# EXPLOSION PROOF SERVO MOTORS

***WARNING — USER RESPONSIBILITY***

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

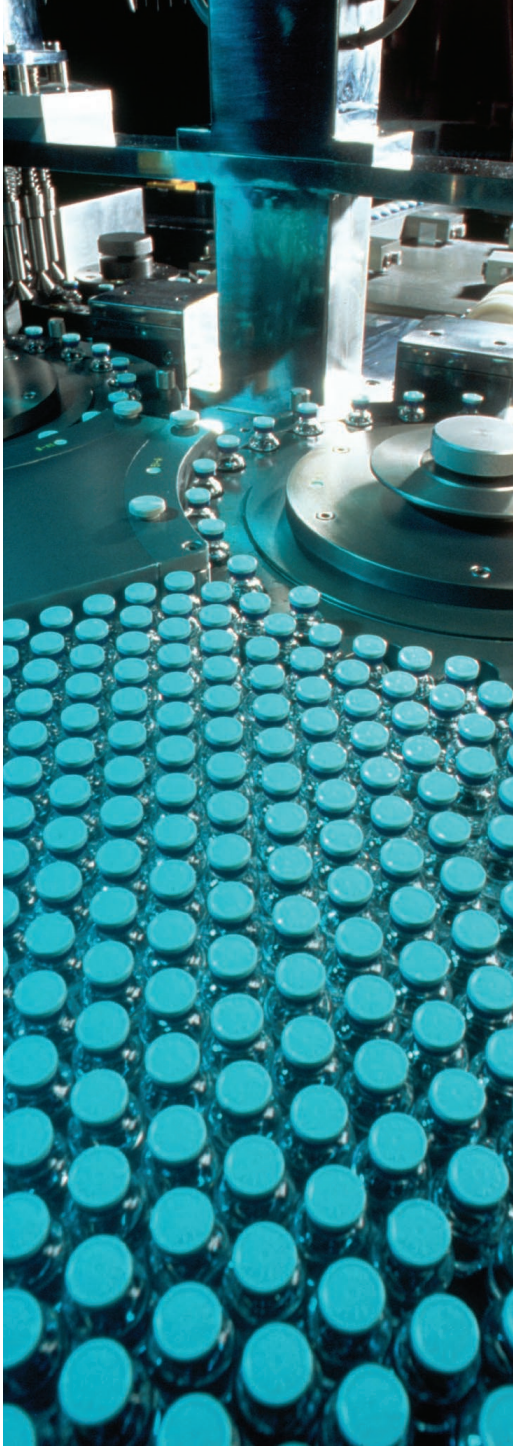
- This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.
- The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.
- To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

***SALE CONDITIONS***

The items described in this document are available for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. Any sale contract entered into by Parker will be governed by the provisions stated in Parker's standard terms and conditions of sale (copy available upon request).

# Table of Contents





If you have questions about the products contained in this catalog, or their applications, please contact:
**Parker Hannifin EMEA Sàrl European Headquarters**
parker.com/msge

| Series | EY  | | EX  | |
|---|---|---|---|---|
| | www.parker.com/eme/ey | | www.parker.com/eme/ex | |
| | page 10 | | page 18 | |
| **Marking** | ATEX | CCC | ATEX/IECEx, KOSHA | CCC |
| **EX Zone** | Zone 2 / 22 | Zone 2 / 22 | Zone 1 / 21 | Zone 1 / 21 |
| **Classification** | Gas or Dust | Gas or Dust | Gas or Dust | Gas or Dust |
| **Torque** | 1.8 to 41 Nm | 1.8 to 41 Nm | 1.75 to 35 Nm | 1.75 to 35 Nm |
| **Max Speed** | 6 800 $min^{-1}$ | 6 800 $min^{-1}$ | 6 800 $min^{-1}$ | 6 800 $min^{-1}$ |
| **Ingress protection level** | IP65 | IP65 | IP65 | IP65 |
| **Power Supply** | 230 - 400 VAC | 230 - 400 VAC | 230 - 400 VAC | 230 - 400 VAC |
| **Conformance** | ATEX 2014/34/EU Directive | CNCA-C23-01 2019 CNEX-C2301-2019 | ATEX 2014/34/EU Directive | CNCA-C23-01 2019 CNEX-C2301-2019 |

# STANDARDS

## Hazardous Areas Classification

### Dangerous Areas Identification

European directive 99/92/EC makes explicit the responsibility of employers to protect employees who may be exposed to risk of ATEX environments (Explosive Atmosphere). The employer must assess the risk and classify potentially dangerous areas. Equipment and materials must also be suited for use in dangerous areas in accordance with ATEX directive 2014/34/EU.

Suitable for ATEX/IECEX Parker servomotors

| | | EX Series | |
|---|---|---|---|
| | | | EY Series |
| Hazard | Permanent | Occasional | Unusal |
| Definition | Explosive atmospheres present continuously, for long periods or frequently | Explosive atmospheres are likely to occur | Explosive atmospheres are unlikely to occur or present only infrequently and for a short period only |
| Gas and vapour | Zone 0 | Zone 1 | Zone 2 |
| Dust | Zone 20 | Zone 21 | Zone 22 |
| Category | 1<br>Very high level of protection | 2<br>High level of protection | 3<br>Normal level of protection |

### Classification of common combustible gases and vapours according to temperature class and explosion group

| | | EX Series | | | | | |
|---|---|---|---|---|---|---|---|
| | | EY Series | | | | | |
| T° Class | | T1 | T2 | T3 | T4 | T5 | T6 |
| Group | I | Methane | | | | | |
| | II A | Acetic acid<br>Acetone<br>Ammonia<br>Benzene<br>Carbon monoxide<br>Ethane<br>Ethyl...<br>Methane<br>Methanol<br>Methyl...<br>Naphtalene<br>Propane<br>Toluene<br>Xylene | Butyl acetate<br>Amylic alcohol<br>Liquefied gas<br>Natural gas<br>Butane<br>Ethyl alcohol | Cyclohexane<br>Cyclohexanol<br>Diesel fuels<br>Gasoline<br>Heptane<br>Hexane<br>Pentane<br>Petroleum (depending on composition) | Acetaldehyde<br>Ether | | |
| | II B | Coke gas | Butadiene<br>Ethylene<br>Ethylbenzene<br>Ethylene oxide | Hydrogen sulphide<br>Isoprene<br>Petroleum (depending on composition) | Ethyl ether | | |
| | II C | Hydrogen | Acetylene | | | | Carbon disulphide<br>Ethyl nitrate |

# Compliance with China Standards

| | for EX motors | For EY motors |
|---|---|---|
| **Marking** | CCC | CCC |
| **Conformance** | CNCA-C23-01 2019<br>CNEX-C2301-2019 | CNCA-C23-01 2024<br>CNEX-C2301-2023 |
| **Standards** | GB/T3836.1-2021<br>GB/T3836.2-2021<br>GB/T3836.31-2021 | GB/T3836.1-2021<br>GB/T3836.2-2021<br>GB/T3836.31-2021 |
| **Marking** | Ex d IIB T4 Gb, Ex tb IIIC T135°C Db<br>(Gas or Dust) | Ex ec IIC T3 Gc, Ex ec IIIC T200°C Dc<br>(Gas or Dust) |
| **Ingress protection level** | IP65 (Gas or dust) | Ex ec IIC T3 Gc, Ex tc IIIC T200°C Dc<br>(Gas or Dust) |

For EY motors
CCC: "CCC" motors have exactly the same construction as IECEx motors (with the exception of a specific nameplate). They are intended for use in the same areas (gas or dust) and have the same degree of safety. Refer to standards GB/T3836.1-2021, GB/T3836.2-2021, GB/T3836.31-2021 for more details.

For EY motors
CCC: "CCC" motors have exactly the same construction as ATEX motors (with the exception of a specific nameplate). They are intended for use in the same areas (gas or dust) and have the same degree of safety. Refer to standards GB/T3836.1-2021, GB/T3836.2-2021, GB/T3836.31-2021 for more details.

# Operating category and marking of EY servomotors

## ATEX gazeous atmospheres

**II 3 G Ex ec IIC T3 Gc IP65**

| II | 3 | G | Ex | nA | II | C | T3* | Gc | IP65 |
|---|---|---|---|---|---|---|---|---|---|
| I Mine | M1 Very high level of protection | G Gas Vapour | Protection against explosions | nC Equipment with protection against sparks | I Mine | Methane | T1 450 °C | Ma Very high level of protection | IP65 |
| | M2 High level of protection | | | nR Equipment with restricted breathing | | | T2 300 °C | Mb High level of protection | |
| II Surface | 1 Very high level of protection | | | ec Equipment not generating sparks | II Surface | A Propane | T3 200 °C | Ga Very high level of protection | |
| | 2 High level of protection | | | | | B Ethylene | T4 135 °C | Gb High level of protection | |
| | 3 Normal level of protection | | | | | C Hydrogen Acetylene | T5 100 °C | Gc Normal level of protection | |
| | | | | | | | T6 85 °C | | |

* Maximum surface temperature

## ATEX dusty atmospheres

**II 3 GD Ex ec IIC T3 Gc IP65 / Ex tc IIIC T200°C Dc IP65**

| II | 3 | D | Ex | tc | III | C | T3* | Dc | IP65 |
|---|---|---|---|---|---|---|---|---|---|
| I Mine | M1 Very high level of protection | D Dust | Protection against explosions | ta Protection by enclosure | III Dust | A Combustible flying | T1 450 °C | Ma Very high level of protection | IP65 |
| | M2 High level of protection | | | tb/tc Protection by enclosure | | | T2 300 °C | Mb High level of protection | |
| II Surface | 1 Very high level of protection | | | pb/pc pressurized enclosure | | B Non-conductive dust | T3 200 °C | Da Very high level of protection | |
| | 2 High level of protection | | | ia/ib/ic intrinsic safety | | | T4 135 °C | Db High level of protection | |
| | 3 Normal level of protection | | | ma/mb/mc Encapsulation | | C Conductive dust | T5 100 °C | Dc Normal level of protection | |
| | | | | | | | T6 85 °C | | |

Suitable for ATEX Parker EY servomotors

# Operating category and marking of EX servomotors

## ATEX/IECEx gazeous atmospheres

**II2 G Ex db IIB T4 Gb IP65 – Group IIA or IIB – category 2G – zone 1 and 2.**

| I I | 2 | G | Ex | db | II | B | T4* | Gb | IP65 |
|---|---|---|---|---|---|---|---|---|---|
| I Mine | M1 Very high level of protection | G Gas Vapour | Protection against explosions | o Oil immersion | I Mine | Methane | T1 450 °C | Ma Very high level of protection | IP65 |
| | M2 High level of protection | | | p Pressurized apparatus | | | T2 300 °C | Mb High level of protection | |
| II Surface | 1 Very high level of protection | | | db Flameproof enclosure | II Surface | A Propane | T3 200 °C | Ga Very high level of protection | |
| | 2 High level of protection | | | e Increased safety | | B Ethylene | T4 135 °C | Gb High level of protection | |
| | 3 Normal level of protection | | | m Encapsulation | | C Hydrogen Acetylene | T5 100 °C | Gc Normal level of protection | |
| | | | | i Intrinsic safety | | | T6 85 °C | | |

* Maximum surface temperature

## ATEX/IECEx dusty atmospheres

**II2 D Ex tb IIIC T135 °C Db IP65 - category 2D – zone 21 and 22**

| I I | 2 | D | Ex | tb | III | C | T135°C* | Db | IP65 |
|---|---|---|---|---|---|---|---|---|---|
| I Mine | M1 Very high level of protection | D Dust | Protection against explosions | ta Protection by enclosure | III Dust | A Combustible flying | T1 450 °C | Ma Very high level of protection | IP65 |
| | M2 High level of protection | | | tb/tc Protection by enclosure | | | T2 300 °C | Mb High level of protection | |
| II Surface | 1 Very high level of protection | | | pb/pc pressurized enclosure | | B Non-conductive dust | T3 200 °C | Da Very high level of protection | |
| | 2 High level of protection | | | ia/ib/ic intrinsic safety | | | T4 135 °C | Db High level of protection | |
| | 3 Normal level of protection | | | ma/mb/mc Encapsulation | | C Conductive dust | T5 100 °C | Dc Normal level of protection | |
| | | | | | | | T6 85 °C | | |

