dunkermotoren

Brushless DC Motors

Series BG

ALCATEL

Brushless D.C. Motors

Series BG

Contents

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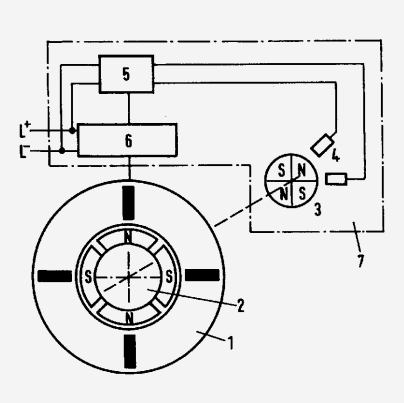
Brushless D.C.Motors

Series BG



Basic Design of a Brushless D.C.Motor

1 Multi-phase stator winding
2 Exciter system
3 Position indicator
4 Hall sensors
5 Decoder and driver stage
6 Switching transistors
7 Electronic commutator

General

In the past few years, more complex and higher demands on the part of the industrial user plus new developments in the fields of electronics and magnet technology have led to broad-based developments aimed at uniting the durability and low-noise level of asynchronous motors with the hitherto unparalleled properties of commutator D.C.motors in a brushless drive concept.

Today, an increasing number of manufacturers already supply such brushless drives, characterised above all by good dynamic values, uniform torque, and a high degree of reliability.

These small-case drives with permanent-magnet rotors and electronic commutation have become known under a variety of names:

Brushless D.C.Motors

Electronic Motors

D.C.Motors with electronic commutation.

A Dynamic Move towards Peak Performance

Dunkermotoren now offers a new generation of brushless D.C.motors with power levels ranging up to 300 W.

The concept combines the advantages of asynchronous A.C.motors with those of permanent-magnet D.C.motors:

- Long service life.
- Maintenance-free.
- High degree of efficiency.
- Optimum speed-torque curve.
- High dynamics.
- High-precision control.

Their compact design and high performance make them particularly suitable for industrial applications such as

– Office and data technology.
– General machine and plant manufacture.
– Pumps, compressors, and agitators.
– Industrial ventilators.
– Medical technology.
– Welding technology.
– Positioning control.
– Spindle drives.

Design Features

– The motors are robust and durable.
– The bearing plates are made of bright metal die-cast zinc.
– Motor mounting dimension as per DIN 42016.
– Operating position optional; direction of rotation likewise.
– Insulation as per VDE 0530.
– Surface protection.

Winkelmaße etc (Englisch fehlt

Design

The DUNKERMOTOREN electronically-commutated D.C. motors have a fourphase electromagnetic motor winding designed as a complete coil package inserted into a quadratic stator plate with grooves.

The permanent-magnet system of the 4-pole rotor consists of radially staggered magnets (neodymium magnets BG 43, BG 63 S and BG 83 S; ferrite magnets BG 63 and BG 83) to reduce the cogging forces.

The signals transmitted from two Hall sensors and the reference signal from a sensor magnet are the basis for position identification of the rotor in relation to the rotary field to be generated.

Electronic commutation is executed by means of bipolar selection of the 4-phase-motor winding by employing 8 transistors in the output stage.

The rotor shaft is supported by ball bearings to ensure a long service life and to accommodate the radial and axial forces.

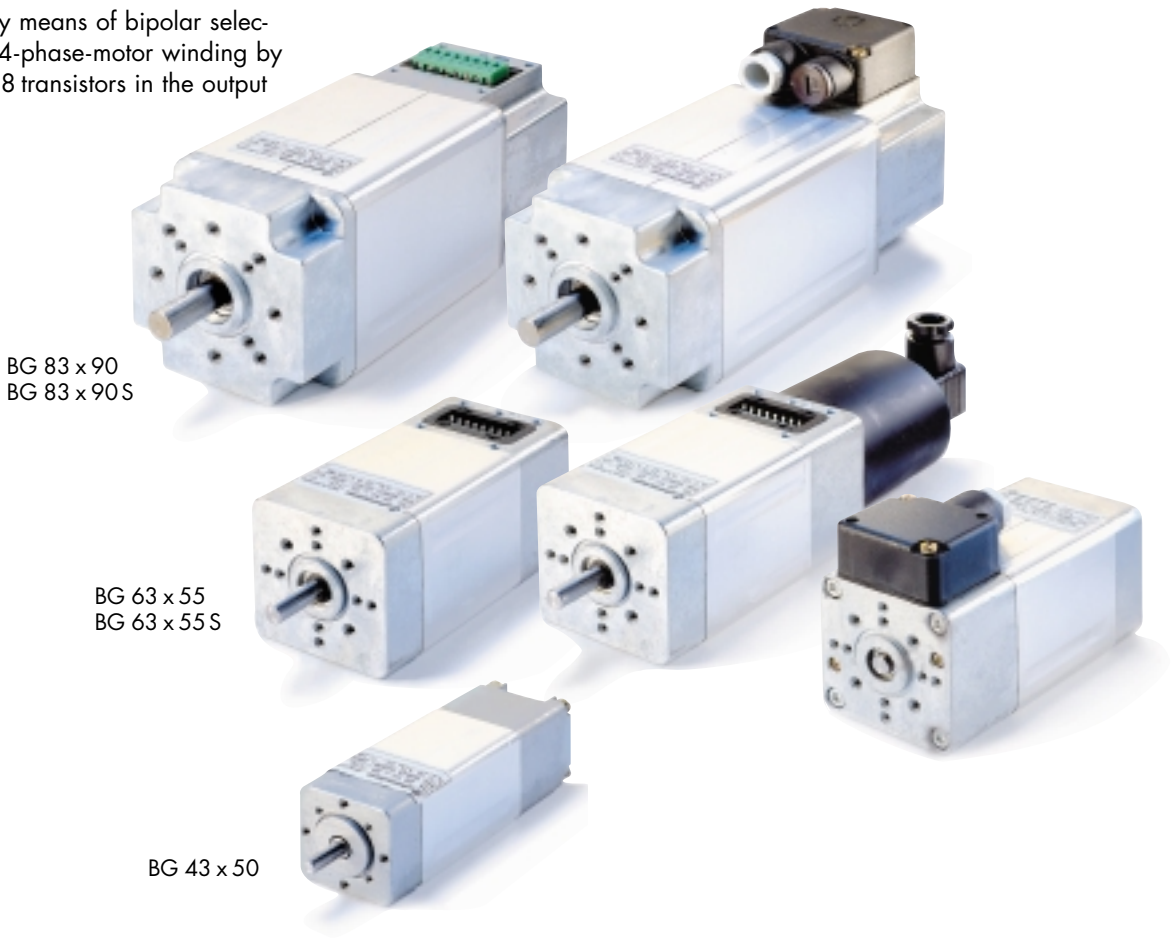
The standard-range motors are available for various nominal voltages and can be also be supplied in the following designs:

- Planetary gears or worm gears.
- Brake motor designs (braking unit).
- Digital rotary encoders ready to be mounted.
- Speed control for 1- or 4-quadrant operation.
- Design with terminal box and safety cover, protection class IP 54, possible.

The 1-quadrant electronic controller BGE 2406 A, which contains the electronic commutator and a speed regulator, is used to control the BG 43 x 50 and BG 63 x 55 series motors.

As 4-quadrant electronic controllers, the BGE 4010 A and BGE 4015 A are available.

The BGE 4010 A is above all employed to control the BG 43 x 50, BG 63 x 55 and BG 63 x 55 S series motors, whereas the BGE 4015 A is mainly used where higher power is required, for example in connection with the BG 83 x 90 and BG 83 x 90 S series motors.



BG 83 x 90
BG 83 x 90 S

BG 63 x 55
BG 63 x 55 S

BG 43 x 50

Elektronik-Gleichstrommotoren

Baureihe BG 43 x 50

Standard programme
Motors with nominal voltages 12 V and 24 V represent our standard motor programme and should be preferred.

Load characteristics
The characteristics are examples for the standard programme with the possible winding configurations of the motor type BG 43 x 50.

Designation	**BG 43 x 50**		
Nominal voltage	12	24	V
Nominal speed	2700	3300	min^{-1} 2)
Nominal torque	9,7	10	Ncm 2)
Nominal current	≤ 5	≤ 2,65	A 2)
Demagnetization current	32	16	A 1)
No-load speed	4700	4650	min^{-1} 1)
No-load current	≤ 850	≤ 510	A 1)
Starting torque	29	≥ 56	Ncm 1)
Nominal power	27,4	34,6	W 2)
Efficiency	58	58,6	% 2)
Moment of inertia	64	64	gcm^2
Weight	0,92	0,92	kg

Shaft load capacity	
Axial load	45 N max.
Radial load applied 15 mm from mounting surface	90 N max.

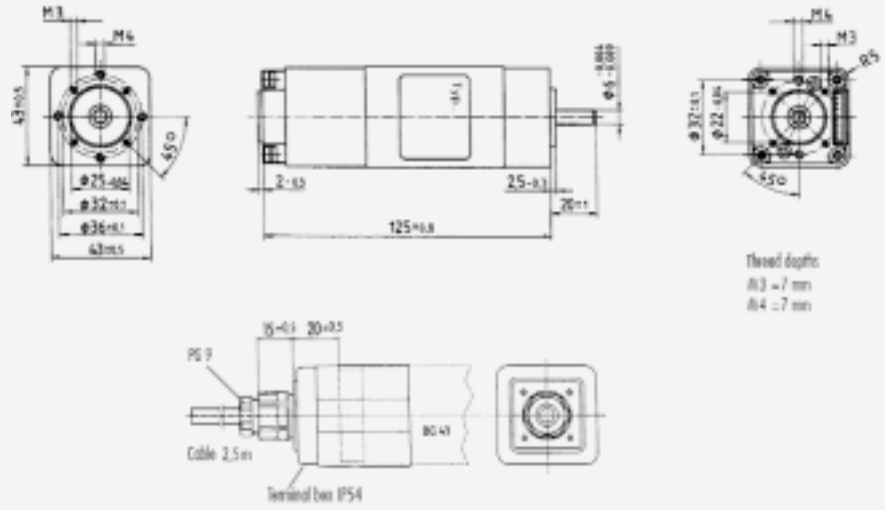
Motor plug to be provided by customer	
8-pin plug consisting of	SNR 24308 57049
Housing	EHR-8
Plug socket	SEH-001 T-P0.6
Make Option for BG 43 x 50	Firma JST & Co. Postfach 1210, D-73644 Winterbach
Safety cover	SNR 27573 32493
Protection class	IP 54

Winding configurations	BG 43 x 50
Rated voltage 12 V	39.0475
Rated voltage 24 V	77.0335

All values relate to
1) $\partial_w = \partial_R = 20\,°C$ or
2) $\Delta\partial_w = 110\,K$
and operation with the BGE 2406 A standard electronics, power consumption 100 mA, plus a 1 m long connecting cable.

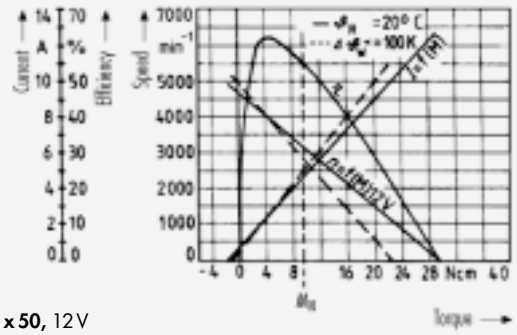
∂_w = winding temperature.
∂_R = room temperature.

Dimensional Drawing · Dimensions in mm

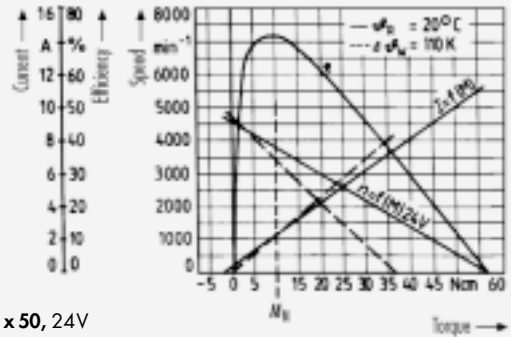


BG 43 x 50

Load characteristics



BG 43 x 50, 12 V
Winding 39.0475



BG 43 x 50, 24 V
Winding 77.0335

Brushless D.C.Motors

Series BG 63 x 55 and BG 63 x 55 S

Standard programme

Motors with nominal voltages 24 V and 40 V represent our standard motor programme and should be preferred.

Load characteristics

The characteristics are examples for the standard programme with the possible winding configurations of the motor type BG 63 x 55 and BG 63 x 55 S.

Designation	BG 63 x 55		BG 63 x 55 S	
Nominal voltage	24	40	24	V
Nominal speed	3300	3650	3200	min^{-1} 2)
Nominal torque	18	18	28	Ncm 2)
Nominal current	≤ 4,5	≤ 2,9	≤ 6,1	A 2)
Demagnetization current	32	19,8	≥ 93	A 1)
No-load speed	3950	4100	3980	min^{-1} 1)
No-load current	≤ 0,66	≤ 0,44	≤ 869	A 1)
Starting torque	≥ 110	≥ 140	≥ 170	Ncm 1)
Nominal power	62,2	68,8	93,8	W 2)
Efficiency	65	67,5	64,1	% 2)
Moment of inertia	600	600	870	gcm^2
Weight	1,95	1,95	2,0	kg

Shaft load capacity

Axial load	150 N max.
Radial load applied 20 mm from mounting surface	150 N max.

Motor plug
to be provided by customer

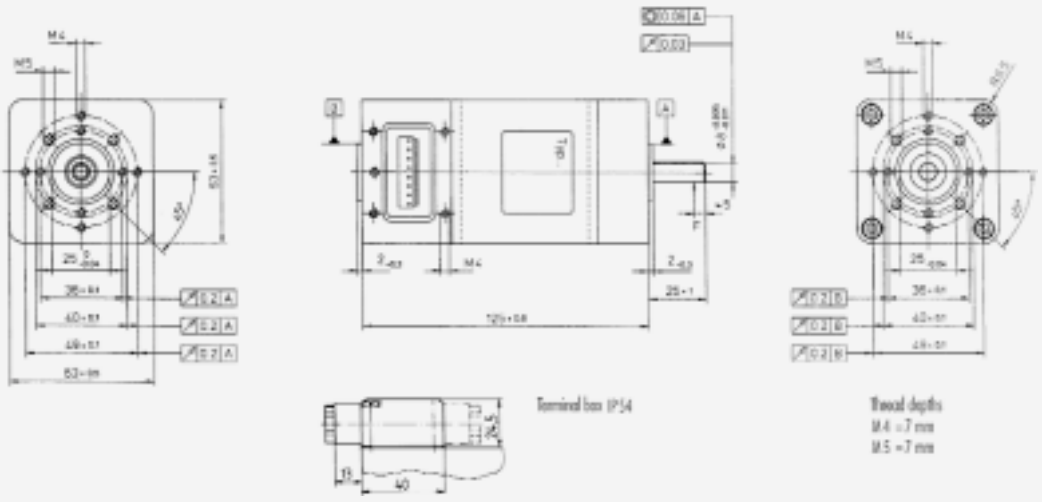
8-pin plug consisting of	SNR 24308 57048
Housing	VHR-8N
Plug socket	SVH-21 T-P1.1
Make Option for BG 63 x 55	Firma JST & Co. Postfach 1210, D-73644 Winterbach
Safety cover	SNR 27573 32491
Protection class	IP 54

Winding configurations	BG 63 x 55	BG 63 x 55 S
Rated voltage 24 V	29.045	34.425
Rated voltage 40 V	47.0335	—

All values relate to
1) $\partial_w = \partial_R = 20\,°C$ or
2) $\Delta\partial_w = 110\,K$
and operation with the BGE 2406 A standard electronics, power consumption 100 mA, plus a 1 m long connecting cable.

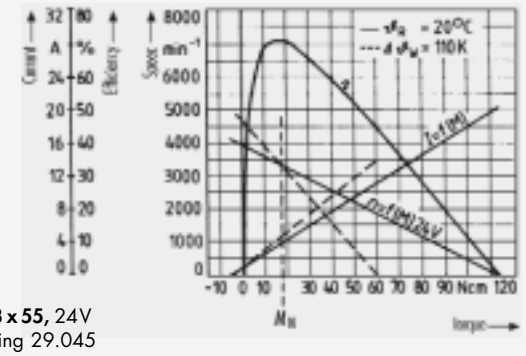
∂_w = winding temperature.
∂_R = room temperature.

Dimensional Drawing · Dimensions in mm

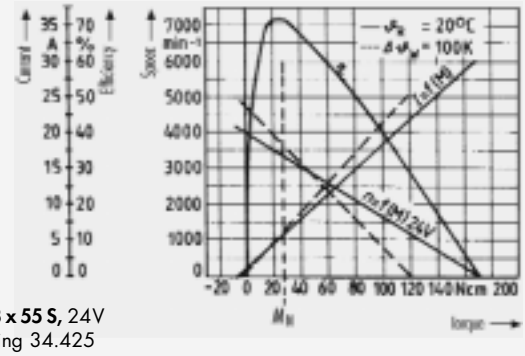


BG 63 x 55 · BG 63 x 55 S

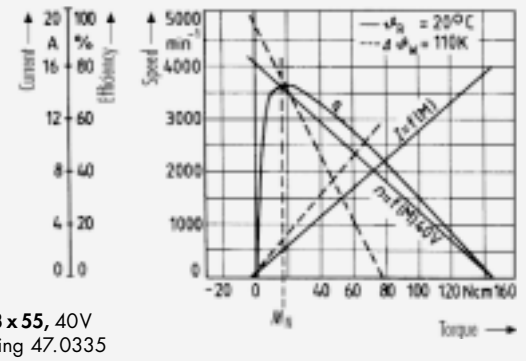
Load characteristics



BG 63 x 55, 24V
Winding 29.045



BG 63 x 55 S, 24V
Winding 34.425



BG 63 x 55, 40V
Winding 47.0335

Brushless D.C.Motors

Series BG 83 x 90 and BG 83 x 90 S

Standard programme

Motors with nominal voltages 40 V and 60 V represent our standard motor programme and should be preferred.

Load characteristics

The characteristics are examples for the standard programme with the possible winding configurations of the motor type BG 83 x 90 and BG 83 x 90 S.

