39 | 1630 |
| | C112_18.6 | 75 | 46 | 0.38 | 1640 |
| | C112_20.6 | 68 | 47 | 0.35 | 1660 |
| | C112_22.8 | 61 | 50 | 0.34 | 1680 |
| | C112_25.4 | 55 | 51 | 0.31 | 1700 |
| | C112_29.5 | 47 | 54 | 0.28 | 1730 |
| | C112_32.8 | 43 | 52 | 0.24 | 1750 |
| | C112_33.4 | 42 | 57 | 0.26 | 1760 |
| | C112_37.0 | 38 | 52 | 0.22 | 1780 |
| | C112_42.9 | 33 | 62 | 0.22 | 1810 |
| | C112_47.6 | 29.4 | 53 | 0.17 | 1830 |
| | C112_49.7 | 28.2 | 63 | 0.20 | 1840 |
| | C112_55.2 | 25.4 | 54 | 0.15 | 1870 |
| | C112_59.6 | 23.5 | 65 | 0.17 | 1880 |
| | C112_66.2 | 21.1 | 56 | 0.13 | 1910 |

| IEC | $n_1$ = 1400 min$^{-1}$ | | | | |
|---|---|---|---|---|---|
| | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_1$ N | $Rn_2$ N |
| ⊖ | | | | | |

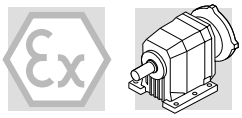
## 2.8.3 C 21 - ATEX

| IEC | | $n_1$ = 1400 min$^{-1}$ | | | | IEC | | $n_1$ = 1400 min$^{-1}$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_2$ N | | | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_1$ N | $Rn_2$ N |
| 2D3D-130—2G3G-T4 | 2D3D-160—2G3G-T3 | C212_6.4 | 219 | 70 | 1.7 | 1890 | 2G3G-T4 | 2G3G-T3 | C212_6.4 | 219 | 70 | 1.7 | 1230 | 1890 |
| | | C212_7.1 | 197 | 75 | 1.6 | 1950 | | | C212_7.1 | 197 | 75 | 1.6 | 1280 | 1950 |
| | | C212_8.7 | 161 | 80 | 1.4 | 2080 | | | C212_8.7 | 161 | 80 | 1.4 | 1260 | 2080 |
| | | C212_9.6 | 146 | 85 | 1.4 | 2150 | | | C212_9.6 | 146 | 85 | 1.4 | 1280 | 2150 |
| | | C212_11.2 | 125 | 90 | 1.2 | 2240 | | | C212_11.2 | 125 | 90 | 1.2 | 1220 | 2240 |
| | | C212_12.4 | 113 | 90 | 1.1 | 2350 | | | C212_12.4 | 113 | 90 | 1.1 | 1290 | 2350 |
| | | C212_14.3 | 98 | 95 | 1.0 | 2450 | | | C212_14.3 | 98 | 95 | 1.0 | 1100 | 2450 |
| | | C212_15.8 | 89 | 100 | 0.98 | 2530 | | | C212_15.8 | 89 | 100 | 0.98 | 1280 | 2530 |
| | | C212_18.0 | 78 | 105 | 0.90 | 2630 | | | C212_18.0 | 78 | 105 | 0.90 | 1010 | 2630 |
| | | C212_20.0 | 70 | 110 | 0.85 | 2730 | | | C212_20.0 | 70 | 110 | 0.85 | 1250 | 2730 |
| | | C212_21.9 | 64 | 115 | 0.81 | 2780 | | | C212_21.9 | 64 | 115 | 0.81 | 940 | 2780 |
| | | C212_24.3 | 58 | 115 | 0.73 | 2920 | | | C212_24.3 | 58 | 115 | 0.73 | 1250 | 2920 |
| | | C212_26.7 | 52 | 120 | 0.69 | 3000 | | | C212_26.7 | 52 | 120 | 0.69 | 1040 | 3000 |
| | | C212_29.6 | 47 | 125 | 0.65 | 3110 | | | C212_29.6 | 47 | 125 | 0.65 | 1260 | 3110 |
| | | C212_33.1 | 42 | 130 | 0.61 | 3210 | | | C212_33.1 | 42 | 130 | 0.61 | 1070 | 3210 |
| | | C212_36.8 | 38 | 135 | 0.57 | 3340 | | | C212_36.8 | 38 | 135 | 0.57 | 1200 | 3340 |
| | | C212_39.0 | 36 | 115 | 0.45 | 3540 | | | C212_39.0 | 36 | 115 | 0.45 | 1270 | 3540 |
| | | C212_43.3 | 32 | 130 | 0.46 | 3610 | | | C212_43.3 | 32 | 130 | 0.46 | 1270 | 3610 |
| | | C212_49.3 | 28.4 | 100 | 0.31 | 3990 | | | C212_49.3 | 28.4 | 100 | 0.31 | 1310 | 3990 |
| | | C212_54.7 | 25.6 | 115 | 0.32 | 4070 | | | C212_54.7 | 25.6 | 115 | 0.32 | 1300 | 4070 |
| | | C212_57.0 | 24.6 | 90 | 0.24 | 4290 | | | C212_57.0 | 24.6 | 90 | 0.24 | 1330 | 4290 |
| | | C212_63.3 | 22.1 | 105 | 0.26 | 4370 | | | C212_63.3 | 22.1 | 105 | 0.26 | 1320 | 4370 |
| | | C213_58.8 | 23.8 | 135 | 0.36 | 4040 | | | | | | | | |
| | | C213_65.3 | 21.4 | 145 | 0.35 | 4160 | | | | | | | | |
| | | C213_74.4 | 18.8 | 145 | 0.31 | 4380 | | | | | | | | |
| | | C213_82.6 | 16.9 | 150 | 0.29 | 4550 | | | | | | | | |
| | | C213_90.2 | 15.5 | 155 | 0.27 | 4660 | | | | | | | | |
| | | C213_100.2 | 14.0 | 155 | 0.24 | 4880 | | | | | | | | |
| | | C213_110.0 | 12.7 | 160 | 0.23 | 5000 | | | | | | | | |
| | | C213_122.2 | 11.5 | 160 | 0.21 | 5000 | | | | | | | | |
| | | C213_136.5 | 10.3 | 160 | 0.19 | 5000 | | | | | | | | |
| | | C213_151.7 | 9.2 | 165 | 0.17 | 5000 | | | | | | | | |
| | | C213_160.7 | 8.7 | 165 | 0.16 | 5000 | | | | | | | | |
| | | C213_178.5 | 7.8 | 165 | 0.15 | 5000 | | | | | | | | |
| | | C213_203.2 | 6.9 | 165 | 0.13 | 5000 | | | | | | | | |
| | | C213_225.8 | 6.2 | 160 | 0.11 | 5000 | | | | | | | | |
| | | C213_235.0 | 6.0 | 140 | 0.09 | 5000 | | | | | | | | |
| | | C213_261.0 | 5.4 | 155 | 0.09 | 5000 | | | | | | | | |

## 2.8.4 C 31 - ATEX

| IEC | | $n_1$ = 1400 min$^{-1}$ | | | |
|---|---|---|---|---|---|
| | | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_2$ N |
| 2D3D-160—2G3G-T3 | C312_6.5 | 215 | 110 | 2.6 | 2740 |
| | C312_7.2 | 194 | 115 | 2.5 | 2840 |
| | C312_8.4 | 167 | 125 | 2.3 | 2960 |
| | C312_9.3 | 151 | 130 | 2.2 | 3080 |
| | C312_11.1 | 126 | 140 | 1.9 | 3240 |
| | C312_12.3 | 114 | 140 | 1.8 | 3390 |
| | C312_14.0 | 100 | 150 | 1.7 | 3510 |
| 2D3D-130—2G3G-T4 | C312_15.6 | 90 | 155 | 1.5 | 3650 |
| | C312_18.1 | 77 | 165 | 1.4 | 3810 |
| | C312_20.1 | 70 | 170 | 1.3 | 3970 |
| | C312_22.6 | 62 | 180 | 1.2 | 4100 |
| | C312_25.1 | 56 | 185 | 1.1 | 4260 |
| | C312_26.8 | 52 | 190 | 1.1 | 4340 |
| | C312_29.8 | 47 | 195 | 1.0 | 4520 |
| | C312_32.5 | 43 | 205 | 0.97 | 4610 |
| | C312_36.1 | 39 | 195 | 0.83 | 4880 |
| | C312_40.7 | 34 | 220 | 0.83 | 4980 |
| | C312_45.3 | 31 | 200 | 0.68 | 5320 |
| | C312_47.2 | 29.7 | 215 | 0.70 | 5310 |
| | C312_52.4 | 26.7 | 205 | 0.60 | 5500 |
| | C312_60.2 | 23.3 | 140 | 0.36 | 5500 |
| | C312_66.8 | 21.0 | 155 | 0.36 | 5500 |
| | C313_74.3 | 18.8 | 200 | 0.43 | 5500 |
| | C313_82.6 | 16.9 | 220 | 0.42 | 5500 |
| | C313_93.0 | 15.1 | 215 | 0.37 | 5500 |
| | C313_103.3 | 13.6 | 230 | 0.35 | 5500 |
| | C313_110.2 | 12.7 | 225 | 0.32 | 5500 |
| | C313_122.4 | 11.4 | 235 | 0.30 | 5500 |
| | C313_133.6 | 10.5 | 230 | 0.27 | 5500 |
| | C313_148.4 | 9.4 | 240 | 0.26 | 5500 |
| | C313_167.5 | 8.4 | 240 | 0.23 | 5500 |
| | C313_186.0 | 7.5 | 250 | 0.21 | 5500 |
| | C313_194.1 | 7.2 | 250 | 0.20 | 5500 |
| | C313_215.6 | 6.5 | 255 | 0.19 | 5500 |
| | C313_247.3 | 5.7 | 225 | 0.14 | 5500 |
| | C313_274.7 | 5.1 | 255 | 0.15 | 5500 |

| IEC | | $n_1$ = 1400 min$^{-1}$ | | | | |
|---|---|---|---|---|---|---|
| | | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_1$ N | $Rn_2$ N |
| 2G3G-T4 | C312_6.5 | 215 | 110 | 2.6 | 1780 | 2740 |
| | C312_7.2 | 194 | 115 | 2.5 | 1780 | 2840 |
| | C312_8.4 | 167 | 125 | 2.3 | 1780 | 2960 |
| | C312_9.3 | 151 | 130 | 2.2 | 1780 | 3080 |
| | C312_11.1 | 126 | 140 | 1.9 | 1780 | 3240 |
| | C312_12.3 | 114 | 140 | 1.8 | 1780 | 3390 |
| | C312_14.0 | 100 | 150 | 1.7 | 1780 | 3510 |
| 2G3G-T3 | C312_15.6 | 90 | 155 | 1.5 | 1780 | 3650 |
| | C312_18.1 | 77 | 165 | 1.4 | 1780 | 3810 |
| | C312_20.1 | 70 | 170 | 1.3 | 1780 | 3970 |
| | C312_22.6 | 62 | 180 | 1.2 | 1780 | 4100 |
| | C312_25.1 | 56 | 185 | 1.1 | 1780 | 4260 |
| | C312_26.8 | 52 | 190 | 1.1 | 1780 | 4340 |
| | C312_29.8 | 47 | 195 | 1.0 | 1780 | 4520 |
| | C312_32.5 | 43 | 205 | 0.97 | 1780 | 4610 |
| | C312_36.1 | 39 | 195 | 0.83 | 1780 | 4880 |
| | C312_40.7 | 34 | 220 | 0.83 | 1780 | 4980 |
| | C312_45.3 | 31 | 200 | 0.68 | 1780 | 5320 |
| | C312_47.2 | 29.7 | 215 | 0.70 | 1780 | 5310 |
| | C312_52.4 | 26.7 | 205 | 0.60 | 1780 | 5500 |
| | C312_60.2 | 23.3 | 140 | 0.36 | 1780 | 5500 |
| | C312_66.8 | 21.0 | 155 | 0.36 | 1780 | 5500 |



## 2.8.5 C 35 - ATEX

| IEC | $n_1$ = 1400 min$^{-1}$ | | | |
|---|---|---|---|---|
| | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_2$ N |
| C352_6.1 | 230 | 200 | 5.1 | 2570 |
| C352_6.8 | 206 | 205 | 4.6 | 2710 |
| C352_7.9 | 177 | 220 | 4.3 | 2790 |
| C352_8.8 | 159 | 225 | 3.9 | 3000 |
| C352_10.5 | 133 | 245 | 3.6 | 3170 |
| C352_11.7 | 120 | 230 | 3.0 | 3420 |
| C352_13.3 | 105 | 260 | 3.0 | 3450 |
| C352_14.8 | 95 | 235 | 2.4 | 3760 |
| C352_17.1 | 82 | 275 | 2.5 | 3790 |
| C352_19.0 | 74 | 240 | 1.9 | 4170 |
| C353_20.2 | 69 | 215 | 1.7 | 4380 |
| C353_22.1 | 63 | 240 | 1.7 | 4450 |
| C353_26.2 | 53 | 245 | 1.5 | 4730 |
| C353_28.7 | 49 | 270 | 1.5 | 4810 |
| C353_34.7 | 40 | 280 | 1.3 | 5140 |
| C353_38.1 | 37 | 305 | 1.3 | 5250 |
| C353_43.9 | 32 | 310 | 1.1 | 5520 |
| C353_48.2 | 29.0 | 335 | 1.1 | 5650 |
| C353_56.5 | 24.8 | 340 | 0.95 | 6000 |
| C353_62.0 | 22.6 | 375 | 0.96 | 6100 |
| C353_70.7 | 19.8 | 375 | 0.84 | 6420 |
| C353_77.6 | 18.0 | 390 | 0.79 | 6500 |
| C353_83.8 | 16.7 | 395 | 0.75 | 6500 |
| C353_91.9 | 15.2 | 400 | 0.69 | 6500 |
| C353_101.6 | 13.8 | 425 | 0.66 | 6500 |
| C353_111.5 | 12.6 | 410 | 0.58 | 6500 |
| C353_127.3 | 11.0 | 440 | 0.55 | 6500 |
| C353_139.8 | 10.0 | 425 | 0.48 | 6500 |
| C353_147.6 | 9.5 | 450 | 0.48 | 6500 |
| C353_162.0 | 8.6 | 435 | 0.42 | 6500 |
| C353_188.0 | 7.4 | 425 | 0.36 | 6500 |
| C353_206.4 | 6.8 | 450 | 0.34 | 6500 |
| C354_232.3 | 6.0 | 450 | 0.31 | 6500 |
| C354_255.0 | 5.5 | 450 | 0.29 | 6500 |
| C354_290.6 | 4.8 | 450 | 0.25 | 6500 |
| C354_318.9 | 4.4 | 450 | 0.23 | 6500 |
| C354_344.3 | 4.1 | 450 | 0.21 | 6500 |
| C354_377.9 | 3.7 | 450 | 0.19 | 6500 |
| C354_417.6 | 3.4 | 450 | 0.17 | 6500 |
| C354_458.4 | 3.1 | 450 | 0.16 | 6500 |
| C354_523.5 | 2.7 | 450 | 0.14 | 6500 |
| C354_574.7 | 2.4 | 450 | 0.13 | 6500 |
| C354_606.6 | 2.3 | 450 | 0.12 | 6500 |
| C354_665.9 | 2.1 | 450 | 0.11 | 6500 |
| C354_773.0 | 1.8 | 450 | 0.09 | 6500 |
| C354_848.5 | 1.6 | 450 | 0.09 | 6500 |

2D3D-130—2G3G-T4

2D3D-160—2G3G-T3

| IEC | $n_1$ = 1400 min$^{-1}$ | | | | |
|---|---|---|---|---|---|
| | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_1$ N | $Rn_2$ N |
| C352_6.1 | 230 | 200 | 5.1 | 1750 | 2570 |
| C352_6.8 | 206 | 205 | 4.6 | 1810 | 2710 |
| C352_7.9 | 177 | 220 | 4.3 | 1770 | 2790 |
| C352_8.8 | 159 | 225 | 3.9 | 1820 | 3000 |
| C352_10.5 | 133 | 245 | 3.6 | 1770 | 3170 |
| C352_11.7 | 120 | 230 | 3.0 | 1870 | 3420 |
| C352_13.3 | 105 | 260 | 3.0 | 1780 | 3450 |
| C352_14.8 | 95 | 235 | 2.4 | 1900 | 3760 |
| C352_17.1 | 82 | 275 | 2.5 | 1790 | 3790 |
| C352_19.0 | 74 | 240 | 1.9 | 1930 | 4170 |
| C353_20.2 | 69 | 215 | 1.7 | 2220 | 4380 |
| C353_22.1 | 63 | 240 | 1.7 | 2210 | 4450 |
| C353_26.2 | 53 | 245 | 1.5 | 2210 | 4730 |
| C353_28.7 | 49 | 270 | 1.5 | 2210 | 4810 |
| C353_34.7 | 40 | 280 | 1.3 | 2210 | 5140 |
| C353_38.1 | 37 | 305 | 1.3 | 2210 | 5250 |
| C353_43.9 | 32 | 310 | 1.1 | 2200 | 5520 |
| C353_48.2 | 29.0 | 335 | 1.1 | 2200 | 5650 |
| C353_56.5 | 24.8 | 340 | 0.95 | 2190 | 6000 |
| C353_62.0 | 22.6 | 375 | 0.96 | 2190 | 6100 |
| C353_70.7 | 19.8 | 375 | 0.84 | 2180 | 6420 |
| C353_77.6 | 18.0 | 390 | 0.79 | 2200 | 6500 |
| C353_83.8 | 16.7 | 395 | 0.75 | 2180 | 6500 |
| C353_91.9 | 15.2 | 400 | 0.69 | 2200 | 6500 |
| C353_101.6 | 13.8 | 425 | 0.66 | 2170 | 6500 |
| C353_111.5 | 12.6 | 410 | 0.58 | 2200 | 6500 |
| C353_127.3 | 11.0 | 440 | 0.55 | 2160 | 6500 |
| C353_139.8 | 10.0 | 425 | 0.48 | 2200 | 6500 |
| C353_147.6 | 9.5 | 450 | 0.48 | 2160 | 6500 |
| C353_162.0 | 8.6 | 435 | 0.42 | 2200 | 6500 |
| C353_188.0 | 7.4 | 425 | 0.36 | 2180 | 6500 |
| C353_206.4 | 6.8 | 450 | 0.34 | 2190 | 6500 |

