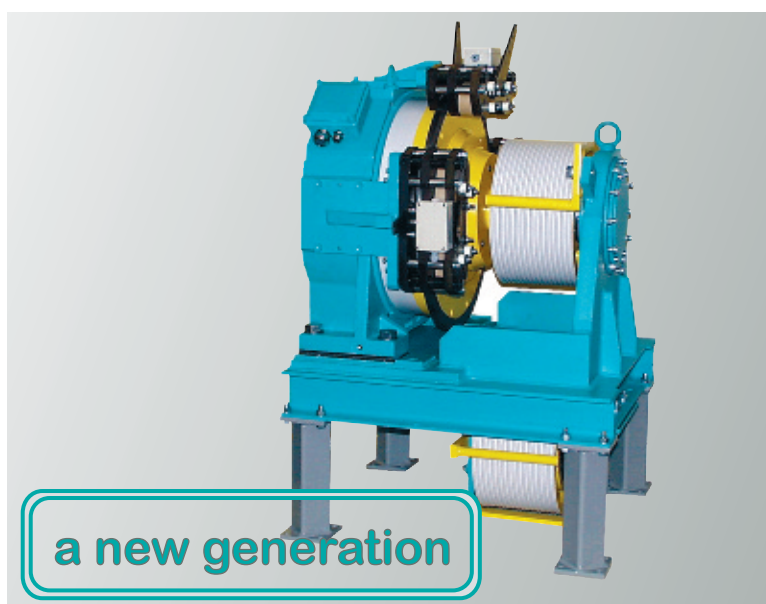


## Gearless Lift Machines

**beamer 2**

WSG-W8.3  
WSG-W8.4



English

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# Gearless Lift Machine

## WSG-W8

### Operating Instructions

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Datum/date	29.01.2010
Stand/version	0.13

These operating instructions are applicable to lift machines:

## WSG – W8. ....

WITTUR Electric Drives GmbH reserves the right to correct or change the contents of this manual and these product details without prior notice. We expressly reserve the right to make technical changes which improve the lift machines or their safety standards without prior notice. No liability can be accepted for damage, injuries or expense arising therefrom. We cannot guarantee the correctness and completeness of the details.



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# Gearless Lift Machine

## WSG-W8

### Operating Instructions

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# Gearless Lift Machine

## WSG-W8

### Operating Instructions

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## 1. General safety instructions

### Explanation of symbols used in these instructions



Danger

means that death or serious injury to persons or serious damage to property will occur unless the appropriate precautions are taken.



Warning

means that death or serious injury to persons or serious damage to property may occur unless the appropriate precautions are taken.



Caution

means that injuries to persons or damage to property may occur unless the appropriate precautions are taken.



Note

points out important information and operating instructions. If these are not observed, damage, hazards or faults may result.

- Non-compliance with the instructions contained in the operating instructions or other documentation supplied
- Unauthorised construction modifications to the WSG-W8
- Insufficient monitoring of parts subject to wear
- Repairs carried out improperly
- Emergencies caused by external forces or force majeure

### Safety precautions

Only qualified personnel are authorised to perform any planning, installation or maintenance work, and this must be done in accordance with the relevant instructions.

The personnel must be trained for the job and must be familiar with the installation, assembly, commissioning and operation of the product.

The WSG-W8 lift machines are intended for use in an enclosed, lockable machine room to which only qualified personnel and personnel authorised by the customer have access.

### Intended use

The WSG-W8 lift machines have been manufactured in compliance with the latest state of the art and recognised safety regulations. They may only be used for the purpose for which they are intended, and with all safety devices in proper working order.

The WSG-W8 may only be used for driving lifts. "Intended use" also requires that the instructions contained in the documentation supplied with the machine and the commissioning instructions be observed, and that the specified inspection and maintenance work be carried out.

### Warranty and liability

Our "Conditions of Sale and Delivery" shall apply for all our supplies and services.

We do not accept any warranty or liability claims for personal injury or property damage resulting from one or more of the following causes:

- Improper use of the WSG-W8 lift machine
- Improper installation, commissioning, operation or maintenance
- Operation of the WSG-W8 with defective and/or inoperative safety or protective devices



Danger

- The instructions given in this manual or any other instructions supplied must always be observed to avoid danger or damage.
- WSG-W8 lift machines are not ready-to-use products; they may only be operated after they have been installed in lift systems and their safe operation has been ensured by taking the appropriate measures.
- Check the proper functioning of the motor and the brake after installing the machine.

# Gearless Lift Machine

## WSG-W8

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Warning

- Repairs may only be carried out by the manufacturer or an authorised repair agency. Unauthorised opening and tampering may result in injuries to persons and property.
- The machines are not designed for direct connection to the three-phase system but are to be operated via an electronic frequency converter. Direct connection to the mains may destroy the motor.
- High surface temperatures may occur on the external parts of the machine. Therefore, no temperature-sensitive parts may be in contact with these parts or attached to them. Protection against accidental contact should be provided, if required.
- The EC type-examined fail-safe brakes provided are designed only for a limited number of emergency braking operations. They must not be used as working brakes.
- High voltages are applied at the terminal connections during the operation of synchronous motors.

# Gearless Lift Machine

## WSG-W8

### Operating Instructions

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## 2. Product description

The series WSG-W8 is a complete drive system, including a base frame (1), an integrated drive motor (2) and a secondary sheave system (3) for the preferred option of double wrapping. Different secondary sheave systems allow for a variety of rope centre distances, as far as is technically feasible. The three-phase synchronous drive motor (2), which forms a single unit with the base frame, is a reliable gearless flat-type motor (2) with an external rotor. It is distinguished by its high efficiency, extremely quiet operation and excellent operating characteristics.

All our gearless lift machines are designed solely for use with electronic frequency converters.

The "W8" system uses two motor widths, W8.3 and W8.4, with different rated speeds and different traction sheave diameters. Several rated speeds are available which can then be further adapted to individual customer requirements.

The permanent field flat-type synchronous motor (2) comprises the sturdy stator frame with stable feet and the rotor (4).

The frame carries the wound stator core (5), against its inner surface, and envelops the core to form a pot-like enclosure. The magnet ring (6) comprising 24 poles (Neodymium-iron-boron magnets) rotates within this enclosure. It transmits the motor torque to the rotor (4) to which it is attached.

The brake disc (7) is cast onto the spheroidal cast iron rotor.

The rotor (4) with the brake disc (7) and the traction sheave (8) are shrunk onto the shaft (9) positively and by friction contact. The shaft runs in the main bearings (10 and 12) of the traction sheave.

The self-aligning roller bearing (10) inside the motor is a locating bearing, whereas the outside self-aligning roller bearing (12) is designed as a non-locating bearing with a wave spring washer for noise reduction.

The ball bearing (11) located on the flexible shaft extension is used as a supporting bearing for installing the motor.

All bearings are sealed on both sides and life-lubricated. The main bearings (10 and 12) can be greased, bearing 10 through a greasing nipple and 12 by removing the outer bearing cover (13).

The drive-specific measuring system (14) is arranged within the centre of the machine behind the NDE ball bearing (11). It is connected using a plug connector (15). Different types of measuring systems can be offered.

The motor is electrically connected in the terminal box (16), where the connection for the temperature monitoring device is also located.

The brake system comprises two (W8.3) or three (W8.4) external multiple pole clasp brakes (17) which are connected to the power supply via separate brake control devices. The devices are located in the respective brake terminal boxes (18) which also accommodate the terminals for the monitoring contacts. Each brake can thus be released individually. The brakes can be released manually, if required, by fitting lever eye bolts or a Bowden cable to the lever plates (19).

The two rope slip-off guards (20, 21) attached to the motor can be rotated to a large extent. They can also be fitted at locations 22 and 23 if required.

The secondary sheave system (3), which is available in different variants, is screwed under the frame plate (1), and comprises the lateral bearing brackets (26), axle (27), spheroidal cast iron secondary sheave (28), two sealed and life-lubricated ball bearings (29) and two settings rings (30). Rope slip-off guards (31) and a safety brace (32) are also fitted to the frame plate.

As shown in sections 10 to 12, a number of variants with differently spaced traction and secondary sheaves are available. The standard version is the "K" version (type code X6=K) shown in section 12 (dimension drawing), which has additional supporting feet to the left and right of the secondary sheave. As a result, the entire machine is supported by 5 feet.

If the customer so requests, the frame plate can also be extended at the secondary sheave end (24). Four feet can then be fitted below the frame plate, or the frame plate can be supported on the shaft head without feet.

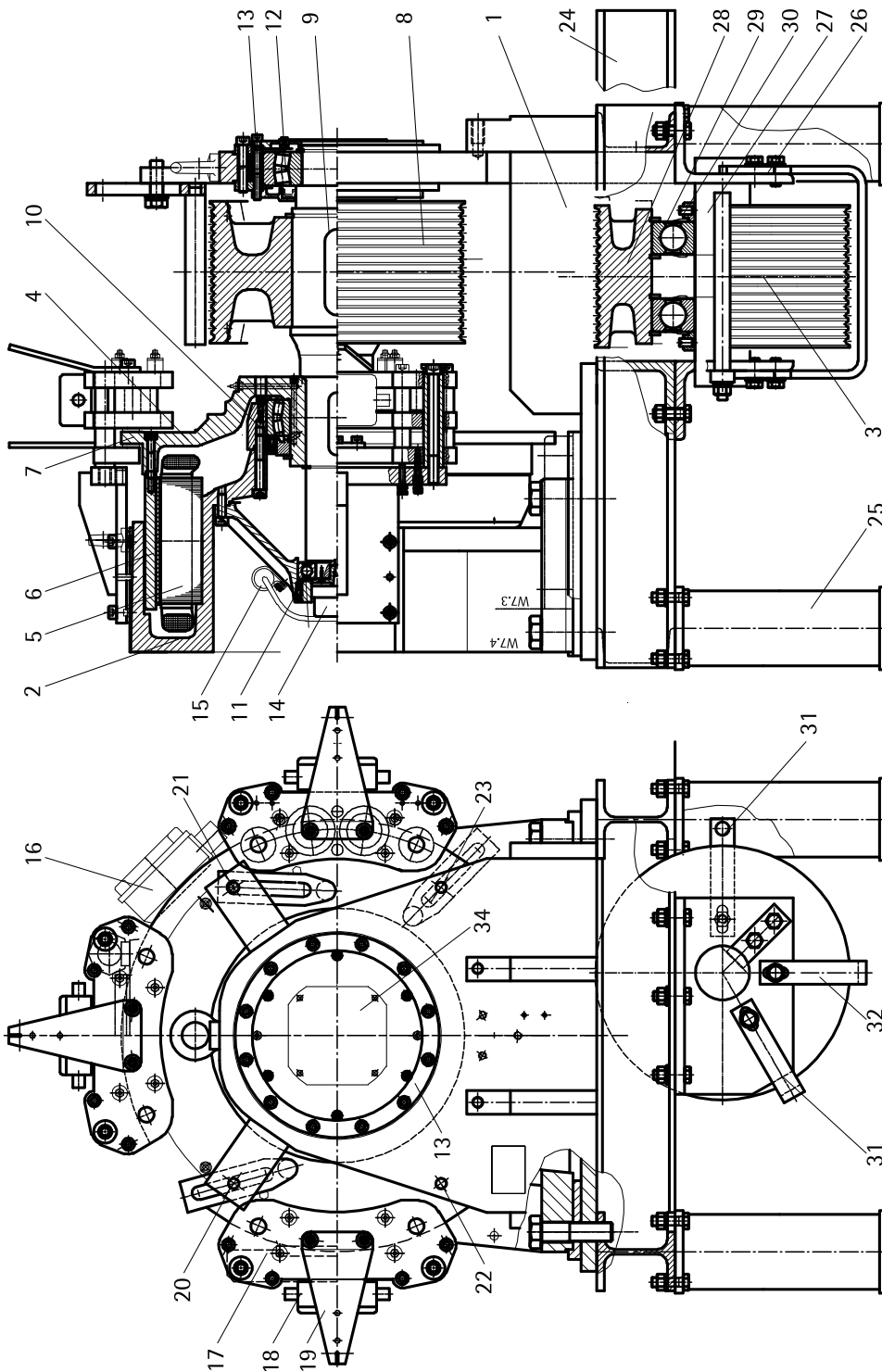
All holes required for fitting secondary sheaves, supports or beam bearing surfaces are factory-drilled and can be used flexibly. The secondary sheave systems are secured in such a way as to allow for a right or left hand alternative which can even be changed on site, and which also permits the offset between the traction and secondary sheaves to be adjusted. Normally it should be half the rope centre distance, i.e.  $a_R/2$ .

# Gearless Lift Machine

## WSG-W8

### Operating Instructions

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- |    |                             |       |  |    |                                  |
|----|-----------------------------|-------|--|----|----------------------------------|
| 1  | Base frame plate            | 12    | Main bearing head, external                    | 24 | Protruding frame plate           |
| 2  | Drive motor                 | 13    | Bearing cover, outer                           | 25 | Support                          |
| 3  | Secondary sheave system     | 14    | Measuring system (ECN1313 shown)               | 26 | Secondary sheave bearing bracket |
| 4  | Rotor                       | 15    | Measuring system signal plug connector         | 27 | Secondary sheave axle            |
| 5  | Stator frame                | 16    | Motor terminal box                             | 28 | Secondary sheave                 |
| 6  | Magnet ring                 | 17    | External multiple pole clasp brake             | 29 | Ball bearing                     |
| 7  | Brake disc                  | 18    | Brake terminal box                             | 30 | Setting ring                     |
| 8  | Traction sheave             | 19    | Brake lever plate                              | 31 | Rope slip-off guard              |
| 9  | Shaft                       | 20,21 | Rope slip-off guards                           | 32 | Safety brace                     |
| 10 | Main bearing head, internal | 22,23 | Alternative locations for rope slip-off guards | 34 | Cover                            |
| 11 | NDE bearing                 |       |  |    |                                  |

# Gearless Lift Machine

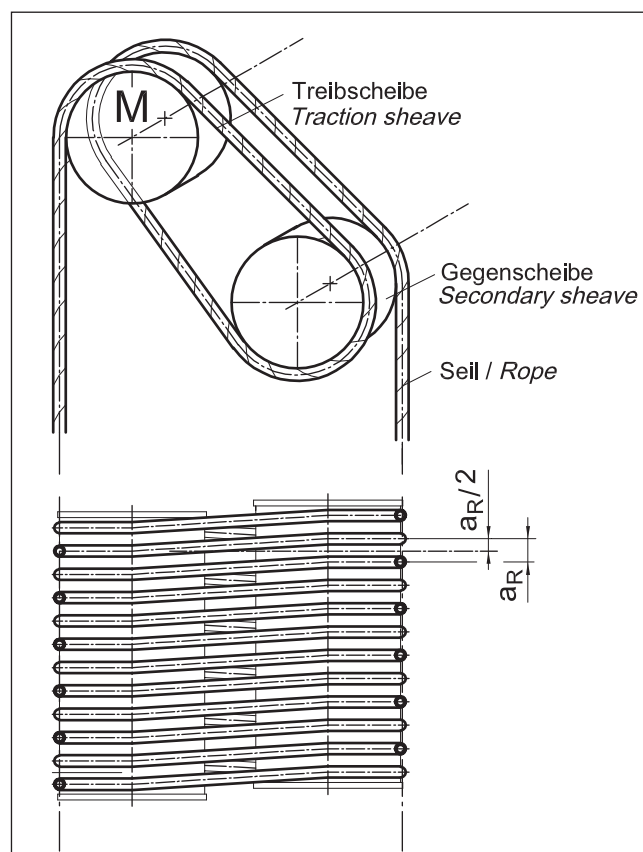
## WSG-W8

### Operating Instructions

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The adjustment is made by displacing the secondary sheave on the shaft after loosening the adjusting rings. The offset  $a_R/2$  between the traction and secondary sheaves is necessary to compensate the deflections resulting from the rope being led in a spiral as shown in the figure "Double wrap". If the rope deflections are not minimised, razor-sharp edges can form on the groove slopes, which reduce the service life of the ropes.