Designation	BG 83 x 90		BG 83 x 90 S		
Nominal voltage	40	60	40	60	V
Nominal speed	2750	3000	2540	2700	min^{-1} 2)
Nominal torque	62	62	110	110	Ncm 2)
Nominal current	≤ 7,2	≤ 4,8	≤ 9,74	≤ 7,1	A 2)
Demagnetization current	39	27	≥ 134	≥ 97	A 1)
No-load speed	3450	3600	3170	3450	min^{-1} 1)
No-load current	≤ 0,68	≤ 0,47	≤ 1,1	≤ 0,8	A 1)
Starting torque	≥ 410	≥ 400	≥ 950	≥ 1000	Ncm 1)
Nominal power	179	195	292	311	W 2)
Efficiency	66,5	67,7	75,1	73	% 2)
Moment of inertia	2610	2610	3300	3300	gcm^2
Weight	5,15	5,15	5,35	5,35	kg

Shaft load capacity

Axial load	150 N max.
Radial load applied 15 mm from mounting surface	200 N max.

Motor plug
to be provided by customer

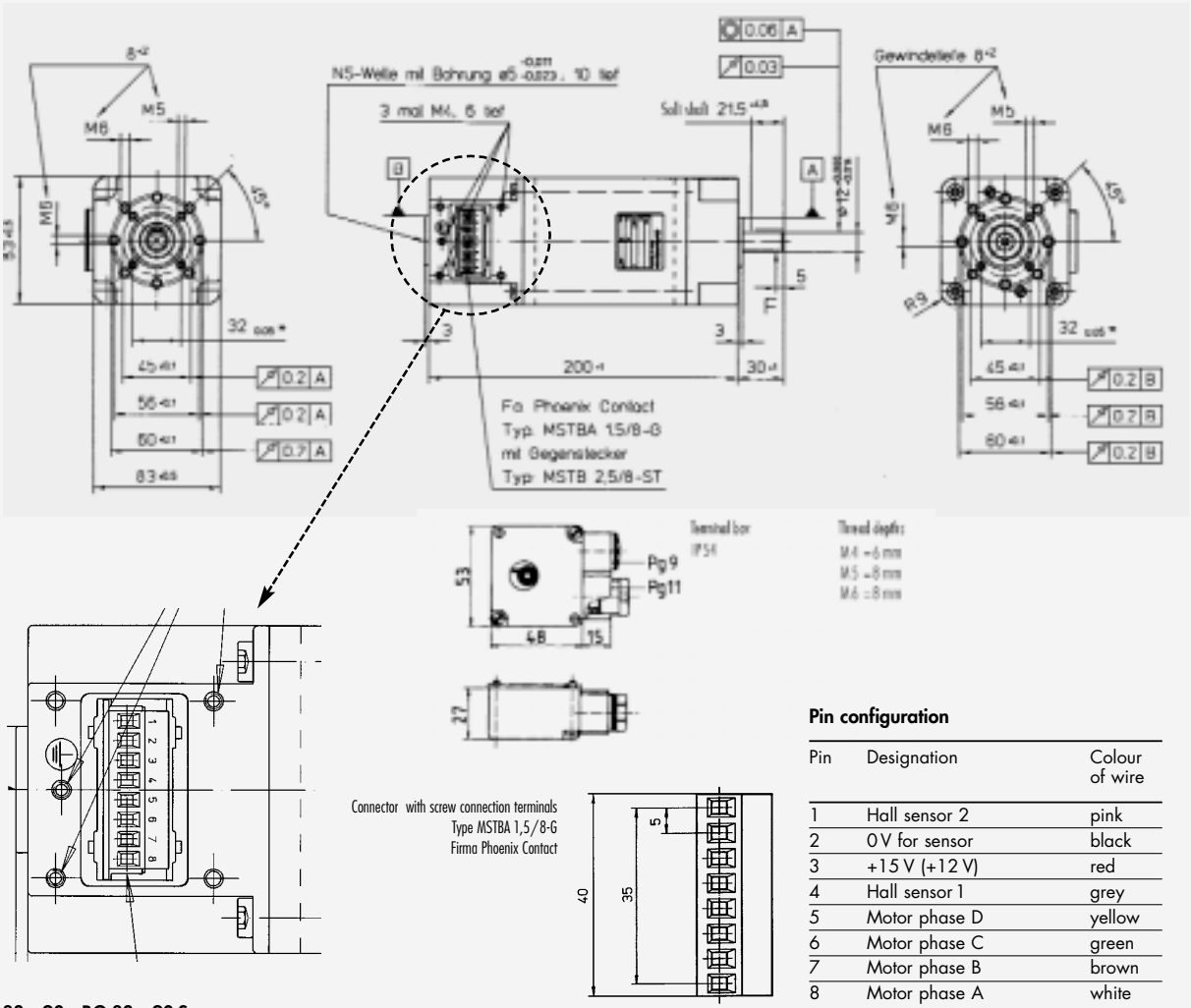
8-pin plug consisting of	SNR 24308 57048
Housing	VHR-8N
Plug socket	SVH-21 T-P1.1
Make Option for BG 63 x 55	Firma JST & Co. Postfach 1210, D-73644 Winterbach
Safety cover	SNR 27573 32492
Protection class	IP 54

Winding configurations	BG 83 x 90	BG 83 x 90 S
Rated voltage 40 V	27.0750	32.71
Rated voltage 60 V	39.0630	—

All values relate to
1) $\partial_w = \partial_R = 20\,°C$ or
2) $\Delta\partial_w = 110\,K$
and operation with the BGE 2406 A standard electronics, power consumption 100 mA, plus a 1 m long connecting cable.

∂_w = winding temperature.
∂_R = room temperature.

Dimensional Drawing · Dimensions in mm

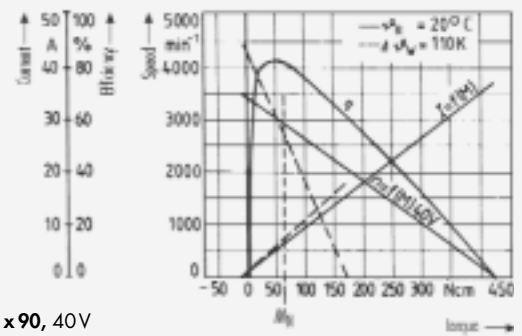


BG 83 x 90 · BG 83 x 90 S

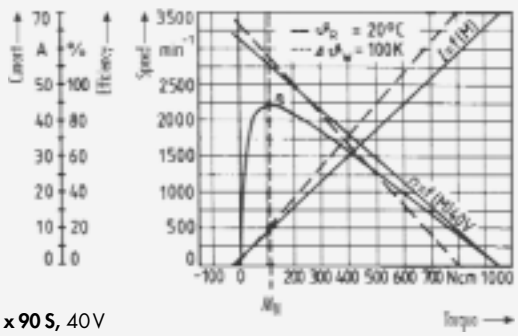
Pin configuration

Pin	Designation	Colour of wire
1	Hall sensor 2	pink
2	0 V for sensor	black
3	+15 V (+12 V)	red
4	Hall sensor 1	grey
5	Motor phase D	yellow
6	Motor phase C	green
7	Motor phase B	brown
8	Motor phase A	white

Load characteristics



BG 83 x 90, 40 V
Winding27.0750



BG 83 x 90 S, 40 V
Winding 32.71

1-Quadrant Electronic Controller BGE 2406 A

Description

The BGE 2406 A is a 1-quadrant controller designed for use with the BG 43 and BG 63 brushless motors, and contains all the control elements necessary for operation and speed control of these motors.

The user must merely provide a simple, unstabilised electrical supply.

No additional rotary encoder feedback is necessary for speed control in the range above 500 rpm.

In the case of increased dynamics and control range demands, a rotary encoder, RE 30 or RE 56, or a DC tachometer can be connected. If required, changeover switches can also be connected.

An external speed setting potentiometer or an external voltage-rate setting unit can also be used for speed control.

The BGE 2406 A is characterised by a high degree of operating safety and reliability, and is both compact (Eurocard format) and modestly priced.

These features are ensured by the modern circuitry concept and the use of powerful ICs in combination with an impulse-driven MOS-FET power output stage.

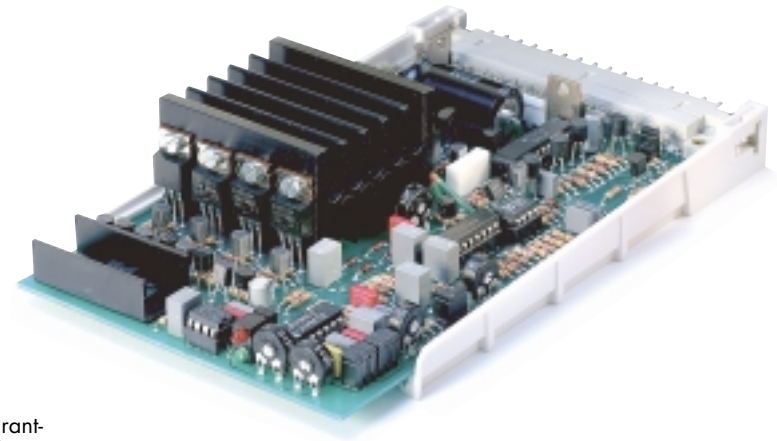
Pin configuration

8-pin plug.
8-core connecting cable.

Pin	Designation	Colour of wire
1	Hall sensor 2	pink
2	0 V for sensor	black
3	+15 V (+12 V)	red
4	Hall sensor 1	grey
5	Motor phase D	yellow
6	Motor phase C	green
7	Motor phase B	brown
8	Motor phase A	white

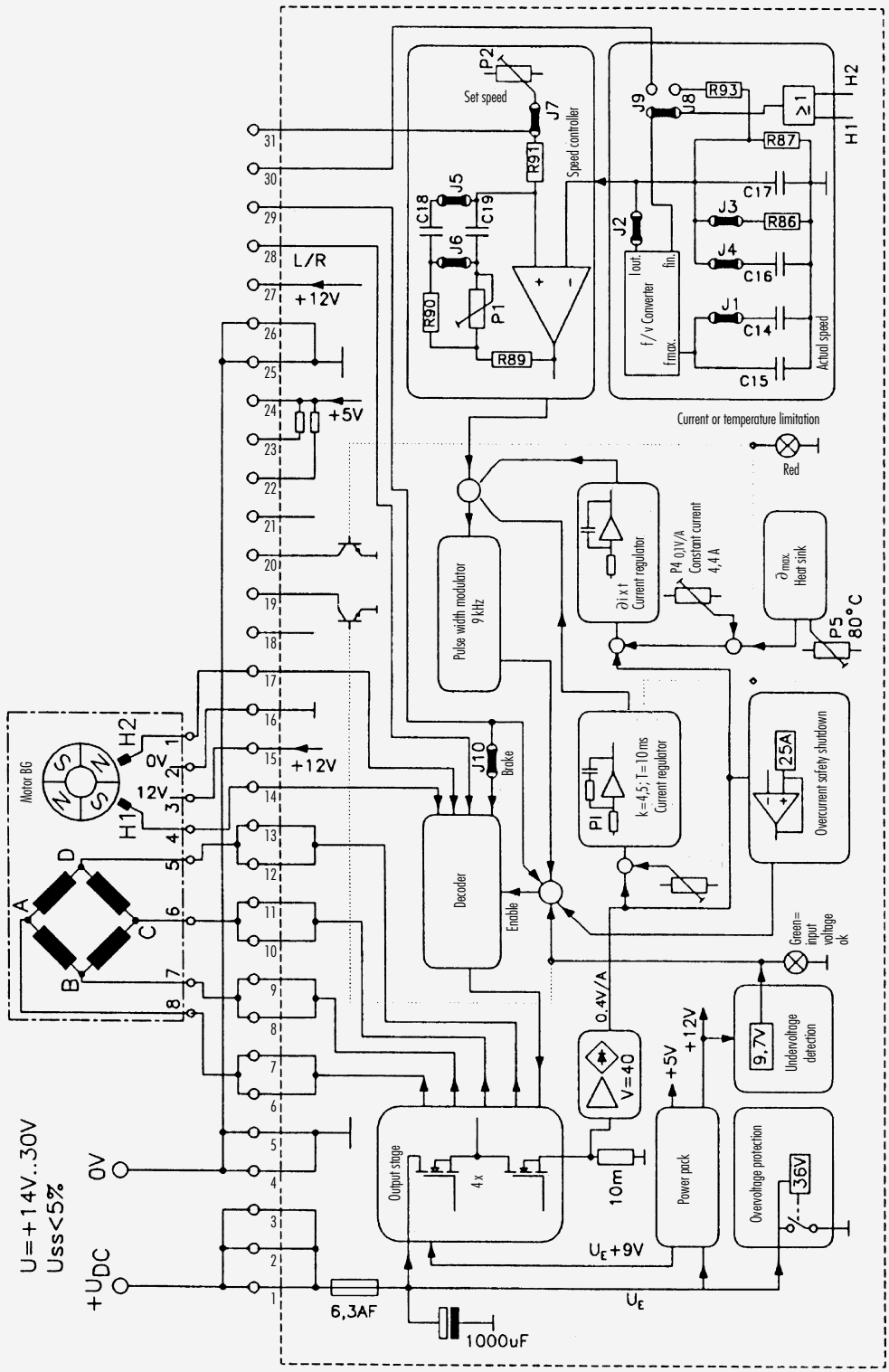
Technical specifications	**BGE 2406 A**
Operating Voltage	
Nominal voltage	24 V DC
Permissible residual ripple	≤ 5%
Minimum permissible voltage	14,5 V
Maximum permissible voltage	30 V
Undervoltage shutdown	< 10 V
Overvoltage protection	> 34 V
Current	
Unclocked rated motor current = PCB input current	5,5 A
Static current limiting BG 63 (BG 43) at constant overload	4,4 A (2,65 A)
Impulse current (maximum setting)	20 A
Excess current shutdown (fault)	> 25 A
General Technical Specifications	
Clock frequency	9,5 kHz
Efficiency	92%
Dimensions (european card)	100 x 160 x 37 mm
Connection via 31-pin plug board with soldering lugs	DIN 41617
Recommended working range without rotary encoder	500 . . . 5000 min^{-1}
Recommended working range with rotary encoder RE 30	100 . . . 5000 min^{-1}
Recommended working range with rotary encoder RE 56	75 . . . 4500 min^{-1}
Recommended working range with DC tachometer TG 52	25 . . . 4500 min^{-1}
Weight	ca. 318 g netto

All specifications relate to an ambient temperature of ϑ_R = 20 °C.
Vertical mounting position in direction of cooling ribs.
Unrestricted air circulation.



1-Quadrant-
Controller BGE 2406 A
No. 49797 57059

Block diagram BGE 2406 A



4-Quadrant Electronic Controller BGE 4010 A

Description

The BGE 4010 A is an analogue 4-Q controller designed for use with brushless DC motors, type BG 43, BG 63, BG 63 S and BG 83.
When the BGE 4010 A is used to drive the BG 83 motor, however, only a limited degree of blocking protection is available.

The regulator is constructed on a single Euro-format (100 x 160 mm) circuit card.

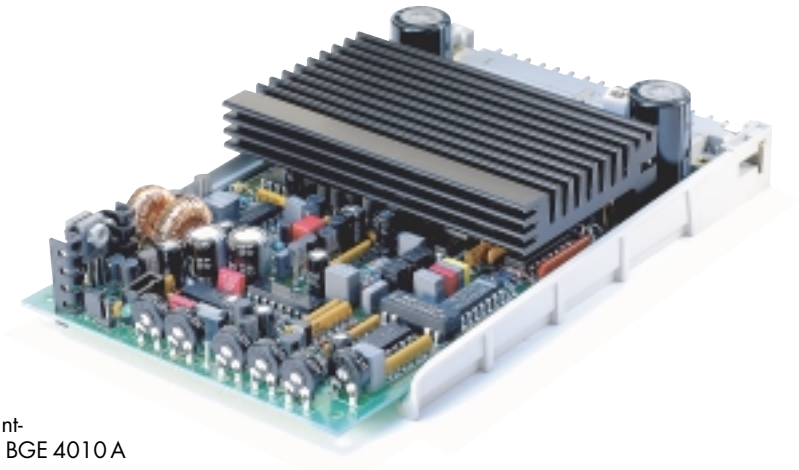
The circuitry incorporates all necessary functions to drive and regulate
the speed of a BG motor.
These include:

- Monitoring and evaluating the actual speed of the motor.
- Motor speed-setting, either on-board or via an external input connection.
- Speed regulation with parallel current regulator.
- +12 V, –12 V and +5 V power supplies for the motor Hall-effect sensors and a rotary encoder.
- Motor commutation, achieved by determining the position of the motor axle by means of the Hall-effect sensors.
- Output stages for the 4 motor windings.
- Ballast circuitry to control the braking energy.

A 31-pole DIN 41617 edge connector is provided for the power supply connections, the 4 motor windings, and for the various external signals (e.g. the Hall-effect sensors, rotary encoder, run/stop inputs, etc.).

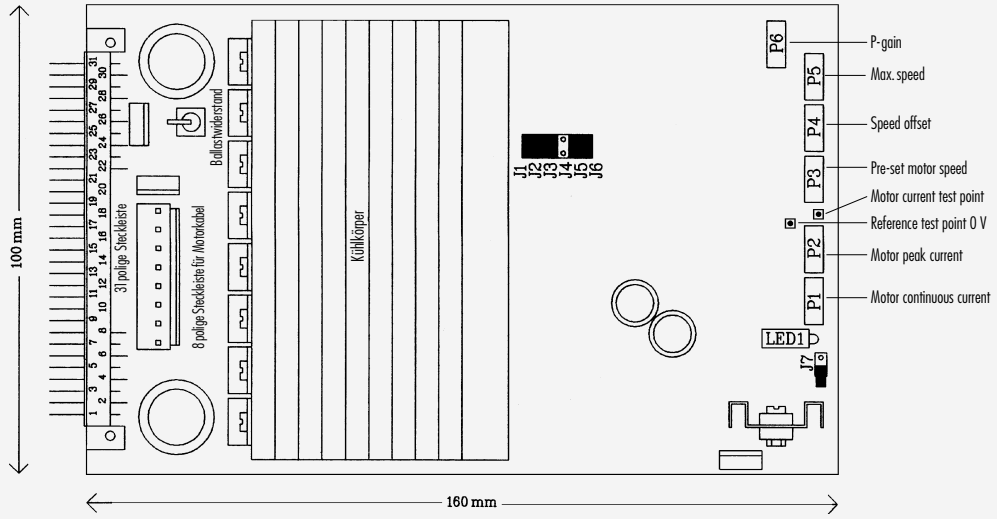
Technical specifications	**BGE 4010 A**
Operating Voltage	
Nominal voltage	24 V, 40 V DC
Permissible residual ripple	≤ 5%
Minimum permissible voltage	20 V
Maximum permissible voltage	50 V
Undervoltage shutdown	< 19 V
Overvoltage protection	> 62 V
Current	
Max. motor current with blocked motor	4 A $_{eff}$
Max. motor current with rotating rotor	8 A $_{eff}$
Impulse current (maximum setting)	25 A für t ≤ 0,5 s
Excess current shutdown (fault)	> 30 A
General Technical Specifications	
Clock frequency	ca. 16 kHz
Dimensions (european card)	100 x 160 x 30 mm
Connection via 31-pin plug board with soldering lugs	DIN 41617
Recommended working range without rotary encoder	500 . . . 5000 min^{-1}
Speed control range with rotary encoder	
Recommended working range with rotary encoder RE 30	50 . . . 5000 min^{-1}
Recommended working range with rotary encoder RE 56	25 . . . 5000 min^{-1}
Weight	ca. 410 g netto

All specifications relate to an ambient temperature of ϑ_R = 20 °C.
Vertical mounting position in direction of cooling ribs.
Unrestricted air circulation.