2G3G-T4

2G3G-T3

## 2.8.6 C 41 - ATEX

| | IEC | $n_1$ = 1400 min$^{-1}$ | | | | | IEC | $n_1$ = 1400 min$^{-1}$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_1$ N | $Rn_2$ N | | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_1$ N | $Rn_2$ N |
| | C412_6.4 | 219 | 200 | 4.8 | | 3260 | C412_6.4 | 219 | 200 | 4.8 | 2600 | 3260 |
| | C412_7.1 | 197 | 205 | 4.5 | | 3410 | C412_7.1 | 197 | 205 | 4.5 | 2640 | 3410 |
| | C412_8.6 | 163 | 220 | 3.9 | | 3600 | C412_8.6 | 163 | 220 | 3.9 | 2610 | 3600 |
| | C412_9.6 | 146 | 225 | 3.6 | | 3790 | C412_9.6 | 146 | 225 | 3.6 | 2660 | 3790 |
| | C412_11.2 | 125 | 245 | 3.4 | | 3920 | C412_11.2 | 125 | 245 | 3.4 | 2620 | 3920 |
| | C412_12.4 | 113 | 245 | 3.0 | | 4120 | C412_12.4 | 113 | 245 | 3.0 | 2670 | 4120 |
| | C412_14.2 | 99 | 260 | 2.8 | | 4280 | C412_14.2 | 99 | 260 | 2.8 | 2620 | 4280 |
| 2D3D-130—2G3G-T4 | C412_15.8 | 89 | 260 | 2.5 | | 4500 | C412_15.8 | 89 | 260 | 2.5 | 2680 | 4500 |
| | C412_17.8 | 79 | 275 | 2.4 | | 4630 | C412_17.8 | 79 | 275 | 2.4 | 2630 | 4630 |
| | C412_19.8 | 71 | 280 | 2.2 | | 4850 | C412_19.8 | 71 | 280 | 2.2 | 2670 | 4850 |
| | C412_22.6 | 62 | 300 | 2.0 | | 5010 | C412_22.6 | 62 | 300 | 2.0 | 2610 | 5010 |
| | C412_25.0 | 56 | 300 | 1.8 | | 5260 | C412_25.0 | 56 | 300 | 1.8 | 2660 | 5260 |
| | C412_28.3 | 49 | 325 | 1.8 | | 5400 | C412_28.3 | 49 | 325 | 1.8 | 2600 | 5400 |
| | C412_31.4 | 45 | 325 | 1.6 | | 5670 | C412_31.4 | 45 | 325 | 1.6 | 2650 | 5670 |
| | C412_33.4 | 42 | 335 | 1.5 | | 5740 | C412_33.4 | 42 | 335 | 1.5 | 2600 | 5740 |
| | C412_37.1 | 38 | 325 | 1.4 | | 6080 | C412_37.1 | 38 | 325 | 1.4 | 2660 | 6080 |
| | C412_44.8 | 31 | 330 | 1.1 | | 6550 | C412_44.8 | 31 | 330 | 1.1 | 2670 | 6550 |
| | C413_28.5 | 49 | 335 | 1.9 | | 5360 | C413_28.5 | 49 | 335 | 1.9 | 2900 | 5360 |
| | C413_31.2 | 45 | 360 | 1.8 | | 5480 | C413_31.2 | 45 | 360 | 1.8 | 2900 | 5480 |
| | C413_36.8 | 38 | 370 | 1.6 | | 5810 | C413_36.8 | 38 | 370 | 1.6 | 2900 | 5810 |
| | C413_40.3 | 35 | 410 | 1.6 | | 5880 | C413_40.3 | 35 | 410 | 1.6 | 2900 | 5880 |
| | C413_47.0 | 29.8 | 415 | 1.4 | | 6240 | C413_47.0 | 29.8 | 415 | 1.4 | 2890 | 6240 |
| | C413_51.5 | 27.2 | 430 | 1.3 | | 6450 | C413_51.5 | 27.2 | 430 | 1.3 | 2910 | 6450 |
| | C413_58.7 | 23.9 | 450 | 1.2 | | 6700 | C413_58.7 | 23.9 | 450 | 1.2 | 2890 | 6700 |
| | C413_64.3 | 21.8 | 445 | 1.1 | | 7000 | C413_64.3 | 21.8 | 445 | 1.1 | 2910 | 7000 |
| | C413_74.4 | 18.8 | 490 | 1.0 | | 7000 | C413_74.4 | 18.8 | 490 | 1.0 | 2880 | 7000 |
| | C413_81.5 | 17.2 | 460 | 0.89 | | 7000 | C413_81.5 | 17.2 | 460 | 0.89 | 2920 | 7000 |
| | C413_93.3 | 15.0 | 545 | 0.92 | | 7000 | C413_93.3 | 15.0 | 545 | 0.92 | 2860 | 7000 |
| | C413_102.3 | 13.7 | 475 | 0.73 | | 7000 | C413_102.3 | 13.7 | 475 | 0.73 | 2920 | 7000 |
| | C413_110.1 | 12.7 | 570 | 0.82 | | 7000 | C413_110.1 | 12.7 | 570 | 0.82 | 2860 | 7000 |
| | C413_120.6 | 11.6 | 490 | 0.64 | | 7000 | C413_120.6 | 11.6 | 490 | 0.64 | 2920 | 7000 |
| | C413_132.9 | 10.5 | 590 | 0.70 | | 7000 | C413_132.9 | 10.5 | 590 | 0.70 | 2860 | 7000 |
| | C413_145.6 | 9.6 | 505 | 0.55 | | 7000 | C413_145.6 | 9.6 | 505 | 0.55 | 2920 | 7000 |
| | C413_164.1 | 8.5 | 600 | 0.58 | | 7000 | C413_164.1 | 8.5 | 600 | 0.58 | 2860 | 7000 |
| | C413_179.9 | 7.8 | 520 | 0.46 | | 7000 | C413_179.9 | 7.8 | 520 | 0.46 | 2920 | 7000 |
| | C413_190.8 | 7.3 | 600 | 0.50 | | 7000 | C413_190.8 | 7.3 | 600 | 0.50 | 2860 | 7000 |
| | C413_209.1 | 6.7 | 530 | 0.40 | | 7000 | C413_209.1 | 6.7 | 530 | 0.40 | 2920 | 7000 |
| | C414_239.9 | 5.8 | 600 | 0.41 | | 7000 | C414_239.9 | 5.8 | 600 | 0.41 | 1050 | 7000 |
| | C414_263.0 | 5.3 | 550 | 0.34 | | 7000 | C414_263.0 | 5.3 | 550 | 0.34 | 1090 | 7000 |
| | C414_304.2 | 4.6 | 600 | 0.32 | | 7000 | C414_304.2 | 4.6 | 600 | 0.32 | 1110 | 7000 |
| | C414_333.4 | 4.2 | 570 | 0.28 | | 7000 | C414_333.4 | 4.2 | 570 | 0.28 | 1140 | 7000 |
| | C414_381.8 | 3.7 | 600 | 0.25 | | 7000 | C414_381.8 | 3.7 | 600 | 0.25 | 1150 | 7000 |
| | C414_418.5 | 3.3 | 590 | 0.23 | | 7000 | C414_418.5 | 3.3 | 590 | 0.23 | 1170 | 7000 |
| | C414_450.2 | 3.1 | 600 | 0.22 | | 7000 | C414_450.2 | 3.1 | 600 | 0.22 | 1180 | 7000 |
| | C414_493.5 | 2.8 | 600 | 0.20 | | 7000 | C414_493.5 | 2.8 | 600 | 0.20 | 1190 | 7000 |
| | C414_543.5 | 2.6 | 600 | 0.18 | | 7000 | C414_543.5 | 2.6 | 600 | 0.18 | 1210 | 7000 |
| | C414_595.8 | 2.3 | 600 | 0.16 | | 7000 | C414_595.8 | 2.3 | 600 | 0.16 | 1700 | 7000 |
| | C414_671.3 | 2.1 | 600 | 0.14 | | 7000 | C414_671.3 | 2.1 | 600 | 0.14 | 1230 | 7000 |
| | C414_735.9 | 1.9 | 600 | 0.13 | | 7000 | C414_735.9 | 1.9 | 600 | 0.13 | 1240 | 7000 |
| | C414_780.4 | 1.8 | 600 | 0.12 | | 7000 | C414_780.4 | 1.8 | 600 | 0.12 | 1240 | 7000 |
| | C414_855.5 | 1.6 | 600 | 0.11 | | 7000 | C414_855.5 | 1.6 | 600 | 0.11 | 1250 | 7000 |

2D3D-160—2G3G-T3 (spans C412_6.4 … C414_855.5)

2G3G-T4 (spans C412_6.4 … C414_855.5)

2G3G-T3 (spans C412_6.4 … C414_855.5)

## 2.8.7 C 51 - ATEX

| | IEC | $n_1$ = 1400 min$^{-1}$ | | | | | IEC | $n_1$ = 1400 min$^{-1}$ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_1$ N | $Rn_2$ N | | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_1$ N | $Rn_2$ N |
| 2D3D-130—2G3G-T4 | C512_7.0 | 200 | 415 | 9.1 | | 5560 | 2G3G-T4 | 200 | 415 | 9.1 | 2220 | 5560 |
| | C512_7.8 | 179 | 420 | 8.3 | | 5770 | | 179 | 420 | 8.3 | 2300 | 5770 |
| | C512_8.8 | 159 | 455 | 8.0 | | 5980 | | 159 | 455 | 8.0 | 2240 | 5980 |
| | C512_9.8 | 143 | 450 | 7.1 | | 6250 | | 143 | 450 | 7.1 | 2330 | 6250 |
| | C512_11.8 | 119 | 505 | 6.6 | | 6590 | | 119 | 505 | 6.6 | 2250 | 6590 |
| | C512_13.1 | 107 | 490 | 5.8 | | 6920 | | 107 | 490 | 5.8 | 2360 | 6920 |
| | C512_15.0 | 93 | 550 | 5.7 | | 7110 | | 93 | 550 | 5.7 | 2260 | 7110 |
| | C512_16.6 | 84 | 535 | 5.0 | | 7470 | | 84 | 535 | 5.0 | 2370 | 7470 |
| | C512_18.9 | 74 | 585 | 4.8 | | 7720 | | 74 | 585 | 4.8 | 2250 | 7720 |
| | C512_21.0 | 67 | 550 | 4.0 | | 8170 | | 67 | 550 | 4.0 | 2390 | 8170 |
| | C512_23.4 | 60 | 625 | 4.1 | | 8290 | | 60 | 625 | 4.1 | 2240 | 8290 |
| | C512_25.9 | 54 | 555 | 3.3 | | 8890 | | 54 | 555 | 3.3 | 2420 | 8890 |
| | C512_29.8 | 47 | 680 | 3.5 | | 8990 | | 47 | 680 | 3.5 | 2220 | 8990 |
| | C512_33.0 | 42 | 565 | 2.6 | | 9770 | | 42 | 565 | 2.6 | 2460 | 9770 |
| | C512_36.4 | 38 | 670 | 2.8 | | 9810 | | 38 | 670 | 2.8 | 2260 | 9810 |
| | C512_40.4 | 35 | 575 | 2.2 | | 10000 | | 35 | 575 | 2.2 | 2460 | 10000 |
| | C512_43.1 | 32 | 650 | 2.3 | | 10000 | | 32 | 650 | 2.3 | 2310 | 10000 |
| | C512_47.8 | 29.3 | 580 | 1.9 | | 10000 | | 29.3 | 580 | 1.9 | 2480 | 10000 |
| | C512_51.4 | 27.2 | 595 | 1.8 | | 10000 | | 27.2 | 595 | 1.8 | 2390 | 10000 |
| | C512_57.0 | 24.6 | 595 | 1.6 | | 10000 | | 24.6 | 595 | 1.6 | 2470 | 10000 |
| | C513_21.8 | 64 | 625 | 4.5 | | 8010 | | 64 | 625 | 4.5 | 2690 | 8010 |
| | C513_23.9 | 59 | 640 | 4.2 | | 8300 | | 59 | 640 | 4.2 | 2720 | 8300 |
| | C513_27.4 | 51 | 675 | 3.9 | | 8650 | | 51 | 675 | 3.9 | 2710 | 8650 |
| | C513_30.1 | 47 | 685 | 3.6 | | 8990 | | 47 | 685 | 3.6 | 2740 | 8990 |
| | C513_37.0 | 38 | 740 | 3.2 | | 9570 | | 38 | 740 | 3.2 | 2720 | 9570 |
| | C513_40.5 | 35 | 750 | 2.9 | | 9950 | | 35 | 750 | 2.9 | 2750 | 9950 |
| | C513_46.7 | 30.0 | 800 | 2.7 | | 10000 | | 30.0 | 800 | 2.7 | 2730 | 10000 |
| | C513_51.2 | 27.3 | 805 | 2.5 | | 10000 | | 27.3 | 805 | 2.5 | 2760 | 10000 |
| | C513_59.0 | 23.7 | 850 | 2.3 | | 10000 | | 23.7 | 850 | 2.3 | 2730 | 10000 |
| | C513_64.6 | 21.7 | 845 | 2.1 | | 10000 | | 21.7 | 845 | 2.1 | 2770 | 10000 |
| | C513_72.9 | 19.2 | 910 | 2.0 | | 10000 | | 19.2 | 910 | 2.0 | 2720 | 10000 |
| | C513_79.9 | 17.5 | 875 | 1.7 | | 10000 | | 17.5 | 875 | 1.7 | 2770 | 10000 |
| | C513_93.0 | 15.1 | 990 | 1.7 | | 10000 | | 15.1 | 990 | 1.7 | 2710 | 10000 |
| | C513_101.8 | 13.8 | 905 | 1.4 | | 10000 | | 13.8 | 905 | 1.4 | 2780 | 10000 |
| | C513_113.6 | 12.3 | 1000 | 1.4 | | 10000 | | 12.3 | 1000 | 1.4 | 2720 | 10000 |
| | C513_124.4 | 11.3 | 935 | 1.2 | | 10000 | | 11.3 | 935 | 1.2 | 2780 | 10000 |
| | C513_134.6 | 10.4 | 1000 | 1.2 | | 10000 | | 10.4 | 1000 | 1.2 | 2730 | 10000 |
| | C513_147.4 | 9.5 | 960 | 1.0 | | 10000 | | 9.5 | 960 | 1.0 | 2780 | 10000 |
| | C513_160.5 | 8.7 | 1000 | 0.99 | | 10000 | | 8.7 | 1000 | 0.99 | 2740 | 10000 |
| | C513_175.8 | 8.0 | 985 | 0.89 | | 10000 | | 8.0 | 985 | 0.89 | 2780 | 10000 |
| | C513_197.9 | 7.1 | 1000 | 0.80 | | 10000 | | 7.1 | 1000 | 0.80 | 2740 | 10000 |
| | C513_216.7 | 6.5 | 1000 | 0.73 | | 10000 | | 6.5 | 1000 | 0.73 | 2780 | 10000 |
| | C514_240.9 | 5.8 | 1000 | 0.67 | | 10000 | | 5.8 | 1000 | 0.67 | 1600 | 10000 |
| | C514_263.8 | 5.3 | 1000 | 0.61 | | 10000 | | 5.3 | 1000 | 0.61 | 1660 | 10000 |
| | C514_297.8 | 4.7 | 1000 | 0.54 | | 10000 | | 4.7 | 1000 | 0.54 | 1680 | 10000 |
| | C514_326.1 | 4.3 | 1000 | 0.50 | | 10000 | | 4.3 | 1000 | 0.50 | 1700 | 10000 |
| | C514_379.6 | 3.7 | 1000 | 0.43 | | 10000 | | 3.7 | 1000 | 0.43 | 1700 | 10000 |
| | C514_415.7 | 3.4 | 1000 | 0.39 | | 10000 | | 3.4 | 1000 | 0.39 | 1700 | 10000 |
| | C514_463.9 | 3.0 | 1000 | 0.35 | | 10000 | | 3.0 | 1000 | 0.35 | 1700 | 10000 |
| | C514_508.0 | 2.8 | 1000 | 0.32 | | 10000 | | 2.8 | 1000 | 0.32 | 1700 | 10000 |
| | C514_549.7 | 2.5 | 1000 | 0.30 | | 10000 | | 2.5 | 1000 | 0.30 | 1700 | 10000 |
| | C514_602.0 | 2.3 | 1000 | 0.27 | | 10000 | | 2.3 | 1000 | 0.27 | 1700 | 10000 |
| | C514_655.4 | 2.1 | 1000 | 0.25 | | 10000 | | 2.1 | 1000 | 0.25 | 1700 | 10000 |
| | C514_717.7 | 2.0 | 1000 | 0.23 | | 10000 | | 2.0 | 1000 | 0.23 | 1700 | 10000 |
| | C514_808.0 | 1.7 | 1000 | 0.20 | | 10000 | | 1.7 | 1000 | 0.20 | 1700 | 10000 |
| 2D3D-160—2G3G-T3 | C514_884.9 | 1.6 | 1000 | 0.18 | | 10000 | 2G3G-T3 | 1.6 | 1000 | 0.18 | 1700 | 10000 |

## 2.8.8 C 61 - ATEX

| IEC | | $n_1$ = 1400 min$^{-1}$ | | | |
|---|---|---|---|---|---|
| | | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_2$ N |
| 2D3D-130—2G3G-T4 | 2D3D-160—2G3G-T3 | C612_6.7 | 209 | 995 | 23 | 5950 |
| | | C612_7.5 | 187 | 825 | 17.0 | 6880 |
| | | C612_8.8 | 159 | 1015 | 17.8 | 6750 |
| | | C612_9.8 | 143 | 840 | 13.2 | 7730 |
| | | C612_10.9 | 128 | 1025 | 14.5 | 7450 |
| | | C612_12.1 | 116 | 850 | 10.8 | 8450 |
| | | C612_14.3 | 98 | 1045 | 11.3 | 8420 |
| | | C612_15.9 | 88 | 865 | 8.4 | 9480 |
| | | C612_17.7 | 79 | 1060 | 9.2 | 9220 |
| | | C612_19.6 | 71 | 875 | 6.9 | 10300 |
| | | C612_22.4 | 63 | 1075 | 7.4 | 10200 |
| | | C612_24.8 | 56 | 890 | 5.5 | 11400 |
| | | C612_27.4 | 51 | 1085 | 6.1 | 11200 |
| | | C612_30.4 | 46 | 900 | 4.6 | 12300 |
| | | C612_34.2 | 41 | 1035 | 4.7 | 12400 |
| | | C612_38.0 | 37 | 910 | 3.7 | 13500 |
| | | C613_26.8 | 52 | 995 | 5.9 | 11300 |
| | | C613_29.4 | 48 | 1020 | 5.5 | 11800 |
| | | C613_33.0 | 42 | 1060 | 5.1 | 12200 |
| | | C613_36.1 | 39 | 1085 | 4.8 | 12600 |
| | | C613_43.4 | 32 | 1155 | 4.2 | 13400 |
| | | C613_47.6 | 29.4 | 1180 | 3.9 | 13900 |
| | | C613_53.5 | 26.2 | 1235 | 3.7 | 14300 |
| | | C613_58.6 | 23.9 | 1265 | 3.4 | 14900 |
| | | C613_67.7 | 20.7 | 1340 | 3.1 | 15500 |
| | | C613_74.2 | 18.9 | 1370 | 2.9 | 16000 |
| | | C613_83.0 | 16.9 | 1410 | 2.7 | 16000 |
| | | C613_91.0 | 15.4 | 1440 | 2.5 | 16000 |
| | | C613_103.6 | 13.5 | 1500 | 2.3 | 16000 |
| | | C613_113.6 | 12.3 | 1515 | 2.1 | 16000 |
| | | C613_128.1 | 10.9 | 1600 | 2.0 | 16000 |
| | | C613_140.5 | 10.0 | 1565 | 1.8 | 16000 |
| | | C613_150.0 | 9.3 | 1600 | 1.7 | 16000 |
| | | C613_164.5 | 8.5 | 1600 | 1.5 | 16000 |
| | | C613_178.6 | 7.8 | 1600 | 1.4 | 16000 |
| | | C613_195.8 | 7.2 | 1600 | 1.3 | 16000 |
| | | C614_217.4 | 6.4 | 1600 | 1.2 | 16000 |
| | | C614_238.3 | 5.9 | 1600 | 1.1 | 16000 |
| | | C614_275.3 | 5.1 | 1600 | 0.94 | 16000 |
| | | C614_301.7 | 4.6 | 1600 | 0.86 | 16000 |
| | | C614_337.7 | 4.1 | 1600 | 0.77 | 16000 |
| | | C614_370.1 | 3.8 | 1600 | 0.70 | 16000 |
| | | C614_421.5 | 3.3 | 1600 | 0.62 | 16000 |
| | | C614_462.0 | 3.0 | 1600 | 0.56 | 16000 |
| | | C614_521.1 | 2.7 | 1600 | 0.50 | 16000 |
| | | C614_571.2 | 2.5 | 1600 | 0.45 | 16000 |
| | | C614_610.1 | 2.3 | 1600 | 0.43 | 16000 |
| | | C614_668.8 | 2.1 | 1600 | 0.39 | 16000 |
| | | C614_726.3 | 1.9 | 1600 | 0.36 | 16000 |
| | | C614_796.1 | 1.8 | 1600 | 0.33 | 16000 |

| IEC | | $n_1$ = 1400 min$^{-1}$ | | | | |
|---|---|---|---|---|---|---|
| | | $n_2$ min$^{-1}$ | $Mn_2$ Nm | $Pn_1$ kW | $Rn_1$ N | $Rn_2$ N |
| 2G3G-T4 | 2G3G-T3 | C612_6.7 | 209 | 995 | 23 | 2700 | 5950 |
| | | C612_7.5 | 187 | 825 | 17.0 | 2850 | 6880 |
| | | C612_8.8 | 159 | 1015 | 17.8 | 2900 | 6750 |
| | | C612_9.8 | 143 | 840 | 13.2 | 2980 | 7730 |
| | | C612_10.9 | 128 | 1025 | 14.5 | 2940 | 7450 |
| | | C612_12.1 | 116 | 850 | 10.8 | 2940 | 8450 |
| | | C612_14.3 | 98 | 1045 | 11.3 | 3590 | 8420 |
| | | C612_15.9 | 88 | 865 | 8.4 | 3590 | 9480 |
| | | C612_17.7 | 79 | 1060 | 9.2 | 3700 | 9220 |
| | | C612_19.6 | 71 | 875 | 6.9 | 3700 | 10300 |
| | | C612_22.4 | 63 | 1075 | 7.4 | 3810 | 10200 |
| | | C612_24.8 | 56 | 890 | 5.5 | 3810 | 11400 |
| | | C612_27.4 | 51 | 1085 | 6.1 | 3880 | 11200 |
| | | C612_30.4 | 46 | 900 | 4.6 | 3880 | 12300 |
| | | C612_34.2 | 41 | 1035 | 4.7 | 4050 | 12400 |
| | | C612_38.0 | 37 | 910 | 3.7 | 4090 | 13500 |
| | | C613_26.8 | 52 | 995 | 5.9 | 3510 | 11300 |
| | | C613_29.4 | 48 | 1020 | 5.5 | 3540 | 11800 |
| | | C613_33.0 | 42 | 1060 | 5.1 | 3520 | 12200 |
| | | C613_36.1 | 39 | 1085 | 4.8 | 3560 | 12600 |
| | | C613_43.4 | 32 | 1155 | 4.2 | 3530 | 13400 |
| | | C613_47.6 | 29.4 | 1180 | 3.9 | 3560 | 13900 |
| | | C613_53.5 | 26.2 | 1235 | 3.7 | 3520 | 14300 |
| | | C613_58.6 | 23.9 | 1265 | 3.4 | 3560 | 14900 |
| | | C613_67.7 | 20.7 | 1340 | 3.1 | 3510 | 15500 |
| | | C613_74.2 | 18.9 | 1370 | 2.9 | 3550 | 16000 |
| | | C613_83.0 | 16.9 | 1410 | 2.7 | 3500 | 16000 |
| | | C613_91.0 | 15.4 | 1440 | 2.5 | 3540 | 16000 |
| | | C613_103.6 | 13.5 | 1500 | 2.3 | 3490 | 16000 |
| | | C613_113.6 | 12.3 | 1515 | 2.1 | 3540 | 16000 |
| | | C613_128.1 | 10.9 | 1600 | 2.0 | 3470 | 16000 |
| | | C613_140.5 | 10.0 | 1565 | 1.8 | 3540 | 16000 |
| | | C613_150.0 | 9.3 | 1600 | 1.7 | 3480 | 16000 |
| | | C613_164.5 | 8.5 | 1600 | 1.5 | 3540 | 16000 |
| | | C613_178.6 | 7.8 | 1600 | 1.4 | 3490 | 16000 |
| | | C613_195.8 | 7.2 | 1600 | 1.3 | 3540 | 16000 |
| | | C614_217.4 | 6.4 | 1600 | 1.2 | 2470 | 16000 |
| | | C614_238.3 | 5.9 | 1600 | 1.1 | 2520 | 16000 |
| | | C614_275.3 | 5.1 | 1600 | 0.94 | 2580 | 16000 |
| | | C614_301.7 | 4.6 | 1600 | 0.86 | 2620 | 16000 |
| | | C614_337.7 | 4.1 | 1600 | 0.77 | 2660 | 16000 |
| | | C614_370.1 | 3.8 | 1600 | 0.70 | 2690 | 16000 |
| | | C614_421.5 | 3.3 | 1600 | 0.62 | 2730 | 16000 |
| | | C614_462.0 | 3.0 | 1600 | 0.56 | 2750 | 16000 |
| | | C614_521.1 | 2.7 | 1600 | 0.50 | 2780 | 16000 |
| | | C614_571.2 | 2.5 | 1600 | 0.45 | 2800 | 16000 |
| | | C614_610.1 | 2.3 | 1600 | 0.43 | 2810 | 16000 |
| | | C614_668.8 | 2.1 | 1600 | 0.39 | 2830 | 16000 |
| | | C614_726.3 | 1.9 | 1600 | 0.36 | 2840 | 16000 |
| | | C614_796.1 | 1.8 | 1600 | 0.33 | 2860 | 16000 |

