



# ATLANTA

## Documented Procedure

### BWL 015e

### 4100-001-12.93

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### Translation from german original

## **ATLANTA Motorized Lifting Spindle Drive EH4 with non-rotating trapezoidal-thread spindle Tr 46x5**

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**The operating and maintenance instructions are to be strictly observed in order to ensure the proper functioning of the equipment and the acceptance of possible claims under warranty.**

**Therefore you should carefully read these instructions before starting work with the Lifting Spindle Drive!**

**The instructions contain important information regarding the maintenance and should therefore always be kept near the Lifting Spindle Drive.**

#### **Product description**

The Motorized Lifting Spindle Drive EH4 with non-rotating trapezoidal-thread spindle consists of the following components: three-stage cylindrical gear unit, trapezoidal-thread spindle, trapezoidal thread nut (installed in gear unit), safety grip nut with automatic cut-off in case of breakage of the supporting nut, protective tube, bellows, link rod head, three-phase AC motor, limit switches at the protective tube, and electronically controlled lubricator.

Depending upon certain customer-specific modifications individual components may vary or be inapplicable.

#### **General technical data:**

Trapezoidal-thread spindle	Tr46x5
Nominal axial force of spindle	50 kN
Duty cycle	0-30% (dep. upon spindle force)
Type of load	push and pull
Travelling distance at spindle	> 20 000 m
Permissible static load	100 kN
Travelling speed	15 mm/s at 2800 rpm motor speed and ratio 15.74
Required input power	3 kW at 2800 rpm motor speed, 50 kN spindle force and ratio 15.74
Gear ratio	7.93, 10.07 or 15.74
Max. gear output torque	200 Nm

Self-locking acc. to VBG 14 with sufficient spindle lubrication.



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**Installation, connection, start-up as well as maintenance and repair work may be carried out only by qualified personnel and with due regard to**

- these instructions
- the warning and information signs on the lifting unit
- any other project information, start-up instructions and circuit diagrams
- the unit-specific instructions and requirements
- the applicable national / regional regulations.

#### **Universally valid data for axial force of spindle and duty cycle:**

Precise data see order specific operating and maintenance instructions.

permissible axial force of spindle	Duty cycle related to 10 min.
50 kN	0 % ⇒ infrequent operation
40 kN	2 %
35 kN	3 %
30 kN	5 %

#### **Mounting**

Make sure to cover the contact surfaces of the radial shaft seals before painting the gear unit. The radial seals are located on both sides of the output sleeve in which the spindle is installed and in the driving flange to which the motor is attached.

The gear unit is supplied preassembled. Check all screwed connections before mounting. The attachment to the lifting table must be stress-free and free from transverse forces. The working surface of the trapezoidal thread must be carefully greased before starting up.

A T L A N T A suggestion: Klüber Microlube GB0.

#### **Mechanical startup**

Motorized lifting spindle drives are generally designed for intermittent operation. It is therefore important that the specific cycle times acc. to design as well as the lubricating instructions are strictly observed when starting up the unit for the first time and also during operation. The cycle times are mentioned in the order specific operating and maintenance instructions. Otherwise the above listed data is valid.

The motor driven operation of the gear unit without end-position control (limit switch at protective tube) is not permissible because overshooting the end-positions will cause mechanical damage to spindle and gear unit. For test runs of the uninstalled gear unit it is necessary to support the torque at the spindle by suitable measures.