4-Quadrant-
Controller BGE 4010 A
No. 49797 57035

Plan view BGE 4010 A



We recommend that the regulator is installed in a standard Euro-format circuit-card holder with screw connection terminals.

The 4 motor connections, the power supply connections, and the +12 V supply for the Hall-effect sensors can also be connected by means of a separate 8-pole high-current connector.

– The individual modes of operation can be pre-set by means of 7 jumper connections (J1-J7) before the regulator is commissioned.
– The operating parameters can either be pre-set by 6 potentiometers (P1-P6), or via external connections.
– The BGE 4010 A can be supplied from a simple, unregulated DC power supply (20 V-50 V) with a residual ripple of ≤5%.
– A simple speed controller (limited speed range, limited dynamics, a relatively large amount of overshoot with sudden changes in set speed) can be constructed simply by using the Hall-effect sensors without an external rotary encoder.
– Where increased control of the speed range, dynamics and overshoot characteristics are required, it is possible to fit and connect a 2-channel rotary encoder (e.g. RE 30 / 500 impulses).

Main Characteristics

The BGE 4010 A is characterised by simple operation and an excellent price-to-performance ratio.

A high degree of operating safety and integrity is ensured by the following features:

- High threshold voltages (approx. 1.4 V) for the rotary encoder inputs, ensuring a large degree of protection against external interference.
- When the regulator is inhibited, the P and I components of the control circuitry are deactivated, thus ensuring that the regulator will restart under stable conditions.
- The maximum motor continuous current and the maximum motor peak current are individually adjustable. By limiting the continuous motor current to approximately 5 A, the BGE 4010 A is protected against overload when the motor shaft is blocked.
- A potentiometer is no longer used to adjust the ballast circuitry. Two possible supply voltage ranges can be selected, either above or below 30 V by fitting or removing jumper J7.
- The output-stage heat sink (see Fig.1) temperature is limited to approx. 85°C by means of a temperature sensor. The +12V, –12V and +5V power supplies in the BGE 4010A are protected against overcurrent and short-circuits.

Digital Servo Controller BGE 9010

The BGE 9010 is a programmable digital servo-controller designed for use with brushless DC-motors type BG43, BG63, BG63S, BG83 and BG 83 S from the plant of Dunkermotoren.

Various functions as stand-still monitoring up to stall torque and programmable ramps allow to use the controller in a broad band of applications.

The features of the BG9010 are as follows:

- Function as 4Q-controller.
- 4Q-speed controller set digital or by analogue +10V input.
- Digital controlled motorposition and position action.
- 8 digital optocoupled inputs.
- 8 digital outputs.
- Low torque ripple.
- Smooth operation up to 0 rpm.
- Precise standstill monitoring with stall torque.
- Connection for an optional external ballast-resistor.
- Various safety features including protection against overload, over-heating, overvoltage, short circuit, wrong wiring.
- Optical status- and error indication via 2 programmable LED.
- Easy set up because of factory presetted parameters.

Technischcal specifications	**BGE 9010**
Operating Voltage	
Nominal voltage	24 V bis 100 V DC
Permissible residual ripple	≤ 5%
Minimum permissible voltage	24 V
Maximum permissible voltage	100 V
Undervoltage shutdown	20 V
Overvoltage protection	120 V
Current	
Nominal current	10 A
Peak current for max. 1s	25 A
Over-current limiting	25 A
Fuse	10 AF
General Technical Specifications	
Clock frequency	15,625 kHz
Dimensions	170 (200) x 66 x 170 mm
Weight	ca. 1185 g

All specifications relate to an ambient temperature of -20 °C to 40°C.
Vertical mounting position in direction of cooling ribs.
Unrestricted air circulation.

Digitaler Servoregler BGE 9010

Sach-Nr.
49797 57902

A compact mechanical housing for wallmounting protects the controller against physical damage and gives a reliable magnetical shielding.

The power-stage is designed for a nominal power of 1 kW and for dynamic peak-power of 2,5 kW. The rated voltage range is from 24V to 100VDC.

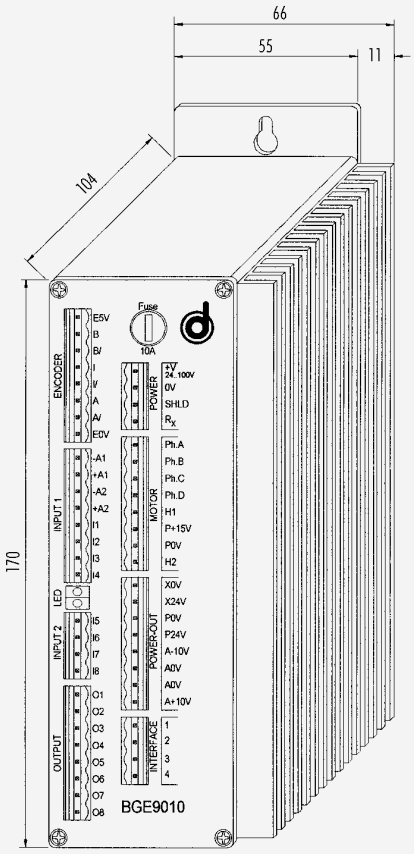
The controllers can actuate in different modes:

– 4Q-stand-alone controller; parameters presetted via RS 232 interface.
– On-line positioning mode; the controller acts according to commands transmitted continuously by the RS232 interface.
– Stand-alone positioning controller with PLC functions working the customers program stored in the internal EE-prom loaded down via RS232 interface. For precise positionning and speed regulation an incremental encoder (type RE30-3512-TI) with built in line-driver mounted on the rear side of the motor is necessary.

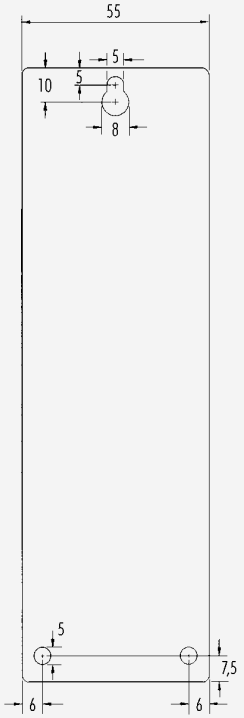
The integrated line-driver (TI) secures disturbance free operation for cables up to 15 m between the controller and the motor.

A positioning accuracy of 10 arc min = 0,18 degrees can be achieved because of encoder flanc detection (2048 pulses per rotation).

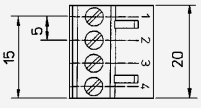
Dimensional Drawing · Dimensions in mm

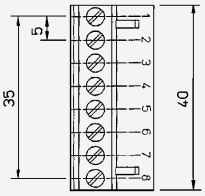


Front view



Mounting plate





Please order additionol plug set for BGE 9010:

3 connectors, 4-pole
Typ MSTB 2,5/4-ST-BD: 1-4
Sach-Nr. 24305 57032

5 connectors, 8-pole
Typ MSTB 2,5/8-ST-BD: 1-8
Sach-Nr. 24305 57030

Digital servo controller BGE 9010

Accessories for Electronic DC Motors

To secure disturbance free operation, our special double shielded special cable is highly recommended.

Attention: For an undisturbed motor operation and to avoid noise in jections you should not use unshielded cables. Prefabricated cables are available in different standard-lengths.

The connector housing on the controller side of the cable will be delivered separately for huzzle free installation. (The contacts are already crimped to the leads).

Attention: If the cables will be ordered by the meter, the connectors have to be ordered separately.

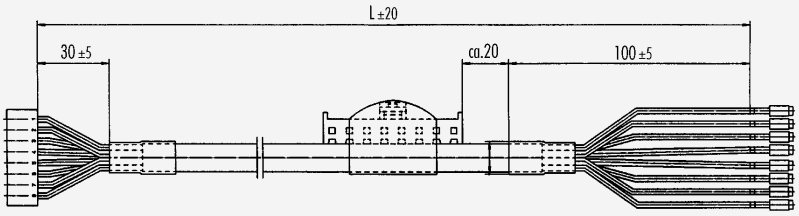
On the prefabricated cables, the motor plug is already adapted, and the crimped contacts on the controller-side are mounted.
The connectors only have to be plugged in the connector housing after laying the cables.

Attention: Be aware of the correct pinning.

We can deliver an IP54-terminal-box as proctection and as lead-fitting.

Connections in combination with the BGE 2406 ond BGE4010 controllers
a) Removal of the white connector housing, that is fixed on the cable with an adhesive tape.
b) Plug-in of the contacts into the connector-housing accurate the pinning-plan.

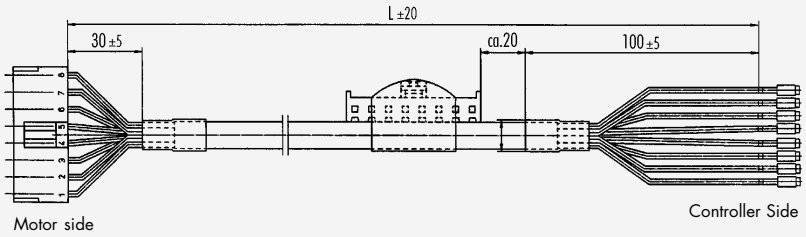
Connection of the Digital Controller BGE 9010 Depending on the use of the controller and the ordered accessories, "Phoenix" style connectors have to be ordered separately.



8-pole connecfion for BG43/BGE
between motor BG43 and controllers BGE 2406 A, 4010 A and BGE 9010.*

L =	1,0 m	S-Nr. 27573 35748
L =	2,5 m	S-Nr. 27573 35749
L =	5,0 m	S-Nr. 27573 35725
L =	10,0 m	S-Nr. 27573 35726

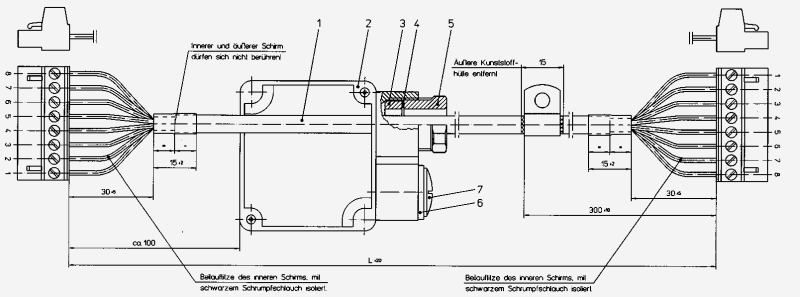
* In combination with BGE9010, use on controller side the 8-pole"Phoenix"style connector No. 24305 57030



8-pole connecfion for BG 63/ BGE
between motor BG43 and controllers BGE 2406A, 4010A and BGE 9010.*

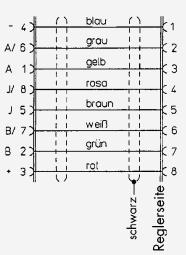
L =	1,0 m	S-Nr. 27573 35758
L =	2,5 m	S-Nr. 27573 35759
L =	5,0 m	S-Nr. 27573 35735
L =	10,0 m	S-Nr. 27573 35736
L =	12,0 m	S-Nr. 27573 35737
L =	15,0 m	S-Nr. 27573 35738

* In combinatian with BGE 9010, use on controller side the 8-pole "Phoenix" style connector No. 24305 57030



8-pole connection BG83/BGE9010,
between BG83/BG83S and controller BLE 9010 with ..... IP 54.

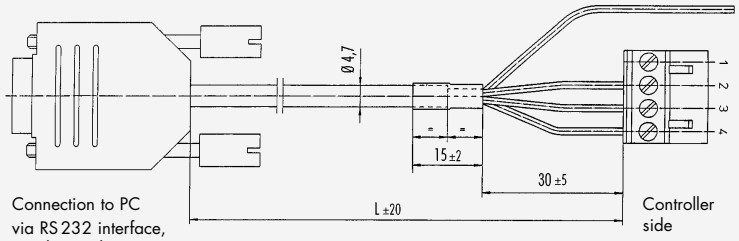
L =	2,5 m	S-Nr. 27573 35690
L =	5,0 m	S-Nr. 27573 35691
L =	10,0 m	S-Nr. 27573 35692



Pinning
8-pole connector with 8-lead cable

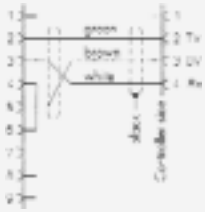
Pin	Designation	Wire
1	Hall sensor 2	pink
2	0 V for sensor	black
3	12 V for sensor	red
4	Hall sensor 1	grey
5	Motor phase D	yellow
6	Motor phase C	green
7	Motor phase B	brown
8	Motor phase A	white

4-pole interface cable
for BGE 9010
length 2,5 m
prefabricated
No. 27573 35715



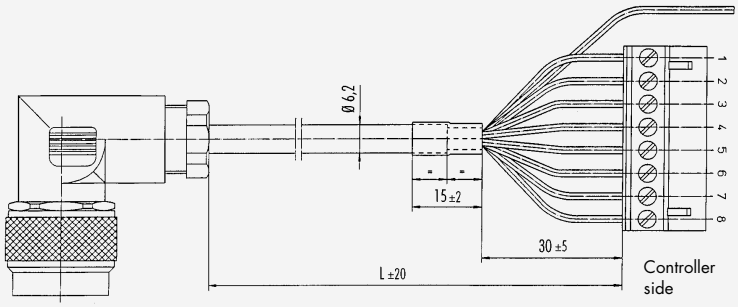
Connection to PC
via RS 232 interface,
9-pole D-Sub-connector

Controller
side



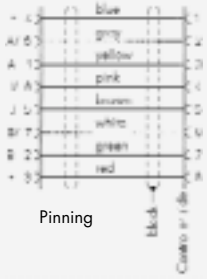
Pinning

8-pole interface cable
for BGE 9010
Connection between
BGE 9010 and incremental
encoder in combination with
cover IP 54
length 2,5 m, prefabricated
No. 27573 35710



Motor side connector
for incremental encoder

Controller
side



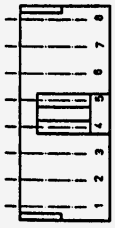
Pinning

L =	2,5 m	S-Nr. 27573 35710
L =	5,0 m	S-Nr. 27573 35711
L =	10,0 m	S-Nr. 27573 35712

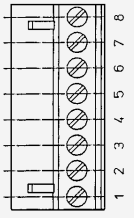
8-pole motor connector
for motors BG 43, 63, 83
contending of housing
and contacts

8-pole female angle connector
for miniature circular connector
DIN 45326, water protected
Brand Binder
Bestell-Nr. 99-0172-75-08

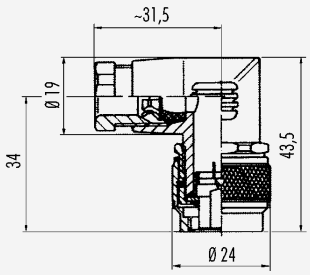
BG 43
No. 24308 57049



BG 63 and BG 63S
No. 24308 57048

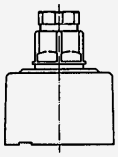


BG 83 and BG 83S
No. 24305 57030

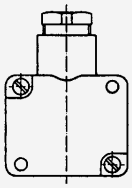


Female angle connector
No. 24320 57000

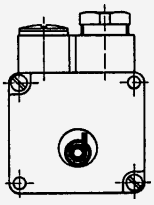
Terminal boxes IP 54
for BG motors
complete, loose



BG 43
No. 27573 32493



BG 63
No. 27573 3249



BG 83
No. 27573 32492

Electronic-Gear Motors

General recommendations for the choice of a gear motor
Planetary gears have the highest allowable continuous torques of all gears. They have a very compact design, low weight and excellent efficiency. Therefore, they are suitable for a wide range of applications.

Due to operation noises the planetary wheels of the 1st gear stage are in general made of strong plastic. Of course, we have also available gears with wheels made of steel for applications with very high peak torques.

Most of the planetary gear ratios are deliverable ex stock.

A special feature of the worm gears is the smooth running. For many applications the gear shaft which is shifted 90° on the opposite of the motor shaft is optimal due to its design.

Spur gears are especially noted by a high gear efficiency and short gear dimensions. A planetary gear should be preferred whenever possible due to the mentioned advantages.

The maximum continuous gear torques should not be exceeded. Overload causes gear wear off. In borderline cases the next larger gear is preferable.

