Drive Systems

Series 51 BG Servo Bevel-Gear Units

Contents

CAUTION! The observance of these operation and maintenance instructions is prerequisite for the undisturbed operation and the acceptance of liability for possible defects. Therefore study the operation and maintenance instructions before starting to use the gear unit. Make sure that the operation and maintenance instructions are made accessible to the assembly personnel in legible condition.
Observe any national / regional regulations concerning safety and prevention of accidents.

Company Address

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General

Who should study these instructions?

These instructions are addressed to all persons installing, operating or maintaining the series 51 BG servo bevel-gear units.
You must not use the Series 51 BG servo bevel-gear units before having read and understood these operating and maintenance instructions. Please give the safety instructions also to other persons.

Safety notes

The following signal symbols and words are used in the instructions to warn you and/or inform you of something.

warns you about high injury hazards

warns you about possible injury hazards

warns you about minor injury hazards and/or damage hazards


Environmentally hazardous - warns you about a pollution hazard for the environment


Transport warns you of injury hazards when transporting and handling bulky objects

Other signs and symbols

☞ by an “instruction to act“ you are asked to do something
☺ by a „hint“ you are informed of a possible simplification or improvement
🛠 **Maintenance:** suggests optimal operation
Ⓔx When operated in Ⓔx areas with explosion hazard the instructions identified by the Ⓔx symbol are to be observed. These were prepared on the basis of the ignition danger rating KGA 114.
✍ This symbol refers to the name plate.
⛋ The storage symbol indicates how the bevel-gear units should be stored.

Exclusion of liability

The manufacturer will not accept liability for damages or injuries resulting from improper use or handling of the series 51 BG servo bevel-gear units.

Improper manipulations and other acts not in accordance with these instructions impair the quality of the product. This will lead to the exclusion of warranty claims against ATLANTA Antriebssysteme E. Seidenspinner GmbH & Co. KG.

Modifications, conversions

Modifications and/or conversions of the gear unit are not permissible unless expressly approved by ATLANTA in writing.

EC Machinery Directive

As defined by the EC Machinery Directive 98/37 EC the gear unit is not considered an autonomous machine but a component to be installed in machines.
Within the purview of the EC directive the unit must not be operated unless the machine into which this product is installed fulfills the requirements of the directive.

Technical changes

ATLANTA Antriebssysteme E. Seidenspinner GmbH & Co. KG reserve the right to make technical changes to improve the product.

Proper use

⚠CAUTION The ATLANTA series 51 BG servo bevel-gear unit may only be used for speed and torque conversion in machines and mechanical equipment under atmospheric pressure conditions. It must not be used outdoors.

The permissible input speed and output torque as well as the permissible additional loads must not be exceeded. The layout instructions in the Atlanta catalogue must be observed. The maximum torques permitted are listed in our catalogue or our website: http://www.atlantagmbh.de

⚠DANGER The gearbox must not be used in combination with combustion engines – danger of overheating, inadmissible shock loading!

⚠CAUTION The gear unit is designed for input drive via bevel-gear shaft with ATLANTA E-servo special clutch or ATLANTA special clutch The input drive via bevel-gear (hollow output shaft) may be chosen only after consulting ATLANTA. The efficiency rating indicated is based upon input drive via the splined shaft.

⚠CAUTION The gear unit is not self-braking.

⚠CAUTION The gear unit must not be used outdoors or under water.

⚠CAUTION The surface temperature of the gearbox must not exceed 80° C during operation. When used in areas with Ex explosion hazard the temperature of

the housing must not exceed 65°C.

Ex If necessary, measure the surface temperature and warn or switch off when it exceeds 65°C.

☺ The gear unit is designed for intermittent operation (S3 acc. to DIN EN 60034-1).

☺ Continuous operation (S1 acc. to DIN EN 60034-1) is not permissible without the manufacturer's written approval. Continuous operation is defined by the duty cycle. If it exceeds 30% or is longer than 20 minutes, it is considered continuous operation.

Ex When used in areas with explosion hazard the instructions identified by the Ex symbol are to be observed.

Improper use

J Whenever the above mentioned limits are exceeded (especially higher torque or speed), this shall be considered improper use which is forbidden.

It is forbidden to operate the gear unit if:

- it is not correctly mounted (e.g. fastening of the motor),
- it is not properly installed (e.g. fixing screws),
- the gear unit is very dirty (e.g. dust deposits)
- there is no sufficient lubrication.

Qualified Personnel

Some residual danger for persons and objects may emanate from the series 51 BG servo bevel-gear unit. Therefore only skilled and trained personnel being aware of possible risks may carry out mounting, installation, start-up, service, and maintenance work.

The personnel must have the necessary qualification for the work to be done and must be familiar with mounting, installation, starting up and operating the product. In addition they must carefully read, understand and observe the operating instruction and, in particular, the safety instructions.

The following works should also be carried out only by qualified personnel:

Transport, storage, erection/installation, connection, start-up, service, maintenance

General safety instructions

We do not claim these safety instructions to be complete. In case of questions or problems please contact ATLANTA Antriebssysteme E. Seidenspinner GmbH & Co. KG.

The gear unit incorporates the latest technological development at the time of delivery and can be principally regarded as safe to operate.

⚠ DANGER Improper manipulations may lead to injuries and damages.

☞ Make sure that the gear unit is only installed, serviced, or disassembled by specially trained skilled personnel.

⚠ DANGER Foreign matter flung about may cause serious injurie.

☞ Make sure that no foreign matter or tools are near the gear unit before starting operation.

⚠ DANGER Contact with hot surfaces may cause burns.

☞ Never touch gear units when they have high operating temperatures, or use suitable protective equipment (e.g. gloves).

⚠ DANGER Rotating parts may cause injuries. Pulling-in risk!