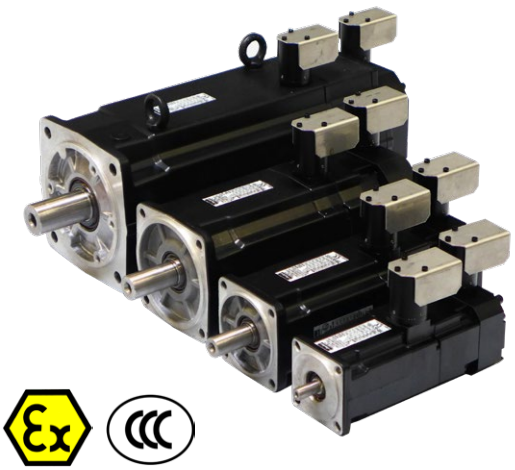
Suitable for ATEX/IECEX Parker EX servomotors

# EXPLOSION PROOF MOTOR FOR ZONE 2 - EY SERIES

## Overview

### Description

The EY series is a range of permanent magnet explosion-proof brushless servo motors designed for use in **explosive atmospheres** in zone 2 for gas and dust at 40°C or 60°C ambient temperature. The EY series of servo motors are characterized by excellent motion quality, dynamic acceleration/deceleration capabilities and high torque output over a wide speed range. Various winding variants and numerous options are available to offer maximum flexibility. This range is in accordance with the European (CE) and International safety standards.



**Advantages**

- **Brushless servo motors with explosion proof certification from a notified body.**
- **Conforming with CE/ATEX or CCC**
- **For an ambiant temperature at 40°c or 60°C**
- **For gas and dust explosive atmospheres**
- **High precision**
- **High motion quality**
- **High dynamic performance**
- **Low cogging**
- **Compactness and robustness**
- **Maintenance free**
- **High power density (6 kW in a 155 square frame)**
- **Compatible with all popular drives**

**Applications**

- **Printing machinery**
- **Paint spray equipments**
- **Chemical, petro-chemical and pharmaceutical industries**
- **Robot applications**
- **Special machines**
- **Cleaning applications**
- **Actuator for valve in Energy applications**
- **Waste processing plants**

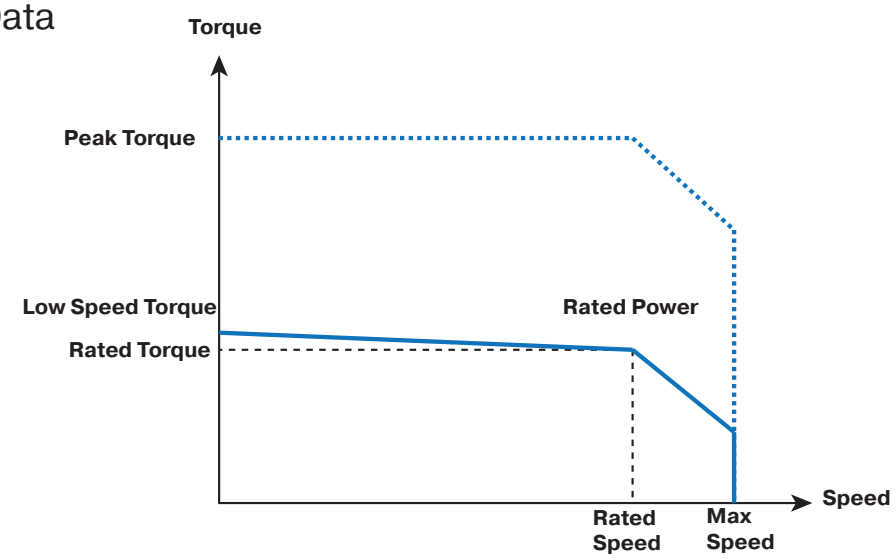
### Technical characteristics

| | |
|---|---|
| **Motor type** | Permanent magnet synchronous motors |
| **Frame size** | 70 - 155 mm |
| **Torque range** | 1.8 to 41 Nm |
| **Speed range** | Up to 6800 $min^{-1}$ |
| **Number of poles** | 10 |
| **Mounting** | Flange with smooth holes |
| **Marking*** | CE / ATEX or CCC |
| **Voltage supply** | 230 / 400 VAC |
| **Conformance*** | ATEX 2014/34/EU Directive |
| | IEC/EN60034-1<br>IEC/EN60034-5<br>IEC/EN60079-0<br>IEC/EN60079-7 (Gas)<br>IEC/EN60079-31 (Dust) |
| **Classification** | II 3 GD Ex ec IIC T3 Gc IP65 / Ex tc IIIC T200°C Dc IP65 (Gas or dust) |
| **Ingress protection level** | IP65 |
| **Connections** | Connector |

* For CCC please see page 6"

# EY Servo Motors - CE Marked for Explosive Atmospheres

## Technical Data




**230 VAC power supply - single or three-phased**

| Motor | Rated Power Pn | Rated Torque Mn | Rated Speed Nn | Rated Current In | Low speed torque Mo | Low Speed Current Io | Peak Torque M peak | Peak Current I peak | Max. Speed N max |
|---|---|---|---|---|---|---|---|---|---|
| | [kW] | [Nm] | [rpm] | [Arms] | [Nm] | [Arms] | [Nm] | [Arms] | [rpm] |
| **40°C ambient temperature** | | | | | | | | | |
| **EY310EAP** | 0.456 | 1.89 | 2300 | 1.37 | 2 | 1.43 | 4.72 | 3.58 | 2300 |
| **EY310EAK** | 0.718 | 1.71 | 4000 | 2.2 | 2 | 2.5 | 4.72 | 6.25 | 4000 |
| **EY420EAP** | 0.911 | 3.78 | 2300 | 2.69 | 4 | 2.81 | 9.47 | 7.03 | 2300 |
| **EY420EAJ** | 1.42 | 3.38 | 4000 | 4.21 | 4 | 4.87 | 9.47 | 12.2 | 4000 |
| **EY430EAL** | 1.2 | 4.99 | 2300 | 3.45 | 5.5 | 3.76 | 13.1 | 9.4 | 2300 |
| **EY430EAF** | 1.72 | 4.1 | 4000 | 5.05 | 5.5 | 6.6 | 13.1 | 16.5 | 4000 |
| **EY620EAV** | 0.905 | 7.85 | 1100 | 2.78 | 8 | 2.82 | 18.9 | 7.04 | 1100 |
| **EY620EAR** | 1.71 | 7.42 | 2200 | 4.95 | 8 | 5.29 | 18.9 | 13.2 | 2200 |
| **EY630EAR** | 1.72 | 11.3 | 1450 | 5.19 | 12 | 5.47 | 28.4 | 13.7 | 1450 |
| **EY630EAN** | 2.53 | 10.5 | 2300 | 7.29 | 12 | 8.26 | 28.4 | 20.6 | 2300 |
| **EY820EAR** | 3.34 | 14.5 | 2200 | 9.74 | 16 | 10.7 | 36.8 | 26.7 | 2200 |
| **EY840EAK** | 4.91 | 23.5 | 2000 | 13.7 | 28 | 16.2 | 65.8 | 40.4 | 2000 |
| **EY860EAJ** | 5.23 | 34.4 | 1450 | 14.9 | 41 | 17.7 | 96.7 | 44.2 | 1450 |
| **60°C ambient temperature** | | | | | | | | | |
| **EY310EAP** | 0.4 | 1.66 | 2300 | 1.2 | 1.8 | 1.29 | 4.3 | 3.21 | 2300 |
| **EY310EAK** | 0.61 | 1.46 | 4000 | 1.88 | 1.8 | 2.25 | 4.3 | 5.62 | 4000 |
| **EY420EAP** | 0.752 | 3.12 | 2300 | 2.22 | 3.4 | 2.39 | 8.17 | 5.97 | 2300 |
| **EY420EAJ** | 1.13 | 2.7 | 4000 | 3.38 | 3.4 | 4.13 | 8.17 | 10.3 | 4000 |
| **EY430EAL** | 1.06 | 4.41 | 2300 | 3.05 | 5.0 | 3.41 | 12 | 8.54 | 2300 |
| **EY430EAF** | 1.41 | 3.36 | 4000 | 4.16 | 5.0 | 5.99 | 12 | 15 | 4000 |
| **EY620EAV** | 0.8 | 6.95 | 1100 | 2.46 | 7.2 | 2.53 | 17.3 | 6.33 | 1100 |
| **EY620EAR** | 1.47 | 6.38 | 2200 | 4.25 | 7.2 | 4.75 | 17.3 | 11.9 | 2200 |
| **EY630EAR** | 1.53 | 10.1 | 1450 | 4.61 | 10.8 | 4.92 | 25.9 | 12.3 | 1450 |
| **EY630EAN** | 2.18 | 9.05 | 2300 | 6.3 | 10.8 | 7.43 | 25.9 | 18.6 | 2300 |
| **EY820EAR** | 2.69 | 11.7 | 2200 | 7.85 | 14.0 | 9.32 | 32.9 | 23.3 | 2200 |
| **EY840EAK** | 3.86 | 18.4 | 2000 | 10.8 | 25.5 | 14.7 | 60.8 | 36.8 | 2000 |
| **EY860EAJ** | 4.4 | 29 | 1450 | 12.6 | 37.0 | 15.9 | 88.5 | 39.8 | 1450 |