## 2.9 MOTOR COMBINATIONS

The following table lists the gear ratios for which the motor/gear unit combinations are technically feasible.
The gearmotor must be selected in accordance with the selection procedure given in this catalogue.
**In particular, the condition $Mn_2 \geqslant Mr_2$ x fs must always be verified.**

| | IEC | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 63A | 63B | 71A | 71B | 80A | 80B | 90S | 90LA |
| C 11 2 | 6.9_66.2 | 6.9_49.7 (47.6) | 6.9_29.5 | 6.9_18.6 | 6.9_10.1 | - | - | - |
| C 21 2 | 8.7_63.3 | 8.7_63.3 | 8.7_54.7 | 8.7_43.3 | 6.4_36.8 | 6.4_21.9 | 6.4_12.4 | 6.4_7.1 |
| C 21 3 | 58.8_203.2 | 58.8_122.2 | 58.8_82.6 | - | - | - | - | - |
| C 31 2 | 11.1_66.8 | 11.1_66.8 | 11.1_66.8 | 11.1_52.4 | 6.5_52.4 | 6.5_40.7 | 6.5_25.1 | 6.5_15.6 |
| C 31 3 | 74.3_274.7 | 74.3_215.6 | 74.3_133.6 | 74.3_82.6 | - | - | - | - |
| C 35 2 | 10.5_19.0 | 10.5_19.0 | 10.5_19.0 | 10.5_19.0 | 6.1_19.0 | 6.1_19.0 | 6.1_19.0 | 6.1_19.0 |
| C 35 3 | 34.7_206.4 | 34.7_206.4 | 34.7_206.4 | 34.7_162.0 | 20.2_111.5 | 20.2_77.6 | 20.2_38.1 | 20.2_22.1 |
| C 35 4 | 232.3_574.7 | 232.3_377.9 | 232.3_255.0 | - | - | - | - | - |
| C 41 2 | 14.2_44.8 | 14.2_44.8 | 14.2_44.8 | 14.2_44.8 | 6.4_44.8 | 6.4_44.8 | 6.4_44.8 | 6.4_33.4 |
| C 41 3 | 47.0_209.1 | 47.0_209.1 | 47.0_209.1 | 47.0_209.1 | 28.5_164.1 | 28.5_110.1 (102.3) | 28.5_58.7 | 28.5_40.3 |
| C 41 4 | 239.9_735.9 | 239.9_493.5 | 239.9_304.2 | 239.9 | - | - | - | - |
| C 51 2 | 18.9_57.0 | 18.9_57.0 | 18.9_57.0 | 18.9_57.0 | 7.0_57.0 | 7.0_57.0 | 7.0_57.0 | 7.0_33.0 |
| C 51 3 | 59.0_216.7 | 59.0_216.7 | 59.0_216.7 | 59.0_216.7 | 21.8_216.7 | 21.8_197.9 | 21.8_134.6 | 21.8_93.0 |
| C 51 4 | 240.9_884.9 | 240.9_808.0 | 240.9_549.7 | 240.9_379.6 | 240.9_263.8 | - | - | - |
| C 61 2 | 22.4_38.0 | 22.4_38.0 | 22.4_38.0 | 22.4_38.0 | 8.8_38.0 | 8.8_38.0 | 8.8_38.0 | 8.8_38.0 |
| C 61 3 | 67.7_195.8 | 67.7_195.8 | 67.7_195.8 | 67.7_195.8 | 26.8_195.8 | 26.8_195.8 | 26.8_195.8 | 26.8_140.5 |
| C 61 4 | 217.4_796.1 | 217.4_796.1 | 217.4_796.1 | 217.4_610.1 | 217.4_462.0 | 217.4_421.5 | 217.4_301.7 | 217.4 |

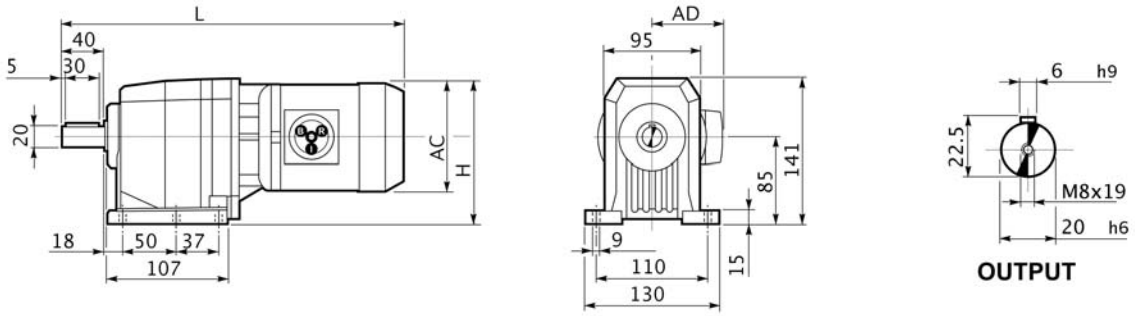
| | IEC | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 90LB | 100LA | 100LB | 112M | 132SA | 132MA | 132MB | 160M |
| C 11 2 | - | - | - | - | - | - | - | - |
| C 21 2 | - | - | - | - | - | - | - | - |
| C 21 3 | - | - | - | - | - | - | - | - |
| C 31 2 | 6.5_11.1 | 6.5_8.4 | - | - | - | - | - | - |
| C 31 3 | - | - | - | - | - | - | - | - |
| C 35 2 | 6.1_19.0 | 6.1_14.8 | 6.1_11.7 | 6.1_6.8 | - | - | - | - |
| C 35 3 | - | - | - | - | - | - | - | - |
| C 35 4 | - | - | - | - | - | - | - | - |
| C 41 2 | 6.4_22.6 | 6.4_19.8 | 6.4_12.4 | 6.4_7.1 | - | - | - | - |
| C 41 3 | - | - | - | - | - | - | - | - |
| C 41 4 | - | - | - | - | - | - | - | - |
| C 51 2 | 7.0_33.0 | 7.0_43.1 | 7.0_29.8 | 7.0_23.4 | 7.0_15.0 | 7.0_8.8 | 7.0 | - |
| C 51 3 | 21.8_72.9 | 21.8_59.0 | 21.8_37.0 | 21.8_23.9 | - | - | - | - |
| C 51 4 | - | - | - | - | - | - | - | - |
| C 61 2 | 8.8_38.0 | 8.8_38.0 | 8.8_38.0 | 8.8_34.2 | 6.7_27.4 | 6.7_22.4 (19.6) | 6.7_17.7 (15.9) | 6.7_14.3 |
| C 61 3 | 26.8_113.6 | 26.8_103.6 | 26.8_67.7 | 26.8_43.4 | 20.4_29.4 | - | - | - |
| C 61 4 | - | - | - | - | - | - | - | - |

Combinations featuring the gear ratios within brackets are not possible.

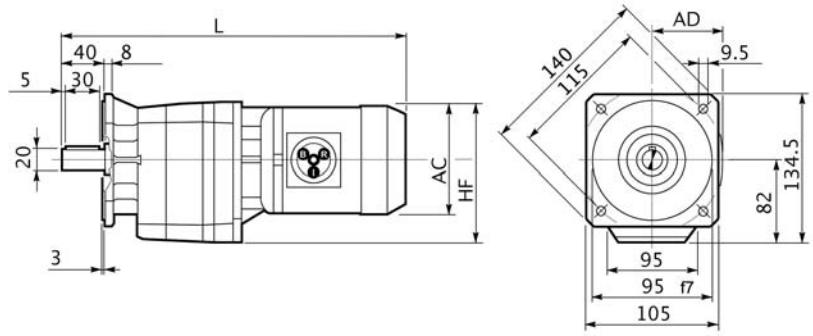
## 2.10 DIMENSIONS

### 2.10.1 C 11_M

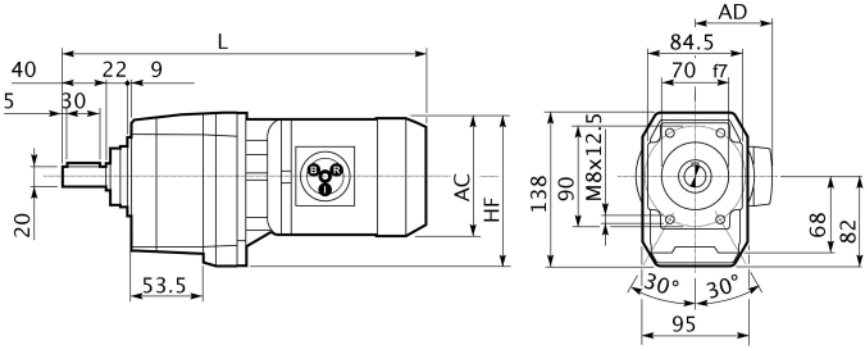
**P**



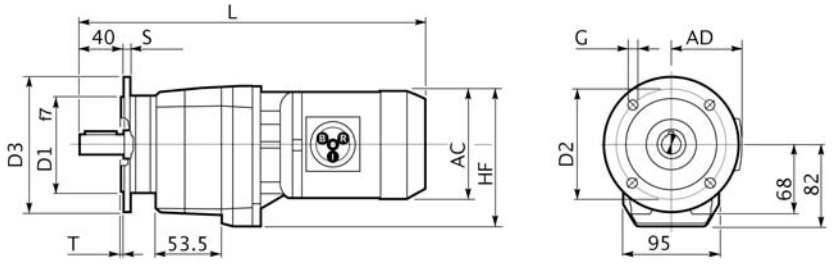

**F**




**U**




**UF**

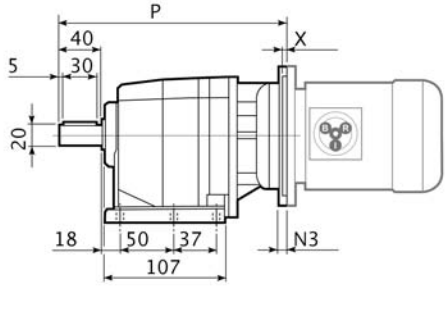


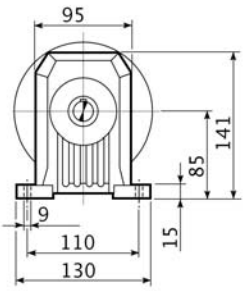

| C 11 2_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 80 | 100 | 120 | 7 | 3 | 8 |
| FB | 95 | 115 | 140 | 9 | 3 | 10 |
| FC | 110 | 130 | 160 | 9 | 3 | 10 |

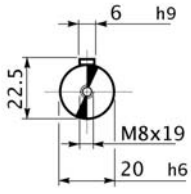
| C 11 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AC | H | HF | L | AD | Kg |
| C 11 2 | S05 | M05 | 121 | 145.5 | 142.5 | 379.5 | 95 | 9 |
| C 11 2 | S1 | M1S | 138 | 154 | 151 | 399.5 | 108 | 10 |
| C 11 2 | S1 | M1L | 138 | 154 | 151 | 408.5 | 108 | 11 |
| C 11 2 | S2 | M2S | 156 | 163 | 160 | 424.5 | 119 | 15 |
| C 11 2 | S3 | M3S | 195 | 182.5 | 179.5 | 503.5 | 142 | 20 |
| C 11 2 | S3 | M3L | 195 | 182.5 | 179.5 | 508.5 | 142 | 22 |

## 2.10.2 C 11_P(IEC)

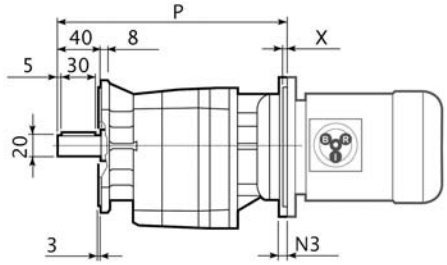
**P**

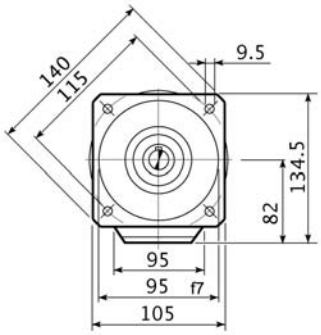


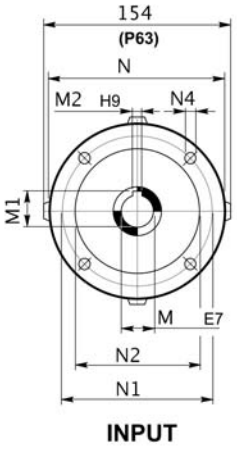



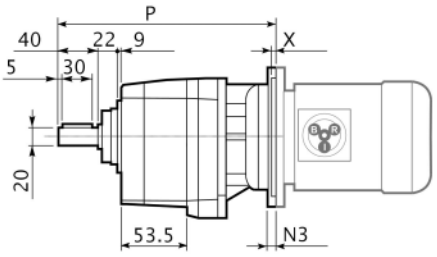

**F**

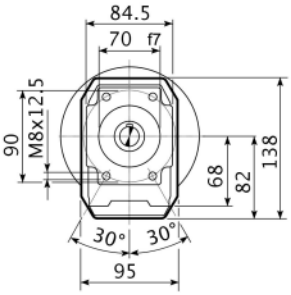


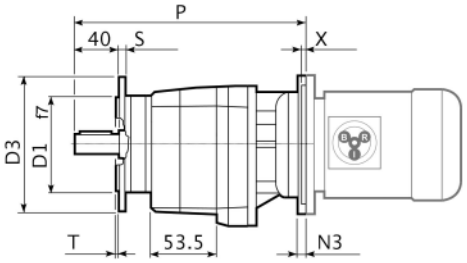



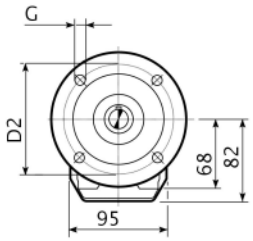

**U**




**UF**



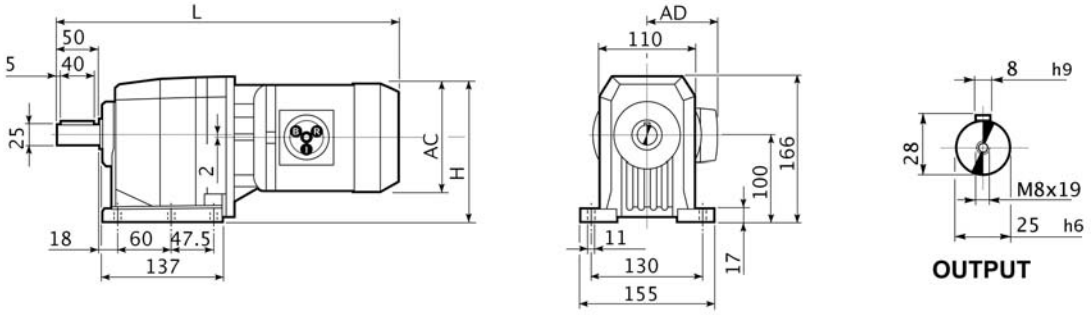




| C 11 2_U | | | | | | |
|---|---|---|---|---|---|---|
| | **D1** | **D2** | **D3** | **G** | **T** | **S** |
| **FA** | 80 | 100 | 120 | 7 | 3 | 8 |
| **FB** | 95 | 115 | 140 | 9 | 3 | 10 |
| **FC** | 110 | 130 | 160 | 9 | 3 | 10 |

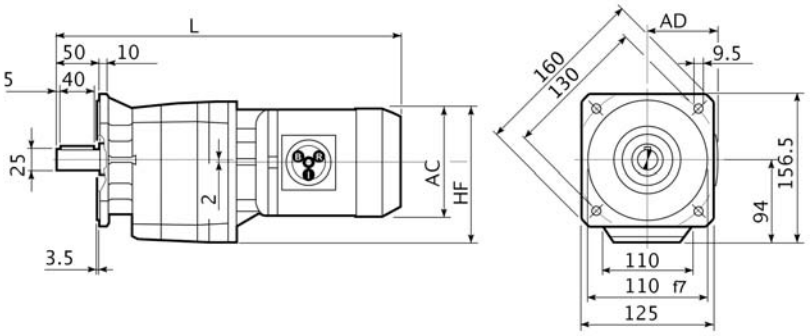
| C 11 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **M** | **M1** | **M2** | **N** | **N1** | **N2** | **N3** | **N4** | **X** | **P** | kg |
| **C 11 2** | **P63** | 11 | 12.8 | 4 | 140 | 115 | 95 | — | M8x19 | 4 | 244.5 | 6 |
| **C 11 2** | **P71** | 14 | 16.3 | 5 | 160 | 130 | 110 | — | M8x16 | 4.5 | 244.5 | 6 |
| **C 11 2** | **P80** | 19 | 21.8 | 6 | 200 | 165 | 130 | — | M10x12 | 4 | 264 | 7 |

## 2.10.3 C 21_M

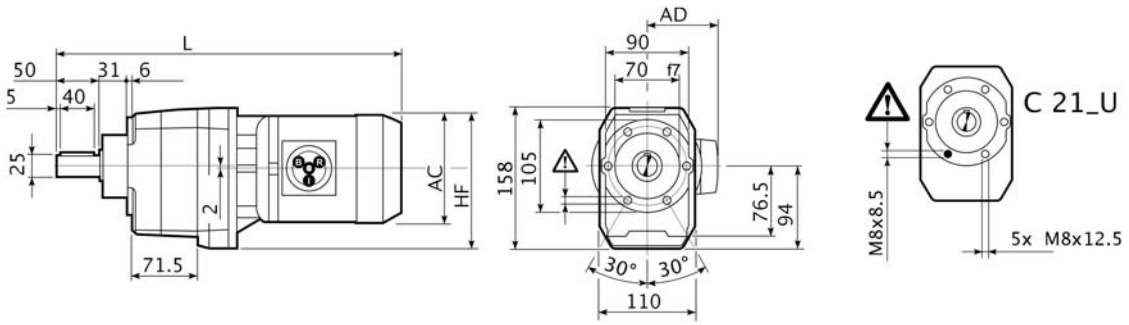
P



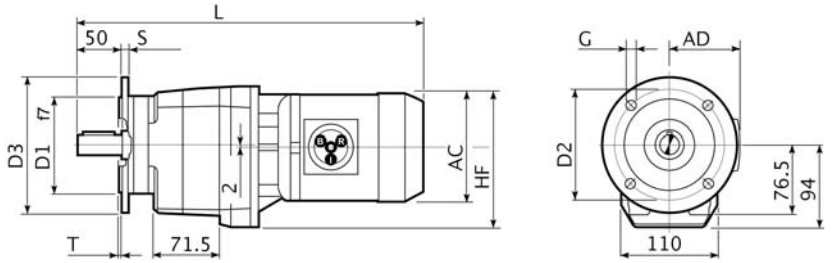

F




U




UF

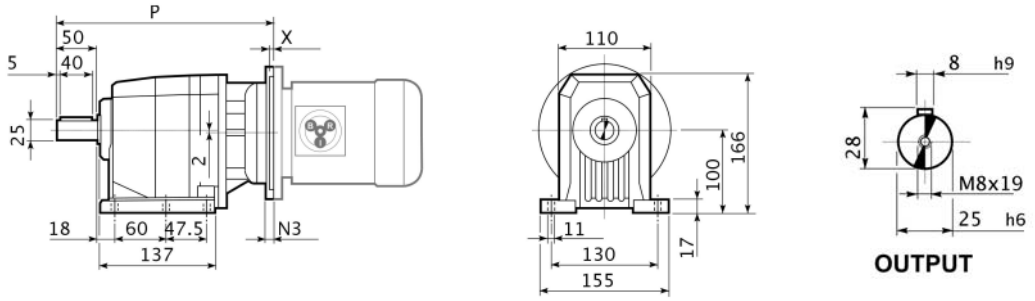



| C 21_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 95 | 115 | 140 | 9 | 3 | 10 |
| FB | 110 | 130 | 160 | 9 | 3 | 10 |
| FC | 130 | 165 | 200 | 11 | 3.5 | 11 |

