

WHY BONFIGLIOLI MECHATRONIC?



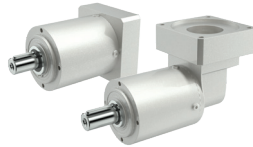
COMPANY HIGHLIGHTS

- Over 60 years of experience in the power transmission and control industry
- \$1 billion company with worldwide production, distribution, sales and service
- Family owned and operated since 1956
- One of the widest product ranges in the marketplace to provide solutions for most applications
- Over 1 million gearboxes and gearmotors manufactured per year
- 1 in 3 wind turbines worldwide has a Bonfiglioli gearbox
- Headquartered in Bologna Italy, Bonfiglioli has 21 branches in 15 countries and 14 production plants
- Investments of 60M€ in new production technologies and infrastructures

PRODUCT DETAILS

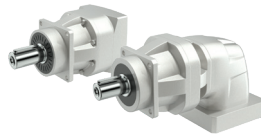
LC/LCK - PRECISION GEARHEADS

- Market drop-in design
- Lubricated for life
- High efficiency
- Low backlash & high torsional stiffness



TQ/TQK - PRECISION GEARHEADS

- Market drop-in design
- Lubricated for life
- High efficiency
- Low backlash & high torsional stiffness



TQF - PRECISION GEARHEADS

- Market drop-in design
- Lubricated for life
- High efficiency
- Low backlash & high torsional stiffness



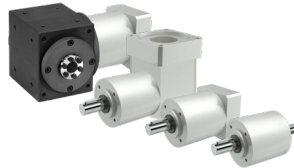
SL - PRECISION GEARHEADS

- Market drop-in design
- Lubricated for life
- High efficiency
- Low backlash & high torsional stiffness



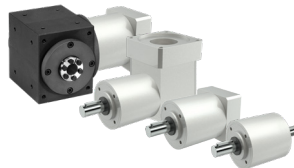
MP - PRECISION GEARHEADS

- Lubricated for life
- High efficiency
- Low backlash & high torsional stiffness
- Unique 3-stage up to 100:1 ratio



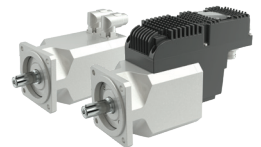
TR - PRECISION GEARHEADS

- Lubricated for life
- High efficiency
- Low backlash & high torsional stiffness
- Unique 3-stage up to 100:1 ratio



BMD - PMAC SERVO MOTORS

- Torque rating up to 530 in-lbs.
- Low inertia
- Compact design with high torque
- Concentrated winding



S2U - NEMA 4X VFD

- IP66 enclosure wash down duty
- 230V 1PH, 480V 3PH
- Internal PLC in Ladder
- Built-in locktag switch
- PID controller-pressure, volume flow or speed control



ANG - MOTION SERVO DRIVES

- 2K Hz control frequency
- Compatible with all Ethernet protocols
- Internal programmable PLC and oscilloscope



ACU - POSITIONING SERVO DRIVES

- Auto sequencing motion table
- Compatible with all Ethernet protocols
- Internal programmable PLC and oscilloscope



AGL - SENSORLESS VECTOR VFD

- Automatic flux reduction energy saving
- Compatible with all Ethernet protocols
- Internal programmable PLC and oscilloscope
- SD card slot for parameter management
- PID controller-pressure, volume flow or speed control



BMI - HUMAN MACHINE INTERFACE

- SD card slot for parameter management
- Offered in three sizes (5, 7 or 10 inches)
- Ethernet & CANOpen



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 **Bonfiglioli**
Forever Forward

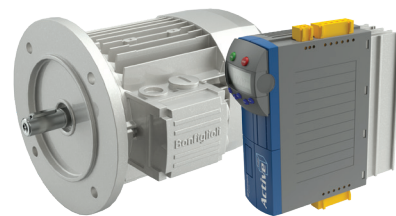
Bonfiglioli Synchronous Reluctance Motor (BSR) + Active Cube VFD (ACU)

TECHNICAL FEATURES

- IE4 & IE2 in 6 Sizes (71, 80, 90, 100, 112, 132)
- 4-Pole Design
- Power at 1500min-1 0.37 ... 11 kW
- Power at 3000min-1 1.1 ... 18.5 kW
- Rating: IE4 High Efficiency or IE2 High Output
- Overall Dimensions as Induction Motor Series
- Brake Motors Available as a Second Step

BENEFITS

- No Magnets
- Lower Rotor Losses
- Lower Heat Dissipation
- No Induced Current
- Longer Bearings Lifetime
- Higher Power Density (20%-100%)



