

# Product Range

Mechatronic & Motion Systems



MECHATRONIC &  
MOTION SYSTEMS





# Mechatronic & Motion Systems



## Motion Control & Human Machine Interface

ANG Series  
iBMD Series  
BMS Series  
BMI Series

## Frequency inverters

Active Cube Series  
Agile Series  
S2U Series  
S2U IP66 Series

## Regenerative Units

AEC Series

## Precision Planetary Gearboxes

<b>Performance line</b>	<b>Effective line</b>
TQ Series	TQFE Series
TQK Series	TQFEK Series
TQF Series	SL Series
TR Series	LC Series
MP Series	LCK Series
	MPE Series
	MPEK Series
	KR Series

## Industrial gearmotors

A Series  
C Series  
F Series  
VF/W Series  
300 Series

## Permanent Magnet Synchronous & Synchronous Reluctance Motors

BMD Series  
BCR Series  
BSR Series



CO-ENGINEERING  
DEVELOPMENT



PROJECT  
COMMISSIONING



SERVICES



DIGITAL  
TOOLS

## The highest level of precision, efficiency and energy optimization.

With almost 20 years of experience in creating dedicated motion control systems, Bonfiglioli has gained a solid reputation as one-stop shop for mechatronic applications in industrial automation.

Bonfiglioli engineering specialists work side by side with customers to develop tailored and forward-thinking integrated solutions, covering the entire motion drive train according to an Industry 4.0 approach.

Thanks to the extensive know-how and the long-term collaboration with key customers, our two centers of excellence, located in Italy and Germany, develop breakthrough mechatronic innovations, including low backlash planetary gearboxes, servomotors, open and closed loop inverters, servo inverters and regenerative inverters.

This, combined with a comprehensive range of Professional Services, enables us to respond to customers' requests with targeted solutions aimed at achieving:

- High efficiency
- High productivity
- Agility
- Easy-to-use drive solutions
- Always up-to-date data for diagnostic, maintenance and predictive analytics
- Low operating costs

Bonfiglioli also provides solutions for:



DISCRETE MANUFACTURING  
& PROCESS INDUSTRIES



ELECTROMOBILITY



MOBILE



WIND

[www.bonfiglioli.com](http://www.bonfiglioli.com)

# Mechatronic solutions for all industrial applications

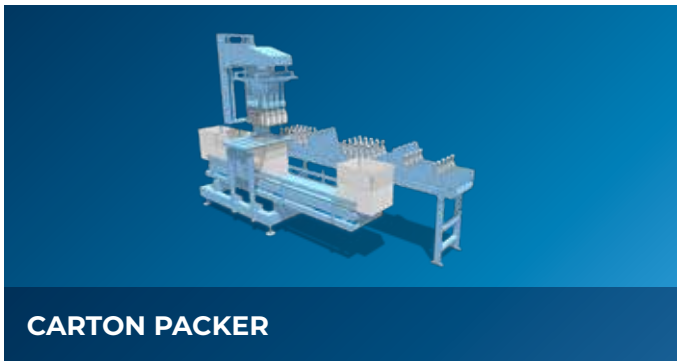
Our engineering specialists work side by side with customers to create the best possible solution, whether the request is to optimize an existing machine or to develop a new one. Our relationship with customers is based on an active partnership with fast decision-making processes to develop individually-tailored offers.

Our full-range offering provides the necessary products for the development of vertically integrated solutions in a variety of applications, such as material handling, automated storage, textile and packaging. Our team of experts assists customers in designing cost effective and energy efficient machines, aligning performance to meet the specific requirements.



## A complete integrated solution

- Precision Planetary Gearboxes
- Industrial Gearboxes
- PM Synchronous Motors
- Synchronous Reluctance Motors
- Asynchronous motors
- Servo Inverters
- Frequency Inverters
- Energy Regenerative Inverters
- Motion Control
- Industry 4.0 solutions





## Our services

### ▪ APPLICATION / ENGINEERING

Assessment and Orientation  
 Engineering and Planning  
 Retrofit and Modernization

### ▪ INSTALLATION / START-UP

On-site assistance  
 Start-up assistance  
 Commissioning

### ▪ AFTER SALES

Maintenance  
 Pre- and post-sale customer service  
 Training

## Industry sector expertise



MATERIAL HANDLING



HOIST & CRANES



FOOD & BEVERAGE



AUTOMATED WAREHOUSE



PACKAGING



TEXTILES



MATERIAL WORKING

# Bonfiglioli Digital Tools



## EPLAN

### Enhance your electrical design

Intense competition is putting pressure on machine builders and system integrators to deliver machines with higher throughput and reduced operating cost in shorter timeframes, leading to a significant increase in the **complexity of the machine design** process.



DOCUMENTS

DE  
EN  
ES

MULTILINGUE  
SUPPORT



COMMERCIAL  
DATA



LOGIC  
DATA



2D/3D  
DATA



PRODUCTION  
DATA

## System design challenge

Bonfiglioli and EPLAN work together to provide efficient engineering solutions, aimed at reducing the gap between the initial concept and its development, programming and commissioning.

- **Better quality of documentation:** the EPLAN Data Portal provides users with up-to-date device data from numerous component manufacturers, saving time for manual data collection and minimizing the risks of faulty data.
- **Shorter system design times:** by including macro-information, function templates, production data and drawings, EPLAN allows users to drag and drop Bonfiglioli drawing templates into their own electrical drawings, reducing the time needed for cabinet planning.

### Bonfiglioli products available on EPLAN data portal



Active Next  
Generation Series



Active Cube  
Series



Agile Series



## SERVOsoft

### Develop optimized solutions

Bonfiglioli and SERVOsoft® work together to support customers in sizing complete **multi-axis servo systems**, including motors, gearboxes and servodrives with **15 mechanisms** and up to **50 axes** in a shared bus or standalone configuration.



With Bonfiglioli offering available on SERVOsoft, customers are able to select, size and design their customized and high performance applications. In addition, Bonfiglioli engineering team - thanks to its in-depth knowledge of the products - uses the high level servosizing tool SERVOsoft® to provide a top level customer support service by developing **optimized, energy-efficient and tailored** engineering solutions to meet individual needs.

#### Benefits

- High level of optimization
- Unique supplier and tailored-made solutions
- Energy-saving solutions
- Tuning of the project in real conditions and further optimization
- Powerful servosizing tool for both customers and Bonfiglioli team

# Motion Control & Human Machine Interface





# Motion control servo drive



## ANG Series

Active Next Generation (ANG) is a motion control application inverter that can be used in servo applications and as frequency inverter. The ANG Series offers a wide power range from 0.25 kW to 400 kW (with parallel connection of drives up to 1200 kW). It can control asynchronous and synchronous motors in open and closed loop operations. Field bus communication and encoder evaluation is always on board, making the Active Next Generation Series the perfect drive for motion control applications in closed loop control like packaging, textile machines, food & beverage, warehouse and material handling. For integration in functional safety environments, ANG offers STO functionality according to SIL 3 and PL e.