☞ Keep sufficient distance to rotating machine parts.

⚠ DANGER Never install or operate defective products.

☞ In case of damage please complain immediately.

Short description

The ATLANTA BG servo bevel gear unit was developed for use with three-phase AC and DC servo motors. It features a low-clearance gearing. The light-metal casing ensures optimal heat dissipation. Robust bearings and an excellent stiffness permit the transmission of high torques and additional forces. The gear unit is supplied test-run, tightness-checked and thus ready for operation. The gear unit is available with different reduction ratios. Within one gearbox size and design all components, except for the set of wheels, are the same. The last 2 digits of the item number stand for the nominal reduction ratio. The exact reduction ratio can be seen from the table below.

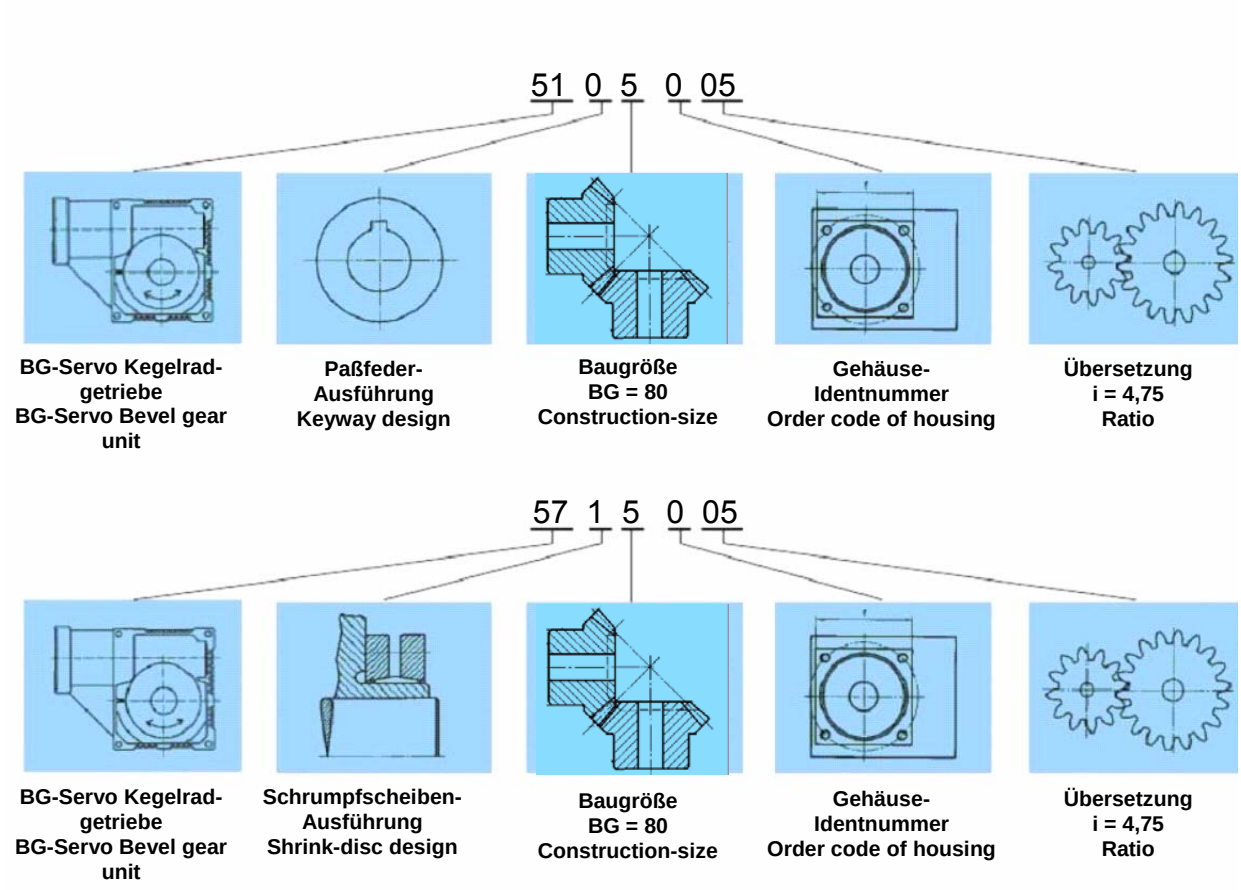
Item no.	Actual gear reduction	Applicable to
51 xx x05	19/4 = 4,75	all sizes
51 xx x07	27/4 = 6,75	all sizes
51 xx x09	39/4 = 9,75	all sizes

This gear unit is available with 2 output variations:

- hollow output shaft for key connections
- hollow output shaft for clamped connections

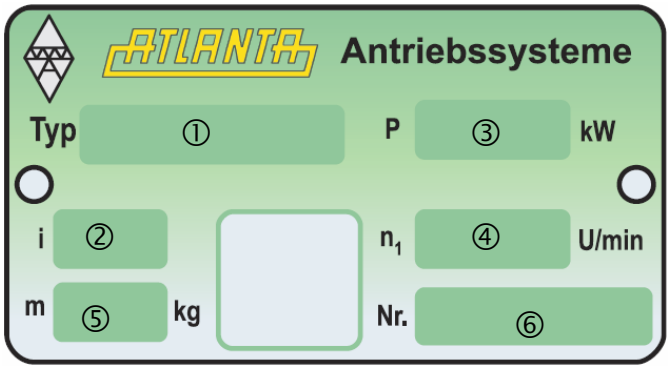
Item number

The item number is composed as follows:
Example BG servo bevel-gear unit BG=80mm, i=4.75 version with key or shrink-disc