An adjustment for this offset must also be made within the overall arrangement. This can be achieved by providing for a corresponding offset of the counterweight or car or by mounting the complete drive with the traction and secondary sheaves in a slightly inclined position.



Double wrap

## 3. Nameplate

The nameplate of the lift machine is on the motor frame.

Type code of lift machine	WITTUR Electric Drives GmbH	EC type-examination certificate
Rated current	WSG-W8.4-0024/4K1-ZF	Serial no.
Rated frequency	3-Mot./Stern $k_B 1,09 \text{ V/min}^{-1}$ $n_N 240 \text{ min}^{-1}$	Rated speed
	$I_N 62,5 \text{ A}$ $P_N 27,6 \text{ kW}$ $M_N 1100 \text{ Nm}$	Rated torque
	$f_N 44 \text{ Hz}$ 22 pole S3-40%	Weight
	155 (F) IP 41 811 kg	
	Bremse/Brake: BFK 466-55	
	$J 7,9 \text{ kgm}^2$ $R_u 0,14 \Omega$ $L_u 3,5 \text{ mH}$	
	Made in Germany	
	www.wittur-drives.de	



# Gearless Lift Machine

## WSG-W8

### Operating Instructions

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## 4. Scope of supply

- Lift machine WSG-W8 according to order specification
- Operating instructions
- Screws for disassembly the brake
- Delivery note

### Options:

- Release lever set with remotely controlled bowden cable
- Connecting cable for measuring system
- Cable set for motor and brake
- Manual turning device
- Rubber isolation pads

## 5. Transport and storage

The lift machines leave the factory in perfect condition after being tested.

Make a visual check for any external damage immediately upon their arrival on site. If any damage incurred in transit is found, make a notice of claim in the presence of the carrier. If necessary, do not put these machines into operation.

### Transport



Warning

Observe the relevant safety regulations and take the centre of gravity into account when handling the lift machines.

The eyebolts are designed for the specified machine weight, i.e. additional loads must not be applied.

### Storage

Store the motors only in closed, dry, dust-free, well-ventilated and vibration-free rooms (storage temperature: -20°C to 60°C). Do not store lift machines in the open air. Bright parts are not sufficiently preserved to withstand extended periods of exposure.

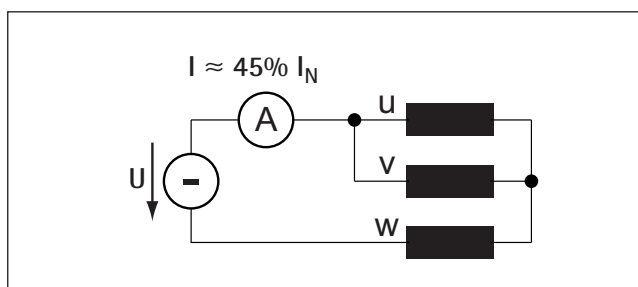
Avoid excessive storage periods (recommendation: max. one year).

After prolonged storage (>3 months), rotate the motor in both directions at a low speed (< 20 min<sup>-1</sup>) to allow the grease to distribute evenly in the bearings.

Measure the insulation resistance before initial operation of the machine. If the value has dropped below < 1 kW per volt of rated voltage, the winding needs to be dried (insulation meter voltage: 1,000 VDC). This can be done, for instance, with heated air, in a drying oven, or by applying a d.c. voltage to the motor connections.

Make sure that the voltage selected does not exceed the values shown in the figure "Drying the winding".

Let the temperature rise to about 70 – 80°C and maintain it for several hours.



*Drying the winding*

### Unpacking



Note

Dispose of the packaging material in an environmentally friendly manner or reuse it.

Any special transport aids or shipping braces are left with the customer.

# Gearless Lift Machine

## WSG-W8

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## 6. Installation



**Danger**

Be sure to check the base frame or foundation loads by calculation before installing the lift machine.

The lift machine may only be installed if the relevant safety precautions have been met.

The machines can be used in lift systems with a machine room.

The machines may only be installed, electrically connected and put into operation by trained specialist personnel. The system-specific conditions and the requirements of the system manufacturer or plant constructor must be met.



**Warning**

Cover the machine and especially the brakes when doing any machining or dust-producing work in the shaft or machine room.



**Note**

The measuring system is only accessible from the rear side. Therefore, leave enough space between the wall and the rear side of the machine or ensure that the machine can be moved away from the wall.

### Degree of protection

Lift machines are designed with degree of protection IP41. Make sure that the cable entries to the terminal boxes are sealed properly when making the electrical installation.

### Ambient conditions

The following ambient conditions must be ensured on site:

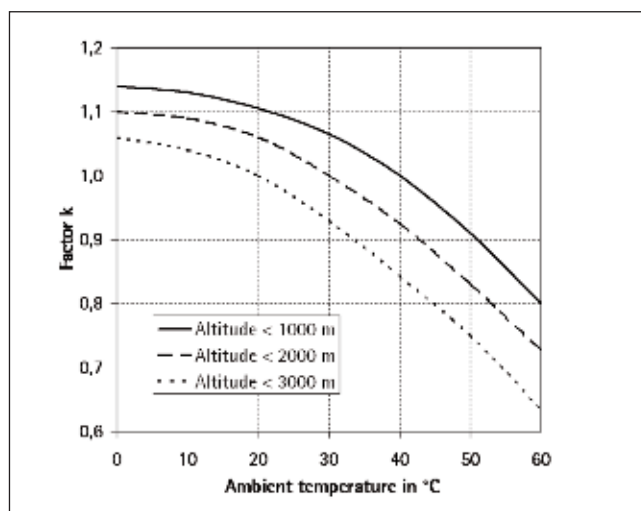
Altitude:	max. 1,000 m a.s.l.
Ambient temperature:	- 5... 40°C
Max. rel. humidity:	85% at 20°C (no moisture condensation)

Install the machine so that ventilation is not obstructed, i.e. sufficient heat dissipation by convection and radiation must be ensured.

The torque and power values indicated in the Technical Data apply to the above ambient temperatures and altitudes. In case of a deviating altitude and/or ambient temperature, the reduction factors  $k$  shown in the diagram below must be used.

$$M_{\text{permiss.}} = k \cdot M_N$$

$$P_{\text{permiss.}} = k \cdot P_N$$



### Fastening the machine



**Note**

Observe the instructions in section 2 ("Product description") on the subject of rope guidance.

Rubber cushions should be used to damp vibrations.

The admissible unevenness of the bolt-on surface is 0.1 mm. The attachment surface must be sufficiently torsion-resistant and stable to absorb any forces that may occur.



**Danger**

Upon completion of adjustment operations, tighten all fastening bolts of the machine to the specified torque.



**Warning**

No welding work may be performed on the lift machine, nor is it permissible to use the machine as a mass point for welding work. This could destroy the bearings and the magnets.

Lift machines are generally equipped with rope slip-off guards. After putting the ropes in place, adjust them so that the distance between the rope and the rope slip-off guard does not exceed 1.5 mm.



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# Gearless Lift Machine

## WSG-W8

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# Gearless Lift Machine

## WSG-W8

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## 7. Electrical connection

### 7.1. General



**Danger**

The electrical connection may only be made by a qualified electrician.

Before starting any work on the machines, ensure that the lift machine or system is properly isolated.

Before making any connections check that

- the connecting cables are suitable for their specific application and for the relevant voltages and currents.
- the sufficiently dimensioned connecting cables and torsion, strain and shear relief as well as anti-kink protection are provided
- the protective conductor (Protection Class I only) is connected to the earthing terminal
- there are no foreign bodies, dirt or moisture in the terminal boxes
- cable entries not in use and the terminal box itself are tightly sealed to prevent the ingress of dust or water.



**Note**

The insulation system of the motors is designed such that they can be connected to a converter with a maximum d.c. link voltage  $U_{link\ max}$  up to max. 700 Volt.

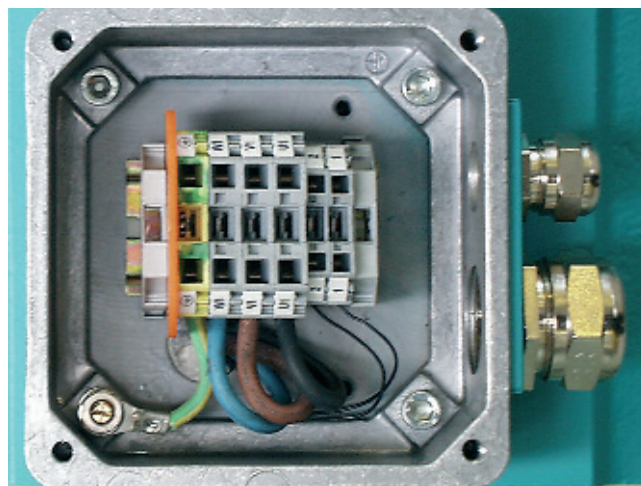
**Note:**  $U_{link\ max}$  is the maximum value of the d.c. link voltage which is only transient and approximately equivalent to the inception voltage of the braking chopper or of the energy recovery unit.

The maximum permissible rate of voltage rise ( $dU/dt$ ) at the motor terminals may be max. 4 kV/ $\mu$ s.

The overvoltage at the motor terminals must not exceed 1.3 kV. It may be necessary to use motor current filters or reactors to achieve these values.

### 7.2. Motor connection / Winding protection

The electrical connection of the motor and the winding monitoring devices is made in the terminal box on top of the machine.



*Terminal box for motor connection*

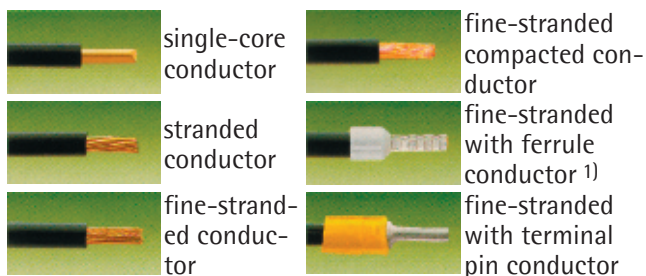


**Caution**

The motor cable must be shielded. Ensure that the cable shield contacts the frame over a large area at both ends.

The motor phases U1, V1 and W1 must be connected correctly to the corresponding phases of the converter; they must not be interchanged.

The WAGO terminal strips are suitable for the following types of copper conductors:



1) When using the nominal cross-sections with ferrules, the usable cable cross-section is reduced!

### Technical data:

Cable cross-section: ...4 mm<sup>2</sup> (6 mm<sup>2</sup> with WSG-W8.4)

Stripping length required: 9...10 mm

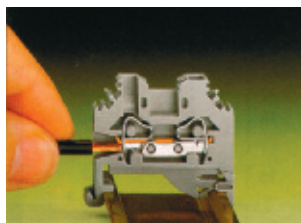
# Gearless Lift Machine

## WSG-W8

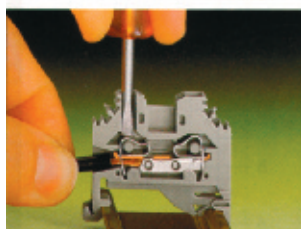
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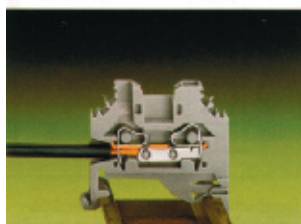
#### Handling



- Hold the bared conductor against the terminal.



- Force down the spring and push the conductor into the terminal.