### Power supply & Power range

- ANG210: 0.25 - 9.2 kW / single or three-phase 200 - 240V / 50 - 60 Hz ( $\pm 10\%$ )
- ANG410: 0.25 - 400 kW / three-phase 360 - 480V / 50 - 60 Hz ( $\pm 10\%$ )  
Parallel connection up to 1200 kW
- ANG510: 160 - 400 kW / three-phase 525V / 50 - 60 Hz ( $\pm 10\%$ )  
Parallel connection up to 1200 kW
- ANG610: 160 - 400 kW / three-phase 690V / 50 - 60 Hz ( $\pm 10\%$ )  
Parallel connection up to 1200 kW

### Motor control

(open loop or optional closed loop):

- Asynchronous AC motors
- Permanent magnet synchronous (brushless) motors

### Mounting options

- Cabinet mounting for all sizes
- Optional feed-through mounting
- Optional DIN rail mounting frame size 1
- Optional ColdPlate (sizes 1 to 5)
- Optional liquid cooling (sizes 5 to 8)

### Overload capacity

- up to 150% for 60 seconds
- up to 200% for 1 second

### Key features

- Different variants include field bus connection and encoder evaluation
- Plug-in power terminals (up to 3kW)
- Plug-in and programmable control terminals
- DC link connection
- Integrated brake chopper
- Positioning function via field bus (Motion control compatible with CiA 402)
- Cubic interpolation
- Integrated VPLC
- Master/slave function with electronic gear
- Power failure control
- Integrated safe torque off STO (SIL 3 / PL e) function
- Output frequency 0...599 Hz, higher frequencies on request
- Diagnosis and setup via optional keypad or PC software

### Variants

Variants automation interface:

- EM-AUT-01: EtherCAT® and Encoder evaluation (TTL, HTL, Resolver, Hiperface, EnDat 2.1)
- EM-AUT-04: EtherCAT®
- EM-AUT-11: PROFINET and Encoder evaluation (TTL, HTL, Resolver, Hiperface, EnDat 2.1)
- EM-AUT-21: Ethernet/IP and Encoder evaluation (TTL, HTL, Resolver, Hiperface, EnDat 2.1)
- EM-AUT-31: Varan and Encoder evaluation (TTL, HTL, Resolver, Hiperface, EnDat 2.1)

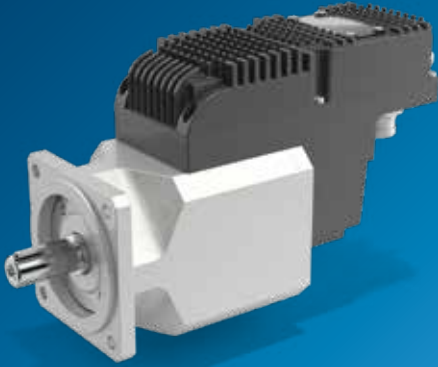
### Options

- Optional keypad for diagnosis and parameter setup
- Optional PC interface
- Optional accessories like brake resistor, mains chokes, mains filters

### Enclosure

- IP20 (EN 60529)

# Motion control servo motor with integrated drive



## iBMD Series

iBMD can be controlled by a master or in standalone mode. It reduces both cable and electrical cabinet costs. Total unit size is reduced by more than 35% compared to a classic servo drive solution.

### DC voltage

- 560 V

### Absolute encoders

- Single and multi turn

### Communication interface

- CANopen, EtherCAT

### Configurable I/Os on board

- ST-IEC61131 programming
- STO function
- Driver Codesys available

### DC power supply

- 20 A, 40 A

### Degree of protection

- IP65 (EN 60529)

### Power supply

- 400 Vac system voltage / 560 Vdc DC link voltage

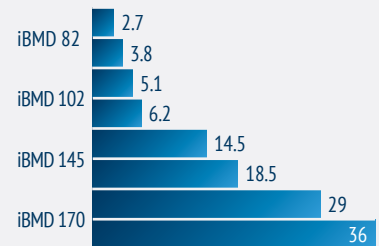
### Software features

- Positioning function via field bus (motion control compatible with CiA 402)
- Internal PLC programming option for standalone machines
- Interpolated mode
- Gearing functionality
- Electronic cam functionality in combination with motion controllers
- Internal drive and motor protection

### Hardware features

- IP65 design
- KTY temperature evaluation
- Absolute Hiperface encoder
- Optional holding brake
- DC power supply

### Torque (Nm)



# Motion servo gearmotor



## BMS Series

The BMS Series offers revolutionary space-saving machine design, a wider range of options and superior performance due to the synergy between permanent magnets, synchronous motors and precision planetary gearbox technologies. The excellent compactness, high torsional stiffness and low moment of inertia ensure a great operating performance in all applications that demand highly precise positioning, accuracy and efficiency. In addition, the BMS series provides a new and unique compact unit selection method, with optimized catalog combinations, to ensure the maximum output in terms of performance, compactness and drive optimization.

### Rated speed

- 60 up to 875 rpm

### Technical features

- 5 gearbox sizes: 060, 070, 090, 130, 160
- 3 overspeed variants: Base, Medium and High
- 6 motor frames and 14 motor sizes

### Backlash

- 1 stage: less than 3 arcmin
- 2 stages: less than 5 arcmin

### Operation

- Continuous duty
- Cyclic operation

### Lubrication

- Life lubricated
- Optionally food grade oil

### Feedback

- 2-pole resolver 8kHz & 10 kHz
- Optical single & multi turn EnDat encoder
- Optical single & multi-turn Hiperface encoder
- Capacitive single & multi-turn Hiperface encoder

### Temperature sensor

- PTC
- KTY 84-130
- PT1000

### Brake options

- Holding brake (optional)
- 24 Vdc

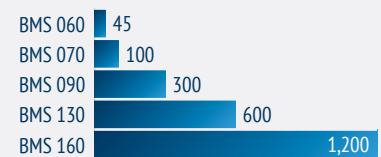
### Degree of protection

- IP65

### Key features

- Compact design
- High precision and dynamics
- Matching application demands and geared motor operating area, with a smaller servopackage
- Very flexible options

### Maximum acceleration torque (Nm)



# General Purpose HMI



## BMI Series Human Machine Interface

The BMI Series offers a complete cost effective automation solution that can be fully customized to suit customers' needs. Combined with one of Bonfiglioli drives system, the BMI Series is a powerful solution dedicated to a wide range of applications.

### Key features

- 7 and 10" display
- Front panel IP 65
- Cost-effective solution
- ABS plastic chassis
- 65.536 colors
- High resolution up to 1024 X 600
- Ethernet and RS232/485 standard

# Frequency inverters



# High Performance Frequency Inverter



## Active Cube Series

Active Cube (ACU) is the high performance frequency inverter with a wide power range from 0.25 kW to 400 kW (with parallel drive connection up to 1200 kW). It can control asynchronous, synchronous and synchronous reluctance motors in open and closed loop operations. Several optional modules for communication and expansions for I/O control and encoder evaluation make the premium frequency inverter ideal for a wide range of high performance applications, such as warehouse and material handling, automatic storage systems, textile machines, packaging, food & beverage, motion control and hoists and cranes applications. For integration in functional safety environments, ACU offers STO functionality according to SIL 3 and PL e.