Identification

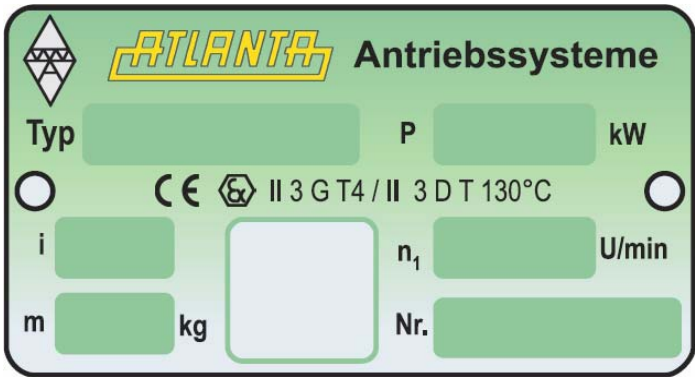
✍ The gear unit is identified by a nameplate containing the gearbox type, the gear ratio, the max. performance for S3 operation, the max. speed for S3 operation, the assembly date, and the serial number of the gear unit.



① Type
② Gear ratio
③ Max. performance for S3 operation [kW]
④ Max. speed for S3 operation [min^{-1}]
⑤ Mass [kg]
⑥ Serial number

A separate oil rating plate specifies the type of oil:

When used in areas with explosion hazard the gear unit must be adequately identified by a means of a nameplate. Only then it may be used in such areas:



Tightening torques

All screw connections for which tightening torques are specified are principally to be tightened and checked with a calibrated torque wrench.
The tightening torques can be taken from tables in relevant books. Should screws be employed acc, to DIN912, you can use the following table:

For the countersunk holes:

⚠CAUTION When applying torques acc. to your own company standard, which allows the utilization of 90% of the yield point of the screw, a suitable washer/bushing should be used.

Hexag. socket-head screws DIN912 Strength class 8.8 /aluminium housing	M5	M6	M8	M10	M12	M16
Tightening torque in Nm*)	3,5	8,9	18.8	40	45	117
Tightening torque in lbf in*)	31	78	166	354	398	1035.5

For the threaded holes::
(Effective length of thread min. 1.5 x d_{nenn} / bearing surface steel with min. p_G> 300 N/mm^2)

Hexag. socket-head screws DIN912 Strength class 8.8	M5	M6	M8	M10	M12	M16
Tightening torque in Nm*)	5,5	9,5	23	46	80	195
Tightening torque in lbf in*)	48	84	203	407	708	1725

*) Use only calibrated torque wrenches! If the tightening torque is too low, the required torque will not be transmitted. If the tightening torque is too high, the screws will be overstrained and become unusable.

Check list - start-up

Before starting up

What has to be checked?	Checked
Delivery: • Are the supplies in conformity with the consignment note? • Any transport damage should be reported immediately to the carrier. • Obvious defects / incompleteness should be reported immediately to ATLANTA Antriebssysteme E. Seidenspinner GmbH & Co. KG.	
Application in areas with explosion hazard: • Are the following data on the nameplate of the gearboxes/motors in conformity with the permissible „*Ex*“ application area on the site? – Explosion group – Category – Zone – Temperature class – Max. surface temperature	
Ambient temperature: • Is the ambient temperature range acc. to the data on the lubricant table observed? The max. ambient temperature of 40°C must not be exceeded throughout the whole operating time. the temperature must not fall below the min. ambient temperature of -10°C throughout the whole operating time.	

Ventilation: • Is sufficient ventilation of the gearbox ensured?	
Ⓔx **Input and output drive elements:** • Are all input and output drive elements to be mounted suitable for the specific „ex“ protection use?	
Nameplate information: • Are the data on the gearbox nameplate not exceeded?	

During start-up

What has to be checked?	Checked
Environment: • It must be ensured that there are no atmospheres, oils, acids, gases, vapours, or combustible dusts around which may explode!	
Temperature measurement: The temperature **must** be measured after 3 hours of operation under max. operating load conditions! • The temperature measurements shall be taken in the input area in places which are protected from the cooling air current. It is advisable to measure in various places in order to determine the maximum. • The absolute temperature of 80°C on the surface of the gearbox must not be exceeded so that the thermal stress on shaft seals and lubricants is kept low; this has a positive influence upon the service life.	

Start-up / operation

Make sure that the following preconditions for the operation are fulfilled:

- The control and protective systems must not be shut off. This applies also for trial runs and start-up operation.
- The gear units must not be operated under the following ambient conditions:
  - o Explosive atmosphere, (exception CE Ⓔx II 3 G T4 / II 3 D T 130° C)
  - o oils,
  - o acids,
  - o gases, (exception CE Ⓔx II 3 G T4 / II 3 D T 130° C)
  - o vapours,
  - o radiation.
- Depending upon the lubricants used the ambient temperature should be between 10°C and +40°C. If the ambient temperatures lie outside the permissible range, get into contact with ATLANTA Antriebssysteme E. Seidenspinner GmbH & Co. KG.
- The gear units must not be operated unless sufficient ventilation is ensured in order to avoid any heat congestion.

Ⓔx When used in areas with explosion hazard, the operator must ensure that the surface temperature of the gearbox does not exceed 65°C.; if necessary, control the surface temperature of the housing.

CAUTION **The surface of the gearbox can reach temperatures of more than 65°C. during operation and can cause burns. The person installing the gear unit must take care that persons cannot be injured due to hot surfaces.**

DANGER **Rotating parts can catch pieces of clothing, hair, and members of the body and can injure persons. The person installing the gear unit must take care that persons cannot be injured by rotating parts.**

Maintenance

DANGER Accidental starting of the gear unit while maintenance work is being carried out can lead to serious accidents.

☞ Make sure that nobody can start the gear unit, while maintenance work is being performed.

DANGER Even short operation of the gear unit while maintenance work is being carried out can cause accidents, if the safety devices are shut off and inoperative.