- Relieve the spring - the conductor is securely clamped

#### Handling the terminal strip

#### Cable cross-section required:



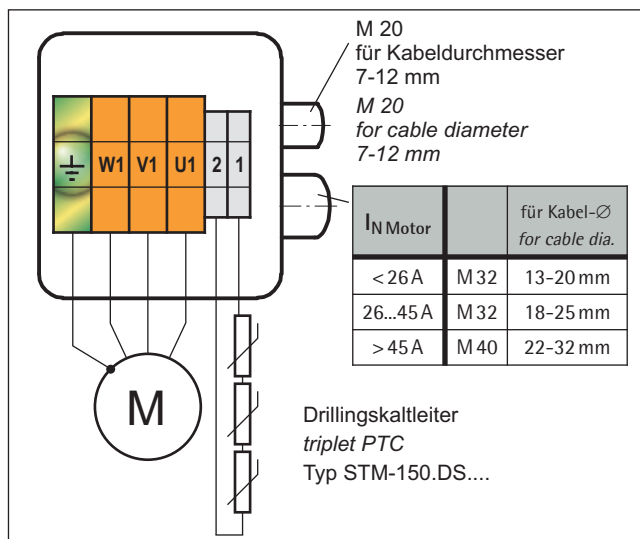
The currents specified under the machine data for the series WSG-W8 refer to duty type S3-40%. This must be taken into account when selecting the cable cross-section required. The continuous I<sub>r.m.s.</sub> value required for the selected cable is approximated from:

$$I_{r.m.s. (cable)} \approx I_N (\text{motor, S3-40\%}) / 1.58$$

The following table gives the recommended values for the current-carrying capacity of PVC cables at a maximum ambient temperature of 40 °C:

Cable cross-section	Permissible max. current (r.m.s. value)	Permissible max. motor current I <sub>N</sub> (S3 - 40%)
1.0 mm <sup>2</sup>	13.1 A	20.7 A
1.5 mm <sup>2</sup>	15.7 A	24.8 A
2.5 mm <sup>2</sup>	22.6 A	35.7 A
4.0 mm <sup>2</sup>	29.6 A	46.7 A
6.0 mm <sup>2</sup>	38.3 A	60.5 A

#### Motor connection diagram



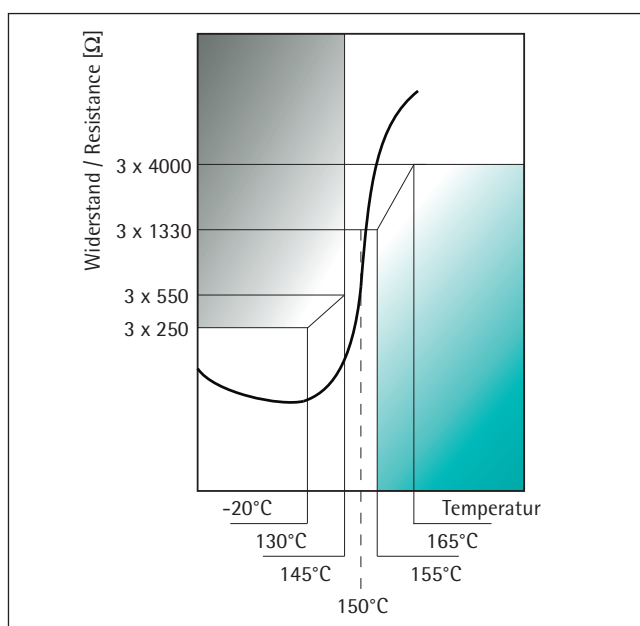
#### Winding protection

A triple PTC thermistor is used for monitoring the temperature of the motor winding. The triple type permits all of the three motor phases to be monitored.



The PTC thermistor installed in the winding must be evaluated in the control system or frequency converter to protect the motor from overtemperature.

The operating voltage of the PTC thermistors is not allowed to exceed 25 VDC.



# Gearless Lift Machine

## WSG-W8

### Operating Instructions

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#### Earthing

For safety reasons, it is very important that the motor be properly and carefully earthed.



**Warning**

It is essential to use the earthing terminal in the terminal box. In addition, an earthing screw is provided on the motor frame for the connection of a protective or earthing conductor as specified in VDE 0100 and VDE 0141 respectively.

When using shielded power cables, make sure the cable shield metal contacts the motor frame over a large area. This is achieved, for example, by special cable glands provided for shield contact.

#### Short-circuiting



**Note**

The motor terminals of the synchronous lift machines, type WSG, can be short-circuited, if required, to brake the lift machine faster. This is, however, only permissible at speeds less than the rated speed of the respective motor.



# Gearless Lift Machine

## WSG-W8

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## 7.3. Speed/Position measuring system

The basic version of the lift machines is equipped with a ECN 1313 sine-cosine encoder from Heidenhain GmbH. The encoder is connected via a 17-pole signal plug connector which is fitted to the measuring system housing.

Alternatively, the machines can be equipped with the encoder types ERN 1387 also from Heidenhain GmbH. These measuring systems are connected via a 17-pole signal coupling fitted to the motor.

We can also provide other measuring systems on request.



Note

We recommend the use of an appropriate cable set to connect the measuring system to the converter system. Cable sets can be supplied as accessories.



Warning

The measuring system of the WSG-W8 lift machines is matched to the associated converter. Do not change the adjustment as this may make it impossible to use the motor.

On the measuring system housing there is a label showing the "offset angle" determined at the factory.

**Note:** This value depends on the converter.



### 7.3.1. Measuring system ECN 1313

Number of sine-cosine periods per rotation:

2048

Operating voltage:

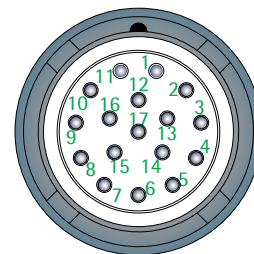
5V

Data interface:

SSI or ENDAT

Pin	Signal
1	U <sub>p</sub> Sensor
4	0V Sensor
7	U <sub>p</sub>
8	Clock +
9	Clock -
10	0V (U <sub>p</sub> )
12	B +
13	B -
14	DATA +
15	A +
16	A -
17	DATA -

plug casing    inner shield



Pin contacts of signal coupling (exterior)

### 7.3.2. Measuring system ERN 1387

Number of sine-cosine periods per rotation:

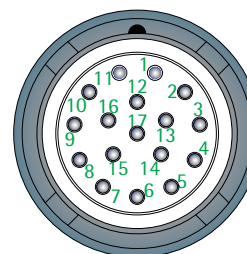
2048

Operating voltage:

5 V

Commutation signals: 1 sine and cosine signal with 1 period/rotation (Z1 track)

Pin	Signal
1	A +
2	A -
3	R +
4	D -
5	C +
6	C -
7	0V (U <sub>p</sub> )
10	U <sub>p</sub>
11	B +
12	B -
13	R -
14	D +
15	0V Sensor
16	U <sub>p</sub> Sensor



Pin contacts of signal coupling (exterior)

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#### 7.4. Brake

The brakes are supplied with d.c. voltage by an overexcitation rectifier which is installed in the terminal box for the brakes.

The connecting contacts for the micro-switches which monitor the brakes are also accommodated in this terminal box.



Note

To reduce the switch-off time, switching can be effected from the d.c. side. However, it is also required to provide switching from the a.c. side at the same time!

The overexcitation rectifier is supplied as standard with a bridge installed between contacts 3 and 4, meaning that a.c. side switching is preset.



Caution

Repeated switching of the brake magnets during the overexcitation period must be avoided as this will result in overloading of the brake control unit. Therefore, a minimum brake operating time of approx. 1.5 – 2s should be maintained during an inspection or commissioning drive.

#### Note on the use of d.c./a.c. side switching:



Note

A.c. side switching is recommended for normal operation, since the lift machine is then decelerated in a controlled manner to zero speed and the switching noise of the brake is negligible.

When braking in the event of a breakdown (emergency stop) or during an inspection drive, the switching should be performed from the d.c. side, since this ensures a faster braking effect with the car being stopped earlier.

It is therefore recommended to use 2 separate contactors for the brake control circuitry, one of which switching at the d.c. side, the other one at the a.c. side.

#### Monitoring the brakes

The switching state of the brakes is monitored using dust-proof micro switches with gold contacts. The contacts are designed as n.c. contacts, i.e. the contact is opened if the armature is attracted (brake released). It is possible to change the micro switch contacts into n.o. contacts, if required.

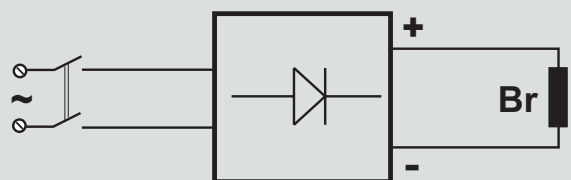


Danger

The switches must be evaluated separately for each partial brake to ensure compliance with the requirements of the type examination.

#### A.c. side switching

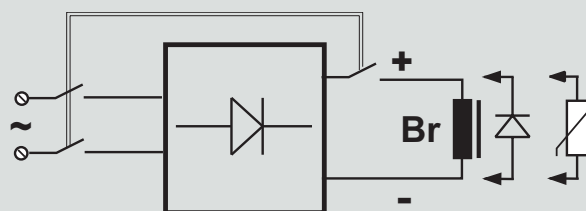
- Low-noise switching of the brake
- No protective measures required for switching contact
- Slow application of the brake.



Attention: schematic diagram!

#### D.c. side switching

- Noisy switching
- Burn-up protection for switching contact required (e.g. varistor, free-wheeling diode)
- Fast application of the brake.



Attention: schematic diagram!

#### Switching times WSG-W8 with caliper disk brake

	$T_L$ / ms	$T_{S\sim}$ / ms	$T_{S=}$ / ms
WSG-W8.3	~ 85	~ 50	~ 15
WSG-W8.4	~ 85	~ 50	~ 15

$T_L$  time for releasing the brake

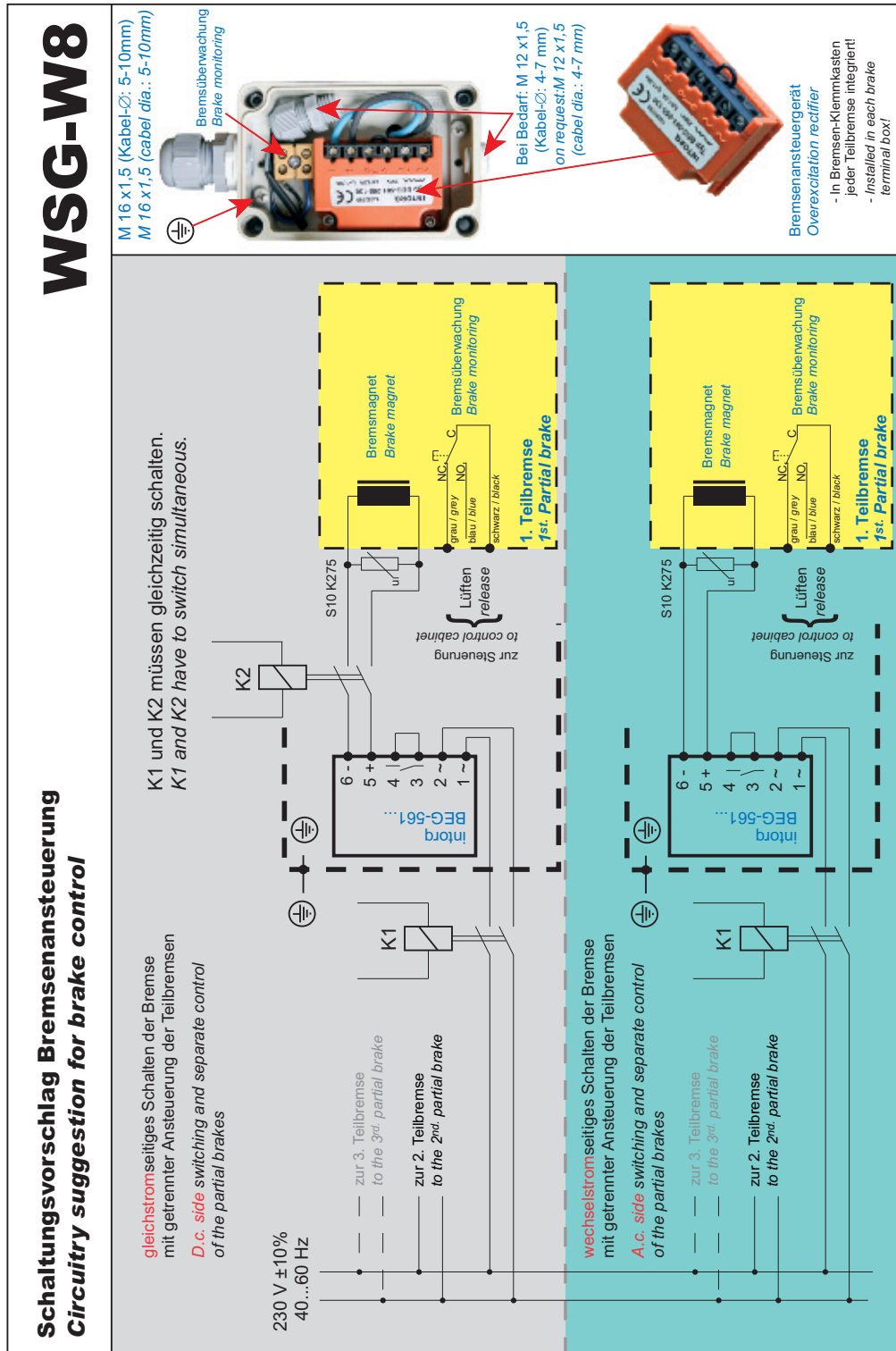
$T_{S\sim}$  switching-off time - A.c. side switching

$T_{S=}$  switching-off time - D.c. side switching

**Note:** The above switching times are guide values under reference conditions.



## Circuitry suggestion for brake control



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## 8. Commissioning

The following points should be checked or completed:

- Remove all securing, auxiliary and installation tools from the danger area.
- Check that the lift machine is used for its intended purpose and that the permissible ambient conditions are met.
- Check that the lift machine is properly fastened.
- Are all bolts tightened with the specified torque and secured?
- Check the motor connection, especially the earthing.
- Check that the temperature monitoring devices are properly connected and functioning.
- Check that the brakes are properly connected and that the brake monitoring switches are functioning properly.
- Is the measuring system properly connected?
- Check that the offset value indicated on the measuring system agrees with the value set on the converter.
- Check the proper functioning of the brake; perform a braking test using one (or two with the WSG-W8.4) partial brake(s).
- Is the rope slip-off guard properly tightened and adjusted?
- Check the remote control of the brake using the Bowden cable, if provided.



Note

An initial functions test of the motor and the brake, together with the converter, should be performed before the ropes are put in place.

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## 9. Operation and maintenance

### 9.1. General

The regulations concerning operation, maintenance and inspection in accordance with the applicable safety regulations in lift construction such as DIN EN 81 "Safety rules for the construction and installation of lifts", Part 1: "Electric lifts" and other relevant regulations are to be strictly observed.

The operator is responsible for the proper installation of the motor with regard to safety requirements as well as for its inspection and maintenance as specified in the applicable regulations.



**Danger**

The proper maintenance of gearless lift machines requires adequately trained specialist personnel and specialised devices and tools.

Repairs other than those described in these operating instructions are not to be carried out by the lift fitter/maintenance technician for liability reasons.