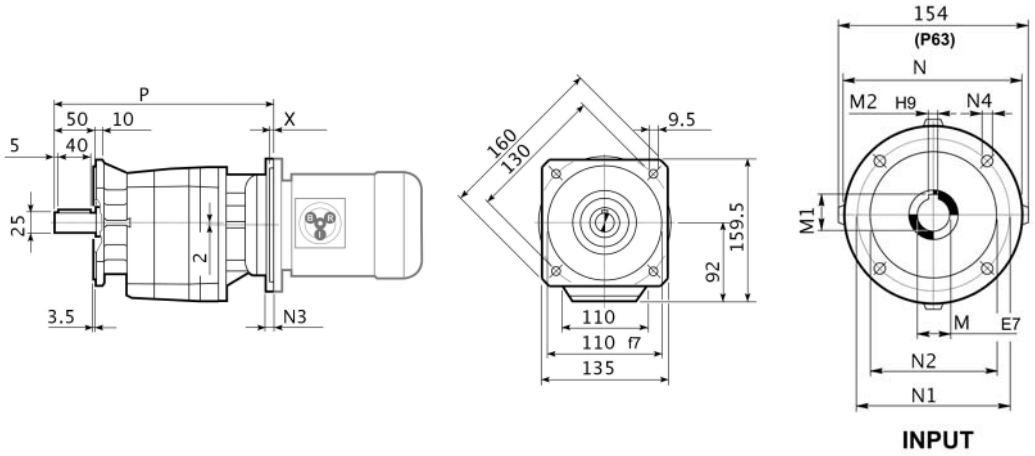
| C 21 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AC | H | HF | L | AD | Kg |
| C 21 2 | S1 | M1S | 138 | 169 | 163 | 428 | 108 | 10 |
| C 21 2 | S1 | M1L | 138 | 169 | 163 | 432 | 108 | 11 |
| C 21 2 | S2 | M2S | 156 | 178 | 170 | 458 | 119 | 16 |
| C 21 2 | S3 | M3S | 195 | 197.5 | 191.5 | 532 | 142 | 21 |
| C 21 2 | S3 | M3L | 195 | 197.5 | 191.5 | 537 | 142 | 27 |
| C 21 3 | S05 | M05 | 121 | 160.5 | 154.5 | 463.5 | 95 | 11 |
| C 21 3 | S1 | M1S | 138 | 169 | 163 | 483.5 | 108 | 12 |
| C 21 3 | S1 | M1L | 138 | 169 | 163 | 487.5 | 108 | 13 |

## 2.10.4 C 21_P(IEC)

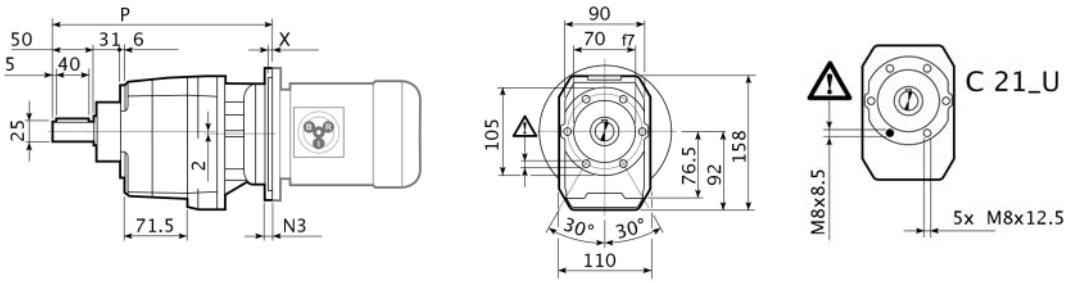
**P**



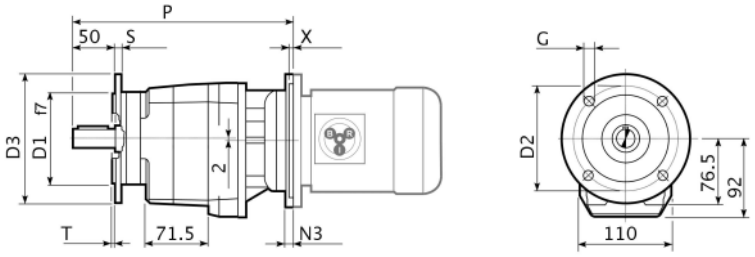

**F**




**U**




**UF**

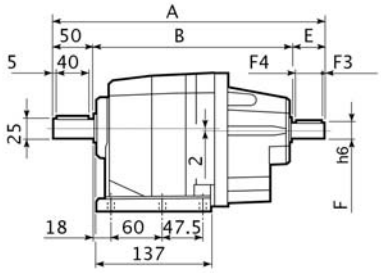


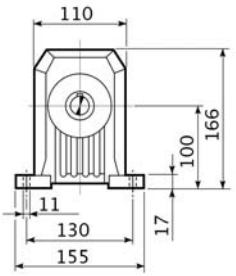

| C 21_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 95 | 115 | 140 | 9 | 3 | 10 |
| FB | 110 | 130 | 160 | 9 | 3 | 10 |
| FC | 130 | 165 | 200 | 11 | 3.5 | 11 |

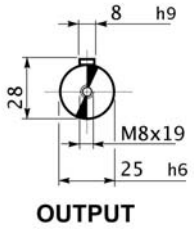
| C 21 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M | M1 | M2 | N | N1 | N2 | N3 | N4 | X | P | Kg |
| C 21 2 | P63 | 11 | 12.8 | 4 | 140 | 115 | 95 | — | M8x19 | 4 | 273 | 7 |
| C 21 2 | P71 | 14 | 16.3 | 5 | 160 | 130 | 110 | — | M8x16 | 4.5 | 273 | 7 |
| C 21 2 | P80 | 19 | 21.8 | 6 | 200 | 165 | 130 | — | M10x12 | 4 | 292.5 | 8 |
| C 21 2 | P90 | 24 | 27.3 | 8 | 200 | 165 | 130 | — | M10x12 | 4 | 292.5 | 8 |
| C 21 3 | P63 | 11 | 12.8 | 4 | 140 | 115 | 95 | — | M8x19 | 4 | 328.5 | 8 |
| C 21 3 | P71 | 14 | 16.3 | 5 | 160 | 130 | 110 | — | M8x16 | 4.5 | 328.5 | 8 |

## 2.10.5 C 21_HS

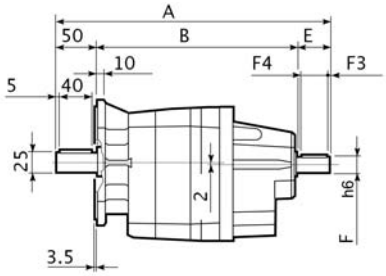
**P**

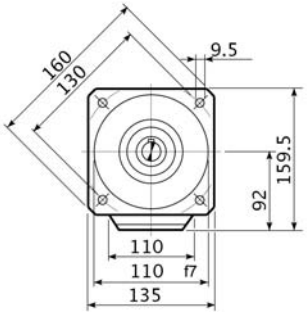


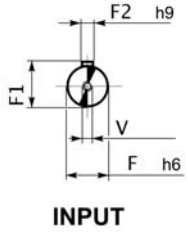



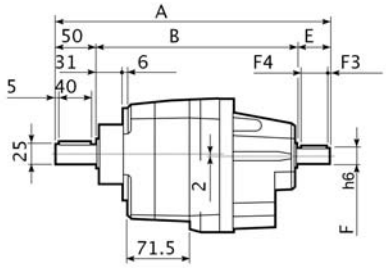

**F**

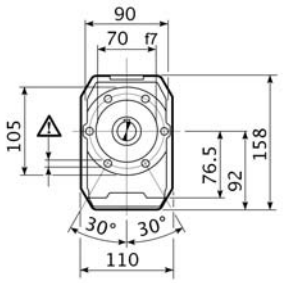


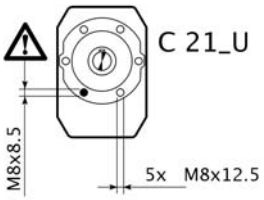



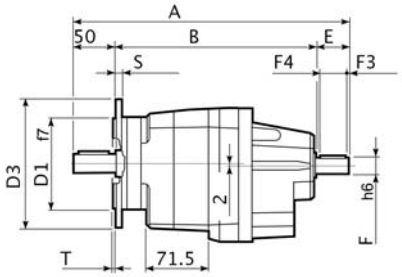

**U**

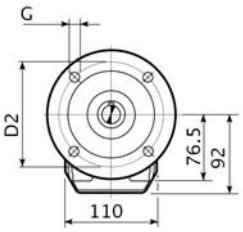



**UF**



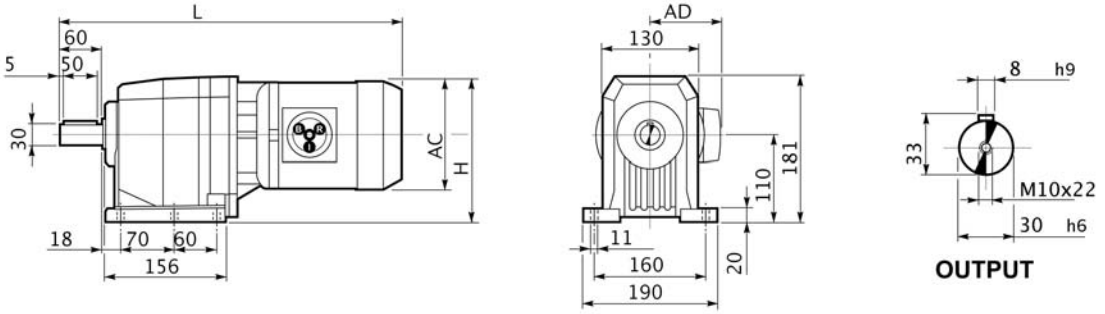




| C 21_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 95 | 115 | 140 | 9 | 3 | 10 |
| FB | 110 | 130 | 160 | 9 | 3 | 10 |
| FC | 130 | 165 | 200 | 11 | 3.5 | 11 |

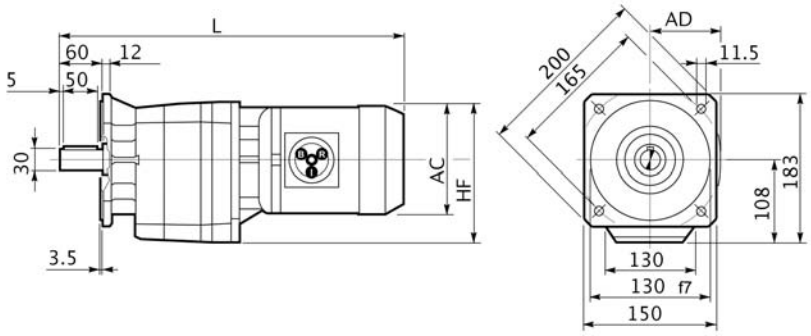
| C 21 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | E | F | F1 | F2 | F3 | F4 | V | Kg |
| C 21 2 | HS | 323 | 233 | 40 | 19 | 21.5 | 6 | 2.5 | 35 | M6x16 | 7.2 |

## 2.10.6 C 31_M

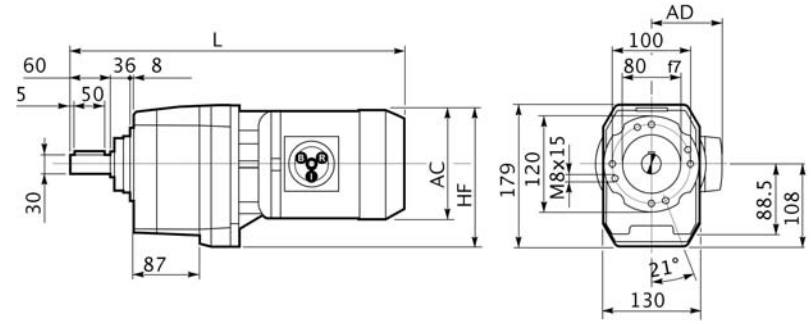
**P**



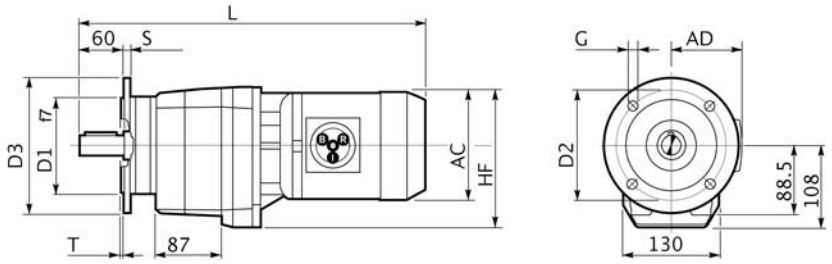

**F**




**U**




**UF**

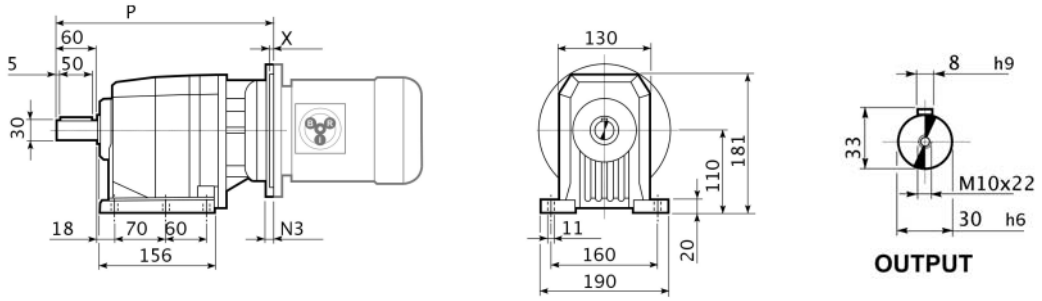



| C 31_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 110 | 130 | 160 | 9 | 3 | 10 |
| FB | 130 | 165 | 200 | 11 | 3.5 | 11 |
| FC | 180 | 215 | 250 | 14 | 4 | 13 |

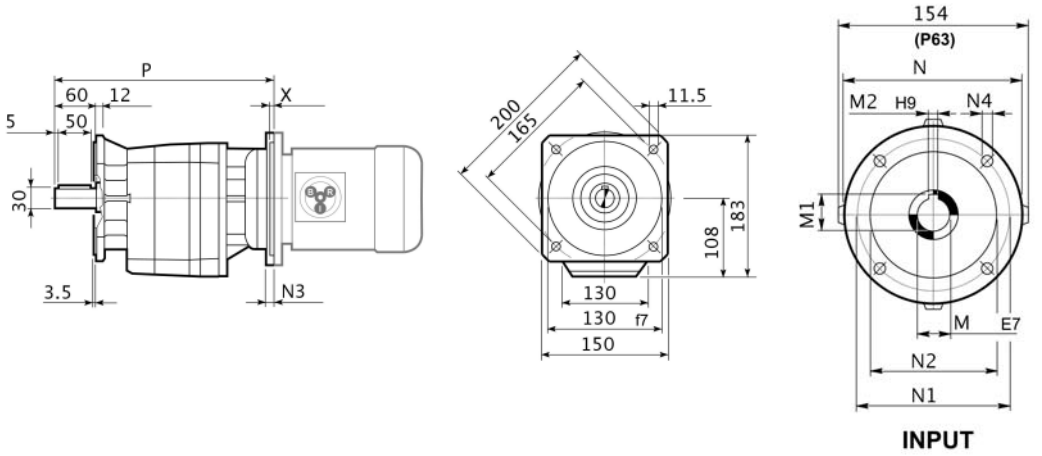
| C 31 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AC | H | HF | L | AD | Kg |
| C 31 2 | S1 | M1S | 138 | 179 | 177 | 462.5 | 108 | 13 |
| C 31 2 | S1 | M1L | 138 | 179 | 177 | 466.5 | 108 | 14 |
| C 31 2 | S2 | M2S | 156 | 188 | 186 | 492.5 | 119 | 18 |
| C 31 2 | S3 | M3S | 195 | 207.5 | 205.5 | 566.5 | 142 | 23 |
| C 31 2 | S3 | M3L | 195 | 207.5 | 205.5 | 571.5 | 142 | 32 |
| C 31 3 | S05 | M05 | 121 | 170.5 | 168.5 | 500 | 95 | 13 |
| C 31 3 | S1 | M1S | 138 | 179 | 177 | 520 | 108 | 14 |
| C 31 3 | S1 | M1L | 138 | 179 | 177 | 524 | 108 | 15 |
| C 31 3 | S2 | M2S | 156 | 188 | 186 | 550 | 119 | 18 |

## 2.10.7 C 31_P(IEC)

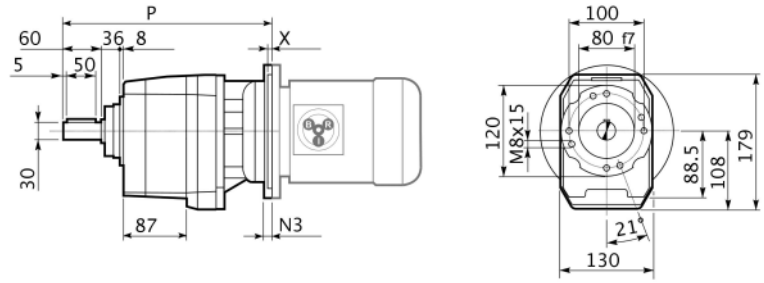
**P**



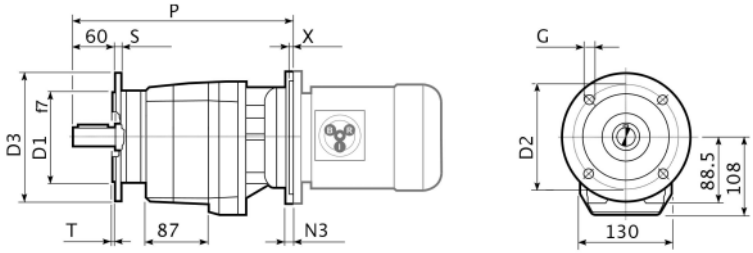

**F**




**U**




**UF**

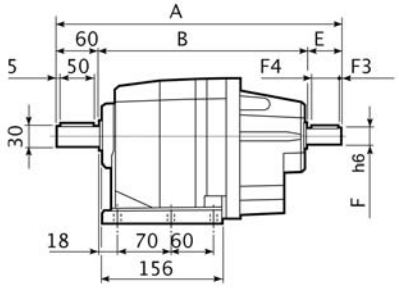


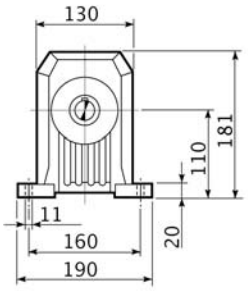

| C 31_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 110 | 130 | 160 | 9 | 3 | 10 |
| FB | 130 | 165 | 200 | 11 | 3.5 | 11 |
| FC | 180 | 215 | 250 | 14 | 4 | 13 |

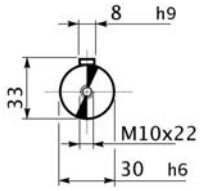
| C 31 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M | M1 | M2 | N | N1 | N2 | N3 | N4 | X | P | Kg |
| C 31 2 | P63 | 11 | 12.8 | 4 | 140 | 115 | 95 | — | M8x19 | 4 | 307.5 | 9 |
| C 31 2 | P71 | 14 | 16.3 | 5 | 160 | 130 | 110 | — | M8x16 | 4.5 | 307.5 | 9 |
| C 31 2 | P80 | 19 | 21.8 | 6 | 200 | 165 | 130 | — | M10x12 | 4 | 327 | 10 |
| C 31 2 | P90 | 24 | 27.3 | 8 | 200 | 165 | 130 | — | M10x12 | 4 | 327 | 10 |
| C 31 2 | P100 | 28 | 31.3 | 8 | 250 | 215 | 180 | — | M12x16 | 4.5 | 337 | 14 |
| C 31 3 | P63 | 11 | 12.8 | 4 | 140 | 115 | 95 | — | M8x19 | 4 | 365 | 10 |
| C 31 3 | P71 | 14 | 16.3 | 5 | 160 | 130 | 110 | — | M8x16 | 4.5 | 365 | 10 |