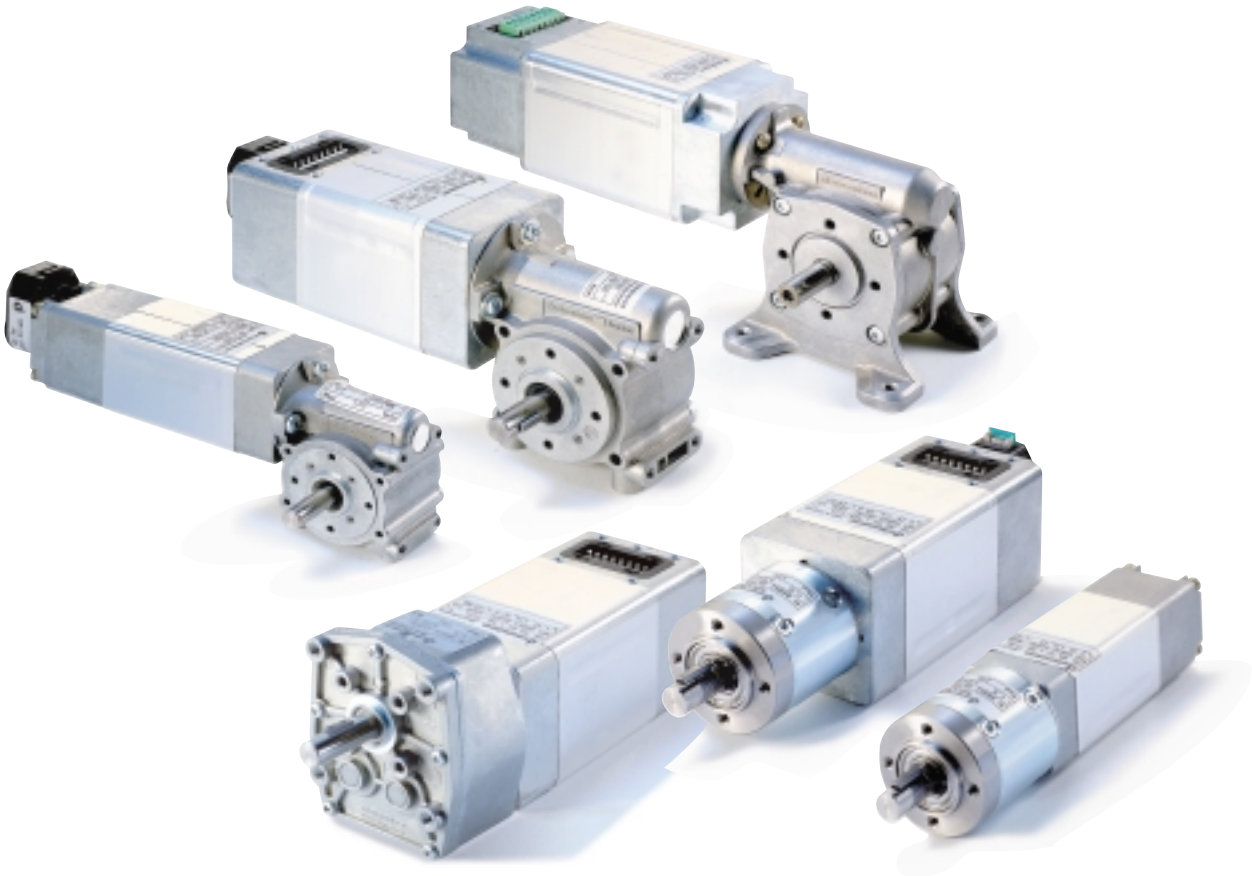
For particular applications maximum torques up to the double of the maximum continuous torque con be run for a short time, especially with planetary gears.

In any case we recommend to discuss critical applications with us before.

For low noise applications, we recommend to lower the motor speed.

The advantage of our BG motor series are as follows:
– Long life-time (no maintenance).
– Good dynamic behaviour.
– High speed possibilities
  up to 8.000 rpm.
– Non electrical sparking.

Please contact us for assistance in making the correct choice, i. e. the exact matching to your individual requirements.



Note
The correct choice, i.e.the exact matching to your individual requirements con be made on request.

The torque at the gear output shah is calculated by

$$M_{gear} = T_{N\ motor} \cdot i \cdot \eta$$

For the choice of a motor after determination of the gear, please calculate as follows:

$$T_{N\ motor} = \frac{T_{output}}{i \cdot \eta}$$

$T_{N\ motor}$ = Nominal motor torque

T_{output} = Needed torque of the machine

i = Gear reduction

η = Gear efficiency

Combinations of motors and gears

Designation	Type	Motor BG 43 x 50	Motor BG 63 x 55 BG 63 x 55S	Motor BG 83 x 90 BG 83 x 90S
Planetary gears	PLG 42 S	●		
	PLG 52.0	●	●	
	PLG 70		●	●
Worm gears	SG 62	●		
	SG 80		●	
	SG 120		●	●
Spur gears	ZG 80	●	●	
	ZG 120		●	●

Max.load for continuous duty and wight

Designation	Type	Stages	Max. continuous torque Ncm	Max. weight kg
Planetary gears	PLG 42 S	1	350 [1]	0,27
		2	600 [2]	0,37
		3	1400 [2]	0,47
Planetary gears	PLG 52.0	1	120 [2]	0,55
		1	450 [1]	0,56
		2	800 [2]	0,72
		3	2400 [2]	0,88
Planetary gears	PLG 70	1	500 [2]	1,7
		2	4000 [2]	2,3
		3	6000 [2]	3,1
Worm gears	SG 62	–	100 – 150 [3]	0,3
	SG 80	–	200 – 400 [3]	0,4
	SG 120	–	800 – 1500 [3]	2,0
Spur gears	ZG 80	–	– 600	0,5
	ZG 120	–	– 2200	2,3

1) 1st stage planet wheels in steel.
2) 1st stage planet wheels in resin-bonded fabric.
3) Dependent on the gear reduction ratio.

Planetary Gears PLG

Planetary gears are especially suited for industrial applications.

The gears are lubricated with an adhesive grease and they make it possible to transmit high torque in a small volume.

Output shafts with their double ball bearings can handle high axial and annular loads, the self-centering planet wheel carriers guarantee symmetrical force distribution. The annular gear also builds the gear casing.

Planetary gear PLG 42 S (S = Steel)
The annular gears and the planetary wheels are manufactured from steel, except at the 1st stage.

Planetary gear PLG 52.0
To allow a low running noise the planetary wheels of the 1st stage are manufactured from a type of laminated phenol. If required, these wheels can also be delivered in steel.

Planetary gears PLG 70
The planetary pinions of the 1st stage are made of web-reinforced plastic.

Gear versions

Planetary gear PLG 42 S

Continuous torques

1-stage to	350 Ncm
2-stage to	600 Ncm
3-stage to	1400 Ncm

Shaft load capacity

Axial load	150 N
Radial load applied 20 mm from mounting surface	250 N

Ratio	Efficiency	Stages
4 :1	0,8	1
6,25 :1	0,8	1
8 :1	0,8	1
16 :1	0,75	2
25 :1	0,75	2
32 :1	0,75	2
50 :1	0,75	2
64 :1	0,75	2
100 :1	0,7	3
128 :1	0,7	3
156 :1	0,7	3
200 :1	0,7	3
256 :1	0,7	3
312,5 :1	0,7	3
400 :1	0,7	3
512 :1	0,7	3

Planetary gear PLG 52.0

Continuous torques

1-stage to	120 Ncm (450 Ncm)*
2-stage to	800 Ncm
3-stage to	2400 Ncm

Shaft load capacity

Axial load	500 N
Radial load applied at center of Woodruff key.	350 N

Ratio	Efficiency	Stages
4,5 :1	0,85	1
6,25 :1	0,85	1
8 :1	0,85	1
20,25 :1	0,72	2
28,12 :1	0,72	2
36 :1	0,72	2
50 :1	0,72	2
64 :1	0,72	2
91,12 :1	0,61	3
126,56 :1	0,61	3
162 :1	0,61	3
225 :1	0,61	3
288 :1	0,61	3
400 :1	0,61	3
512 :1	0,61	3

*First stage planet wheels in steel.

Planetary gear PLG 70

Continuous torques

1-stage to	500 Ncm [1])
2-stage to	4000 Ncm [2])
3-stage to	6000 Ncm [3])

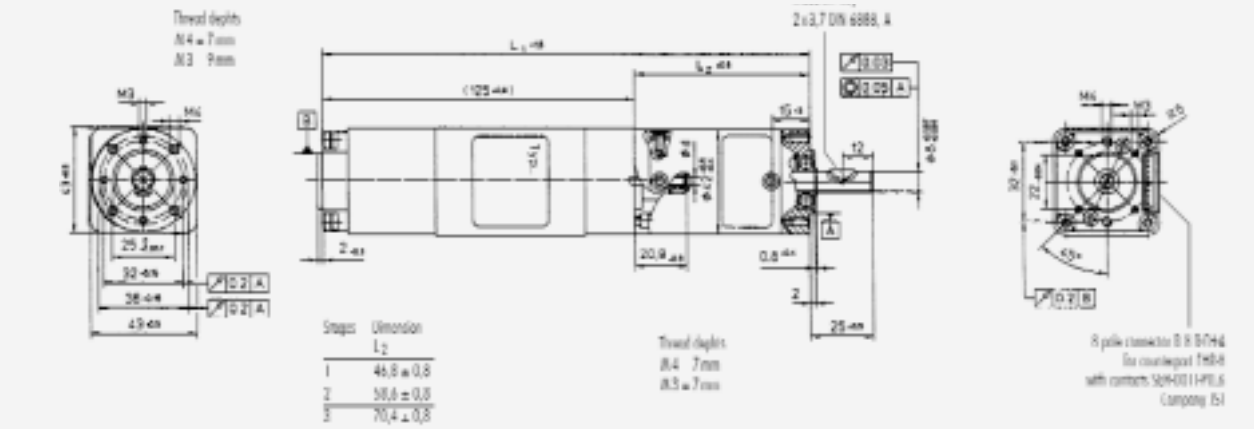
Shaft load capacity

Axial load	1000 N
Radial load applied 25 mm from mounting surface	600 N

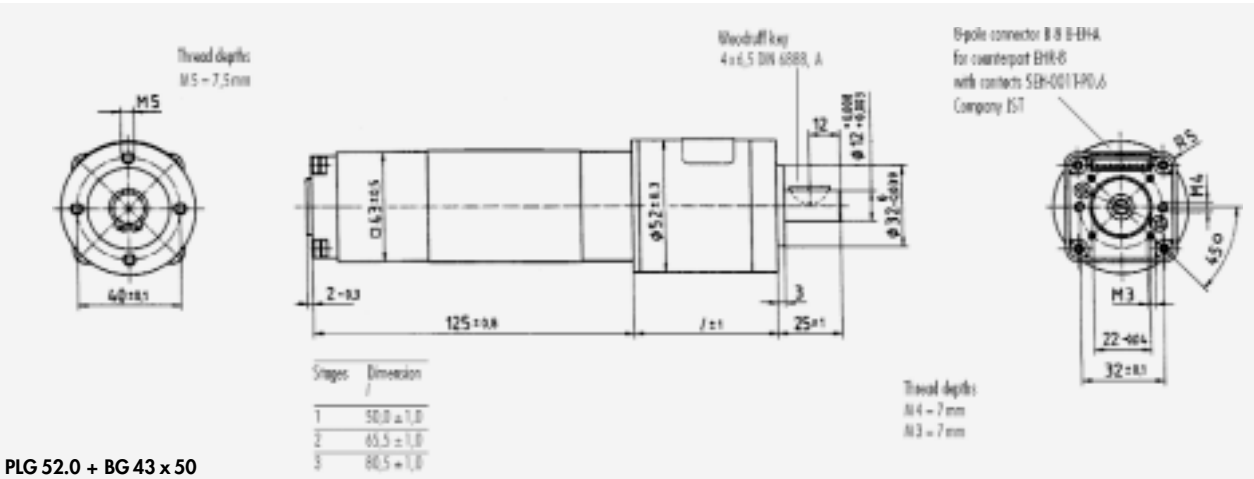
Ratio	Efficiency	Stages
4 :1	0,8	1
5,8 :1	0,8	1
7 :1	0,8	1
16 :1	0,75	2
23,2 :1	0,75	2
28 :1	0,75	2
33,64 :1	0,75	2
40,6 :1	0,75	2
49 :1	0,75	2
64 :1	0,7	3
92,8 :1	0,7	3
112 :1	0,7	3
134,56 :1	0,7	3
162,4 :1	0,7	3
195,112 :1	0,7	3
235,48 :1	0,7	3
284,2 :1	0,7	3
343 :1	0,7	3

1) 10 Nm at short-time service.
2) 60 Nm at short-time service.
3) 100 Nm at short-time service.

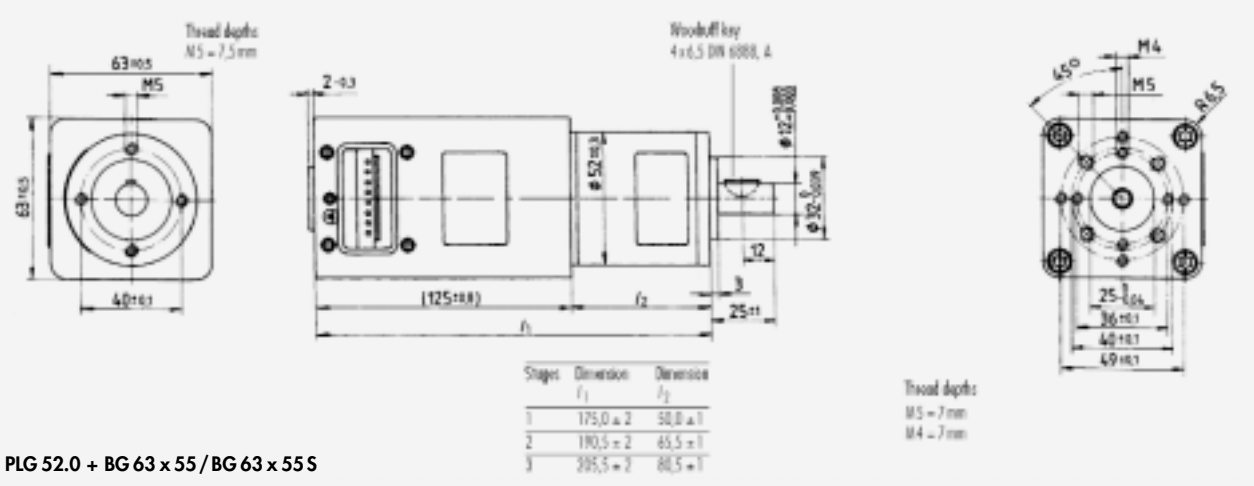
Dimensional Drawings · Dimensions in mm



PLG 42 S + BG 43 x 50



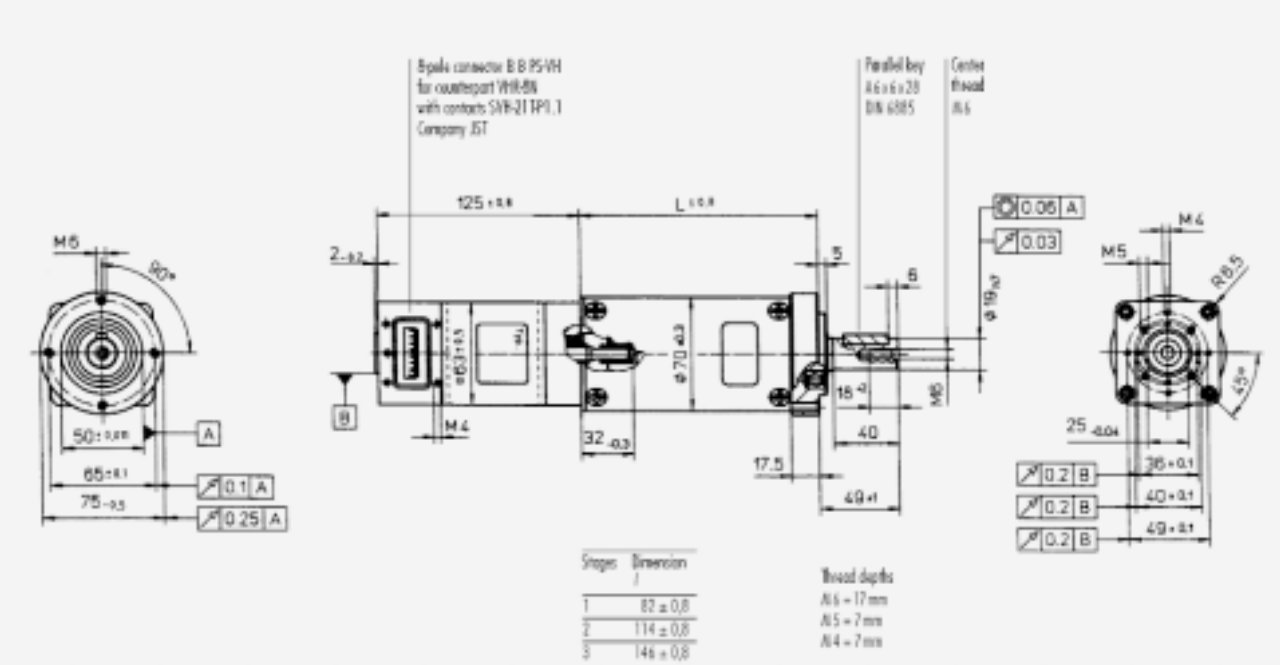
PLG 52.0 + BG 43 x 50



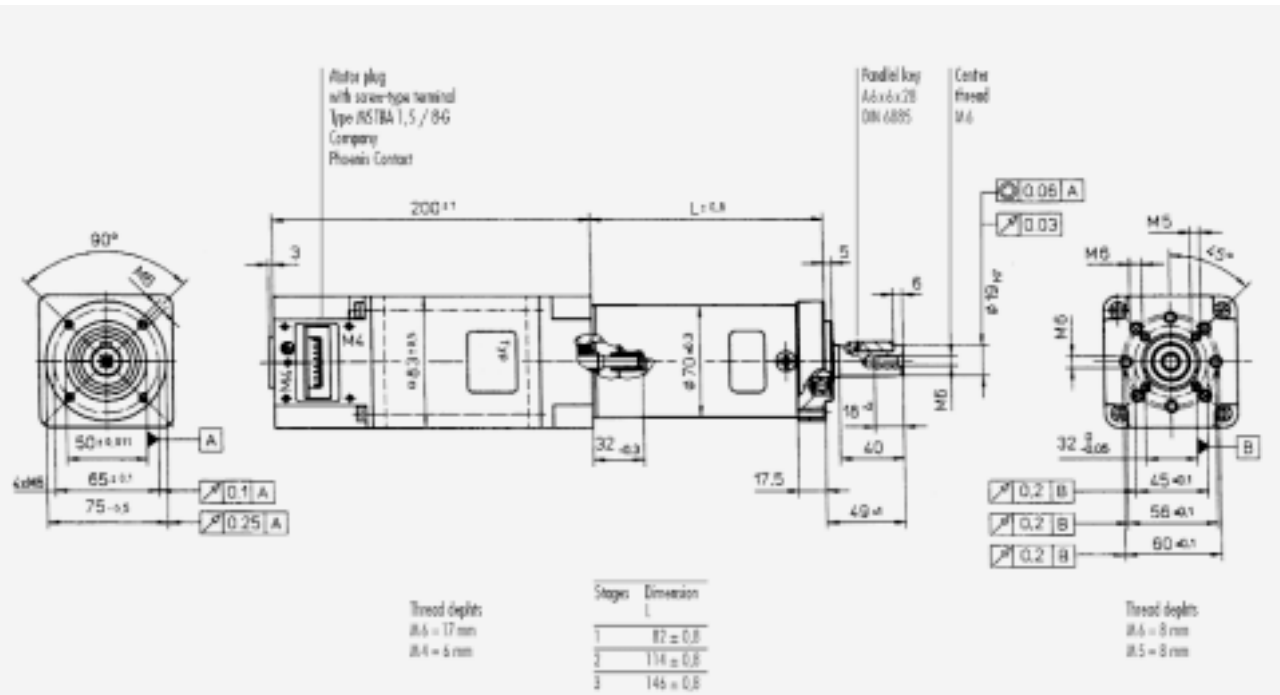
PLG 52.0 + BG 63 x 55 / BG 63 x 55 S

Planetary Gears PLG

Dimensional Drawings · Dimensions in mm



PLG 70 + BG 63 x 55 / BG 63 x 55 S



PLG 70 + BG 83 x 90 / BG 83 x 90 S

Spur Gears ZG

Spur gears ZG 80
Compact design and high efficiency are features of spur gear unit ZG 80.