### Power supply & Power range

- ACU210: 0.25 - 9.2 kW / single or three-phase 200 - 240V / 50 - 60 Hz ( $\pm 10\%$ )
- ACU410: 0.25 - 400 kW / three-phase 360 - 480V / 50 - 60 Hz ( $\pm 10\%$ )  
Parallel connection up to 1200 kW
- ACU510: 160 - 400 kW / three-phase 525V / 50 - 60 Hz ( $\pm 10\%$ )  
Parallel connection up to 1200 kW
- ACU610: 160 - 400 kW / three-phase 690V / 50 - 60 Hz ( $\pm 10\%$ )  
Parallel connection up to 1200 kW

### Motor control

(open loop or optional closed loop):

- Asynchronous AC motors
- Synchronous Reluctance motors
- Permanent magnet synchronous (brushless) motors

### Mounting options

- Cabinet mounting for all sizes
- Optional feed-through mounting
- Optional DIN rail mounting frame size 1
- Optional ColdPlate (sizes 1 to 5)
- Optional liquid cooling (sizes 5 to 8)

### Overload capacity

- up to 150% for 60 seconds
- up to 200% for 1 second

### Key features

- Optionally expanding series for field bus communication and encoder evaluation
- Plug-in power terminals (up to 3kW)
- Plug-in and programmable control terminals
- DC link connection
- Integrated brake chopper
- Positioning function via field bus (Motion control compatible with CiA 402)
- Integrated VPLC
- Master/slave function with electronic gear
- Power failure control
- Integrated safe torque off STO (SIL 3 / PL e) function
- Output frequency 0...599 Hz, higher frequencies on request
- Diagnosis and setup via optional keypad or PC software

### Options

- Different field bus options, such as CANopen, PROFIBUS, Modbus, EtherCAT, PROFINET, Varan
- Optional I/O extensions for additional digital and analogue inputs & outputs
- Optional keypad for diagnostics and parameter setup
- Optional PC interface
- Optional accessories like brake resistor, mains chokes, mains filters

### Enclosure

- IP20 (EN 60529)

# Standard Frequency Inverter



## Agile Series

The Agile (AGL) Series is a flexible compromise for standard applications, such as warehouse and material handling (for example glass, wood, marble), textile machines, food & beverage, packaging, ceramic and hoists applications. The Agile Frequency Inverter Series has three mechanical sizes for power ranges between 0.12 and 11 kW, with open loop control for asynchronous and synchronous motors. For integration into functional safety environments, AGL offers STO functionality according to SIL 2 and PL d.

### Power supply & Power range

- AGL202: 0.12 - 3 kW / single-phase 200 V... 240 V / 50 - 60 Hz ( $\pm 10\%$ )
- 0.25 - 7.5 kW / three-phase 200 V ... 240 V / 50 - 60 Hz ( $\pm 10\%$ )
- AGL402: 0.25 - 11 kW / three-phase 320 V... 530 V / 50 - 60 Hz ( $\pm 10\%$ )

### Motor control

(open loop):

- Asynchronous AC motors
- Permanent magnet synchronous (brushless) motors

### Mounting options

- Cabinet mounting for all sizes
- Optional feed-through mounting
- Optional DIN rail mounting frame size 1
- Optional ColdPlate

### Overload capacity

- up to 150% for 60 seconds
- up to 200% for 1 second

### Key features

- Optionally expanding series for field bus communication
- Sensorless control of synchronous and asynchronous motors
- Modbus and Systembus onboard
- DC link connection
- Integrated brake chopper
- Power failure control
- Programmable PI controller
- Integrated VPLC
- Master/slave function with electronic gear
- Integrated safe torque off STO (SIL 2 / PL d) function
- Energy saving function
- Intelligent current limits
- Output frequency 0...599 Hz, higher frequencies on request
- Diagnostics and setup via integrated keypad and integrated service interface for PC connection

### Options

- Different field bus options, such as CANopen, PROFIBUS, Modbus
- Optional accessories like brake resistor, mains chokes, mains filters
- Optional PC connection set

### Enclosure

- IP20 (EN 60529)

# Basic Frequency Inverter



## S2U Series

Our S2U frequency inverters are designed for simple handling applications and are quickly integrated into your machines. The S2U frequency inverter is available in two mechanical sizes ranging from 0.20 kW to 2.2 kW for 230 V single phase operations. S2U is already preset for corresponding open loop controlled asynchronous motors. You can also adjust the basic behavior of the drive with a set of 30 parameters. S2U is our solution for compact and economic applications, such as pumps, fans and material handling including packaging and textile machines.

### Power supply & Power range

- S2U230S: 0.2 - 2.2 kW / single-phase 200 - 240V (+10%-15%) / 50 or 60 Hz

### Motor control

(open loop):

- Asynchronous AC motors

### Mounting options

- Cabinet mounting for all sizes
- Optional DIN rail mounting frame size 1 & 2

### Overload capacity

- up to 150% for 60 seconds

### Key features

- Sensorless control of asynchronous motors
- Modbus onboard
- Reference speed via analogue inputs or integrated potentiometer
- Small amount of parameters for simple setup or optional advanced and more flexible parameter setup
- Power failure control
- Output frequency 0...650 Hz
- Diagnostics and setup via integrated keypad and integrated service interface for PC connection

### Options

- Optional accessories, such as mains chokes, mains filters
- Optional PC connection set

### Enclosure

- IP20 (EN 60529)



# Basic Frequency Inverter IP66



## S2U IP66 Series

The S2U IP66 frequency inverter series is available in three mechanical sizes, ranging from 0.40 kW to 18.5 kW. S2U is already preset for corresponding open loop controlled asynchronous motors. S2U IP66 is our compact, robust and economic solution for applications operating in harsh environments, such as pumps, fans and conveyor belts. S2U IP66 frequency inverter, with a simple change of the advanced parameter settings, is also suitable for packaging, textile, material processing, woodworking and food & beverage applications. The heat sink function is specifically designed for extreme environmental conditions such as dust, humidity, and cleaning chemicals.

### Power supply & Power range

- S2U230T-..(F) IP66: 0.4 - 2.2 kW / single-phase 200 - 240V (+10%-15%) / 50 or 60 Hz
- S2U400T-..F IP66: 0.75 - 18.5 kW / three-phase 380 - 480V (+10%-15%) / 50 or 60 Hz

### Motor control

(open loop):

- Asynchronous AC motors

### Mounting options

- Cabinet or field mounting for all sizes

### Overload capacity

- up to 150% for 60 seconds

### Key features

- Solution for harsh environments
- Sensorless control of asynchronous motors
- Integrated brake chopper
- Fire override mode selectable via parameter setup
- Reference speed via analogue inputs or integrated potentiometer
- Modbus onboard
- Small amount of parameters for simple setup or optional advanced and more flexible parameter setup
- Integrated PLC function with Ladder programming
- Output frequency 0...599 Hz
- Diagnostics and setup via integrated keypad and integrated service interface for PC connection

### Options

- Optional accessories, such as brake resistor, mains chokes, mains filters
- Optional PC connection set

### Enclosure

- IP66 (EN 60529)

# Regenerative Units



# Regenerative drive



## AEC Series

Decades of experience in electronic industrial drives and renewable energy have enabled Bonfiglioli to offer an effective solution for recovering braking energy. This solution comes as the new Active Regenerative System inverters (AEC). In a large number of electrically controlled industrial applications, inertia in moving mechanisms can drive electric motors acting as brakes. They convert kinetic energy into electrical energy. In regenerative processes, this energy is returned to the grid.