☞ Make sure that all safety devices are mounted and operative.

Shaft sealing rings:

Shaft sealing rings seal the gap between the housing and the rotating shafts. They are wearing parts which have to be replaced when they reach the permissible limit of wear.
The service life of shaft sealing rings is influenced by a multitude of parameters.
These are among others.:

- peripheral speed at the sealing lip
- temperature
- internal pressure in the gearbox
- viscosity of lubricant
- chemical analysis and additivation of lubricants
- mounting situation (lubricant supply to the sealing lip)
- particles and/or metallic fines in the lubricant
- material of the shaft sealing ring
- external pollution

This multitude of influencing parameters make it practically impossible to predict the precise service life without making experiments simulating the respective application. As the service life of the shaft sealing rings is subject to the above mentioned fluctuations, it.. is absolutely necessary to check them at regular intervals. Only regular checks can prevent unnoticed loss of lubricant in the gearbox.
Whenever the shaft sealing is replaced you should also check the running surface of the lips of the seal on the shaft. If seizure marks are visible, the shaft must be repaired or replaced. Alternatively it is possible to insert the shaft sealing ring in a slightly axially displaced position so that the lip of the seal runs in a practically new place

Maintenance intervals

Provided that the gear units are used properly as described in the catalogue, the series 51 BG servo bevel-gear units are designed and built for 12,000 h of operation except for wearing parts such as the bearings and the shaft sealing rings.

The following maintenance works should be performed for the series 51 BG servo bevel-gear units.

Interval	What should be done?
Every 2000 machine hours, but at least every six months	• Check the running noise to detect possible defects in the bearings • Inspect the motor flanges for leakage • Inspect the seals for leakage. Should any leakage be detected, please contact us.
After 5000 … 8000 hours, but after 3 years at the latest	• Replace the shaft sealing rings

Changing the gear oil

A sufficient amount of lubricant is absolutely necessary for safe operation. The lubricant ensures that dry running and consequently excessively high surface temperatures, wear (play), or mechanic sparking is prevented in the metallic contacts. The main danger is an unnoticed loss of lubricant. Therefore the gear units must be regularly checked for loss of lubricant.

ATLANTA E servo bevel-gear units are filled with synthetic polyglycol oil.

Under the following preconditions this is a lifetime lubrication:

- The layout of the gear unit is strictly in accordance with the guidelines given in the ATLANTA catalogue (www.atlantagmbh.de).
- The gear unit is exclusively operated within the permissible characteristic and limit values (www.atlantagmbh.de).
- The operator checks the gear unit regularly (every 2 weeks) for loss of oil.
- The surface temperature must not exceed max. 80°C during operation.
- ☺ In the case of operation with mostly low input speeds (peripheral speed of the bevel gear v < 0.5 m/s) we recommend to change the lubricant every two years.

The gear unit is supplied filled with synthetic lubricant (viscosity class ISO VG 220). The type of lubricant filled in is indicated on the oil-rating plate.

For quantity of lubricant to be filled in see table below.

CAUTION Synthetic oils are not miscible with mineral oils.
We recommend to use the following gearbox lubricants:

Manufacturer	Lubricant	Internet address
Klüber	Klübersynth GH6 – 220	www.klueber.de
Aral	Degol GS 220	www.aral.de
BP	Energol SG – XP 220	www.bp.de
DEA	Polydea PGL P220	www.dea.de
Fuchs	Renolin PG 220	www.fuchs-oil.de
Optimol	Optiflex A 220	www.optimol.de
Shell	Tivela Öl S220	www.shell.com
Tribol	800/220	www.castrol-industrie.com

Order code for 1 liter of Klübersynth GH6-220: 65 90 010

Gearbox size	Oil quantity	Input drive speed for V < 0.5 m/s
BG 50	0.3 l	500 min^{-1}
BG 63	0.5 l	400 min^{-1}
BG 80	1.2 l	400 min^{-1}

DANGER Extended intensive contact with synthetic grease and synthetic oils can lead to skin irritation.

☞ Avoid extended contact with oils and/or grease and clean any oil-polluted patches of skin thoroughly.

DANGER Hot oil can scald you.

☞ Protect yourself against contact with hot oil when changing the oil.

CAUTION Blending different lubricants can deteriorate the lubrication characteristics. This may cause damage to the gear unit.

☞ Make a complete change of lubricant (including rinsing) when you wish to use another lubricant.

CAUTION Mineral oils reduce the transmission efficiency and must not be used without consulting ATLANTA.

Lubricants (oils and fats) are dangerous substances which may pollute soil and water.

☞ Collect drained off lubricant in suitable containers and dispose of them in accordance with the applicable national regulation.

☞ Prevent lubricants from penetrating into drain pipes, the sewerage, and water.

Cleaning

Ex Dust deposits of more than 5 mm thickness on the gearbox are not permissible because they increase the surface temperature which may result in the ignition of the dust.

⚠CAUTION Cleaning with high-pressure cleaner is not permitted because it destroys the sealing rings so that water may penetrate into the gear unit causing premature failure of the gear unit.

⚠CAUTION Cleaning with solvents is permissible only if these have been released by the company ATLANTA Antriebssysteme E. Seidenspinner GmbH & Co. KG in writing.

Mounting instruction

⚠CAUTION Mounting work may only be carried out by skilled or specially trained personnel.

Preparing the installation

☞ Check the gear unit for damage or soiling on the outside.

⚠CAUTION A damaged or soiled gear must neither be installed nor operated.

⚠CAUTION The gear unit, especially the area of the seals, must not be cleaned with sharp-edged objects or cleansing liquids.