**400 VAC power supply - three-phased**

| Motor | Rated Power Pn | Rated Torque Mn | Rated Speed Nn | Rated Current In | Low speed torque Mo | Low Speed Current Io | Peak Torque M peak | Peak Current I peak | Max. Speed N max |
|---|---|---|---|---|---|---|---|---|---|
| | [kW] | [Nm] | [rpm] | [Arms] | [Nm] | [Arms] | [Nm] | [Arms] | [rpm] |
| **40°C ambient temperature** | | | | | | | | | |
| **EY310EAP** | 0.718 | 1.71 | 4000 | 1.26 | 2 | 1.43 | 4.72 | 3.58 | 4000 |
| **EY310EAK** | 0.873 | 1.39 | 6000 | 1.82 | 2 | 2.5 | 4.72 | 6.25 | 6000 |
| **EY420EAP** | 1.42 | 3.38 | 4000 | 2.43 | 4 | 2.81 | 9.47 | 7.03 | 4000 |
| **EY420EAJ** | 1.59 | 3.04 | 5000 | 3.83 | 4 | 4.87 | 9.47 | 12.2 | 5000 |
| **EY430EAL** | 1.72 | 4.1 | 4000 | 2.87 | 5.5 | 3.76 | 13.1 | 9.4 | 4000 |
| **EY430EAF** | 1.77 | 3.37 | 5000 | 4.21 | 5.5 | 6.6 | 13.1 | 16.5 | 5000 |
| **EY620EAV** | 1.57 | 7.52 | 2000 | 2.67 | 8 | 2.82 | 18.9 | 7.04 | 2000 |
| **EY620EAR** | 2.52 | 6.17 | 3900 | 4.16 | 8 | 5.29 | 18.9 | 13.2 | 3900 |
| **EY630EAR** | 2.83 | 10.0 | 2700 | 4.61 | 12 | 5.47 | 28.4 | 13.7 | 2700 |
| **EY630EAN** | 3.31 | 7.9 | 4000 | 5.57 | 12 | 8.26 | 28.4 | 20.6 | 4000 |
| **EY820EAR** | 5.29 | 12.9 | 3900 | 8.78 | 16 | 10.7 | 36.8 | 26.7 | 3900 |
| **EY840EAK** | 6.8 | 18.6 | 3500 | 11.0 | 28 | 16.2 | 65.8 | 40.4 | 3500 |
| **EY860EAJ** | 6.27 | 23.0 | 2600 | 10.2 | 41 | 17.7 | 96.7 | 44.2 | 2600 |
| **60°C ambient temperature** | | | | | | | | | |
| **EY310EAP** | 0.61 | 1.46 | 4000 | 1.07 | 1.8 | 1.29 | 4.3 | 3.21 | 4000 |
| **EY310EAK** | 0.697 | 1.11 | 6000 | 1.48 | 1.8 | 2.25 | 4.3 | 5.62 | 6000 |
| **EY420EAP** | 1.13 | 2.7 | 4000 | 1.95 | 3.4 | 2.39 | 8.17 | 5.97 | 4000 |
| **EY420EAJ** | 1.24 | 2.36 | 5000 | 3 | 3.4 | 4.13 | 8.17 | 10.3 | 5000 |
| **EY430EAL** | 1.41 | 3.36 | 4000 | 2.37 | 5.0 | 3.41 | 12 | 8.54 | 4000 |
| **EY430EAF** | 1.33 | 2.59 | 4900 | 3.28 | 5.0 | 5.99 | 12 | 15 | 4900 |
| **EY620EAV** | 1.36 | 6.5 | 2000 | 2.31 | 7.2 | 2.53 | 17.3 | 6.33 | 2000 |
| **EY620EAR** | 1.98 | 4.85 | 3900 | 3.29 | 7.2 | 4.75 | 17.3 | 11.9 | 3900 |
| **EY630EAR** | 2.38 | 8.43 | 2700 | 3.9 | 10.8 | 4.92 | 25.9 | 12.3 | 2700 |
| **EY630EAN** | 2.42 | 5.78 | 4000 | 4.12 | 10.8 | 7.43 | 25.9 | 18.6 | 4000 |
| **EY820EAR** | 3.17 | 7.76 | 3900 | 5.35 | 14.0 | 9.32 | 32.9 | 23.3 | 3900 |
| **EY840EAK** | 3.85 | 14.1 | 2600 | 8.38 | 25.5 | 14.7 | 60.8 | 36.8 | 2600 |
| **EY860EAJ** | 4.8 | 21.8 | 2100 | 9.61 | 37.0 | 15.9 | 88.5 | 39.8 | 2100 |

# Drive Associations

230 VAC power supply

| Motor | Associated Drive Sizes[1] | |
|---|---|---|
| | PSD1[2] | Compax3 |
| **With 40°C ambiant temperature - 230 VAC power supply** | | |
| **EY310EAP** | PSD1SW1200... | C3S025V2... |
| **EY310EAK** | PSD1SW1300... | C3S025V2... |
| **EY420EAP** | PSD1SW1300... | C3S063V2... |
| **EY420EAJ** | PSD1SW1300... | C3S063V2... |
| **EY430EAL** | PSD1SW1300... | C3S063V2... |
| **EY430EAF** | - | C3S100V2... |
| **EY620EAV** | PSD1SW1300... | C3S063V2... |
| **EY620EAR** | - | C3S063V2... |
| **EY630EAR** | - | C3S063V2... |
| **EY630EAN** | - | C3S100V2... |
| **EY820EAR** | - | C3S150V2... |
| **EY840EAK** | - | - |
| **EY860EAJ** | - | - |
| **With 60°C ambiant temperature - 230 VAC power supply** | | |
| **EY310EAP** | PSD1SW1200... | C3S025V2... |
| **EY310EAK** | PSD1SW1300... | C3S025V2... |
| **EY420EAP** | PSD1SW1300... | C3S063V2... |
| **EY420EAJ** | PSD1SW1300... | C3S063V2... |
| **EY430EAL** | PSD1SW1300... | C3S063V2... |
| **EY430EAF** | - | C3S063V2... |
| **EY620EAV** | PSD1SW1300... | C3S025V2... |
| **EY620EAR** | - | C3S063V2... |
| **EY630EAR** | - | C3S063V2... |
| **EY630EAN** | - | C3S100V2... |
| **EY820EAR** | - | C3S100V2... |
| **EY840EAK** | - | C3S150V2... |
| **EY860EAJ** | - | - |

[1] Ambient temperature for the drives is 40°C
[2] PSD drive with optional resolver board only

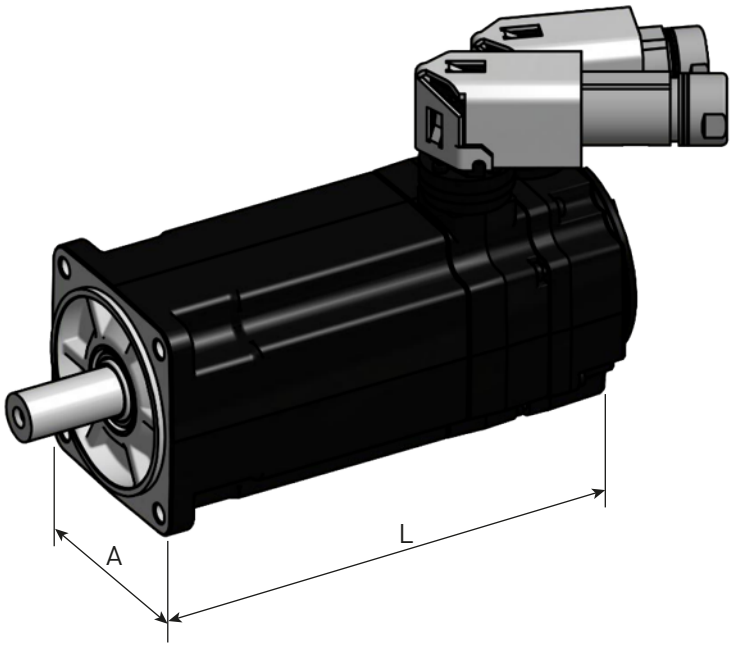
**400 VAC power supply**

| Motor | Associated Drive Sizes[1] | | |
|---|---|---|---|
| | PSD1[2] | Compax3 | AC30V |
| **With 40°C ambiant temperature - 400 VAC power supply** | | | |
| **EY310EAP** | PSD1MW1300... | C3S015V4... | 31V-4D-0004 |
| **EY310EAK** | PSD1MW1300... | C3S038V4... | 31V-4D-0004 |
| **EY420EAP** | PSD1MW1300... | C3S038V4... | 31V-4D-0004 |
| **EY420EAJ** | PSD1MW1300... | C3S075V4... | 31V-4D-0008 |
| **EY430EAL** | PSD1MW1300... | C3S038V4... | 31V-4D-0005 |
| **EY430EAF** | PSD1MW1400... | C3S075V4... | 31V-4D-0008 |
| **EY620EAV** | PSD1MW1300... | C3S038V4... | 31V-4D-0004 |
| **EY620EAR** | PSD1MW1400... | C3S075V4... | 31V-4D-0008 |
| **EY630EAR** | PSD1MW1400... | C3S075V4... | 31V-4D-0008 |
| **EY630EAN** | PSD1MW1600... | C3S150V4... | 31V-4D-0010 |
| **EY820EAR** | PSD1MW1600... | C3S150V4... | 31V-4D-0012 |
| **EY840EAK** | PSD1MW1800... | C3S300V4... | 31V-4E-0023 |
| **EY860EAJ** | PSD1MW1800... | C3S300V4... | 31V-4E-0023 |
| **With 60°C ambiant temperature - 400 VAC power supply** | | | |
| **EY310EAP** | PSD1MW1300... | C3S015V4... | 31V-4D-0004 |
| **EY310EAK** | PSD1MW1300... | C3S038V4... | 31V-4D-0004 |
| **EY420EAP** | PSD1MW1300... | C3S038V4... | 31V-4D-0004 |
| **EY420EAJ** | PSD1MW1300... | C3S075V4... | 31V-4D-0006 |
| **EY430EAL** | PSD1MW1300... | C3S038V4... | 31V-4D-0005 |
| **EY430EAF** | PSD1MW1400... | C3S075V4... | 31V-4D-0008 |
| **EY620EAV** | PSD1MW1300... | C3S038V4... | 31V-4D-0004 |
| **EY620EAR** | PSD1MW1300... | C3S075V4... | 31V-4D-0008 |
| **EY630EAR** | PSD1MW1300... | C3S075V4... | 31V-4D-0008 |
| **EY630EAN** | PSD1MW1400... | C3S075V4... | 31V-4D-0010 |
| **EY820EAR** | PSD1MW1600... | C3S150V4... | 31V-4D-0012 |
| **EY840EAK** | PSD1MW1600... | C3S150V4... | 31V-4E-0023 |
| **EY860EAJ** | PSD1MW1800... | C3S300V4... | 31V-4E-0023 |

(1) Ambient temperature for the drives is 40°C
[2]PSD drive with optional resolver board only

# Dimensions

## EY




| Motor | A | Mounting Flange centering / interaxis hole | Shaft diameter x length | Without Brake | | With Brake | |
|---|---|---|---|---|---|---|---|
| | [mm] | [mm] | [mm] | L [mm] | Weight [kg] | L [mm] | Weight [kg] |
| **EY310** | 71 | 60 / 75-80 | 11 x 23 | 159 | 2 | 207 | 2.4 |
| **EY420** | 91.5 | 80 / 100 | 19 x 40 | 181 | 3.7 | 232 | 4.5 |
| **EY430** | | | | 206 | 4.6 | 257 | 5.4 |
| **EY620** | 121 | 110 / 130 | 24 x 50 | 195 | 6.9 | 249 | 8 |
| **EY630** | | | | 224 | 8.8 | 278 | 10 |
| **EY820** | 155 | 130 / 165 | 32 x 58 | 213 | 13 | 279 | 16.5 |
| **EY840** | | | | 273 | 20 | 339 | 23.5 |
| **EY860** | | | | 333 | 27 | 399 | 30.5 |

# Order Code

## EY Motors

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Order example | **EY** | **3** | **10** | **E** | **A** | **K** | **B** | **7** | **1** | **10** | **-** |

| | | |
|---|---|---|
| **1** | **Product Series** | |
| | **EY** | Atex servo motor Zone 2 |
| **2** | **Motor size** | |
| | **3** | 71 mm square |
| | **4** | 92 mm square |
| | **6** | 121 mm square |
| | **8** | 155 mm square |
| **3** | **Motor length** | |
| | **10** | up to 60 depending on size |
| **4** | **Fixed code** | |
| | **E** | ATEX motor |
| **5** | **Feedback sensor** | |
| | **A** | 2 pole resolver |
| | **K** | Without sensor |
| **6** | **Torque/Speed characteristics** | |
| | | see table "Technical data" |
| | **...** | |
| **7** | **Painting** | |
| | **B** | Black RAL9005 |
| **8** | **Electric connection** | |
| | **7** | Connector |
| **9** | **Brake and thermal sensor option*** | |
| | PTC on power connector (AC890,AC30V,...) | |
| | **1** | PTC sensor |
| | **4** | PTC sensor + brake |
| | PTC on feedback connector (PSD,Compax3,SLVD,...) | |
| | **A** | PTC sensor |
| | **D** | PTC sensor + brake |
| **10** | **Mechanical interface** | |
| | **10** | IP65 with smooth shaft |
| | **11** | IP65 with keyed shaft |
| **11** | **Nameplate** | |
| | **C** | CCC certification |
| | **-** | ATEX |

* other options on request

# Cables

**Motor cable**

| Drive | Cable reference | |
|---|---|---|
| | Current ⩽ 12 A @40°C<br>Current ⩽ 9 A @60°C | Current ⩽ 24 A @40°C<br>Current ⩽ 17 A @60°C |
| **PSD1S, PSD1M18** | CBM015HB-C04-D01-xxxx-00 | CBM025HB-C04-D01-xxxx-00 |
| **PSD1M (except M18)** | CBM015HB-C04-D02-xxxx-00 | CBM025HB-C04-D02-xxxx-00 |
| **Compax3** | CBM015HB-C04-D01-xxxx-00 | CBM025HB-C04-D01-xxxx-00 |

**Feedback cable (2 pole resolver)**

| Drive | Cable reference |
|---|---|
| **PSD1** | CBFRE0H0-C07-D03-xxxx-00 |
| **Compax3** | CBFRE0H0-C07-D05-xxxx-00 |

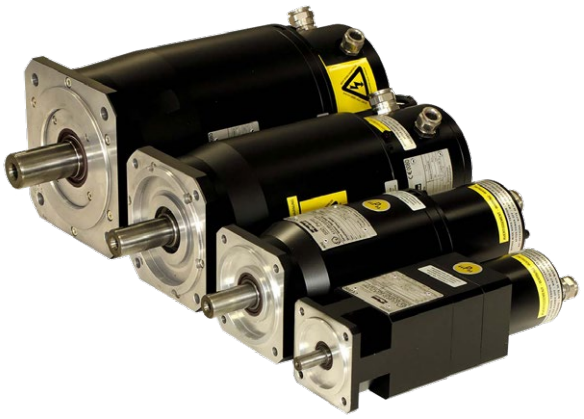
For non-standard length cable with length different from:
3/5/10/15/20/25/30/50m please contact us.