### Power range

- 9.7 ... 173.2 kVA  
3-phase 320V ... 440V  
45Hz ... 66Hz

### Overload capacity

- 150% for 1 min

### Enclosure

- IP20 (EN 60529)

### Main hardware features

- DC link connection
- Adjustable input and regenerative power control
- Short-circuit and earth-fault resistance
- Configurable control terminals

### Bus communication

- RS232, RS485, Profibus-DP, CANopen

### Operating panel

- Removable KP500 keypad

### PC software

- VPlus for Windows operating systems

### Software features

- Adjustable displacement factor (sinusoidal)
- Harmonic distortion factor <3% (sinusoidal)
- Adjustable DC link voltage (sinusoidal)
- Power factor ~0.9 (square wave)
- Automatic network synchronization
- Operation independent of phase sequence
- Performance and load characteristics curve

### Hardware features

- Integrated dynamic braking module
- DC link connection
- Plug-in and programmable control terminals
- 6 digital inputs, 1 multifunction input
- 1 digital output, 1 multifunction output, 1 relay output (changeover contact)

### Key features

- Input and regenerative power with sinusoidal current
- Regenerative power with square-wave current

# Precision Planetary Gearboxes

(P) Performance line

(E) Effective line



# Precision planetary inline gearboxes

(P)



## TQ Series

The TQ precision planetary gearbox features a higher positioning. Whether torque, robustness or precision are a requirement, this top class product scores in every category. TQ is particularly suited for the highly demanding requirements of servo systems, such as fast dynamics and frequent reverse motion, precise position and motion control, high numbers of start/stops, and high compactness level. This gearbox's technical design allows high axial and radial loads on the output shaft and very quiet operation. The main sectors the new TQ serves are: industrial automation systems, robotics, machine tools, packaging machines, or other applications requiring high performance servo drive systems.

### Gear ratios

- 1 stage: 3 ... 10
- 2 stages: 16 ... 100

### Degree of protection

- IP65

### Backlash

- 1 stage: less than 2 arcmin
- 2 stages: less than 3 arcmin

### Max radial force

- 1,850 ... 15,000 N

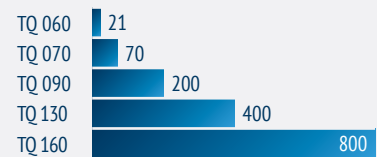
### Input speed

- Up to 6,000 min<sup>-1</sup>

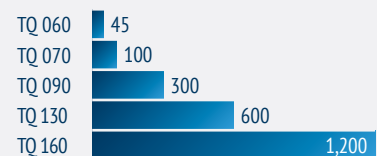
### Key features

- Designed for continuous duty & cyclic operation
- Life lubricated
- Optionally food grade oil
- Quiet operation
- Universal design allows any mounting orientation

### Nominal torque (Nm)



### Acceleration torque (Nm)



# Precision planetary right angle gearboxes

(P)



## TQK Series

The TQK precision planetary gearbox features a higher positioning. Whether torque, robustness or precision are a requirement, this top class product scores in every category and represents the solution for the issues of space often posed by increasing machine compactness. TQK is particularly suited for the highly demanding requirements of servo systems, such as fast dynamic response, frequent reverse motion, precise position and motion control, high number of starts/stops, and high compactness level. This gearbox's technical design also allows high axial and radial loads on the output shaft and very quiet operation.

### Gear ratios

- 1 stage: 3 ... 10
- 2 stages: 16 ... 100

### Degree of protection

- IP65

### Backlash

- 2 stages: less than 4 arcmin
- 3 stages: less than 6 arcmin

### Max radial force

- 1,850 ... 15,000 N

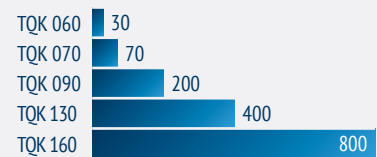
### Input speed

- Up to 6,000 min<sup>-1</sup>

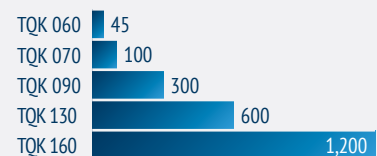
### Key features

- Designed for continuous duty & cyclic operation
- Life lubricated
- Optionally food grade oil
- Quiet operation
- Universal design allows any mounting orientation

### Nominal torque (Nm)



### Acceleration torque (Nm)



# Precision planetary inline gearboxes

(P)



## TQF Series

This planetary gearbox is particularly well-suited to high positioning accuracy, dynamics and compact solutions for motion control, automation, and robotics. Highest torsional stiffness, reduced backlash, highest tilting moment, highest overload and compactness are the main characteristics of this excellent product. Typical applications for TQF reducers include: precision rotary axis drives, traveling gantries & columns and material handling axis drives.

### Gear ratios

- 1 stage: 3 ... 10
- 2 stages: 16 ... 100

### Degree of protection

- IP65

### Backlash

- 1 stage: less than 3 arcmin
- 2 stages: less than 5 arcmin

### Max radial force

- 2,400 ... 29,000 N

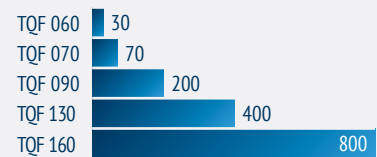
### Input speed

- Up to 6,000 min<sup>-1</sup>

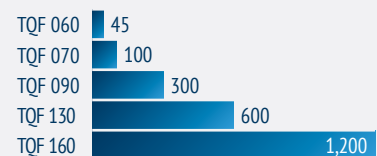
### Key features

- High torsional stiffness
- High tilting moment
- Reduced backlash
- Designed for continuous duty & cyclic operation
- Life lubricated
- Optionally food grade oil
- Quiet operation
- Universal design allows any mounting orientation

### Nominal torque (Nm)

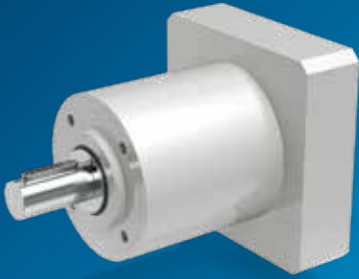


### Acceleration torque (Nm)



# Precision planetary in-line & right angle gearboxes

(P)



## TR Series

TR precision planetary gearboxes are the benchmark for optimal performance and top reliability. Very low backlash, smooth operation, easy motor assembly and numerous product configurations as standard options are some of the many outstanding features of the TR precision planetary gearbox series. This versatile series has multiple configurations available: free input shaft, right angle in input, right angle in output.

### Gear ratios

- 3 ... 1000

### Degree of protection

- IP65

### Backlash

- 1 stage: less than 3 arcmin
- 2 stages: less than 3 arcmin
- 3 stages: less than 3 arcmin
- 4 stages: less than 5 arcmin

### Max radial force

- 500 ... 14,000 N

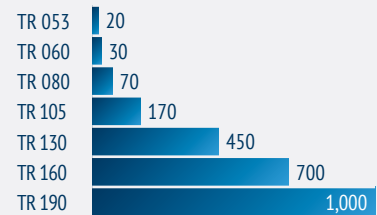
### Input speed

- Up to 6,000 min<sup>-1</sup>

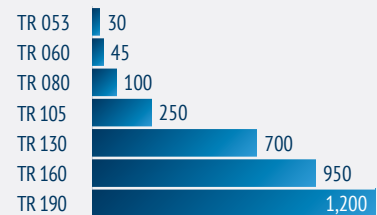
### Key features

- Designed for continuous duty & cyclic operation
- Life lubricated
- Option for food grade oil
- Quiet operation

### Nominal torque (Nm)



### Acceleration torque (Nm)







# Precision planetary in-line & right angle gearboxes



## MP Series

MP precision planetary gearboxes are the benchmark for optimal performance and top reliability. Reduced backlash, smooth operation, easy motor assembly and numerous product configurations as standard options are some of the many outstanding features of the MP planetary precision gearbox series. This versatile series has multiple configurations available: free input shaft, right angle in input, right angle in output.