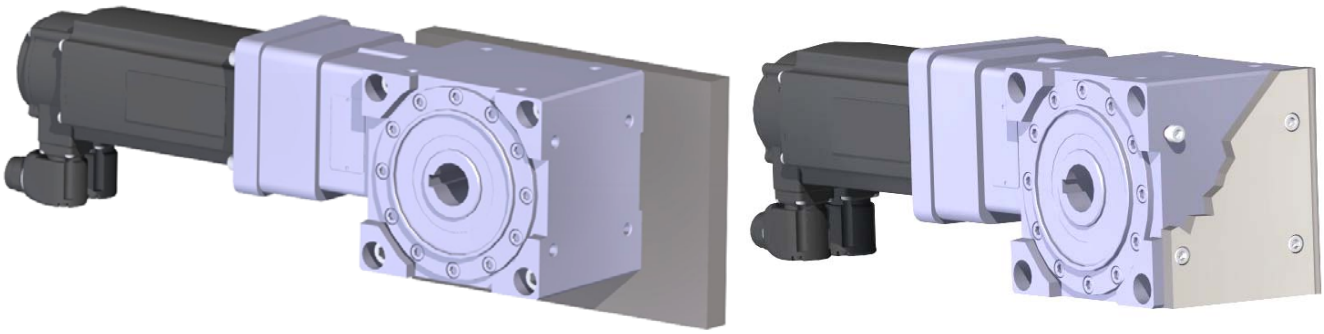
⚠CAUTION If the gear unit is cleaned in the area of the seals with a cleansing agent approved by ATLANTA Antriebssysteme E. Seidenspinner GmbH & Co. KG , the cleaned surfaces must be protected again against corrosion.

Installation of bevel-gear units:

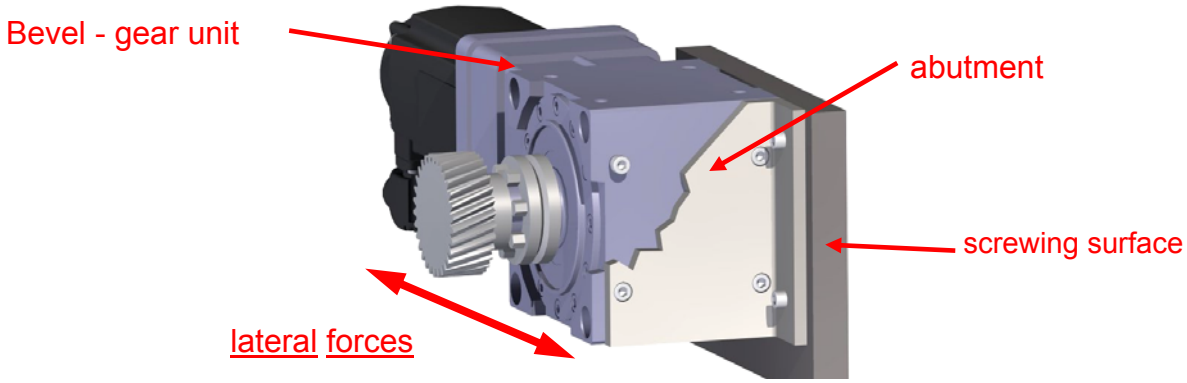
There are 5 machined mounting faces with sufficiently dimensioned pre-drilled fixing holes and tapped holes. It is important to ensure tension-free mounting. Use all fixing holes of the pertinent contact face. Hexagon nuts or screws are to be tightened to the specified torque and secured. The correct tightening torque can be seen from relevant tables. Special attention should be paid to the strength class of the screws and the material of the supporting surfaces.

☞ If the additional forces are to be fully used, the gear unit should be attached to the largest contact face, i.e. to one of the two lateral surfaces.

☞ Mounting the bevel-gear shaft (input drive shaft) in a lateral and/or inferior position is ideal with a view to lubrication. Mounting the shaft in a top position will reduce the driving power by about 10%. Avoid to install the unit with the motor hanging downward. In this position leakage oil could get into the motor.



☞ For precise positioning and stability of the gear unit we recommend to provide an abutment on the front face of the gearbox.



⚠CAUTION

Any additional attachments and/or modifications of the gear unit are not permissible unless approved by ATLANTA in writing.

⚠CAUTION

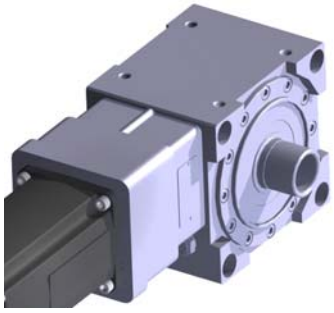
Do not use the gear unit at ambient temperatures of < -10 °C and >40°C

Ⓔx The most suitable point for controlling the max. permissible surface temperature of the housing is in the area of the input-side bevel-gear shaft bearings.

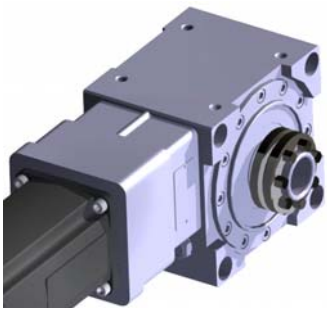
Ⓔx The vertical arrangement of the shaft (input or output vertically downward) is only permissible with an oil level monitor stopping the gear unit in case of a sudden loss of oil.

Mounting the output drive shaft (Version with shrink-disc)

For the output drive shaft we recommend tolerance h6 (DIN ISO 286). The material must have a minimum yield point of 385 N/mm^2.
If you have bought the output drive shaft from ATLANTA and if it is not supplied already mounted, we recommend to proceed as follows:



Gearbox without output shaft



Gearbox w. shrink-disc set

Gearbox w. shrink-disc set and output shaft

- Clean the seat of the hollow shaft and oil it slightly (do not use grease). Wipe off any excess oil with a rag.
- Slide the shrink-disc onto the hollow shaft.

☺ Do not tighten the screws beforehand!