The zinc die-cast housing is designed for flange mounting. Toothed wheel work made of steel and an adhesive grease guarantee a high lifetime at the nominal torques stated. Partial use of helical gearwheels gives the gears quiet running and a high service life.

The output shaft of the gear runs in a self-lubricating sintered bearing bush.On request an angle foot plate B3 is available.

Spur gears ZG 120
Compact design and high efficiency are features of spur gears series ZG 120.

The foot mounting design type B3 displays also bore holes type B14 for flange mounting, thus making the gears suitable for universal applications.

High-grad toothed wheel work, hardened and ground, guarantees a high lifetime at the nominal torques stated.

The use of helical gearwheels in the first stage gives the gears quiet running and a high service life.

The output shaft of the gear runs in a ball bearing and can handle high axial and radial loads.

Gear versions

Spur gear ZG 80

Continuous torques	
2-stage to	250 Ncm
3-stage to	500 Ncm
4-stage to	600 Ncm

Shaft load capacity	
Axial load	80 N max.
Radial load applied to center of Woodruff key	80 N max.

Ratio	Efficiency	Stages
5,6 : 1	0,81	2
8,7 : 1	0,81	2
11,3 : 1	0,81	2
15,6 : 1	0,81	2
23,9 : 1	0,73	3
37,3 : 1	0,73	3
48,7 : 1	0,73	3
66,9 : 1	0,73	3
112,8 : 1	0,65	4
147,1 : 1	0,65	4
202,1 : 1	0,65	4

Spur gear ZG 120

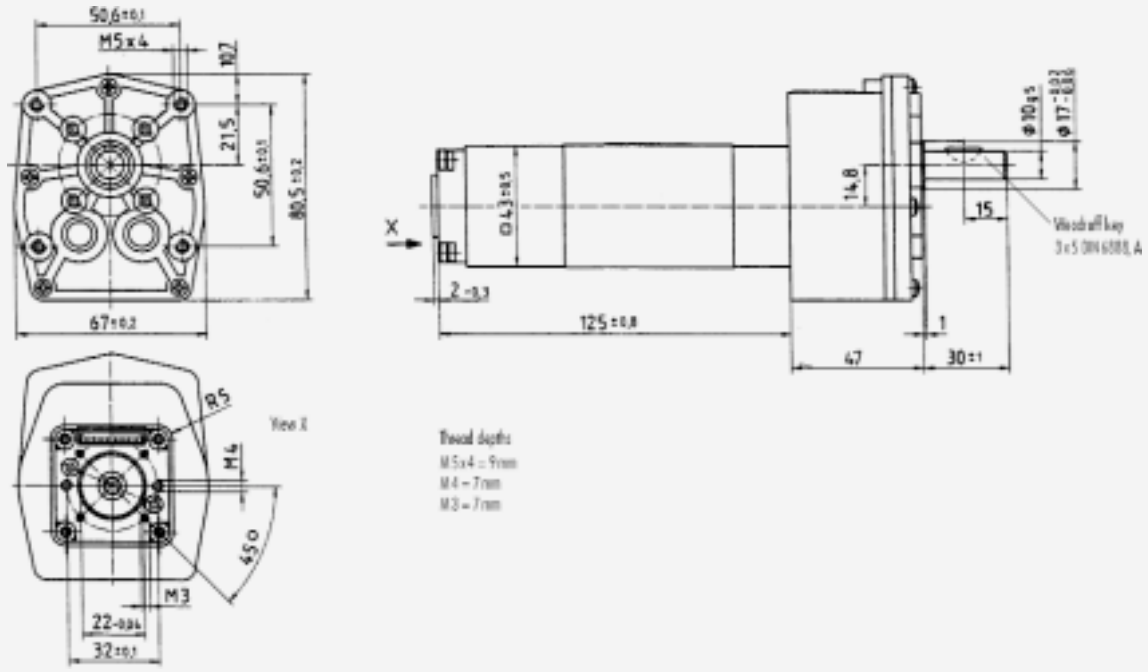
Continuous torques	
1-stage to	400 Ncm
2-stage to	1000 Ncm
3–6-stage to	2200 Ncm

Shaft load capacity	
Axial load	600 N max.
Radial load applied to center point of parallel key	600 N max.

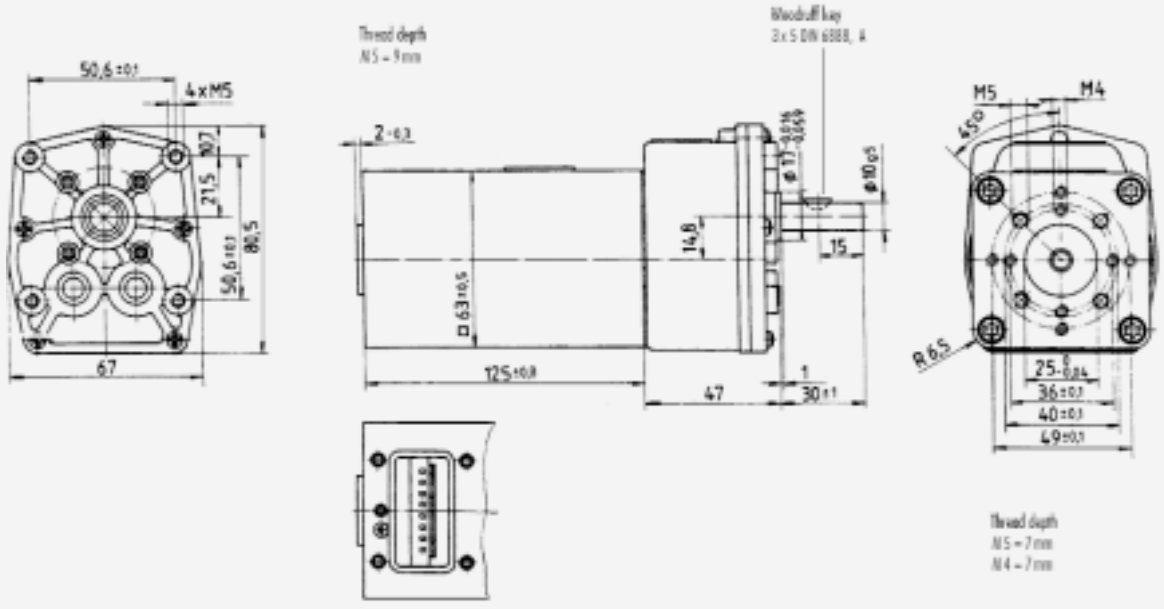
Ratio	Efficiency	Stages
3 : 1	0,90	1
5,1 : 1	0,90	1
8 : 1	0,81	2
13,7 : 1	0,81	2
21,6 : 1	0,72	3
37,1 : 1	0,72	3
58,6 : 1	0,66	4
100,4 : 1	0,66	4
158,5 : 1	0,60	5
271,6 : 1	0,60	5
428,9 : 1	0,55	6
735 : 1	0,55	6

Spur Gears ZG

Dimensional Drawings · Dimensions in mm

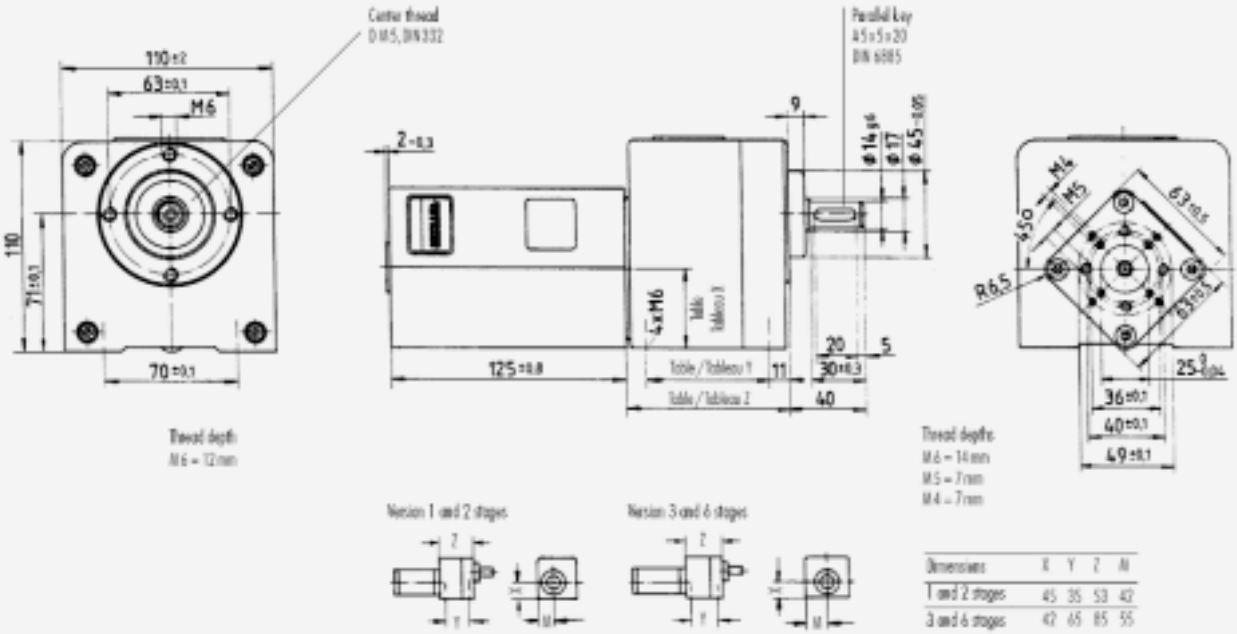


ZG 80 + BG 43 x 50

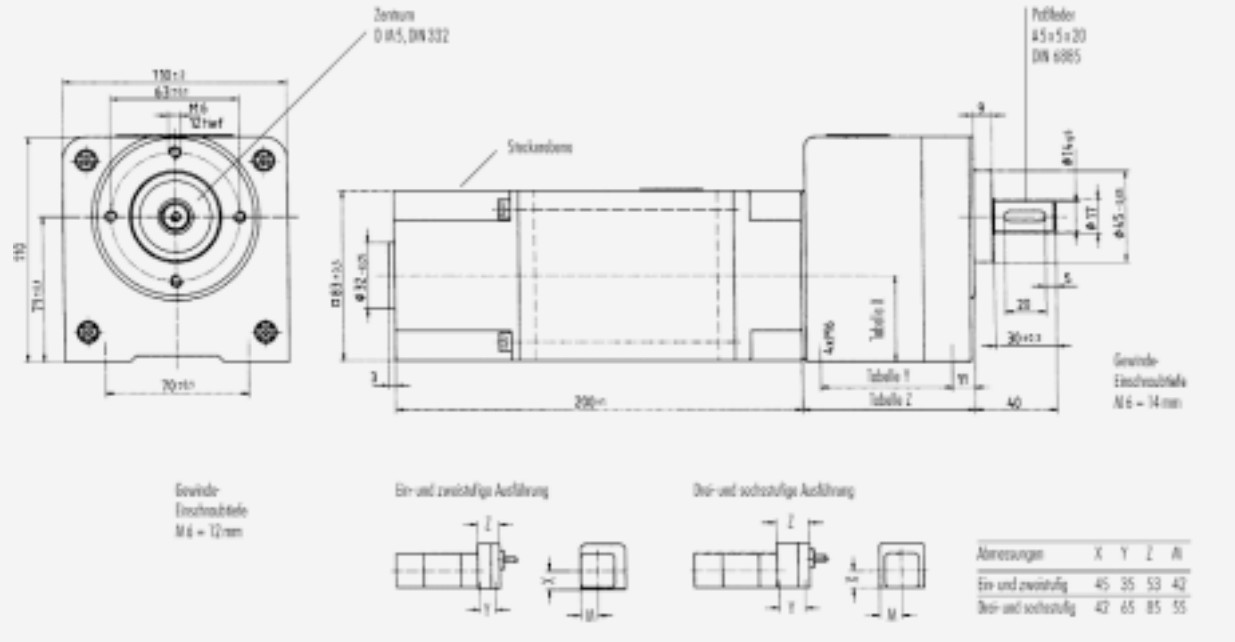


ZG 80 + BG 63 x 55

Dimensional Drawings · Dimensions in mm



ZG 120 + BG 63 x 55



ZG 120 + BG 83 x 90

Worm Gears SG

A special feature of the worm gears is the smooth running.

Worm gears SG 62, SG 80 und SG 120

The zinc die-cast casing is designed for foot and flange mounting.
The worm shaft has bearings on both sides. Worm gear parts made of steel/bronze and an adhesive grease guarantee a high lifetime at the rated torques stated.

With the standard type gears SG 62 and SG 80 the output shaft runs in a self-lubricating sintered bearing bush and is designed one-sided on left, WL1 = Standard design. Ball bearings are possible as special design.

With the standard type gears SG 120 the output shaft runs in ball bearings.

Available output shaft positions:
WL 1 = Standard design:
shaft postion left.
WL 2 = Special design:
shaft postion right.
WL 3 = Special design:
shaft postion left and right.

Gear versions

Worm gear SG 62

Continuous torques up to 150 Ncm

Shaft load capacity

Axial load	40 N max.
Radial load applied to center of standard gear shaft	40 N max.

Ratio	Efficiency	Torques max.
8 : 1	0,60	100 Ncm
15 : 1	0,55	100 Ncm
23 : 1	0.50	150 Ncm
35 : 1	0,45	150 Ncm
46 : 1	0,40	150 Ncm
72 : 1	0,30	150 Ncm

Worm gear SG 80 with Planetary Gears PLG 52.0

Text unklar

Gesamt-Untersetz	SG 80 Unter-setzung : 1	PLG 52.0 Unter-setzung : 1
22	5	4,5
31	5	6,25
45	10	4,5
62	10	6,25
101	5	20,25
180	5	36
250	5	50
360	10	36
500	10	50
750	15	50
1 200	24	50
1 900	38	50
2 500	50	50
4 000	10	400
6 000	15	400
9 600	24	400
15 200	38	400
20 000	50	400
30 000	75	400

Weitere Untersetzungs-Kombinationen auf Anfrage.

Worm gear SG 120

Continuous torques up to 1500 Ncm

Shaft load capacity

Axial load	300 N max.
Radial load applied to center point of parallel key	500 N max.

Ratio	Efficiency	Torques max.
5 : 1	0,70	200 Ncm
10 : 1	0,65	250 Ncm
15 : 1	0.55	300 Ncm
24 : 1	0,50	350 Ncm
38 : 1	0,40	350 Ncm
50 : 1	0,35	400 Ncm
75 : 1	0,25	400 Ncm

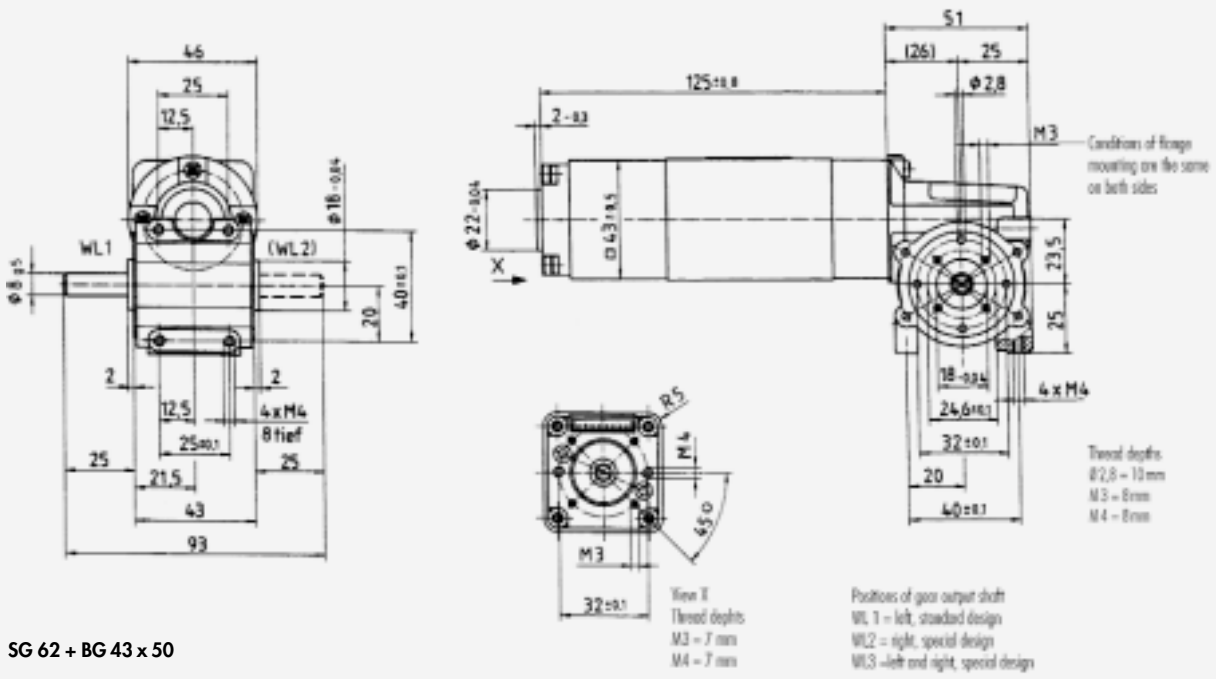
Worm gear SG 120

Continuous torques up to 1500 Ncm

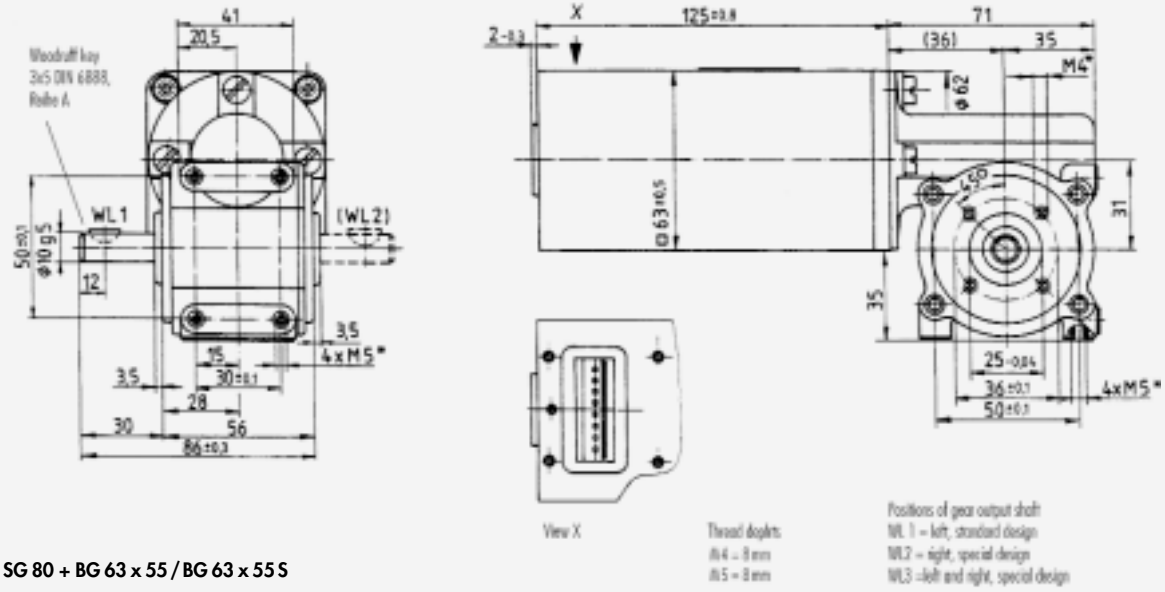
Shaft load capacity

Axial load	300 N max.
Radial load applied to center point of Woodruff key	500 N max.