### Bolt/screw tightening torques



**Warning**

When doing any work on the machine or replacing parts, make sure that the specified bolt/screw strength class and the tightening torques are observed (see table). Secure the bolts/screws with "omnifit 100" or a similar product against accidental loosening.

dimension	tightening torque [Nm]		
strength class	8.8	10.9	12.9
M4	2,8	4,1	4,8
M5	5,5	8,1	9,5
M6	9,6	14	16
M8	23	34	40
M10	46	67	79
M12	79	115	135
M16	195	290	340
M20	395	560	660
M24	680	970	1150

### 9.2. Maintenance intervals

Check the thickness of the brake linings	every six months	see section 9.6.
Relubricate the bearings	see section 9.3.	
Check the bearing noise	every six months	
Check the brake air gap	every six months	see section 9.6
Check the proper functioning of the brakes and the brake monitoring switches	every six months	see section 9.6
Check the traction sheave for wear	every six months	
Check the traction sheave for tight seating	every six months	
Check the electrical cables	every six months	see section 7.
Check the rope slip-off guard	every six months	
Check the guards and safety devices for their condition and safe functioning	every six months	
Check the tightening torques of the frame, brake and traction sheave fastening bolts/screws	every six months	see section 9.1.
Clean the external machine surfaces	as required	

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### 9.3. Lubricating instructions

The two traction sheave main bearings (internal and external self-aligning roller bearings 10 and 12 in the picture page 7) have been factory-greased with a grease quantity sufficient for the nominal service life of the machine. No greasing is required or indeed recommended under normal service conditions.



Note

In special cases, e.g. under extreme conditions (maximum utilisation of permissible axial forces at max. nominal speed), greasing is permitted as follows:

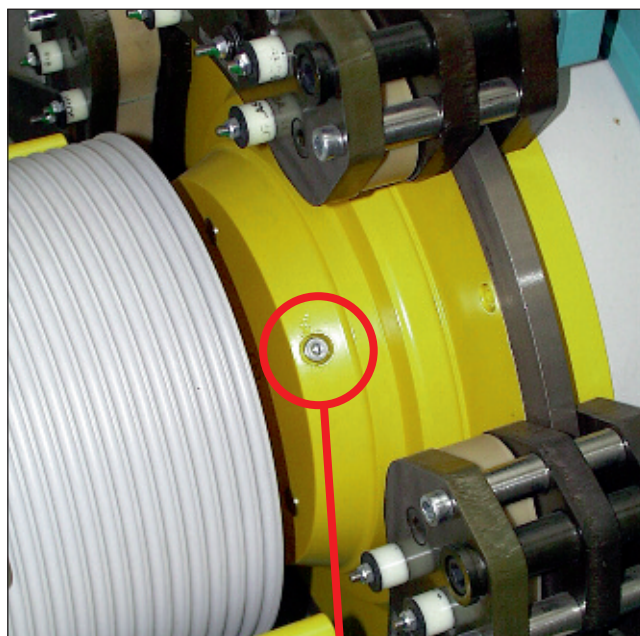
Internal main bearing (10): Screw the lubricating nipple which is "parked" in a dummy hole on the right motor foot (viewed facing the traction sheave) into the greasing hole which is located near the rotor centre. (See picture "greasing nipple"). Before doing this, remove the plug screw DIN 908-B-M10x1 which protects the greasing hole.

To grease the external main bearing (12), carefully remove the outer bearing cover (13). Press a small quantity of grease into the bearings. Then refit the bearing cover (13) firmly and snugly, close the greasing hole with the plug and "park" the greasing nipple.

Observe a high standard of cleanliness when doing this work, to prevent any foreign material, dirt or dangerous liquids from penetrating into the bearings.

Use a KP 2 N-30 grease to DIN 51 502 (e.g. Wälalit LZ2 or Klüberlub BE 41-542). The refilled grease should exert only a slight pressure on the grease column. Therefore use only a small quantity, max. 0.5 cm<sup>3</sup>.

The NDE secondary bearing is life-lubricated and is not provided with a greasing facility.



Greasing nipple

### 9.4. Emergency evacuation



Note

The lift design engineer must always provide for an electric return motion control or for a manual rewinder (please note EN 81-1/ 12.5.2).

Should a failure occur with the car at rest, the car can be moved with the drive connected to the mains or to an uninterruptible power supply (UPS) or mechanically under its own load with the emergency brakes temporarily released.

These brakes are released electrically either from the mains or using a UPS.

They can, however, also be released manually.

For this purpose the brakes are equipped with a lever plate (19) into which two ring bolts (e.g. M8 to DIN 580) spaced 35 mm apart can be screwed (see "Release lever set with remotely controlled bowden cable"). By inserting lever rods (dia. max. 20 mm), the brakes can be released manually.

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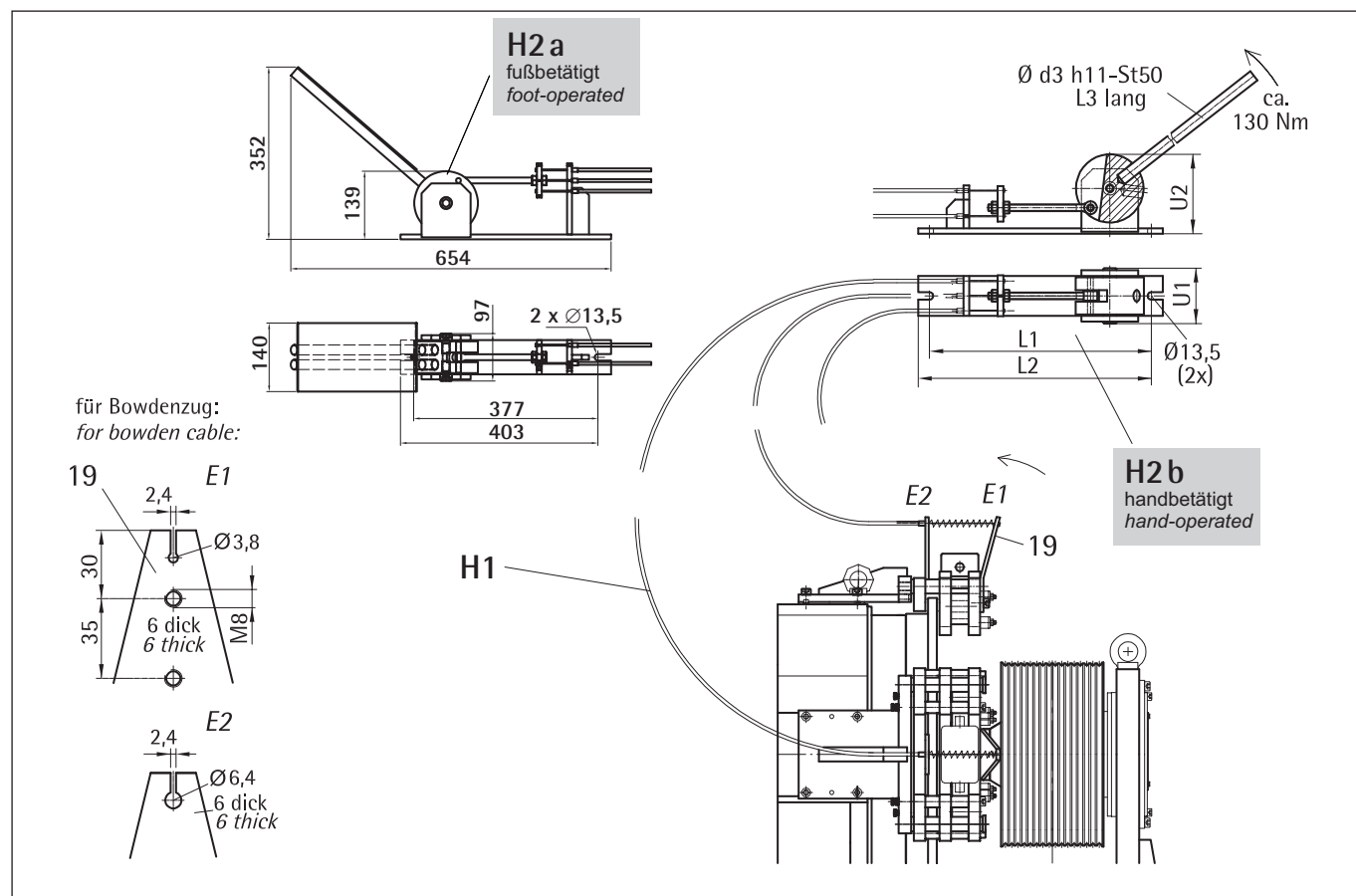
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The brake lever plates and the associated counter plates also have holes and slots to which Bowden cables can be attached. By using special lever devices, the brakes can then also be released remotely by hand or foot within certain limits. Such devices are shown in the figure and table "Release lever set with remotely controlled bowden cable". This "lever system" with 3 m Bowden cables (preferred length 3 m, max. length 6 m) can be supplied on special order.

If the brakes are released with the motor deenergised, the motor windings should be short-circuited. This prevents the lift from accelerating in an uncontrolled manner since the short-circuiting produces a speed-dependent braking torque.

		WSG-			
		W8.3 (two brakes)		W8.4 (three brakes)	
Item in figure	Assembly	Number	Item no.	Number	Item no.
H1	bowden cable	2	505 656-2 (preferred length 3 m)	3	505 656-2 (preferred length 3 m)
H2 a	lever support	1	505 045 900	1	505 045 900
H2 b	lever support	1	505 666	1	505 045
	L1		220		390
	L2		250		430
	U1		76		98
	U2		93		140
	d3/L3		Ø 16/300		Ø 20/400

Release lever set with remotely controlled bowden cable



Release lever set with remotely controlled bowden cable



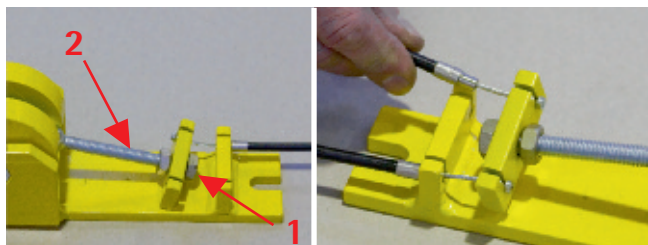
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#### Installation of the manual brake releasing device



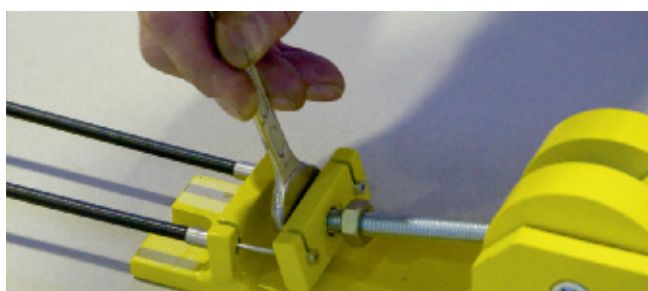
1. Insert all Bowden cables into the lever block, making sure that the nut (1) is screwed flush onto the stud bolt (2).



2. Insert the ends of the Bowden cables into the machine.

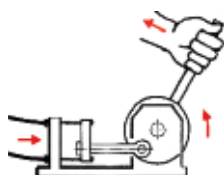


3. Then insert the sleeve ends. A certain amount of effort is needed, as the cables require some preloading. Note: The Bowden cables should be kept straight and not wound.



4. Preload the Bowden cables by turning the nuts on the stud bolts (2). The brakes must not yet release (**check this!**).

5. Fit the manual releasing lever and check that the brakes are properly released.



In the very rare case of load compensation between the car and the counterweight, the electric return motion control must be used.

When required and if expressly ordered, the attachable manual turning device No. 504 090 (35) can be supplied. This completely assembled device is composed of a worm wheel (36) with two stationary plug-in bolts (37), a worm gear shaft (38) with a hand wheel (39), the bearing block with the stop plate (40), the centre bolt (41) and two fastening bolts (42). The centre and fastening bolts are captivated with nuts which must be removed when the device is to be used.

The manual turning device is available in three versions:

Item no.	version with view of the traction sheave		weight
504 090 001	left	hand wheel left	23 kg
504 090 002	right	hand wheel right	23 kg
504 090 003	uni	long shaft; hand wheel left and right interchangeable	25 kg

Use of the manual turning device is the sole responsibility of the user. All W7/W8 lift machines with delivery dates on or after 10/2005 are designed for attachment of this complete device.

If such a manual turning device is provided, the lift machine is equipped with the safety switch (43) shown opposite, which must be incorporated into the safety circuit of the lift system.

Operating data of the safety switch:

Type:	AZ 14-1 (Schmersal)
Utilisation category	AC-15, DC-13
$I_e/U_e$	2 A / 230VAC 2 A / 200VDC

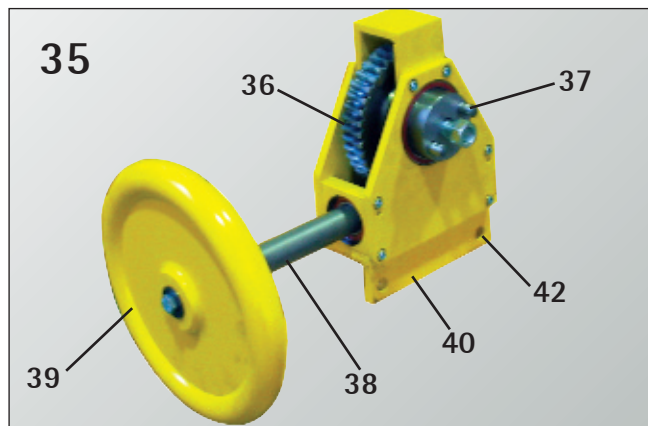
During normal operation the safety contact remains closed by virtue of a bow on the switch cover. Before using the manual turning device in an emergency, this cover (34) (4xM6 wing nuts) must first be removed. The two pinholes - 15 in dia. and 60 mm apart - in the shaft of the lift machine will then be visible. Turn the hand wheel (39) of the manual turning device so that the position of the plug-in bolts (37) approximately matches that of the pinholes. Remove nuts from the bolts 41 and 42 (captivation), then lift the device onto the lift machine in a position where the two plug-in bolts (37) slip into the pinholes in the shaft and the stop plate (40) of the device is brought up axially to the bearing battens (44) of the frame. Then screw the centre bolt (41) loosely into the tapped hole in the shaft. With the turning device

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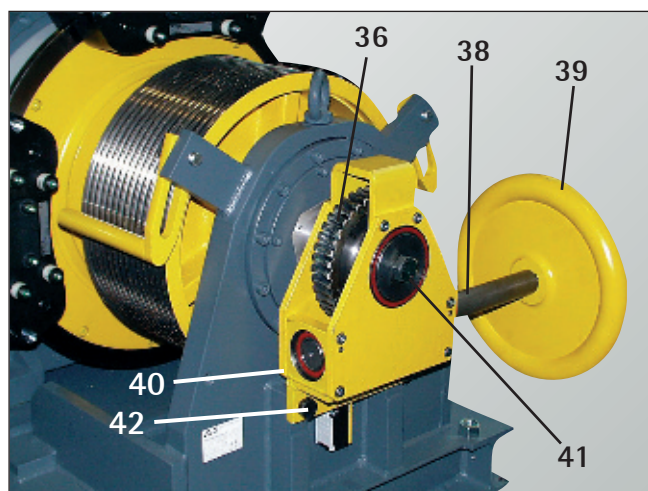
now self-supported on the shaft, proceed to the accurate positioning and securing of the stop plate. To this end, screw in the two M16x35 hexagon head bolts (42) and tighten the centre bolt (41) alternately.