- Clean the shank of the output drive shaft and oil it slightly. Wipe off any excess oil with a rag.

- Push the output drive shaft into the bore right up to the stop.
- Attach the shrink-disc by evenly tightening the screws one after the other (not crosswise).

☺ Make sure that the two clamping discs are plane parallel.

- Several passes are necessary until the screws are tightened to the specified torque acc. to the table below.

Order code	Tightening torque *)
80 84 036	12 Nm
80 85 050	12 Nm
80 86 062	12 Nm

*) Use only calibrated torque wrenches! If the tightening torque is too low, the required torque will not be transmitted. If the tightening torque is too high, the screws will be overstrained and become unusable.

Soiling may impede the transmission of the torque. Do not disassemble the shrink-disc clamping set before mounting it

If the gear unit is cleaned in the sealing area with a cleansing agent approved by ATLANTA Antriebssysteme E. Seidenspinner GmbH & Co. KG the surfaces cleaned must be protected again against corrosion.

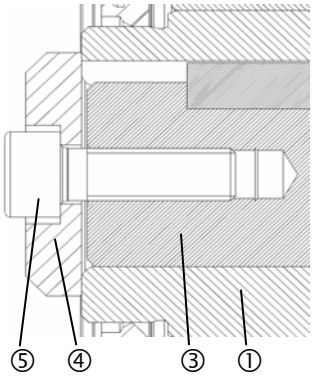
The forces of the shrink-disc can deform the hollow shaft. Always install the machine shaft before tightening the clamping screws of the shrink-disc.

Slanting the shafts may cause damage. Make sure that the hollow shaft and the machine shaft are aligne

Ex When used in areas with explosion hazard improper installation may lead to inadmissibly high temperatures. Check the tightening torques and axial fixing after 10 hours under operating conditions.

Mounting the output-drive pinion shaft BG 50 (Version with key)

Unless the output pinion shaft comes already fully assembled, we recommend to proceed as follows:



- Clean the seat of the hollow shaft ① and rub with MoS_2-powder or grease (reduces fretting corrosion).
- Insert the locking washer ② into the recess of the hollow shaft ①..
- Insert the locking washer ④ from the opposite side up to the stop inside the hollow shaft ①..
- Connect the mounting plate ④ and the output shaft ③ by means of the screw ⑤.
- Secure the screw ⑤ using suitable adhesive (e.g. Loctite 243).

*) Dry lubricant: Improves the sliding properties of machine parts and reduces friction and wear within a wide temeperature range; minimum friction with maximum load capacit.


Gearbox without output shaft

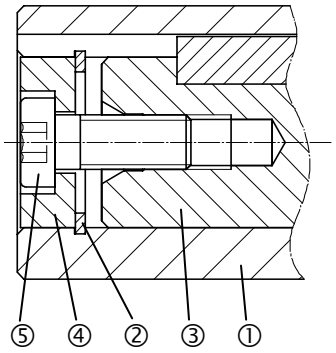

Insert pinion shaft


Mount retaining disk / lock screw and tighten

The retaining ring, washer and screw supplied with the drive shaft serve for the axial fixation of the input driving shaft. For gearboxes size BG 50 an additional washer 2 51 09 001 is required which replaces the two items retaining ring + locking washer supplied together with the driving shaft.

Mounting the output-drive pinion shaft BG63 and BG 80 (Version with key)

Unless the output pinion shaft comes already fully assembled, we recommend to proceed as follows:



- Clean the seat of the hollow shaft ① and rub with MoS_2-powder or grease (reduces fretting corrosion).
- Insert the retaining ring ② into the recess of the hollow shaft ①.
- Push in the output shaft ③ right up to the stop.
- Insert the locking washer ④ from the opposite side up to the stop inside the hollow shaft ①.
- Connect the mounting plate ④ and the output shaft ③ by means of the screw ⑤.
- Secure the screw ⑤ using suitable adhesive (e.g. Loctite 243)

*) Dry lubricant: Improves the sliding properties of machine parts and reduces friction and wear within a wide temeperature range; minimum friction with maximum load capacit.

Gearbox without output shaft
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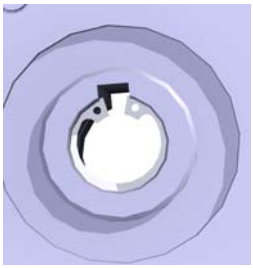
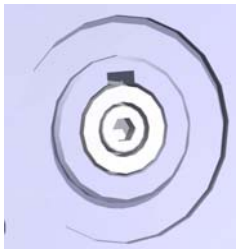


Insert Spring

Insert pinion shaft



Mount retaining disk /
ock screw and tighten

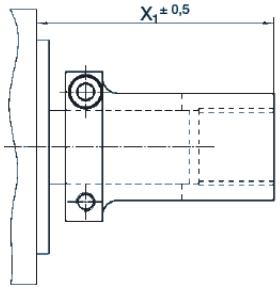
Hexagon socket head-screws DIN912 strength rating 8.8 / locking washer	M5	M8	M12	M16
Tightening torque in Nm	5.5	23	80	195
Tightening torque in lbf in	48.5	203.5	708	1726

*) Use only calibrated torque wrenches! If the tightening torque is too low, the required torque will not be transmitted. If the tightening torque is too high, the screws will be overstrained and become unusable

⚠CAUTION Slanting the shafts may cause damage. Make sure that the hollow shaft and the machine shaft are aligned. Mount the machine shaft in the hollow shaft without using force. Never try to mount it by means of knocking it in. Use only suitable tools and devices.

Ex When used in areas with explosion hazard, improper installation may lead to inadmissibly high temperatures (see ignition danger rating acc. to KGA 114). Check the tightening torques and the axial fixing after 10 h work under operating conditions.