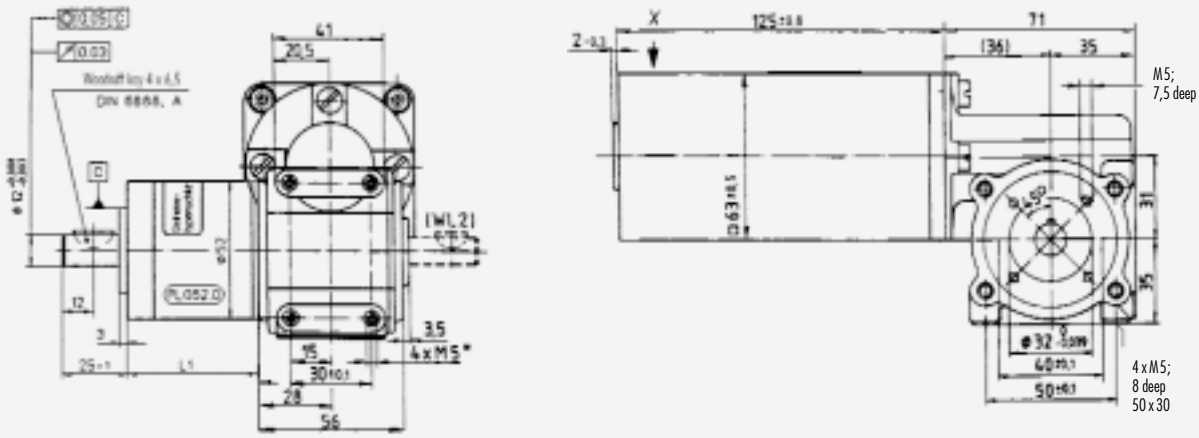
Ratio	Efficiency	Torques max.
8 : 1	0,70	800 Ncm
10 : 1	0,70	1000 Ncm
15 : 1	0,56	1000 Ncm
20 : 1	0,55	1500 Ncm
30 : 1	0,50	1500 Ncm
40 : 1	0,40	1500 Ncm
50 : 1	0,35	1500 Ncm
60 : 1	0,30	1500 Ncm
70 : 1	0,28	1500 Ncm
80 : 1	0,25	1500 Ncm



SG 62 + BG 43 x 50



SG 80 + BG 63 x 55 / BG 63 x 55 S

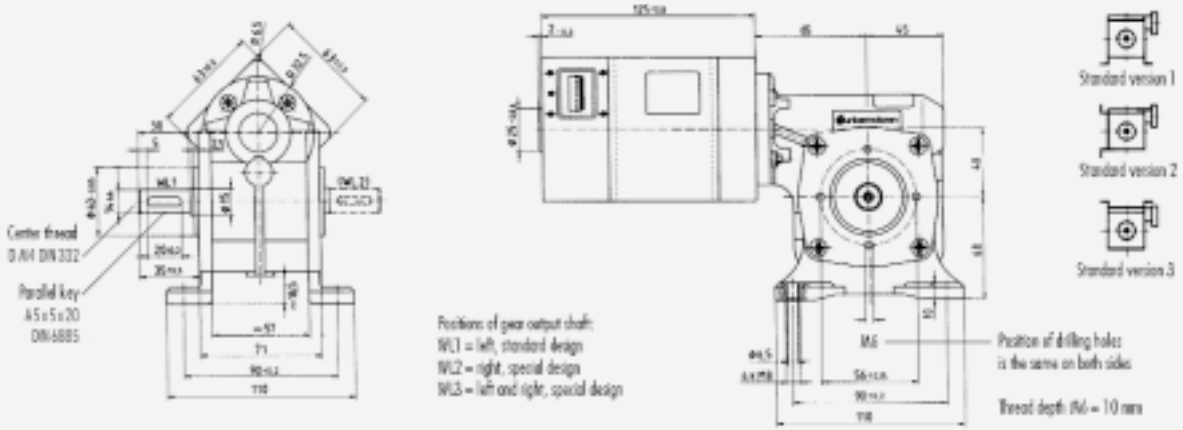


SG 80 + PLG52.0/BG 63 x 55/BG 63 x 55S

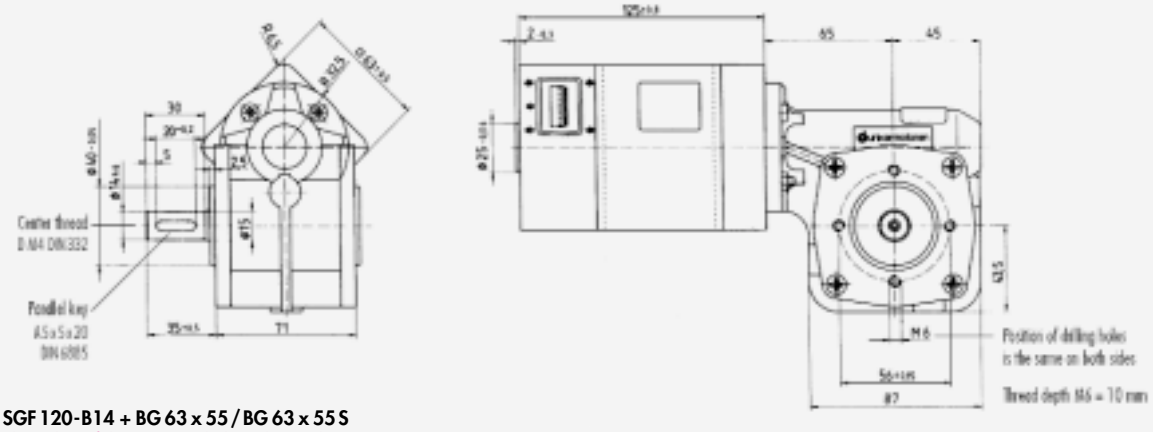
SG 80 without ????????

Worm Gears SG

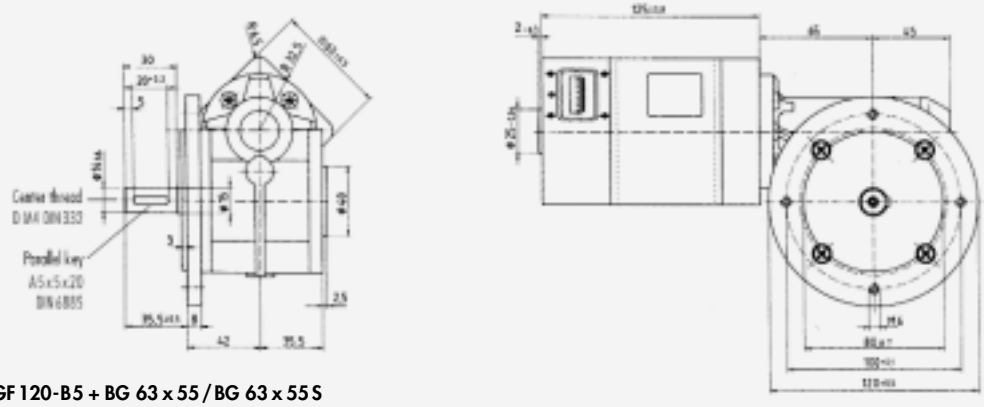
Dimensional Drawings · Dimensions in mm



SG 120 + BG 63 x 55 / BG 63 x 55 S

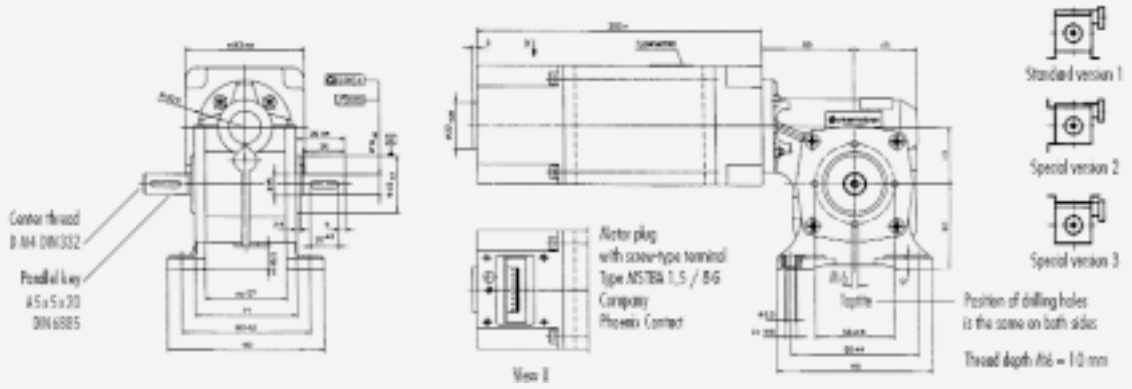


SGF 120-B14 + BG 63 x 55 / BG 63 x 55 S
Flanschausführung B14 links oder rechts

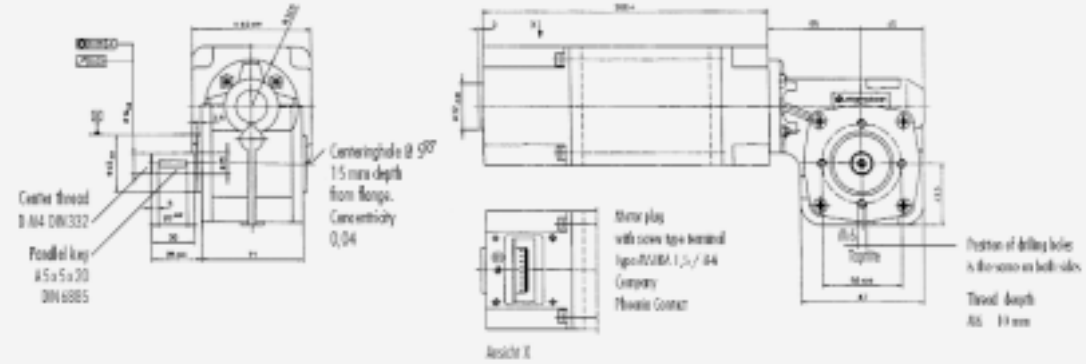


SGF 120-B5 + BG 63 x 55 / BG 63 x 55 S
Flanschausführung B5 links oder rechts

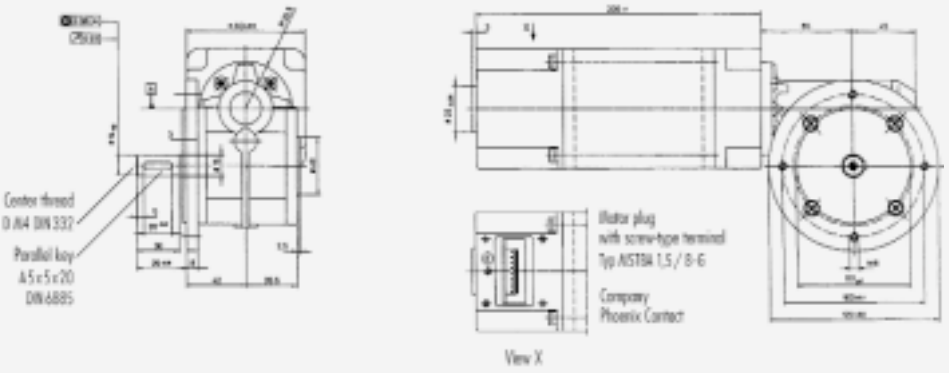
Dimensional Drawings · Dimensions in mm



SG 120 + BG 83 x 90 / BG 83 x 90 S

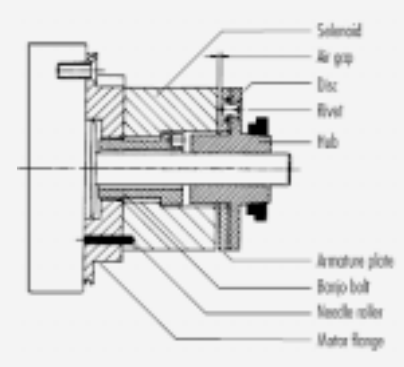


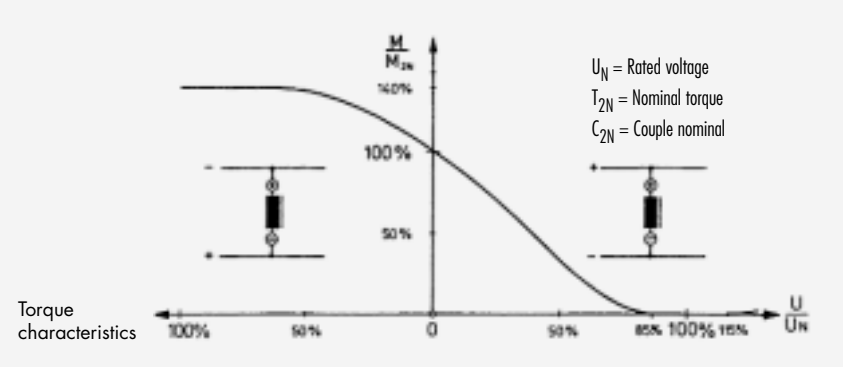
SGF 120-B14 + BG 83 x 90 / BG 83 x 90 S
Flanschausführung B14 links oder rechts



SGF 120-B5 + BG 83 x 90 / BG 83 x 90 S
Flanschausführung B5 links oder rechts

Brushless DC Motors with Brakes





In addition to actual value generators or encoders, the BG series motors can be equipped with brakes. Quiescent current brakes represent our standard program.

In deenergized condition, the dynamic effect of a permanent magnet is used to generate the torque, whereby the armature plate is pulled against the opposing friction surface in axial direction.

A friction-tight connection free from torsional play results. Once the current is switched on, the force acting upon the armature plate lifts it up. The friction surfaces are separated torque-free from the riveted spring independent of the lifting position.

Torque Characteristics

By applying a voltage ranging between 0 and 85% nominal voltage, the torque can be steplessly adjusted. Voltages ranging between 85 and 115% nominal voltage cause the armature plate to drop.

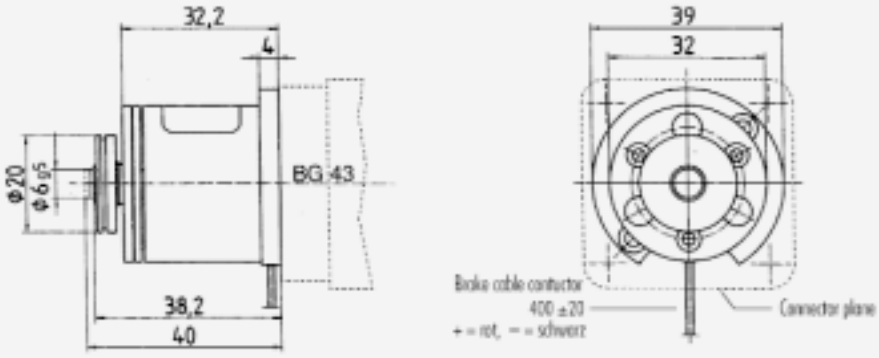
By applying a voltage which generates a magnetic field, the torque can be strengthened and the switch-on time reduced. Voltages over 115% nominal voltage are not permissible.

Attention

- Use of a flyback shunt diode is recommended to protect the DC relay contacts of your control unit from contact burn.
- Pay attention to the connection polarity: plus = red, minus = black.
- Make sure that no metal shavings or other particles attracted by permanent magnets find their way onto the friction surfaces.
- Keep the friction surfaces free from oil and grease.
- The quoted torque values are applicable once the motor is run in; in its new condition, lesser values are possible.
- The service life depends on the load, the speed and the employed drive. The moment of inertia in loaded condition runs linearly and the speed quadratically in the service life calculation.