### Gear ratios

- 3 ... 1000

### Degree of protection

- IP65

### Backlash

- 1 stage: less than 10 arcmin
- 2 stages: less than 10 arcmin
- 3 stages: less than 12 arcmin
- 4 stages: less than 12 arcmin

### Input speed

- Up to 6,000 min<sup>-1</sup>

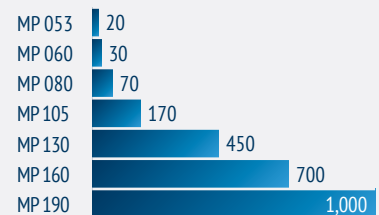
### Maximum radial force

- 200 - 14000 N

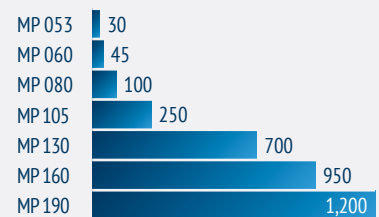
### Key features

- Designed for continuous duty & cyclic operation
- Life lubricated
- Optionally food grade oil
- Quiet operation
- Universal design allows any mounting orientation

### Nominal torque (Nm)

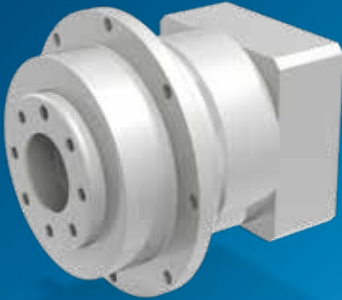


### Acceleration torque (Nm)



# Precision planetary inline gearboxes

(E)



## TQFE Series

The TQFE series combines exceptional compactness with a standardized flange interface, ensuring a quick and easy mounting suitable for a wide variety of applications.

With TQFE it is possible to have high levels of performance and precision at an optimum value-price ratio.

### Gear ratios

- 1 stage: 3 ... 10
- 2 stages: 9 ... 100

### Degree of protection

- IP54

### Backlash

- 1 stage: less than 5 arcmin
- 2 stages: less than 7 arcmin

### Max radial force

- 550 ... 2,500 N

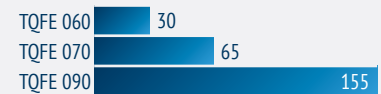
### Input speed

- Up to 6,000 min<sup>-1</sup>

### Key features

- Designed for continuous duty & cyclic operation
- Life lubricated
- Optionally food grade oil
- Easy and quick installation
- Standardized flange for great compatibility

### Nominal torque (Nm)



### Acceleration torque (Nm)



# Precision planetary right angle gearboxes



## TQFEK Series

The TQFEK series offers optimized performance and features at an optimum value-price ratio.

Exceptionally compact and standardized flange interface combined with optimal positioning accuracy make it suitable for a wide range of industrial applications.

Its right angle-design allows more compact layouts for space-saving.

### Gear ratios

- 1 stage: 3 ... 10
- 2 stages: 9 ... 100

### Degree of protection

- IP54

### Backlash

- 1 stage: less than 7 arcmin
- 2 stages: less than 9 arcmin

### Max radial force

- 550 ... 2,500 N

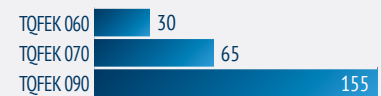
### Input speed

- Up to 6,000 min<sup>-1</sup>

### Key features

- Designed for continuous duty & cyclic operation
- Life lubricated
- Optionally food grade oil
- Easy and quick installation
- Standardized flange for great compatibility
- Compact design for space-saving

### Nominal torque (Nm)



### Acceleration torque (Nm)



# Precision planetary inline gearboxes

(E)



## SL Series

The SL precision planetary gearbox for pulley drives has no rivals when it comes to compactness, efficiency and optimization for timed belt pulley drive systems. The enhanced performance option ensures important downsizing in many applications where a higher transmissible output torque was virtually impossible. Transmissible torque is now improved by up to 40%.

### Gear ratios

- 1 stage: 3 ... 10
- 2 stages: 9 ... 100

### Degree of protection

- IP64

### Backlash

- 1 stage: less than 6 arcmin
- 2 stages: less than 8 arcmin

### Max radial force

- 6,000 ... 15,000 N

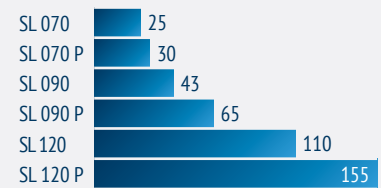
### Input speed

- Up to 6,000 min<sup>-1</sup>

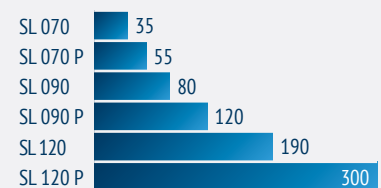
### Key features

- Designed for continuous duty & cyclic operation
- Life lubricated
- Optionally food grade oil
- Universal design that allows any mounting orientation

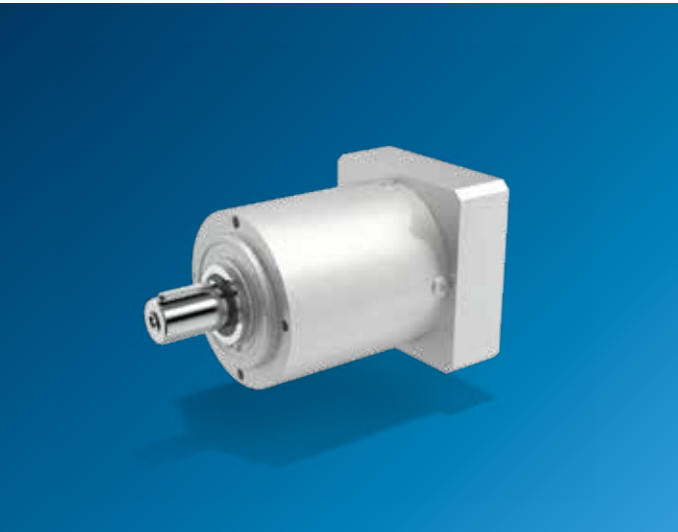
### Nominal torque (Nm)



### Acceleration torque (Nm)



# Precision planetary inline gearboxes



## LC Series

LC precision planetary gearboxes represent a flexible solution and valuable alternative with optimal performance and reliability levels. The enhanced performance option ensures important downsizing in many applications where a higher transmissible output torque was virtually impossible. Transmissible torque is now improved by up to 40%.

### Gear ratios

- 1 stage: 3 ... 10
- 2 stages: 16 ... 100

### Degree of protection

- IP64

### Backlash

- 1 stage: less than 6 arcmin
- 2 stages: less than 8 arcmin

### Max radial force

- 500 ... 6,000 N

### Input speed

- Up to 6,000 min<sup>-1</sup>

### Key features

- Designed for continuous duty & cyclic operation
- Life lubricated
- Optionally food grade oil
- Universal design that allows any mounting orientation

### Nominal torque (Nm)



### Acceleration torque (Nm)



# Precision planetary right angle gearboxes

(E)



## LCK Series

LCK precision planetary right angle gearboxes represent a flexible solution and valuable alternative with optimal performance and reliability levels. Right-angle layout is the solution to space issues often posed by increasingly compact machines. The enhanced performance option ensures important downsizing in many applications where a higher transmissible output torque was virtually impossible. Transmissible torque is now improved by up to 40%.