# EXPLOSION PROOF MOTOR FOR ZONE 1 - EX SERIES

## Overview

### Description

EX series is a range of permanent magnet servo motor designed for use in zone 1 explosive atmospheres. Featuring robust explosion-proof housings, EX motors are capable of bearing internal explosions with no risks of propagation to the neighbouring environment. Two versions are available, conforming with North American or European safety standards. EX servomotors are characterized by excellent motion quality, great acceleration / deceleration capabilities, and high torque output over a wide speed range. Various winding variants and numerous options are available to offer maximum flexibility.



**Advantages**

- Servo motors with explosion proof enclosure "d"
- Conforming with CE/ATEX/CCC and IECEx
- For an ambiant temperature at 40°c or 60°C
- For gas and dust explosive atmospheres
- High precision
- High motion quality
- High dynamic performance
- Low cogging
- Compactness and robustness
- Maintenance free
- High power density (6 kW in a 155 square frame)
- Compatible with all popular drives

**Applications**

- Printing machinery
- Packaging, filling machines
- Painting robots
- Coating machines
- Chemical, petro-chemical and pharmaceutical industries
- Robot applications
- Special machines
- Cleaning applications
- Actuator for valve in Energy applications
- Waste processing plants

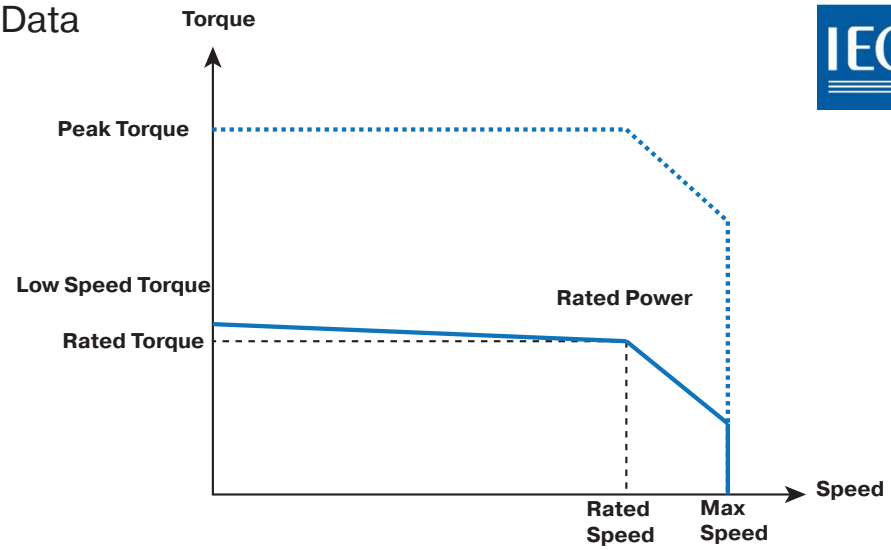
### Technical Characteristics - Overview

| | |
|---|---|
| **Motor type** | Permanent magnet synchronous motors |
| **Number of poles** | 10 |
| **Torque range** | 1.6 ... 35 Nm |
| **Speed range** | 1100...7600 $min^{-1}$ |
| **Operating temperature** | Up to +40°C (standard)<br>Up to +60°C (with derating) |
| **Marking*** | ATEX/IECEx, KOSHA |
| **Voltage supply** | 230 / 400 VAC |
| **Conformance*** | ATEX 2014/34/EU Directive |
| | IEC/EN60079-0,<br>IEC/EN60079-1<br>IEC/EN60079-31 standards |
| **Classification** | II 2GD<br>Ex db IIB T4 Gb IP65<br>Ex tb IIIC T135 °C Db IP65<br>(Gas or Dust) |
| **Ingress protection level** | IP65 |
| **Connections** | Cable glands |

* For CCC please see page 6

# EX Servo Motors - CE Marked for Explosive Atmospheres

## Technical Data




**230 VAC power supply - single or three-phased**

| Motor | Rated Power Pn | Rated Torque Mn | Rated Speed Nn | Rated Current In | Low speed torque Mo | Low Speed Current Io | Peak Torque M peak | Peak Current I peak | Max. Speed N max |
|---|---|---|---|---|---|---|---|---|---|
| | [kW] | [Nm] | [rpm] | [Arms] | [Nm] | [Arms] | [Nm] | [Arms] | [rpm] |
| **40°C ambient temperature** | | | | | | | | | |
| **EX310EAP** | 0.40 | 1.66 | 2300 | 1.2 | 1.75 | 1.2 | 4.2 | 3.1 | 2300 |
| **EX310EAK** | 0.64 | 1.54 | 4000 | 2.0 | 1.75 | 2.2 | 4.2 | 5.4 | 4000 |
| **EX420EAP** | 0.77 | 3.18 | 2300 | 2.3 | 3.5 | 2.5 | 8.3 | 6.2 | 2300 |
| **EX420EAJ** | 1.12 | 2.67 | 4000 | 3.3 | 3.5 | 4.3 | 8.3 | 10.7 | 4000 |
| **EX430EAL** | 1.02 | 4.2 | 2300 | 3.0 | 4.8 | 3.3 | 11.5 | 8.3 | 2300 |
| **EX430EAF** | 1.37 | 3.3 | 4000 | 4.1 | 4.8 | 5.8 | 11.5 | 14.5 | 4000 |
| **EX620EAV** | 0.76 | 6.6 | 1100 | 2.4 | 6.7 | 2.4 | 16.7 | 6.0 | 1100 |
| **EX620EAR** | 1.33 | 5.8 | 2200 | 4.0 | 6.7 | 4.5 | 16.7 | 11.2 | 2200 |
| **EX630EAR** | 1.43 | 9.4 | 1450 | 4.2 | 10.4 | 4.6 | 25.9 | 11.5 | 1450 |
| **EX630EAN** | 2.02 | 8.4 | 2300 | 5.7 | 10.4 | 6.9 | 25.9 | 17.3 | 2300 |
| **EX820EAR** | 2.57 | 11.2 | 2200 | 7.5 | 14 | 9.3 | 32.5 | 23.2 | 2200 |
| **EX840EAK** | 3.31 | 15.8 | 2000 | 9.4 | 24.5 | 14.3 | 58.2 | 35.6 | 2000 |
| **EX860EAJ** | 3.86 | 25.4 | 1450 | 11.5 | 35 | 15.7 | 83.3 | 39.2 | 1450 |
| **60°C ambient temperature** | | | | | | | | | |
| **EX310EAP** | 0.31 | 1.30 | 2300 | 0.9 | 1.5 | 1.2 | 4.2 | 3.1 | 2300 |
| **EX310EAK** | 0.40 | 0.95 | 4000 | 1.3 | 1.5 | 2.2 | 4.2 | 5.4 | 4000 |
| **EX420EAP** | 0.59 | 2.45 | 2300 | 1.8 | 3 | 2.1 | 7.3 | 5.3 | 2300 |
| **EX420EAJ** | 0.63 | 1.5 | 4000 | 1.9 | 3 | 3.7 | 7.3 | 9.1 | 4000 |
| **EX430EAL** | 0.82 | 3.4 | 2300 | 2.4 | 4.2 | 2.9 | 10.2 | 7.2 | 2300 |
| **EX430EAF** | 0.90 | 2.9 | 3000 | 3.6 | 4.2 | 5.1 | 10.2 | 12.7 | 4000 |
| **EX620EAV** | 0.63 | 5.5 | 1100 | 2.0 | 6 | 2.2 | 15.0 | 5.3 | 1100 |
| **EX620EAR** | 0.88 | 3.8 | 2200 | 2.8 | 6 | 4.1 | 15.0 | 9.9 | 2200 |
| **EX630EAR** | 1.12 | 7.35 | 1450 | 3.4 | 9 | 4.0 | 22.5 | 9.8 | 1450 |
| **EX630EAN** | 1.24 | 5.15 | 2300 | 3.7 | 9 | 6.1 | 22.5 | 14.7 | 2300 |
| **EX820EAR** | 1.65 | 8.5 | 1850 | 5.8 | 11 | 7.3 | 26.6 | 18.3 | 2200 |
| **EX840EAK** | 2.23 | 11.5 | 1850 | 6.9 | 21 | 12.2 | 51.0 | 30.6 | 2000 |
| **EX860EAJ** | 2.74 | 18.0 | 1450 | 8.3 | 31 | 13.9 | 75.1 | 34.8 | 1450 |