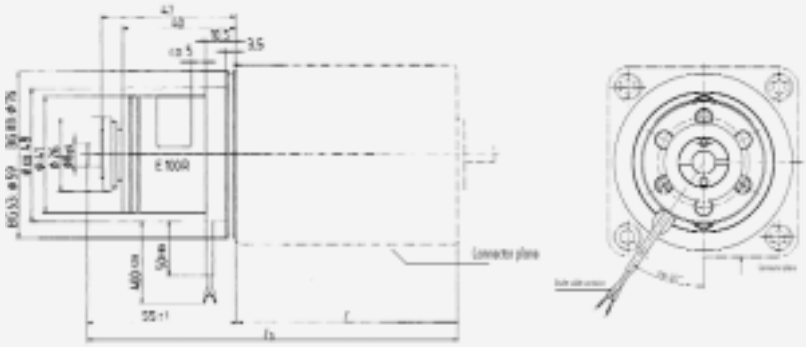
Current brake	**E 50 R**	**E 90**	**E 100 R**
Rated Voltage U_N	24 V	24 V	24 V
Current consumption I_N	330 mA	400 mA	460 mA
Power consumption P	8 W	9,6 W	11 VA
Resistance	–	60 Ohm	–
Brake torque M_B	0,75 Nm	100 Ncm	1,5 Nm
Protection class	IP 40	IP 20/IP 54	IP 20
Class of insulating material	B	E	B
Average switch-on time	7 ms – $M_B = 0$	–	15 ms – $M_B = 0$
Average switch-off time	8 ms – $M_B = 0{,}9 \cdot M_N$	–	11 ms – $M_B = 0{,}9 \cdot M_N$
Weight	0,15 kg	0,5 kg	0,18 kg

Brake ASTO E 50 R
for BG 43 x 50



Brake ASTO E 100 R
for
BG 63 x 55 / BG 63 x 55 S
BG 83 x 90 / BG 83 x 90 S

Dimensions mm	*l*	l_3
BG 63 x 55 / 63 x 55 S	125 ± 1	180 ± 2
BG 83 x 90 / 83 x 90 S	200 ± 1	255 ± 2

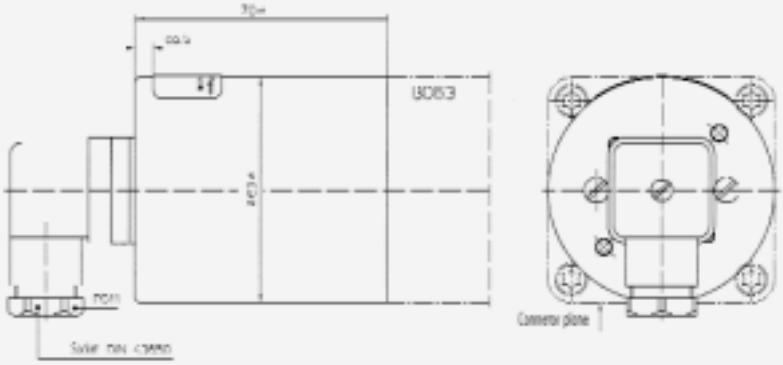


BG 63 x 55 / BG 63 x 55 S
with brake ASTO E 100 R
and terminal box IP 54

Motor with brake	Cover Ø x *l*
BG 63 x 55 / 63 x 55 S	63 x 70 mm

Wire
+ = Pin 3, red
– = Pin 4, black

E 100 + cover
for BG 63

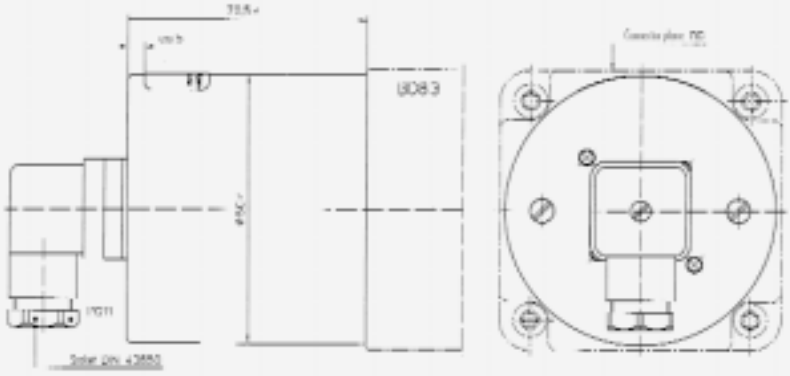


BG 83 x 90 / BG 83 x 90 S
mit Ankerstoppbremse ASTO E 100 R
und Schutzhaube IP 54

Motor mit Bremse	Haube Ø x *l*
BG 83 x 90 / 83 x 90 S	80 x 70 mm

Wire
+ = Pin 3, red
– = Pin 4, black

E 100 + cover
for BG 83



Brushless DC Motors with Digital Encoders

BG series brushless DC motors can be equipped with digital incremental encoders for measuring the actual speed.

Note
A line driver should be installed in the rotary encoder if the cable between the motor and the encoder exceeds 2.5 m in length.

Line driver components are available with supply voltages of +5 V and +1OV to +30V.

If a BG63, BG63S, BG83 or a BG 83 S is fitted with an RE 30 and line driver, an IP54-class protective cover is recommended to protect the rotary encoder and line driver against external influences.

Upon request, we will be pleased to supply dimensional drawings and technical specifications for motor drives with integrated line drivers.

Note
For the BG43 series combined with an incremental encoder, the assembly of the IP54-class protective cover is not possible.

Combination Possibilities

Incremental encoder	BG 43 x 50	BG 63 x 55	BG 63 x 55 S	BG 83 x 90	BG 83 x 90 S
RE 30-2 2 channel, 2 x 500 pulses	●	●	●	●	●
RE 30-3 2 channel, 2 x 500 pulses +1 reference pulse	●	●	●	●	●
RE 30-3-512+TI with integrated driver 2 channel, 2 x 512 pulses +1 reference pulse	●	●	●	●	●
RE 56 2 channel 2 x 1000 pulses		●	●	●	●

The incremental encoders RE 30 and RE 56 are suitable for speed monitoring or control of D.C. motors.

The digital rotary encoder is connected mechanically to the motor and transmits a series of impulses corresponding to the motor speed and direction via a 5-pin connector.

Principle of operation
The non-contact speed transmitter is wear-free. A light barrier is formed by a LED, a metallic slotted disc, and a photo diode array.

Internal logic circuitry generates two TTL-compatible square wave signals in phase quadrature, if desired with index signal, from the photodiode signal.

Connection cable
Please order the connection cable with connector for the encoder RE 30-2, RE 30-3 or RE 56, see accessories.

Note
A combination of the RE 56 series with the IP54-class protective cover is not possible.

Digital Encoder	**RE 30-2**
Output signals	2 square wave signals in phase quadrature TTL-compatible
Number of increments per rotation	500, channel A and B
Supply voltage	+5 V ±10%
Supply current	typ. 17 mA; max. 40 mA
Deviation of pule[1])	typ. 7° max. 40°
Deviation of phase [2])	typ. 2° max. 15°
Output voltage Low level I_L / High level I_H	0,4 V bei 3,2 mA (I_L) max. 2,4 V bei 40 µA (I_H) min.
Rise time C_L=25 pF; R=11 kΩ	typ. 200 ns
Fall time against U=+5 V	typ. 50 ns
Load capacity with R[3])	C_L=100 pF max.
Operating temperature range	–40 … 100°C
Protection class	IP 30

Digital Encoder	**RE 30-3**
Output signals	2 square wave signals in phase quadrature TTL-compatible
Number of increments per rotation	500, channel A and B
Supply voltage	+5 V ±10%
Supply current	typ. 57 mA; max. 85 mA
Deviation of pule[1])	typ. 7° max. 30°
Deviation of phase [2])	typ. 2° max. 15°
Output voltage Low level I_L / High level I_H	0,4 V at 3,86 mA (I_L) max. 2,4 V at 200 µA (I_H) min.
Rise time C_L=25 pF; R=11 kΩ	typ. 180 ns
Fall time against U=+5 V	typ. 40 ns
Load capacity with R[3])	C_L=100 pF max.
Operating temperature range	–40 … 100°C
Protection class	IP 30

Digital Encoder	**RE 56**
Output signals	2 square wave signals in phase quadrature TTL-compatible
Number of increments per rotation	1000, channel A and B
Supply voltage	+5 V ±10%
Supply current	typ. 17 mA; max. 40 mA
Deviation of pule[1])	typ. 7° max. 40°
Deviation of phase [2])	typ. 2° max. 15°
Output voltage Low level I_L / High level I_H	0,4 V at 3,2 mA (I_L) max. 2,4 V at 40 µA (I_H) min.
Rise time C_L=25 pF; R=11 kΩ	typ. 200 ns
Fall time against U=+5 V	typ. 50 ns
Load capacity with R[3])	C_L=100 pF max.
Operating temperature range	–40 … 100°C
Protection class	IP 30

1) From 180 electric degrees
2) Between channel A and B from 90 electric degrees.
3) R=3,2 kΩ gegen U=+5V "Pull up"

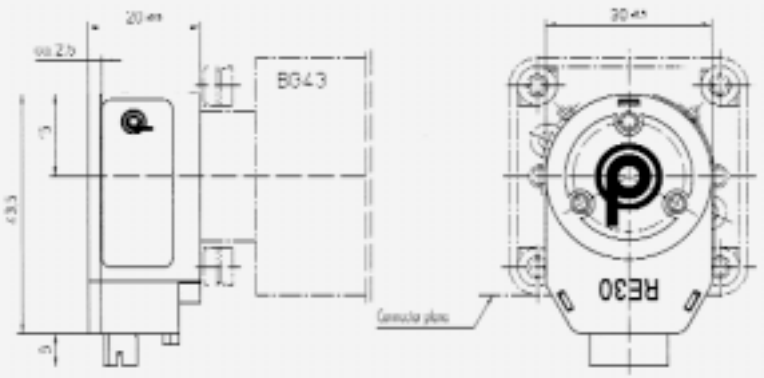
Brushless DC Motors with Digital Encoders

Dimensional Drawings · Dimensions in mm

Incremental encoder RE30 + TI for BG43

Pin assignment RE 30-2	Wire
1 – U; 0 V	black
2 Not assigned	–
3 channel A	yellow
4 + U; 5 V	red
5 channel B	green

RE 30/Driver 5 V Pin assignment:	
1	Not assigned
2	+5 V
3	GND
4	Not assigned
5	/A
6	A
7	/B
8	B
9	Not assigned
10	Not assigned

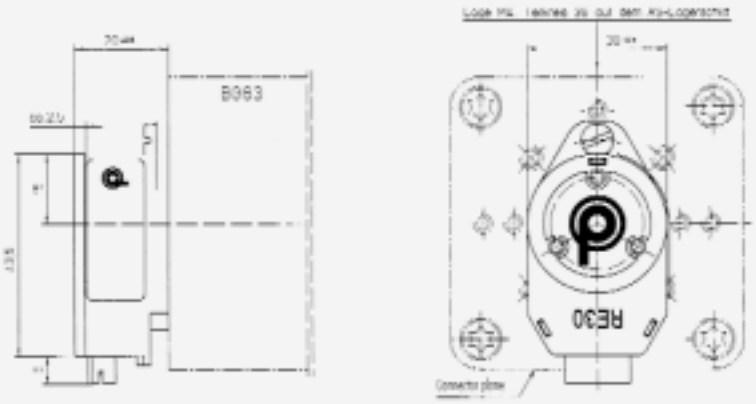


Incremental encoder RE 30 + TI for BG63

Pin assignment RE 30-3	Wire
1 – U; 0 V	black
2 channel I	brown
3 channel A	yellow
4 + U; 5 V	red
5 channel B	green

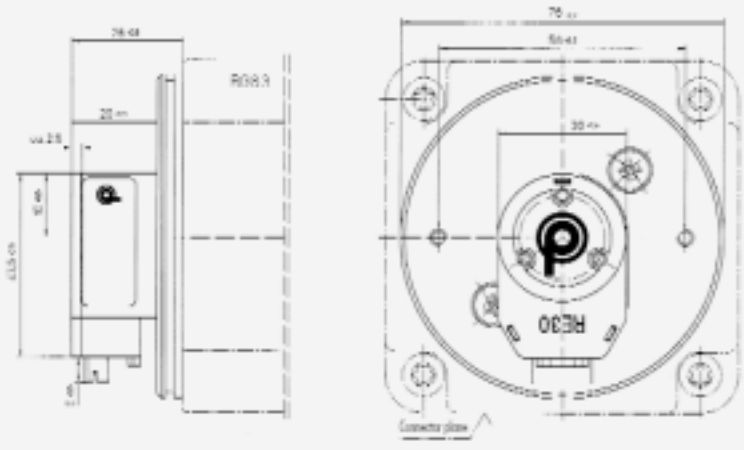
RE-connector see page 41

RE 30/Driver 5 V Pin assignment:	
1	Not assigned
2	+5 V
3	GND
4	Not assigned
5	/A
6	A
7	/B
8	B
9	Not assigned
10	Not assigned



Incremental encoder RE 30 + TI for BG83

RE 30/Driver 5 V Pin assignment:	
1	Not assigned
2	+5 V
3	GND
4	Not assigned
5	/A
6	A
7	/B
8	B
9	Not assigned
10	Not assigned



Incremental encoder RE30 + TI + Cover for BG43

Pin assignment RE 30/Treiber 5 V at 8 pole round connector:

Pin A	A
Pin B	B
Pin C	+ 5 V
Pin D	GND
Pin E (*)	I
Pin F	/A
Pin G	/B
Pin H (*)	/I

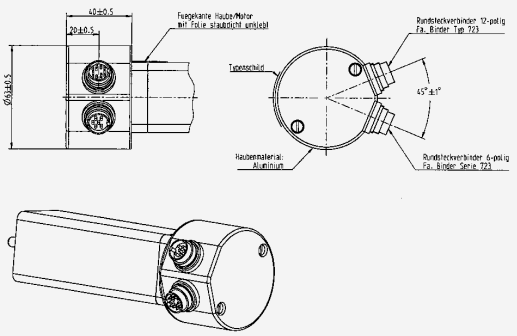
(*) nur bei 3-Kanal-Geber

Pin assignment Motorphasen at 6 pole round connector:

Pin 1	A
Pin 2	B
Pin 3	C
Pin 4	D

Pin assignment Motor-Hallsensoren at 12 pole connecter:

Pin J	Hall 1
Pin K	Hall 2
Pin L	+ 12 V
Pin M	GND

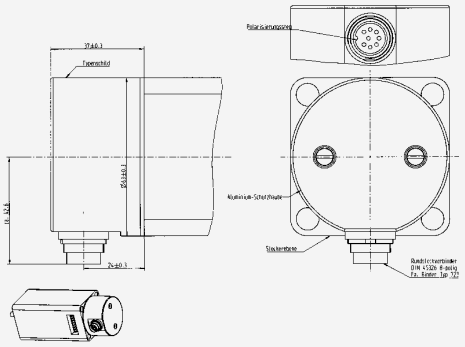


Incremental encoder RE30 + TI + Cover for BG63

Pin assignment RE 30/Driver 5 V at 8 pole round connector:

Pin 1	A
Pin 2	B
Pin 3	+ 5 V
Pin 4	GND
Pin 5 (*)	I
Pin 6	/A
Pin 7	/B
Pin 8 (*)	/I

(*) nur bei 3-Kanal-Geber

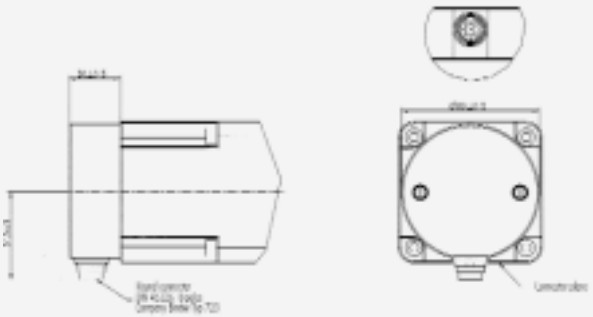


Incremental encoder RE30 + TI + Cover for BG83

Pin assignment RE 30/Treiber 5 V at 8 pole round connector:

Pin 1	A
Pin 2	B
Pin 3	+ 5 V
Pin 4	GND
Pin 5 (*)	I
Pin 6	/A
Pin 7	/B
Pin 8 (*)	/I

(*) nur bei 3-Kanal-Geber

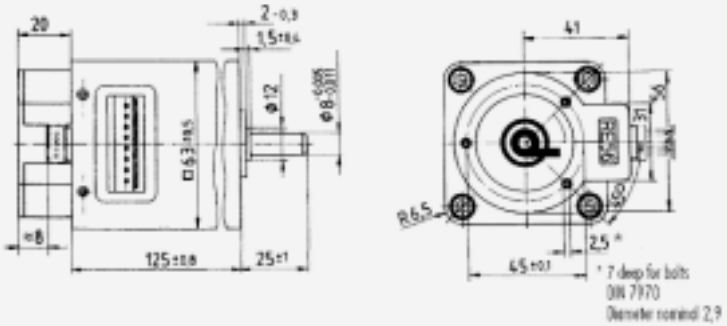


Incremental encoder RE 56

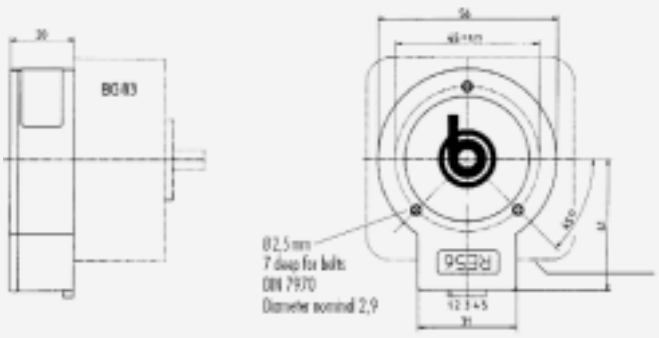
Pin assignment RE 56	Wire
1 –U; 0 V	black
2 Nicht belegt	–
3 Kanal A	yellow
4 +U; 5 V	red
5 Kanal B	green

RE-connector see page 41

Incremental encoder with motors BG 63 x 55 BG 63 x 55 S



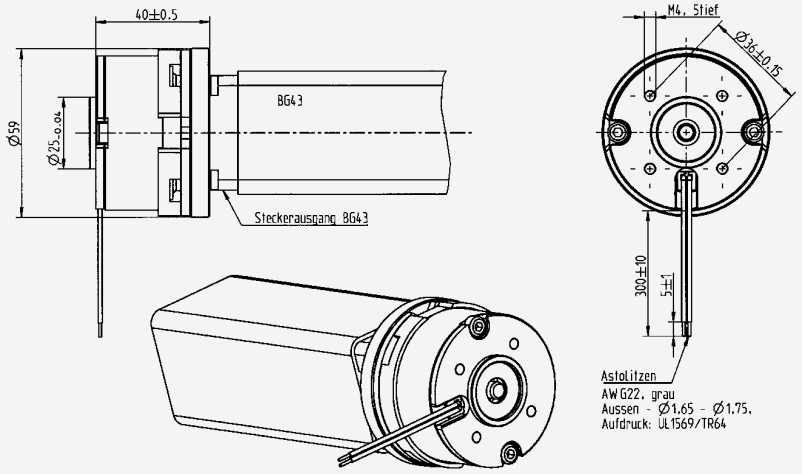
Incremental encoder with motors BG 83 x 90 BG 83 x 90 S