Once the self-locking device is reliably secured, the manual turning device can be operated by cautiously turning the hand wheel, provided that the emergency brakes of the lift machine are released.

Before the lift machine is restarted, dismantle the manual turning device by reversing the order of operations indicated above. Make sure that electric interlocking conditions are complied with while so doing. Replace the blank cover (34) correctly.



In the special case of the car being caught by the safety device, it can be released, thanks to the excellent traction provided by the double wrapping, by powering the drive from the mains or a UPS.

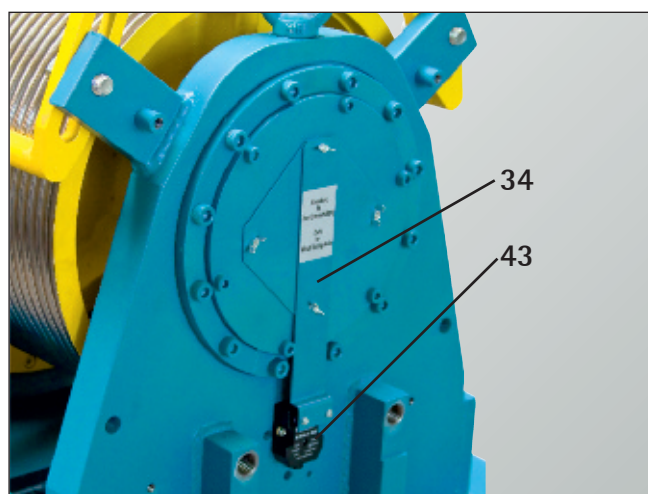


Manual turning device (r.h.s. version)

### 9.5. Replacing the traction sheave

Since the semi-circular grooves used for the double wrap are subject to wear, it will not normally be necessary to replace the traction and secondary sheaves.

Should this however become necessary due to any kind of failure, the motor and the DE main bearing must be removed. This can only be done in an authorised repair shop.



Safety switch

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## 9.6. Replacing the brakes

### Disassembly

- Remove the two M6 x 40 spring bolts.
- Release the brake manually using the two M6 x 65 release screws supplied (see figure).



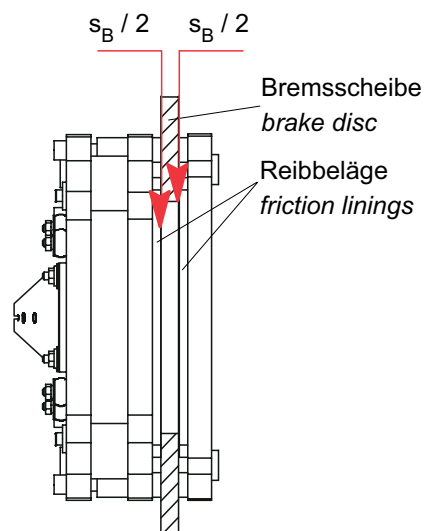
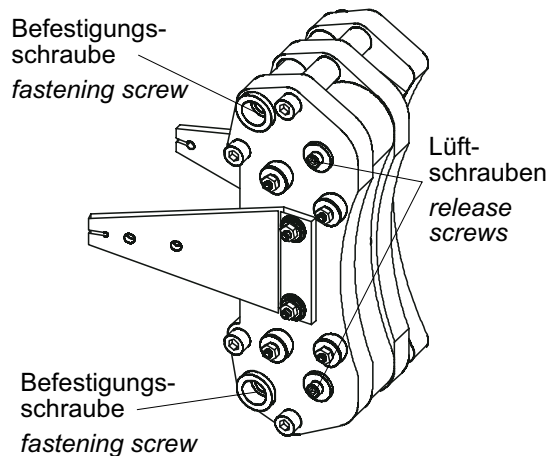
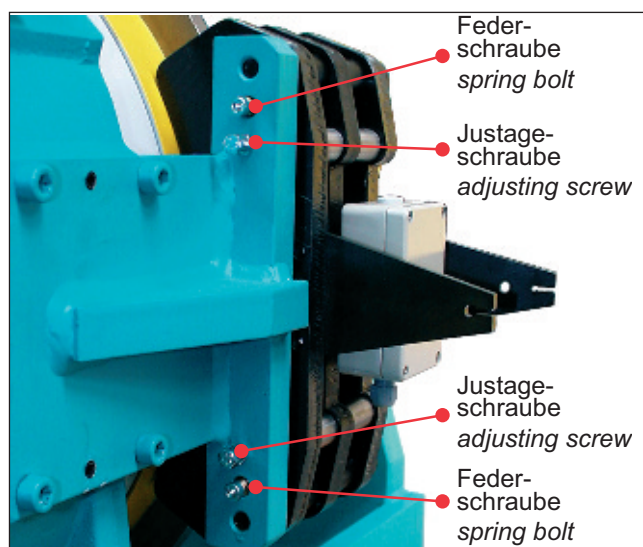
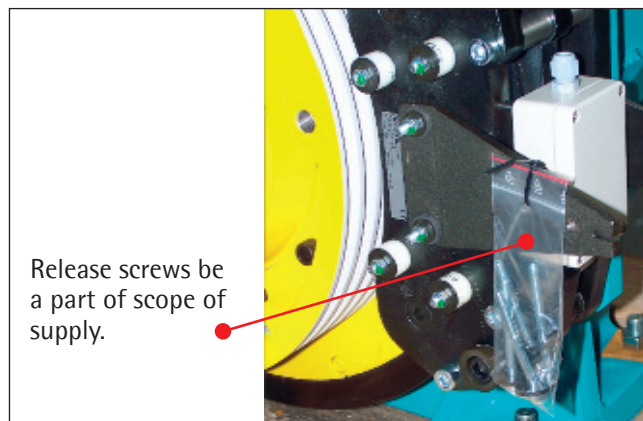
Caution

Ensure the brake unit is not dropped.

- Remove the M12x140 fastening bolts; remove the brake.

### Assembly

- Fasten the brake using the M12 x 140 M fastening bolts. Secure the bolts with "omnifit 100" or a similar product. Tighten them with a torque spanner using a torque of  $M_A = 115 \text{ Nm}$ .
- Remove the M6 x 65 release screws !
- Insert the M6x40 spring bolts.
- Release the brake electrically and adjust the brake air gap by means of the adjusting screws ( $s_B = 0,5^{+0,1} \text{ mm}$ ). Make sure that the two friction linings and the brake disc are symmetrical (using a feeler gauge).
- Switch the brake on and off several times and check the air gap.





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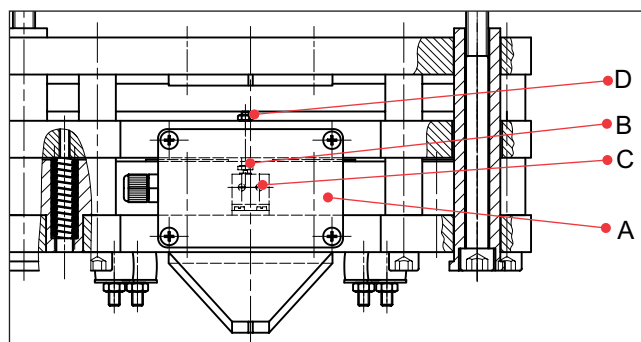
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### 9.7. Switch-adjusting for monitoring the brake

- Remove the brake terminal box (A)
- Switch on the brake magnet;  $s_B$  has to be 0 mm.
- Turn the hexagon head screw (B) until to the switch-point in direction of the microswitch (C). For definition of the switch-point, the hexagon head screw has to be turned very slowly!
- Following the hexagon head screw (B) has to be screwed additional 60° in direction of the microswitch.
- Secure the hexagon head screw (B) with hexagon nut (D). While securing please mind, that the position of the hexagon head screw may not be changed.
- Hexagon nut and fastening-screws of the microswitch have to be secured with screw-lock-lacquer.

- Check that the switch-point is between  $s_B = 0$  mm and 0.3 mm.



### 9.8. Testing the brake system to EN 81-1



The brake system should be tested with the car about halfway down the shaft. If any motor short-circuit connections have been made, these should be deactivated so that the brake effect can be tested independently.

#### Overload

The brake system should be tested by interrupting the power supply to the motor and brake system with the car moving downward at rated speed and 1.25 times the rated load. The brake system must be capable of decelerating the car.

#### Failure of a brake

If one brake fails, the brake system must still be capable of decelerating the car sufficiently during its downward travel at rated load and rated speed.

When simulating the failure of one brake, the other brakes must be kept open separately, even if the safety circuit is open. This should preferably be done using suitable electric circuitry, but can also be performed manually.

This state must not be maintained in the long term.



Observe the lift during this test. If it does not decelerate, close the open brake circuit immediately.

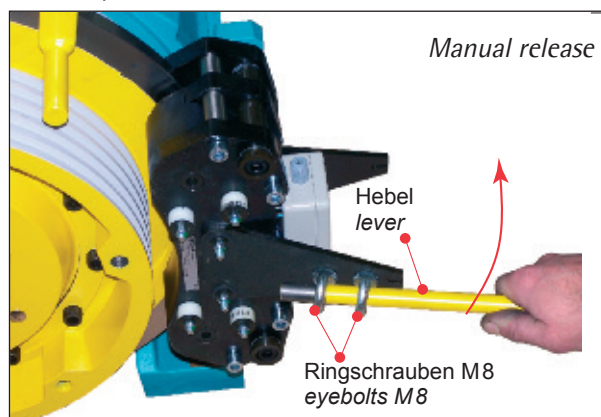
### Monitoring the brakes

Check the brake monitoring switches individually. No car travel must be permitted if a micro switch signal is missing or a wrong signal operates.

### Separate operation of the individual brakes

There are several possible ways of operating the brakes separately:

- The preferred method is separate electrical control of the brakes. The individual brakes can be activated/deactivated quickly by individual control buttons.
- Remote control by Bowden cable as described in section 9.4. (The other Bowden cables must be removed. The Bowden cable of the brake to be tested should be attached to the central hole in the lever support to avoid diagonal tension.)
- Use of two M8 eyebolts and a lever (see picture "Manual release").



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## 9.9. Replacing the measuring system



Note

The measuring system is only accessible from the rear side of the motor.

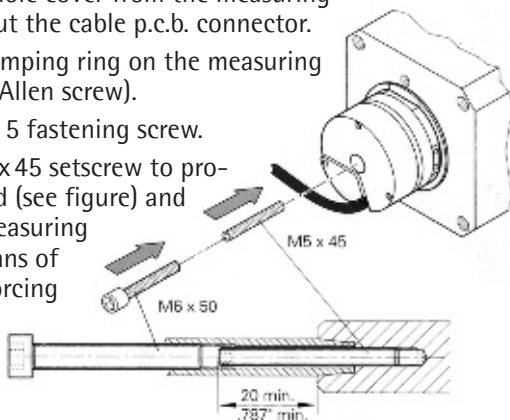


Warning

Disassemble the measuring system only if this is necessary because of a defect. Remember to readjust the offset value after reassembly (see the converter operating instructions).

### Disassembly

- Remove the cable cover from the measuring system; pull out the cable p.c.b. connector.
- Loosen the clamping ring on the measuring system (2 mm Allen screw).
- Remove the M5 fastening screw.
- Insert the M5x45 setscrew to protect the thread (see figure) and remove the measuring system by means of the M6x50 forcing screw.



### Assembly

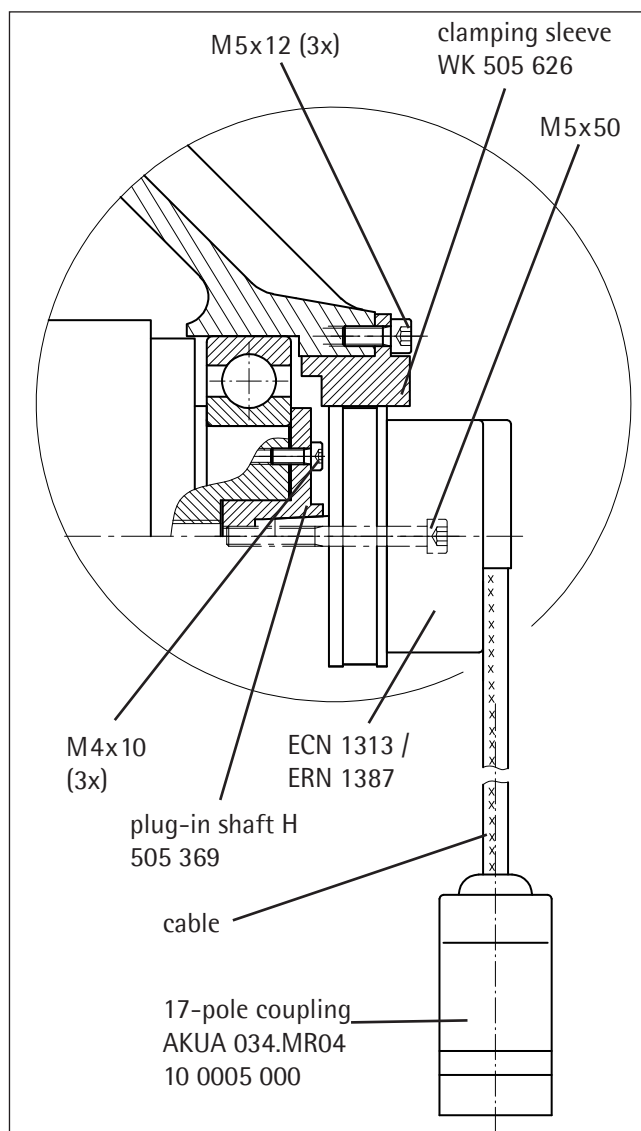
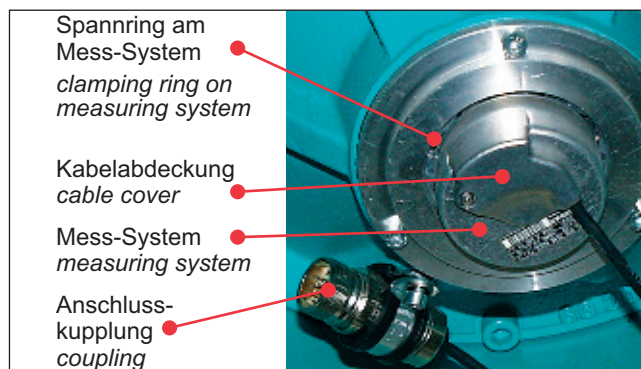
- Check the true running on the stud (plug-in shaft H) (permissible runout max.0.02 mm).
- Clean the stud and the measuring system shaft end; do not grease them.
- Remove the cable cover from the measuring system.
- Plug in the measuring system, insert the M5x50 fastening screw in the hollow shaft and tighten the screw ( $M_A = 5,2 \text{ Nm}$ ).
- Turn the measuring system so that the cable can be suitably routed.
- Tighten the clamping ring on the measuring system ( $M_A = 0,65 \text{ Nm}$ ).
- Insert the cable p.c.b. connector (observing the designation "TOP" or the guiding nose).