**400 VAC power supply - single or three-phased**

| Motor | Rated Power Pn | Rated Torque Mn | Rated Speed Nn | Rated Current In | Low speed torque Mo | Low Speed Current Io | Peak Torque M peak | Peak Current I peak | Max. Speed N max |
|---|---|---|---|---|---|---|---|---|---|
| | [kW] | [Nm] | [rpm] | [Arms] | [Nm] | [Arms] | [Nm] | [Arms] | [rpm] |
| **40°C ambient temperature** | | | | | | | | | |
| **EX310EAP** | 0.64 | 1.54 | 4000 | 1.1 | 1.75 | 1.2 | 4.2 | 3.1 | 4000 |
| **EX310EAK** | 0.87 | 1.23 | 6800 | 1.6 | 1.75 | 2.2 | 4.2 | 5.4 | 6800 |
| **EX420EAP** | 0.94 | 3 | 4000 | 2.1 | 3.5 | 2.5 | 8.3 | 6.2 | 3000 |
| **EX420EAJ** | 1.11 | 1.8 | 6000 | 2.3 | 3.5 | 4.3 | 8.3 | 10.7 | 6000 |
| **EX430EAL** | 1.37 | 3.3 | 4000 | 2.3 | 4.8 | 3.3 | 11.5 | 8.3 | 4000 |
| **EX430EAF** | 1.37 | 3.3 | 4000 | 4.1 | 4.8 | 5.8 | 11.5 | 14.5 | 5800 |
| **EX620EAV** | 1.25 | 6.0 | 2000 | 2.2 | 6.7 | 2.4 | 16.7 | 6.0 | 2000 |
| **EX620EAR** | 1.53 | 3.8 | 3900 | 2.7 | 6.7 | 4.5 | 16.7 | 11.2 | 3900 |
| **EX630EAR** | 2.19 | 7.8 | 2700 | 3.5 | 10.4 | 4.6 | 25.9 | 11.5 | 2700 |
| **EX630EAN** | 2.18 | 5.2 | 4000 | 3.8 | 10.4 | 6.9 | 25.9 | 17.3 | 4000 |
| **EX820EAR** | 2.84 | 7.5 | 3600 | 5.2 | 14 | 9.3 | 32.5 | 23.2 | 3900 |
| **EX840EAK** | 0.99 | 2.9 | 3300 | 2.1 | 24.5 | 14.3 | 58.2 | 35.6 | 3500 |
| **EX860EAJ** | 2.35 | 9.0 | 2500 | 4.4 | 35 | 15.7 | 83.3 | 39.2 | 2600 |
| **60°C ambient temperature** | | | | | | | | | |
| **EX310EAP** | 0.40 | 0.95 | 4000 | 0.7 | 1,5 | 1.2 | 4.2 | 3.1 | 4000 |
| **EX310EAK** | 0.40 | 0.95 | 4000 | 1.3 | 1,5 | 2.2 | 4.2 | 5.4 | 6800 |
| **EX420EAP** | 0.66 | 2.1 | 4000 | 1.5 | 3.0 | 2.1 | 7.3 | 5.3 | 3000 |
| **EX420EAJ** | 0.63 | 1.5 | 4000 | 1.9 | 3.0 | 3.7 | 7.3 | 9.1 | 6000 |
| **EX430EAL** | 0.90 | 2.9 | 3000 | 2.0 | 4.2 | 2.9 | 10.2 | 7.2 | 4000 |
| **EX430EAF** | 0.90 | 2.9 | 3000 | 3.6 | 4.2 | 5.1 | 10.2 | 12.7 | 4900 |
| **EX620EAV** | 0.88 | 4.2 | 2000 | 1.6 | 6.0 | 2.2 | 15.0 | 5.3 | 2000 |
| **EX620EAR** | 0.84 | 3.2 | 2500 | 2.4 | 6.0 | 4.1 | 15.0 | 9.9 | 3900 |
| **EX630EAR** | 1.18 | 4.5 | 2500 | 2.2 | 9.0 | 4.0 | 22.5 | 9.8 | 2700 |
| **EX630EAN** | 1.18 | 4.5 | 2500 | 3.3 | 9.0 | 6.1 | 22.5 | 14.7 | 4000 |
| **EX820EAR** | 1.65 | 8.5 | 1850 | 5.8 | 11.0 | 7.3 | 26.6 | 18.3 | 3900 |
| **EX840EAK** | 2.22 | 11.5 | 1850 | 6.9 | 21.0 | 12.2 | 51.0 | 30.6 | 2600 |
| **EX860EAJ** | 2.60 | 15.5 | 1600 | 7.2 | 31.0 | 13.9 | 75.1 | 34.8 | 2100 |

# Drive Associations

**230 VAC power supply**

| Motor | Associated Drive Sizes[1] | |
|---|---|---|
| | PSD1[2] | Compax3 |
| **With 40°C ambiant temperature - 230 VAC power supply** | | |
| **EX310EAP** | PSD1SW1200... | C3S025V2... |
| **EX310EAK** | PSD1SW1300... | C3S025V2... |
| **EX420EAP** | PSD1SW1300... | C3S025V2... |
| **EX420EAJ** | PSD1SW1300... | C3S063V2... |
| **EX430EAL** | PSD1SW1300... | C3S063V2... |
| **EX430EAF** | - | C3S063V2... |
| **EX620EAV** | PSD1SW1300... | C3S025V2... |
| **EX620EAR** | PSD1SW1300... | C3S063V2... |
| **EX630EAR** | PSD1SW1300... | C3S063V2... |
| **EX630EAN** | - | C3S100V2... |
| **EX820EAR** | - | C3S100V2... |
| **EX840EAK** | - | C3S150V2... |
| **EX860EAJ** | - | - |
| **With 60°C ambiant temperature - 230 VAC power supply** | | |
| **EX310EAP** | PSD1SW1200... | C3S025V2... |
| **EX310EAK** | PSD1SW1300... | C3S025V2... |
| **EX420EAP** | PSD1SW1300... | C3S025V2... |
| **EX420EAJ** | PSD1SW1300... | C3S063V2... |
| **EX430EAL** | PSD1SW1300... | C3S063V2... |
| **EX430EAF** | - | C3S063V2... |
| **EX620EAV** | PSD1SW1300... | C3S025V2... |
| **EX620EAR** | PSD1SW1300... | C3S063V2... |
| **EX630EAR** | PSD1SW1300... | C3S063V2... |
| **EX630EAN** | - | C3S063V2... |
| **EX820EAR** | - | C3S100V2... |
| **EX840EAK** | - | C3S150V2... |
| **EX860EAJ** | - | C3S150V2... |

[1] Ambient temperature for the drives is 40°C
[2] PSD drive with optional resolver board only

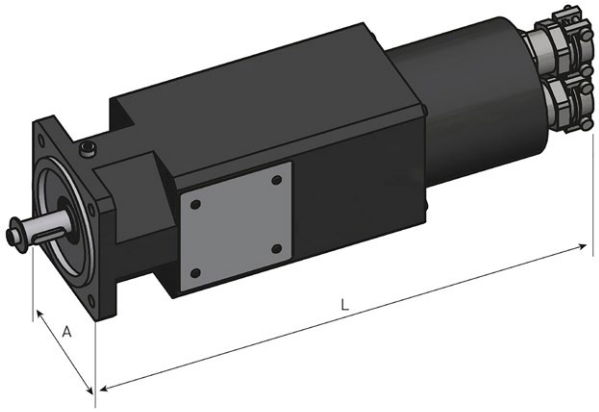
**400 VAC power supply**

| Motor | Associated Drive Sizes[1] | | |
|---|---|---|---|
| | PSD1[2] | Compax3 | AC30V |
| **With 40°C ambiant temperature - 400 VAC power supply** | | | |
| **EX310EAP** | PSD1MW1300... | C3S015V4... | 31V-4D-0004 |
| **EX310EAK** | PSD1MW1300... | C3S038V4... | 31V-4D-0004 |
| **EX420EAP** | PSD1MW1300... | C3S038V4... | 31V-4D-0004 |
| **EX420EAJ** | PSD1MW1300... | C3S075V4... | 31V-4D-0006 |
| **EX430EAL** | PSD1MW1300... | C3S038V4... | 31V-4D-0005 |
| **EX430EAF** | PSD1MW1400... | C3S075V4... | 31V-4D-0008 |
| **EX620EAV** | PSD1MW1300... | C3S038V4... | 31V-4D-0004 |
| **EX620EAR** | PSD1MW1300... | C3S075V4... | 31V-4D-0006 |
| **EX630EAR** | PSD1MW1300... | C3S075V4... | 31V-4D-0008 |
| **EX630EAN** | PSD1MW1400... | C3S150V4... | 31V-4D-0010 |
| **EX820EAR** | PSD1MW1600... | C3S150V4... | 31V-4D-0012 |
| **EX840EAK** | PSD1MW1600... | C3S150V4... | 31V-4E-0023 |
| **EX860EAJ** | PSD1MW1800... | C3S300V4... | 31V-4E-0023 |
| **With 60°C ambiant temperature - 400 VAC power supply** | | | |
| **EX310EAP** | PSD1MW1300... | C3S015V4... | 31V-4D-0004 |
| **EX310EAK** | PSD1MW1300... | C3S038V4... | 31V-4D-0004 |
| **EX420EAP** | PSD1MW1300... | C3S038V4... | 31V-4D-0004 |
| **EX420EAJ** | PSD1MW1300... | C3S038V4... | 31V-4D-0005 |
| **EX430EAL** | PSD1MW1300... | C3S038V4... | 31V-4D-0004 |
| **EX430EAF** | PSD1MW1400... | C3S075V4... | 31V-4D-0008 |
| **EX620EAV** | PSD1MW1300... | C3S038V4... | 31V-4D-0004 |
| **EX620EAR** | PSD1MW1300... | C3S075V4... | 31V-4D-0006 |
| **EX630EAR** | PSD1MW1300... | C3S075V4... | 31V-4D-0006 |
| **EX630EAN** | PSD1MW1400... | C3S075V4... | 31V-4D-0008 |
| **EX820EAR** | PSD1MW1400... | C3S075V4... | 31V-4D-0010 |
| **EX840EAK** | PSD1MW1600... | C3S150V4... | 31V-4E-0016 |
| **EX860EAJ** | PSD1MW1600... | C3S150V4... | 31V-4E-0023 |

[1] Ambient temperature for the drives is 40°C
[2] PSD drive with optional resolver board only

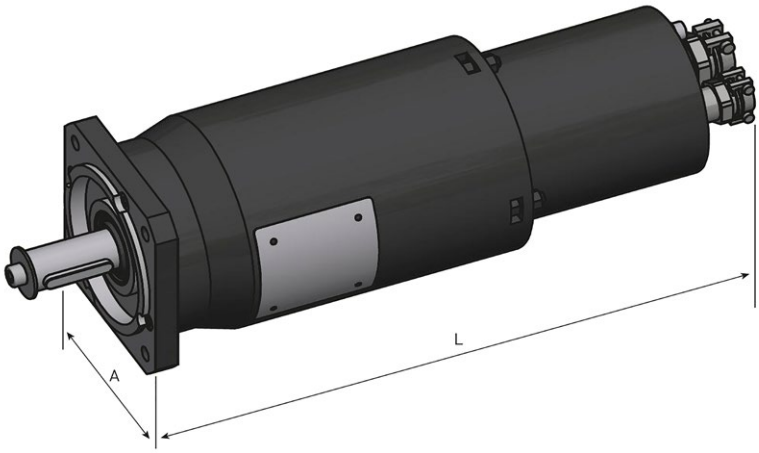
# Dimensions (Resolver Version)

## EX3



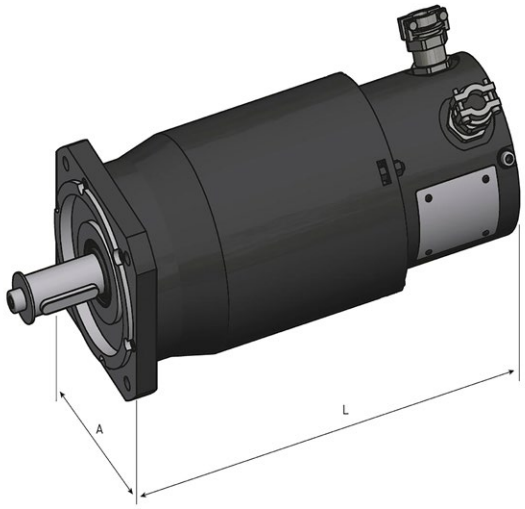

| Motor | A | Mounting Flange centering / interaxis hole | Shaft diameter x length | Without Brake | | With Brake | |
|---|---|---|---|---|---|---|---|
| | [mm] | [mm] | [mm] | L [mm] | Weight [kg] | L [mm] | Weight [kg] |
| EX310 | 70 | 60 / 75 | 11 x 23 | 225 | 2.8 | 255 | 3.2 |

## EX4




| Motor | A | Mounting Flange centering / interaxis hole | Shaft diameter x length | Without Brake | | With Brake | |
|---|---|---|---|---|---|---|---|
| | [mm] | [mm] | [mm] | L [mm] | Weight [kg] | L [mm] | Weight [kg] |
| EX420 | 92 | 80 / 100 | 19 x 40 | 305 | 7 | 330 | 8 |
| EX430 | | | | 330 | 8 | 355 | 9 |

## EX6




| Motor | A | Mounting Flange centering / interaxis hole | Shaft diameter x length | Without Brake | | With Brake | |
|---|---|---|---|---|---|---|---|
| | [mm] | [mm] | [mm] | L [mm] | Weight [kg] | L [mm] | Weight [kg] |
| EX620 | 120 | 110 / 130 | 24 x 50 | 275 | 10 | 290 | 11 |
| EX630 | | | | 300 | 12.5 | 325 | 13.5 |