### Gear ratios

- 2 stage: 6 ... 20
- 3 stages: 24 ... 100

### Degree of protection

- IP64

### Backlash

- 2 stages: less than 6 arcmin
- 3 stages: less than 8 arcmin

### Max radial force

- 500 ... 6,000 N

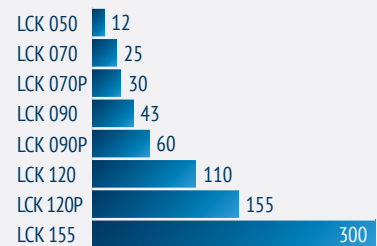
### Input speed

- Up to 5,000 min<sup>-1</sup>

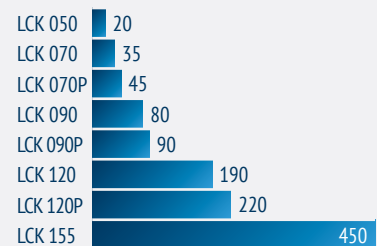
### Key features

- Designed for continuous duty & cyclic operation
- Life lubricated
- Optionally food grade oil
- Universal design that allows any mounting orientation

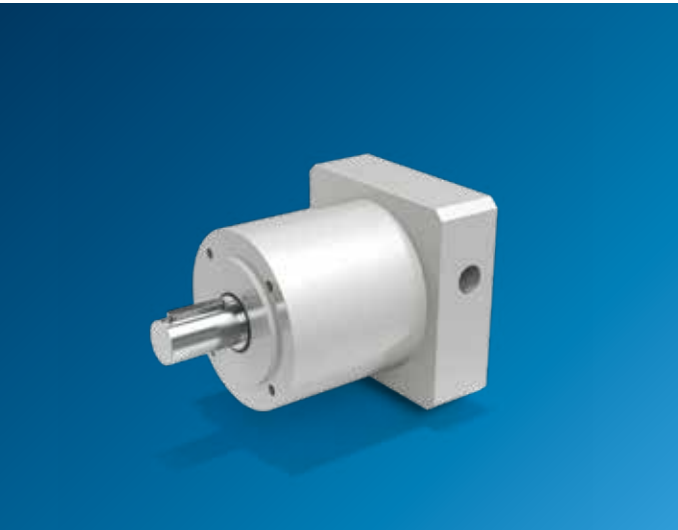
### Nominal torque (Nm)



### Acceleration torque (Nm)



# Precision planetary inline gearboxes



## MPE Series

The MPE series offers cost-effective solutions for applications that require medium levels of positioning accuracy. It offers high flexibility in terms of sizes, ratios and mounting configurations for a variety of applications requirements. The output design in line with market standards ensures great compatibility for easy retrofits and a high level of freedom in projects development.

### Gear ratios

- 1 stage: 3 ... 10
- 2 stages: 9 ... 100

### Degree of protection

- IP54

### Backlash

- 1 stage: less than 5 arcmin
- 2 stages: less than 7 arcmin

### Max radial force

- 220 ... 2,000 N

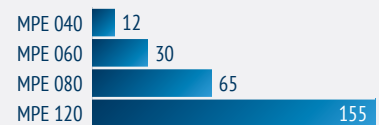
### Input speed

- Up to 6,000 min<sup>-1</sup>

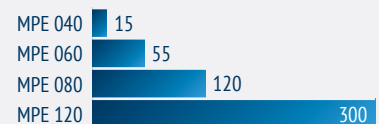
### Key features

- High compatibility for easy retrofits
- Suitable for a variety of applications thanks to great flexibility

### Nominal torque (Nm)



### Acceleration torque (Nm)



# Precision planetary right angle gearboxes

(E)



## MPEK Series

The MPEK Series offers medium levels of performance and position accuracy at a competitive value-price ratio. The output design in line with market standards ensures great compatibility for easy retrofits and a high level of freedom in projects development. Its right angle-design allows more compact layouts for space-saving.

### Gear ratios

- 2 stages: 3 ... 10
- 3 stages: 9 ... 100

### Degree of protection

- IP54

### Backlash

- 2 stages: less than 7 arcmin
- 3 stages: less than 9 arcmin

### Max radial force

- 220 ... 2,000 N

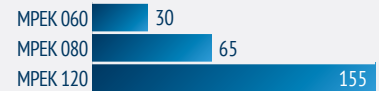
### Input speed

- Up to 6,000 min<sup>-1</sup>

### Key features

- High compatibility for easy retrofits
- Suitable for a variety of applications thanks to great flexibility
- Compact design for space-saving

### Nominal torque (Nm)



### Acceleration torque (Nm)





# Precision planetary right angle gearboxes



## KR Series

This flexible, cost-effective series represents an alternative for applications that demand compactness and medium precision at a very competitive price. This series is very versatile and offers multiple configurations: solid/hollow shaft; single/double shaft extension; shrink disk version; flange option, etc.

### Gear ratios

- 1 stage: ratio 1; 2; 5

### Degree of protection

- IP65

### Standard backlash

- 1 stage: less than 8 arcmin

### Max radial force

- 500 ... 5,500 N

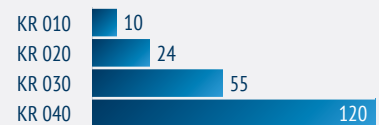
### Input speed

- Up to 5,000 min<sup>-1</sup>

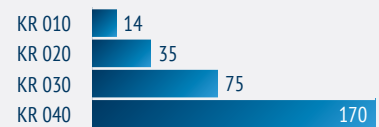
### Key features

- Designed for continuous duty & cyclic operation
- Life lubricated
- Option for food grade oil
- Quiet operation

### Nominal torque (Nm)

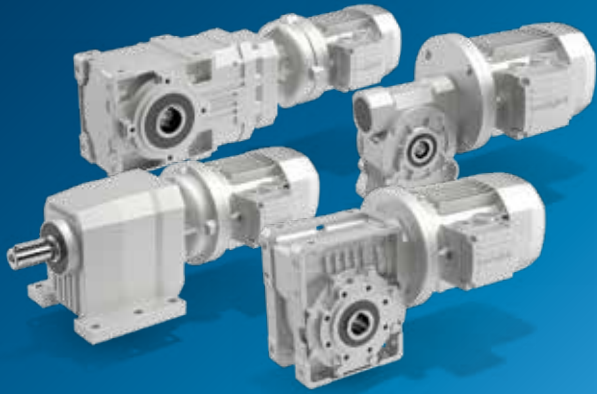


### Acceleration torque (Nm)



# Industrial Gearmotors





For over 60 years, we've been supporting our customers with solutions that perfectly match any industrial applications requirement. Bonfiglioli industrial gearmotors combine high efficiency, reliability, low maintenance costs and the widest torque range available on the market.