## 2.10.8 C 31_HS

**P**

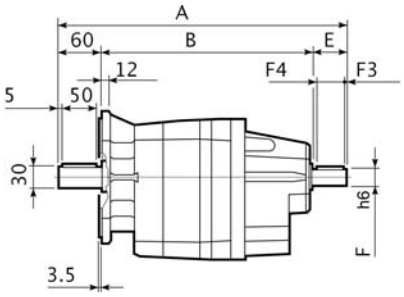


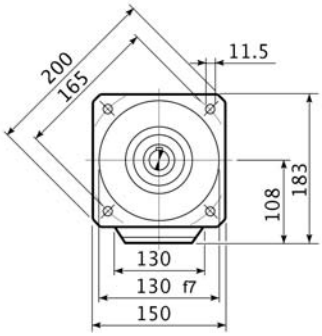



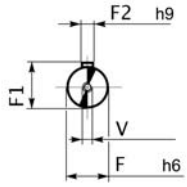




OUTPUT

**F**

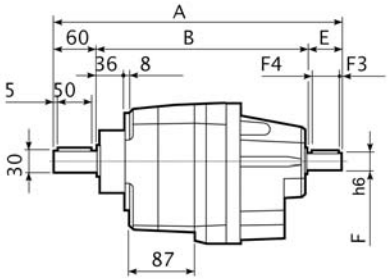


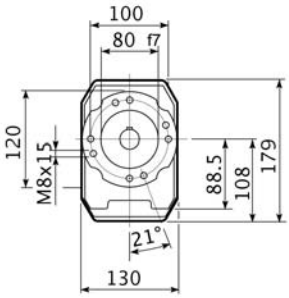



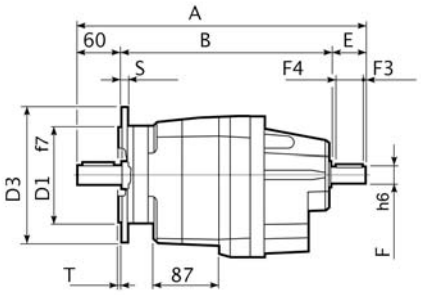

INPUT

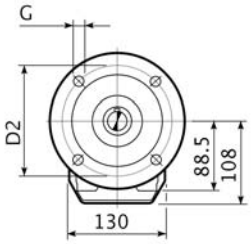
**U**




**UF**



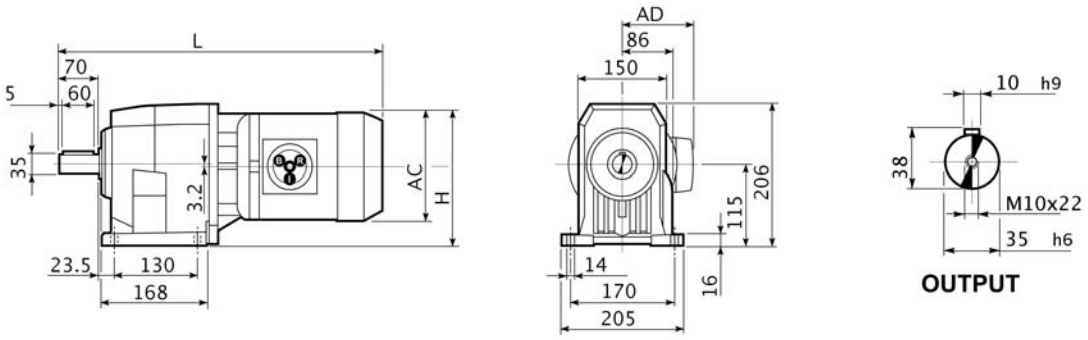




| C 31_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 110 | 130 | 160 | 9 | 3 | 10 |
| FB | 130 | 165 | 200 | 11 | 3.5 | 11 |
| FC | 180 | 215 | 250 | 14 | 4 | 13 |

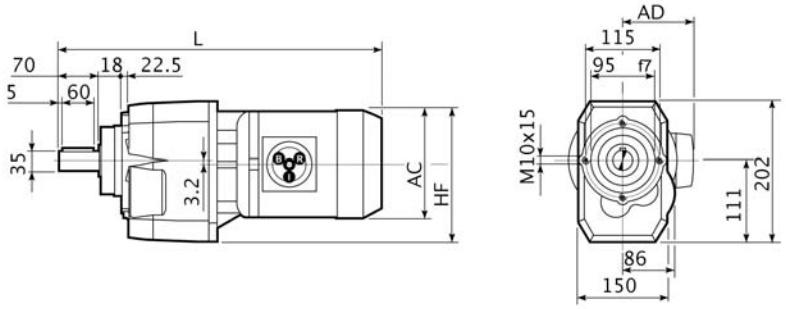
| C 31 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | E | F | F1 | F2 | F3 | F4 | V | Kg |
| C 31 2 | HS | 357.5 | 257.5 | 40 | 19 | 21.5 | 6 | 2.5 | 35 | M6x16 | 11.1 |

## 2.10.9 C 35_M

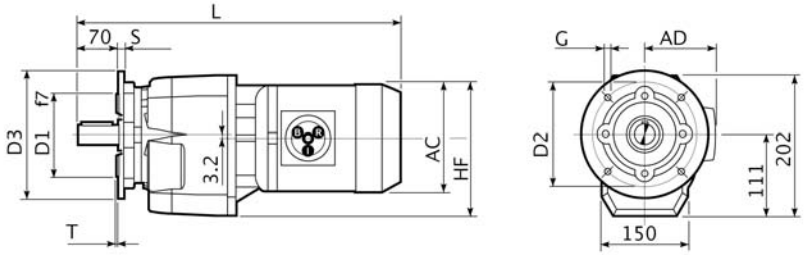
**P**




**U**




**UF**

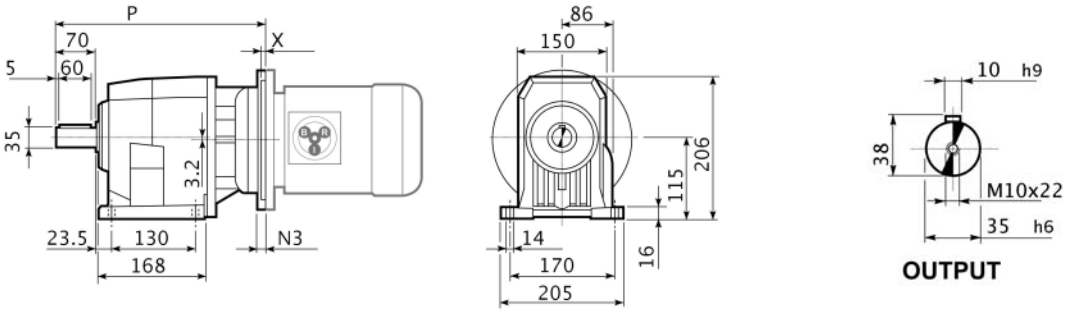



| C 35_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 130 | 165 | 200 | 11 | 3.5 | 11 |
| FB | 180 | 215 | 250 | 14 | 4 | 14 |

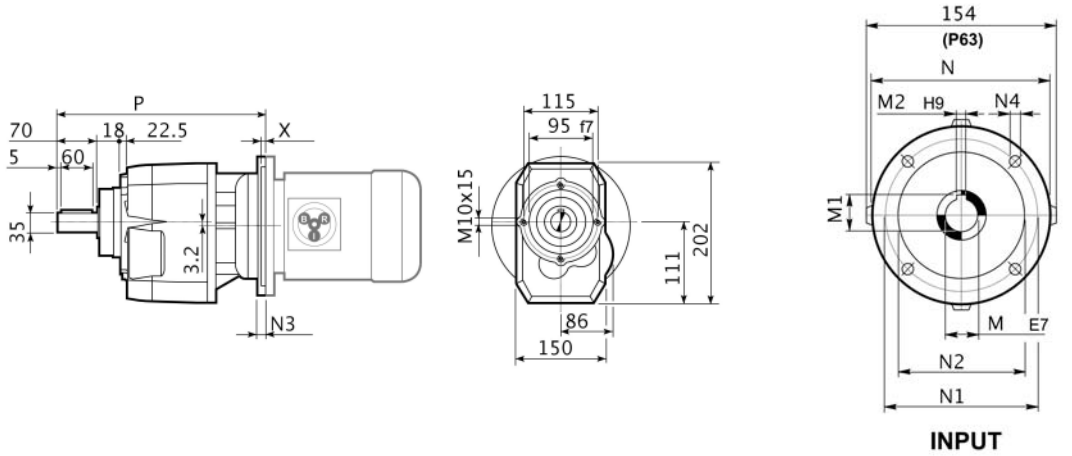
| C 35 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AC | H | HF | L | AD | Kg |
| C 35 2/3 | S1 | M1S | 138 | 184 | 177 | 481 | 108 | 20 |
| C 35 2/3 | S1 | M1L | 138 | 184 | 177 | 485 | 108 | 20 |
| C 35 2/3 | S2 | M2S | 156 | 193 | 186 | 511 | 119 | 23 |
| C 35 2/3 | S3 | M3S | 195 | 212.5 | 205.5 | 585 | 142 | 28 |
| C 35 2/3 | S3 | M3L | 195 | 212.5 | 205.5 | 590 | 142 | 37 |
| C 35 4 | S05 | M05 | 121 | 175.5 | 168.5 | 518.5 | 95 | 19 |
| C 35 4 | S1 | M1S | 138 | 184 | 177 | 538.5 | 108 | 21 |
| C 35 4 | S1 | M1L | 138 | 184 | 177 | 542.5 | 108 | 21 |
| C 35 4 | S2 | M2S | 156 | 193 | 186 | 568.5 | 119 | 24 |
| C 35 4 | S3 | M3S | 195 | 212.5 | 205.5 | 642.5 | 142 | 29 |
| C 35 4 | S3 | M3L | 195 | 212.5 | 205.5 | 647.5 | 142 | 38 |

## 2.10.10 C 35_P(IEC)

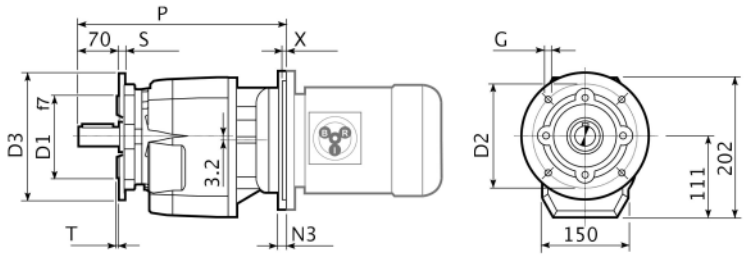
**P**




**U**




**UF**

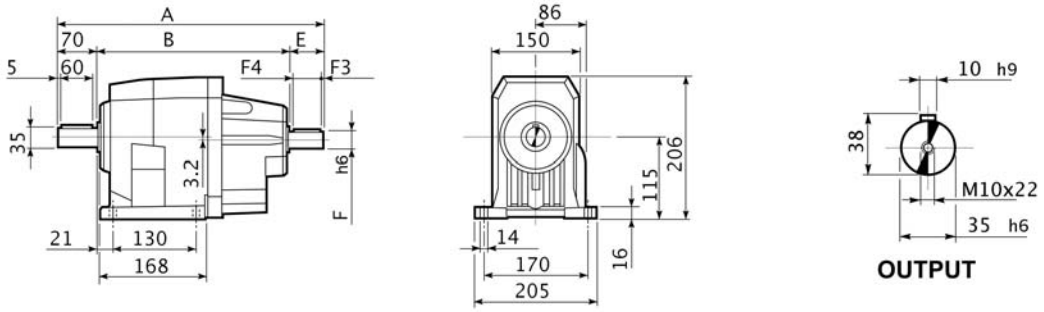



| C 35_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 130 | 165 | 200 | 11 | 3.5 | 11 |
| FB | 180 | 215 | 250 | 14 | 4 | 14 |

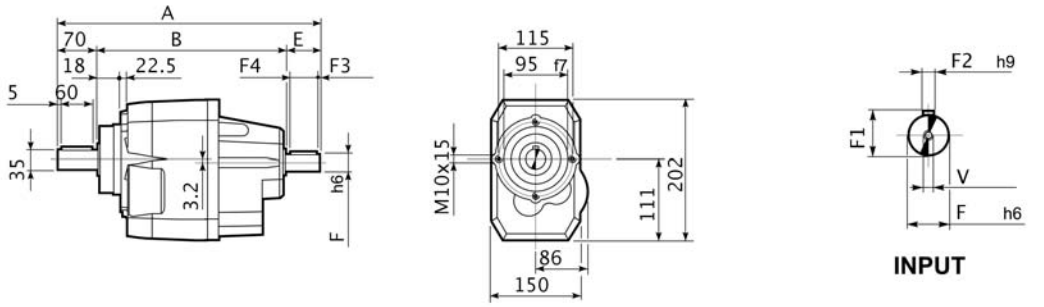
| C 35 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M | M1 | M2 | N | N1 | N2 | N3 | N4 | X | P | Kg |
| C 35 2/3 | P63 | 11 | 12.8 | 4 | 140 | 115 | 95 | — | M8x19 | 4 | 326 | 17 |
| C 35 2/3 | P71 | 14 | 16.3 | 5 | 160 | 130 | 110 | — | M8x16 | 4.5 | 326 | 17 |
| C 35 2/3 | P80 | 19 | 21.8 | 6 | 200 | 165 | 130 | — | M10x12 | 4 | 345.5 | 18 |
| C 35 2/3 | P90 | 24 | 27.3 | 8 | 200 | 165 | 130 | — | M10x12 | 4 | 345.5 | 18 |
| C 35 2 | P100 | 28 | 31.3 | 8 | 250 | 215 | 180 | — | M12x16 | 4.5 | 355.5 | 22 |
| C 35 2 | P112 | 28 | 31.3 | 8 | 250 | 215 | 180 | — | M12x16 | 4.5 | 355.5 | 22 |
| C 35 4 | P63 | 11 | 12.8 | 4 | 140 | 115 | 95 | — | M8x19 | 4 | 383.5 | 20 |
| C 35 4 | P71 | 14 | 16.3 | 5 | 160 | 130 | 110 | — | M8x16 | 4.5 | 383.5 | 20 |

## *2.10.11 C 35_HS*

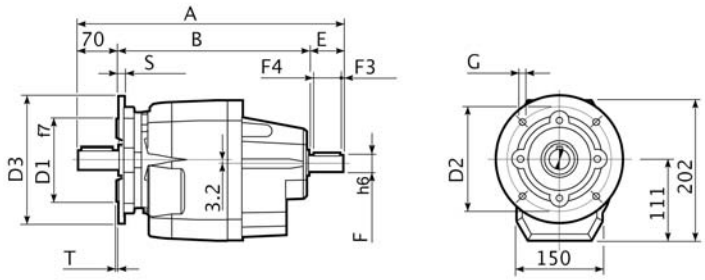
**P**




**U**




**UF**

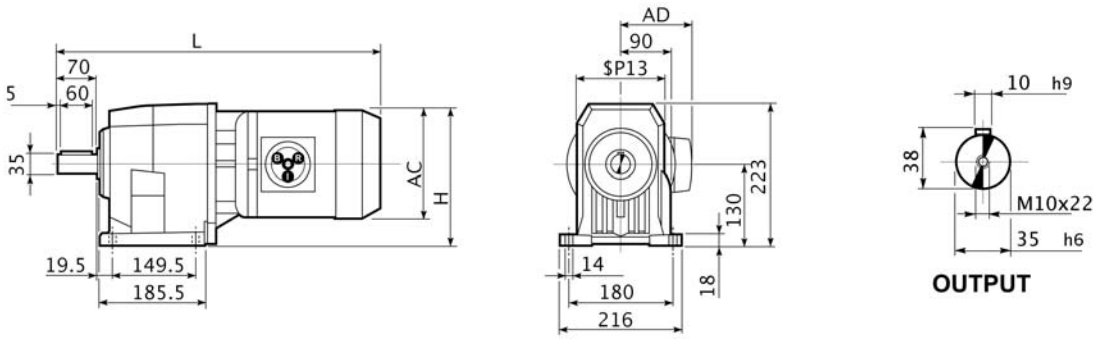



| C 35_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 130 | 165 | 200 | 11 | 3.5 | 11 |
| FB | 180 | 215 | 250 | 14 | 4 | 14 |

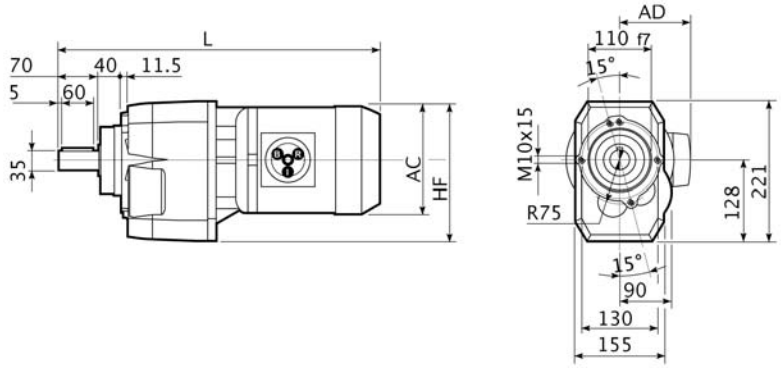
| C 35 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | E | F | F1 | F2 | F3 | F4 | V | Kg |
| C 35 2 | HS | 415.5 | 295.5 | 50 | 24 | 27 | 8 | 2.5 | 45 | M8x19 | 25.5 |
| C 35 3 | HS | 415.5 | 295.5 | 50 | 24 | 27 | 8 | 2.5 | 45 | M8x19 | 25.5 |

## 2.10.12 C 41_M

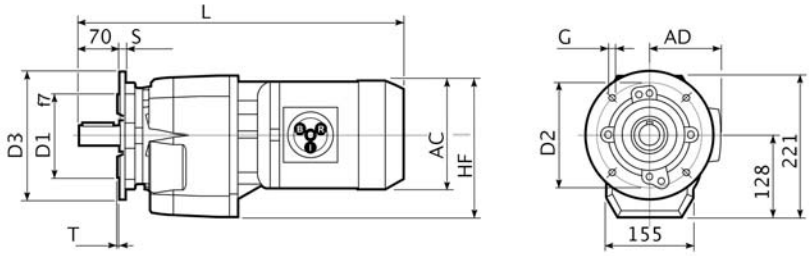
**P**




**U**




**UF**

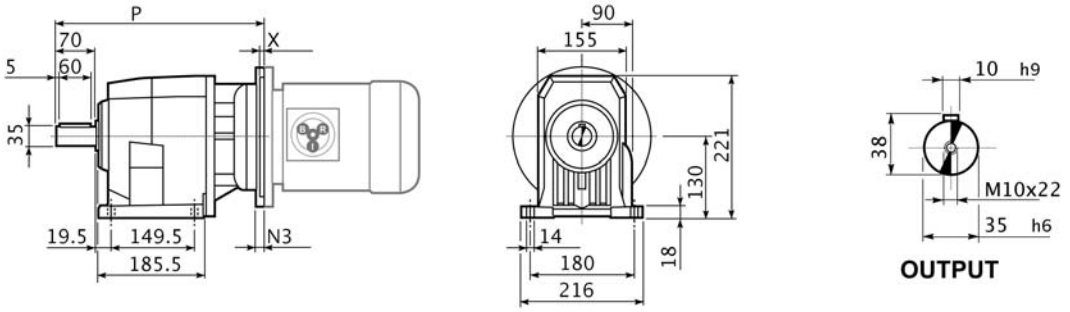



| C 41_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 130 | 165 | 200 | 11 | 3.5 | 11 |
| FB | 180 | 215 | 250 | 14 | 4 | 14 |

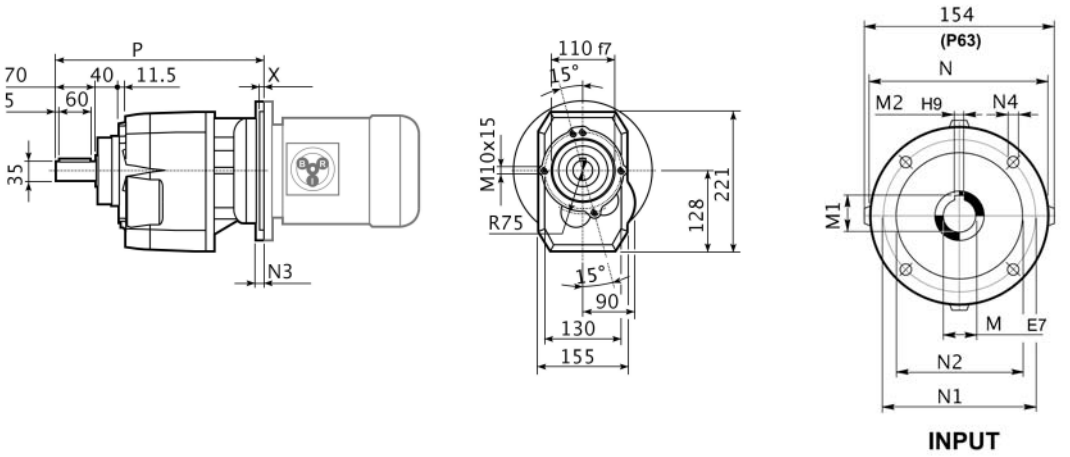
| C 41 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AC | H | HF | L | AD | Kg |
| C 41 2/3 | S1 | M1S | 138 | 199 | 197 | 491.5 | 108 | 25 |
| C 41 2/3 | S1 | M1L | 138 | 199 | 197 | 495.5 | 108 | 25 |
| C 41 2/3 | S2 | M2S | 156 | 208 | 206 | 521.5 | 119 | 31 |
| C 41 2/3 | S3 | M3S | 195 | 227.5 | 225.5 | 595.5 | 142 | 36 |
| C 41 2/3 | S3 | M3L | 195 | 227.5 | 225.5 | 600.5 | 142 | 45 |
| C 41 4 | S05 | M05 | 231 | 245.5 | 243.5 | 533 | 95 | 27 |
| C 41 4 | S1 | M1S | 138 | 199 | 197 | 553 | 108 | 28 |
| C 41 4 | S1 | M1L | 138 | 199 | 197 | 559 | 108 | 28 |
| C 41 4 | S2 | M2S | 156 | 208 | 206 | 583 | 119 | 34 |
| C 41 4 | S3 | M3S | 195 | 227.5 | 225.5 | 657 | 142 | 39 |
| C 41 4 | S3 | M3L | 195 | 227.5 | 225.5 | 662 | 142 | 48 |