## EX8


| Motor | A | Mounting Flange centering / interaxis hole | Shaft diameter x length | Without Brake | | With Brake | |
|---|---|---|---|---|---|---|---|
| | [mm] | [mm] | [mm] | L [mm] | Weight [kg] | L [mm] | Weight [kg] |
| EX820 | 155 | 130 / 165 | 32 x 58 | 325 | 22 | 360 | 25 |
| EX840 | | | | 385 | 28 | 420 | 31 |
| EX860 | | | | 445 | 38 | 480 | 41 |

# Order Code

## EX Motors - CE Marked

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Order example | **EX** | **3** | **10** | **E** | **A** | **P** | **B** | **1** | **2** | **1** | **1** | **-** |

| | | |
|---|---|---|
| **1** | **Product Series** | |
| | **EX** | Atex servo motor Zone 1 |
| **2** | **Motor size** | |
| | **3** | 70 mm square |
| | **4** | 92 mm square |
| | **6** | 120 mm square |
| | **8** | 155 mm square |
| **3** | **Motor length** | |
| | **10** | up to 60 depending on size |
| **4** | **Fixed code** | |
| | **E** | ATEX/IECEx/KOSHA/CCC motor |
| **5** | **Feedback sensor** | |
| | **A** | 2 pole resolver (standard) |
| | **K** | Without feedback sensor |
| | **P** | Absolute singleturn HIPERFACE DSL® EKS36 Encoder SIL2 - Not Kosha certified |
| | **Q** | Absolute multiturn HIPERFACE DSL® EKM36 Encoder SIL2 - Not Kosha certified |
| | **R** | Absolute singleturn HIPERFACE SKS36 Encoder (128 periods/rev) |
| | **S** | Absolute multiturn HIPERFACE SKM36 Encoder (128 periods/rev) |
| **6** | **Torque/Speed characteristics** | |
| | | see table "Technical data" |
| | **...** | |
| **7** | **Painting** | |
| | **B** | Black RAL9005 |
| **8** | **Electric connection** | |
| | **1** | Cable gland |
| **9** | **Brake** | |
| | **2** | Motor without brake (standard) + thermal switch sensor |
| | **5** | Motor with brake + thermal switch sensor |
| **10** | **Ingress protection level** | |
| | **1** | IP65 |
| **11** | **Shaft end** | |
| | **0** | Smooth shaft (standard) |
| | **1** | Key shaft |
| **12** | **Nameplate** | |
| | **-** | ATEX/IECEx/KOSHA |
| | **C** | CCC certification |

# Cables

**Power and feedback cables**

| Drive | Cable reference | |
|---|---|---|
| | Current ⩽ 17 A @40°C ambient t°<br>Current ⩽ 12 A @60°C ambient t° | Current ⩽ 24 A @40°C ambient t°<br>Current ⩽ 17 A @60°C ambient t° |
| **Single cable - Power and Feedback - for use with Hiperface DSL® feedback** | | |
| **PSD1S, PSD1M18** | CBM015TD-T03-D01-xxxx-00 | - |
| **PSD1M (except M18)** | CBM015TD-T03-D02-xxxx-00 | - |
| **Power Cable + 2 pairs (brake + thermoswitch) - for use with other feedback** | | |
| **PSD1S / PSD1MW1800** | CBM015TB-T04-D01-xxx-00 | CBM025TB-T04-D01-xxx-00 |
| **PSD1M** | CBM015TB-T04-D02-xxx-00 | CBM025TB-T04-D02-xxx-00 |
| **Compax3** | CBM015TB-T04-D01-xxx-00 | CBM025TB-T04-D01-xxx-00 |
| **Feedback Cable** | **2 pole resolver** | **Hiperface** |
| **PSD1S / PSD1M** | CBFRE0T0-T05-D03-xxxx-00 | - |
| **Compax3** | CBFRE0T0-T05-D05-xxxx-00 | CC3UR1D1Rxxxx |

For non-standard length cable with length different from: 3/5/10/15/20/25/30/50m please contact us.

To note that these cables have a surface temperature resistance of 100°C.

# Additional Information

## Feedback Sensors

**2 poles resolver - option A**

- Accuracy: ±10' max
- Transformation ratio: 0.5 ±5 %
- Max. operating speed: 17 000 $min^{-1}$
- Working temperature range: -55...+155 °C

**Single turn / Multiturn absolute encoder HIPERFACE SKS/SKM36 - option R/S**

- Number of sine/cosine periods per revolution: 128
- Absolute position per revolution: 4096 (12 bits)
- Number of absolutely encodable revolutions: 4096 (SKM36)
- Max. operating speed SKS36: 12 000 $min^{-1}$
- Max. operating speed SKM36: 9000 $min^{-1}$
- Working temperature range: -20...+110 °C

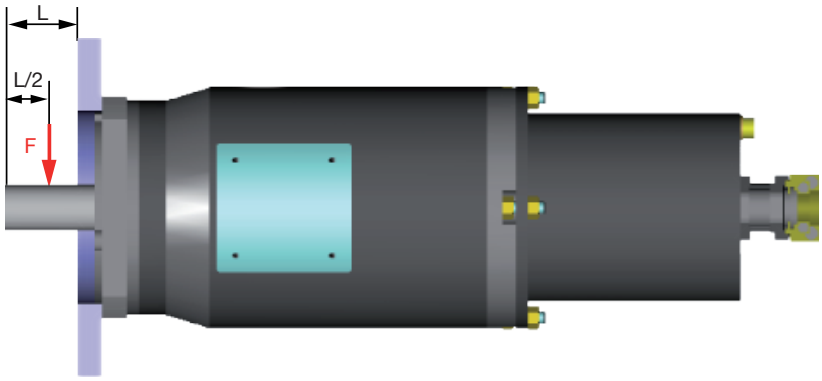
**Single turn / Multiturn absolute encoder HIPERFACE DSL® EKS/EKM36 - option P/Q**

- Absolute position per revolution: 4096 (18/20 bits)
- Number of absolutely encodable revolutions: 4096 (EKM36)
- Max. operating speed EKS36: 12 000 $min^{-1}$
- Max. operating speed EKM36: 9000 $min^{-1}$
- Working temperature range: -20...+115 °C
- SIL2 certified

## Shaft Loads

**Maximum load acceptable on the shaft**

The values written in the table are given for a load placed on the middle of the shaft like the picture below.




Due to the small ATEX airgap requirements between the shaft and the front flange, the radial loads on the shaft are lower than standard NX motors.
The ATEX airgap requirements depend on the volume of the motor and can lead to lower radial loads for bigger motors.

Regarding to these shaft loads, you must not use a pulley belt system without a load take-up system.

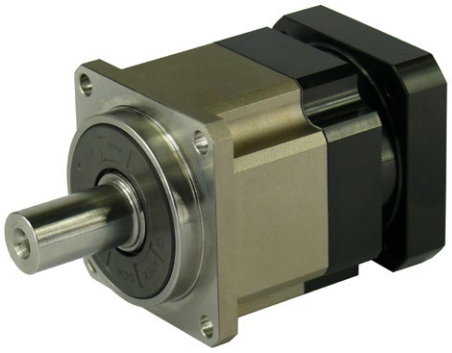
| Type | Max. shaft load F [N] |
|---|---|
| EX310 | 100 |
| EX430 | 500 |
| EX630 | 500 |
| EX860 | 250 |

# ATEX GEARBOXES GXA SERIES

## Overview

### Description

GXA gearbox series has to be associated with the powerful Parker ATEX servomotors ranges for use in hazardous areas. The precision helical gearing design offers smooth and quiet operation for the most demanding high performance applications.
The solid uncaged needle roller bearings provides maximum contact points to increase stiffness and generates high output torque.
In addition the unique motor adapter and bushing module system design allows to obtain a compact structure and a quick and easy mounting of any ATEX certified Parker motor.



**Features**

- ATEX certify
- Low backlash
- High efficiency
- Easy mounting
- Low noise
- Compact structure
- Helical Gear Design

### Technical Characteristics - Overview

| Series | Unit | GXA |
|---|---|---|
| Gear geometry | | Helical Gearing |
| Type | | In-Line |
| Frame sizes | [mm] | 60, 90, 115, 142, 180, 220 |
| Maximum input speed | [$min^{-1}$] | up to 10 000 |
| Nominal torque | [Nm] | 40...1800 |
| Radial force | [N] | up to 50 000 |
| Life | [h] | up to 20 000 |
| Backlash | [arc-min] | up to $\leqslant$ 3 |
| Efficiency | [%] | up to $\geqslant$ 97 % |
| Conformance | | 2014/34/EU Directive |
| Classification | | II 2 GD c T6 |
| Harmonized standard | | EN 1127-1:2012 |
| Other technical standards & specifications applied | | EN 13463-1:2009, EN 13463-5:2013, ISO281:2004, ISO286:2013, DIN3960 |

# Technical Characteristics

| Model No. | | Stage | Ratio[1] | GX.. R02.. | GX.. R04.. | GX.. R06.. | GX.. R07.. | GX.. R09.. | GX.. R10.. |
|---|---|---|---|---|---|---|---|---|---|
| Nominal Output Torque $T_{2N}$ | [Nm] | 1 | 3 | 55 | 130 | 208 | 342 | 588 | - |
| | | | 4 | 50 | 140 | 290 | 542 | 1050 | - |
| | | | 5 | 60 | 160 | 330 | 650 | 1200 | - |
| | | | 6 | 55 | 150 | 310 | 600 | 1100 | - |
| | | | 7 | 50 | 140 | 300 | 550 | 1100 | - |
| | | | 8 | 45 | 120 | 260 | 500 | 1000 | - |
| | | | 9 | 40 | 100 | 230 | 450 | 900 | - |
| | | | 10 | 40 | 100 | 230 | 450 | 900 | - |
| | | 2 | 15 | - | 130 | 208 | 342 | 588 | - |
| | | | 20 | - | 140 | 290 | 542 | 1050 | - |
| | | | 25 | - | 160 | 330 | 650 | 1200 | - |
| | | | 30 | - | 150 | 310 | 600 | 1100 | - |
| | | | 35 | - | 140 | 300 | 550 | 1100 | - |
| | | | 40 | - | 120 | 260 | 500 | 1000 | - |
| | | | 45 | - | 100 | 230 | 450 | 900 | - |
| | | | 50 | - | 160 | 330 | 650 | 1200 | - |
| | | | 60 | - | 150 | 310 | 600 | 1100 | - |
| | | | 70 | - | 140 | 300 | 550 | 1100 | 1800 |
| | | | 80 | - | 120 | 260 | 500 | 1000 | 1600 |
| | | | 90 | - | 100 | 230 | 450 | 900 | 1500 |
| | | | 100 | - | 100 | 230 | 450 | 900 | 1500 |
| Emergency Stop Torque $T_{2NOT}$[3] | [Nm] | 1,2 | 3~100 | 3 times of Nominal Output Torque | | | | | |
| Nominal Input Speed $n_{1N}$ | [min$^{-1}$] | 1,2 | 3~100 | 5000 | 4000 | 4000 | 3000 | 3000 | 2000 |
| Max. Input Speed $n_{1B}$ | [min$^{-1}$] | 1,2 | 3~100 | 10 000 | 8000 | 8000 | 6000 | 6000 | 4000 |
| Standard Backlash | [arcmin] | 1 | 3~10 | ⩽ 5 | ⩽ 5 | ⩽ 5 | ⩽ 5 | ⩽ 5 | ⩽ 5 |
| | | 2 | 15~100 | ⩽ 7 | ⩽ 7 | ⩽ 7 | ⩽ 7 | ⩽ 7 | ⩽ 7 |
| Reduced Backlash | [arcmin] | 1 | 3~10 | ⩽ 3 | ⩽ 3 | ⩽ 3 | ⩽ 3 | ⩽ 3 | ⩽ 3 |
| | | 2 | 15~100 | ⩽ 5 | ⩽ 5 | ⩽ 5 | ⩽ 5 | ⩽ 5 | ⩽ 5 |
| Torsional Rigidity | [Nm / arcmin] | 1,2 | 3~100 | 7 | 14 | 25 | 50 | 145 | 225 |
| Max. Radial Load $F_{2rB}$[2] | [N] | 1,2 | 3~100 | 1530 | 3250 | 6700 | 9400 | 14500 | 50000 |
| Max. Axial Load $F_{2aB}$[2] | [N] | 1,2 | 3~100 | 765 | 1625 | 3350 | 4700 | 7250 | 25000 |
| Lifetime | [h] | 1,2 | 3~100 | 20 000* | | | | | |
| Efficiency | [%] | 1 | 3~10 | ⩾ 97 % | | | | | |
| | | 2 | 15~100 | ⩾ 94 % | | | | | |
| Weight | [kg] | 1 | 3~10 | 1.3 | 3.7 | 7.8 | 14.5 | 29 | 48 |
| | | 2 | 15~100 | 1.5 | 4.1 | 9 | 17.5 | 33 | 60 |
| Operating Temp | [°C] | 1,2 | 3~100 | -10 to 40 °C | | | | | |
| Lubrication | | | | Synthetic grease | | | | | |
| Degree of Gearbox Protection | | 1,2 | 3~100 | IP65 | | | | | |
| Mounting Position | | 1,2 | 3~100 | All directions | | | | | |
| Noise Level (n1=3000 min$^{-1}$, No Load) | [dB(A)] | 1,2 | 3~100 | ⩽ 58 | ⩽ 60 | ⩽ 63 | ⩽ 65 | ⩽ 67 | ⩽ 70 |