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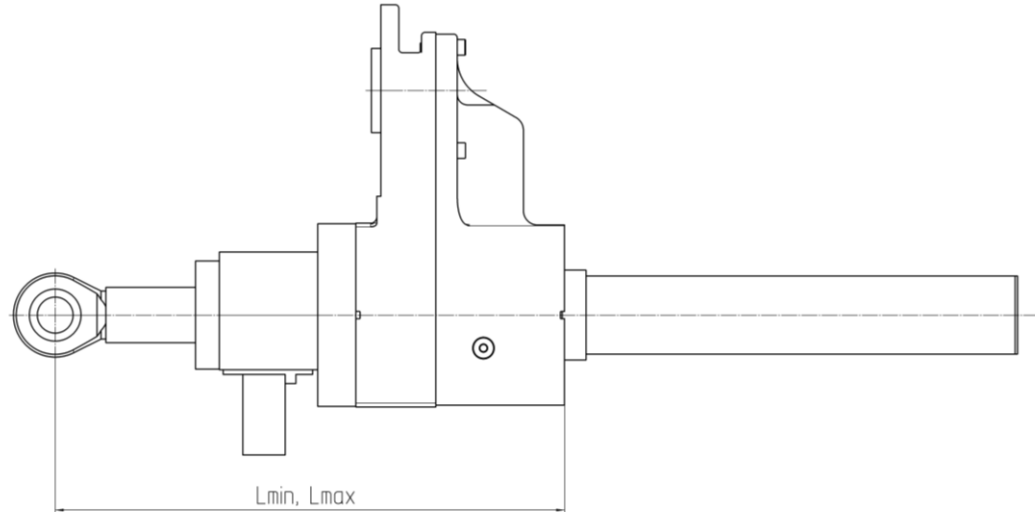
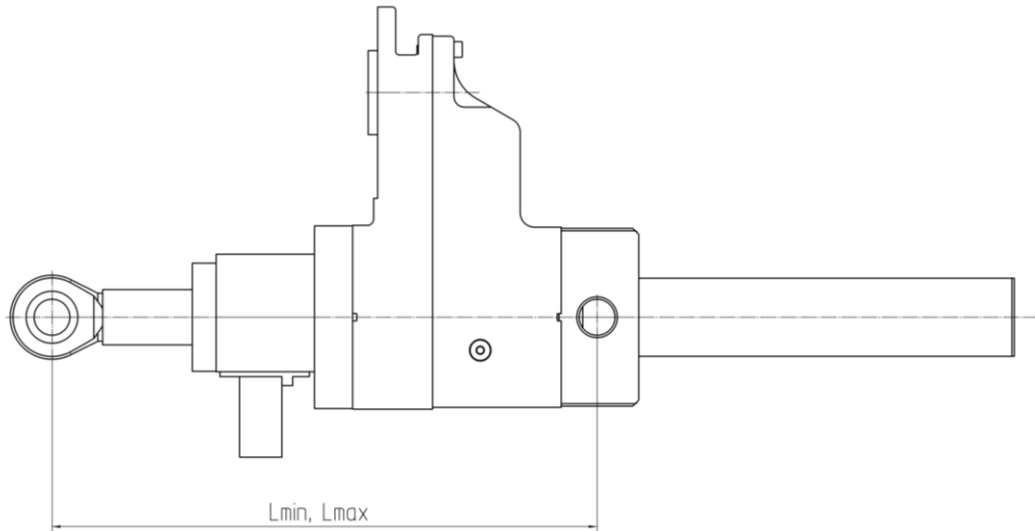
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End positions:



 **ATLANTA** Antriebssysteme

Max. Hub = ...mm  
Lmin = ...mm  
Lmax = ... mm

Max. Hub = maximum permissible stroke

L min = minimum length in retracted position; may not be less

L max = maximum length in extended position; may not be more



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#### Electrical startup

**All electrical components are to be connected only by specially trained skilled personnel. The attached operating and maintenance instructions of the motor and/or the technical data sheets of the two limit switches must be strictly observed.**

Connect the limit switches at the break contacts 11 and 12 in order to ensure the forced mechanical disconnection of the break contacts.

Check the limit switches at the protective tube for proper function and correct position.

The power connection for direct mains operation is shown on the enclosed connecting diagram.

In order to protect the brake control from disturbing influences the brake lines must not be installed together with clock-pulse controlled power lines in one cable.

In order to protect the motor protection devices (temperature sensors, coil thermostats) from disturbing influences unshielded supply lines must not be installed together with clock-pulse controlled power lines in one cable.