## 2.10.13 C 41_P(IEC)

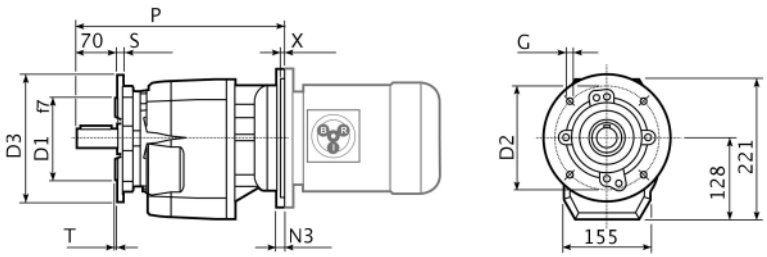
**P**




**U**




**UF**

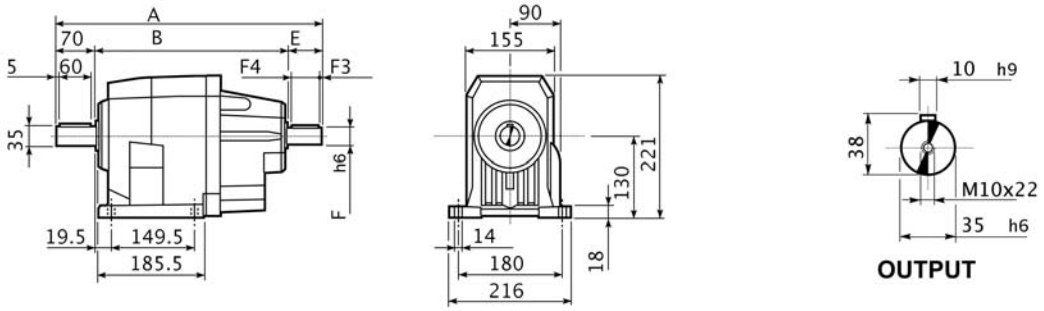



| C 41_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 130 | 165 | 200 | 11 | 3.5 | 11 |
| FB | 180 | 215 | 250 | 14 | 4 | 14 |

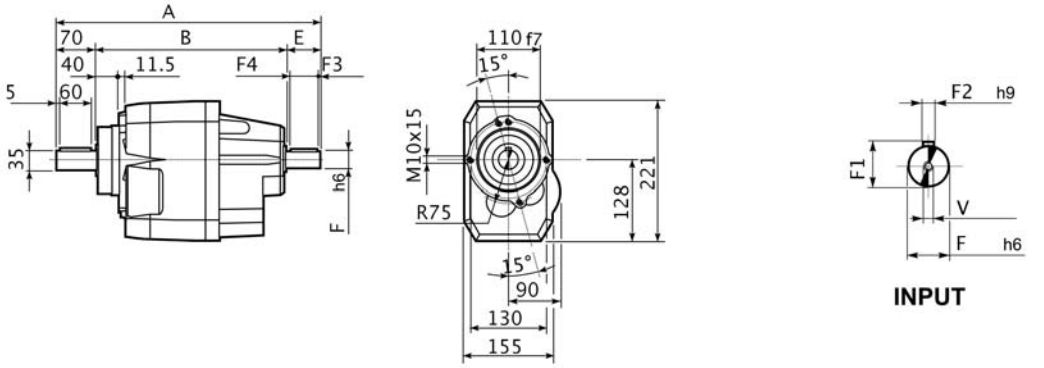
| C 41 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M | M1 | M2 | N | N1 | N2 | N3 | N4 | X | P | Kg |
| C 41 2/3 | P63 | 11 | 12.8 | 4 | 140 | 115 | 95 | — | M8x19 | 4 | 336.5 | 27 |
| C 41 2/3 | P71 | 14 | 16.3 | 5 | 160 | 130 | 110 | — | M8x16 | 4.5 | 336.5 | 28 |
| C 41 2/3 | P80 | 19 | 21.8 | 6 | 200 | 165 | 130 | — | M10x12 | 4 | 356 | 29 |
| C 41 2/3 | P90 | 24 | 27.3 | 8 | 200 | 165 | 130 | — | M10x12 | 4 | 356 | 29 |
| C 41 2 | P100 | 28 | 31.3 | 8 | 250 | 215 | 180 | — | M12x16 | 4.5 | 366 | 33 |
| C 41 2 | P112 | 28 | 31.3 | 8 | 250 | 215 | 180 | — | M12x16 | 4.5 | 366 | 33 |
| C 41 4 | P63 | 11 | 12.8 | 4 | 140 | 115 | 95 | — | M8x19 | 4 | 395 | 30 |
| C 41 4 | P71 | 14 | 16.3 | 5 | 160 | 130 | 110 | — | M8x16 | 4.5 | 395 | 31 |

## 2.10.14 C 41_HS

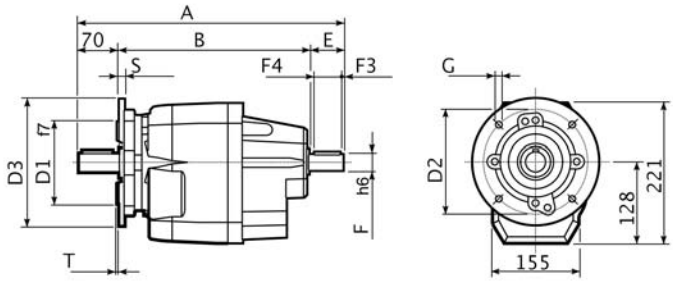
**P**




**U**




**UF**

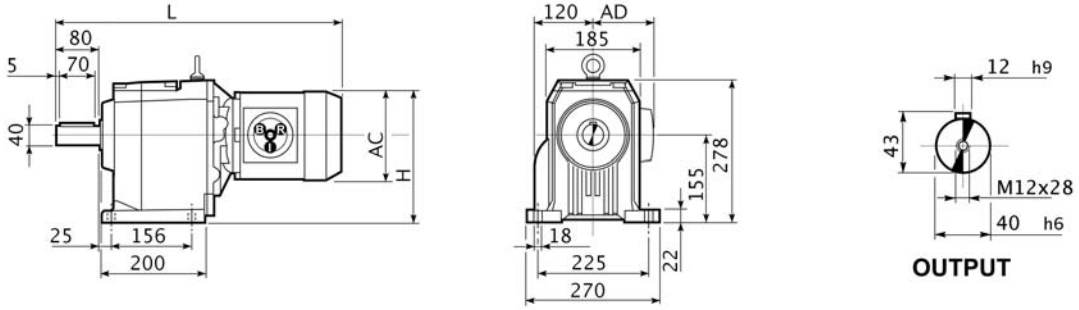



| C 41_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 130 | 165 | 200 | 11 | 3.5 | 11 |
| FB | 180 | 215 | 250 | 14 | 4 | 14 |

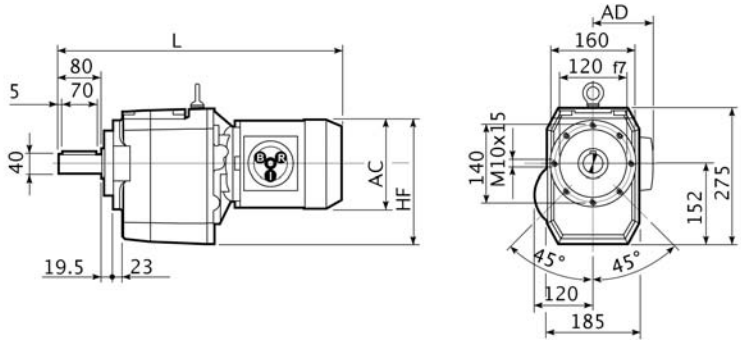
| C 41 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | E | F | F1 | F2 | F3 | F4 | V | Kg |
| C 41 2 | HS | 425.5 | 305.5 | 50 | 24 | 27 | 8 | 2.5 | 45 | M8x19 | 30 |
| C 41 3 | HS | 425.5 | 305.5 | 50 | 24 | 27 | 8 | 2.5 | 45 | M8x19 | 30 |
| C 41 4 | HS | 448 | 338 | 40 | 19 | 21.5 | 6 | 2.5 | 35 | M6x16 | 33 |

## 2.10.15 C 51_M

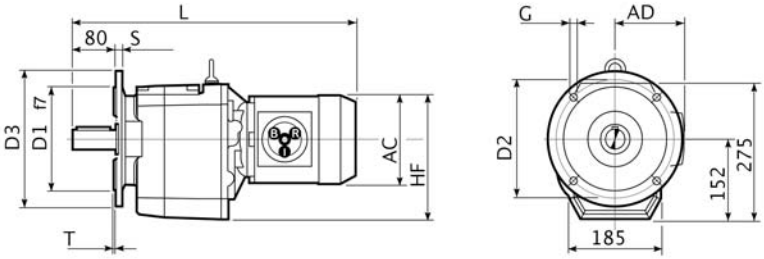
**P**




**U**




**UF**

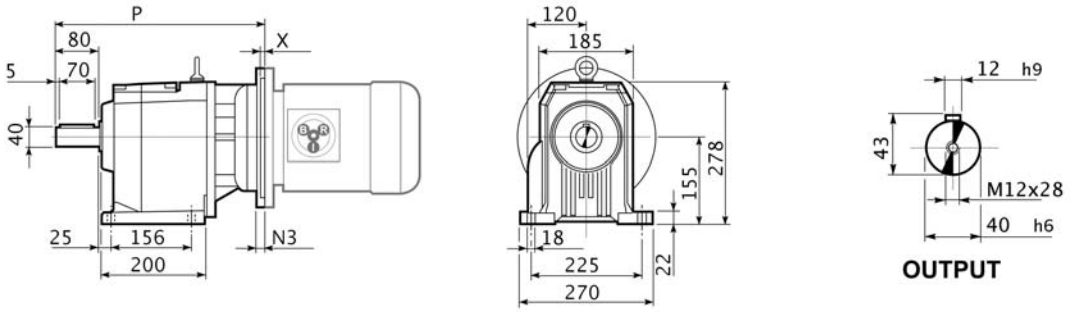



| C 51_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 180 | 215 | 250 | 14 | 4 | 14 |
| FB | 230 | 265 | 300 | 14 | 4 | 16 |

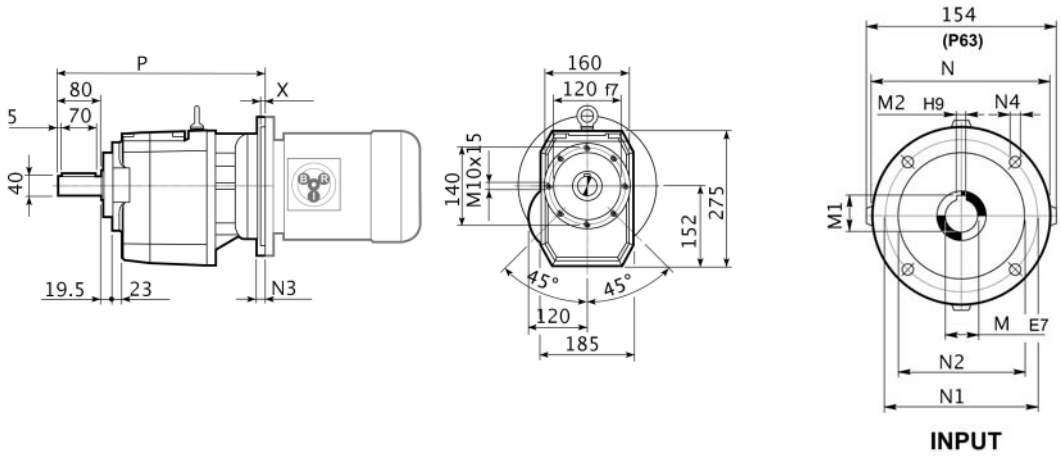
| C 51 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AC | H | HF | L | AD | Kg |
| C 51 2/3 | S1 | M1S | 138 | 224 | 221 | 517.5 | 108 | 48 |
| C 51 2/3 | S1 | M1L | 138 | 224 | 221 | 521.5 | 108 | 49 |
| C 51 2/3 | S2 | M2S | 156 | 233 | 230 | 547.5 | 119 | 53 |
| C 51 2/3 | S3 | M3S | 195 | 252.5 | 249.5 | 621.5 | 142 | 58 |
| C 51 2/3 | S3 | M3L | 195 | 252.5 | 249.5 | 626.5 | 142 | 65 |
| C 51 4 | S1 | M1S | 138 | 224 | 221 | 589 | 108 | 51 |
| C 51 4 | S1 | M1L | 138 | 224 | 221 | 593 | 108 | 52 |
| C 51 4 | S2 | M2S | 156 | 233 | 230 | 619 | 119 | 56 |
| C 51 4 | S3 | M3S | 195 | 252.5 | 249.5 | 693 | 142 | 61 |
| C 51 4 | S3 | M3L | 195 | 252.5 | 249.5 | 698 | 142 | 68 |

## 2.10.16 C 51_P(IEC)

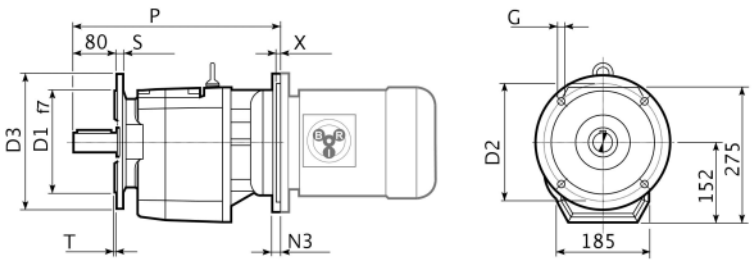
**P**




**U**




**UF**

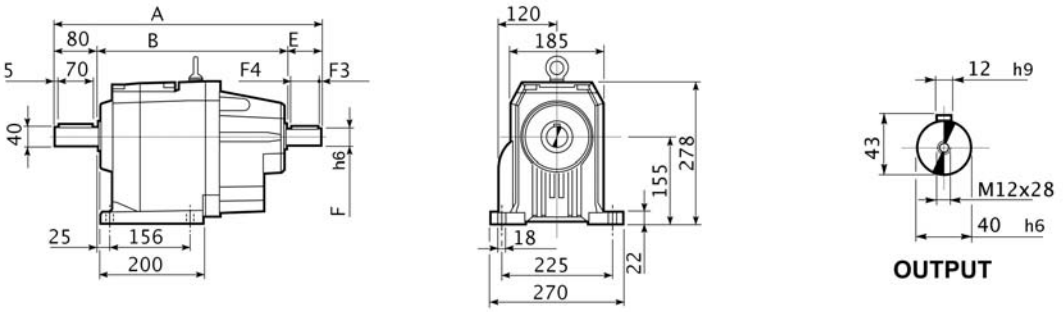



| C 51_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 180 | 215 | 250 | 14 | 4 | 13 |
| FB | 230 | 265 | 300 | 14 | 4 | 16 |

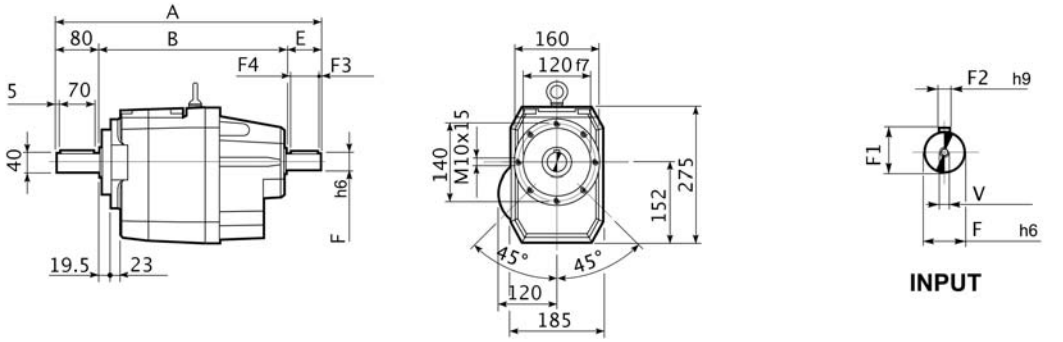
| C 51 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M | M1 | M2 | N | N1 | N2 | N3 | N4 | X | P | Kg |
| C 51 2/3 | P63 | 11 | 12.8 | 4 | 140 | 115 | 95 | — | M8x19 | 4 | 362.5 | 45 |
| C 51 2/3 | P71 | 14 | 16.3 | 5 | 160 | 130 | 110 | — | M8x16 | 4.5 | 362.5 | 45 |
| C 51 2/3 | P80 | 19 | 21.8 | 6 | 200 | 165 | 130 | — | M10x12 | 4 | 382 | 47 |
| C 51 2/3 | P90 | 24 | 27.3 | 8 | 200 | 165 | 130 | — | M10x12 | 4 | 382 | 47 |
| C 51 2/3 | P100 | 28 | 31.3 | 8 | 250 | 215 | 180 | — | M12x16 | 4.5 | 392 | 51 |
| C 51 2/3 | P112 | 28 | 31.3 | 8 | 250 | 215 | 180 | — | M12x16 | 4.5 | 392 | 51 |
| C 51 2 | P132 | 38 | 41.3 | 10 | 300 | 265 | 230 | 16 | 14 | 5 | 428.5 | 54 |
| C 51 4 | P63 | 11 | 12.8 | 4 | 140 | 115 | 95 | — | M8x19 | 4 | 434 | 47 |
| C 51 4 | P71 | 14 | 16.3 | 5 | 160 | 130 | 110 | — | M8x16 | 4.5 | 434 | 47 |
| C 51 4 | P80 | 19 | 21.8 | 6 | 200 | 165 | 130 | — | M10x12 | 4 | 453.5 | 49 |

## *2.10.17 C 51_HS*

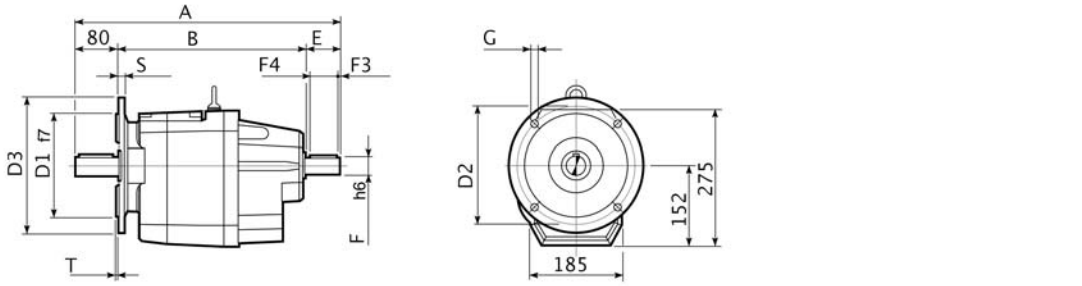
**P**




**U**




**UF**

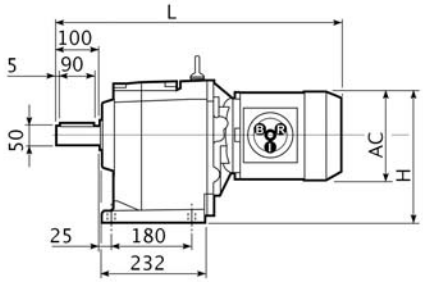


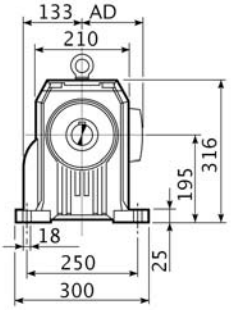

| C 51_U | | | | | | |
|---|---|---|---|---|---|---|
| | **D1** | **D2** | **D3** | **G** | **T** | **S** |
| **FA** | 180 | 215 | 250 | 14 | 4 | 13 |
| **FB** | 230 | 265 | 300 | 14 | 4 | 16 |

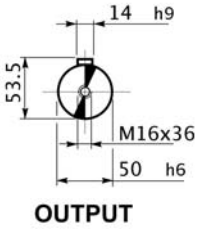
| C 51 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **A** | **B** | **E** | **F** | **F1** | **F2** | **F3** | **F4** | **V** | Kg |
| **C 51 2** | **HS** | 451.5 | 322 | 50 | 24 | 27 | 8 | 2.5 | 45 | M8x19 | 45 |
| **C 51 3** | **HS** | 451.5 | 322 | 50 | 24 | 27 | 8 | 2.5 | 45 | M8x19 | 45 |
| **C 51 4** | **HS** | 484 | 364 | 40 | 19 | 21.5 | 6 | 2.5 | 35 | M6x16 | 48 |

## 2.10.18 C 61_M

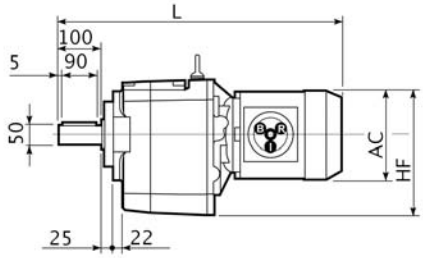
**P**

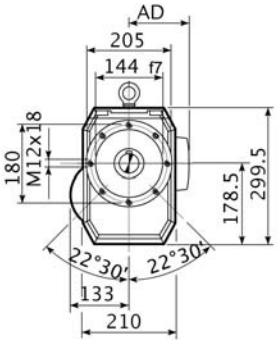


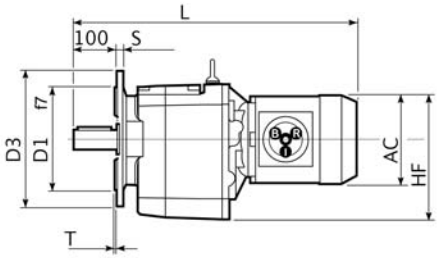



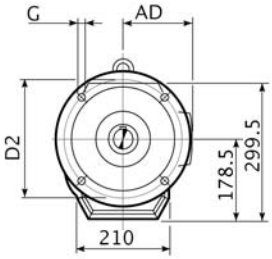

**U**




**UF**



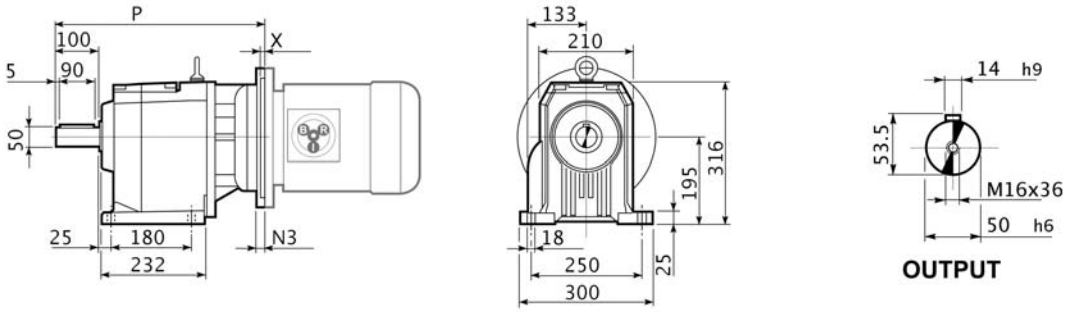




| C 61_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 230 | 265 | 300 | 14 | 4 | 16 |
| FB | 250 | 300 | 350 | 18 | 5 | 18 |