1. Ratio ( i=N in / N out )
2. Applied to the output shaft center @ 100 min-1
3. Max. acceleration torque T2B = 60% of T2NOT

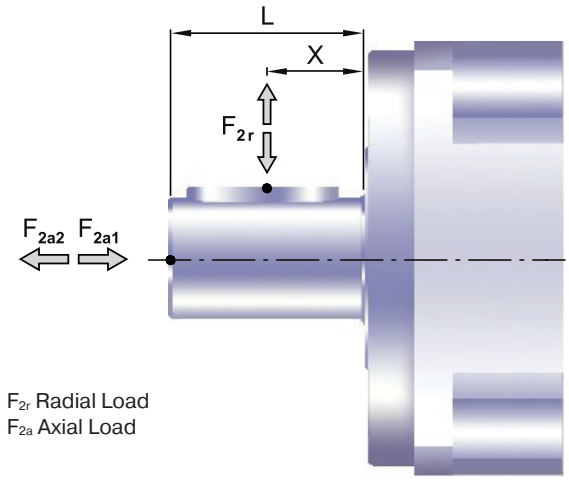
* S1 service life 10,000 hrs.

# Gearbox Inertia

| Model No. | Unit | Stage | Ratio | GX.. R02.. | GX.. R04.. | GX.. R06.. | GX.. R07.. | GX.. R09.. | GX.. R10.. |
|---|---|---|---|---|---|---|---|---|---|
| Mass Moments of inertia $J_1$ | [kgmm²] | 1 | 3 | 16 | 61 | 325 | 921 | 2898 | - |
| | | | 4 | 14 | 48 | 274 | 754 | 2367 | - |
| | | | 5 | 13 | 47 | 271 | 742 | 2329 | - |
| | | | 6 | 13 | 45 | 265 | 725 | 2275 | - |
| | | | 7 | 13 | 45 | 262 | 714 | 2248 | - |
| | | | 8 | 13 | 44 | 258 | 707 | 2259 | - |
| | | | 9 | 13 | 44 | 257 | 704 | 2253 | - |
| | | | 10 | 13 | 44 | 257 | 703 | 2251 | - |
| | | 2 | 15 | - | 13 | 47 | 271 | 742 | - |
| | | | 20 | - | 13 | 47 | 271 | 742 | - |
| | | | 25 | - | 13 | 47 | 271 | 742 | - |
| | | | 30 | - | 13 | 47 | 271 | 742 | - |
| | | | 35 | - | 13 | 47 | 271 | 742 | - |
| | | | 40 | - | 13 | 47 | 271 | 742 | - |
| | | | 45 | - | 13 | 47 | 271 | 742 | - |
| | | | 50 | - | 13 | 44 | 257 | 703 | - |
| | | | 60 | - | 13 | 44 | 257 | 703 | - |
| | | | 70 | - | 13 | 44 | 257 | 703 | 2251 |
| | | | 80 | - | 13 | 44 | 257 | 703 | 2251 |
| | | | 90 | - | 13 | 44 | 257 | 703 | 2251 |
| | | | 100 | - | 13 | 44 | 257 | 703 | 2251 |

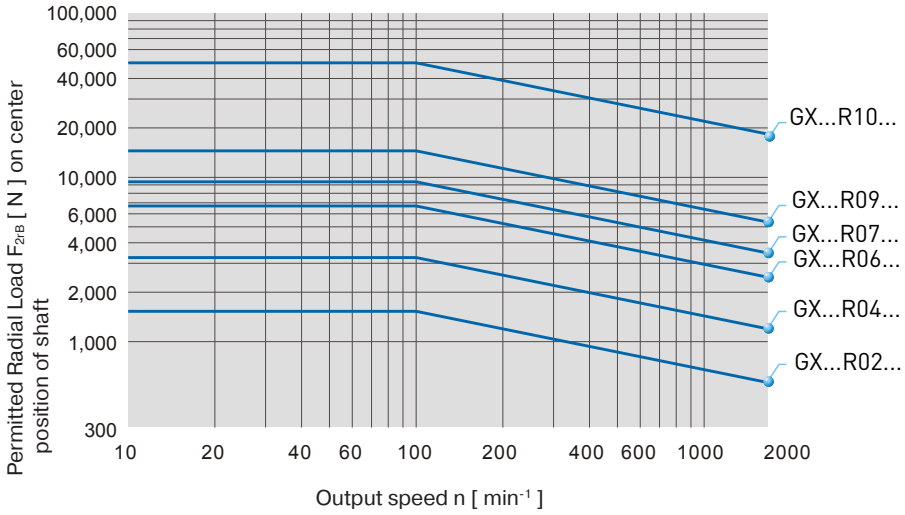
# Permitted radial and axial loads on output shaft of the gearbox

The permitted radial and axial loads on output shaft of the gearbox depend on the design of the gearbox supporting bearings.
GXA Series uses the extension straddle oversized ball bearing design It can take heavy load from both axes.



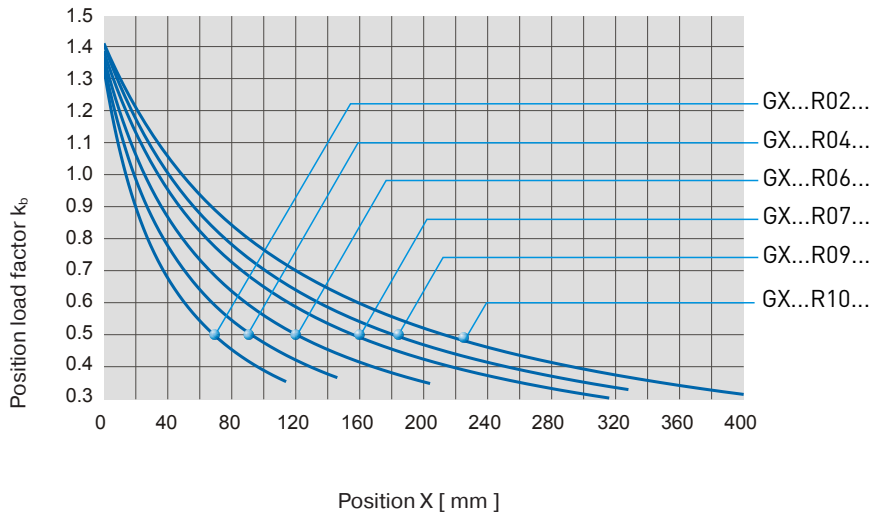

$F_{2r}$ Radial Load
$F_{2a}$ Axial Load

**If radial force F2r exert on the center of the output shaft : X=1/2 x L.**




The permitted radial load is given on left diagram.

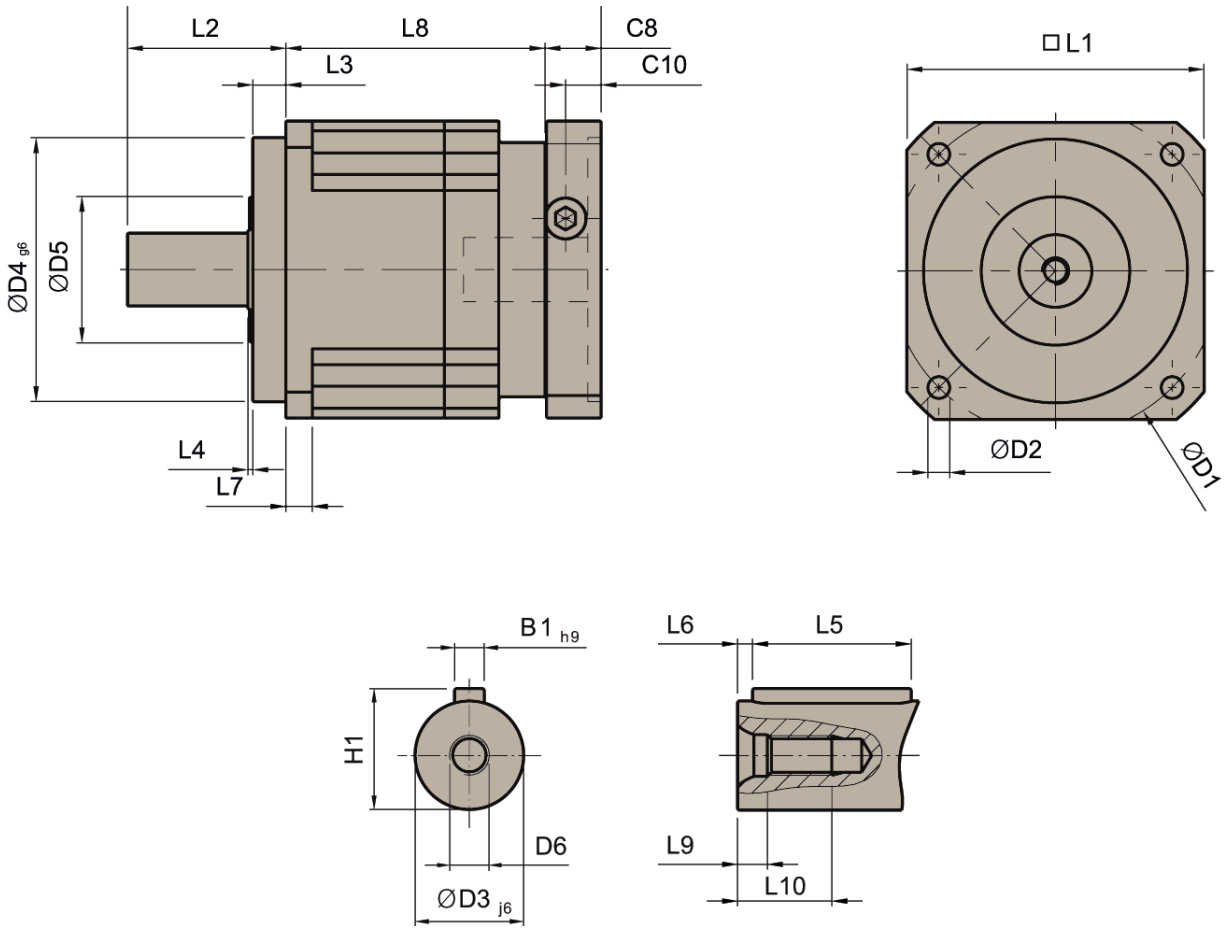
**If radial force F2r not exert on the center of the output shaft : X<1/2 x L or X>1/2 x L**




The permitted radial load can be calculated by multiplying the previous value by the position load factor Kb on the left diagram.