Note

The ECN 1313 and ERN 1387 require different cables. Please take this into consideration when replacing the measuring system.

- Reinstall the cable cover.
- Fasten the coupling using the clamp and the M5x16 screw.



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## 9.10. Trouble shooting

Fault	Possible cause	Remedy
Motor does not start, operates out of control or develops no torque	<ul style="list-style-type: none"> <li>• Motor not connected in proper phase sequence</li> <li>• Measuring system not properly connected</li> <li>• Converter parametrisation incorrect</li> <li>• EMC disturbance</li> <li>• Measuring system offset angle incorrectly set</li> <li>• Measuring system defective</li> </ul>	<ul style="list-style-type: none"> <li>• Connect motor correctly</li> <li>• Connect measuring system correctly</li> <li>• Check converter parametrisation</li> <li>• Carry out shielding and earthing measures as described by the converter manufacturer</li> <li>• Check measuring system offset angle</li> <li>• Replace measuring system</li> </ul>
Motor noise	<ul style="list-style-type: none"> <li>• Bearing defective</li> <li>• Converter parametrisation incorrect</li> </ul>	<ul style="list-style-type: none"> <li>• Notify customer service</li> <li>• Check converter parametrisation</li> </ul>
Braking system does not release	<ul style="list-style-type: none"> <li>• Braking system is not supplied with voltage</li> <li>• Brake magnet voltage too low</li> <li>• Brake shoes mechanically blocked</li> <li>• Overexcitation rectifier defective</li> </ul>	<ul style="list-style-type: none"> <li>• Check electrical connection</li> <li>• Check braking voltage supply voltage</li> <li>• Remove mechanical blocking</li> <li>• Replace overexcitation rectifier</li> </ul>
Delay in braking system release	<ul style="list-style-type: none"> <li>• Overexcitation rectifier defective</li> </ul>	<ul style="list-style-type: none"> <li>• Replace overexcitation rectifier</li> </ul>
Braking system does not engage	<ul style="list-style-type: none"> <li>• Brake shoe mechanically blocked</li> </ul>	<ul style="list-style-type: none"> <li>• Remove mechanical blocking</li> </ul>
Delay in engaging of braking system	<ul style="list-style-type: none"> <li>• Switch-off time too short with a.c. side switching</li> </ul>	<ul style="list-style-type: none"> <li>• Brake control using d.c. side switching of the overexcitation rectifier</li> </ul>
Brake makes loud switching noise	<ul style="list-style-type: none"> <li>• Brake air gap too large</li> <li>• D.c. side switching of the brake in "normal operation"</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust brake air gap</li> <li>• Change over to brake control by a.c. side switching in "normal operation"</li> </ul>
Braking torque too low	<ul style="list-style-type: none"> <li>• Brake friction surface or brake linings dirty.</li> <li>• Foreign bodies between friction surface and brake lining</li> <li>• Brake friction surface or brake lining have come into contact with oily or greasy materials</li> <li>• Load torque too high</li> </ul>	<ul style="list-style-type: none"> <li>• Clean friction surface / brake linings</li> <li>• Remove foreign bodies</li> <li>• Replace brake lining, clean brake drum thoroughly</li> <li>• Reduce load torque</li> </ul>

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## 10. Type code

Example:	W	S	G-	W8	.	3	-	0	0	09	/	40A	-	ZE
	W	S	G-	W8	.	Z3	-	X1	X2	X3 X4	/	X5 X6 X7	-	X8 X9
Customer specific identifier														
S= Synchronous motor														
G= Gearless														
Frame size														
Z3: Overall length: 2 overall lengths are available; identified by: 3, 4														
X1: Customer specific identifier														
X2: Motor voltage: 0: suitable for converter supply using a link voltage of 500 .... 620V														
X3 X4: Rated speed: e.g.:06: 60 min <sup>-1</sup> (with D <sub>T</sub> = 400 mm v=0.6 m/s, suspension 2:1) 24: 240 min <sup>-1</sup> (with D <sub>T</sub> = 400 mm v=2.5 m/s, suspension 2:1) 07: 75 min <sup>-1</sup> (with D <sub>T</sub> = 320 mm v=0.6 m/s, suspension 2:1) 23: 239 min <sup>-1</sup> (with D <sub>T</sub> = 320 mm v=2.0 m/s, suspension 2:1)														
X5 X6 X7: Traction sheave and frame design (Traction sheave and deflector sheave; frame design, centre distance and rope centre distance)														
X8 X9: Variant code (brake, measuring system, modifications) ZE: caliper disk brake; measuring system ECN 1313-2048 incr. - SSI-interface ZF: caliper disk brake; measuring system ECN 1313-2048 incr. - ENDAT-interface ZG: caliper disk brake; measuring system ERN 1387-2048 incr.														

# Gearless Lift Machine

## WSG-W8

### Operating Instructions

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Datum/date 29.01.2010  
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## 11. Technical data

Duty type:	S3 – 40 % ED
Traction sheave:	dia. 400 mm or dia. 320 mm
Traction sheave hardness:	min. 220 HB 30
Typical number of carrying ropes and dia.:	8 x dia. 8 mm; 7 x dia. 10 mm;
DE main bearings:	self-aligning roller bearing
NDE bearing:	ball bearing or cylindrical roller bearing
Permissible shaft load:	45 kN exerted by the complete machine (90 kN on the motor traction sheave centre)
Drive motor:	synchronous motor
Number of pole pairs:	11
Thermal class:	155 (F)
Degree of protection:	IP 41
Overload capability:	2.3fold ( $I_{max}/I_N$ )
Winding protection:	triple PTC 150°C

### Site conditions

Max. altitude:	max. 1,000 m (derating required at higher altitudes)
Ambient temperature:	-5°C ... +40°C
Max. rel. humidity:	85 % at 20°C (no moisture condensation)

### caliper disk brake

	WSG-W8.3	WSG-W8.4
Type:	BFK 466-55	
Max. braking torque:	2 x 925 Nm	3 x 925 Nm
Factory default setting:	2 x 925 Nm	3 x 925 Nm
Air gap $s_B$ :	0.5 ± 0.1 mm (new air gap)	
Max. air gap $s_{B \max}$ :	1.0 mm	
Holding voltage:	103 VDC	
Holding current:	2 x 1.1 A	3 x 1.1 A
Overexcitation voltage:	205 VDC	
Overexcitation current:	2 x 2.3 A	3 x 2.3 A

### Brake control unit

Type:	BEG-561-255-130 from intorq GmbH (accessories)
Operating voltage	$U_N = 230 \text{ VAC } (\pm 10\%), 40... 60 \text{ Hz}$

### Brake monitoring contacts

Loadability of contacts	...250 VAC / 1 mA...3 A (resistive load)
Mechanical life of contacts:	1 x 10 <sup>7</sup> switching operations
Degree of protection	IP 67

# Gearless Lift Machine

## WSG-W8

### Operating Instructions

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Datum/date 29.01.2010  
Stand/version 0.13

# 2:1

		synchron / <i>synchronous</i> 22-polig / <i>22-poles</i>											
Motor/ <i>motor</i>		WSG-W8.3						WSG-W8.4					
Drehmoment/ <i>torque</i> S3-40%, 240 S/h	M <sub>N</sub> [Nm]	740						1100					
Treibscheibe/ <i>traction sheave</i> Gegenscheibe/ <i>secondary sheave</i>	Ø D <sub>T</sub> [mm] Ø D <sub>G</sub> [mm]	320			400			320			400		
für Nennlasten/ <i>for loads</i> *)	Q [kg]	bis/ <i>up to</i> 1400			bis/ <i>up to</i> 1150			bis/ <i>up to</i> 2050			bis/ <i>up to</i> 1600		
Aufhängung/ <i>suspension</i>		Tabelle gilt für / <i>table applies for</i> 2:1											
Motorströme gelten für 500...620V Zwischenkreisspannung  <i>Motor currents are valid for 500...620V d.c. link voltage</i>	v [m/s]	n <sub>N</sub> [rpm]	P <sub>N</sub> [kW]	I <sub>N</sub> [A]	n <sub>N</sub> [rpm]	P <sub>N</sub> [kW]	I <sub>N</sub> [A]	n <sub>N</sub> [rpm]	P <sub>N</sub> [kW]	I <sub>N</sub> [A]	n <sub>N</sub> [rpm]	P <sub>N</sub> [kW]	I <sub>N</sub> [A]
	0,63	75	5,8	18,5	60	4,6	18,5	75	8,6	28,5	60	6,9	28,5
	1,0	119	9,2	26,9	95	7,4	18,5	119	13,7	43,0	95	10,9	28,5
	1,6	191	14,8	41,3	153	11,9	26,9	191	22,0	62,5	153	17,6	43,0
	2,0	239	18,5	41,3	190	14,7	41,3	239	27,5	62,5	190	21,9	62,5
2,5				240	18,6	41,3				240	27,6	62,5	
Seil Ø / <i>rope diameter</i>	Ø d [mm]	8			10			8			10		
Fahrkorbmasse/ <i>car weight</i> *)	P <sub>car</sub> [kg]	2000			2000			2500			2000		
Seilanzahl/ <i>number of ropes</i> *)	z	... 8			... 7			... 8			... 7		

\*) Reference values. Achievable nominal load depends on specific lift system data.

The table is applicable for an overall shaft efficiency of approx. 72...78 % (counterweight: 50 %). It lists a standard selection of machines. The lift and project data will be adapted to the actual site conditions and may deviate from the above values.

# 1:1

		synchron / <i>synchronous</i> 22-polig / <i>22-poles</i>											
Motor / <i>motor</i>		WSG-W8.3						WSG-W8.4					
Drehmoment / <i>torque</i> S3-40%, 240S/h	M <sub>N</sub> [Nm]	740						1100					
Treibscheibe / <i>traction sheave</i> Gegenscheibe / <i>secondary sheave</i>	Ø D <sub>T</sub> [mm] Ø D <sub>G</sub> [mm]	320			400			320			400		
für Nennlasten / <i>for loads</i> *)	Q [kg]	bis / <i>up to</i> 700			bis / <i>up to</i> 570			bis / <i>up to</i> 1000			bis / <i>up to</i> 800		
Aufhängung / <i>suspension</i>		Tabelle gilt für / <i>table applies for</i> 1:1											
Motorströme gelten für 500...620 V Zwischenkreisspannung  <i>Motor currents are valid for 500...620 V d.c. link voltage</i>	v [m/s]	n <sub>N</sub> [rpm]	P <sub>N</sub> [kW]	I <sub>N</sub> [A]	n <sub>N</sub> [rpm]	P <sub>N</sub> [kW]	I <sub>N</sub> [A]	n <sub>N</sub> [rpm]	P <sub>N</sub> [kW]	I <sub>N</sub> [A]	n <sub>N</sub> [rpm]	P <sub>N</sub> [kW]	I <sub>N</sub> [A]
	1,0	60	4,6	18,5	48	3,7	14,0	60	6,9	28,5	48	5,5	20,2
	1,6	95	7,4	18,5	76	5,9	18,5	95	10,9	28,5	76	8,8	28,5
	2,0	119	9,2	26,9	95	7,4	18,5	119	13,7	43,0	95	10,9	28,5
	2,5	149	11,5	26,9	119	9,2	26,9	149	17,2	43,0	119	13,7	43,0
Seil Ø / <i>rope diameter</i>	Ø d [mm]	8			10			8			10		
Fahrkorbmasse / <i>car weight</i> *)	P <sub>car</sub> [kg]	2000			2000			2500			2000		
Seilanzahl / <i>number of ropes</i> *)	z	... 8			... 7			... 8			... 7		

# Gearless Lift Machine

## WSG-W8

### Operating Instructions

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## 12. Dimension drawing

Motor / motor	$\varnothing D_T / \varnothing D_G$	Trägheitsmoment <sup>*)</sup> inertia <sup>*)</sup> [kgm <sup>2</sup> ]	Masse <sup>**)</sup> weight <sup>**)</sup> [kg]
WSG-W8.3	320/320	4,8	620
WSG-W8.3	400/400	6,5	655
WSG-W8.4	320/320	4,9	685
WSG-W8.4	400/400	6,6	720

<sup>\*)</sup> complete with secondary sheave

<sup>\*\*)</sup> Frame motor with secondary sheave: additionally approx. 15kg per 100 mm centre distance AH for secondary sheave bracket, and approx. 5-6 kg per foot

### Execution examples:

Typschlüssel Type code X5X6X7	$\varnothing D_T / \varnothing D_G$	AH	RH
3K2	320/320	480	800
4K7	400/400	250	650
4K3	400/400	650	1050

### Beispiel example

dargestellt ist/  
shown is:  
Gegenscheibe  
links/secondary  
sheave left  
AH=650  
RH=1050  
Variante /  
variant:  
X5X6X7=4K3