HELICAL BEVEL  
GEARMOTORS & GEAR UNITS

## A Series

### Torque range

- 100 ... 14,000 Nm

### Gear ratios

- 4.9 ... 1,715

### Mechanical rating

- 0.22 ... 150 kW

IN-LINE GEARMOTORS  
& GEAR UNITS

## C Series

### Torque range

- 45 ... 12,000 Nm

### Gear ratios

- 2.6 ... 1,481

### Mechanical rating

- 0.09 ... 213 kW

HELICAL PARALLEL-SHAFT  
GEARMOTORS & GEAR UNITS

## F Series

### Torque range

- 140 ... 14,000 Nm

### Gear ratios

- 6.4 ... 2,099

### Mechanical rating

- 0.09 ... 123 kW

UNIVERSAL WORM  
GEARMOTORS & GEAR UNITS

## VF/W Series

### Torque range

- 13 ... 7,100 Nm

### Gear ratios

- 7 - 300 ... 2,300

### Mechanical rating

- 0.04 ... 75 kW

INDUSTRIAL PLANETARY  
GEARMOTORS & GEAR UNITS

## 300M Series

### Torque range

- 1,250 ... 1,286,000 Nm

### Gear ratios

- 3.4 ... 2,916

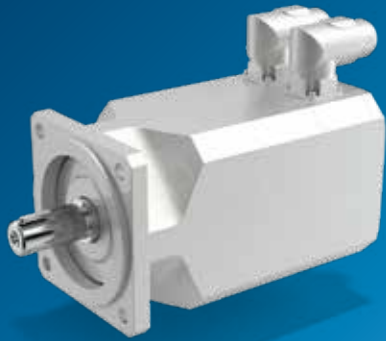
### Mechanical rating

- up to 1,050 kW

**Permanent Magnet  
Synchronous  
& Synchronous  
Reluctance Motors**



# Synchronous servomotor



## BMD Series

BMD servomotors are permanent magnet synchronous motors with highly compact dimensions and low inertia. They meet the most stringent demands for precision, dynamics and speed settings thanks to their high-quality neodymium iron boron rare-earth magnets and our excellent design. The motors are equipped with the latest encoder technology and are optimized for operation with frequency inverters and precision planetary gearboxes, offering an excellent synergy. More modularity is given by the many available options.

### Power supply

- 230, 400 Vac

### Rated speed

- 1600, 3000, 4500, 5500, 6000 rpm

### Feedback

- 2-pole resolver 8kHz & 10 kHz
- Optical absolute single & multi turn EnDat encoder
- Optical single & multi-turn Hiperface encoder
- Capacitive absolute single and multi-turn Hiperface encoder

### Temperature sensor

- PTC
- KTY 84-130
- PT1000

### Degree of protection

- IP65
- IP67 (optional)

### Inertia

- 0. 2 ... 47 (kgm<sup>2</sup> x 10<sup>-4</sup>)

### Holding brake (optional)

- 24 Vdc

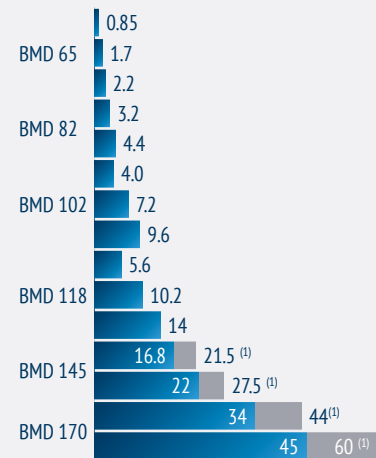
### Additional flywheel (optional)

- 0. 5 ... 70 (Kgm<sup>2</sup> x 10<sup>-4</sup>)

### Forced ventilation (optional)

- 24 Vdc
- 230 Vac

## Torque (Nm)



(1) Motor with forced ventilation option

# Synchronous servomotor



## BCR Series

BCR high-performance servomotors are designed to satisfy the needs of continuous and transient high torque applications. A wide torque range and above-average instantaneous overload ratings make BCR servomotors robust enough for even the most demanding drive applications. Equipped with IP65 push-pull connectors (IP67 connectors are optional), in conformity with EMC requirements, and with a PTC temperature probe with reinforced insulation, these motors guarantee secure electrical connection under all ambient operating conditions.

### Power supply

- 230, 400 Vac

### Rated speed

- 2000, 3000, 4500 rpm (depending on selected torque)

### Sizes

- 7 flange sizes

### Feedback

- Resolver (default)
- Optional Hiperface encoder (single- or multi-turn)

### Temperature sensor

- PTC included

### Degree of protection

- IP65
- IP67 (optional)

### Inertia

- 0.06 ...190 (kgm<sup>2</sup> x 10<sup>-4</sup>)

### DC brake (optional)

- 24 Vdc

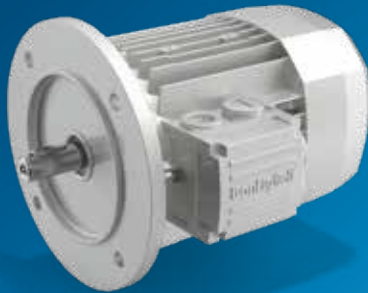
### Key features

- High torque range
- Small inertia
- Resolver onboard by default

### Torque (Nm)

BCR2 0020	0.2
BCR2 0040	0.4
BCR2 0060	0.6
BCR2 0080	0.8
BCR3 0065	0.65
BCR3 0130	1.3
BCR3 0250	2.5
BCR4 0100	1.0
BCR4 0260	2.6
BCR4 0530	5.3
BCR4 0750	7.5
BCR5 0660	6.6
BCR5 1050	10.5
BCR5 1350	13.5
BCR5 1700	17.0
BCR5 2200	22.0
BCR6 1350	13.5
BCR6 1900	19.0
BCR6 2200	22.0
BCR6 2900	29.0
BCR7 2700	27.0
BCR7 3200	32.0
BCR7 4000	40.0
BCR8 0400	40.0
BCR8 0680	68.0
BCR8 0930	93.0
BCR8 1150	115.0

# Synchronous reluctance motors



## BSR Series

The synchronous reluctance motor guarantees a sustainable energy-saving solution that decreases the overall environmental impact, thanks to the absence of magnets and increased efficiency. Reduced operating costs allow a fast return on investment. This product benefits from the proven simplicity and reliability of induction motors and the higher efficiency of synchronous motors.

### Sizes

- High efficiency package  
71C ... 132 MB
- High output package  
71C ... 132 MA

### Rated motor power

- High efficiency package  
0.37 ... 9.2 kW
- High output package  
0.55 ... 18.5 kW

### Power supply

- 400 Vac

### Degree of protection

- Standard IP55
- IP56 (optional)

### Motor mounting

- B3; B5; B14

### Thermal protection

- Silicon sensor KTY 84-130
- Thermistor PTC 150
- Platinum sensor PT1000

### Main options

- Anti-condensate heaters
- Power supply 1~230V
- Double extended shaft
- External mechanical protection
- Rotor balancing grade B

### Forced ventilation

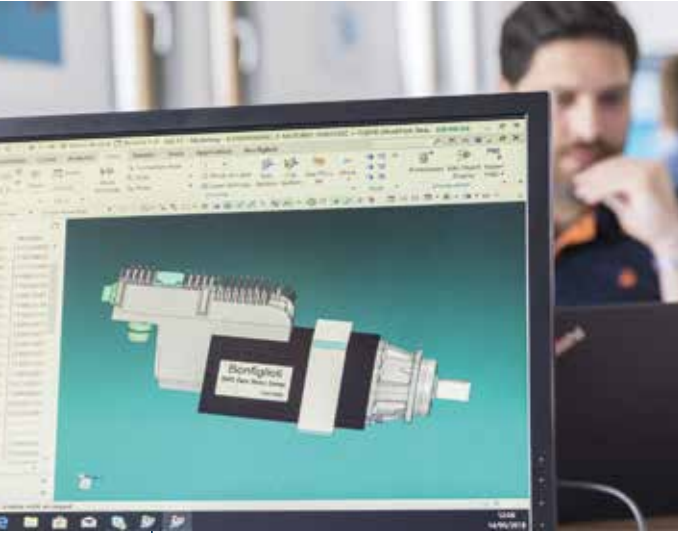
- Power supply 1 ~ 230 V (for sizes 71 to 100)
- Power supply 3 ~ 400 V (for sizes 112 to 132)

### Key benefits

- Highly accurate sensorless control technology
- Compact, economical & eco-friendly
- High dynamic response
- Energy savings
- High reliability
- High performance solution

Both Bonfiglioli packages are IES2 according to the International Efficiency of Systems (IES) classification for the drive-motor combination (IEC 61800-9-2).