# Dimensions

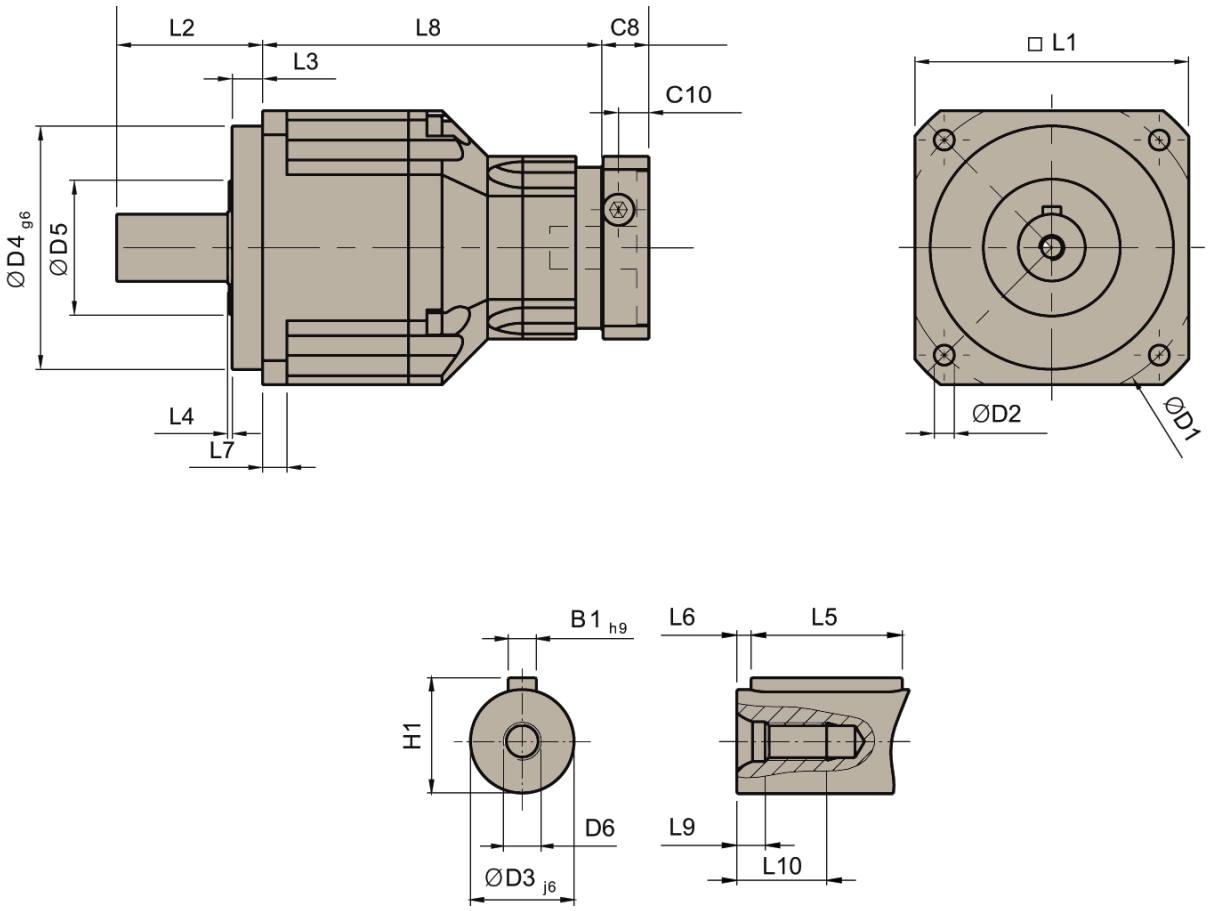
**1 Stage - Ratio i = 3 - 10**




| | GX..R02.. | GX..R04.. | GX..R06.. | GX..R07.. | GX..R09.. |
|---|---|---|---|---|---|
| **D1** | 70 | 100 | 130 | 165 | 215 |
| **D2** | 5.5 | 6.6 | 9 | 11 | 13 |
| **D3 j6** | 16 | 22 | 32 | 40 | 55 |
| **D4 g6** | 50 | 80 | 110 | 130 | 160 |
| **D5** | 45 | 65 | 95 | 75 | 95 |
| **D6** | M5 x 0.8 | M8 x 1.25 | M12 x 1.75 | M16 x 0.8 | M20 x 2.5 |
| **L1** | 60 | 90 | 115 | 142 | 180 |
| **L2** | 37 | 48 | 65 | 97 | 105 |
| **L3** | 7 | 10 | 12 | 15 | 20 |
| **L4** | 1.5 | 1.5 | 2 | 3 | 3 |
| **L5** | 25 | 32 | 40 | 63 | 70 |
| **L6** | 2 | 3 | 5 | 5 | 6 |
| **L7** | 6 | 8 | 10 | 12 | 15 |
| **L8** | 61 | 78.5 | 102 | 119.5 | 154 |
| **L9** | 4.8 | 7.2 | 10 | 12 | 15 |
| **L10** | 12.5 | 19 | 28 | 36 | 42 |
| **C8** [3] | 19 | 17 | 19.5 | 22.5 | 29 |
| **C10** [3] | 13.5 | 10.75 | 13 | 15 | 20.75 |
| **B1** h9 | 5 | 6 | 10 | 12 | 16 |
| **H1** | 18 | 24.5 | 35 | 43 | 59 |

"3. C8~C10 are motor specific dimensions.

**2 Stages - Ratio i = 15 - 100**




| | GX..R04.. | GX..R06.. | GX..R07.. | GX..R09.. | GX..R10.. |
|---|---|---|---|---|---|
| **D1** | 100 | 130 | 165 | 215 | 250 |
| **D2** | 6.6 | 9 | 11 | 13 | 17 |
| **D3 j6** | 22 | 32 | 40 | 55 | 75 |
| **D4 g6** | 80 | 110 | 130 | 160 | 180 |
| **D5** | 65 | 95 | 75 | 95 | 115 |
| **D6** | M8 x 1.25 | M12 x 1.75 | M16 x 2 | M20 x 2.5 | M20 x 2.5 |
| **L1** | 90 | 115 | 142 | 180 | 220 |
| **L2** | 48 | 65 | 97 | 105 | 138 |
| **L3** | 10 | 12 | 15 | 20 | 30 |
| **L4** | 1.5 | 2 | 3 | 3 | 3 |
| **L5** | 32 | 40 | 63 | 70 | 90 |
| **L6** | 3 | 5 | 5 | 6 | 7 |
| **L7** | 8 | 10 | 12 | 15 | 20 |
| **L8** | 111.5 | 143.5 | 176 | 209.5 | 248 |
| **L9** | 7.2 | 10 | 12 | 15 | 15 |
| **L10** | 19 | 28 | 36 | 42 | 42 |
| **C8** [4] | 19 | 17 | 19.5 | 22.5 | 29 |
| **C10** [4] | 13.5 | 10.75 | 13 | 15 | 20.75 |
| **B1** h9 | 6 | 10 | 12 | 16 | 20 |
| **H1** | 24.5 | 35 | 43 | 59 | 79.5 |

4. C8~C10 are motor specific dimensions.

# Gearbox Combinations

| | Ratio | Motor Size | | | |
|---|---|---|---|---|---|
| | | EX3 / EY3 | EX4 / EY4 | EX6 / EY6 | EX8 / EY8 |
| 1 stage | 3 | GXA3N003R0201 | GXA4N003R0401 | GXA6N003R0601 | GXA8N003R0701 |
| | 4 | GXA3N004R0201 | GXA4N004R0401 | GXA6N004R0601 | GXA8N004R0701 |
| | 5 | GXA3N005R0201 | GXA4N005R0401 | GXA6N005R0601 | GXA8N005R0701 |
| | 6 | GXA3N006R0201 | GXA4N006R0401 | GXA6N006R0601 | GXA8N006R0701 |
| | 7 | GXA3N007R0201 | GXA4N007R0401 | GXA6N007R0601 | GXA8N007R0701 |
| | 8 | GXA3N008R0201 | GXA4N008R0401 | GXA6N008R0601 | GXA8N008R0701 |
| | 9 | GXA3N009R0201 | GXA4N009R0401 | GXA6N009R0601 | GXA8N009R0701 |
| | 10 | GXA3N010R0201 | GXA4N010R0401 | GXA6N010R0601 | GXA8N010R0701 |
| 2 stages | 15 | GXA3N015R0401 | GXA4N015R0601 | GXA6N015R0701 | GXA8N015R0901 |
| | 20 | GXA3N020R0401 | GXA4N020R0601 | GXA6N020R0701 | GXA8N020R0901 |
| | 25 | GXA3N025R0401 | GXA4N025R0601 | GXA6N025R0701 | GXA8N025R0901 |
| | 30 | GXA3N030R0401 | GXA4N030R0601 | GXA6N030R0701 | GXA8N030R0901 |
| | 35 | GXA3N035R0401 | GXA4N035R0601 | GXA6N035R0701 | GXA8N035R0901 |
| | 40 | GXA3N040R0401 | GXA4N040R0601 | GXA6N040R0701 | GXA8N040R0901 |
| | 45 | GXA3N045R0401 | GXA4N045R0601 | GXA6N045R0701 | GXA8N045R0901 |
| | 50 | GXA3N050R0401 | GXA4N050R0601 | GXA6N050R0701 | GXA8N050R0901 |
| | 60 | GXA3N060R0401 | GXA4N060R0601 | GXA6N060R0701 | GXA8N060R0901 |
| | 70 | | GXA4N070R0601 | | GXA8N070R0901 |
| | | GXA3N070R0401 | GXA4N070R0701 | GXA6N070R0701 | GXA8N070R1001 |
| | 80 | GXA3N080R0401 | GXA4N080R0601 | GXA6N080R0701 | GXA8N080R0901 |
| | | | GXA4N080R0701 | | GXA8N080R1001 |
| | 90 | GXA3N090R0401 | GXA4N090R0601 | GXA6N090R0701 | GXA8N090R0901 |
| | | | GXA4N090R0701 | | GXA8N090R1001 |
| | 100 | GXA3N100R0401 | GXA4N100R0601 | GXA6N100R0701 | |
| | | | GXA4N100R0701 | | GXA8N100R1001 |

Motor gearhead possible combination with torque limitation, please consult us at EM-motion@parker.com

# Order Code

## GXA Gearboxes

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Order example | **GX** | **A** | **3** | **N** | **005** | **R060** | **0** |

| | | | |
|---|---|---|---|
| **1** | **Gearbox Series** | | |
| | **GX** | Gearbox for in-line mounting | |
| **2** | **Gearbox Type** | | |
| | **A** | ATEX version | |
| **3** | **Motor size association *** | | |
| | **3** | EX3, EY3 (60/75/11/23) | |
| | **4** | EX4, EY4 (80/100/19/40) | |
| | **6** | EX6, EY6 (110/130/24/50) | |
| | **8** | EX8, EY8 (130/165/32/58) | |
| **4** | **Backlash** | | |
| | **N** | Normal | |
| | **R** | Reduced | |
| **5** | **Ratio** | | |
| | **3 to 10** | for GXA | 1 stage |
| | **15 to 100** | for GXA | 2 stages |
| **6** | **Gearbox Size *** | | |
| | **R020** | Size 60 | |
| | **R040** | Size 90 | |
| | **R060** | Size 115 | |
| | **R070** | Size 142 | |
| | **R090** | Size 180 | |
| | **R100** | Size 220 | |
| **7** | **Shaft** | | |
| | **0** | Smooth shaft | |
| | **1** | Keyed shaft | |

* To find out about possible combinations please refer to the table on page 34.

Parker Hannifin Corporation
**Motion Systems Group Europe**
Parker Hannifin EMEA Sàrl European Headquarters
La Tuilière 6 Etoy
Switzerland CH-1163
www.parker.com

192-063032 08/2024

Your Local Authorized Parker Distributor