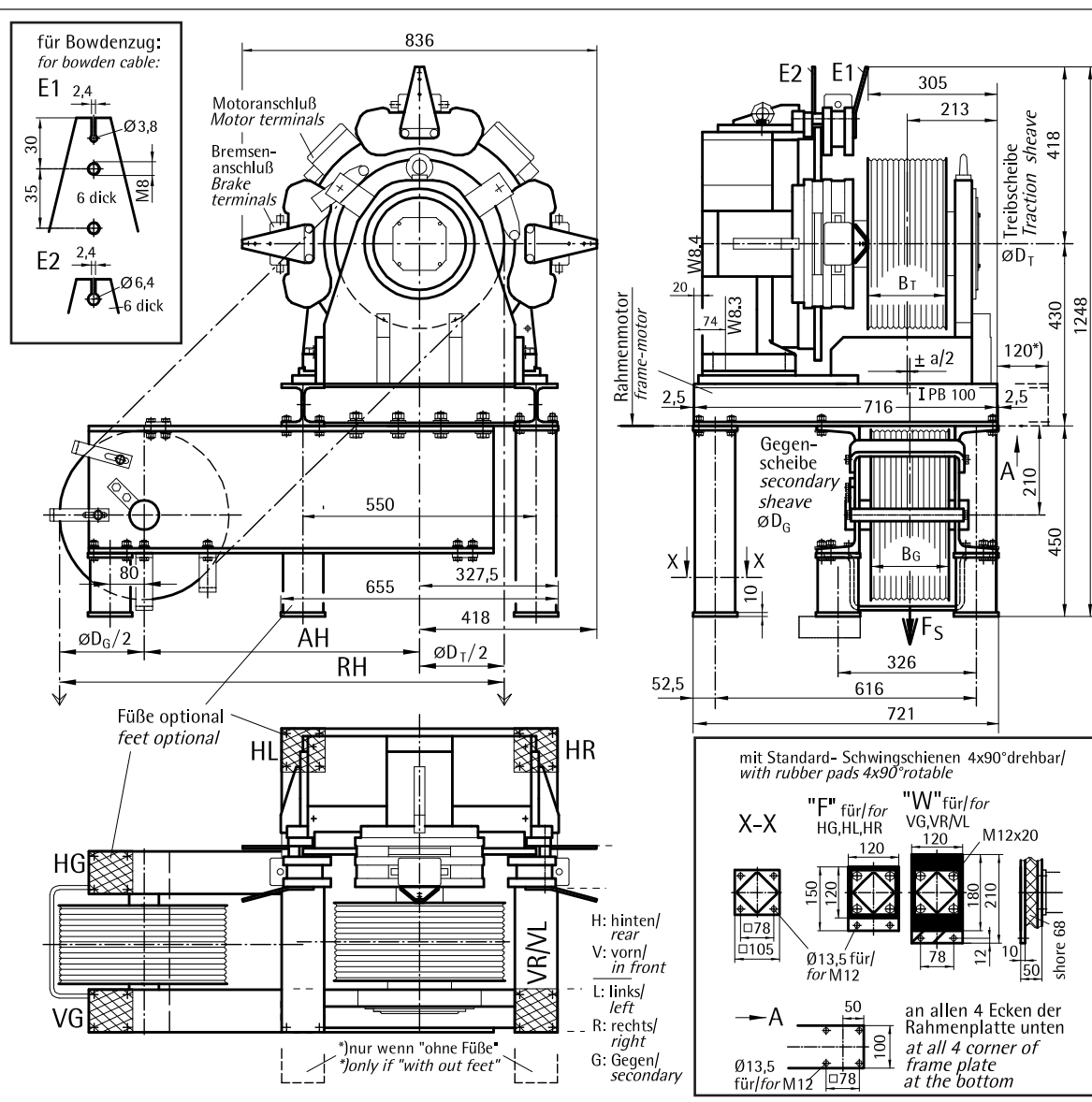


Es sind Seil-  
mittenab-  
stände RH  
zwischen  
400 und  
1300 mm  
möglich.

Wählen Sie  
Ihre Vari-  
ante. Rufen  
Sie uns an.  
Wir beraten  
Sie gern.

Rope centre  
distances RH  
between  
400 and  
1,300 mm  
are availa-  
ble.

Choose  
your option.  
Give us a  
call. We'll  
be happy to  
advise you.





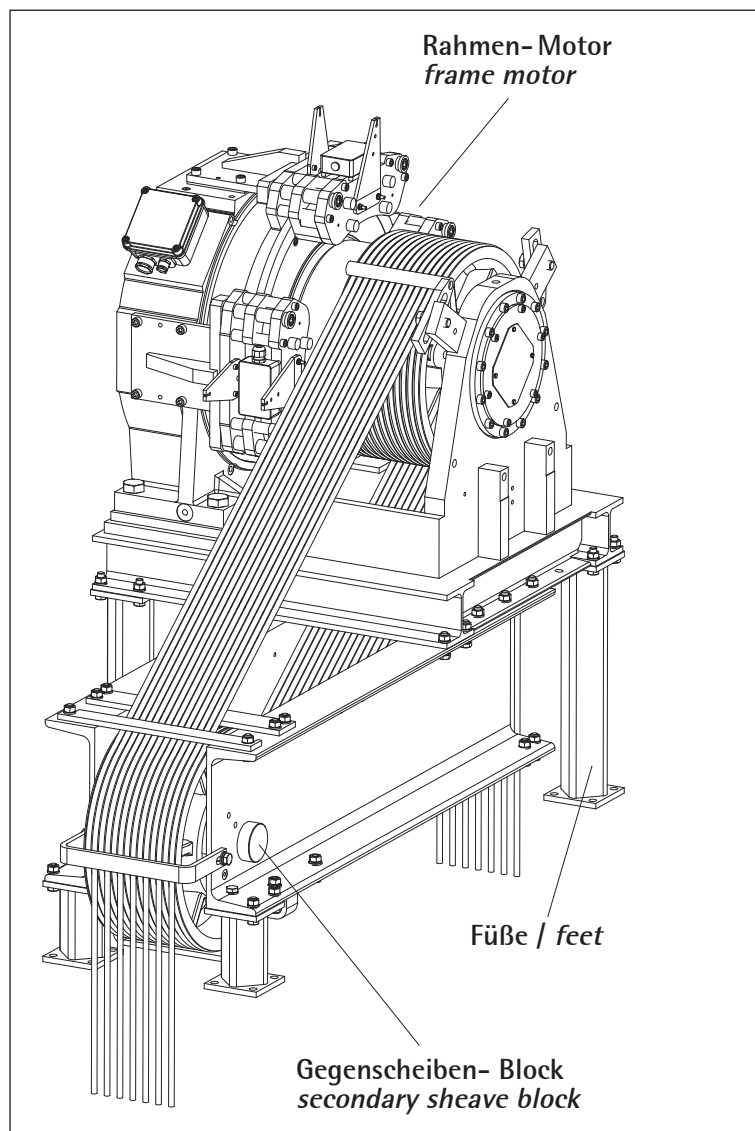
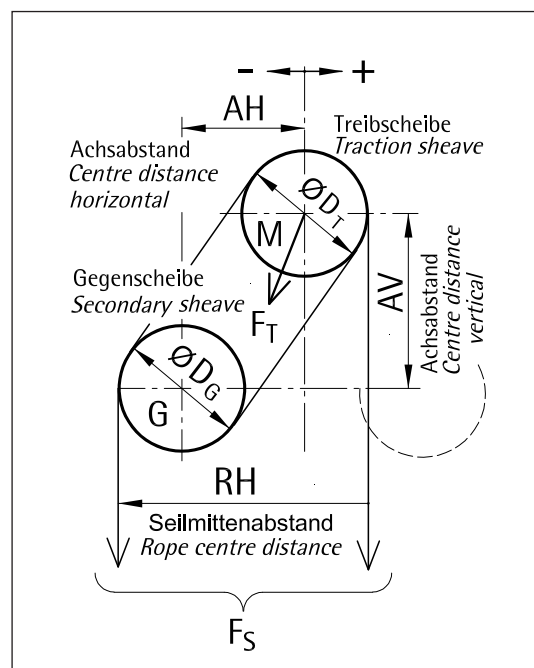
# Gearless Lift Machine

## WSG-W8

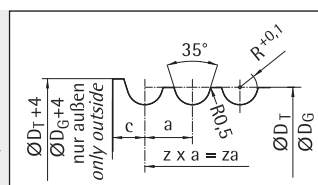
### Operating Instructions

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The WSG-W8 lift machine comprises a compact frame motor, an adaptable secondary sheave block and optional feet. The secondary sheave block can be fitted offset from the machine centre either to the right ("+" facing the traction sheave, identifier X1=R) or to the left ("-", X1=L). The offset between the traction and secondary sheaves is adjustable:  $\pm a/2$  (half rope centre distance).



**Rillenprofil**  
**Treib-/Gegenscheibe**  
**traction sheave / secondary**  
**sheave groove profile**




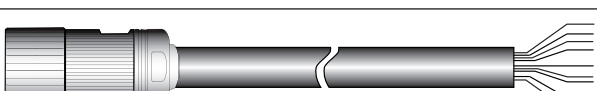




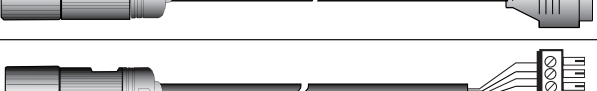

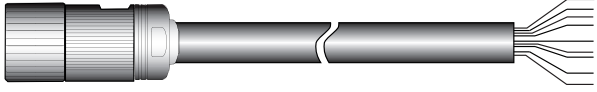


$\varnothing D_T$	$\varnothing D_G$	$B_T$	$a$	$z \times a = za$	$C$	$R$
320	320	180	11	$15 \times 11 = 165$	7,5	4,05
400	400	185	13	$13 \times 13 = 169$	8	5,05



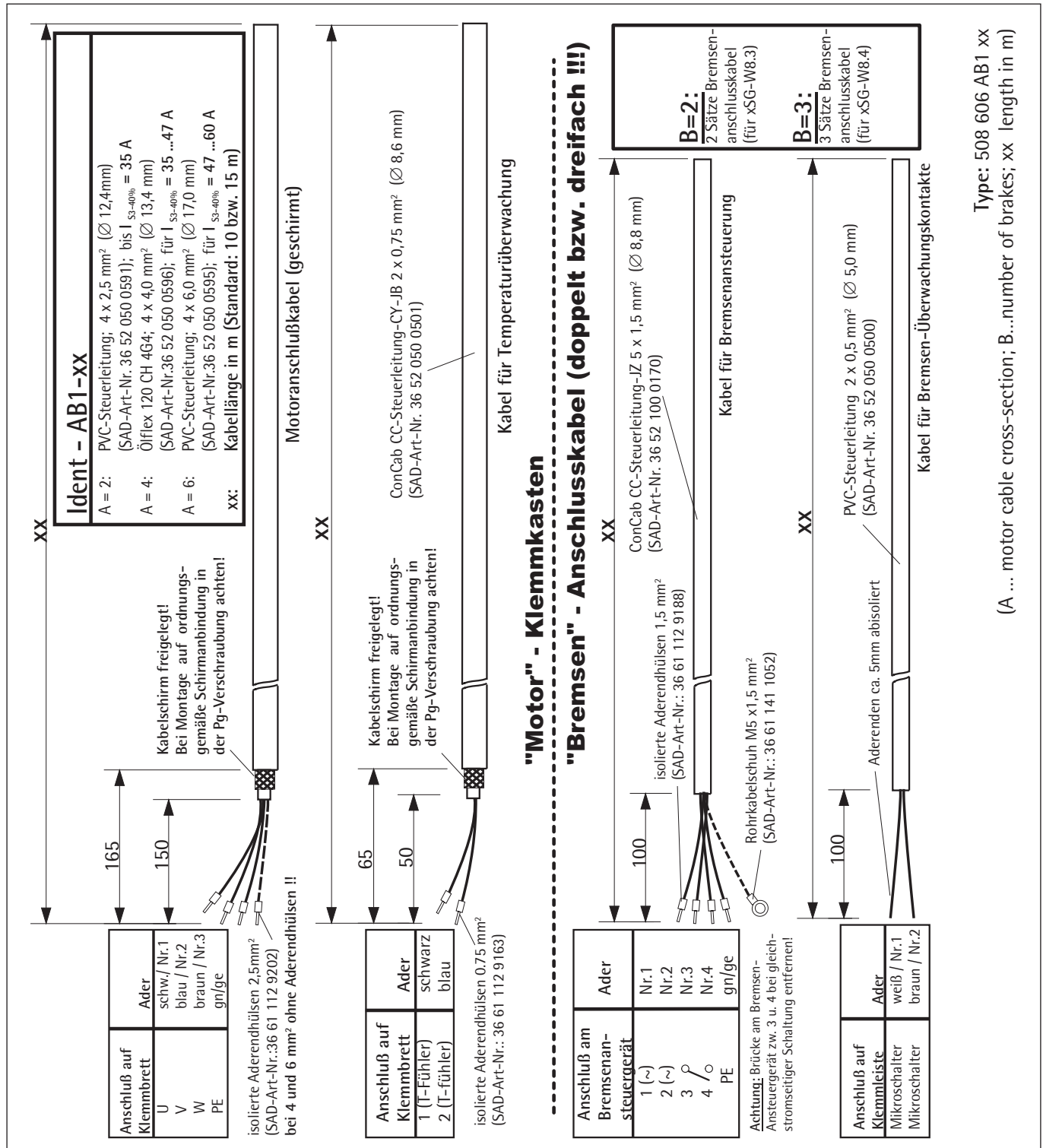
## 13. Accessories

### 13.1. Connecting cable for measuring systems

	Inverter type	recom. encoder system	recommended measurement system cable
	CT <i>unidrive SP</i>	ECN 1313 (EnDat or SSI)	502 452 021 xx
	emotron/ Dietz DSV 5445	ECN 1313 (EnDat or SSI)	501 112 022 xx
	Flender/Loher L05	ERN 1387	507 874 022 xx
	Fuji Frenic	ECN 1313 (EnDat)	502 679 022 xx
	KEB F5	ECN 1313 (EnDat)	502 363 022 xx
	LTi DRiVes Lust CDD 3000	ECN 1313 (SSI)	505 677 022 xx
	RST Elektronik FRC	ECN 1313 (EnDat)	508 752 022 xx
	GEFRAN (SIEI) AVY-L-M	ERN 1387	502 599 022 xx
	Vacon NXP	ECN 1313 (EnDat)	503 289 021 xx
	Yaskawa/ Omron L7 Telemecanique/ Schneider Altivar 71	ECN 1313 (EnDat)	503 715 022 xx
	Ziehl-Abegg 2SY/3BF	ECN 1313 (EnDat or SSI)	508 749 022 xx

xx... cable length [m]