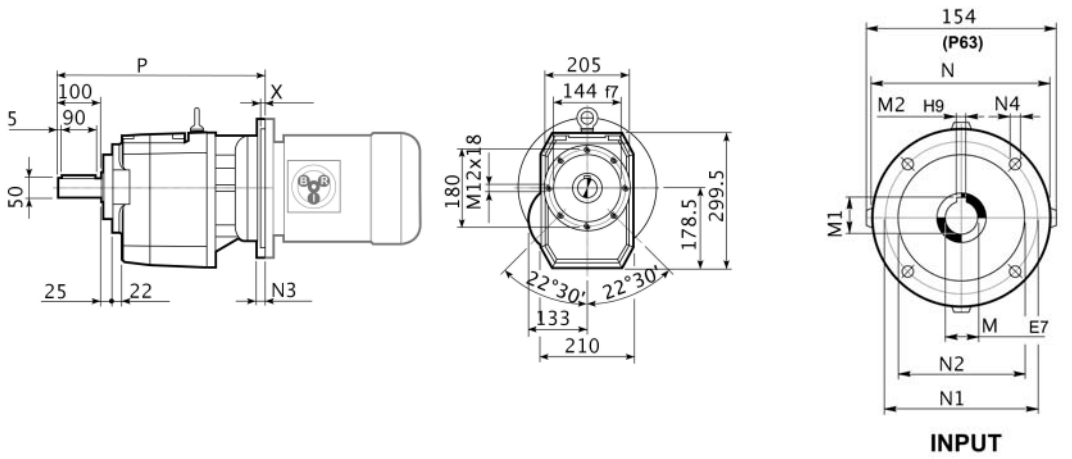
| C 61 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AC | H | HF | L | AD | Kg |
| C 61 2/3 | S2 | M2S | 156 | 273 | 256.5 | 600.5 | 119 | 61 |
| C 61 2/3 | S3 | M3S | 195 | 292.5 | 276 | 674.5 | 142 | 66 |
| C 61 2/3 | S3 | M3L | 195 | 292.5 | 276 | 679.5 | 142 | 74 |
| C 61 4 | S1 | M1S | 138 | 264 | 247.5 | 641 | 108 | 69 |
| C 61 4 | S1 | M1L | 138 | 264 | 247.5 | 645 | 108 | 71 |
| C 61 4 | S2 | M2S | 156 | 273 | 256.5 | 671 | 119 | 75 |
| C 61 4 | S3 | M3S | 195 | 292.5 | 276 | 745 | 142 | 79 |
| C 61 4 | S3 | M3L | 195 | 292.5 | 276 | 750 | 142 | 87 |

## 2.10.19 C 61_P(IEC)

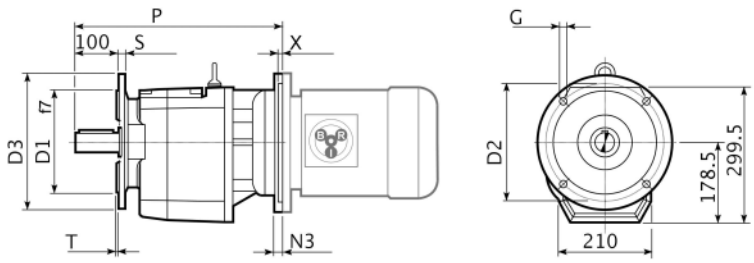
**P**




**U**




**UF**

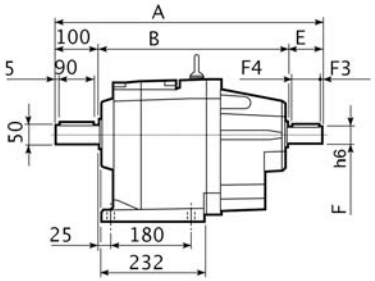


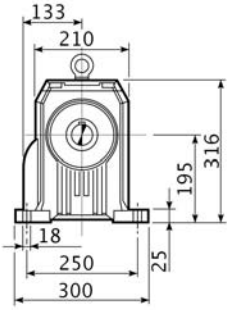

| C 61_U | | | | | | |
|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | G | T | S |
| FA | 230 | 265 | 300 | 14 | 4 | 16 |
| FB | 250 | 300 | 350 | 18 | 5 | 18 |

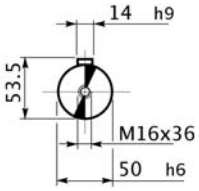
| C 61 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M | M1 | M2 | N | N1 | N2 | N3 | N4 | X | P | Kg |
| C 61 2/3 | P63 | 11 | 12.8 | 4 | 140 | 115 | 95 | — | M8x19 | 4 | 415.5 | 55 |
| C 61 2/3 | P71 | 14 | 16.3 | 5 | 160 | 130 | 110 | — | M8x16 | 4.5 | 415.5 | 57 |
| C 61 2/3 | P80 | 19 | 21.8 | 6 | 200 | 165 | 130 | — | M10x12 | 4 | 435 | 61 |
| C 61 2/3 | P90 | 24 | 27.3 | 8 | 200 | 165 | 130 | — | M10x12 | 4 | 435 | 61 |
| C 61 2/3 | P100 | 28 | 31.3 | 8 | 250 | 215 | 180 | — | M12x16 | 4.5 | 444 | 65 |
| C 61 2/3 | P112 | 28 | 31.3 | 8 | 250 | 215 | 180 | — | M12x16 | 4.5 | 444 | 65 |
| C 61 2 | P132 | 38 | 41.3 | 10 | 300 | 265 | 230 | 16 | 14 | 5 | 481.5 | 68 |
| C 61 2 | P160 | 42 | 45.3 | 12 | 350 | 300 | 250 | 23 | 18 | 5.5 | 532 | 73 |
| C 61 4 | P63 | 11 | 12.8 | 4 | 140 | 115 | 95 | — | M8x19 | 4 | 486 | 61 |
| C 61 4 | P71 | 14 | 16.3 | 5 | 160 | 130 | 110 | — | M8x16 | 4.5 | 489 | 63 |
| C 61 4 | P80 | 19 | 21.8 | 6 | 200 | 165 | 130 | — | M10x12 | 4 | 505.5 | 67 |
| C 61 4 | P90 | 24 | 27.3 | 8 | 200 | 165 | 130 | — | M10x12 | 4 | 505.5 | 67 |

## *2.10.20 C 61_HS*

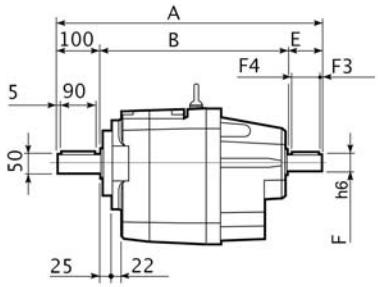
**P**

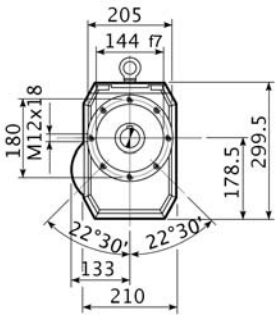


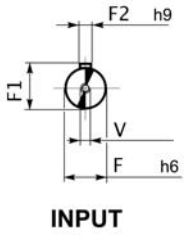



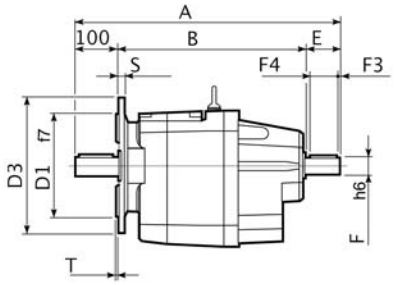

**U**

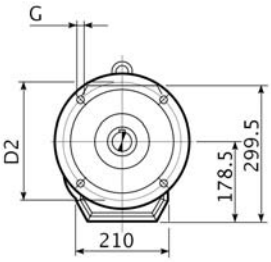



**UF**




| C 61_U | | | | | | |
|---|---|---|---|---|---|---|
| | **D1** | **D2** | **D3** | **G** | **T** | **S** |
| **FA** | 230 | 265 | 300 | 14 | 4 | 16 |
| **FB** | 250 | 300 | 350 | 18 | 5 | 18 |

| C 61 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **A** | **B** | **E** | **F** | **F1** | **F2** | **F3** | **F4** | **V** | Kg |
| **C 61 2** | **HS** | 532 | 372 | 60 | 28 | 31 | 8 | 5 | 50 | M10x22 | 66 |
| **C 61 3** | **HS** | 532 | 372 | 60 | 28 | 31 | 8 | 5 | 50 | M10x22 | 66 |
| **C 61 4** | **HS** | 575 | 425 | 50 | 24 | 27 | 8 | 2.5 | 35 | M8x19 | 72 |

## 2.11 DECLARATION OF CONFORMITY

**BONFIGLIOLI RIDUTTORI S.p.A.**
Via Giovanni XXIII, 7/a
40012 Lippo di Calderara di Reno
Bologna (Italy)
Tel. +39 051 6473111
Fax +39 051 6473126
bonfiglioli@bonfiglioli.com
www.bonfiglioli.com
*Company Certified UNI EN ISO 9001:2000*

**CERTIFICATE OF COMPLIANCE (according to EC Directive 94I9/CE Annex VIII)**

**BONFIGLIOLI RIDUTTORI S.p.A.**
declares under its own responsibility that the following products:
- helical-bevel gear units type **A**
- helical in-fine gear units type **C**
- worm gear units type **VF** and **W**
- helical shaft-mounted units type **F**

in category **2G** and **2D** to which this certificate refers, are in compliance with the requirements of the following Directive:

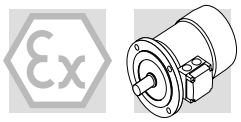
**94/9/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of 23 March 1994**
Conformity with the provisions of this Directive is proven by complete compliance to the following Standards:

**EN 1127-1, EN 13463-1, prEN 13463-5, prEN 13463-8**

**BONFIGLIOLI RIDUTTORI** filed the documents according to 94/9IEC Annex VIII, with the following notified body:
TÜV PRODUCT SERVICE GmbH- Identification number 0123

Lippo di Calderara di Reno, 27/11/2003
Place and date

Ing. Enzo Cognigni
R&D Manager



## 3 ATEX MOTORS

### 3.1 SYMBOLS AND UNITS OF MEASUREMENT

| | | |
|---|---|---|
| **cosφ** | - | Power factor |
| **η** | - | Efficiency |
| **$I_N$** | [A] | Rated current |
| **$I_S$** | [A] | Locked rotor current |
| **$J_M$** | [$Kgm^2$] | Moment of inertia |
| **$M_A$** | [Nm] | Mean breakaway torque |
| **$M_N$** | [Nm] | Rated torque |
| **$M_S$** | [Nm] | Starting torque |
| **n** | [$min^{-1}$] | Rated speed |
| **$P_n$** | [kW] | Motor rated power |
| **$T_a$** | [°C] | Ambient temperature |

## 3.2 GENERAL CHARACTERISTICS

### 3.2.1 PRODUCTION RANGE

**Motors described in this catalogue are designed and manufactured for use in industrial applications andare suitable for installation in ambients with the presence of potentially explosive dusty atmospheres, according to EN 50281 with type of protection Ex II 2D 125 °C (combustible dust).**
**The electrical construction complies with the harmonizedNorms EN 50014 andEN 50281-1-1 as well as with the requirements of Directive 94/9/EC.**
Motors are three-phase, asynchronous type, with cage rotor and are available in the base versions IMB5, IMB14 and their derivatives. The present catalogue also describes the features and ratings of compact motors **Series M**, designed for direct combination with the speed reducers.

Catalogue ratings refer to motors operating in the following conditions:

- Service S1
- Power supply
- Degree of protection IP65
- Insulation class F
- Ambient temperature: min. -20, max +40 °C
- Altitude $\leqslant$ 1000 m a.s.l.

### 3.2.2 DIRECTIVES 73/23/EEC (LVD) and 89/336/EEC (EMC)

BN motors comply with the requirements of Directives 73/23/EEC (Low Voltage Directive) and 89/336/EEC (Electromagnetic Compatibility Directive) and their name plates bear the CE mark.
As for the EMC Directive, construction is in accordance with standards CEI EN 60034-1 Sect. 12, EN 50081, EN50082.
Motors also meet the requirements of standard CEI EN 60204-1 “Electrical equipment of machines”.
The responsibility for final product safety and compliance with applicable directives rests with the manufacturer or the assembler who incorporate the motors as component parts.

### 3.2.3 STANDARDS

The motors described in this catalogue are manufactured to the applicable standards listed in the following table.

| Title | EN |
|---|---|
| General requirements for rotating electrical machines | EN 60034-1 |
| Electrical apparatus for potentially explosive atmospheres – General requirements | EN 50014 |
| Electrical apparatus for use in the presence of combustible dust<br>Part 1-1: Electrical apparatus protected by enclosures – Construction and testing | EN 50281-1-1 |
| Electrical apparatus for use in the presence of combustible dust<br>Part 1-2: Electrical apparatus protected by enclosures – Selection, installation and maintenance | EN 50281-1-2 |
| Terminal markings and direction of rotation of rotating machines | EN 60034-8 |
| Methods of cooling for electrical machines | EN 60034-6 |
| Dimensions and output ratings for rotating electrical machines | EN 50347 |
| Classification of degree of protection provided by enclosures for rotating machines | EN 60034-5 |
| Noise limits | EN 60034-9 |
| Classification of type of construction and mounting arrangements | EN 60034-7 |
| Vibration level of electrical machines | EN 60034-14 |

### 3.2.4 PRODUCT IDENTIFICATION

The name plate shown here under is fitted on the electric motor. The name plate carries the necessary information for the correct use of the motor.


1) Type of motor
2) n° of the ATEX certificate
3) Product code number and production batch
4) Year of production and serial number
5) Type of duty
6) Mounting (barring motors series M)
7) Weight of motor
8) Rated voltage and relevant wiring
9) Rated frequency
10) kW rating
11) Rated current
12) Rated speed
13) Power factor
14) Degree of protection
15) Specific ATEX marking

CE marking certifying the conformity of the product to the applicable European Directives. The number listed underneath identifies the nominated authority TÜV Produkt Service GmbH.

0123

Marking designating the applicable explosion protection.

**II 2D** Group II, category 2, for potentially explosive dusty atmosphere.

**T 125 °C** Maximum surface temperature 125 °C.

**IP65** Degree of protection for the enclosure.

### 3.2.5 TOLERANCES

The following tolerances are permitted according to CEI EN 60034-1:

| | |
|---|---|
| - 0.15x(1 - η) P ≤ 50kW | Efficiency |
| -(1 - cosφ) / 6 [min 0.02 max 0.07] | Power factor |
| ±20% (*) | Slip |
| +20% | Locked-rotor current |
| -15% ... +25% | Locked-rotor torque |
| -10% | Breakdown torque |

(*) ± 30% for motors with Pn < 1kW

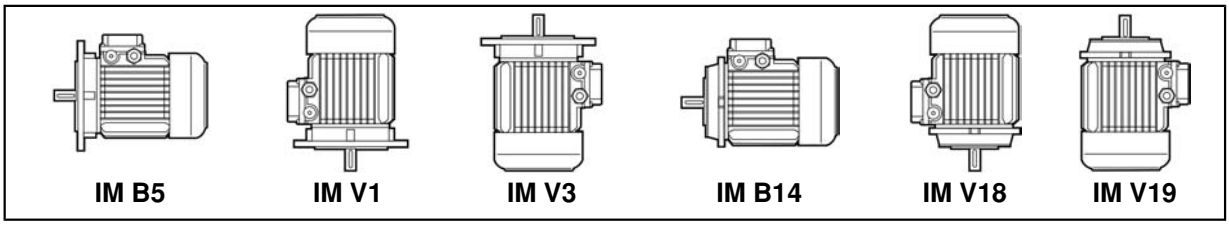
## 3.3 MECHANICAL FEATURES

### 3.3.1 MOTOR MOUNTING

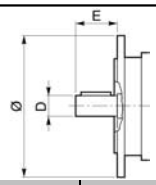
IEC-normalised BN motors are available in the design versions indicated in table (A30) as per Standards CEI
EN 60034-14.

Mounting versions are:
**IM B5** (basic)
IM V1, IM V3 (derived)
**IM B14** (basic)
IM V18, IMV19 (derived)

IM B5 design motors can be installed in positions IM V1 and IM V3; IM B14 design motors can be installed in positions IM V18 and IM V19. In such cases, the basic design IM B5 or IM B14 is indicated on the motor name plate.
In design versions with a vertically located motor and shaft downwards, it is recommended to request the drip cover (always necessary for brake motors). This facility, included in the option list should be specified when ordering as it does not come as a standard device.




Flanged motors can be supplied with a reduced mounting interface, as shown in chart below.



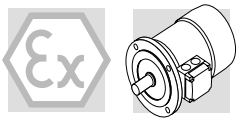

| | BN 71 | BN 80 | BN 90 | BN 100 |
|---|---|---|---|---|
| | D x E - Ø | | | |
| **B5R** (1) | 11 x 23 - Ø 140 | 14 x 30 - Ø 160 | 19 x 40 - Ø 200 | 24 x 50 - Ø 200 |
| **B14R** (2) | 11 x 23 - Ø 90 | 14 x 30 - Ø 105 | 19 x 40 - Ø 120 | 24 x 50 - Ø 140 |

(1) flange con through holes
(2) flange with threaded holes

### 3.3.2 DEGREE OF PROTECTION

In their execution Ex II 2D 125 °C BN and M motors feature, as standard, the IP65 degree of protection. In addition to the degree of protection specified when ordering, motors to be installed outdoors require protection against direct sunlight and also – when they are to be installed vertically down – a drip cover to prevent the ingress of water and solid particles (option **RC**).

|  |  | IP65 | IP55 |
|---|---|---|---|
| **BN - Ex II 2D 125°C** | **M - Ex II 2D 125°C** | default | ⊖ |



### 3.3.3 COOLING

The motors are externally ventilated (IC 411 to CEI EN 60034-6) and are equipped with a plastic fan working in both directions.
The installation must ensure a minimum clearance of 50 mm between fan cowl and the nearest wall, in order to provide for an unobstructed air flow and permitting removal of the motor, should the circumstance be required.

### 3.3.4 DIRECTION OF ROTATION

Motors may operate in both directions of rotation. When the terminals U1, V1, W1 are connected to the line phases L1, L2, L3, the motor will run in a clockwise direction as viewed from the coupling end.
Counter clockwise rotation is obtained by swapping two phases.

### 3.3.5 NOISE LEVEL

Noise levels measured using the method specified by standard ISO 1680 are within the maximum limits required by standards CEI EN 60034-9.

### 3.3.6 VIBRATIONS AND BALANCING

Rotor shafts are balanced with half key fitted and fall within the vibration class N, as per Standard CEI EN 60034-14.
If a further reduced noise level is required improved balancing can be optionally requested (class N).
Table below shows the value for the vibration velocity for standard (N) and improved (R) balancing.

| Vibration class | Angular velocity n [$min^{-1}$] | Limits of the vibration velocity [mm/s] **BN 63...BN 100 M05...M3** |
|---|---|---|
| **N** | $600 \leqslant n \leqslant 3600$ | 1.8 |
| **R** | $600 \leqslant n \leqslant 1800$ | 0.71 |

Values refer to measures with freely suspended motor in unloaded conditions.

### 3.3.7 TERMINAL BOX

Terminal board features 6 studs for eyelet terminal connection. A ground terminal is supplied for earthing or equipotential bonding of the connection facilities. A second terminal for earthing or bonding of the protective conductor is fitted externally to the motor (section of conductor $\geqslant$ 4 $mm^2$). Number and type of terminals are shown in the following table.
Wiring instructions are provided either in the box or in the user manual.

|  |  | No. of terminals | Terminals threads | Wire cross section area [$mm^2$] |
|---|---|---|---|---|
| **BN 63...BN 71** | **M05, M1** | 6 | M4 | 2.5 |
| **BN 80, BN 90** | **M2** | 6 | M4 | 2.5 |
| **BN 100** | **M3** | 6 | M5 | 6 |

### 3.3.8 CABLE ENTRY

The holes used to bring cables to terminal boxes use metric threads in accordance with standard EN 50262 as indicated in the table here after.

|  |  | Cable entry |
|---|---|---|
| **BN 63** | **M05** | 2 x M20 x 1.5 |
| **BN 71** | **M1** | 2 x M25 x 1.5 |
| **BN 80, BN 90** | **M2** | 2 x M25 x 1.5 |
| **BN 100** | **M3** | 2 x M32 x 1.5 |
| | | 2 x M25 x 1.5 |

As standard, motors are supplied without cable glands and with cable entries closed by blank plugs compliant with Norm EN 50014. On installing the motors ATEX-compliant cable glands must be used. These must feature the same degree of protection of the motor, or greater.

### 3.3.9 BEARINGS

Life lubricated preloaded radial ball bearings are used, types are shown in the chart here under.
L10h lifetime of bearings, calculated according to Norm ISO 281, is.