Mounting the clutch on the motor shaft



ATLANTA E servo special clutch 65 5X XXX or ATLANTA special clutch 65 4X XXX

The clutch is supplied pre-assembled.

- VBefore mounting the clutch on the motor shaft clean all contact surfaces and coat them with a thin oil film (no grease). Any excess oil should be wiped off with a rag
- Rub the DIN 5480 profile of the clutch with MoS_2 powder or grease (reduces fretting corrosion)
- If the motor shaft has a key, it should be removed.
- Slide the clutch onto the motor shaft as far as specified in the catalogue as „X1" (65 5X XXX) and/or right up to the stop (65 4X XXX / shoulder or retaining ring).
- In the case of clutch 65 5X XXX intermediate sleeves may be used in order to reach the motor-shaft diameter. In such a case the slot in the intermediate sleeve must be aligned with the slot in the clutch body.
- Slightly tighten the clamping screws.
- Tighten screws uniformly by turning them alternately (crosswise with 65 4X XXX)..
- Check clutch for true running at the reference diameter (f_r < 0.04 mm).
- Several passes are necessary until the screws are tightened to the tightening torque specified in the table below.
- Make sure that the width of the gap between clutch and pressure surface remains uniform.
- Check at reference diameter for true running.

65 5X XXX

Order code of clutch	Tightening torque *)	
65 51 xxx	7 Nm	62 lbf in
65 53 xxx	7 Nm	62 lbf in
65 54 xxx	10 Nm	88,5 lbf in
65 55 xxx	25 Nm	221 lbf in

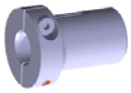
65 4X XXX

Order code of clutch	Tightening torque *)	
65 43 xxx	7 Nm	62 lbf in
65 44 xxx	10 Nm	88,5 lbf in
65 46 xxx	10 Nm	88,5 lbf in
65 47 xxx	25 Nm	221 lbf in

*) Use only calibrated torque wrenches! If the tightening torque is too low, the required torque will not be transmitted. If the tightening torque is too high, the screws will be overstrained and become unusable.

Ⓔx When used in areas with explosion hazard, improper installation may lead to inadmissibly high temperatures (see ignition danger rating acc. to KGA 114). Check the tightening torques and the axial fixing after 10 hrs work under operating conditions.

Ⓔx When used in areas with explosion hazard, use corrosion-protected screws.



Clean motor and clutch surfaces

Mount the clutch on the motor shaft and fasten as described

Mounting the motor

- Clean flange surface and centering shoulder on motor and gearbox.
- Slide the motor with coupling mounted onto the teeth of the input drive shaft and into the gear centering piece so that the plane surfaces touch.
- If necessary, rotate the motor around the motor axle until the clutch and the input shaft teeth mesh..

☞ The motor must slide on easily .

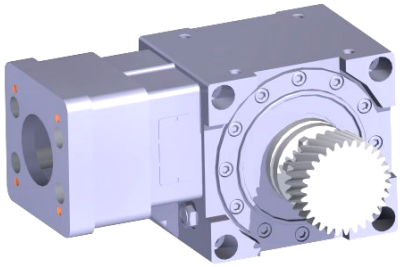
☞ There must not be any gap between the motor and the gearbox flange.

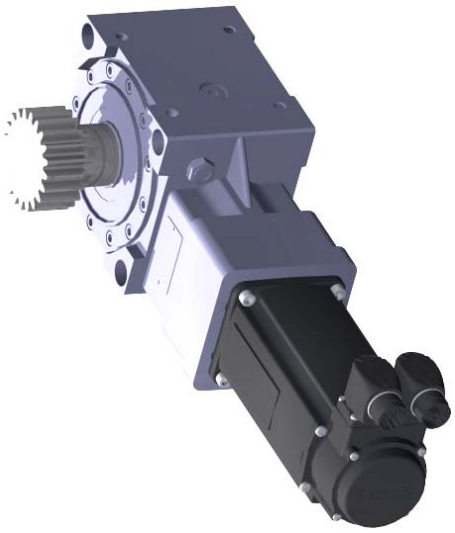
⚠CAUTION Mounting motors having longer shafts than permissible for the respective gear unit leads to tensions which damage the motor and the gear unit. Check the interfering edges by measuring out or by checking the dimension according to our catalogue data and the motor manufacturer's data.

- Screw motor and gearbox together. Hexagon nuts or screws are to be tightened to the specified torque and secured. The correct tightening torque can be seen from the respective tables. In this context it is particularly important to pay special attention to the strength class of the screw and the material of the supporting surfaces.
- The motor can be mounted optimally centered by positioning the gearbox in such a way that the bevel-gear shaft is standing up vertically.

☺ Use screws with an effective length of at least 1.6 x thread diameter.

Ⓔx When used in areas with explosion hazard, use corrosion-protected screws





Clean screwing surfaces of motor and gearbox and rub with MoS_2*) powder or grease

Screw motor to gearbox,
Use proper tightening torque for screws

*) Dry lubricant: Improves the sliding properties of machine parts and reduces friction and wear within a wide temeperature range; minimum friction with maximum load capacity.