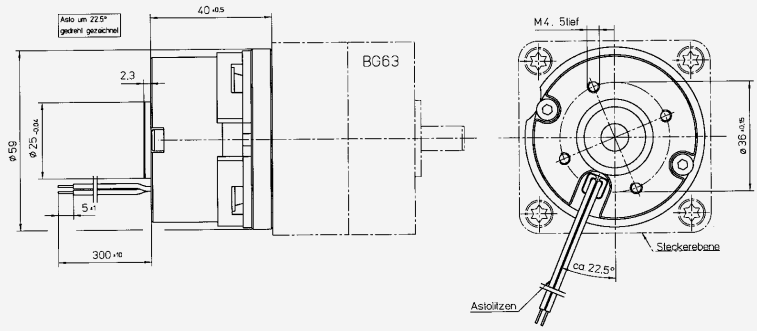
Brushless DC Motors with Brakes

Dimensional Drawings · Dimensions in mm

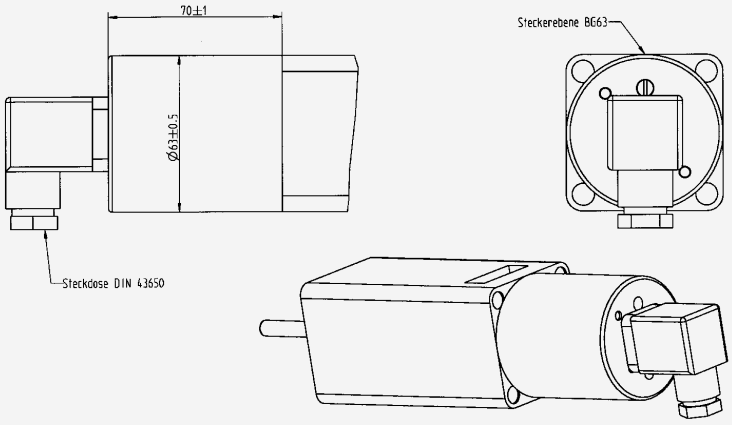
ASTO E90 for BG43



ASTO E90 for BG63



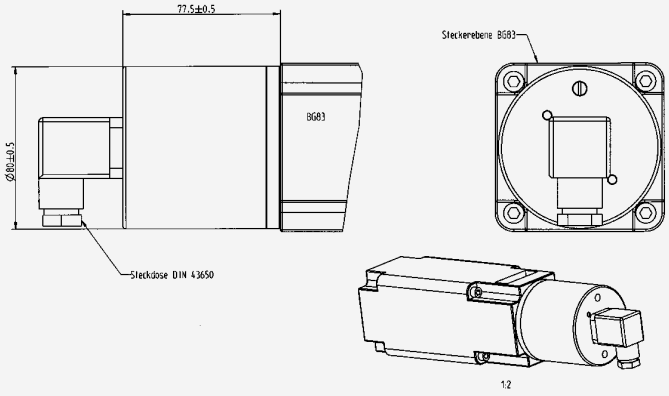
ASTO E90 + Cover for BG63



Pin assignment
der Astolizen
auf 4-poligen Stecker

Asto (+)	Pin 3
Asto (–)	Pin 4

ASTO E90 + Cover for BG83



Pin assignment
der Astolizen
auf 4-poligen Stecker

Asto (+)	Pin 3
Asto (–)	Pin 4

Das Baukastensystem erlaubt die Kombination verschiedener Anbauten mit und ohne Schutzhauben.
Aus Platzgründen können nicht alle Maßbilder gezeigt werden. Entsprechende Detailmaßbilder erhalten Sie gerne auf Anfrage!

Cables und Connectors for Digital Encoders

Connector RE
with plug contacts
for RE 30-2, RE 30-3
and RE 56

Order-No.
27573 32220

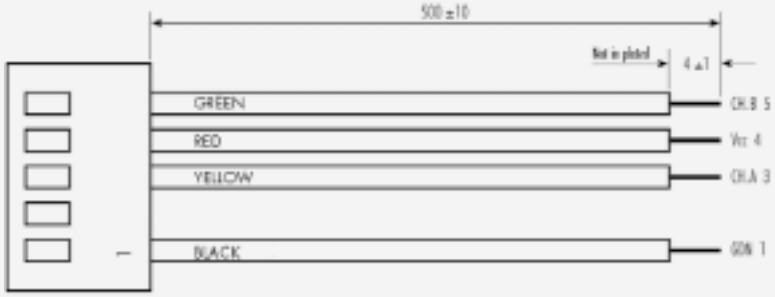
Connectors for IP performance

Connector Molex, 5-pole, Typ 5051 M · Order-No. 22-01-1053
with female contacts type 2759 for shell 5051 M · Order-No. 08-50-0113

Connector Elco, Typ 8263 · Bestell-Nr.60-8263-3058-15-001
with female contacts type 8263 · Bestell-Nr.60-8263-0523-99-808

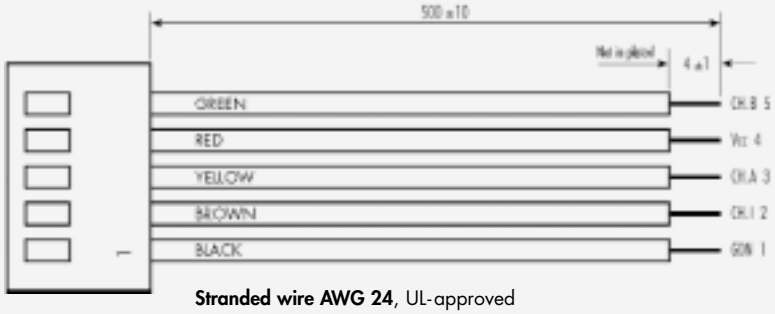
Cable with onnector RE
for RE 30-2
and RE 56

Order-No.
27573 37020



Cable with onnector RE
for RE 30-3

Order-No.
27573 37026



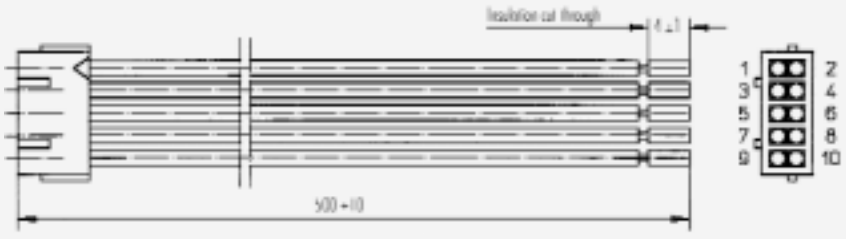
Stranded wire AWG 24, UL-approved
7 or more tinsel conductors, tin-plated, isolation diameter max.1,57.
Litzen von einheitlichem Typ · Tear out force ≥20 N!

Cables for incremental encoder without driver

Dimensions in mm

Kabel mit RE-Stecker
für RE 30-3-512-TI
mit integriertem Treiber

Bestell-Nr.
27573 37059



Connector for IP version
Round connector, 8-poles
Typ 723 · DIN 45326
Company Binder · Bestell-Nr. 09-0172-00-08

Stranded wire AWG 24, UL-approved
7 or more tinsel conductors, tin-plated,
Isolation diameter max.1,5.
Tear out force ≥20 N!

Pin assignment

1	not assignet	–
2	red	+5 V
3	black	0 V
4	not assignet	–
5	grey	A\
6	yellow	A
7	white	B\
8	green	B
9	pink	I\
10	brown	I

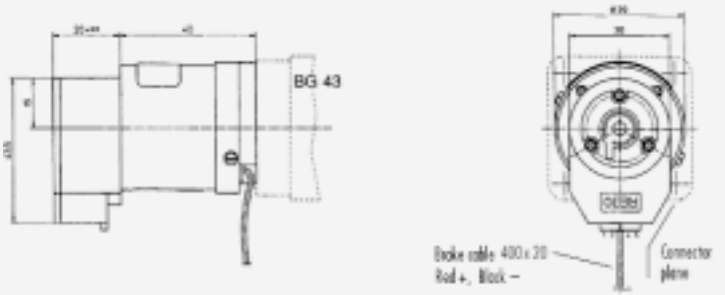
Cables for incremental encoder with driver

Dimensions in mm

Brushless DC Motors with Brakes and Digital Encoders

The brushless DC motors series BG 43 x 50, BG 63 x 55 und BG 83 x 90 can be supplied with braking units and the RE 30 digital encoder.

Dimensional Drawings · Dimensions in mm



Brake and Digital Encoder RE 30-2 / RE 30-3 with BG 43 x 50

Das Baukastensystem erlaubt die Kombination verschiedener Anbauten mit und ohne Schutzhauben. Aus Platzgründen können nicht alle Maßbilder gezeigt werden. Entsprechende Detailmaßbilder erhalten Sie gerne auf Anfrage!

Pin assign-
ment

Pin assignment of RE 30/driver 5 V at 8-pole round connector

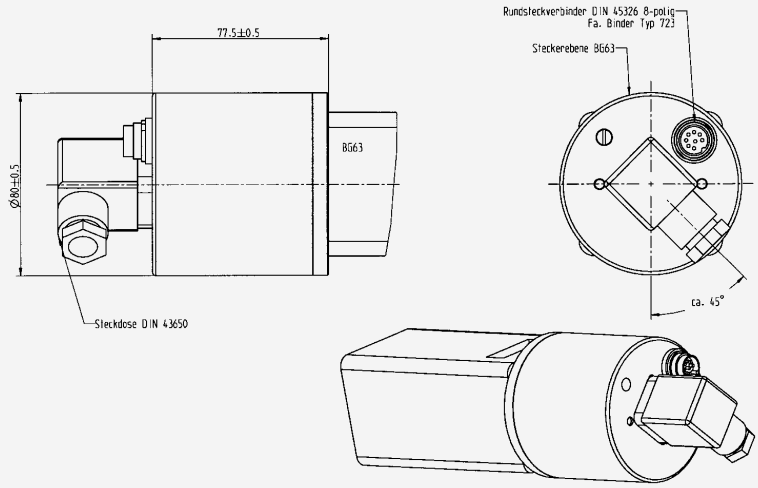
(A)	at Pin 1
(B)	at Pin 2
(+)	at Pin 3
(–)	at Pin 4
(I)	at Pin 5
(A inv.)	at Pin 6
(B inv.)	at Pin 7
(I inv.)	at Pin 8

Pin assignment of ASTO-Litzen at 8-pole round connector

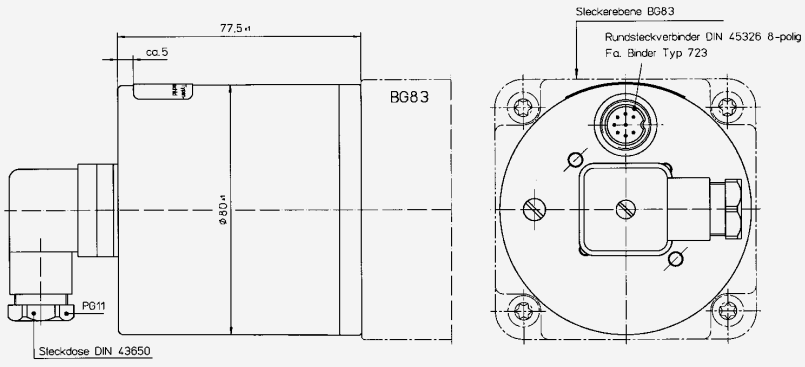
Asto (+)	at Pin 3
Asto (–)	at Pin 4

Das Baukastensystem erlaubt die Kombination verschiedener Anbauten mit und ohne Schutzhauben.
Aus Platzgründen können nicht alle Maßbilder gezeigt werden.
Entsprechende Detailmaßbilder erhalten Sie gerne auf Anfrage!

Dimensional Drawings · Dimensions in mm



E90 + RE30TI + cover for BG63



E90 + RE30TI + cover for BG83

Our Delivery Program

Dunkermotoren – Small Precision Motors

Dunkermotoren offers the optimal solution for many drive problems in the form of AC and DC motors which can be combined with a great variety of gears.
For further information, please contact our agent or us directly.

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e-mail: info@dunkermotoren.de
Telefax (07703) 930-234
Telefon (07703) 930-0

Brushless DC Motors

Brushless DC Motors BG

Operating voltage	12 – 60 V
Operating speed	2700 – 3650 min^{-1}
Torque max.	9,7 – 110 Ncm

As accessory for brushless DC motors, different electronic control units are available.

- The BG motors can be delivered with armature brakes.
- All BG motors can be produced in series with planetary gears, spur gears and worm gears.

DC Motors GR

Operating voltage	3 – 220 V
Operating speed	1500 – 10000 min^{-1}
Torque max.	0,47 – 70 Ncm

DC Motors G

Operating voltage	3 – 40 V
Operating speed	1500 – 6000 min^{-1}
Torque max.	0,85 – 5,6 Ncm

- The GR motors are obtainable with analog or digital encoders.
- Most of the GR/G motors are deliverable with armature brakes.
- All GR/G motors can be produced in series with planetary gears, spur gears and worm gears.

AC Motors

Single-phase Capacitor Motors KD

Operating voltage	230 V, 50 Hz
Nominal power	2 – 76 W
Nominal torque	0,75 – 28 Ncm
Motor version	2/4poles

Three-phase Motors DR

Operating voltage	230/400 V, 50 Hz
Nominal power	6 – 86 W
Nominal torque	4,1 – 32 Ncm
Motor version	2/4poles

- Most of the motors are deliverable with armature brakes.
- All AC motors can be produced in series with planetary gears, spur gears and worm gears.

Drives for Blinds

Drives for Venetian Blinds D

Operating voltage	230 V, 50 Hz
Operating speed	23 min^{-1}
Torque max.	3 – 10 Nm bzw. 2 x 4,5 – 2 x 10 Nm

Drives for venetian blinds are used in the head-pieces of electrical venetian blinds and are able to move - according to the motor type and venetian blind system - venetian blinds having a surface up to 50 m^2.

Electronic Control System DSC
Dunkermotoren has developed a new control system for the venetian blind motors. The control system DSC is a decentralized system for the control of venetian blind singlephase capacitor motors.
The system contains control power supplies, individual control units, group control units, group switches, central control units.

Drives for Horizontal Interior Blinds DCD

Operating voltage	230 V, 50 Hz
Operating speed	15 – 42 min^{-1}
Torque max.	0,25 – 1 Nm

The drives of the series DCD 24 and DCD 30 represent together with the sun protection electronic control system SSR 100 a complete solution for electrically driven horizontal interior blinds.

Positioning Drives

Positioning Drives D

Operating voltage	230 V, 50 Hz
Operating speed	11, 23 bzw. 52 min^{-1}
Torque max.	up to 20 Nm

The positioning drives represent economical solutions for drive-related problems, permitting short but vigorous movements.
The compact drives consist of:

- Single-phase capacitor motors 230 V, 50 Hz for intermiffent duty.
- Planetary gears Torques from 3 to 20 Nm.
- Integrated switch-off installations in the final positions.
- Electromagnetic brakes and temperature feelers.

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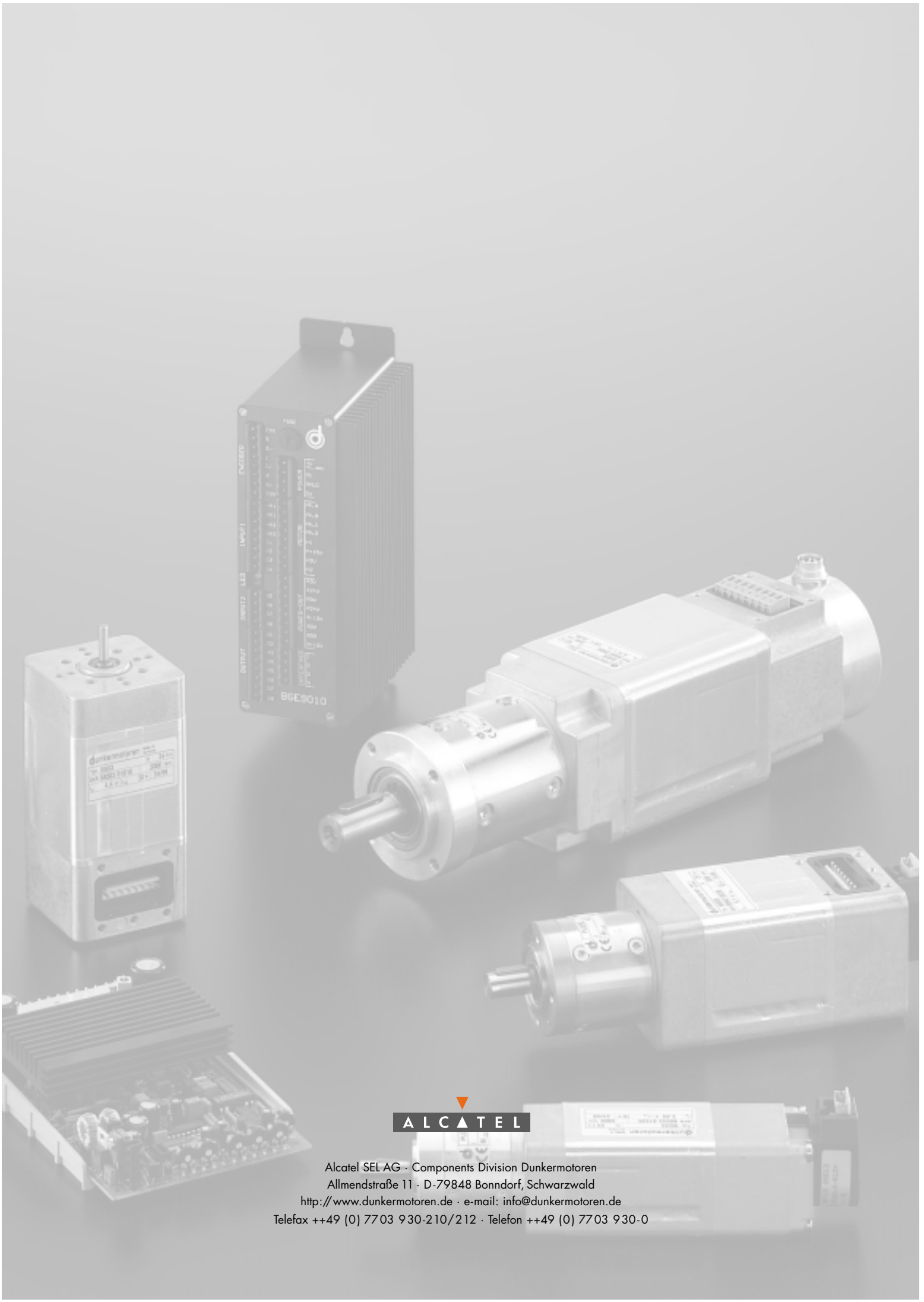

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