## 13.2. Cable set for motor and brake

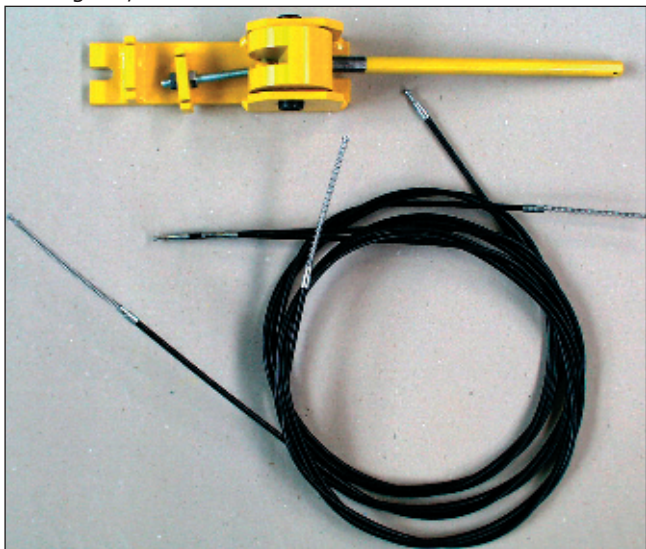


# Gearless Lift Machine WSG-W8 Operating Instructions

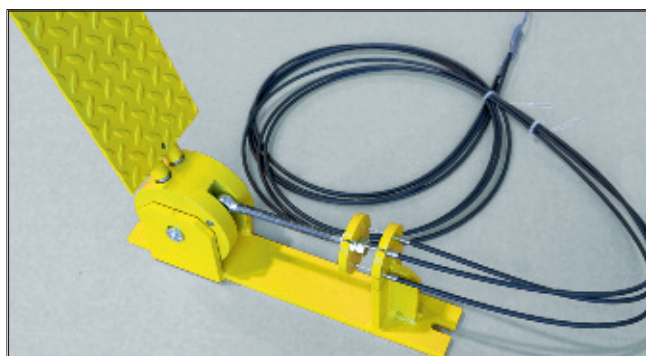
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## 13.3. Release lever set with remotely controlled Bowden cable

The remote control of the brake by Bowden cable is used to release the brakes mechanically in the case of an emergency. For details of this method see section 9.4. "Emergency evacuation".

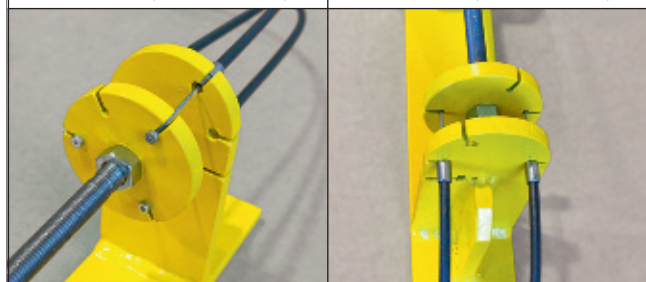


*Release lever set with remotely controlled bowden cable, hand-operated*



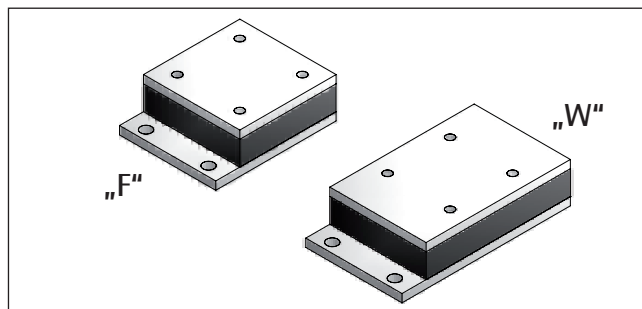
WSG-08.4 (with 3 brakes)

WSG-W8.3 (with 2 brakes)



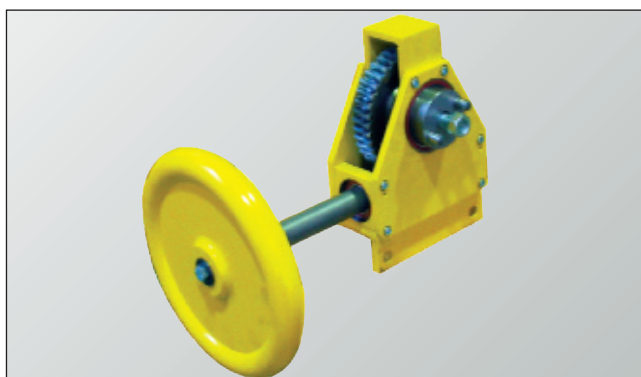
*Release lever set with remotely controlled bowden cable, foot-operated*

## 13.4. Rubber cushions



Solid-borne sound absorbing elements (rubber cushions) should be used for vibration damping in the lift system. The cushions must be dimensioned and customised to suit the specific application. Refer chapter 12. "Dimension drawing" on page 31.

## 13.5. Manual turning device



For details of this method see section 9.4. "Emergency evacuation".

# Gearless Lift Machine

## WSG-W8





### Operating Instructions

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## 14. Spare parts

Item	Part	Description
<b><u>Motor</u></b>		
01	Rope slip-off guard	505 284
02	Hydraulic-type lubricating nipple	DIN 71 412 - AM 10 x 1
03	Dummy stopper	N-Pg 9 DIN 46320-Fs
04	Rope slip-off guard, cpl.	505 648
05	Measuring system (depending on spec.)	ECN 1313 / SSI / 2048 incr. / clamping ring ECN 1313 / ENDAT / 2048 Inkr. / clamping ring ERN 1387 / 2048 Inkr. / clamping ring
<b><u>Brake system</u></b>		
06	Overexcitation rectifier	32 17 320 A23 (from Binder GmbH) to 06/2006 BEG-561-255-130 (from intorq GmbH) as from 06/2006
07	Caliper disk brake	Type BFK 466-55
08	Release screws	M6x65

## 15. EC type-examination certificate

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">ZERTIFIKAT ♦ CERTIFICATE ♦ 認証証書 ♦ CERTIFICADO ♦ CERTIFICAT</p>	 Industrie Service	
	<b>EC type-examination certificate</b>	
	<b>Certificate no.:</b>	ABV 716/4
	<b>Notified body:</b>	TÜV SÜD Industrie Service GmbH Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile Westendstraße 199, 80686 München - Germany
	<b>Applicant/ Certificate holder:</b>	WITTUR Holding GmbH Rohrbachstraße 26-30 85259 Wiedenzhausen - Germany
	<b>Date of submission:</b>	2007-08-28
	<b>Accredited manufac- tures of the holding:</b>	WITTUR Electric Drives GmbH Offenburger Straße 3 01189 Dresden - Germany
	<b>Product:</b>	Braking device acting on the traction sheave, as part of the protection device against overspeed for the car moving in upwards direction
	<b>Type:</b>	BFK 466-55
	<b>Application area:</b>	Lift machines line XSG-07.X, XSG-W7.X, XSG-08.X, XSG-W8.X
<b>Mark:</b>		
<b>Test laboratory:</b>	TÜV SÜD Industrie Service GmbH Abteilung Aufzüge und Sicherheitsbauteile Westendstraße 199, 80686 München - Germany	
<b>Date and number of test report:</b>	2007-11-14 716/4	
<b>EU-Directive:</b>	Directive 95/16/EC (June 1995)	
<b>Statement:</b>	The safety component conforms to the directive's essential safety requirements for the respective scope of application stated on page 1 - 2 of the annex to this EC type-examination certificate.	
<b>Date of issue:</b>	2007-11-15	
Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile <b>EU code number: 0036</b>  Dieter Roas		
TÜV SÜD Industrie Service GmbH - Westendstrasse 199 - 80686 München - Germany  		





# Gearless Lift Machine

## WSG-W8

### Operating Instructions

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<p><b>Annex to the EC type-examination certificate</b> <b>no. ABV 716/4 dated 2007-11-15</b></p>	<p>The braking device may only be used in connection with the lift machines XSG-07.1, XSG-07.2, XSG-07.3, XSG-07.4, XSG-W7.3, XSG-W7.4, XSG-08.1, XSG-08.2, XSG-08.3, XSG-08.4, XSG-W8.3 and XSG-W8.4.</p> <p>The lift machines XSG-07.1, XSG-07.2, XSG-07.3, XSG-W7.3, XSG-08.1, XSG-08.2, XSG-08.3 and XSG-W8.3 are equipped with two single brakes, the lift machine XSG-07.4, XSG-W7.4, XSG-08.4 and XSG-W8.4 are equipped with three single brakes. (The letter "X" in the identification of the lift machine can be replaced for recognition by any letter, e. g. "W".)</p>
<p><b>1. Scope of Application</b></p>	<p><b>3. Remarks</b></p>
<p>1.1 Permissible brake moment when the braking device acts on the traction sheave while the car is moving upward (if acting on the traction sheave, the braking sheave and the traction sheave are a fix screwed unit; if acting on the shaft of the traction sheave, the braking sheave is situated close to the traction sheave)</p>	<p>3.1 Where three single brakes are used, redundancy requirements necessitate that a sufficient braking effect as outlined in section 12.4.2.1 of EN 81-1 is still maintained if one of the single brake fails. It is not assumed that two single brakes will fail simultaneously.</p>
<p>Braking device consisting of two single brakes (two brake tongs)</p>	<p>3.2 The permissible brake moments must be applied to the lift system in such a manner, that the empty car moving in upwards direction is not decelerated by more than 1g.</p>
<p>2228 Nm</p>	<p>3.3 In the scope of this type-examination it was found out, that the brake device also functions as a brake for normal operation, is designed as a redundant system and therefore meets the requirements to be used also as a part of the protection device against overspeed for the car moving in upwards direction.</p>
<p>3507 Nm</p>	<p>3.4 In order to provide identification and information about the design and its functioning drawing No BFK 46655-001 dated 24 February 2003 with last modification dated 1. March 2005 is to be enclosed with the EC type-examination certificate and the Annex thereto. The environmental conditions and connection requirements are shown on the drawing "Maßbild Z" 505 215 dated 18 September 2002 state of modification 21 May 2007 (Braking sheave and traction sheave are a fix screwed unit) and Maßbild W7" 505 215 JW dated 07 January 2004 state of modification 21 May 2007 (Braking sheave situated on the shaft close to the traction sheave).</p>
<p>1.2 Maximum tripping speed of the overspeed governor and maximum rated speed for traction sheave diameter of 400 mm (in relation to the rope's centre) and car suspension of 2:1</p>	<p>3.5 The EC type-examination certificate may only be used in connection with the pertinent annex.</p>
<p>1.2.1 Maximum tripping speed</p>	
<p>1.2.2 Maximum rated speed</p>	
<p>According to the tripping speed and the rated speed, a tripping rotary speed of 300 min<sup>-1</sup> and a rated rotary speed of 240 min<sup>-1</sup> of the traction sheave is calculated on the basis of the traction sheave diameter of 400 mm and the car suspension of 2:1.</p> <p>If deviating traction sheave diameters, car speeds or car suspensions are used, care must be taken that these rotary speeds are not exceeded during operation and tripping of the overspeed governor.</p>	
<p><b>2. Conditions</b></p>	
<p>2.1 Since the braking device represents only a part at the protection device against overspeed for the car moving in upwards direction an overspeed governor as per EN 81-1, paragraph 9.9 must be used to monitor the upward speed and the braking device must be triggered (engaged) via the overspeed governor's electric safety device.</p>	
<p>Alternatively, the speed may also be monitored and the braking device engaged by a device other than an overspeed governor as per paragraph 9.9 if the device shows the same safety characteristics and has been type tested.</p>	
<p>2.2 In order to recognize the loss of redundancy the movement of each brake circuit (each anchor of the single brake) is to be monitored separately and directly (e.g. by micro switches). If a brake circuit fails to engage (close) while the lift machine is at standstill, next movement of the lift must be prevented.</p>	
<p>2.3 In cases where the lift machine moves despite the brake being engaged (closed), the lift machine must be stopped at the next operating sequence at the latest and the next movement of the lift must be prevented. (The car may, for example, be prevented from travelling, by querying the position of the micro switch which is used to monitor the movement of the brake circuits, should both brake circuits fail to open).</p>	





WITTUR Electric Drives GmbH



## EC Declaration of Conformity

The manufacturer

WITTUR Electric Drives GmbH  
Offenburger Straße 3  
D-01189 Dresden

certifies that the traction machine with

**Safety component:** Braking device acting on the traction sheave, as part of the protection device against overspeed for the car moving in upwards direction, type BFK 466-55

**Type:** xSG-07.x, xSG-W7.x, xSG-08.x and xSG-W8.x  
**Year of Construction:** see name plate on product and shipping documents  
**Serial number:** see name plate on product and shipping documents  
**EC type-examination:** ABV 716/4 dated 2007-11-15

is in conformity with the specification of the European Lifts Directive 95/16/EC dated 1995-06-29 and of the Low Voltage Directive (73/23/EEC).


The EC prototype testing according to European Lifts Directive 95/16/EC art. 8, (1), a), i) and the production sample testing as specified in the Directive, Annex XI, was/are performed by the following authority:

TÜV SÜD Industrie Service GmbH  
Abteilung Aufzüge und Sicherheitsbauteile  
Westendstraße 199  
D-80686 München - Deutschland  
EU-Kennnummer: 0036

**Used harmonized standards:** EN 81-1: Stand 1999 (Safety rules for the construction and the installation of lifts, part 1: Electric lifts)  
EN 60034 / DIN VDE 0530 (Rotating electrical machines)  
EN 60204-1 (Safety of machinery: electrical equipment of machines; part 1: general requirements).

It is certified, that the safety component is in conformity with the proved test sample of the EC type examination.

Dresden, 2007-12-20  
(place, date)



Dr. Peter Sekula, General Manager  
(undersigned, title)



Steffen Mann, Head of Development/Construction  
(undersigned, title)