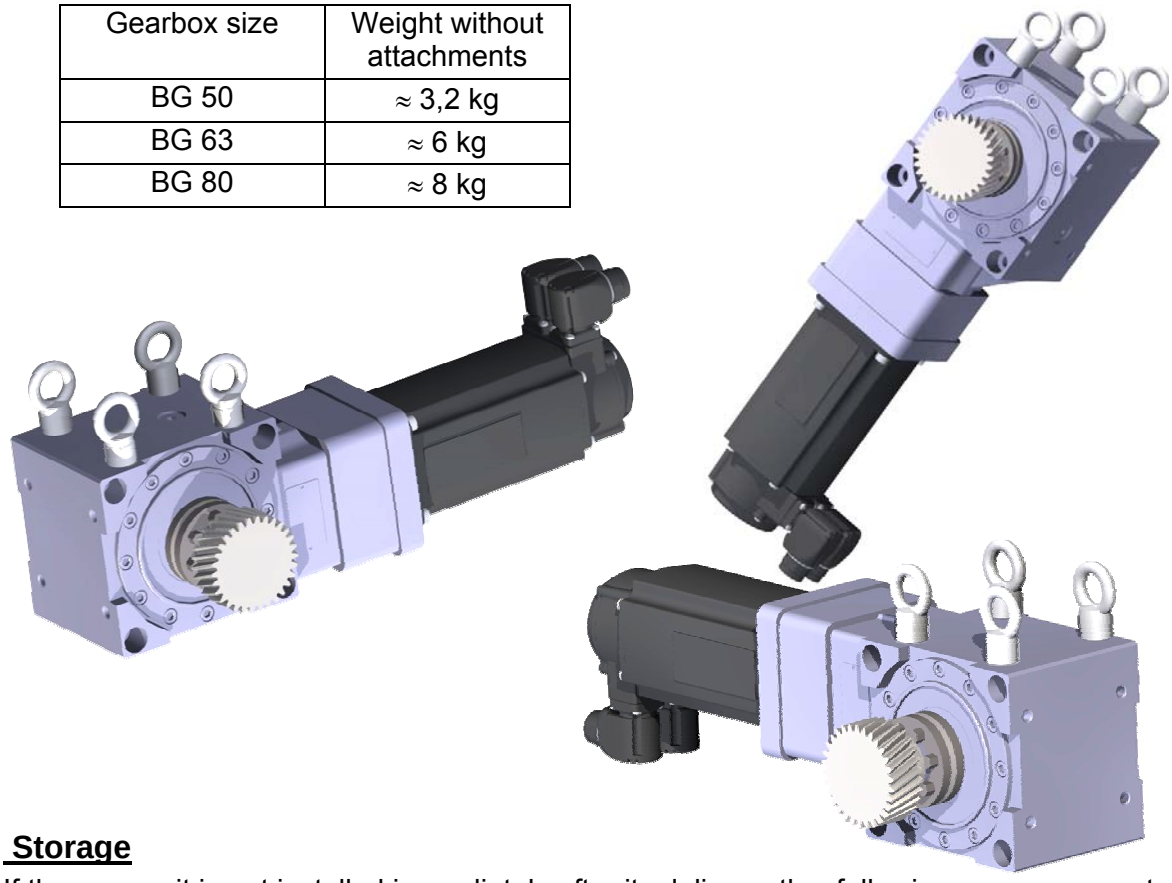
Transport and handling

There are no special holes or threads provided for transporting and handling the gear unit. There are, however, numerous fixing threads available in the gear housing permitting to screw in eye-bolts so that it is possible to handle the gearbox safely.

☞ Observe all safety regulations in connection with transport and handling using lifting gear.

☞ Make sure that the load is handled and set down slowly and carefully.

Gearbox size	Weight without attachments
BG 50	≈ 3,2 kg
BG 63	≈ 6 kg
BG 80	≈ 8 kg



Storage

If the gear unit is not installed immediately after its delivery, the following measures are to be taken:

- ☞ Store the gear unit with horizontal hollow output shaft and horizontal input drive shaft (worm shaft) on top in such a way that - except for the supporting surface - it cannot come into contact with any other objects
- ☞ Protect the gear units from detrimental environmental influences (high air humidity, salty air, aggressive gases; UV light, electric welding; dust; dirt, shocks; temperature fluctuations; [0°C to +30°C], etc.).
- ☞ Connecting parts, e.g. clutch or output shaft, are to be stored separately.
- ☞ Protect the steel parts against corrosion.
- ☞ As logistics principle for store-keeping we recommend the „first in – first out“ principle.

☺ Occasionally turning the input shaft of the gear unit will facilitate the start-up

☞ The max. storage time under such conditions is 2 years.

Failure list (Troubleshooting)

You should take remedial measures at once, if you get aware of oil loss, increased operating noises, or increased operating temperatures.
Any disturbances occurring during the warranty period requiring the repair of the gear unit, may only be remedied by ATLANTA.
We recommend to ask for our assistance also after the expiration of the warranty period.

⚠ DANGER Always shut down the gearbox during the elimination of disturbances. Secure the driving unit against inadvertant starting. Post a notice at the switching position.

Problem	Possible cause	Remedy
Increased operating temperature	Layout to weak; Speed / torque too high	Check the technical data
	Motor heats up the gear unit	Check the attachment circuit, replace the motor, or provide an insulation between motor and gear unit
	Ambient temperature too high	Ensure adequate cooling
	Duty cycle too long	Verify the layout
Increased operating noise	Defective bearing	Please contact us
	Defective tooth system	
	The fixing of the gear unit has loosened.	Tighten screws/nuts with the specified tightening torque. Replace defective screws/ nuts.
	Adjustment of controller.	Check the servo-motor parameters
Loss of oil	Leakage	Get into contact with us.
	Apparent leakage	A temporary leakage due to much grease between sealing lip and protective lip . The surplus grease can penetrate outside as an apparent leakage.

Disposal

Please observe the national regulations!
If required, dispose of the individual components separately depending on their nature and any existing specific national regulations, e.g as:

- Steel scrap
  - gearwheels
  - shafts (hollow shafts)
  - antifriction bearings
  - cast iron parts
  - clutches
- Aluminium scrap
  - housing elements
  - adaptor elements
- Bronze scrap
  - bevel gear (separated from hollow shaft)
- Collect waste oil and dispose of as directed

ATLANTA does not accept liability for any damage to the transmission or any consequential damage, if these instructions are not observed.