# Research & Development



Bonfiglioli's global research and development create breakthrough solutions that integrate the most advanced mechanical, electrical and hydraulic technologies. They meet the most demanding application requirements and support our customers' growth.

More than 200 employees around the world are involved in the group's research and development.



DESIGN YOUR  
SOLUTIONS



CO-  
ENGINEERING

## We support our customers' projects from beginning to end.

At Bonfiglioli, we believe that product development relies on passion, efficient processes, and the ability to understand our customers' needs accurately.

First, our team identifies the customer's requirements. We perform a detailed analysis based on our specific know-how in the various fields of application.

Using dedicated simulation tools, we can select the right products to shorten the development time.

The alignment phase allows us to adapt our proposal according to key factors of performance, installation and maintenance.



### The test centers at Bonfiglioli

Bonfiglioli's test laboratories support the various phases of the product life cycle, including development, certification and the production of solutions developed and manufactured in our plants around the world.

Our specialists are true partners to the R&D, technical and quality departments. They help validate each Bonfiglioli product from the smallest critical component to the overall solution.

The test centers regularly conduct additional tests to ensure the product durability and confirm the specifications declared during the official approval stage.





# Quality, Health & Safety



Our team is wholly dedicated to continuous improvement in the quality, safety and environmental sphere, throughout the entire value chain, from the smallest supplier to the end client.

Bonfiglioli management systems are certified ISO 9001: 2015, ISO 14001: 2015 and OHSAS 18001: 2007, while our products are covered by international certifications. Responsibility, excellence and continuous improvement are the basic elements that make us the favored partner of our clients and suppliers.



SYSTEM CERTIFICATION



PRODUCTS CERTIFICATION

## Quality

Bonfiglioli is committed to achieving the highest ethical and quality standards. These standards are documented in the Bonfiglioli Quality Management System.

Our products are intended to generate value for our customers. We are committed to designing, manufacturing and supplying effective products and services that set a benchmark for quality in the industry.

Based on defined procedures and instructions, the Bonfiglioli Quality Management System has been established not only to ensure the ongoing quality of our products and processes, but also to guarantee continuous improvement.

Bonfiglioli has also implemented a Quality Policy which sets customer focus as a primary goal. The Quality Policy is used to set and deploy goals and objectives at every level of the organization. The fulfilment of these objectives is measured on a regular basis with appropriate performance indicators.



## Health & Safety: Sustainability starts with safety

Prevention of accidents and incidents is a key element of our company's sustainable strategy and an integral part of each one of our business processes. The successful management of risks is essential for protecting our employees and assets and thereby contribute therefore strengthening.



## Global Presence



Bonfiglioli is a market force with a presence spanning 22 countries on 5 continents. Our organization makes the most of geographic proximity to offer complete solutions combining efficiency and competence.



3780  
EMPLOYEES



20  
BRANCHES



13  
PLANTS



550  
DISTRIBUTORS



80  
COUNTRIES

## We Are a Global Company

Thanks to an international network of sales branches and closely interconnecting production plants, we can guarantee the same high standards of Bonfiglioli quality anywhere at any given time. Aware that our direct presence in local markets is the key to long-lasting success, our family includes 20 sales branches, 13 production plants and more than 500 distributors around the world.

**Our organization is always close by, offering complete and efficient solutions and supporting our customers with dedicated services, such as co-engineering or after-sales assistance.**



# Bonfiglioli Worldwide Locations

## Australia

### **Bonfiglioli Transmission (Aust.) Pty Ltd.**

2, Cox Place Glendenning NSW 2761  
Locked Bag 1000 Plumpton NSW 2761  
Tel. +61 2 8811 8000

## Brazil

### **Bonfiglioli Redutores do Brasil Ltda.**

Travessa Cláudio Armando 171 - Bloco 3 - CEP 09861-730  
Bairro Assunção - São Bernardo do Campo - São Paulo  
Tel. +55 11 4344 2322

## China

### **Bonfiglioli Drives (Shanghai) Co. Ltd.**

#68, Hui-Lian Road, QingPu District,  
201707 Shanghai  
Tel. +86 21 6700 2000

## France

### **Bonfiglioli Transmission s.a.**

14 Rue Eugène Pottier  
Zone Industrielle de Moimont II - 95670 Marly la Ville  
Tel. +33 1 34474510

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### **Bonfiglioli Deutschland GmbH**

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Tel. +49 0 2131 2988 0

### **Bonfiglioli Vectron GmbH**

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Tel. +49 0 2151 8396 0

### **O&K Antriebstechnik GmbH**

Ruhrallee 8-12 - 45525 Hattingen  
Tel. +49 0 2324 2050 1

## India

### **Bonfiglioli Transmissions Pvt. Ltd.**

#### **Mobile, Wind**

AC 7 - AC 11 Sidco Industrial Estate  
Thirumudivakkam Chennai - 600 044  
Tel. +91 844 844 8649

#### **Industrial**

Survey No. 528/1, Perambakkam High Road Mannur Village,  
Sriperumbudur Taluk Chennai - 602 105  
Tel. +91 844 844 8649

#### **Industrial**

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Tel. +39 0464 443435/36

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Johannesburg, 2090 South Africa  
Tel. +27 11 608 2030

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### **Tecnotrans Bonfiglioli, S.A.**

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08040 Barcelona  
Tel. +34 93 447 84 00

## Turkey

### **Bonfiglioli Turkey Jsc**

Atatürk Organize Sanayi Bölgesi, 10007 Sk. No. 30  
Atatürk Organize Sanayi Bölgesi, 35620 Çiğli - Izmir  
Tel. +90 0 232 328 22 77

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Warrington, Cheshire - WA2 8UD  
Tel. +44 1925 852667

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### **Bonfiglioli USA Inc.**

3541 Hargrave Drive  
Hebron, Kentucky 41048  
Tel. +1 859 334 3333

## Vietnam

### **Bonfiglioli Vietnam Ltd.**

Lot C-9D-CN My Phuoc Industrial Park 3  
Ben Cat - Binh Duong Province  
Tel. +84 650 3577411



We have a relentless commitment to excellence, innovation and sustainability. Our team creates, distributes and services world-class power transmission and drive solutions to keep the world in motion.

#### **HEADQUARTERS**

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40012 Lippo di Calderara di Reno  
Bologna (Italy) [www.bonfiglioli.com](http://www.bonfiglioli.com)