PRODUCT SPECIFICATIONS

SERVO MOTION DRIVES



Active Next Generation
Designed for Motion Control

Power Range

ANG 410: 0.25...400 kW
ANG 210: 0.25...9.2 kW

Overload Capacity

150% for 60 s; 200% for 1 s

Functionalities

Cubic Interpolation, Fast Control Loop,
Two Position Sensor Inputs

iBMD

Servomotors with Integrated Drive

Torque Range

2.7 ... 36 Nm

DC Voltage

560 V

Absolute Encoders

Single and Multi turn

Communication Interface

CANopen, EtherCAT

I/Os on Board Configurable

ST-IEC61131 Programming

STO Function

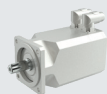
CE Declaration

Driver Codesys Available

DC Power Supply

20 A, 40 A

PMAC SERVO MOTORS



BMD

Servomotors

Stall Torque

0.85 ... 60 Nm

Rated Speed

1600; 3000; 4500; 5500; 6000 min⁻¹

Power Supply

230, 400 Vac

Low Inertia Motors

Inertia Flywheel Option

Main Options

Servoventilation for size BMD 145 & 170

BSR

Synchronous Reluctance Motors

IE4 Efficiency and High Power Density Package

Power Range

0.37 ... 18.5 kW

Frame Size

71 ... 132

Voltage

400 V

IP Degree

55



VARIABLE FREQUENCY DRIVES (VFD)

Positioning Servo Drive

Active Cube
High Positioning & Speed Control

Power Range

ACU 410: 0.25 ... 400 kW
(1200 kW in parallel connection)

ACU 210: 0.25 ... 9.2 kW

IP 54 Available

Overload Capacity

150% for 60 s; 200% for 1 s

PLC Functions

Premium Drive

Active
Powerful Drive

Power Range

ACT 410: 0.55 ... 132 kW

ACT 210: 0.55 ... 9.2 kW

Overload Capacity

150% for 60 s; 200% for 1 s

Sensorless Vector VFD

Agile
Smart Sensorless Drive

Power Range

AGL 402: 0.25 ... 11 kW

AGL 202: 0.12 ... 3 kW / 0.25 ... 7.5 kW

Overload Capacity

150% for 60 s; 200% for 1 s

PLC Functions, Standby Mode, Energy Saving Function, Predictive Maintenance

NEMA 4X VFD

S2U IP66

Plug & Play VFD

Power Range

0.4 ... 18.5 kW

Overload Capacity

150% for 60 seconds

Switching Frequency

up to 16 kHz

Communication Modules

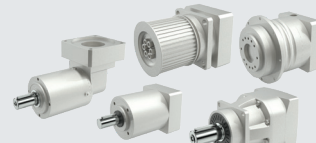
Modbus RTU on-board

Optional Communication Modules

PROFIBUS-DPV1, CANopen, RS232, RS485, DeviceNet, EtherCAT®, PROFINET, VABus/TCP*, Modbus TCP*, EtherNet I/P

* Optional 2 ports

PRECISION SERVO GEARHEADS



TQ & TQK

Precision Servo Gearheads

In-line & right angle

Nominal Torque Range

30...800 Nm

Acceleration Torque

45 ... 1200 Nm

Transmission Ratio

3...100

Backlash TQ [arcmin]

Type	1 stage	2 stages
Standard	4'	6'
Reduced	2'	4'

Backlash TQK [arcmin]

Type	1 stage	2 stages
Standard	6'	8'
Reduced	5'	7'

MP

Precision Servo Gearheads

In-line & right angle (input bevel stage "G" / output bevel stage "MB")

Nominal Torque Range

20...1000 Nm

Acceleration Torque

30 ... 1200 Nm

Transmission Ratio

3...100

Backlash [arcmin]

Type	1 stage	2 stages	3 stages
Standard	15'	15'	17'
Reduced	10'	10'	12'

LC / LC (P) & LCK / LCK (P)

Precision Servo Gearheads

In-line & right angle

Nominal Torque Range

12...450 Nm

Acceleration Torque

20 ... 700 Nm

Transmission Ratio

LC: 3...100

LCK: 6...100

Backlash LC [arcmin]

Type	1 stage	2 stages
Standard	12'	15'
Reduced	6'	8'

Backlash LCK [arcmin]

Type	1 stage	2 stages
Standard	6'	8'

TQF

Precision Servo Gearheads

In-line

Nominal Torque Range

30...800 Nm

Acceleration Torque

45 ... 1200 Nm

Transmission Ratio

4...100

Backlash [arcmin]

Type	1 stage	2 stages
Standard	5'	7'
Reduced	3'	5'

TR

Precision Servo Gearheads

In-line & right angle (input bevel stage "G" / output bevel stage "MB")

Nominal Torque Range

30...1000 Nm

Acceleration Torque

30 ... 1200 Nm

Transmission Ratio

3...1000

Backlash [arcmin]

Type	1 stage	2 stages	3 stages
Standard	5'	5'	7'
Reduced	3'	3'	5'

SL / SL (P)

Precision Servo Gearheads

In-line

Nominal Torque Range

25...110 Nm

Acceleration Torque

35 ... 190 Nm

Transmission Ratio

3...100

Backlash [arcmin]

Type	1 stage	2 stages
Standard	12'	15'
Reduced	6'	8'

KR

Precision Servo Gearheads

Nominal Torque Range

3 ... 120 Nm

Acceleration Torque

14 ... 170 Nm

Transmission Ratios

i = 1, 2, 5

Backlash [arcmin]

Standard: 8