**It must be ensured that an overload protection device limits the motor torque to 150 % of the motor torque when lifting the nominal load.**

**In the case of motors powered by frequency converters it is absolutely necessary to observe the frequency converter manufacturer's operating and maintenance instructions as well as the wiring instructions.**

**We strongly recommend to provide S-shaped ramps at the converter.**

#### **Lubricating Instructions**

The sliding friction prevailing between the trapezoidal-thread spindle and nut makes it absolutely necessary to ensure sufficient lubrication. Without adequate lubrication there will be excessive wear and tear leading to the destruction of the nut.

The electronically controlled lubricator is to be put into operation as described in the enclosed instruction.

The trapezoidal-thread spindle is supplied with an initial lubrication sufficient for approx. 10 strokes.

For putting the unit into operation, the hose should be filled before mounting by means of a grease gun.

Proper lubrication is ensured only when the connecting hose is completely filled with grease right into the nut.

For pressure buildup observe the times indicated in the lubricator operating instructions.

Quickest pressure buildup: all switches „ON“. Pressure buildup within 6-8 hours.

Type of lubricant: Microlube GB0 (Klüber) ATLANTA no. for 1kg: 65 90 002.

Based upon our tests, we recommend to set an emptying time of 6 months after the startup and the pressure buildup. During the first days and weeks the lubricant supply should be checked at regular intervals and the emptying time should be adjusted to the application. The spindle surface must always be covered with a uniform, thin grease film.

Grease in the protecting tube or under the bellows is an indication for an excessive lubricant supply.

Screeching noises between spindle and nut are an indication for insufficient lubrication.

The level in the lubricator should be checked regularly. We recommend to include this check in a maintenance plan.

When the lubricator is completely empty it can be used again after refilling. Only the pressure chamber where the gas generation takes place and which is available as a spare part must be replaced. A permanent signal lamp powered by two commercially available 1.5 V batteries shows that the lubricator is ready for use. Please ask for our relevant instructions BKI 103.

When refilling the lubricator take special care that no air bubbles are trapped in the lubricator. They might be the reason for insufficient lubrication when they are transported to the lubricating spot.

**No warranty will be assumed if the lubricating instructions are not observed.**



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#### **Safety instructions**

The gear unit may only be operated within the permissible limits indicated on the order specific operating and maintenance instructions and on page 2. Avoid any bodily contact with rotating parts. Maintenance work should only be carried out when the gearbox is at a standstill and cooled off. The motor must be disconnected.

The gear oil Klübersynth GH 6 used in the gear unit at the time of delivery, for which a safety data sheet is available, has the waste code 544 01 (synthetic coolants/lubricants).

The grease Klüber Microlube GB0 contained in the lubricator at the time of delivery, for which a safety data sheet is available, has the waste code 542 02 (grease waste/residues).

#### **Maintenance of safety-relevant components**

Good and durable lubrication provided, the spindle drive is designed for a service life of approx. 20,000 m.

**Wear, if any, usually occurs at first at the threaded nut. It should therefore be included in the annual inspection. In the case of long operating times and high loads near the upper limit the unit should be inspected more frequently, preferably quarterly.** The amount of wear can be determined by measuring the distance between supporting nut and safety grip nut (dimension X on the drawing below). The original dimension at the time of delivery is noted on a name plate on the outside of the gearbox. For inspection remove the cap item 2. Do not remove the limit switch. If the distance has decreased/increased by 1.6 mm, the supporting nut must be replaced.

#### **Maintenance of the other gearbox components**

Spindle lubrication is ensured by the lubricator which is to be operated in accordance with the respective instructions. When the lubricator is empty it can be refilled and used again. At this occasion the spindle should be cleaned from old grease and greased again. Grease deposits in the protective tube and in the bellows are to be removed.

The gearbox is filled with oil. It should be regularly checked for leakages at the seams and the seals. If there are no leakages, it is sufficient to change the oil every 2 years. Capacity: 0.7 l.

A T L A N T A suggestion: Klübersynth GH6 – 220 from Klüber.