- **serie BN**: in excess of 40000 hours in the absence of loads applying radially on the shaft
- **serie M**: in excess of 5000 hours, based on the maximum loading generated by the gearing when matched to the correspondent gear unit (refer to sales catalogues of BONFIGLIOLI gearmotors).

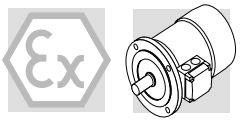
**DE** = drive end
**NDE** = non drive end

|  | **DE** | **NDE** |  | **DE** | **NDE** |
|---|---|---|---|---|---|
| **M05** | 6004 2Z C3 | 6201 2RS C3 | **BN 63** | 6201 2RZ C3 | 6201 2RS C3 |
| **M1** | 6004 2Z C3 | 6202 2RS C3 | **BN 71** | 6202 2RZ C3 | 6202 2RS C3 |
| **M2** | 6007 2Z C3 | 6204 2RS C3 | **BN 80** | 6204 2RZ C3 | 6204 2RS C3 |
| **M3** | 6207 2Z C3 | 6206 2RS C3 | **BN 90** | 6205 2RZ C3 | 6205 2RS C3 |
| | | | **BN 100** | 6206 2RZ C3 | 6206 2RS C3 |

## 3.4 ELECTRICAL CHARACTERISTICS

### 3.4.1 VOLTAGE / FREQUENCY

Motors are designed for direct mains supply and, in their standard execution, to be connected 230V Δ / 400V Y, 50Hz with a ± 10% tolerance applying to voltage. In addition to nominal voltage-frequency values the name plate also shows voltage ranges the motor can operate under:
220 - 240V Δ
380 - 415V Y / 50 Hz.
As per Norms CEI EN 60034-1 on above voltage values the ±5% tolerance applies.
Other executions with max. input voltage 600V may be available on request.



### *3.4.2 ISULATION CLASS*

**CLF**

Bonfiglioli motors use class F insulating materials (enamelled wire, insulators, impregnation resins) as compare to the standard motor.

**CLH**

Motors manufactured in insulation class H are available at request.
In standard motors, stator windings over temperature normally stays below the 80 K limit corresponding to class B over temperature.
A careful selection of insulating components makes the motors compatible with tropical climates and normal vibration.
For applications involving the presence of aggressive chemicals or high humidity, contact Bonfiglioli Engineering for assistance with product selection.

### *3.4.3 TYPE OF DUTY*

Motors described in this catalogue are rated for continuous duty S1, with mains supply and operating conditions as specified by the Norm EN 60034-1.

## *3.5 MODIFICATIONS*

### *3.5.1 VIBRATIONS AND BALANCING*

Motors are dynamically balanced with a half key and fall within vibration class **N** in accordance with standard CEI EN 60034-14.

**RV**

Where low noise is a priority requirement, the option **RV** ensures reduced vibration in accordance with vibration class **R**.
The table below reports effective velocity of vibration for normal (N) and R grade balancing.

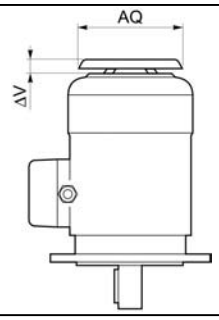
| Vibration class | Synchronous speed | Limits of the vibration velocity (mm/s) | |
|---|---|---|---|
| | | **63 < H ⩽ 132** | **132 < H ⩽ 200** |
| **N** | 600 < n < 3600 | 1.8 | 2.8 |
| **R** | 600 < n < 1800 | 0.71 | 1.12 |
| | 1800 < n < 3600 | 1.12 | 1.8 |

Values are obtained from measurements on freely suspended motor during no-load operation; tolerance ± 10%.

### *3.5.2 DRIP COVER*

**RC**

The rain canopy protects the motor from dripping and avoids the ingress of solid matter. It is recommended when motor is installed in a vertical position with the shaft pointing downwards. The rain canopy is not compatible with variants PS, EN1, EN2, EN3 and will not fit motors equipped with a BA brake.
Relevant dimensions are indicated in the table.

|  |  | **AQ** | **∆V** | |
|---|---|---|---|---|
| **BN 63** | **M05** | 118 | 24 |   |
| **BN 71** | **M1** | 134 | 27 | |
| **BN 80** | **M2** | 134 | 25 | |
| **BN 90** | **-** | 168 | 30 | |
| **BN 100** | **M3** | 168 | 28 | |

### *3.5.3 SECOND SHAFT EXTENSION*

**PS**

Motors carrying this modification cannot be fitted with the drip cover (option RC).
As a consequence, the IM V1 vertical mounting (shaft pointing downwards) is not permitted for motors featuring the second shaft extension.

## 3.6 MOTOR RATING CHARTS

### 3.6.1 BN - Ex II 2D 125°C (1500 $min^{-1}$)

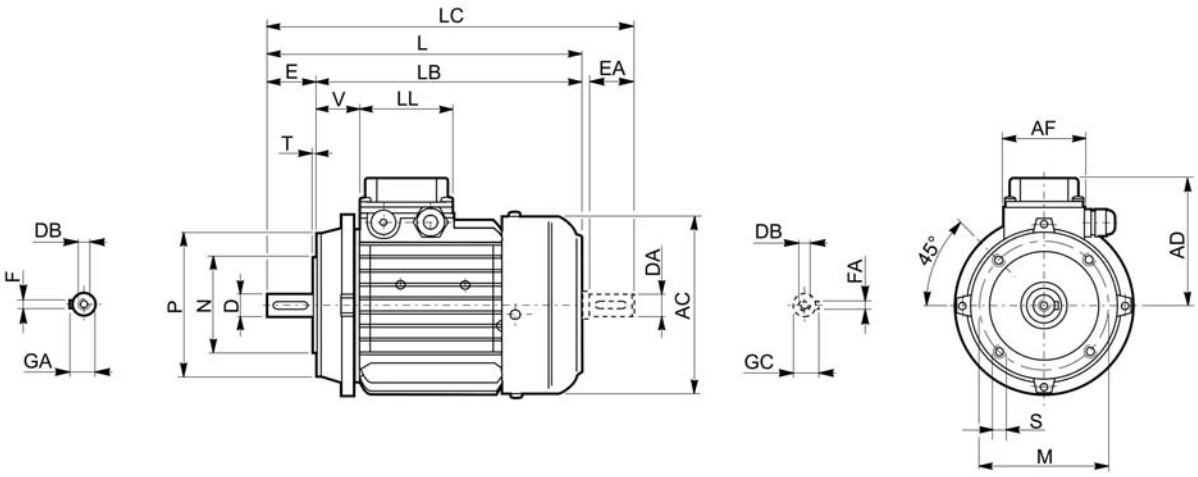
| Pn kW | | n $min^{-1}$ | Mn Nm | η % | cosφ | In A (400V) | Is/In | Ms/Mn | Ma/Mn | Jm x$10^{-4}$ $kgm^2$ | IMB5 Kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.12 | **BN63A 4** | 1310 | 0.88 | 51 | 0.68 | 0.5 | 2.6 | 1.9 | 1.8 | 2 | 3.5 |
| 0.18 | **BN63B 4** | 1320 | 1.3 | 53 | 0.68 | 0.72 | 2.6 | 2.2 | 2 | 2.3 | 3.9 |
| 0.25 | **BN63C 4** | 1320 | 1.81 | 60 | 0.69 | 0.87 | 2.7 | 2.1 | 1.9 | 3.3 | 5.1 |
| 0.25 | **BN71A 4** | 1375 | 1.74 | 62 | 0.77 | 0.76 | 3.3 | 1.9 | 1.7 | 5.8 | 5.1 |
| 0.37 | **BN71B 4** | 1370 | 2.6 | 65 | 0.77 | 1.07 | 3.7 | 2 | 1.9 | 6.9 | 5.9 |
| 0.55 | **BN71C 4** | 1380 | 3.8 | 69 | 0.74 | 1.55 | 4.1 | 2.3 | 2.3 | 9.1 | 7.3 |
| 0.55 | **BN80A 4** | 1390 | 3.8 | 72 | 0.77 | 1.43 | 4.1 | 2.3 | 2 | 15 | 8.2 |
| 0.75 | **BN80B 4** | 1400 | 5.1 | 75 | 0.78 | 1.85 | 4.9 | 2.7 | 2.5 | 20 | 9.9 |
| 1.1 | **BN80C 4** | 1400 | 7.5 | 75 | 0.79 | 2.68 | 5.1 | 2.8 | 2.5 | 25 | 11.3 |
| 1.1 | **BN90S 4** | 1400 | 7.5 | 73 | 0.77 | 2.82 | 4.6 | 2.6 | 2.2 | 21 | 12.2 |
| 1.5 | **BN90LA 4** | 1410 | 10.2 | 77 | 0.77 | 3.7 | 5.3 | 2.8 | 2.4 | 28 | 13.6 |
| 1.85 | **BN90LB 4** | 1400 | 12.6 | 77 | 0.78 | 4.4 | 5.2 | 2.8 | 2.6 | 30 | 15.1 |
| 2.2 | **BN100LA 4** | 1410 | 14.9 | 78 | 0.76 | 5.4 | 4.5 | 2.2 | 2 | 40 | 18.3 |
| 3 | **BN100LB 4** | 1410 | 20 | 80 | 0.78 | 6.9 | 5 | 2.3 | 2.2 | 54 | 22 |

### 3.6.2 M - Ex II 2D 125°C (1500 $min^{-1}$)

| Pn kW | | n $min^{-1}$ | Mn Nm | η % | cosφ | In A (400V) | Is/In | Ms/Mn | Ma/Mn | Jm x$10^{-4}$ $kgm^2$ | IMB5 Kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.12 | **M05A 4** | 1310 | 0.88 | 51 | 0.68 | 0.5 | 2.6 | 1.9 | 1.8 | 2 | 3.2 |
| 0.18 | **M05B 4** | 1320 | 1.3 | 53 | 0.68 | 0.72 | 2.6 | 2.2 | 2 | 2.3 | 3.6 |
| 0.25 | **M05C 4** | 1320 | 1.81 | 60 | 0.69 | 0.87 | 2.7 | 2.1 | 1.9 | 3.3 | 4.8 |
| 0.37 | **M1SD 4** | 1370 | 2.6 | 65 | 0.77 | 1.07 | 3.7 | 2 | 1.9 | 6.9 | 5.5 |
| 0.55 | **M1LA 4** | 1380 | 3.8 | 69 | 0.74 | 1.55 | 4.1 | 2.3 | 2.3 | 9.1 | 6.9 |
| 0.75 | **M2SA 4** | 1400 | 5.1 | 75 | 0.78 | 1.85 | 4.9 | 2.7 | 2.5 | 20 | 9.2 |
| 1.1 | **M2SB 4** | 1400 | 7.5 | 75 | 0.79 | 2.68 | 5.1 | 2.8 | 2.5 | 25 | 10.6 |
| 1.5 | **M3SA 4** | 1410 | 10.2 | 78 | 0.77 | 3.6 | 4.6 | 2.1 | 2.1 | 34 | 15.5 |
| 2.2 | **M3LA 4** | 1410 | 14.9 | 78 | 0.76 | 5.4 | 4.5 | 2.2 | 2 | 40 | 17 |
| 3 | **M3LB 4** | 1410 | 20 | 80 | 0.78 | 6.9 | 5 | 2.3 | 2.2 | 54 | 21 |

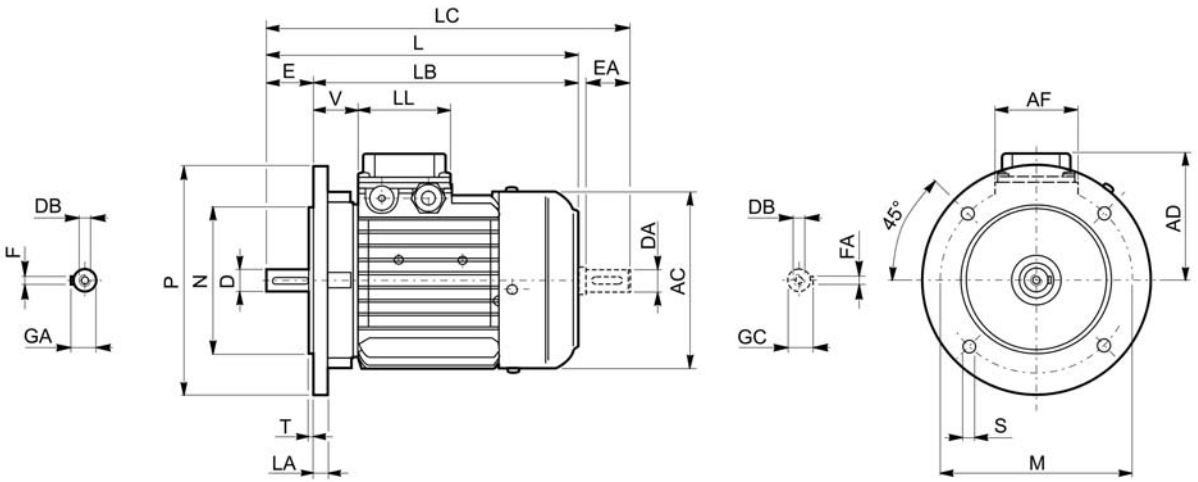
## 3.7 MOTORS DIMENSIONS

### 3.7.1 BN - IMB14



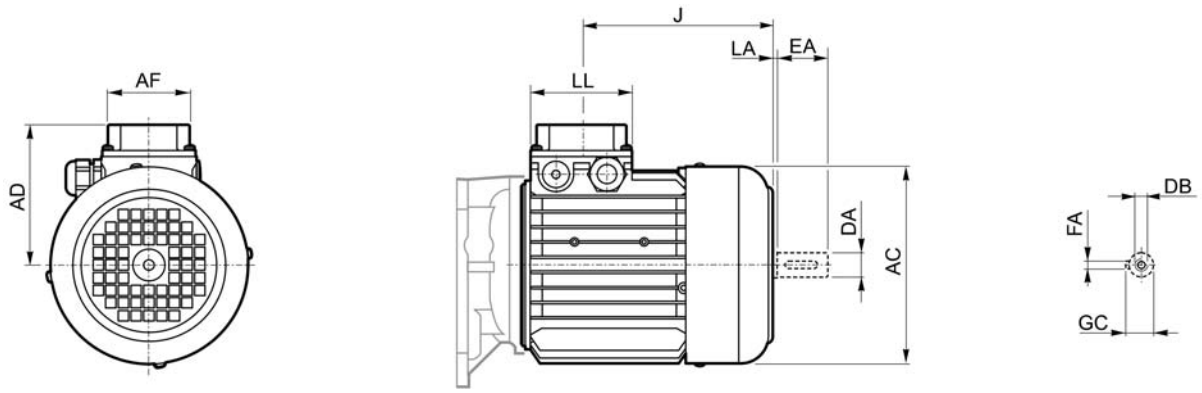

| | Shaft | | | | | Flange | | | | | Motor | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **D DA** | **E EA** | **DB** | **GA GC** | **F FA** | **M** | **N** | **P** | **S** | **T** | **AC** | **L** | **LB** | **LC** | **AD** | **AF** | **LL** | **V** |
| **BN63_2D** | 11 | 23 | M4 | 12.5 | 4 | 75 | 60 | 90 | M5 | 2.5 | 121 | 215 | 192 | 240 | 95 | 74 | 80 | 26 |
| **BN71_2D** | 14 | 30 | M5 | 16 | 5 | 85 | 70 | 105 | M6 | 2.5 | 138 | 254 | 224 | 286 | 108 | 74 | 80 | 37 |
| **BN80_2D** | 19 | 40 | M6 | 21.5 | 6 | 100 | 80 | 120 | M6 | 3 | 156 | 276 | 236 | 318 | 119 | 74 | 80 | 38 |
| **BN90_2D** | 24 | 50 | M8 | 27 | 8 | 115 | 95 | 140 | M8 | 3 | 176 | 326 | 276 | 378 | 133 | 98 | 98 | 44 |
| **BN100_2D** | 28 | 60 | M10 | 31 | 8 | 130 | 110 | 160 | M8 | 3.5 | 195 | 370 | 310 | 472 | 142 | 98 | 98 | 50 |

### 3.7.2 BN - IMB5




| | Shaft | | | | | Flange | | | | | | Motor | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **D DA** | **E EA** | **DB** | **GA GC** | **F FA** | **M** | **N** | **P** | **S** | **T** | **LA** | **AC** | **L** | **LB** | **LC** | **AD** | **AF** | **LL** | **V** |
| **BN63_2D** | 11 | 23 | M4 | 12.5 | 4 | 115 | 95 | 140 | 9.5 | 3 | 10 | 121 | 207 | 184 | 240 | 95 | 74 | 80 | 26 |
| **BN71_2D** | 14 | 30 | M5 | 16 | 5 | 130 | 110 | 160 | 9.5 | 3 | 10 | 138 | 249 | 219 | 286 | 108 | 74 | 80 | 37 |
| **BN80_2D** | 19 | 40 | M6 | 21.5 | 6 | 165 | 130 | 200 | 11.5 | 3.5 | 11.5 | 156 | 274 | 234 | 318 | 119 | 74 | 80 | 38 |
| **BN90_2D** | 24 | 50 | M8 | 27 | 8 | 165 | 130 | 200 | 11.5 | 3.5 | 11.5 | 176 | 326 | 276 | 378 | 133 | 98 | 98 | 44 |
| **BN100_2D** | 28 | 60 | M10 | 31 | 8 | 215 | 180 | 250 | 14 | 4 | 14 | 195 | 367 | 307 | 432 | 142 | 98 | 98 | 50 |

### *3.7.3 M*




| | AC | AD | AF | LL | J | DA | EA | LA | DB | GC | FA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **M05_2D** | 121 | 95 | 74 | 80 | 117 | 11 | 23 | 3 | M4 | 12.5 | 4 |
| **M1S_2D** | 138 | 108 | 74 | 80 | 118 | 14 | 30 | 2 | M5 | 16 | 5 |
| **M1L_2D** | 138 | 108 | 74 | 80 | 142 | 14 | 30 | 2 | M5 | 16 | 5 |
| **M2S_2D** | 156 | 119 | 74 | 80 | 152 | 19 | 40 | 3 | M6 | 21.5 | 6 |
| **M3S_2D** | 195 | 142 | 98 | 98 | 176.5 | 28 | 60 | 3 | M10 | 31 | 8 |
| **M3L_2D** | 195 | 142 | 98 | 98 | 208.5 | 28 | 60 | 3 | M10 | 31 | 8 |

## *3.8 DECLARATION OF CONFORMITY*

**BONFIGLIOLI RIDUTTORI S.p.A.**
Via Giovanni XXIII, 7/a
40012 Lippo di Calderara di Reno
Bologna (Italy)
Tel. +39 051 6473111
Fax +39 051 6473126
bonfiglioli@bonfiglioli.com
www.bonfiglioli.com
*Company Certified UNI EN ISO 9001:2000*

**CERTIFICATE OF COMPLIANCE** (according to EC Directive 94I9/CE)

**BONFIGLIOLI RIDUTTORI S.p.A.**
declares under its own responsibility that the 3-phase electric motors:
- **BN** series, sizes 63 - 100 (4 pole)
- **M** series, sizes M05 - M3 (4 pole)

Group **II**, category **2D**, maximum surface temperature **T 125°C** (TÜV PRODUCT SERVICE 0123 -N° EX5 04 08 29103 006) to which this declaration refers, are in conformity with the requirements of the following Directive:

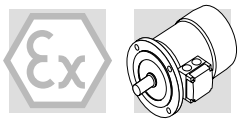
**94/9/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of 23 March 1994**
Conformity with the provisions of this Directive is proven by complete compliance to the following Standards:

**EN 60034-1, EN 50281-1-1, EN 50014**

**BONFIGLIOLI RIDUTTORI** filed the documents according to 94/9/EC, with the following notified body: TÜV PRODUCT SERVICE GmbH- Identification number 0123

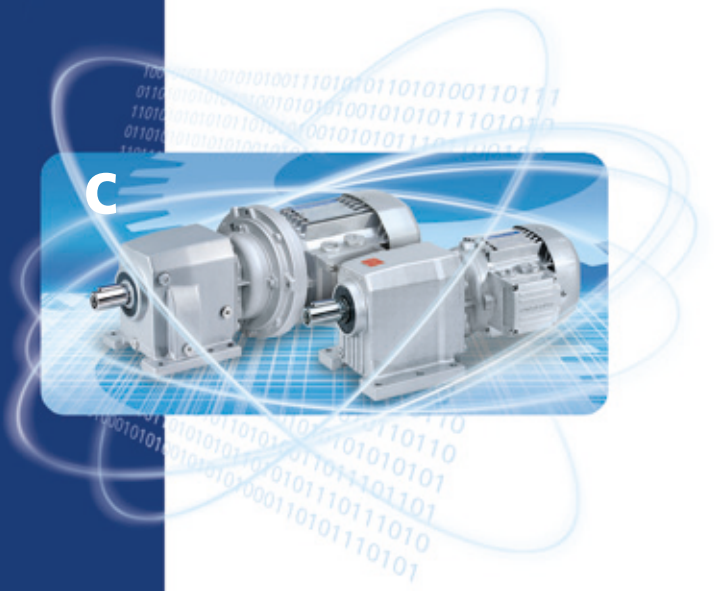
Lippo di Calderara di Reno, 27/11/2003
Place and date

Ing. Enzo Cognigni
R&D Manager



| INDEX OF REVISIONS (R) | R3 |
|---|---|
| Description | |
| - Updated chapter 2.9 (motor adapter limitations for C 61 2, i= 6.7_7.5) | |

INDUSTRY PROCESS
AND AUTOMATION SOLUTIONS



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