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### Troubleshooting

The following information shall help you in the case of problems with your gear unit.

Problem	Cause	Remedy
Trapezoidal-thread spindle screeches		Turn off unit immediately and eliminate the cause.
	Lubricator empty	Refill lubricator, replace pressure chamber, replace battery.
	Emptying time chosen too long	Shorten emptying time (see lubricator instructions).
		Relubricate the spindle directly with a brush before starting up the unit again.
Motor current increases	Excessive load on spindle.	Check if load on the table, or the distribution of the load on the table has changed.
		Check moving parts and bearings of the lifting table for changes.
		Check if all parts move freely or are jammed.
	Insufficient lubrication of spindle.	Proceed as described under "spindle screeches".
Gear unit switches off.	Limit switch is actuated.	See "limit switch at grip nut" or "limit switch at protective tube".
	Motor switched off.	See "motor current increases".
Temperature on gearbox surface exceeds 60° C.	Excessive heat buildup between spindle and nut	See "motor current increases".
Limit switch at protective tube is actuated.	Overshooting of end position limit switch.	Check end position limit switch for proper function and position and replace, if necessary. Check wiring.
Limit switch at grip nut is actuated.	Supporting nut worn and safety grip nut engaged.	Send the gear unit to ATLANTA for replacement of supporting nut.



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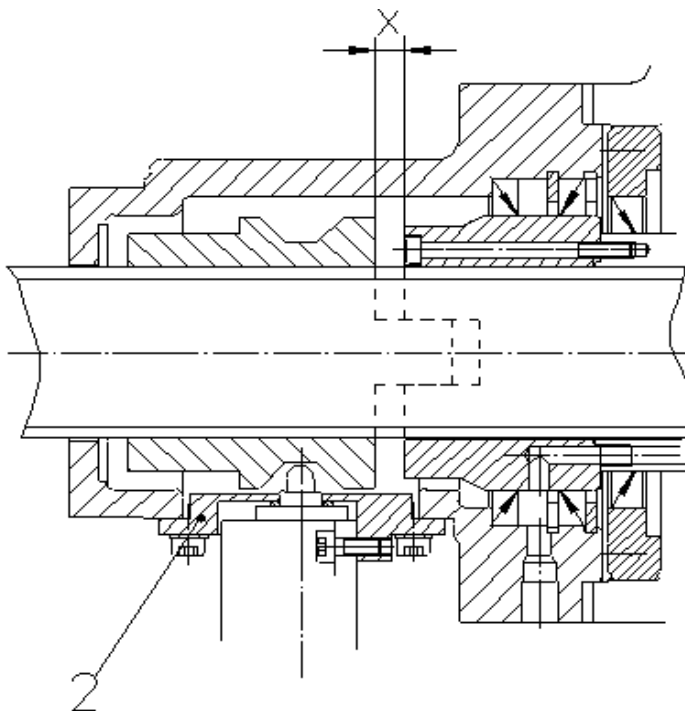
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#### List of wear and spare parts of the basic gear unit:

Stück	Benennung	Artikel-Nr.	DIN	Fertigmaße	Bezeichnung
2	Taper roller bearing	9 11 40 093	720	65x120x41	33 213
1	Deep groove ball bearing	9 11 03 014	625	12x32x10	6201 2RS
1	Deep groove ball bearing	9 11 04 013	625	12x37x12	6301 2RS
1	Deep groove ball bearing	9 11 04 023	625	15x42x13	6302 2RS
1	Deep groove ball bearing	9 11 01 060	625	30x55x9	16006
Or 1	Deep groove ball bearing	9 11 30 034	625	35x55x10	6907
2	Angular contact ball bearing(2 rows)	9 11 16 020	628	15x35x15,9	3202
2	Radial shaft seal	9 21 03 177	3760	65x85x8	
1	Radial shaft seal	9 21 03 116	3760	38x55x7	
Or 1	Radial shaft seal	9 21 03 121	3760	40x55x7	

#### Measuring the wear of the supporting nut:





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#### Circuit diagram:

