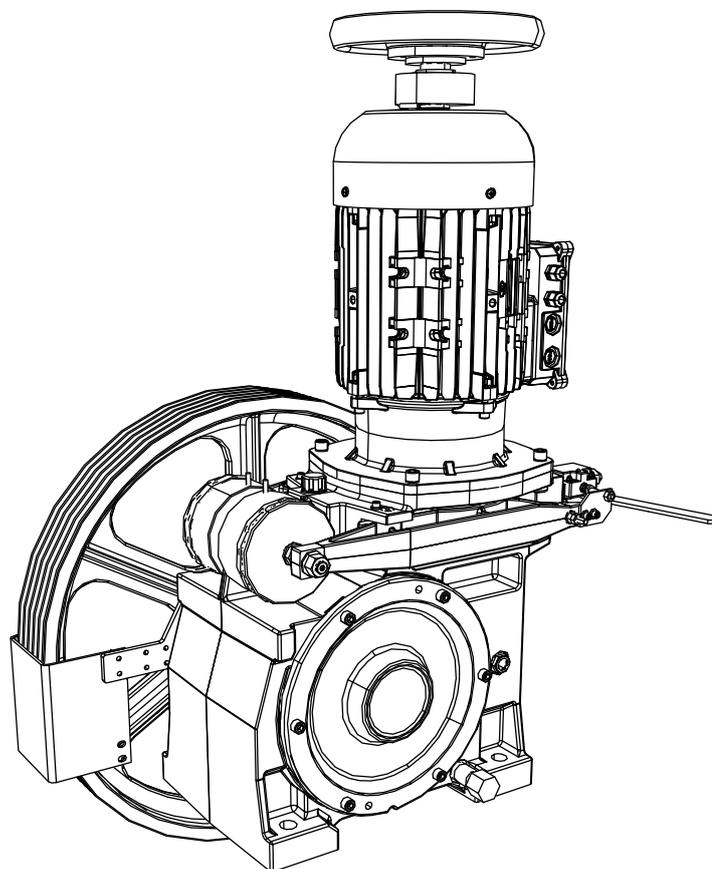


OPERATING MANUAL

TW63B

Drive
01/2025



6232002860

TKE

Company and contact information

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1 About these instructions

1.1 Guide to layout

Sequence of actions involving several steps

✓ Requirement for the sequence of actions (optional).

1. First action step.
2. Second action.
 - ▷ Interim result (optional)
3. Third action step.
 - ▷ Result of action (optional)

Sequence of actions involving independent steps

- Action step.
- Action step.
- Action step.

Information



Information must always be read and followed.

Reference

↗ [Chap. 1 P. 6](#)

List

- Top item of a list
 - Sub-item of a list
 - Sub-item of a list
- Top item of a list
- Top item of a list

2 Safety

2.1 Warning notes

- Warning notes are intended for the protection of persons and property.
- Warning notes must be read and observed by every person who works on the product.
- Warning notes precede activities that pose a hazard for people and the product.

2.1.1 Structure

SIGNAL WORD AND SIGNAL COLOUR



Type and source of danger

Consequences if danger disregarded.

→ Measures to avert the danger.

2.1.2 Indications of danger to persons

DANGER



Danger with a high degree of risk!

If ignored, leads to death or serious injury.

→ Read and comply with the warning.

WARNING



Danger with a high degree of risk!

If ignored, may lead to death or serious injury.

→ Read and comply with the warning

CAUTION



Danger with a low degree of risk!

If ignored, may lead to minor or moderate injury.

→ Read and comply with the warning.

2.1.3 Indication of possible damage to property

NOTICE



Hazard with possible damage to property!

May lead to product function impairments or function loss.

→ Read and comply with the warning.

2.2 Safety requirements

This document contains important information for safe operation of the product.

- Keep this document and all other applicable documents at the location of use for the entire working life of the product.

2.2.1 Area of applicability

This document applies only to the product described here.

Other applicable documents

- International occupational health and safety regulations

2.2.2 Basic requirements for safety

- All existing safety devices are to be tested regularly in accordance with the maintenance schedule.
- This document, in particular the chapter entitled "Safety", together with the warnings and all other applicable documents, must be followed by all persons who work with the product.
- In addition to this document, the rules at the location of use with regard to environmental protection and the occupation health and safety and accident prevention regulations must be followed.
- All safety and hazard warnings on the installation must be kept in legible condition.
- Safety information and instructions required by law must be displayed to users in such a way that they are clearly visible.
- A requirement for safe handling and non-disruptive operation of this product is knowledge of the fundamental safety regulations.

2.2.3 Obligations of the operating company and installation firm

- Only deploy trained and instructed qualified personnel.
- Provide personnel with the required personal protective equipment.
- Check personnel at regular intervals to ensure that they follow safety-conscious work practices and comply with national provisions.
- Make all other applicable documents as well as this document available to personnel.

2.2.4 Duties of personnel

- Clearly establish all areas of responsibility prior to any activity.
- Always wear the personal protective equipment made available to you.
- Prior to work, make people aware of the dangers of electrical current.

2.2.5

Dangers in handling the drive

DANGER



Residual voltage after switching off the elevator installation!

Electric shock that can lead to death or severe injury.

- Perform work on energised parts of the drive only after the waiting period and/or when the DC link voltage is less than 60 V (check with a measuring instrument)

WARNING



Inadequate connection

Electric shock. Damage to drive.

- Earth the motor and brake magnet in accordance with country-specific regulations.
- Electrical connections must correspond to at least the protection class in accordance with the name plate and/or required country-specific protection class.

WARNING



Contact with rotating or moving parts!

Entanglement of clothing or body parts can lead to crushing or even loss of limbs.

- Maintain an adequate distance to rotating and moving parts, for example traction sheave, ropes.
- Wear tight-fitting clothing.
- Make sure you assume a firm stance.

- The drive may only be operated in a closed machine room or secured shaft.
- The machine may only be operated with the cover and rope guard fitted to the traction sheave.
- The drive is not suitable for operation in explosive or aggressive atmospheres.
- On entering the machine room, adequate safety clearance to all rotating parts is to be maintained.
- In the event of improper use of the machine, there is a risk of personal injury or to the life of the user or third parties, or impairment on the assembly or other assets can arise. Malfunctions that can adversely affect safety must be rectified immediately.
- It must be ensured that a fault generated by the encoder, the brake or the brake control system is detected by the elevator control system or frequency inverter. The control system must immediately place the elevator in a safe state.
- The elevator installation must ensure that emergency braking by the mechanical brake system takes place in the following cases:
 - Uncontrolled movement out of the stopping zone

- Failure of the inverter (due to short circuit with triggering of the fuse)
- The elevator installation must be fitted with a safety device complying with EN81 or A17 that detects exiting the elevator car with the door opened and initiates suitable measures.

2.3 Warranty and liability

The "General Terms of Sale and Delivery" of TK Aufzugswerke GmbH apply.

Warranty and liability claims in the event of personal injury and material damage shall be excluded if they arise due to at least one of the following causes:

- Improper use that is not in line with the intended purpose of the product
- Incorrect installation, commissioning, operation and maintenance of the product
- Operation of the product with defective or inoperative safety and/or protection devices
- Non-observance of the instructions in the operating manual with regard to transport, storage, installation, commissioning, operation and maintenance
- Structural modification to the product without agreement or approval
- Modification to product features without agreement or approval
- Inadequate monitoring of parts that are subject to wear
- Repairs that are carried out improperly
- Cases of catastrophe due to third-party interference or force majeure
- Use of non-approved auxiliary materials and operating fluids

2.3.1 Structural modification of the product

The product is configured in the factory and delivered ready for operation.

If changes are made to the product, the entire warranty of TK Aufzugswerke GmbH shall become null and void.

2.3.2 Use in line with intended use

The product has been constructed using state-of-the-art technology and in line with the recognised technical safety regulations. It may only be used in accordance with its intended use and when the technical safety devices are free from defects. Any other or additional form of use shall be regarded as **non-compliant** with the intended use. TK Aufzugswerke GmbH shall **not** be liable for any damage arising from such use and any damage arising due to operator errors.

In order to comply with the intended use of the product:

- Use the product as a Drive of elevators only
- Read and comply with the document, in particular the chapter entitled "Safety", together with the warnings and all other applicable documents
- Comply with the commissioning instructions, the installation description as well as the required inspection and maintenance work

2.4

10 rules for health and safety at work



Field

10 RULES PREVENTION OF AN ACCIDENT

Lock Out – Tag Out (LOTO)

Always test & verify.

Ensure there are no passengers in the cab. All doors are closed and mechanically locked.

Guard any circuit that may not be de-energized on a locked out controller: e.g 110 V lighting.

Always have the unit personally locked before working on the unit if it is not to be moved.



Fall Protection

Always tie-off when a fall hazard of 1.8m or more exists.

Always wear proper work attire: full body harness.

Inspect your full body harness before each use.

Always be aware of your surroundings, especially at heights of more than 1.8m and with a gap of more than 300mm.



Jumpers

Always count jumpers before and after use.

Inspect jumpers for damage. Only use approved jumpers.

Jumpers may not be installed on the safety circuit when the elevator is in automatic operation. Always notify co-workers when jumpers are being used.



Personal Protective Equipment (PPE)

Always wear the proper Personal Protective Equipment.

Always wear proper work attire and if necessary: safety shoes, helmet, eye protection, hearing protection and protective gloves.



NO JOB IS SO IMPORTANT
OR URGENT THAT IT CANNOT
BE DONE IN A SAFE WAY.



OSH
BECAUSE WE CARE

Car Top And Pit Access

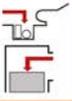
Maintain control of the elevator at all times.

Access: Car top - Send the car up/down, open the door (Door-Lock) and fix with door stopper. Independently verify door safety, stop switches and inspection switch.

Pit - Activate pit stop switch and use ladder safely.

Egress: ensure stop switches are activate when exiting car top or pit.

Pit - Deactivate stop switch(es) and use ladder or step aids safety.



Live Electrical/Troubleshooting

Use certified tools and prevent incidental contact with live electrical circuits.

Probe with only one hand.

Lock Out and Tag Out if power is not required.

Inspect tools before use.

Always guard live circuits.

Test meter on a known source before use.



Mechanical Stored Energy

Avoid pinch points of materials and tools.

Avoid loose clothing and be careful when wearing gloves near moving machinery.

Ensure all loads are stable and secure.

Avoid the red zones (leaning over to adjacent shaft etc.).



Rigging & Hoisting

Verify stability & capacity.

Inspect rigging equipment before each use.

Ensure load slings are properly sized.

Ensure load will clear all obstructions.

Do not stand or walk under load being hoisted.



False Cars & Running Platforms

Operate with two means of safety.

Always use safeties and governor if hoisting with original machines.

When using a temporary cable climbing hoist a secondary Blocktop is required.

Governor and/or safety foot pedal is required.

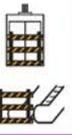


Barricading

Secure workplace properly with barricades.

When swing doors, automatic doors, steps, stepreads, pallets, comb-plates, comb-plate teeth, floor plates or trap doors have been removed or have not been installed leaving an open fall hazard, the unit has to be secured with barriers (for escalators at both ends).

Barricades are to be secured to the unit when work is not being performed in the area.



The international rules for occupational health and safety can also be found on our online platform ELI for download at: <https://eli.tkelevator.com/support/occupational-safety-health>

2.5 Personal protective equipment

| Danger | Cause | Risks | Remedy | Equipment |
|--|---|--|---|-------------------------|
|  | <ul style="list-style-type: none"> Unprotected shaft | Falling |  | Safety harness |
|   | <ul style="list-style-type: none"> WARNING! Do not walk underneath suspended loads Falling tools Transport of heavy loads Sharp-pointed objects | Head injury |  | Head protection |
|   | <ul style="list-style-type: none"> WARNING! Do not walk underneath suspended loads Falling tools Transport of heavy loads Sharp-pointed objects | Danger of crushing in the foot area Cut or stab injury in the foot area |  | Foot protection |
|    | <ul style="list-style-type: none"> Sharp objects Mechanical parts Sharp-pointed objects Caustic substances | Danger of crushing in the hand area Stab injury in the hand area Acid/alkali burns |  | Protective gloves |
|  | <ul style="list-style-type: none"> Severe noise pollution | Noise damage |  | Ear protection |
|   | <ul style="list-style-type: none"> Flying parts Flying particles Laser beams Emissions of optical rays | Eye injury Loss of sight/blinding |  | Protective goggles |
|  | <ul style="list-style-type: none"> Electrical voltage | Electric shock |  | Enable source of energy |

3 Description

3.1 Standards and legal requirements

The product complies with the following regulations:

- Directive 2014/34/EU
- DIN EN 81-20:2020-06
- DIN EN 81-50:2020-06
- DIN EN 81-77:2019-01



For operation in line with standards, the elevator installation must comply with each standard.

3.2 Product Group TW Machines

The designation of this series (successor generation of W series) is composed of the combination of TK Elevator, Wormgear (TW) and a figure for the main performance point (e.g. Q = 1600 kg → 160) of the machine, as well as an indicator of the generation (e.g. "B").

As part of further technical development, these machines are designed completely with low-friction rolling bearings.

The use of a synthetic gear oil (polyalkylene glycol with additives) not only increases the power density and the gear efficiency, but also extends the oil change intervals.

3.3 Product

The machine TW63B (**TK Elevator Wormgear**, Q=630 kg) is used for traction elevators within the framework of the TW series (machines with worm gear, anti-friction bearings, lubrication with synthetic gear oil).

Conceived for installations with rated load 630 kg at 1.0/1.6 m/s , machine TW63B consists of a worm gear with integrated operational brake, overhung traction sheave, flange-connected three-phase motor in design IMB5/V1.

Design variants for the motor and traction sheave positions:

| Motor position | Traction sheave position | NBS |
|----------------|--------------------------|--------------|
| Vertical | left | with/without |
| Horizontal | left/right | with/without |

Tab. 1

ATR_1_21_0002_0

On the version with vertical upright motor, the compact arrangement of the gear, motor and traction sheave means no variation of the traction sheave position is required. The possible traction sheave position is conditional on the configuration of the gear housing – in general, on the left.

- The machine is exclusively available with frequency-controlled motors (VVVF).

Version with vertical motor position IMV1 and brake monitoring - SA3.1

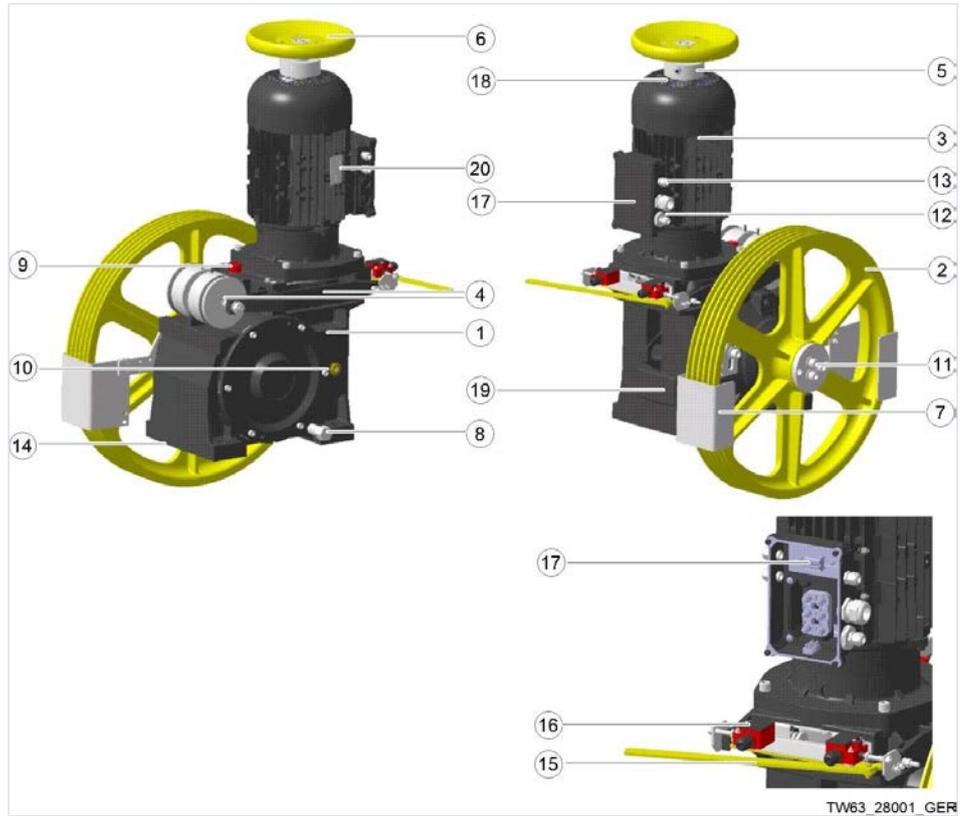


Fig. 1

ATR_2_12_0070_0

| Item | Designation | Item | Designation |
|------|--|------|---|
| 1 | Driving gear (vertical version) | 2 | Traction sheave (standard version) |
| 3 | Motor of type IMB5/V1 in accordance with building code BV6530-06/BI.6 with integrated special flange (standardised motors) or BV6530-06/BI.1 with additional intermediate flange | 4 | Service brake |
| 5 | Encoder (type WDG100) | 6 | Handwinding wheel (D270) |
| 7 | Rope guard (adjustable) | 8 | Oil drain (3/4") |
| 9 | Oil filling hole and ventilation (R3/4") | 10 | Oil level monitoring (gauge glass) |
| 11 | Traction sheave mount | 12 | Connection for motor and temperature monitoring |
| 13 | Intermediate terminal connection and connection of the service brake (only available for the standardised motors) | 14 | Mounting surface for machine base frame |
| 15 | Lever for manual brake release (not mounted) | 16 | Brake monitoring - SA3.1 (optional) |

| Item | Designation | Item | Designation |
|------|---|------|---|
| 17 | Motor terminal box in extended version for intermediate terminal connection of the service brake (only available for the standardised motors) | 18 | Air entry openings for motor with screen grid |
| 19 | Machine type plate | 20 | Motor type plate |

Version with horizontal motor position IMB5

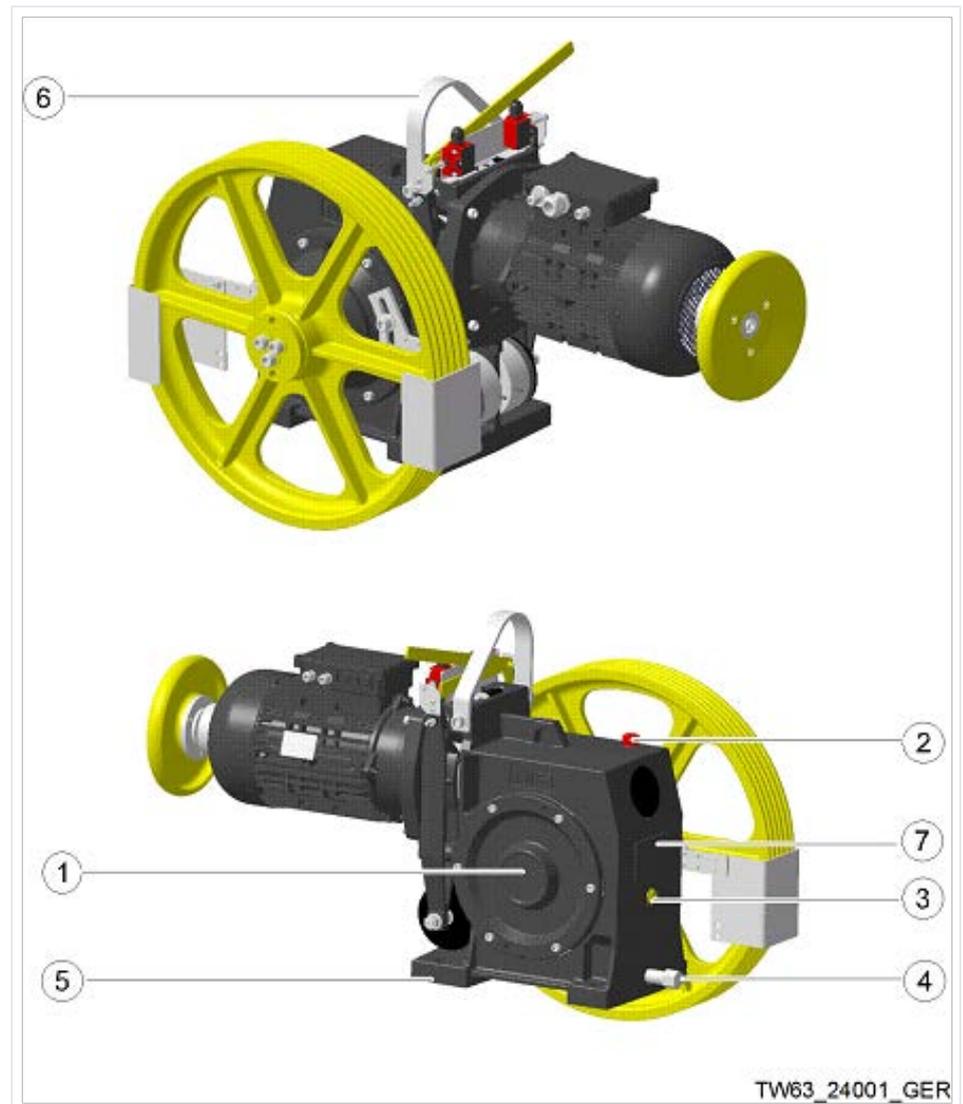


Fig. 2

ATR_2_12_0071_0

| Item | Designation | Item | Designation |
|------|---|------|--|
| 1 | Driving gear (horizontal version) | 2 | Oil filling hole and ventilation (R3/4") |
| 3 | Oil level monitoring (gauge glass) | 4 | Oil drain (R3/4") |
| 5 | Mounting surface for machine base frame | 6 | Transport hanger (for transport only) |
| 7 | Machine type plate | | |

Version with emergency brake (NBS) (shown is the horizontal motor position, IMB5, and left-hand traction sheave position)

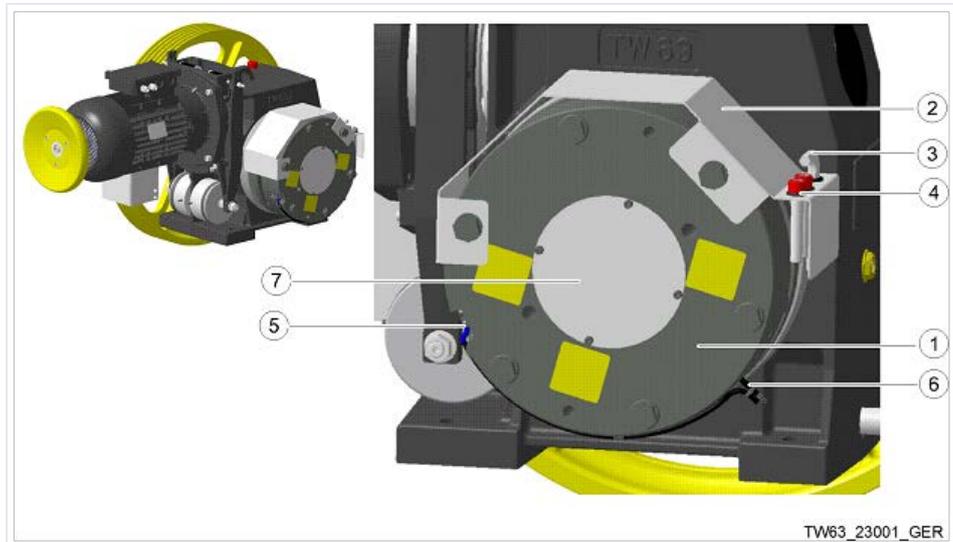


Fig. 3

ATR_2_12_0072_0

| Item | Designation | Item | Designation |
|------|---|------|--|
| 1 | Disc brake - emergency brake system, NBS | 2 | Cover plate for brake |
| 3 | Socket wrench for manual release | 4 | Screws for manual release (screw head marked in red) |
| 5 | Brake test switch with connection line (length approx. 1 m) | 6 | Connection line for brake voltage (length approx. 1 m) |
| 7 | Protective cover for brake | | |

Version for traction sheave position in the shaft (SA9)



Fig. 4

ATR_2_12_0073_0

| Item | Designation | Item | Designation |
|------|--|------|-------------------------------------|
| 1 | TW63B machine, shown with vertical motor position IMV1 | 2 | Traction sheave shaft (SA9 version) |

| Item | Designation | Item | Designation |
|------|---|------|--|
| 3 | Outside bearing (bearing housing with self-aligning bearing on adapter sleeve; pictured is the vertical installation position for upward rope pull direction) | 4 | Traction sheave (SA9 version) |
| 5 | Compensating support (for statically defined machine mounting) | 6 | Mounting surfaces for machine base frame |

Version for position of traction sheave in the shaft – SA9 in combination with emergency brake, NBS (horizontal motor position pictured and outside bearing support upwards)

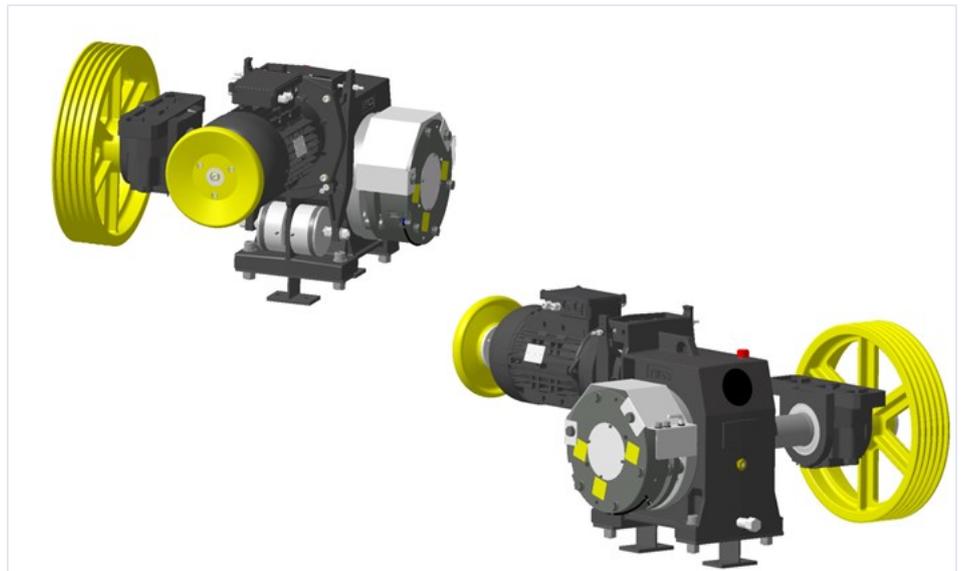


Fig. 5

ATR_2_12_0167_0

Version with safeguard measures complying with EN81-77

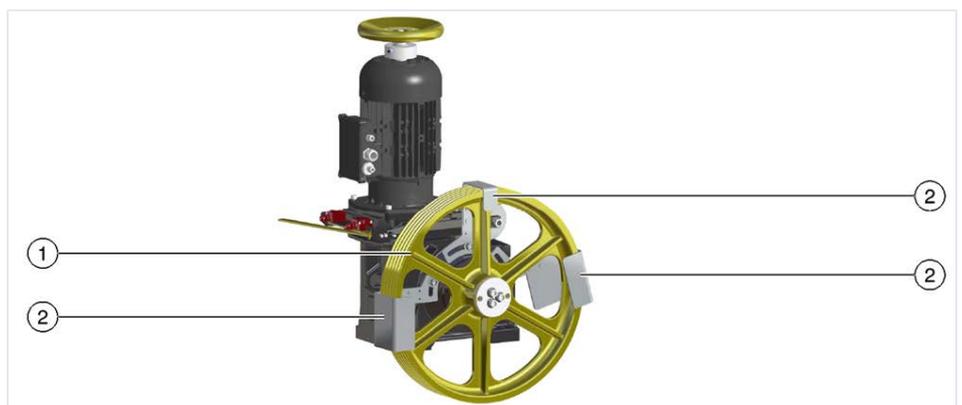


Fig. 6

ATR_2_12_0161_0

| Item | Designation | Item | Designation |
|------|--|------|---|
| 1 | Traction sheave (D450 / D510 / D520 / D590 / D675) | 2 | Earthquake safeguard complying with EN81-77 |

Special version SA1 (modified mounting of the machine, including compensation washers)

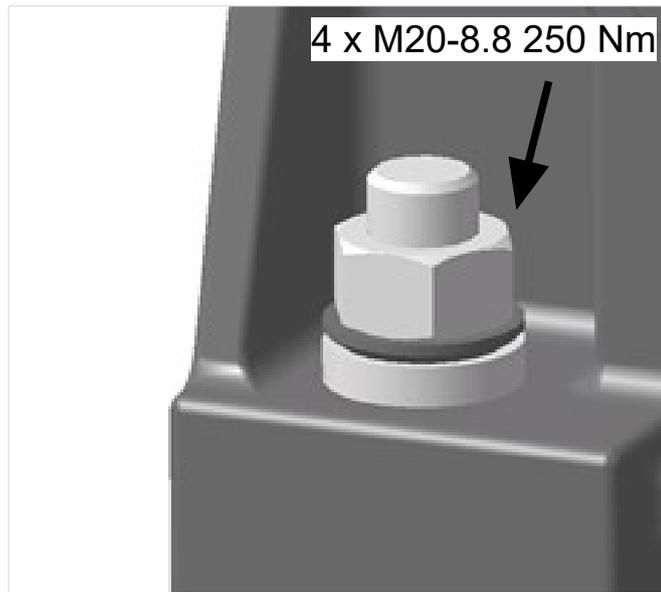


Fig. 7

ATR_2_12_0163_0

3.3.1

Machine base frame

Various machine base frame versions are possible. Consult the general arrangement drawings.

The machine base frames with / without rope pulley described below are intended for installation of the machine in the machine room above the shaft.

AY machine base frame TW63 NO/2:1

The TW63 NO/2:1 machine base frame (shown with TW63B machine in vertical motor position) in the version without rope pulley is used for:

- Installations with 1:1 rope suspension and direct rope departure for a rope distance elevator car to counterweight $ASL \leq 775$ mm and traction sheave diameter 675 mm (e.g. installations of type NO51)
- Installations with 2:1 or 4:1 rope suspension
- Weight of the machine base frame: Approx. 80 kg

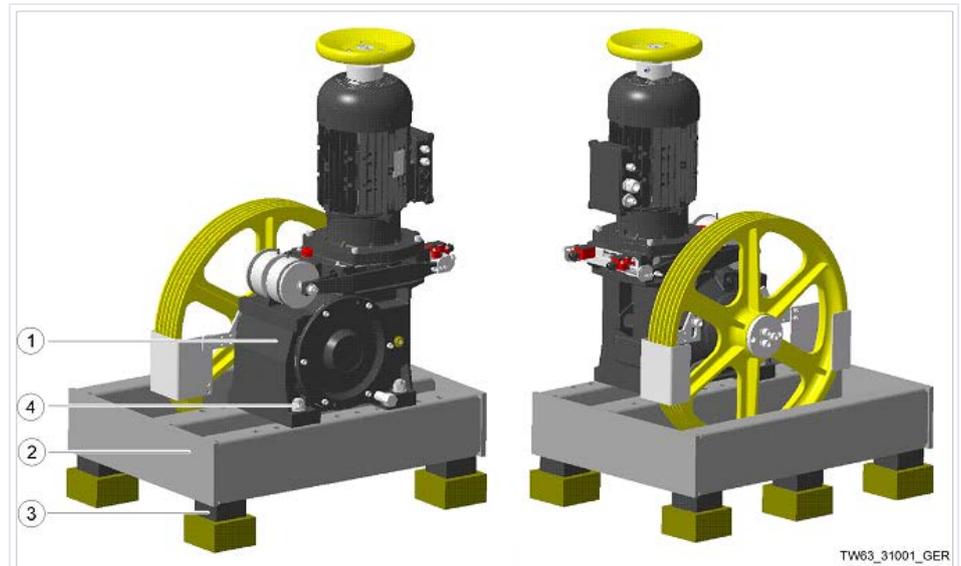


Fig. 8

ATR_2_12_0074_0

| Item | Designation | Item | Designation |
|------|---|------|--|
| 1 | TW63B machine | 2 | TW63 NO/2:1 machine base frame |
| 3 | Insulation elements (the version with support is shown) | 4 | Mounting parts for machine on machine base frame |

AY TW63 BO/MSR machine base frame

The TW63 BO/MSR machine base frame (shown with the machine base frame with left-hand pulley hub position and TW63B machine in left-hand horizontal motor position and left-hand traction sheave position) is used for:

- Installations with 1:1 rope suspension and rope distance elevator car to counterweight
- ASL = 566 to 1143 mm (e.g. BO/SO 41/51 type installations)
- The rope pulleys used are the versions D360-7x diameter 8, D450-7x diameter 10 or D540-7x diameter 13 (rope pulleys, see product description for mechanical elevator parts, type 6070-6079_NBO2 – standard sheet 60 720 12 00 0). The rope pulleys have maintenance-free roller bearings.

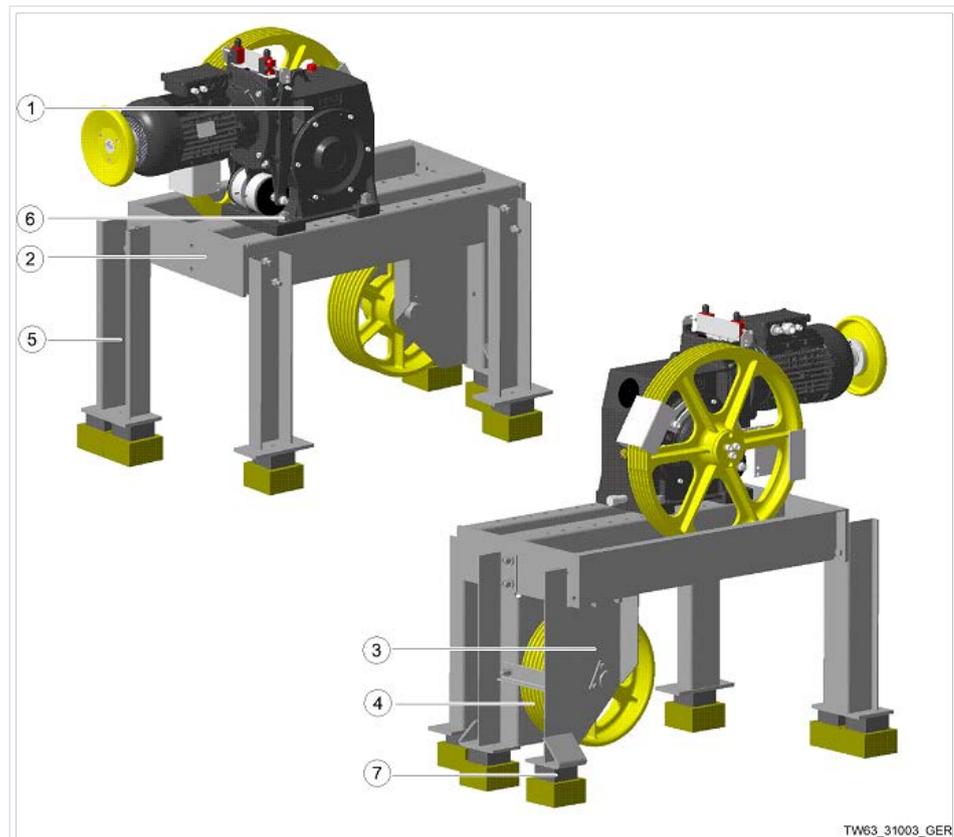


Fig. 9

ATR_2_12_0076_0

| Item | Designation | Item | Designation |
|------|---|------|--|
| 1 | TW63B machine | 2 | BO/MSR upper frame part |
| 3 | Supports for rope pulley D360, 450 or 540 | 4 | D360, 450 or 540 rope pulley |
| 5 | Supports for insulation elements | 6 | Mounting parts for machine on machine base frame |
| 7 | Insulation elements (the version with support is shown) | | |

Weight of the machine base frame

| Rope pulley version [mm] | Weight, including rope pulley [kg] |
|--------------------------|------------------------------------|
| D360 | 170 |
| D450 | 200 |
| D540 | 230 |

Mounting parts for machine on machine base frame

A set of screw connection elements (M20-8.8) is available for mounting the TW63 NO/2:1 and BO/MSR machine on the machine base frame.

A reinforced mounting SA1 (4 x M20-8.8 250) is required for individual applications of the TW63B machine with upward horizontal or vertical rope departure - except for the special versions SA9.

Instructions for setting up machine base frames in the machine room

The machine base frames are erected using impact soundproof elements (rubber block 100 x 100/50 mm high) in the machine room.

- Insulation elements without packing for machine room without floor pavement and/or erection of machine base frame directly on floor pavement
- Insulation elements with packing for machine room with floor pavement (≤ 60 mm high); support made from Multiplex laminated wood 140 x 140/80 mm high

Version with earthquake safeguard in accordance with EN81-77

Optional components are available for the TW63 NO/MSR and TW63 BO/MSR base frames; these meet the requirements for protection devices in accordance with EN81-77.

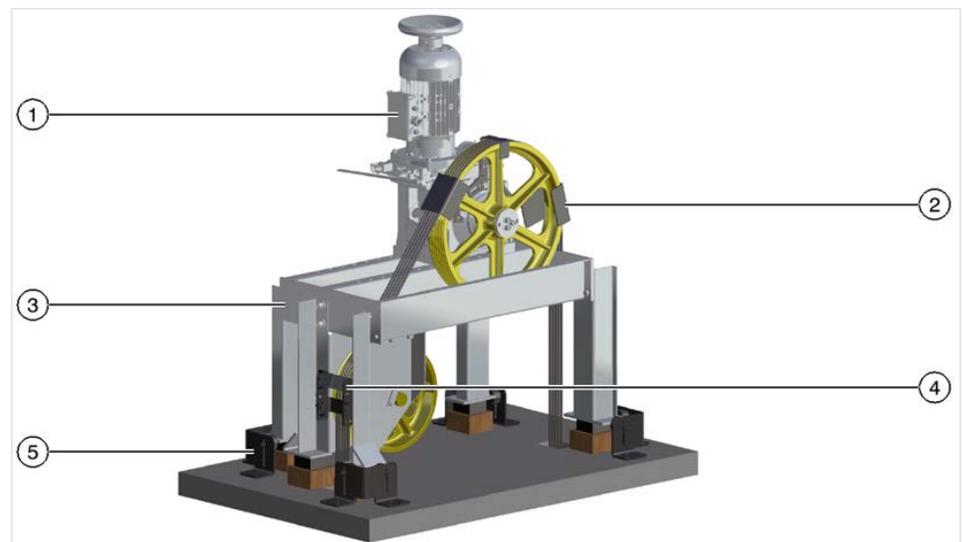


Fig. 10

ATR_2_12_0173_0

| Item | Designation | Item | Designation |
|------|--|------|--|
| 1 | TW63B machine, vertical | 2 | Rope guard in accordance with EN81-77 for traction sheave |
| 3 | TW63 BO/MSR machine base frame | 4 | Rope guard in accordance with EN81-77 for rope pulley diameters D450, D540 |
| 5 | Shift protection device in accordance with EN81-77 | | |

The safeguard measures are only suitable for machine base frames with locations in the machine room.

The protection device consists of a modified rope guard for rope pulleys of diameters D360/D450 or D540 which prevent the ropes departing from the grooves.

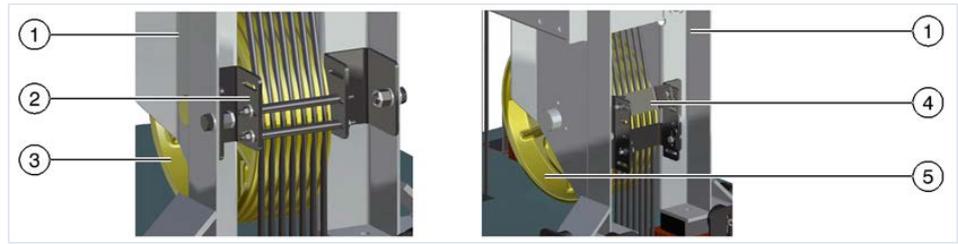


Fig. 11

ATR_2_12_0174_0

| Item | Designation | Item | Designation |
|------|--------------------------------|------|--|
| 1 | TW63 BO/MSR machine base frame | 2 | Rope guard in accordance with EN81-77 for rope pulley diameter D360 |
| 3 | Rope pulley diameter D360 | 4 | Rope guard in accordance with EN81-77 for rope pulley diameters D450, D540 |
| 5 | Rope pulley diameter D450 | | |

The safeguard measures also consist of shift protection devices that prevent the machine from changing its position.

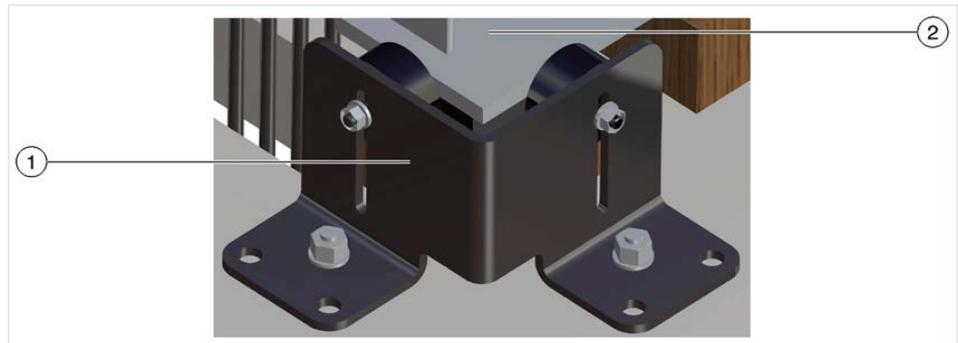


Fig. 12

ATR_2_12_0175_0

| Item | Designation | Item | Designation |
|------|--|------|--------------------------------|
| 1 | Shift protection device in accordance with EN81-77 | 2 | TW63 BO/MSR machine base frame |

In the case of deployment of the machine in earthquake categories 2 and 3, additional safeguard measures in accordance with EN81-77 are necessary.

3.3.2

Standard version for machine in the machine room

The standard version of the machine TW63B comprises the following components:

- Driving gear (incl. oil filling; vertical/horizontal motor position; traction sheave position – left/right)
- Service brake 2x90 Nm (for deployment complying with EN81-20/50, including brake monitoring SA3.1)
- Motor type IMB5/V1
- Flexible coupling between motor and driving gear
- Encoder and handwinding wheel or flywheel rim
- Traction sheave (standard version)
- Rope guard components

- Blocking clamp

3.3.3

Special versions

- SA 1 Modified machine fastening (including compensating sheave) for upward horizontal or vertical force resulting from rope pull.
- SA3.1 Brake monitoring (microswitch).
- SA 9 Traction sheave position in the shaft (extended traction sheave shaft with pedestal bearing and machine on compensating supports for statically defined mounting/mounting of the drive shaft).
- SA15 "Full Ex" protection (including microswitch for brake monitoring).

Brake monitoring (special version SA3.1 / SA15)

For monitoring the service brake (function and wear), it is possible to configure the machine with optional brake test switches (version with microswitch - SA3.1) (one switch for each brake circuit).

i

Brake monitoring is generally to be provided in order to use the machine in combination with TKE frequency inverters of type RPI/MFR. Brake monitoring SA3.1 (microswitch) is generally to be provided in order to use the machine complying with EN81-20/50. Exception: In the case of Full Ex machines, this is already a constituent part of SA15.

| Description | Unit | Technical data | |
|---------------------------|------|--|---|
| Version | | Standard SA3.1 | Full Ex (SA15) |
| Manufacturer | | Bernstein | Steute |
| Switching principle | | Switch with contacts (1 break contact / 1 make contact) | |
| Switching display | | - | - |
| Operating voltage | [V] | 240 (AC) / 24 (DC) | 250 (AC) |
| Max. switching current | [A] | 3 | 6 |
| Type of protection | | IP65 | IP67 |
| Explosion protection | | - | EX II 2G Ex db IIC T6, T5 Gb EX II 2D Ex tb IIIC T80°C, T95°C Db |
| Type approval certificate | | - | PTB 03 ATEX 1070 X |
| Cable entry point | | Cable gland M16 x 1.5 | Cast connection line 4 x 0.75 mm ² 5 m length |

Tab. 2

ATR_1.21_0038_0

Traction sheave position in the shaft (SA9)

For this version, the machine has an extended traction sheave shaft with an outside bearing and two compensating supports underneath the machine for statically defined mounting. The outside bearing is mounted in a position to suit the rope pull direction (normally in the upward direction).

This version is standardised for traction sheaves with diameters DT = 450, 510, 520, 590 and 675 mm.

The components for the rope guard are not an integral part of the machine in this version. Note on the machine base frame (not standardised): The permitted tolerance for the horizontal offset between the plane for the compensating supports and the mounting surface for the outside bearing is ± 1 mm.

"Full Ex" protection (special version SA15)

The "Full Ex" machine version is used in installations in which the entire machine room is located in the potentially explosive atmosphere.

The machine (not including the electrical components) has been assessed for potential ignition sources in accordance with DIN EN ISO 80079:-36 and complies with the requirements of Directive 2014/34 EU. The machine (not including the electrical components) is assigned the following identification in accordance with Directive 2014/34/EC:

Ex groups IIC-IIIC for layer thickness ≤ 0.2 mm (standard version):

- Ex II 2 G Ex h IIC T4 Gb
- Ex II 2 D Ex h IIIC T135°C Db

Ex groups IIB-IIIB for layer thickness > 0.2 mm / ≤ 2 mm:

- Ex II 2 G Ex h IIB T4 Gb
- Ex II 2 D Ex h IIIB T135°C Db

(Equipment group: II = other than mining; category: 2 = Zone 1, 21; Ex atmosphere: G = Gases and D = Dust; Ignition protection type: h (c = constructional safety and k = liquid encapsulation); area with danger of gas explosions: Ex groups IIB or IIC; area with danger of dust explosions: Ex groups IIIB or IIIC; temperature class: T4 and/or max. 135°C)

- The maximum permitted angle of inclination of the machine in relation to the horizontal is 2° to ensure the type of ignition protection "k" in compliance with DIN EN ISO 80079-37.
- In the case of special paintwork for increased corrosion protection, e.g. C5-M with layer thickness ≥ 0.24 mm, only a rating according to IIB and/or IIIB is possible!
- The maximum permitted rope speed at the traction sheave is limited to 3.2 m/s. Related to the rated speed, this means a maximum of 3.2 m/s with 1:1, a maximum of 1.6 m/s with 2:1 and a maximum of 0.8 m/s with 4:1.

The service brake is generally monitored by brake test switches.

Layout of electrical components:

- Brake magnets in Ex data [↗ Chap. 4.1.2 P. 28](#).
- Brake test switch in Ex [↗ Chap. 3.3.3 P. 23](#) (Note: These brake test switches are general constituent parts of SA15).
- The motor and any encoders as well as an additional terminal box for the magnetic clamps depend on the project specs.

3.3.4

Version with emergency brake, NBS

The optional version of the emergency brake (NBS) meets the requirements for the protection device that prevents overspeed in the upward-moving elevator car in accordance with EN81-1:1998 / 9.10 and/or EN81-20/5.6.6 and unintended elevator car movements in accordance with EN81-1:2010-06 / 9.11 (EN81-1/A3) and/or EN81-20/5.6.7.

Alongside the service brake, an additional braking device is fitted on the drive shaft, consisting of the components:

- Type-approved electromagnetic disc brake in accordance with [↗ Chap. 4.1.6 P. 33](#)
- Driving gear in emergency brake NBS version (bearing bracket NBS, brake flange NBS for fitting the brake)
- Traction sheave / worm wheel shaft NBS (including components for sealing)

The braking device is located on the machine side opposite the traction sheave and directly affects the traction sheave shaft.

A certificate with respect to the calculation of the traction sheave shaft for the machine TW63B with emergency brake system (NBS) shall be enclosed with the technical documentation.

The emergency brake is activated via a separate control unit including terminal box and connecting lines as well as an additional safety switch at the overspeed governor (made by TK Elevator) to activate the facility in the event of overspeed.

The emergency brake is released manually (e.g. emergency rescue in the event of a power failure) via screws that are screwed into the brake in the event of triggering, thus releasing the brake/armature base plate of the disc brake. During normal operation, the screws and a socket wrench are kept in the guard plate of the brake.

For installation of the manual emergency ventilation screws, a minimum distance of 100 mm is to be set between the emergency brake and the adjoining wall of the machine room or similar.

Retrofitting of the emergency brake, NBS, on existing machines TW63B is not possible.

3.3.5

Version with earthquake safeguard complying with EN81-77

The optional version of the rope guard complying with EN81-77 enables compliance with the requirements for protection devices in earthquake regions up to earthquake category 1 as standard.

The rope guard fitted as standard is replaced with the modified rope guard which, in the event of an earthquake, prevents the ropes from leaving the groove of the traction sheave. Attention should be paid to ensuring that the rope guard is installed in accordance with the installation instructions.

The rope guard complying with EN81-77 is standardised for the traction sheaves of diameters 450 / 510 / 520 / 590 / 675. The rope guard is designed in such a way that all standard gaps between the ropes on the rope departure can be covered with the TW63 NO/2:1, TW63 NO/MSR and TW63BO/MSR base frames.

3.4 Combination of versions / options

| Combination | 450,520,510,590,675 | SA1 | SA3.1 | SA9 | SA15 | V | H | NBS | EN81-77 |
|------------------------------|---------------------|-----|-------|-----|------|---|---|-----|---------|
| 450,520,510,590,675 | | | | | | | | | |
| SA1 | X | | | | | | | | |
| SA3.1 | X | X | | | | | | | |
| SA9 | X | O | X | | | | | | |
| SA15 | X | X | O | X | | | | | |
| V | X | X | X | X | X | | | | |
| H | X | X | X | X | X | O | | | |
| Emergency brake system (NBS) | X | X | X | X | O | X | X | | |
| EN81-77 | X | O | X | O | X | X | X | X | |

Tab. 3

ATR_1.21_0056_0

X Combination possible

O Combination not possible

450, 510, 520, 590, 675 traction sheave diameters [mm]

SA... special versions

V Motor position – vertical

H Motor position – horizontal

NBS Version with emergency brake-NBS

EN81-77 earthquake safeguard complying with EN81-77

4 Technology

4.1 Mechanical data

4.1.1 Gear unit

Single-stage worm gear with:

- Housing in monoblock design made of EN-GJL 250; in the case of vertical motor position, with one-sided integrated AS bearing bracket and separate BS bearing bracket; in the case of horizontal motor position, with separate AS and BS bearing brackets; housing version adapted for motor position (vertical/horizontal); integrated motor flange (special type in accordance with building code BV 6530-06)
- Worm shaft made of case-hardened steel (16MnCrS5), roller bearings (grease/oil lubrication)
- Flexible coupling (plug-in type)
- Drive shaft made of tempering steel (C60 or 42CrMo4 for emergency brake system and Mayr brake RSO800 / 2200 Nm), mounted on roller bearings (oil-bath lubrication)
- Extended drive shaft version is possible for the traction sheave position in the shaft, incl. outside bearing (SA9)
- Contact pattern position of gear teeth adjustable; backlash not adjustable
- With vertical motor position, gear teeth run under oil; with horizontal motor position, with transport oil from oil sump via worm wheel gear teeth
- Oil level monitoring via gauge glass; oil drain (R3/4"); casing ventilation
- Worm shaft made of case-hardened steel (16MnCrS5), roller bearings (grease/oil lubrication); worm wheel made of centrifugally case bronze (CuSn12Ni-C-GZ) with screw-connected hub
- Machine type plate

| Version | Unit | TW63B |
|------------------------------|------|---|
| Axle distance | [mm] | 155 |
| Ratio | | 54:1/48:1/33:1/48:2/43:3 |
| Oil filling (motor position) | [L] | approx. horizontal 9.0/vertical 11.0 |
| Oil grade | | Synthetic gear oil (polyalkylene glycol with additives) |
| Designation | | SM1 |
| Backlash | [°] | 0.025-0.07 |
| Weight | [kg] | approx. 190 |

Tab. 4

ATR_1_21_0005_0

The rope guard components are adjustable for rope departure directions of the relevant rope line up to 90° upwards and 15° downwards in relation to the vertical tangent. For the version with the traction sheave in the shaft (SA9) or

in the case of rope departure directions outside the adjustable range, installation-specific rope guard measures must be taken in accordance with EN81-1 / 9.7EN81-20/5.5.7 EN81-77.

4.1.2

Brake

Redundant electromagnetic dual-circuit outside shoe brake on the motor/worm shaft integrated in the gear or motor flange. The electric release of the brake circuits takes place via magnetic clamps. The magnetic clamps are available in standard and in explosion-proof versions.

A flexible coupling must be integrated on the brake disc to connect the motor and worm shafts.

| Designation | Unit | Technical data |
|----------------------------------|-------|--|
| Manufacturer | | TK Aufzugswerke GmbH |
| Type | | TW63B |
| Braking torque | [Nm] | Max. 2 x 90 |
| Braking torque adjustment | | Possible |
| Design | | Dual-circuit outside brake shoe With brake disc made of EN-GJL 250 |
| Brake linings | | Made without asbestos |
| Brake disc diameter | [mm] | 200 |
| Air gap | [mm] | 0.3 |
| Air gap setting | | Possible |
| Electrical release | | 1 magnetic clamp per brake circuit (2 magnetic clamps connected in series) |
| Nominal force – magnetic clamps | [N] | 2500 |
| Operating voltage | [VDC] | 180 – overexcitation 90 – holding voltage |
| Rated current | [A] | 1.1/1.0 ¹⁾ |
| Monitoring devices | | Brake test switch |
| Manual release | | Brake release lever (not mounted) |
| Protection type, magnetic clamps | | IP65 (standard version) II 2 G Ex mb IIC T4 Gb ¹⁾ II 2 D Ex mb IIIC T105°C Db ¹⁾ |
| Type examination certificate | | Not on standard version IBExU17ATEX1137 X ¹⁾ |
| Length of connection cable | [m] | 1.5 1.5 ¹⁾ |
| Type approval sign | | Without (not required) |

Tab. 5

ATR_1_21_0025_0

1) Version for explosion protection

Version with NBS emergency brake

| Designation | Unit | Technical data |
|--|-------|--|
| Manufacturer | | Chr. Mayr GmbH |
| Type | | Mayr RSO800/2200 Nm |
| Braking torque | [Nm] | 2200 |
| Braking torque setting | | not possible |
| Design | | 4-surface disc brake |
| Version of brake linings | | Asbestos-free |
| Brake disc diameter | [mm] | 275 |
| Air gap | [mm] | 0.65 |
| Air gap setting | | not possible |
| Electrical release | | 1 magnetic clamp with armature base plate |
| Operating voltage | [VDC] | 207 - overexcitation 104 - holding voltage |
| Operating current | [A] | 1.99 - over-excitation 0.99 - holding current |
| Performance data | [W] | 412 - overexcitation 103 - stopping power |
| Monitoring devices | | Release monitoring (microswitch) |
| Manual emergency release | | 2 x M12 screws |
| Connection cable length | [m] | approx. 1.0 |
| Type of protection | | IP54 |
| Weight | [kg] | approx. 75 |
| Type approval sign | | EU-BD 762 ²⁾ and/or ABV 762/2 ³⁾ |
| Type approval sign | | EU-BD 762 ²⁾ and/or ESV 762/2 ³⁾ |
| Times: t10 / t50 / t90 ¹⁾ | [ms] | 35 / 90 / 180 |
| Certificate for traction sheave shaft test number: | | TW63-RSO800/2200 Nm |

Tab. 6

ATR_1_21_0039_0

1) DC - direct current cut-off (emergency stop)

2) Complying with EN81-20/50 and EN81-1:1998+A3:2009

3) Complying with EN81-1:1998+A3:2009.

4.1.3

Encoder

The following hollow shaft encoders are available:

| Number of pulses | Version | Connection |
|------------------|---------|-------------------------------|
| 2x1024 | TTL | Line and connector hard-wired |
| 2x4096 | TTL | Line and connector hard-wired |

Tab. 7

ATR_1_21_0072_0

4.1.4 Traction sheave

Different versions of traction sheave are used, depending on the location of the machine.

- Standard version – traction sheave position in the machine room
- Special version SA9 - Traction sheave position in the shaft

The traction sheaves for the standard versions differ from the SA9 versions in the dimensional assignment of traction sheave middle to cone position. The use of SA9 versions in machines for the machine room - and vice versa - is not possible.

The one-part traction sheaves are secured overhung on the traction sheave shaft using a cone (1:15) and a mounting plate, including three screws (M16-8.8 microencapsulated with locking washer).

| Designation | Unit | Technical data | | | | |
|---|------|---|-------------------------------|----------------------|----------------------|-------------------------------|
| Machine version | | Standard / SA9 | | | | |
| Diameter – DT | [mm] | 450 | 510 | 590 | 520 | 675 |
| Rim width – B | [mm] | 132 | | | 110 | 96 |
| Max. possible number of grooves – z x d ²⁾ | | 10 x 8 (9 x 8) | | | 8 x 8 | 7 x 8 |
| | | 9 x 9 (8 x 9) | | | 7 x 9 | 6 x 9 |
| | | 8 x 10 (7 x 10) | | | 6 x 10 | 6 x 10 (5 x 10) |
| | | 7 x 11 | | | 6 x 11 | 5 x 11 |
| | | - | 7 x 12 (6 x 12) ³⁾ | | 5 x 12 | 5 x 12 (4 x 12) ³⁾ |
| | | - | | 6 x 13 ³⁾ | 5 x 13 ³⁾ | 4 x 13 ³⁾ |
| Groove type | | Seat/vee groove ¹⁾ | | | | |
| Vee groove angle | [°] | Depends on project specs ¹⁾ | | | | |
| Weight | [kg] | 50 | 60 | 70 | 50 | 70 |
| Material | | Specially alloyed EN-GJL 250 / EN-GJL-300 | | | | |

Tab. 8

ATR_1_21_0012_0

¹⁾ Version in accordance with the product description, groove profiles with hardened groove flanks (min. 50 HRc)

²⁾ With minimum groove clearance – RA_{min} – in accordance with the product description for groove profiles for seat grooves (for vee groove, if deviating)

³⁾ With T_{min} for hardened grooves in accordance with the product description for groove profiles

4.1.5 Performance chart

Applications in the standard

| r | v _n | n ₁ | DT | i | v _{n1} | Q' _{max} | F' _{max} | x | |
|-----|----------------|----------------|-----------|------|-----------------|-------------------|-------------------|------|----|
| 1:1 | 0.63 | 1280 | 450 | 48:1 | 0.63 | 1050 | 1700 | 50 | |
| | | | | | | 1125 | 1800 | 45 | |
| | | 1280 (1250) | 510 (520) | 54:1 | 0.63 | 1000 | 1200 | 45 | |
| | 0.80 | 1500 | 1500 | 450 | 54:1 | 0.65 | 1000 | 1500 | 45 |
| | | | | | | | 1050 | 1200 | 45 |
| | | 1270 | 590 | 48:1 | 0.82 | 800 | 1200 | 50 | |
| | | | | | 900 | 1000 | 45 | | |

| r | v_n | n_1 | DT | i | v_{n1} | Q'_{max} | F'_{max} | x |
|------|----------------|----------------|----------------|--------------|----------------|------------|------------|------|
| 1:1 | 1.00 | 1270 | 675 | 54:1 | 0.83 | 630 | 1200 | 50 |
| | | | | | | 675 | 1400 | 45 |
| | | 1500 | 510 | 48:1 | 0.83 (0.85) | 800 | 1200 | 50 |
| | | | | | | 950 | 1200 | 45 |
| | | 1500 | 590 | 54:1 | 0.86 | 750 | 1200 | 45 |
| | | 1.00 | 1270 (1250) | 510 (520) | 33:1 | 1.03 | 975 | 1000 |
| | 1050 | | | | | | 1400 | 45 |
| | 1350 | | 675 | 48:1 | 1.00 | 630 | 1300 | 50 |
| | | | | | | 675 | 1500 | 45 |
| | | | | | | 1050 | 1250 | 50 |
| | | | | | | 1125 | 1600 | 45 |
| | 1400 | | 450 | 33:1 | 1.07 | 1000 | 1300 | 50 |
| | 1500 | | 450 | 33:1 | 1.07 | 1050 | 1700 | 45 |
| | 1500 | | 590 | 48:1 | 0.97 | 675 | 1500 | 50 |
| | | | | | | 750 | 1500 | 45 |
| | 1500 | 675 | 54:1 | 0.98 | 630 | 1200 | 45 | |
| | | | | | 675 | 900 | 45 | |
| | 1550 | 590 | 48:1 | 1.00 | 675 | 1400 | 50 | |
| | 750 | 1400 | 45 | | | | | |
| | 1.25 | 1330 | 590 | 33:1 | 1.25 | 750 | 1400 | 50 |
| | | | | | | 825 | 1500 | 45 |
| | | 1650 | 675 | 48:1 | 1.22 | 630 | 1100 | 45 |
| | | 1330 | 590 | 33:1 | 1.25 | 750 | 1400 | 50 |
| | 825 | 1500 | 45 | | | | | |
| 1.50 | 1400 | 675 | 33:1 | 1.50 | 630 | 1100 | 50 | |
| | | | | | 675 | 1300 | 45 | |
| | | | | | 750 | 1500 | 50 | |
| | | | | | 825 | 1500 | 45 | |
| | 1350 (1320) | 510 (510) | 48:2 | 1.50 | 675 | 1200 | 50 | |
| | | | | | 750 | 1200 | 45 | |
| | 1600 | 590 | 33:1 | 1.50 | 750 | 1200 | 45 | |
| | 1.60 | 1270 | 590 | 48:2 | 1.63 | 675 | 1300 | 50 |
| | | | | | | 750 | 1300 | 45 |
| | | 1440 (1410) | 510 (520) | 48:2 | 1.60 | 750 | 1300 | 50 |
| | | | | | | 800 | 1500 | 45 |
| | | 1490 | 675 | 33:1 | 1.60 | 630 | 1400 | 45 |
| 675 | | | | | | 1150 | 45 | |
| 1650 | 590 | 33:1 | 1.55 | 630 | 1400 | 50 | | |
| 675 | 1500 | 45 | | | | | | |
| 1.75 | 1360 | 590 | 48:2 | 1.75 | 630 | 1400 | 50 | |
| | | | | | 750 | 1100 | 45 | |
| | 1630 | 675 | 33:1 | 1.75 | 630 | 1200 | 45 | |

| r | v _n | n ₁ | DT | i | v _{n1} | Q' _{max} | F' _{max} | x |
|------|----------------|----------------|--------------|----------------|-----------------|-------------------|-------------------|-------|
| | 2.00 | 1360 | 675 | 48:2 | 2.00 | 600 | 900 | 50 |
| | | | | | | 630 | 1100 | 45 |
| | | 1550 | 590 | | | 630 | 1400 | 45 |
| | | 675 | 1200 | | | 45 | | |
| | 2.50 | 1340 (1320) | 510 (520) | 43:3 | 2.50 | 675 | 1500 | 45/50 |
| | | 1650 | 675 | 48:2 | 2.43 | 525 | 1250 | 45 |
| 2:1 | 0.40 | 1270 | 590 | 48:1 | 0.41 | 1600 | 2800 | 50 |
| | | | | | | 1800 | 2800 | 45 |
| | | 1440 (1410) | 510 (520) | | 0.40 | 1800 | 2500 | 50 |
| | | 2000 | 2500 | | 45 | | | |
| | | 1500 | 510 (520) | | 0.42 (0.43) | 1800 | 1800 | 50 |
| | | 2000 | 1800 | | 45 | | | |
| | 1500 | 590 | 54:1 | 0.43 | 1450 | 2000 | 50 | |
| | | | | | 1600 | 2000 | 45 | |
| | 0.63 | 1280 | 450 | 48:2 | 0.63 | 2000 | 2500 | 50 |
| | | | | | | 2200 | 2500 | 45 |
| | | 1340 | 590 | 33:1 | 1600 | 2800 | 50 | |
| | | | | | 1800 | 2400 | 45 | |
| 1500 | 510 (520) | 0.61 (0.62) | 1800 | | 2400 | 50 | | |
| | | 2000 | 2400 | | 45 | | | |
| 0.63 | 1560 (1530) | 510 (520) | 33:1 | 0.63 | 1800 | 2000 | 50 | |
| | | | | | 2000 | 2000 | 45 | |
| | 1650 | 675 | 48:1 | 0.61 | 1250 | 1800 | 50 | |
| | | | | | 1350 | 2200 | 45 | |
| | 0.80 | 1270 | 590 | 48:2 | 0.82 | 1500 | 2000 | 50 |
| | | | | | | 1600 | 2800 | 45 |
| 1500 | | 510 (520) | 48:2 | 0.83 (0.85) | 1600 | 2200 | 50 | |
| | | | | | 1800 | 2000 | 45 | |
| 1500 | | 675 | 33:1 | 0.80 | 1350 | 1700 | 50 | |
| | | | | | 1425 | 2500 | 45 | |
| 1.00 | 1250 | 450 | 43:3 | 1.03 | 1600 | 3000 | 45/50 | |
| | | | | | 1250 | 1800 | 50 | |
| | 1350 | 675 | 48:2 | 1.00 | 1350 | 2200 | 45 | |
| | | | | | 1350 | 2000 | 50 | |
| | 1500 | 590 | | 0.97 | 1500 | 2000 | 45 | |
| | | | | 1.00 | 1350 | 1800 | 50 | |
| | 1550 | 590 | 1.00 | 1500 | 1800 | 45 | | |
| | | | | | | | | |
| 1.25 | 1340 (1310) | 510 (520) | 43:3 | 1.25 | 1500 | 2000 | 45/50 | |
| | 1650 | 675 | 48:2 | 1.21 | 1050 | 2000 | 50 | |

| r | v _n | n ₁ | DT | i | v _{n1} | Q' _{max} | F' _{max} | x |
|-----|----------------|----------------|--------------|------|-----------------|-------------------|-------------------|-------|
| | | | | | | 1200 | 1800 | 45 |
| | 1.50 | 1390 | 590 | 43:3 | 1.50 | 1200 | 1800 | 45/50 |
| | 1.60 | 1300 | 675 | | 1.60 | 1050 | 1600 | |
| | | 1490 | 590 | | | 1200 | 1600 | |
| | 1.75 | 1620 | 590 | | 1.75 | 1200 | 1600 | |
| | 2.00 | 1630 | 675 | | 2.00 | 1000 | 1600 | |
| | | | | 1050 | | 1600 | 45 | |
| 4:1 | 0.40 | 1270 | 590 | 48:2 | 0.41 | 3000 | 4000 | 50 |
| | | | | | | 3400 | 3700 | 45 |
| | 0.40 | 1500 | 510 (520) | 48:2 | 0.42 (0.43) | 3200 | 4200 | 50 |
| | | | | | | 3500 | 4800 | 45 |
| | 0.63 | 1350 (1320) | 510 (520) | 43:3 | 0.63 | 3000 | 4500 | 45/50 |
| | | | | | | 1500 | 450 | |
| | 0.80 | 1310 | 675 | 43:3 | 0.80 | 2200 | 2500 | 45/50 |
| | | | | | | 1500 | 590 | |

Tab. 9

ATR_1_21_0057_0

r - Rope suspension
v_n fpm (m/s) rated speed
n₁ (rpm) Motor speed
DT in (mm) Diameter of traction sheave
i - Gear ratio
Q'_{max} lbs (kg) Rated load (maximum)
F'_{max} lbs (kg) Mass of car (maximum at Q'_{max})
x (%) Counterweight compensation

Performance data, including suspension rope weight MSR for travel height:

- H = 20 m for v_n to 0.63 m/s
- H = 40 m for v_n to 1.25 m/s
- H = 60 m for v_n up to 1.65 m/s
- H = 100 m for v_n to 2.50 m/s

All specified performance data in [↗ Chap. 4.1.5 P. 30](#) apply to the following application conditions:

- Operating data max. 180 c/h at 50% duty cycle
- Ambient temperature + 5°C to + 40°C

For types of performance not shown in the chart or deviating installation data, there is the possibility to use a calculation program (e.g. TK Liftdesigner) to check the operational safety of the machine.

The machines are conceived for a service life of at least 15 years and/or 20,000 hours of operation.

4.1.6

Motor versions

The specified electrical data applies to the following site conditions:

- Max. altitude 1000 m amsl
- Max. temperature + 40 °C at max. 50% air humidity

- Max. relative air humidity 70% at 20 °C

If the conditions stated above are exceeded, the deratings in accordance with VDE0530 apply.

Please refer to the product catalogue [↗ Product catalogue for elevator motors](#) for detailed technical data for the motors and encoders.

In general, motors of the type IMB5/V1 are used for the TW63B machine. The mechanical versions (flange dimensions, AS/BS shaft end, encoder, add-on handwinding wheel) comply with the building codes BV 6530 - 06 / Bl.1, Bl.6. or BV6530-07 / Bl.1.

- Standardised motors comply with BV6530-06 / Bl.1 with integrated special flange. These motors have an additional extended motor terminal box (including terminal block and cable glands) for intermediate terminal connection of the brake magnets
- Non-standardised motors can be designed in line with BV6530-06 / Bl.6 with a standard A300 flange. Separate intermediate flanges are used to adapt the mounts for these motors. These motors require an additional terminal box for intermediate terminal connection of the brake magnets.

The connection from motor and gear is by means of a plug-in type flexible coupling.

Standardised motors

| Designation | Unit | Technical data | | | | | | | |
|--|-------|---|---------------|----------------------|---------------|-----------------------|---------------|------------------------|---------------|
| Version | | Frequency-controlled (frequency inverter) | | | | | | | |
| Manufacturer | | Orange1 | | | | | | Motorlift | |
| Type | | MT132STD 20705S | | MT132STD 22557S | | MT132STD 22164S | | CMRF160L1 | |
| Motor version TKAW designation | | C 5.2 400 TW63 00 | | C 7.0 400 TW63 00 | | C 10.0 330 TW63 00 | | ML 13.0 400 TW63 00 | |
| S5 – operation data | | 180 c/h / 50% DC | | | | | | | |
| Speed range | [rpm] | 1000– 1249 | 1250– 1800 | 1000– 1249 | 1250– 1800 | 1000– 1249 | 1250– 1650 | 1000– 1249 | 1250– 1650 |
| Performance | [kW] | 4.2–5.2 | 5.2 | 5.6–7.0 | 7.0 | 8.0–10.0 | 10.0 | 10.5– 13.0 | 13.0 |
| Torque | [Nm] | 40 | 40–28 | 54 | 54–37 | 77 | 77–58 | 100 | 100–75 |
| Rated current | [A] | 12.5 | | 16.5 | | 28 | | 32 | |
| Permitted starting torque | [Nm] | 70 | 70–63 | 88 | 88–79 | 125 | | 170 | |
| Permitted starting current | [A] | 20 | | 25 | | 44 | | 48 | |
| Effective voltage | [V] | 340 | | 340 | | 290 | | 340 | |
| cos φ | | 0.87 | | 0.88 | | 0.84 | | 0.82 | |
| Efficiency | | 0.82 | | 0.82 | | 0.85 | | 0.85 | |
| Version in accordance with building code | | BV6530-06/Bl.1 ²⁾ | | | | | | | |
| Type of protection | | IP55 | | | | | | IP54 | |

| Designation | Unit | Technical data | | | |
|-------------------------|------|-------------------------|----|-------------------|-------------------|
| Ventilation | | Internal ventilator | | | |
| Handwinding wheel 1) | [mm] | D270 (plastic) | | | |
| kproj. | [mm] | 539 ²⁾ | | 577 ²⁾ | 639 ²⁾ |
| Weight | [kg] | 56 | 62 | 70 | TBD |
| Actual-value sensor | | WDG100-38-1024/4096 TTL | | | |

Tab. 10

ATR_1_21_0036_0

¹⁾ Optional without handwinding wheel with machine location in the headroom/shaft pit.

²⁾ Motor with integrated special flange and enhanced motor terminal box for intermediate clamping of the brake magnets.

4.1.7

Load data - traction sheave shaft

The load value F_{tzu} listed below is the limit value of the permitted radial stress for the traction sheave shaft calculated from the overall mass present on the installation.

The overall mass of the installation is determined and the load is checked as part of the calculation program TK LiftDesigner.

- Traction sheave shaft - standard version: $F_{tzu} \leq 43 \text{ kN}$
- Traction sheave shaft, NBS $F_{tzu} \leq 43 \text{ kN}$
- Traction sheave shaft - SA 9 (with outside bearing): $F_{tzu} \leq 41 \text{ kN}$
- Traction sheave shaft – SA9 + NBS $F_{tzu} \leq 43 \text{ kN}$

4.1.8

Load data for rope pull direction – vertical upwards or horizontal

For the configuration of the machine with the standard version of the traction sheave shaft or in the version for the emergency brake system, NBS, there are restrictions due to the housing strength for the permitted load $F_{tzu-stat}$ depending on the installation data for the upward horizontal or vertical rope pull direction.

TW63B with vertical motor position

- Horizontal rope pull: $F_{tzu-stat} = 106 \text{ kN} \leq F_{t-stat-max}$
- Upward vertical rope pull: $F_{tzu-stat} = 80 \text{ kN} \leq F_{t-stat-max}$

TW63B with motor position – horizontal

- Horizontal rope pull: $F_{tzu-stat} = 85 \text{ kN} \leq F_{t-stat-max}$
- Upward vertical rope pull: $F_{tzu-stat} = 73 \text{ kN} \leq F_{t-stat-max}$

The load $F_{t-stat-max}$ present for the static overload case is determined via the TK-LiftDesigner, etc.

The values for upward horizontal and/or vertical rope pull directions can be used up to +/- 45° respectively for rope pull directions between upward horizontal and vertical.

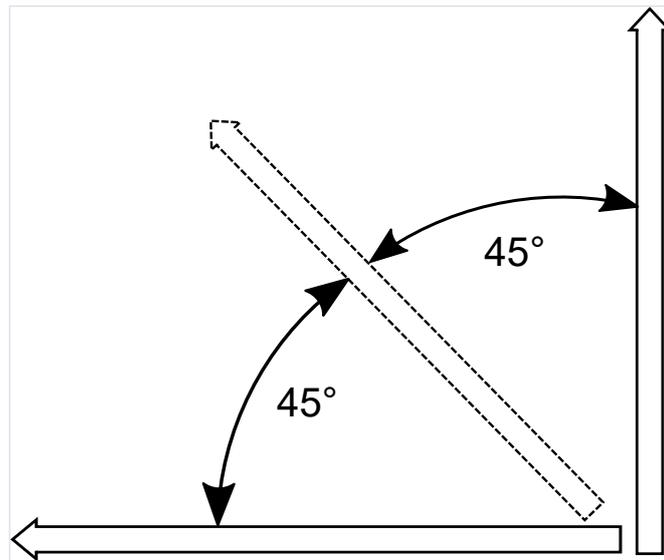


Fig. 13

ATR_2_12_0168_0

For installations on which $F_{t_{stat-max}}$ is $> F_{t_{zul-stat}}$ the permitted load and possible constructive measures must be clarified with TK Aufzugswerke GmbH on request.

With the special version SA9 and horizontal rope tension (+/- 45°), the outside bearing must be turned in the load direction. The intended machine base frame must be appropriately dimensioned and prepared to accommodate the outside bearing so that the occurring forces can be absorbed.

Additional struts must be provided at the feet of the gear box housing in order to relieve the supports under the housing and their screwed connection.

With the special version SA9 and vertical rope tension upwards (+/- 45°), the outside bearing must be turned in the load direction. The intended machine base frame must be appropriately dimensioned and prepared to accommodate the outside bearing so that the occurring forces can be absorbed.

4.1.9

Gear efficiency

The specified gear efficiencies η_G and η_G' are extreme values which are to be applied for dimensioning the motor, frequency inverter and braking resistor, etc. The rated efficiency η_n provides information on the value η_G that can be achieved under optimum operating conditions.

The efficiencies η_{an} and η_{an}' describe the state of gear starting (overcoming static friction or build-up of lubricating film in the gear teeth; with η_{an} values < 0.5 - the gear, when stopped, must be viewed as self-inhibiting).

- η_g : minimum design efficiency, driving
- η_g' : maximum design efficiency, driven (braking)
- η_n : rated efficiency - driving
- η_{an} : starting efficiency – driving
- η_{an}' : starting efficiency – driven

| Ratio / Speed (rpm) | η_g | | η_g' | | η_n | η_{an} | η_{an}' |
|------------------------|------------|------------|------------|------------|------------|-------------|--------------|
| | 800 - 1249 | 1250 -1800 | 800 - 1249 | 1250 -1800 | 1250 -1800 | - | - |
| 54:1 | 0.72 | 0.74 | 0.74 | 0.76 | 0.80 | 0.37 | -0.20 |
| 48:1 | 0.74 | 0.76 | 0.76 | 0.78 | 0.82 | 0.38 | -0.15 |

| Ratio / | η_g | | $\eta_{g'}$ | | η_n | η_{an} | η_{an}' |
|---------|----------|------|-------------|------|----------|-------------|--------------|
| 33:1 | 0.76 | 0.78 | 0.79 | 0.81 | 0.84 | 0.44 | 0.12 |
| 48:2 | 0.79 | 0.81 | 0.84 | 0.86 | 0.88 | 0.54 | 0.42 |
| 43:3 | 0.83 | 0.85 | 0.89 | 0.91 | 0.92 | 0.64 | 0.63 |

Tab. 11

ATR_1_21_0052_0

4.1.10

Mass moment of inertia

The total mass moment of inertia of the machine is composed of the individual values for the winch (driving gear, brake disc, proportion for the traction sheave), the motor as well as either the proportion for the handwinding wheel (diameter 270).

| Designation | Mass moments of inertia J_{rot} [kgm ²] | | | | |
|-------------|---|---------------------|-------|--------------------|-------|
| | Motor type | Winch ¹⁾ | Motor | Hand-winding wheel | Total |
| VVVF | C5.2 | | 0.017 | 0.01 | 0.081 |
| | C7.0 | | 0.024 | | 0.088 |
| | C10.0 | | 0.036 | | 0.100 |
| | ML 13.0 | | 0.165 | | 0.229 |

Tab. 12

ATR_1_21_0053_0

¹⁾ including traction sheave portion

²⁾ Diameter 360 mm

The values for the mass moment of inertia of non-standardised motors can be found in the lists of motors (e.g. Koncar, etc.).

4.1.11

Weight

| Designation | Weight [kg] | Machine version | | | |
|---|-------------|-----------------|-----|-----|-----|
| Driving gear | 180 | x | x | x | x |
| Additional parts for SA9 | 40 | | | x | x |
| Additional parts for NBS emergency brake system | 90 | | x | | x |
| Traction sheave D590 / 675 ²⁾ | 70 | x | x | x | x |
| AY complete winch ¹⁾ [kg] | | 250 | 340 | 290 | 380 |

Tab. 13

ATR_1_21_0008_0

¹⁾ without motor weight

²⁾ Weight for traction sheave D450 approx. 50 kg and D510 approx. 60 kg

The weight data for the motor type IMB5/V1 can be taken from:

- [Chap. 4.1.6 P. 33](#)
- custom-order motors from the manufacturers' motor lists

4.1.12

Noise levels

The airborne noise levels in the machine room at a distance of 1 m for the standard version of the machine TW63B with operation at normal rating are:

| Version | [dB(A)] |
|---------|---------|
| TW63B | ≤ 65 |

Tab. 14

ATR_1_21_0016_0

ATR_1_22_032_0

4.2

Survey diagrams

Survey diagram for standardised VVVF motors (additional optional brake test switches)

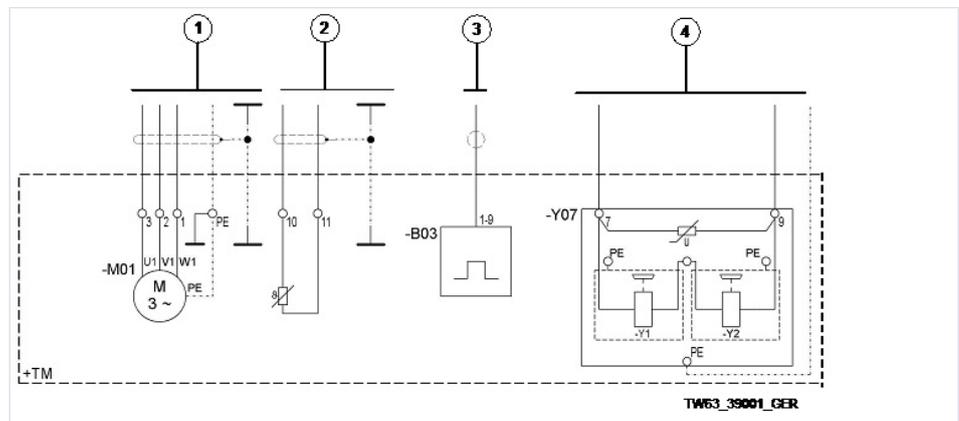


Fig. 14

ATR_2_12_0169_0

| Item | Designation | Item | Designation |
|------|--|------|---|
| 1 | Motor (EMC cable gland M25x1.5 for motors C 5.2 and C 7.0 and/or M32x1.5 for C10.0 and V 13.0) | 2 | PTC thermistor (EMC cable gland M16x1.5) |
| 3 | Encoder (including 10 m connection line) | 4 | Intermediate terminal connection of the brake (cable gland M16x1.5) |

4.3 Dimensions

4.3.1 Machine

Version with vertical motor position IMV1

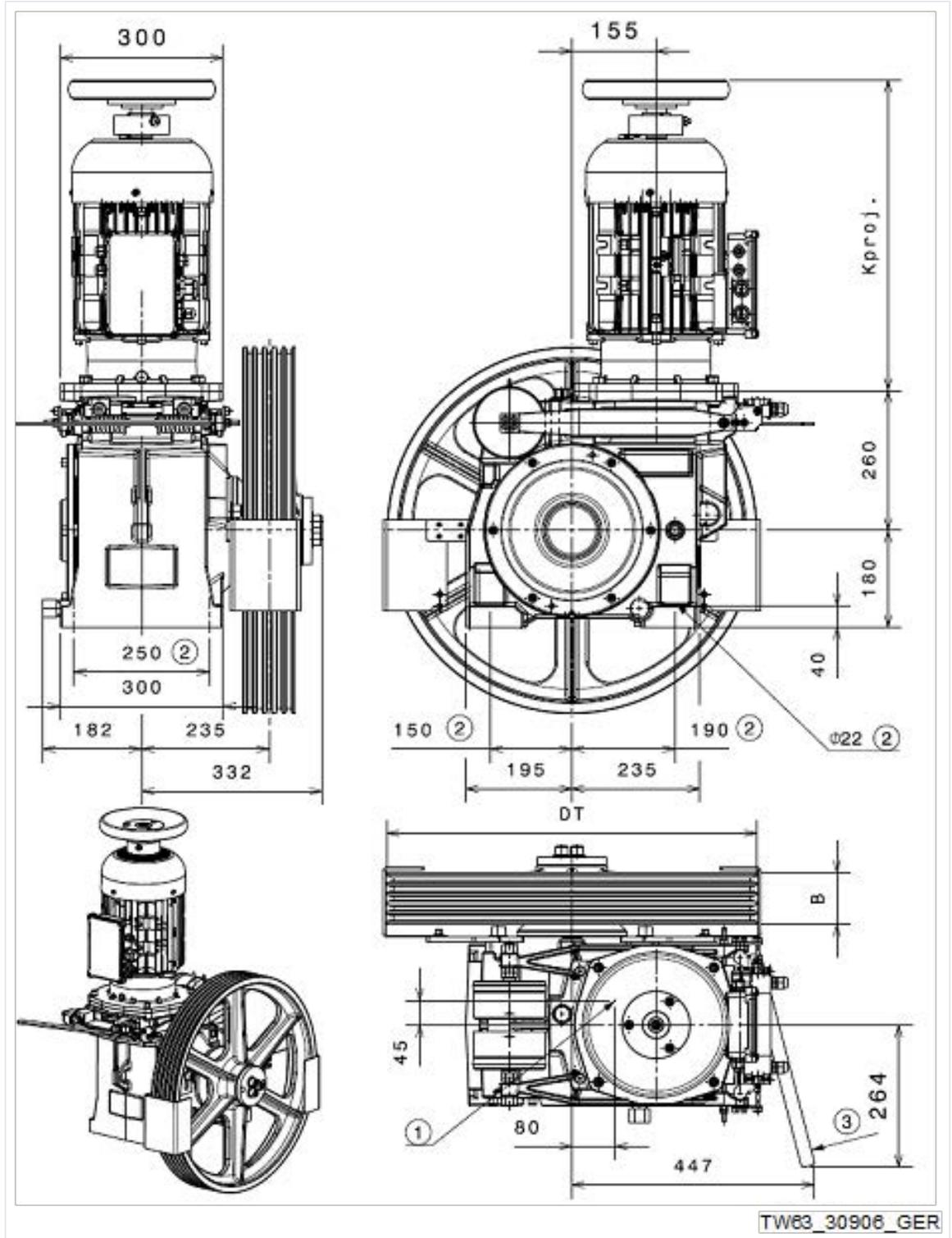


Fig. 15

ATR_2_12_0077_0

| Item | Designation | Item | Designation |
|------|---|------|--|
| 1 | Machine centre of gravity | 2 | Mount of machine on machine base frame |
| 3 | Operation of lever for manual brake release (plug-in) | | |

Version with horizontal motor position IMB5

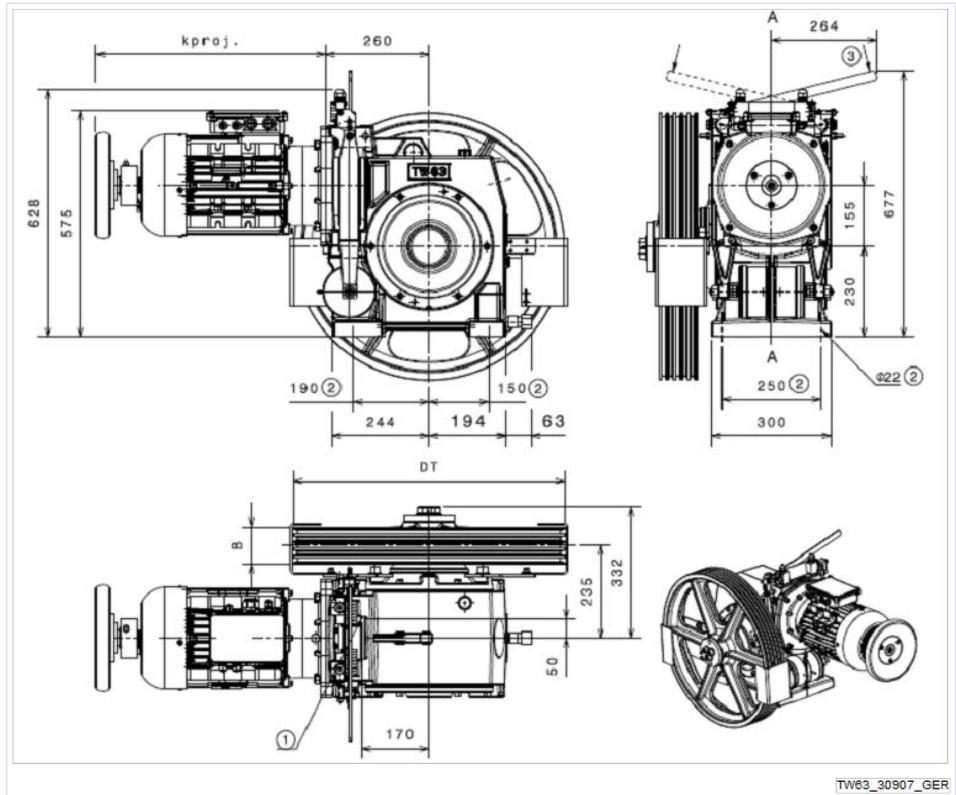


Fig. 16

ATR_2_12_0078_0

| Item | Designation | Item | Designation |
|------|---|------|--|
| 1 | Machine centre of gravity | 2 | Mount of machine on machine base frame |
| 3 | Operation of lever for manual brake release (plug-in) | | |

Version with emergency brake, NBS (additional dimensions)

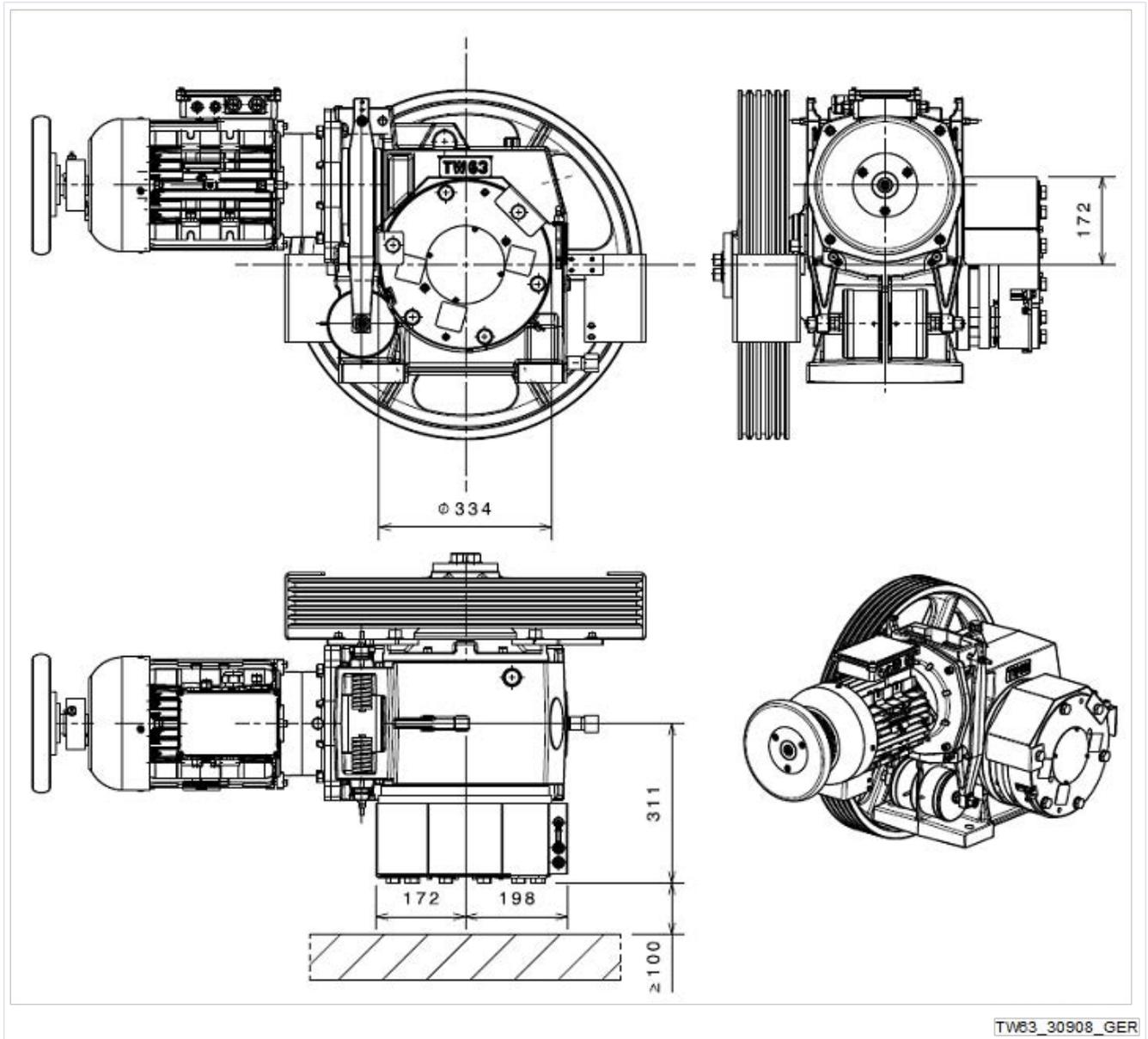


Fig. 17

ATR_2_12_0079_0

Version for traction sheave in the shaft - SA9 (additional dimensions)

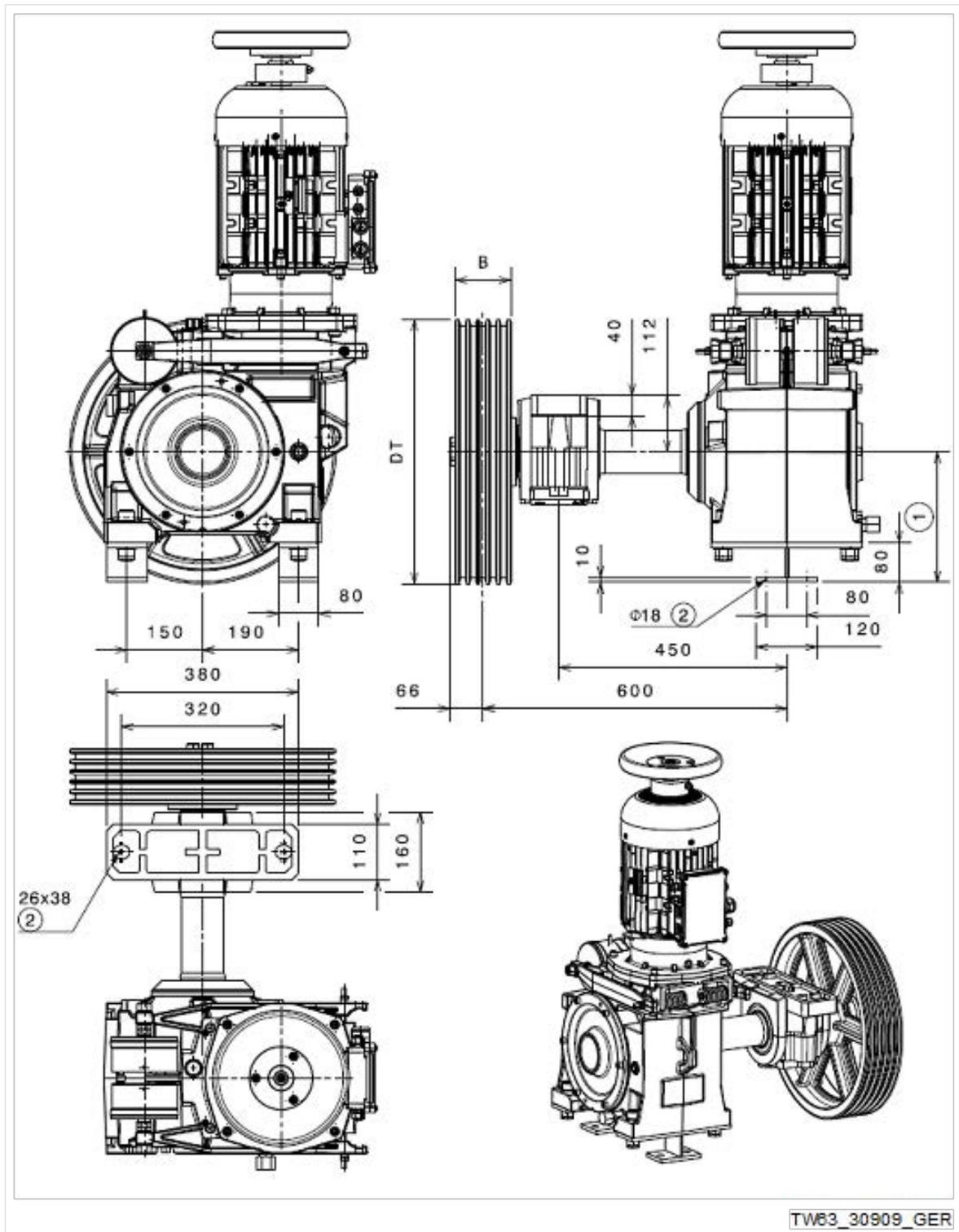


Fig. 18

ATR_2_12_0080_0

| Item | Designation | Item | Designation |
|------|--|------|--|
| 1 | 260 with vertical motor position 310 with horizontal motor position | 2 | Mount of machine and outside bearing on machine base frame |

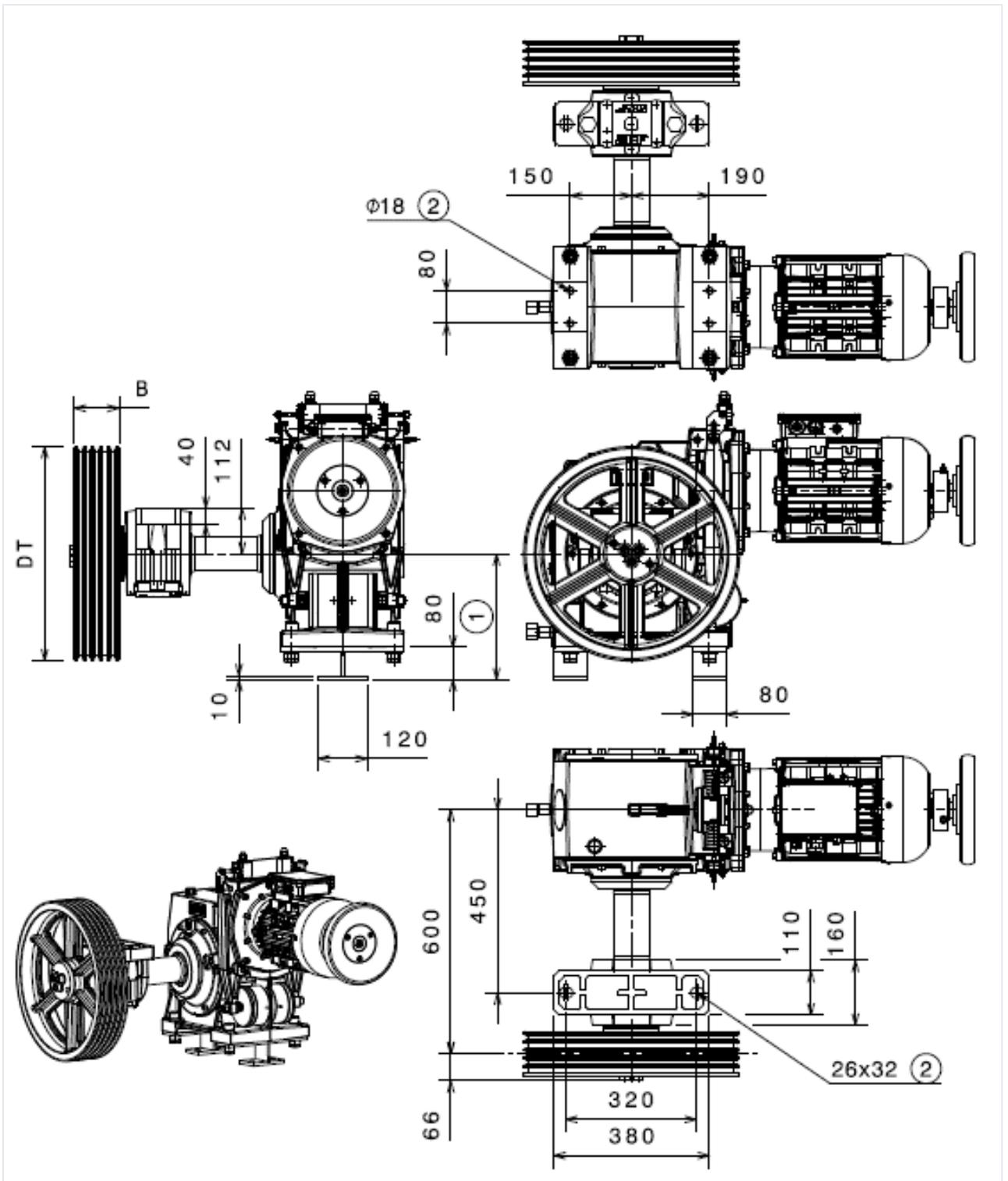


Fig. 19

ATR_2_12_0171_0

| Item | Designation | Item | Designation |
|------|-------------|------|--|
| 1 | 310 | 2 | Mount of machine and outside bearing on machine base frame |

Version for position of traction sheave in the shaft – SA9 in combination with emergency brake, NBS (Horizontal motor position pictured and outside bearing support upwards)

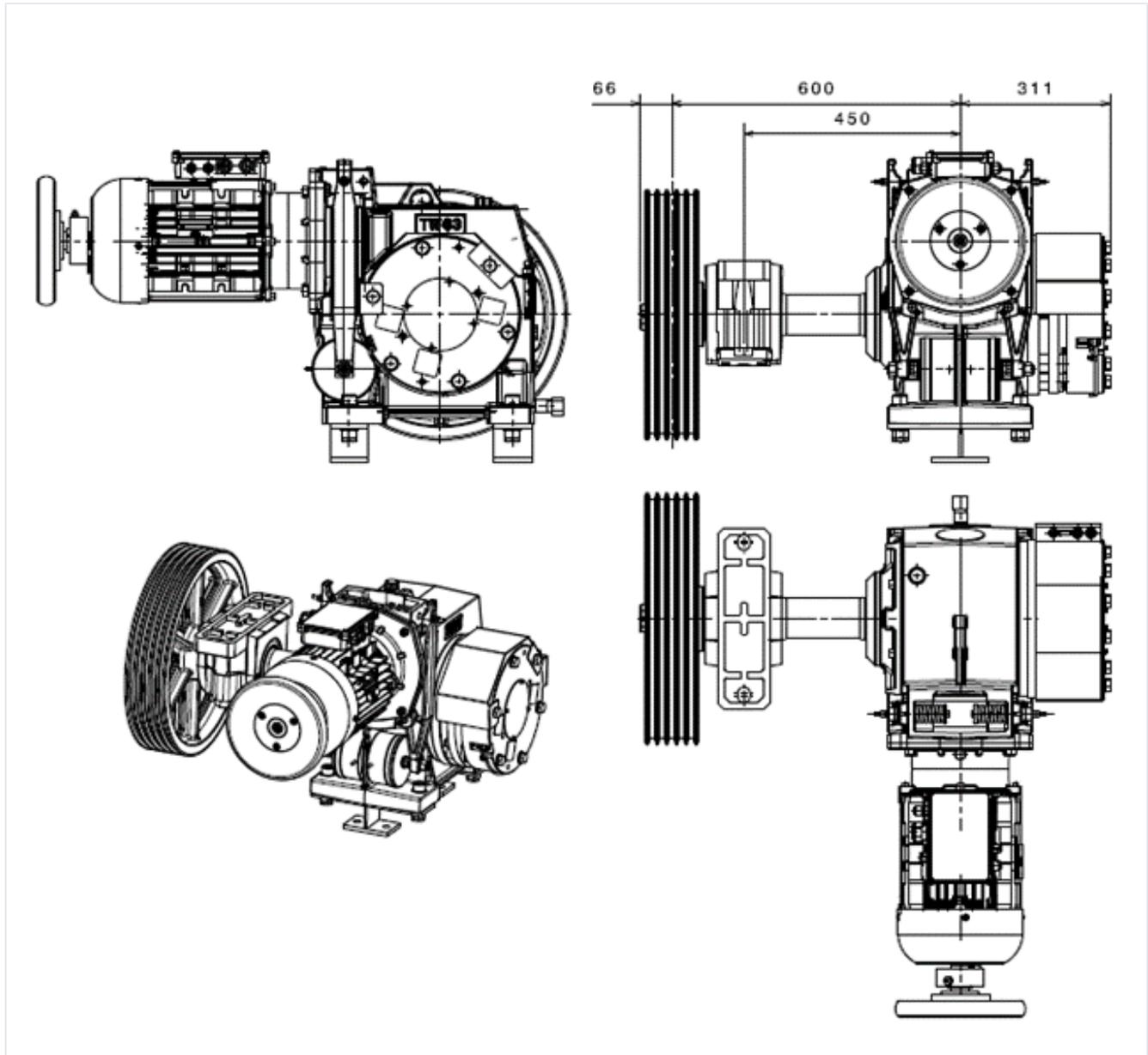


Fig. 20

ATR_2_12_0172_0

Project planning dimensions:

| Traction sheave version DT [mm] | Arrangement of base frame-mounted machine | | | | | | | |
|------------------------------------|---|-------|------------------------|------|--------------------|-------|---------------------|-------|
| | left ^{1),2)} | | right ^{1),2)} | | left ³⁾ | | right ³⁾ | |
| | x1 | x2 | x1 | x2 | x1 | x2 | x1 | x2 |
| | [mm] | | | | | | | |
| 450 | 96.5 | 368.5 | 368.5 | 96.5 | 136.5 | 328.5 | 340.5 | 124.5 |
| 510 | 66.5 | 338.5 | 338.5 | 66.5 | 106.5 | 298.5 | 310.5 | 94.5 |
| 520 | 61.5 | 333.5 | 333.5 | 61.5 | 101.5 | 293.5 | 305.5 | 89.5 |
| 590 | 94.5 | 230.5 | 230.5 | 94.5 | 66.5 | 258.5 | 202.5 | 122.5 |
| 675 | 120.0 | | | | 92.0 | 148.0 | 160.0 | 80.0 |

Tab. 15

ATR_1_21_0026_0

¹⁾ Machine with vertical motor position²⁾ Machine with horizontal motor position / traction sheave position on right³⁾ Machine with horizontal motor position / traction sheave position on left

Intermediate values for x1 and x2 in the modular dimension of 68 mm possible

| Version | Rope pulley version [mm] | | | | | | | | | | | | |
|-----------------|--------------------------|----------|-----|----------|------|----------|-----|----------|------|----------|-----|----------|-----|
| Traction sheave | D360 | | | | D450 | | | | D540 | | | | |
| DT [mm] | ASL | α | ASL | α | ASL | α | ASL | α | ASL | α | ASL | α | |
| | min | max | max | min | min | max | max | min | min | max | max | min | |
| 450 | [mm] / [°] | 622 | 166 | 1098 | 137 | 566 | 169 | 1042 | 137 | 566 | 168 | 1042 | 133 |
| 510 | | 652 | 168 | 1128 | 139 | 664 | 166 | 1072 | 139 | 664 | 164 | 1072 | 135 |
| 520 | | - | - | - | - | - | - | - | - | 669 | 164 | 1077 | 135 |
| 590 | | 760 | 166 | 1100 | 145 | 704 | 170 | 1044 | 146 | 704 | 168 | 1044 | 142 |
| 675 | | 802 | 169 | 1143 | 147 | 815 | 168 | 1087 | 149 | 883 | 160 | 1087 | 145 |

Tab. 16

ATR_1_21_0030_0

| Rope pulley version | Dimension x1 | Dimension x2 | Dimension y1 | Dimension y2 | Dimension z1 |
|---------------------|--------------|--------------|--------------|--------------|--------------|
| SR [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
| 360 | 130 | 61 | 700 | 190 | 245 |
| 450 | 231 | 116 | 655 | 235 | 255 |
| 540 | 276 | 116 | 575 | 315 | 255 |

Tab. 17

ATR_1_21_0031_0

Version with rope pulley BO/MSR/rope pulley position on right

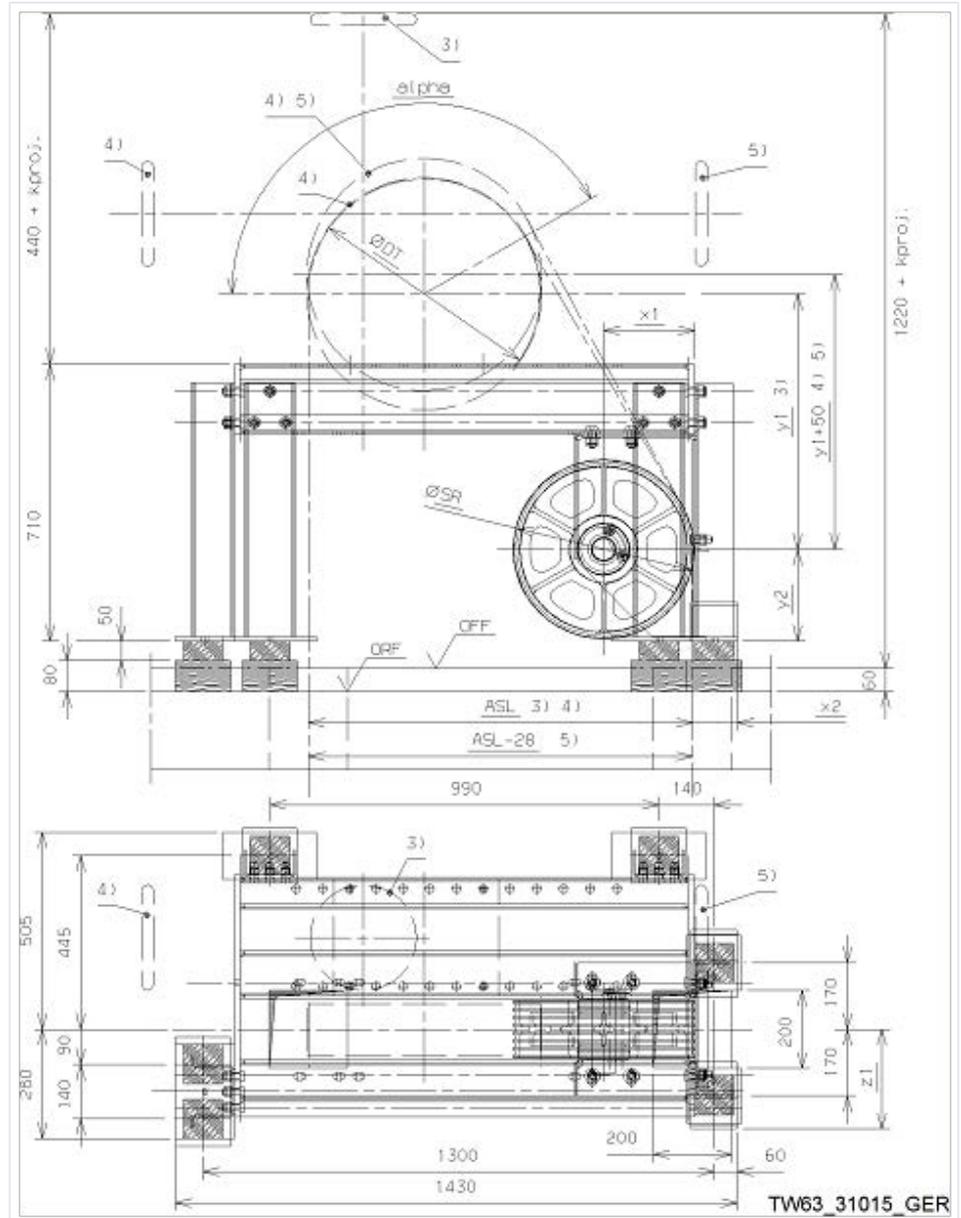


Fig. 23

ATR_2_12_0082_0

| Item | Designation | Item | Designation |
|------|---|------|--|
| 3 | Vertical motor position | 4 | Horizontal motor position/ traction sheave position – right |
| 5 | Horizontal motor position/ traction sheave position – left | | |

Project planning dimensions:

Rope clearance dimensions elevator car to counterweight ASL and wrap angle α

Clearance dimensions for ASL possible in the modular dimensions 68 mm

| Version | Rope pulley version [mm] | | | | | | | | | | | | |
|-----------------|--------------------------|----------|-----|----------|------|----------|-----|----------|------|----------|-----|----------|-----|
| Traction sheave | D360 | | | | D450 | | | | D540 | | | | |
| DT [mm] | ASL | α | ASL | α | ASL | α | ASL | α | ASL | α | ASL | α | |
| | min | max | max | min | min | max | max | min | min | max | max | min | |
| 450 | [mm] / [°] | 622 | 166 | 1098 | 137 | 566 | 169 | 1042 | 137 | 566 | 168 | 1042 | 133 |
| 510 | | 652 | 168 | 1128 | 139 | 664 | 166 | 1072 | 139 | 664 | 164 | 1072 | 135 |
| 520 | | - | - | - | - | - | - | - | - | 669 | 164 | 1077 | 135 |
| 590 | | 760 | 166 | 1100 | 145 | 704 | 170 | 1044 | 146 | 704 | 168 | 1044 | 142 |
| 675 | | 802 | 169 | 1143 | 147 | 815 | 168 | 1087 | 149 | 883 | 160 | 1087 | 145 |

Tab. 18

ATR_1_21_0030_0

| Rope pulley version | Dimension x1 | Dimension x2 | Dimension y1 | Dimension y2 | Dimension z1 |
|---------------------|--------------|--------------|--------------|--------------|--------------|
| SR [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
| 360 | 130 | 61 | 700 | 190 | 245 |
| 450 | 231 | 116 | 655 | 235 | 255 |
| 540 | 276 | 116 | 575 | 315 | 255 |

Tab. 19

ATR_1_21_0031_0

5 Transportation and storage

5.1 Packaging

NOTICE



Rust on components of the drive!

Damage and possibly loss of function of the product.

→ Check the "anti-corrosion foil" for damage.

In the case of larger traction sheaves, the gear box casing is bolted onto wooden blocks.

The gear box is screw-connected directly onto the pallet (special pallet 1200x800)

- 1200 x 1000 for SA9
- 1200 x 1320 for motors with greater overall length



Fig. 24

ATR_2_12_0083_0

Further packaging depends on the order and is country-specific (air/sea/land freight).

→ Refer to the delivery note for the dimensions and weight.

- Observe the symbols attached to the packaging or in visible locations.
- Dispose of used packing material in an environmentally responsible manner.



Specific transport equipment and shipping braces remain with the customer.

5.2 Transport

NOTICE



Improper transport!

Damage and possibly loss of function of the product.

- Do not place heavy objects on the assembly when packaged.
 - Protect it against impacts and falling.
 - Protect it against water and extreme temperatures .
 - Comply with safety regulations.
 - Pay attention to the centre of gravity of the product.
-

5.3 Fork-lift truck transport

⚠ WARNING



Protruding or tilting parts.

In the event of impact, transported goods can lead to severe crushing injuries or cuts and possibly fatal injuries.

- When effecting transport with a fork lift, use adequately long forks to prevent tipping over.
 - During transport, keep a safe distance to persons.
 - Always pick up at the frame or transport pallet with the forks, not the machine itself.
-

5.4 Crane transport

⚠ WARNING



Suspended load!

Falling transported goods can lead to severe crushing injuries or cuts and possibly fatal injuries.

- Do not walk underneath suspended loads.
 - Only use tested and adequately dimensioned lifting gear.
 - The specified means of transport are only configured for transportation of the machine, the installed brake and traction sheave. Do not use them to transport any other loads.
-

Dimensions and weight

1. Specified weights, see packaging with label.
2. Dimensions, see delivery note.
3. Approximate specifications, see [↗ Chap. 4.1.11 P. 37](#).
4. Machine without frame on rope with transport hanger.
5. In the case of a machine that is mounted on the machine base frame, attach a transport rope to the base frame.
6. Secure the machine against slipping and falling over.

7. In the case of machines without a machine base frame, attach a transport rope to the transport hanger.



Fig. 25

ATR_2_12_0085_0

8. Use the thread fitted below the vertical version of the motor for transport hooks.

⚠ NOTICE!

Do not damage the handwinding wheel. Ropes or chains must not make contact with the handwinding wheel during transport.

9. Use the transport hanger with the horizontal version.



Fig. 26

ATR_2_12_0084_0

5.5 Checking the delivery

WARNING



Severe transport damage to the product.

Can lead to a malfunction of the product and thus to death or serious injury.

→ Before commissioning, ensure that there is no severe damage to the product.

1. Check delivery for completeness.
2. Compare with the ordering and delivery documents.
3. Check the packaging for damage and any other conspicuous anomalies.

In the case of damage

1. Do not commission a damaged product.
2. Any damage that is determined is to be documented immediately by means of a sketch, photo or description of the damage.
3. Report damage to the manufacturer.

5.6 Intermediate storage

- The product may be exposed to a maximum relative air humidity of 60% (at 20 °C).
- Store the product carefully in a protected location:
 - Protect it against the formation of condensation and moisture.

- Protect against dirt in the machine.
- In the case of downtimes of longer than one year, carry out standstill maintenance [↗ Chap. 9.1 P. 85](#) Standstill maintenance.

6 Installation

6.1 Setting up the machine base frame

To reduce noise and sound transmission, we offer insulation elements that can be inserted between the frame supports and floor. These differ according to the type of mounting:

- A rubber block 100 x 100 x 50 high without base is used to mount the drive on the machine room floor without a cement floor or directly surface-mounted on the cement floor.
- For installation on cement floor, packing cast into cement floor (thickness ≤ 60 mm). The packing component must be cast in when installing the cement floor. A rubber block 100 x 100 x 50 with additional packing 140 x 140 x 80 mm is used here.

The number and arrangement of rubber elements is based on the total load and the distance between the rope lengths (ASL dimension = distance between rope departures).

When arranging the supports, the overall centre of gravity must lie within the rubber elements.

The arrangement under the machine base frame should be such that the stress and/or buffering of the insulation elements (maximum difference 3–5 mm) is as even as possible.

6.2 Aligning the machine

The machine is to be set up according to the plan of installation. The rope departure from the traction sheave is to be aligned plumb to the elevator car mounting or the elevator car rope pulley and the counterweight according to the drawing. With load applied to the ropes, the machine should be aligned vertically on its installation surface. Irregularities must be balanced out by inserting shims under the floor support.

SA9 traction sheave in the shaft, machine with extended traction sheave shaft and pedestal bearing.

1. Fitting and mounting of the compensating supports.
2. Horizontal alignment of the traction sheave shaft.
3. Align the bearings of the machine and the outside bearing exactly.

Installation of compensating supports for SA9

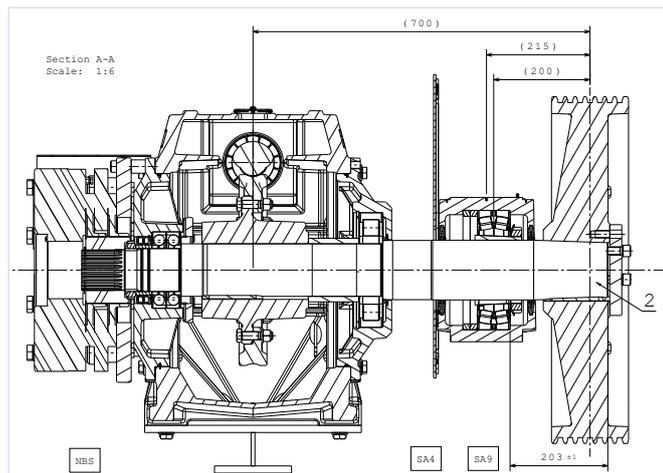


Fig. 27

ATR_2_21_0244_0

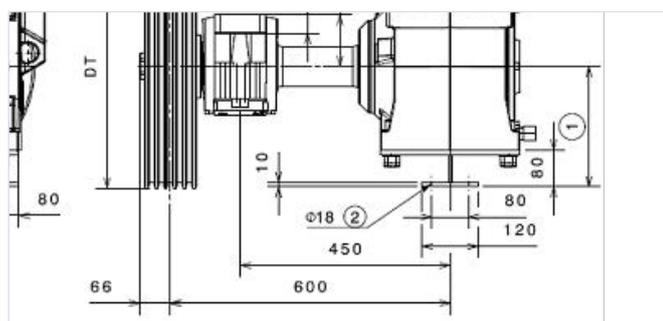


Fig. 28

ATR_2_12_0080_0

1. Mount the compensating supports on the machine housing from underneath.
 - ▷ Tighten 4x M20 x 80-8.8 to 190 Nm

6.3

Mounting the frame with rope pulley

NOTICE**One-sided load on component and or drive set up on a slant!**

Failure of the drive involving damage.

- The drive must be horizontal.
- Use a spirit level to check; add support if necessary.
 - ▷ Secure the drive on the machine base frame against shifting with adjusting screws or stops.
- Arrange the suspension ropes symmetrically on the suspension plate, traction sheave and rope pulleys.

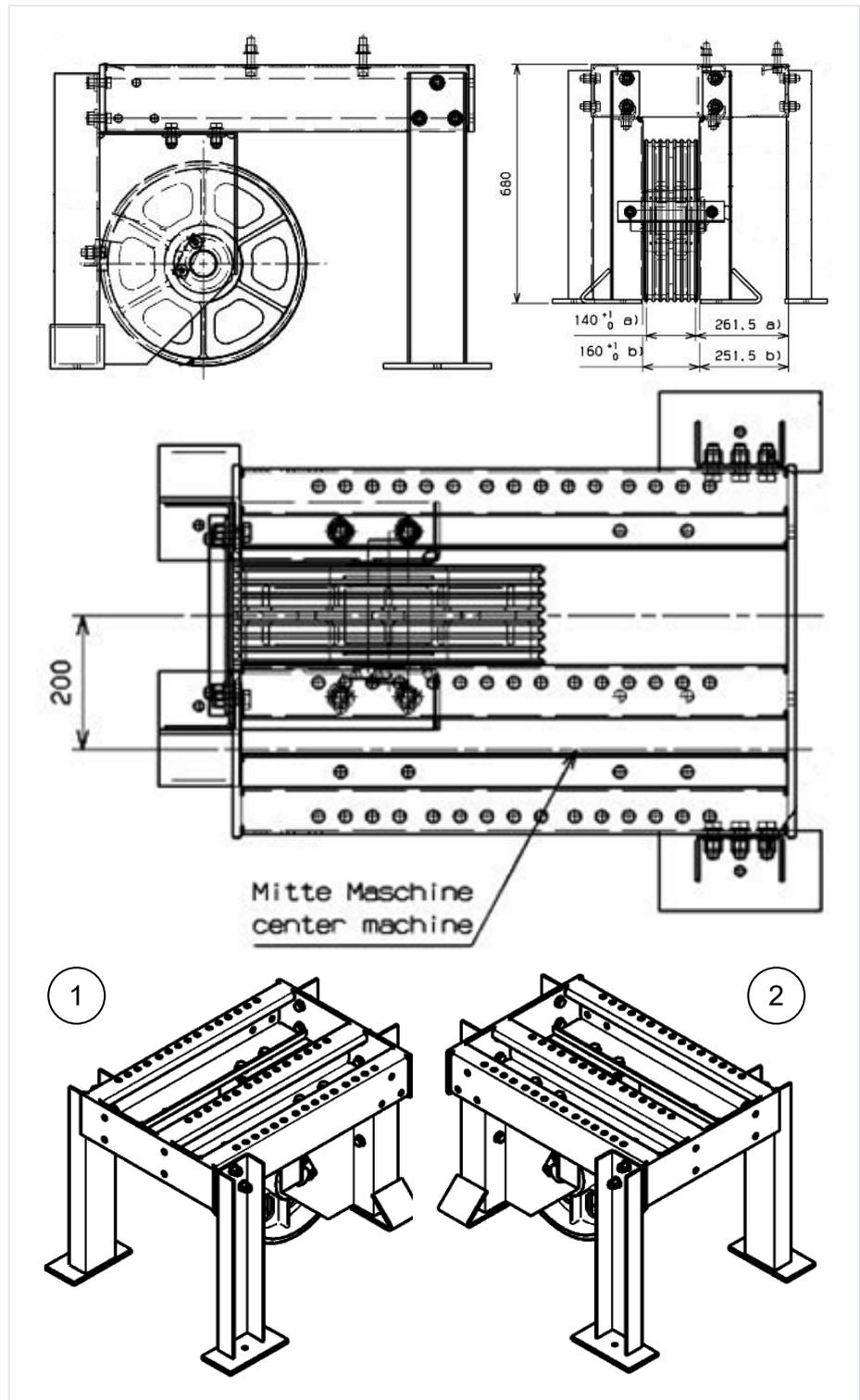


Fig. 29

ATR_21_0214_0

| Item | Designation | Item | Designation |
|------|-------------------|------|--------------------|
| 1 | Left-hand version | 2 | Right-hand version |

1. The version can be found in the plan of installation.
2. Mount the delivered frame (upper frame part, supports and pulley frame with rope pulley) loosely together in the machine room.
3. Position the frame on the insulation elements in accordance with the plan of installation.

4. Lift the machine onto the frame using lifting tackle.
 - ▷ The traction sheave must rest on the diverter pulley side.
5. Move the machine sideways on the base frame until the required ASL dimension (parallel clearance between the ropes at the rope departure) is reached.
6. Bolt the machine onto the frame, whereby the machine housing must not be tensioned.
 - ▷ Use the supplied shims for compensation.
7. Align the rope grooves of the traction sheave and diverter pulley in parallel.
8. Tighten the screws to the required torque.
 - ▷ Tighten 4x M16-8.8 to 190 Nm
9. Plumb the rope departure on the rope pulley and/or mounting on elevator car and counterweight.

6.4

Mounting the rope guard

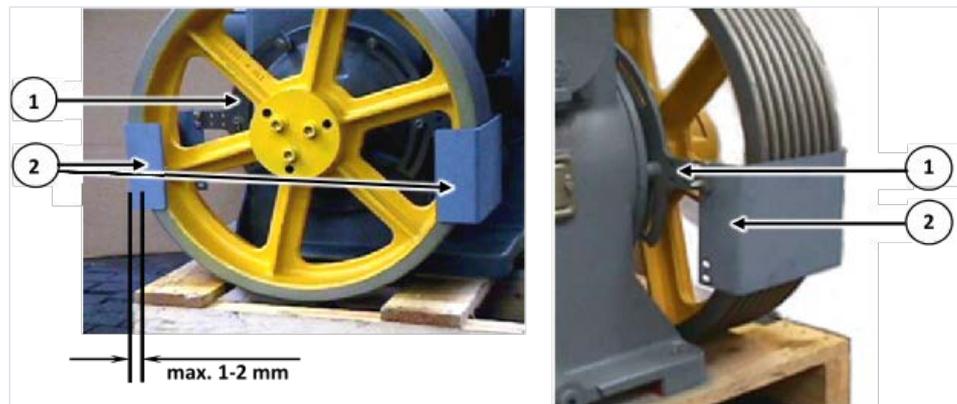


Fig. 30

ATR_2_12_0091_0

| Item | Designation | Item | Designation |
|------|--------------------|------|-------------|
| 1 | Rope guard carrier | 2 | Rope guard |

1. Use the enclosed screws to bolt the rope guard onto the rope guard carrier.
2. Pivot the rope guard carrier to set the guard in such a way that the clearance between the rope and hoop guard on the rope run-in and run-out side of the traction sheave is as small as possible (1-2 mm).
3. Adapt the inclined pulling location of the rope guard carrier by remounting the changed rope pull direction.
4. Align the winch and tighten the securing bolts of the rope guard carrier to the prescribed torque ↗ [Chap. 10.1 P. 86](#).

i

For machines with rope run-in direction of 0–90° above the horizontal (e.g.: machine arrangement up/down beside), an additional rope guard is required to prevent foreign bodies from entering between the rope and groove. If the rope run-in zone is protected within the machine base frame, the function "protection against injury" is not required.

i

If the rope run-in zone is protected within the machine base frame, the function "protection against injury" is not required. For SA9 traction sheave in the shaft, no rope guard is fitted at the plant.

6.5

Shift protection on the machine base frame

The entire shift protection consists of four units in total.

The fastening materials (Hilti HST M16/25 or Fischer M16/25 FAZ II) are included in the scope of supply and must be attached to the unfinished concrete floor.

→ Comply with the installation instructions of the manufacturer.

i

In locations where the distance to the wall is < 250 mm, the standard shift protection devices must be replaced by devices for low wall clearances.

The shift protection is configured for the following machine insulations:

- Insulation elements without underlay for machine room without floor pavement
- Insulation elements with underlay for machine room with floor pavement (≤ 60 mm height); underlay made from Multiplex laminated wood 140x140x80 mm.

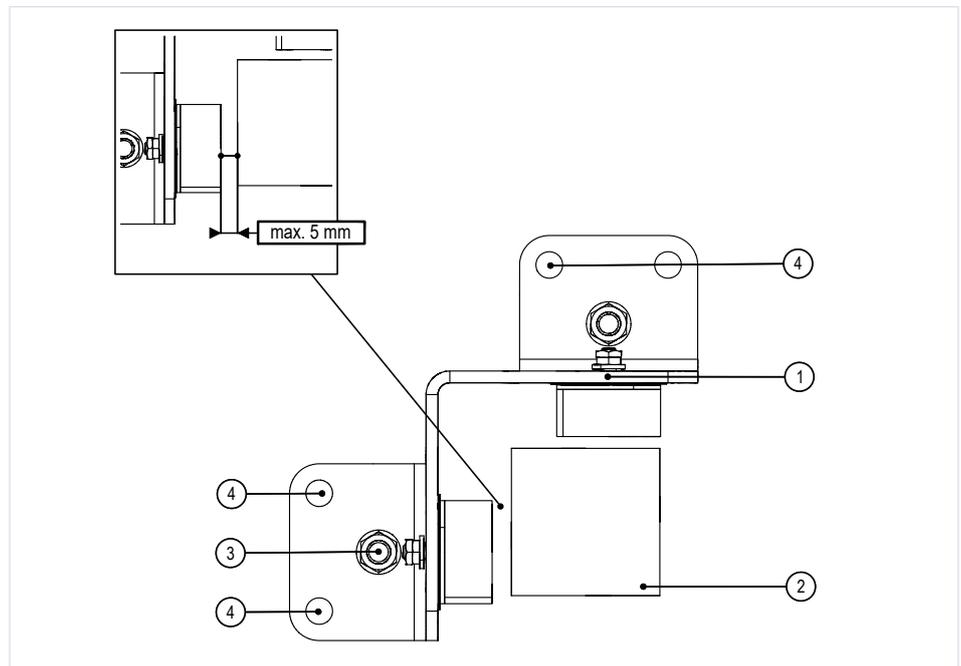


Fig. 31

ATR_2_00_0002_0

| Item | Designation | Item | Designation |
|------|------------------|------|--------------------|
| 1 | Shift protection | 2 | Machine base frame |
| 3 | Anchoring device | 4 | Alternative holes |

1. Position the shift protection elements contact-free with a slight clearance (maximum 5 mm) to the machine base frame and make marks.

2. Drill holes for the anchoring devices at the marked positions.
 - ▷ If there is steel reinforcement in the concrete, use alternative holes.
3. Secure the shift protection elements with two anchoring devices.
 - ▷ Use 1 anchoring device per tab.

6.6 Electrical connection

⚠ WARNING



Inadequate connection

Electric shock. Damage to drive.

- Earth the motor and brake magnet in accordance with country-specific regulations.
- Electrical connections must correspond to at least the protection class in accordance with the name plate and/or required country-specific protection class.

⚠ WARNING



Live parts!

Electric shock.

- When connecting the machine, comply with the relevant regulations. Never work when the voltage is switched on!
- Ensure reliable earthing (loop resistance).
- Here, configure connections in both terminal boxes.

6.6.1 Connecting the machine

NOTICE



Incorrectly connected cables!

May lead to impairment or loss of function of the product.

- When connecting the motor, comply with the terminal connecting plan on the back of the cover on the motor terminal box and/or the motor connection terminal diagram.
- In the case of frequency-controlled machines, ensure EMC-compliant installation of the motor and posistor (use suitable shielding).

Motor terminal connecting plan



Fig. 32

ATR_2_12_0092_0

| Item | Designation | Item | Designation |
|------|--------------------------------|------|-----------------------------|
| 1 | Connection for magnetic clamps | 2 | Motor connection |
| 3 | Connection for resistor | 4 | Connection for PE conductor |

6.6.2

Connecting the motor line

1. Strip the insulation from the connection line.
2. Route cable through the cable gland.
3. Connect the PE conductor to the screwed connection specifically designed for the purpose.
4. Connect the three motor wires to the terminals U, V and W as specified in the terminal connecting plan.
5. Pull the shielding braid evenly over the lamellar insert.
6. The braid must not protrude beyond the lamellar insert into the thread.
7. Pull the cable through the cap nut.
8. Push the cap nut over the shielding.
9. Tighten the cap nut with the recommended torque in accordance with manufacturer documentation [↗ Chap. 10.2 P. 86](#).

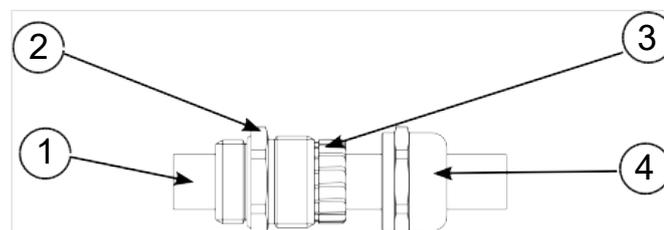


Fig. 33

ATR_2_21_0055_0

| Item | Designation | Item | Designation |
|------|----------------------------|------|-------------|
| 1 | Cable with shielding braid | 2 | Lock nut |
| 3 | Lamellar insert | 4 | Cap nut |

6.6.3 Connecting the posistor

NOTICE



Overvoltage at the measuring device.

Defective posistor.

- Do not apply a voltage greater than 2.5 V.
- Observe the internal resistance on the measuring instrument.

A triggering device (motor protection device) is required for evaluation of the posistor temperature sensor installed in the motor.

1. Strip the insulation from the connection line.
2. Connect both wires in accordance with the terminal connecting plan.
3. Tighten the cap nut with the recommended torque in accordance with manufacturer documentation [↗ Chap. 10 P. 86](#).

6.6.4 Connecting the brake

Connect the brake (coil and microswitch) via the motor terminal box

[↗ Chap. 6.6.1 P. 62](#).

Emergency brake NBS (optional)



If the emergency brake system is fitted, a description with all the details regarding connection and operation of the emergency brake can be found in the separately enclosed operating manual for the emergency brake system, NBS.

Terminal connecting plan VVVF

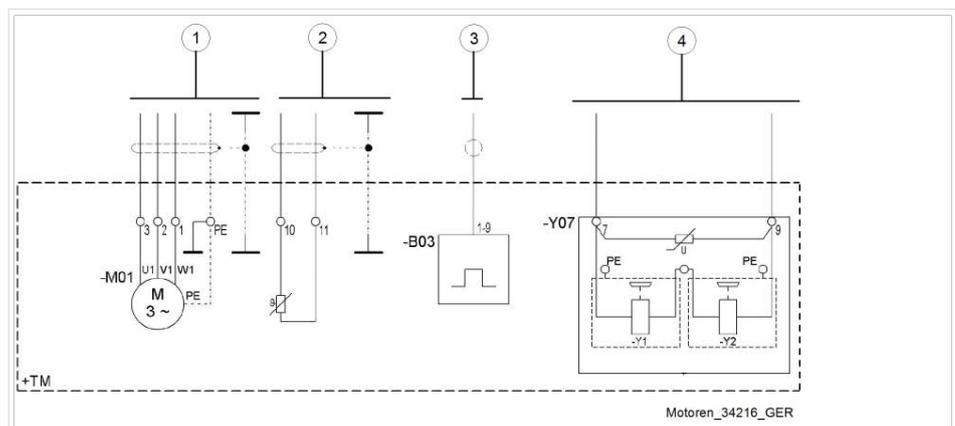


Fig. 34

ATR_2_12_0094_0

| Item | Designation | Item | Designation |
|------|-------------|------|--|
| 1 | Motor | 2 | PTC thermistor |
| 3 | Encoder | 4 | Brake (intermediate terminal connection) |

7 Work on the product

7.1 Replacing the brake shoes

With a remaining lining thickness of less than or equal to 3 mm or if the linings are damaged (e.g. glazing), the brake shoes incl. the brake lining must be replaced.

Disassembly

1. Disconnect the power from the installation and secure it against reactivation.
2. Remove the nuts and spherical washer.
 - ▷ Take out the tension spring with add-on parts.



Fig. 35

ATR_2_12_0100_0

3. Remove the brake shoe bolt locking screws.
4. Slide the cover ring of the armature base plate over the magnetic clamp.
5. Remove the counter nut of the anchor bolt.
 - ▷ Press the anchor bolt and armature base plate together slightly.
 - ▷ The gap between the magnetic clamp and armature base plate is enlarged.



Fig. 36

ATR_2_12_0101_0

6. Pull the brake shoe bolt out of the housing using the locking screw.
7. Remove the compression spring, spring plate and screw.
8. Remove one brake shoe.

Installation

1. Mount the armature base plate on the new brake shoe.
2. Check the ease of movement of the armature base plate; adjust if necessary.
 - ▷ It should be possible to move the armature base plate with low resistance.
 - ▷ If necessary, grease the rubbing surface between the armature base plate and anchor bolt.
3. Secure the settings of the armature base plate pre-tension with the counter nut.
4. Install brake shoes, bolts and locking screws for the bolts.
 - ▷ The end thread in the bolt must point outwards.
5. For maximum spring travel, preload the springs with the hexagon nut.
 - ▷ with nominal force 2500, magnetic clamp diameter D130 mm, 2 x 125 Nm, initial tension 13.5 mm (approx. 10.8 revolutions)
 - ▷ Pre-tension the compression spring to approx. 13.5 mm.
 - ▷ Secure the setting with the counter nut.

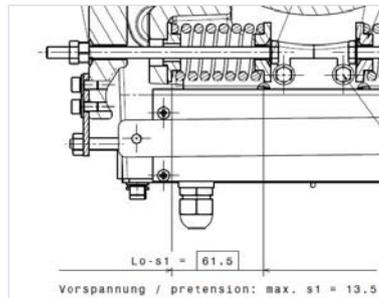


Fig. 37

ATR_2_12_0102_0

6. Set the brake shoe stroke by adjusting the armature base plate screw on the brake shoe.
 - ▷ Brake shoe stroke at the narrowest point $0.1 + 0.05$ mm. This corresponds to approximately 0.35 to max. 0.6 mm in the middle of the brake disc.
 - ▷ Check the brake shoe stroke with electrical pick-up.
7. Push the rubber ring over the gap between magnetic clamp and armature base plate.
8. Modify, replace and set the second brake shoe in the same manner.
9. Use electrical recall to move the elevator and observe whether both brake shoes open evenly.

10. Check the stroke paths and deceleration; if required, adjust.

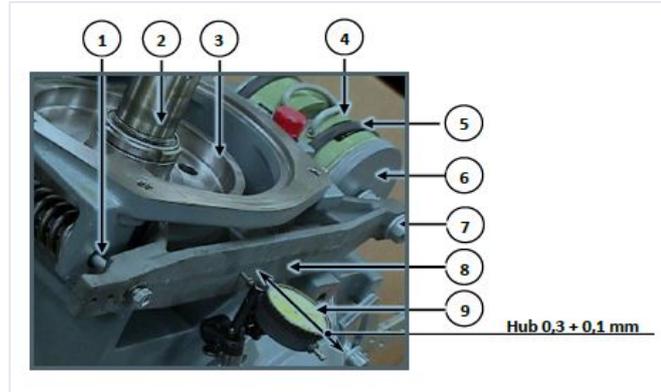


Fig. 38

ATR_2_12_0103_0

| Item | Designation | Item | Designation |
|------|---------------------------|------|---------------------|
| 1 | Tightening screw | 2 | Worm shaft |
| 3 | Brake disc | 4 | Magnetic clamp |
| 5 | Cover ring | 6 | Armature base plate |
| 7 | Armature base plate screw | 8 | Brake shoes |
| 9 | Dial gauge | | |

7.2

Setting the brake shoe stroke and armature base plate

✓ Before initial operation and during monitoring, the working stroke of the brake shoes, the initial tension of the brake springs and initial tension of the armature base plates must be checked.

1. Check the rubber disc between the armature base plate and the brake shoe.
 - ▷ Readjust the initial tension between the brake shoe and armature base plate.
2. The armature base plate can be rotated with suction on the anchor bolt.
3. Align a dial gauge on the brake shoe at the height of the centre of the brake disc.
4. Switch on the drive and check the stroke of the brake shoes.
5. In the event of deviations, loosen the counter nut.
6. Readjust the anchor bolt and, on opening, ensure that the brake shoes have the same stroke.
7. Secure the setting.

A correct setting of the initial tension is only possible within the framework of a deceleration measurement. In doing so, do not exceed the maximum initial tension distance of 13.5 mm.

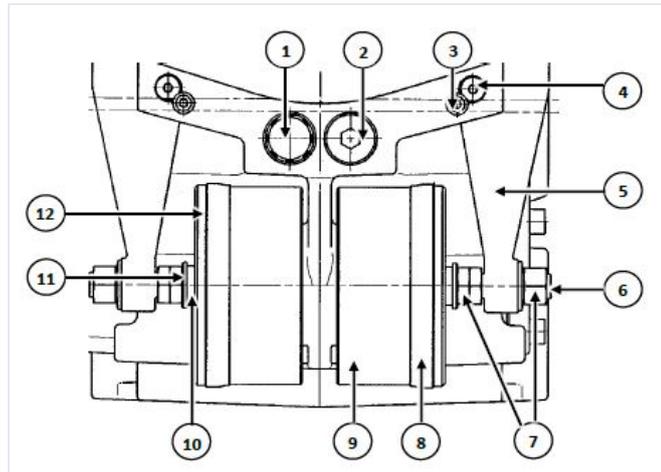


Fig. 39

ATR_2_12_0104_0

| Item | Designation | Item | Designation |
|------|-------------------------|------|---------------------|
| 1 | Oil ventilation | 2 | Control opening |
| 3 | Locking screw with disc | 4 | Brake shoe pin |
| 5 | Brake shoes | 6 | Anchor bolt |
| 7 | Counter nut | 8 | Cover ring |
| 9 | Magnetic clamp | 10 | Rubber disc |
| 11 | Washer | 12 | Armature base plate |

If brake test switches are present, these must be checked or adjusted after brake adjusting [↗ Chap. 3.3.3 P. 23](#) [↗ Chap. 10 P. 86](#).

7.3

Braking deceleration setting

The brake adjustment is to be carried out only with one effective brake shoe with the elevator car loaded with the rated load on a descending run (full down) or with an empty elevator car on an ascending run (empty up) according to the deceleration values in the table below. Brake shoe stroke at the narrowest point $0.1 + 0.05$ mm. This corresponds to approximately 0.35 to max. 0.6 mm in the middle of the brake disc. The braking torque must be set by pre-tensioning the brake springs in relation to the system, evenly across both brake shoes.

| Braking deceleration | Machine with handwinding wheel | | |
|-----------------------------------|--------------------------------|-------------|----------|
| | ≤ 0.63 | ≤ 1.25 | > 1.25 |
| v in m/s | ≤ 0.3 | ≤ 0.4 | > 0.50 |
| a in m/s ² (full down) | ≤ 0.5 | ≤ 0.6 | > 0.75 |
| a in m/s ² (empty up) | | | |

Tab. 20

ATR_1_21_0032_0

If brake test switches are present, these must be checked and/or readjusted after a brake setting. [↗ Chap. 3.3.3 P. 23](#).

7.4 Brake readjustment in the event of brake lining wear

With wear on the brake linings, the stroke of the brake shoes increases compared with the reference state. At a limiting value of 0.6 mm, the following settings on the brake are to be checked and, if necessary, corrected:

1. Armature base plate pre-tension: Check and, if required, adjustment of the pre-tension.
2. Stroke of the brake shoes: Setting to the reference value.
3. Pre-tension of the compression springs: Setting of the reference value to max. 13.5 mm as well as check of the deceleration ↗ [Chap. 7.3 P. 68](#).

7.5 Test of one brake circuit

1. Manually open the brake shoe not being tested with a suitable tool.
 - ▷ For example, a nailing tool or a flat spanner on smaller machines.

⚠ WARNING



Brake malfunction!

Malfunction/slipping of the brake being tested.

- The tool must not be secured in the brake's open position.
- The installation tool must be operated by a qualified person.
- The brake must be able to re-engage immediately.

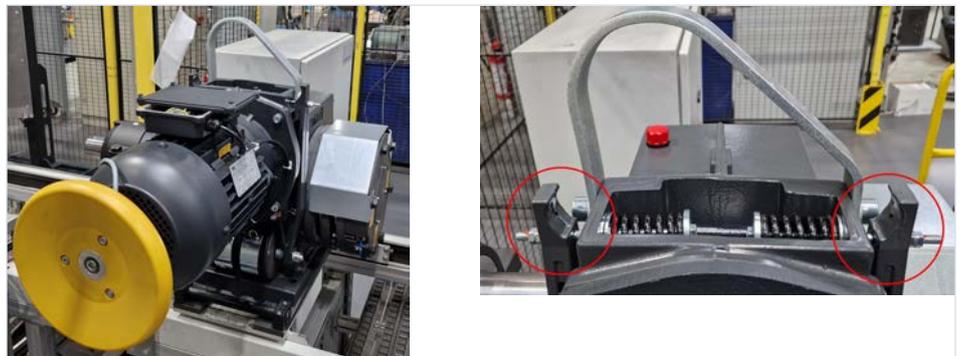


Fig. 40

ATR_2_21_0237_0

2. Carry out a brake test/emergency stop using the brake being tested.
3. Repeat the operation on the other brake.

7.6

Checking the oil level

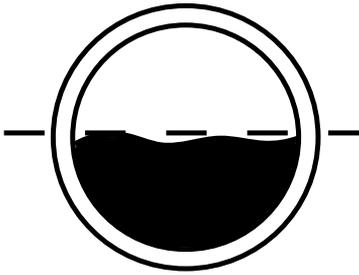


Fig. 41

ATR_2_12_0316_0

- Check the oil level.
 - ▷ The oil level should be ± 5 mm outside of the centre.
 - ▷ To top up, the machine should be out of service for five minutes.

7.7

Lubrication

NOTICE**Possible bearing damage!**

Damage to the gear due to unsuitable lubricant.

- Only use the specified gear oil.



The machine is delivered full of oil.

| Lubricant | Replacement interval | Motor position/filling quantity |
|------------------------|--|---|
| Synthetic gear oil SM1 | For the first time after 4 years then every 8 years | vertical approx. 11.0 litres horizontal approx. 9.0 litres |

Tab. 21

ATR_1_21_0024_0

⚠ WARNING**Danger of scalding**

Long-term car operation heats up the oil!

- During work on the drive, wait until the housing has cooled down, if necessary.

1. Heat the gear to operating temperature (approx. 35 °C) before changing the oil.
2. Drain off the gear oil by removing the cap on the oil drain pipe.
3. Collect the old oil in a container specifically designed for the purpose.
4. Empty the gear and close off the cap on the oil drain pipe with PTFE sealing tape.
 - ▷ Check for leakage.

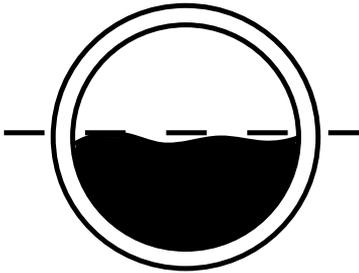


Fig. 42

ATR_2_12_0316_0

5. Remove the red locking screw "OIL" and fill the gear housing until the prescribed oil quantity is reached.
6. Check the level at the oil gauge glass.
7. Never mix different types of oil
8. Do not dispose of oil where it can enter the groundwater.
9. Dispose of old oil as well as cloths contaminated with oil and grease according to prevailing regional regulations.
10. Use of gear oil approved by TK Aufzugswerke GmbH.
11. TK Aufzugswerke GmbH will not be held liable for damage resulting from the use of non-approved lubricants.

Vertical motor position

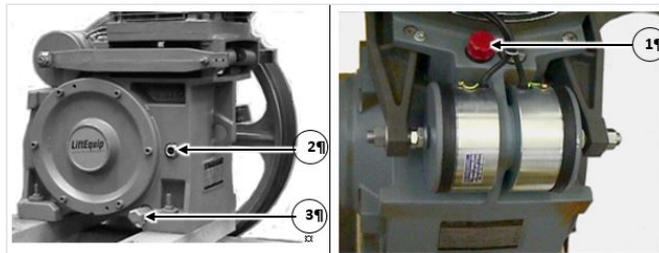


Fig. 43

ATR_2_12_0095_0

| Item | Designation | Item | Designation |
|------|------------------|------|-----------------|
| 1 | Oil filling hole | 2 | Oil gauge glass |
| 3 | Oil drain | | |

Horizontal motor position

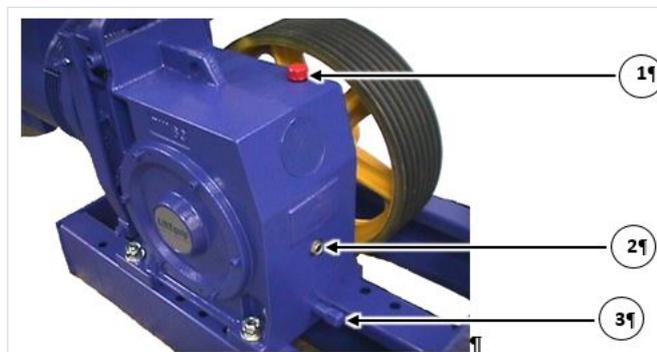


Fig. 44

ATR_2_12_0096_0

| Item | Designation | Item | Designation |
|------|------------------|------|-----------------|
| 1 | Oil filling hole | 2 | Oil gauge glass |
| 3 | Oil drain | | |

7.8

Checking the backlash

If the running performance deteriorates, this might have been caused by excessive backlash in the worm gear toothing.

Wear on the worm wheel gear toothing changes the actual tooth thickness and this can be determined using the following measurement of the backlash.

NOTICE



Backlash too great!

Teeth on worm wheel worn; deterioration in running performance.

- If the running performance deteriorates (noises, jerking, etc.), measure the backlash.
- If a wear limit value (backlash) of 1.5 mm is reached, replace the gear teeth.

1. Disconnect the power from the installation and secure it against reactivation.
2. Secure the car and counterweight against movement.
3. Take the load off the traction sheave.
 - ▷ The traction sheave must be free to move.
4. Perform the measurement with the operational brake closed.
5. Release the emergency brake, if present.
6. Fit a measuring attachment to the traction sheave, e.g. screw clamp.
7. Specify the measured radius (M) and mark the measuring point.
 - ▷ The radius (r) for the TW63B = 125 mm.
8. Attach a dial gauge with magnet stator at the gear drive housing and align to the measuring point (M).
9. Turn the traction sheave by hand until the dial gauge pointer moves.
10. Move the traction sheave back and forth until resistance is felt.
11. Read the dial gauge (ME).
12. Use the formula below to calculate the backlash.
 - ▷ Backlash = (ME*r)/M

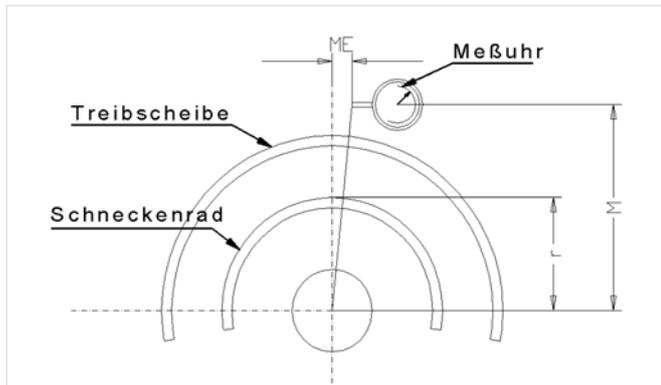


Fig. 45

ATR_2_22_0027_0

| Item | Designation | Item | Designation |
|------|---|------|--------------------|
| M | Radius | ME | Measurement result |
| r | Radius – worm wheel, all dimensions in mm | | |

7.9

Replacing the traction sheave

WARNING



Traction sheave not resting properly on cone (is loose)!

Traction sheave tumbles and can come loose. The elevator car can move in an uncontrolled manner through the shaft.

- Do not change the dimension of the feather key, groove, cone shaft or traction sheave bore hole under any circumstances.
- Avoid damage to and contamination of the cone shaft and traction sheave.
- Secure the traction sheave with a chain or ropes.
- Ensure correct installation.

1. Disconnect the power from the installation and secure it against reactivation.
2. Secure the car and counterweight against movement.
3. Remove the cover plate on the traction sheave.
4. Take the load off the traction sheave (slack rope).
5. Take off and secure the ropes.
6. Remove the mounting bolts with tension disc.
7. Secure the traction sheave using lifting tackle.
8. Loosely screw in the tension disc with screws in the outer circle of holes of the tension disc on the traction sheave hub.
9. Place a metal spacer (e.g. disc) of approx. 10 mm thickness between the tension disc and shaft end. The diameter of the spacer must be such that it does not protrude beyond the front face of the shaft.
10. By evenly and alternately tightening the screws, pull the traction sheave off the shaft (cone).

Installation of the traction sheave

1. Clean the shaft end and traction sheave bore hole (free of oil, grease, paint)
 - ▷ Do **not** apply grease or oil to the shaft and hub!
2. Place the new traction sheave on the conical shaft end of the motor shaft.
3. Align the locations of the feather key and groove in relation to one another.
4. Push the traction sheave onto the motor shaft.

⚠ WARNING!

Adhesion force of the microencapsulated screws has no effect! The traction sheave can come loose and the elevator car can move in an uncontrolled manner through the shaft. Use microencapsulated screws a maximum of twice.

5. Use the supplied **new** microencapsulated screw and detent edged washers to attach the tension disc to the motor shaft at the inner circle of holes.
 - ▷ Retighten the screws several times to obtain the prescribed tightening torque on all three screws.
6. Comply with the prescribed tightening torque of 150 Nm.
 - ▷ Compare torque with drawing.

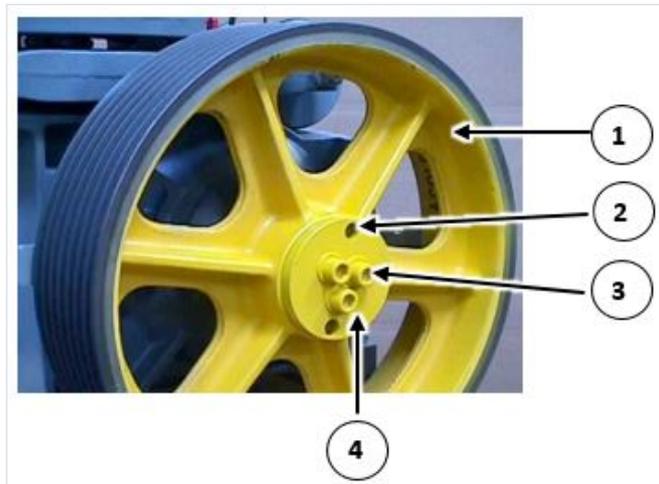


Fig. 46

ATR_2_12_0097_0

| Item | Designation | Item | Designation |
|------|--------------------|------|------------------------|
| 1 | Traction sheave | 2 | Hole for forcing screw |
| 3 | Mounting bolt (3x) | 4 | Mounting plate |

1. Release the mounting of the traction sheave from the lifting tackle.
2. Hang up the ropes on the traction sheave.
3. Mount the rope guard plates.
4. Align the rope guard plates.
5. Remove the safety devices from the car and counterweight.

7.10

Replacing the motor

Disassembly

1. Disconnect the power from the installation and secure it against reactivation.
2. Secure the car and counterweight against movement.
3. Attach and secure the motor to the lifting tackle.
4. Unplug the electrical connections and lines from the motor.
5. Undo the nuts of the motor mounting on the housing flange.

6. Release the radially arranged screws for the flexible coupling on the coupling groove.
 - ▷ In the case of the flexible coupling, the elastomer part of the coupling remains screw-connected to the brake disc.
7. Carefully pull the motor off the dog clutch coupling connection.
8. If the replacement motor was delivered without a handwinding wheel and encoder, remove these from the old motor and, including the encoder mount (clip nut), use them for the new motor.

Installation

1. Place the replacement motor ready for use.
2. Compare the motor data.
3. Attach and secure the motor to the lifting tackle.
4. Align the motor to the coupling and housing flange of the gear.
5. The locations of the mounting holes must match those of the screws.
6. Push on the motor until the face of the motor contacts the gear flange or flange ring.
7. Mount the motor on the gear flange.
8. Tighten the nuts evenly alternately and cross-wise up to the prescribed tightening torque [↗ Chap. 10.1 P. 86](#).
9. Mount radially arranged screws on the clutch hub and tighten to 85 Nm [↗ Centaflex](#).
10. Connect the connection line in the terminal box.
11. Make the electrical connections as per terminal connecting plan Installation.
12. Establish the connections of the brake and encoder to the control system.
13. Check the function of the brake before starting up.

7.11

Replacing the encoder



Fig. 47

ATR_2_12_0064_0

| Item | Designation | Item | Designation |
|------|----------------------------|------|---|
| 1 | Fan hood of motor | 2 | Encoder |
| 3 | Handwinding wheel with hub | 4 | Central screw for handwinding wheel mount |

| Item | Designation | Item | Designation |
|------|------------------------------|------|-------------------------------------|
| 5 | Encoder mount (spring plate) | 6 | Screw for encoder mount |
| 7 | Clip nut | 8 | Studs for mounting encoder on shaft |

Disassembly

Preparatory measures

1. Disconnect the power from the installation and secure it against reactivation.
2. Unplug the encoder connection cable at the frequency inverter.
3. Remove the central screwed connection in the middle of the handwinding wheel hub or the handwinding wheel.
4. Release the two headless set screws at the collar of the encoder inner ring (do not remove completely).
5. Unscrew the slotted pan head tapping screw at the bracket of the encoder mount.
6. Remove the cable ties holding back the cables.
7. Pull the encoder off the end of the motor shaft.
8. Check that the technical data of the new encoder matches

Installation

1. Fit the encoder mount (spring plate) of the removed encoder onto the new encoder.
2. Push the new encoder onto the cleaned shaft end of the motor until it makes contact with the shaft collar.
3. The mounting collar must point towards the shaft end.
4. Screw on the encoder mount at the motor.
5. Secure the encoder inner ring by tightening the headless set screw on the motor shaft.
6. Align handwinding wheel D270 with the hub to the axial pin in the shaft and mount the hub with the handwinding wheel by means of the central screw and disc, then tighten to 75 Nm.
7. Secure the connection line to the motor using cable ties.
8. Connect the encoder connection cable to the frequency inverter.

7.12

Checking for grease/oil leakage

⚠ WARNING



Loss of the brake function!

The elevator car can move in an uncontrolled manner through the shaft.

- Make sure the brake drum and other components of the brake are free of grease and oil.
- Rectify the cause of grease/oil leakage.
- Run the brake test.
- Replace the contaminated brake.

NOTICE



Danger when using commercially available brake cleaning agents!

Damage to the brake

- For cleaning work on the brake, only use the cleaning agent isopropanol (isopropyl alcohol). Observe the information provided by the brake manufacturer Appendix.

| Degree of contamination | Procedure | |
|--|--|---|
| If a small amount of oil/grease leakage is determined | Clean and check regularly within the framework of maintenance | Every 3 months (and/or every 6 months in the case of low frequency of use: fewer than 50,000 runs per year) |
| If a large amount of oil/grease leakage is determined or brake disc/brake linings are already fouled with oil/grease | Clean the machine and, if necessary, the brake, and repair as quickly as possible. Before continuing operation until modification, run a brake test. If the braking effect is inadequate: Shut down installation. If necessary, check on a daily basis whether oil/grease is still leaking. If this is the case: Shut down installation. | Repair after 4 weeks at the latest |

Tab. 22

ATR_00_0004_0

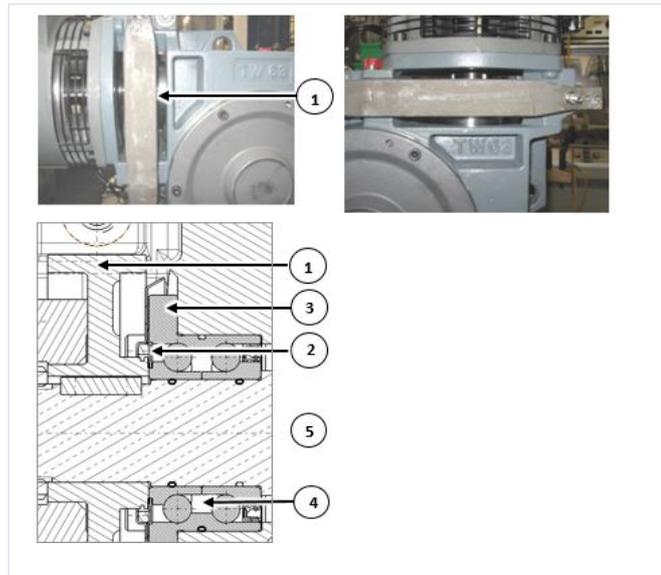


Fig. 48

ATR_2_12_0099_0

| Item | Designation | Item | Designation |
|------|-----------------------------------|------|-----------------------------|
| 1 | Brake drum | 2 | Roller bearing sealing disc |
| 3 | Stroke unit with integrated cover | 4 | Grease filling |
| 5 | Gear oil | | |

See manufacturer's instructions [↗ Chap. 10 P. 86](#)

7.13

Blocking clamp

NOTICE**Blocking clamp not removed.**

May lead to impairment or loss of function of the product.

→ Remove the blocking clamp after completion of the installation work.

Each machine has a blocking clamp that matches the traction sheave.

Deployment of the blocking clamp

Use the blocking clamp to prevent movements due to slipping ropes during installation work on the elevator car or counterweight or during work where the rope traction of the installation is insufficient (e.g. pulling out of the safety gear).

The blocking clamp should be pre-tensioned by evenly tightening the hexagon nuts so that the ropes are unable to slip.

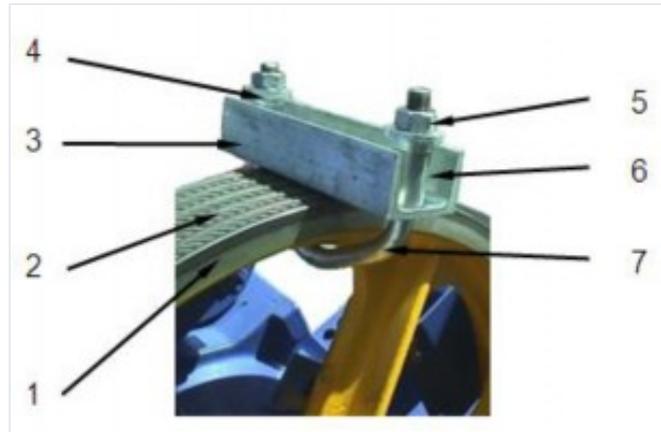


Fig. 49

ATR_2_12_0066_0

| Item | Designation | Item | Designation |
|------|-----------------|------|---------------|
| 1 | Traction sheave | 2 | Rope |
| 3 | Pressure piece | 4 | Washer |
| 5 | Hexagon nut | 6 | Spacer sleeve |
| 7 | Clamp clip | | |

7.14

Brake monitoring circuit

Installation

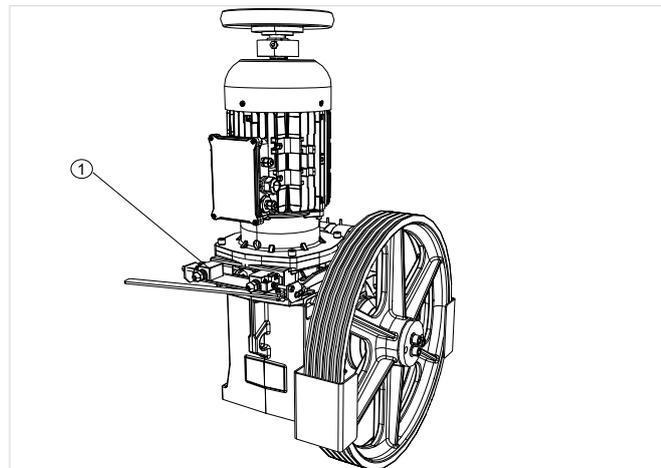


Fig. 50

ATR_2_21_0245_0

| Item | Designation | Item | Designation |
|------|-------------------------------------|------|-------------|
| 1 | Brake monitoring – SA3.1 (optional) | | |

1. If not included in the scope of supply, make two lines of 0.75 mm² for SA3.1 (with PVC sheaths) for direct connection of the switches to the control system.
2. Install both hexagon adjusting screws with counter nuts into the brake shoes.
3. Removal of both transport hangers.
4. Secure the switch to the switch plate using M4 screws, discs and nuts.

5. The switch tappet must be opposite the adjusting screw, but should not make contact with it.
6. Knock out the relevant opening on the switch for the cable gland and install the cable gland.
7. Connect the cable to the switch.

Terminal connecting plan for brake test switch SA 3.1

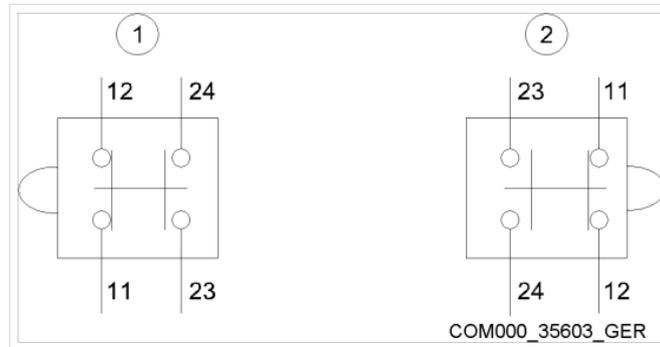


Fig. 51

ATR_2_22_0042_0

| Item | Designation | Item | Designation |
|------|----------------------------|------|----------------------------|
| 1 | Button for brake circuit 1 | 2 | Button for brake circuit 2 |

Setting SA3.1 for monitoring the brake release with wear detection

The break contact with contacts 11 and 12 is used to monitor the position of the brake shoes. With the brake open, the switch is closed. The make contact only closes contacts 23/24 when the wear limit of the brake linings has been reached and the brake is closed. The contacts must be switched in such a way that, when one contact for both switches is closed, the drive is prevented from starting up. With correctly set brake test switches, all switch contacts must be interrupted with a closed brake. Before starting to set the switch, the stroke of the brake shoes must be adjusted.

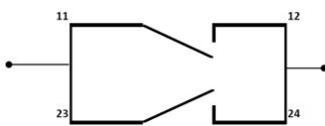


Fig. 52

ATR_2_22_0058_0

1. Switch on emergency operation switch and elevator control unit.
2. Connect the continuity test device to contacts 23–24.
3. Adjust the adjusting screw towards the switch until the continuity test device indicates continuity of 23–24.
4. Turn the screw back slowly until the continuity test device no longer indicates continuity of 23–24.
5. Move the adjusting screw by $\frac{1}{4}$ turn (corresponds to approx. 0.3 mm) in the direction of the switch and secure.
6. Continuity test device indicates constant continuity of 23–24.
7. Continue unscrewing the adjusting screw a further approx. $\frac{1}{4}$ revolution.
8. Open and close the brakes by switching the motor
9. Check the switch change at the switches between the opened and closed brake.
10. Perform the setting on both switches in the same way.

Setting SA3.1 for monitoring the brake release without wear detection

Before starting to set the switch, the stroke of the brake shoes must be adjusted.

1. Connect the continuity test device to contacts 11 and 12 of the break contact. The adjusting screw must not touch the switch tappet.
2. In the drive's home position (brake magnet without current), unscrew the adjusting screw for the brake test from the brake shoe in the direction of the switch tappet until opening of the contact is indicated by a signal interruption at the continuity test device.
3. Continue unscrewing the adjusting screw a further approx. 1/4 revolution.
4. Secure the setting by tightening the counter nuts.
5. Repeat the setting procedure at the second brake test switch.

Checking the setting

Open and close the brakes by switching the motor. In doing so, observe whether the switch change at the contacts corresponds to the procedure described above. Push the feeler gauge between the adjusting screw and the switch tappet. Select the thickness of the feeler so that contact 23/24 is closed. If one of the contacts is closed, the drive must not be activated.

Switch mounting and setting for SA15 (full Ex)



Fig. 53

ATR_2_22_0043_0

| Item | Designation | Item | Designation |
|------|----------------------------|------|----------------------------|
| 1 | Button for brake circuit 1 | 2 | Button for brake circuit 2 |

- Operation: Monitoring of the brake release **without** wear monitoring of the brake lining

Only contacts 23–24 are used for this function.

The break contact with contacts 23–24 is used to monitor the position of the brake shoe. With the brake open, the switch is also open.

- Operation: Monitoring of the brake release **and** wear monitoring of the brake lining

The break contact with contacts 11–12 is used to monitor the position of the brake shoe. With the brake open, the switch is closed. The make contact only closes contacts 23–24 when the wear limit of the brake linings has been reached and the brake is closed. The contacts must be switched in such a way that, when one contact for both switches is closed, the drive is prevented from starting up. With correctly set brake test switches, all switch contacts must be interrupted with a closed brake.

Circuitry of the contacts:

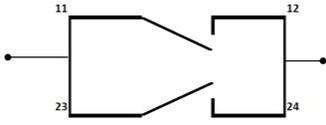


Fig. 54

ATR_2_22_0058_0

8 Commissioning

8.1 Work steps

Check the following points:

1. Check the machine, traction sheave and base frame.
2. Check the rope guard.
3. Check the distance to the traction sheave.
4. Check the setup of the machine, base frame, pedestal and rope departure.
5. With a side or oblique rope departure, secure the gear box casing against moving using steady plates and set screws.
6. Tighten the screws to the required torque [↗ Chap. 10.1 P. 86](#).
7. Check the oil level.
8. Check the installation of the filling and/or ventilation screw.
9. Check the power connections and grounding at the motor.
10. Check the connection of the magnetic clamp and the brake test switch.
11. Check the connection values (voltage, frequency) against the manufacturer specifications.
12. Check the function of the monitoring devices (encoder, thermal element).
13. Check the parking brake and emergency brake NBS (if present).
14. Check the brake function.
15. Attach the direction arrow (up/down) according to the direction of travel and clearly visible on the motor near the handwinding wheel.
16. Remove safety, auxiliary and installation tools from the danger zone.



For assembly and repair, use only original parts from TK Aufzugswerke GmbH, as otherwise no warranty can be provided.

8.2 Emergency operation

Emergency rescue of trapped persons

CAUTION



Rapid movement of the elevator car!

Abrasion injuries.

- Only use the handwinding wheel for assembly and maintenance purposes with a safe stance.
 - In the event of uncontrolled elevator car movement, let go of the handwinding wheel immediately.
-

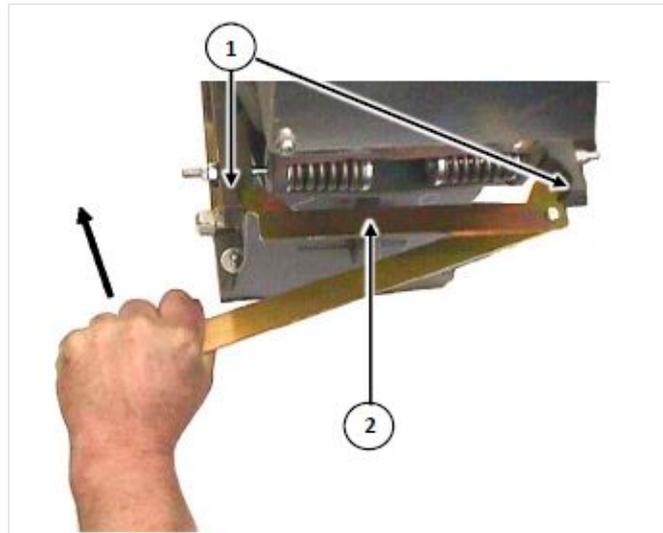


Fig. 55

ATR_2_21_0232_0

| Item | Designation | Item | Designation |
|------|-------------|------|---------------------|
| 1 | Brake shoes | 2 | Brake release lever |

1. To open the brake, check that the brake release lever is in the direction of the motor.
2. The handwinding wheel might also have to be moved to bring the elevator car into the nearest landing.
3. Depending on the load, the elevator car can begin to move quickly after opening the brake.
4. Immediately let go of the handwinding wheel and control the speed of the elevator car by pressing the brake release lever with varying degrees of force.
5. After the rescue operation, remove the brake release lever again.

Drive with emergency brake (NBS)

i

Mounting the emergency brake, NBS, fundamentally changes the procedure and sequence for emergency operation. Comply with the separate NBS operating manual. The operating manual for drives with emergency brake system equipment is delivered separately. [↗ Emergency brake system, NBS.](#)

9 Maintenance

9.1 Maintenance

Measurements must be taken annually:

1. Check the oil level; top up if necessary.
2. Change the oil at the prescribed intervals.
3. Clean the ventilation screw on the gear housing; the ventilation opening must be clear.
4. Check the gear and bearings for leakage
5. Check the brake and release gap.
6. Check the brake setting of the shoe stroke.
7. Check the brake function
8. Check the braking deceleration
9. Check the worm gear toothing for wear
10. Check the groove profile on the traction sheave for damage and wear
11. Check that the screws of the traction sheave mount are securely seated
12. With the drive on the machine base frame, check the mounting of the machine, supports and rope pulley carriers.
13. Check the rope pulley grooves for damage and wear.
14. Check that the electrical connections are in proper and adequate condition, and check that they are securely attached.
15. Check that protective and safety devices are present and correctly set.
16. Check the seals at the shaft in the area of the brake and at the bearing for grease and/or oil leakage.

9.2 Standstill maintenance

Standstill maintenance must be carried out on stored machines that have been at a standstill for over a year.

Standstill maintenance must be carried out on stored machines that have been at a standstill for over a year. Release the operational brake by means of the brake release lever and (if available) release the emergency brake manually via the emergency release screws.

The traction sheave is rotated (clockwise and anticlockwise) via a handwinding wheel on motor 3.

Depending on the storage conditions, replace the corrosion protection of the bare parts (for example with Rivolta KSP 317 corrosion protection wax).

9.3 Maintenance instructions

- Oil change: After 4 years for the first time, then every 8 years
- Greasing: Re-lubrication of outside bearing on SA9 annually
- Other components: Maintenance free

10 Appendix

10.1 Tightening torques

DANGER



Insecure threaded connection.

Death or severe physical injury due to parts coming loose.

- When working on the machine or replacing parts, care must be taken to ensure that the prescribed bolt/screw strength and tightening torques are complied with.
- Only use suitable tools (torque wrench).

The values listed below apply to screwed connections with **regular threads** (not fine threads):

- Slotted pan head tapping screws DIN 912 ISO 4762
- Hexagon head bolts DIN 931/933 ISO 4014/4017
- These specifications do not apply to microencapsulated bolts/nuts. The specifications of the manufacturer apply here.



If other tightening torques are specified in the drawings or elsewhere in the document for each screw size, these are to be complied with.

| Tightness | 8.8 | 10.9 | 12.9 |
|-----------------|------------------------|------|------|
| Screw/bolt size | Tightening torque [Nm] | | |
| M4 | 2.6 | - | - |
| M5 | 5.3 | - | - |
| M6 | 9.0 | 12 | 15 |
| M8 | 20 | 30 | 35 |
| M10 | 40 | 60 | 75 |
| M12 | 75 | 105 | 130 |
| M14 | 120 | 170 | 205 |
| M16 | 190 | 265 | 320 |
| M20 | 370 | 520 | 620 |
| M24 | 640 | 900 | 1080 |
| M30 | 1300 | 1800 | 2150 |

Tab. 23

ASY_1_00_0001_0

10.2 Manufacturer information

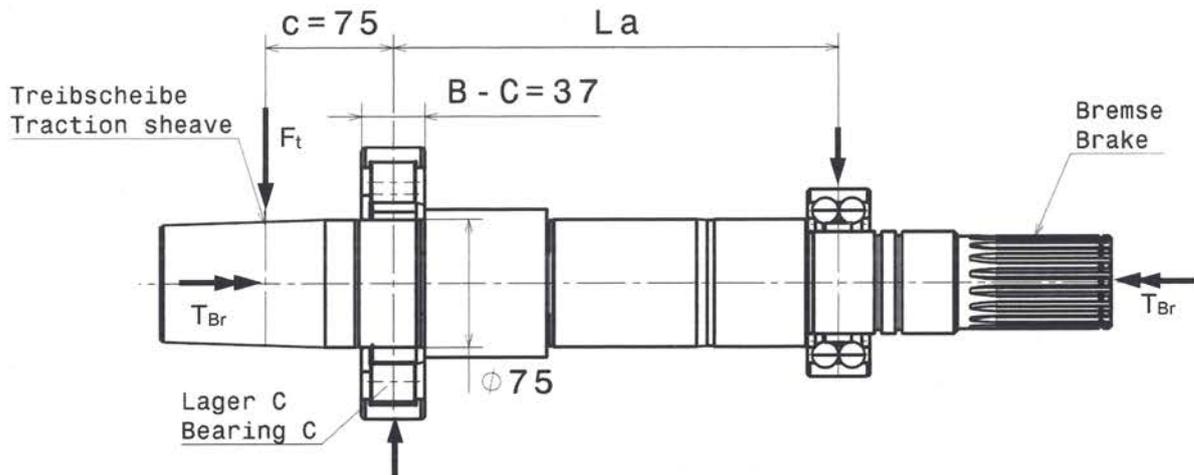
Also see about this

➤ [Verification of traction sheave calculation P. 88](#)

- ↗ Verification of traction sheave shaft calculation SA9 P. 89
- ↗ SKINTOP MS-SC Mounting instructions P. 90
- ↗ Wachendorff encoder WDG100H--xx-yyyy-ABN-I05-K3-D56 - assembly instructions P. 91
- ↗ Drehgeber Wachendorf WDG 100H - Datenblatt P. 92
- ↗ Encoder Wachendorf WDG 100H-38-1024-AB-R05-K3-J66-100 P. 104
- ↗ Centaflex P. 105

Certificate concerning the examination of traction sheave shaft calculation including shaft to collar connections

Lift machine, type: TW63
 Brake type: RSO 800 - 2200Nm according EC-Type Examination EU-BD 762/X
 Manufacturer: TK Aufzugswerke GmbH Bernhäuser Str.45, 73765 Neuhausen a.d.F.
 Object examined: Calculation of traction sheave shaft including shaft to collar connections
 Examination basis: DIN743, machine elements Niemann/Winter/Höhn (2005)



Design drawing: 6232 000 9237
 Material: 42CrMoS4+QT (1.7227) or 42CrMo4+QT (1.7225)
 Load data:

| Machine | Max. shaft load F_t | Nominal brake torque T_{Br} | Max. brake torque $1.6 \times T_{Br}$ | Distance traction sheave C | Bearing distance L_a |
|---------|-----------------------|-------------------------------|---------------------------------------|------------------------------|------------------------|
| | (kN) | (Nm) | (Nm) | (mm) | (mm) |
| TW63 | 42 | 2200 | 3520 | 75 | 260 |

Examination result:

For the examination calculations were carried out based on the examination basis. The result was that the traction sheave shaft and the shaft to collar connections were designed according the maximum load data. The remarks in the maintenance instructions are to be observed. The conditions mentioned in annex of the EC-Type-Examination Certificate EU-BD 762/X are herewith fulfilled

(Head of PDC Neuhausen, TKE IaO)

(Cluster Lead TM, TKE IaO)

Certificate concerning the examination of traction sheave shaft calculation including shaft to collar connections

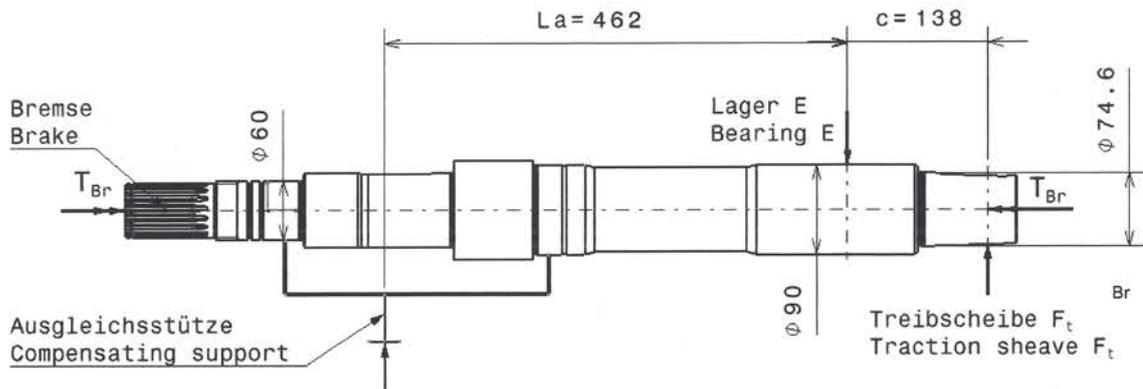
Lift machine, type: TW63 (special version SA9)

Brake type: RSO 800 - 2200Nm
according EC-Type Examination EU-BD 762/X

Manufacturer: TK Aufzugswerke GmbH
Bernhäuser Str.45, 73765 Neuhausen a.d.F.

Object examined: Calculation of traction sheave shaft including shaft to collar connections

Examination basis: DIN743, machine elements Niemann/Winter/Höhn (2005)



Design drawing: 6232 000 9322

Material: 42CrMoS4+QT (1.7227) or 42CrMo4+QT (1.7225)

Load data:

| Machine | Max. shaft load F_t | Nominal brake torque T_{Br} | Max. brake torque $1.6 \times T_{Br}$ | Distance traction sheave C | Bearing distance La |
|------------|--------------------------|----------------------------------|--|---------------------------------|--------------------------|
| | (kN) | (Nm) | (Nm) | (mm) | (mm) |
| TW63 (SA9) | 43 | 2200 | 3520 | 138 | 462 |

Examination result:

For the examination calculations were carried out based on the examination basis. The result was that the traction sheave shaft and the shaft to collar connections were designed according the maximum load data. The remarks in the maintenance instructions are to be observed.

The conditions mentioned in annex of the EC-Type-Examination Certificate EU-BD 762/X are herewith fulfilled


 (Head of PDC Neuhausen, TKE IaO)


 (Cluster Lead TM, TKE IaO)

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 Tel.0711/7838-1010
 Fax.0711/7838-2640
 Internet:www.lappkabel.de

GEBRAUCHSANWEISUNG INSTRUCTION SHEET

SKINTOP® MS-M, MSR-M, MS-M-XL, MSR-M-XL
 MS-SC-M, MS-SC-M-XL

| Bezeichnung Product | | Klemm- und Dichtbereich Clamping and Sealing range | | | | | Approbationen Approvals | |
|------------------------|---------------------|---|------------------------------|---------------------------|------------------|----------|----------------------------|--|
| | | EN 50262 | | UL 514 B | | | | |
| Größe/Size M | | Kat.der Zug- entlastung | Anzugsdreh- momente Nm | Klemm- bereich Ø mm | Diameter inch | Ø mm | | |
| 12x1,5 | MS-M, MS-M-XL | A | 8 | 3,5 - 7 | .12 - .27 | 3,5 - 7 | | |
| | MSR-M, MSR-M-XL | | | 3,5 - 5 | .04 - .20 | 1 - 5 | | |
| | MS-SC-M, MS-SC-M-XL | | | 3,5 - 7 | .12 - .27 | 3,5 - 7 | | |
| 16x1,5 | MS-M, MS-M-XL | A | 10 | 4,5 - 10 | .17 - .35 | 4,5 - 10 | | |
| | MSR-M, MSR-M-XL | | | 3,5 - 7 | .08 - .27 | 2 - 7 | | |
| | MS-SC-M, MS-SC-M-XL | | | 4,5 - 9 | .17 - .35 | 4,5 - 9 | | |
| 20x1,5 | MS-M, MS-M-XL | A | 12 | 7 - 13 | .27 - .51 | 7 - 13 | | |
| | MSR-M, MSR-M-XL | | | 5 - 10 | .20 - .04 | 5 - 10 | | |
| | MS-SC-M, MS-SC-M-XL | | | 7 - 12,5 | .27 - .49 | 7 - 12,5 | | |
| 25x1,5 | MS-M, MS-M-XL | A | 12 | 9 - 17 | .35 - .65 | 9 - 17 | | |
| | MSR-M, MSR-M-XL | | | 6 - 13 | .23 - .51 | 6 - 13 | | |
| | MS-SC-M, MS-SC-M-XL | | | 9 - 16,5 | .35 - .65 | 9 - 16,5 | | |
| 32x1,5 | MS-M, MS-M-XL | A | 18 | 11 - 21 | .43 - .83 | 11 - 21 | | |
| | MSR-M, MSR-M-XL | | | 7 - 15 | .27 - .59 | 7 - 15 | | |
| | MS-SC-M, MS-SC-M-XL | | | 11 - 21 | .43 - .83 | 11 - 21 | | |
| 40x1,5 | MS-M, MS-M-XL | A | 18 | 19 - 28 | .75 - 1.1 | 19 - 28 | | |
| | MSR-M, MSR-M-XL | | | 15 - 23 | .59 - .9 | 15 - 23 | | |
| | MS-SC-M, MS-SC-M-XL | | | 19 - 28 | .75 - 1.1 | 19 - 28 | | |
| 50x1,5 | MS-M, MS-M-XL | A | 20 | 27 - 35 | 1.06 - 1.38 | 27 - 35 | | |
| | MSR-M, MSR-M-XL | | | 22 - 29 | .87 - 1.14 | 22 - 29 | | |
| | MS-SC-M, MS-SC-M-XL | | | 27 - 35 | 1.06 - 1.38 | 27 - 35 | | |
| 63x1,5 | MS-M | A | 20 | 34 - 45 | 1.34 - 1.77 | 34 - 45 | | |
| | MSR-M | | | 28 - 39 | 1.1 - 1.53 | 28 - 39 | | |

Bemerkungen/ Remarks

- SKINTOP ins Gehäuse schrauben oder mit Gegenmutter festziehen
Screw SKINTOP into housing or tighten with locknut
- Leitung durchziehen
Put cable through
- Hutmutter mit empfohlenem Drehmoment festziehen
Tighten nut with recommended tightening torque

Schutzart:

IP 68; 5bar/30min.nach EN 60 529
 IP 69K nach DIN 40 050

Ohne Gegenmutter:
 NUR IN GEWINDEBOHRUNGEN
 VERWENDEN!

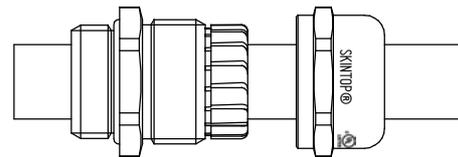
*Usage without Locknut:
 ONLY IN THREADED
 HUB!*

1 inch = 25,4mm
 Temperaturbereich: -25 bis +100°C
 Temperature range: -25 up to +100°C

UL File No. E 79903, Control Number 54 B 2

Hinweis / Note:

Sollte der Inhalt dieser Verpackung auf neue Verpackungen verteilt werden, so muss jeder neuen Verpackung eine Kopie dieser Betriebsanleitung beigelegt werden.
If the content of this bag will be split on two or more units, a copy of this instruction sheet must be placed in every packing units.



Art.Nr. 91100008

BS 04/2889-5

Druckfarbe: schwarz, Papierfarbe: hellgelb "CARNEVAL" 80g/qm (igepa Art.Nr.323-31)

Größe angepasst auf DIN A5, Falzung Kreuzbruch, Druck aussen

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| Toleranzen / tolerances: DIN | | Werkstoff / material: Papier | | Oberfläche / surface | | Gewicht / weight: | | Volumen / volume: | | Farbe / color: | |
| Bearb. edited | Datum / date 27.05.04 | Name / name M. Schmid | Geprüft checked | Datum / date 23.04.08 | Name / name D.Müller | Maßangaben in dimension units mm | | | | | |
| Projektion / projection: | | Maßstab / scale: 1:1 | | Benennung / name: SKINTOP MS-M Beipackzettel SKINTOP MS-M operating instuction | | | | | | | |
| 05 | 500000001032 | Mast1 | 26.03.2009 | U.I. Lapp GmbH | | Zeichnungs-Nr. / drawing no: BS04_2889 | | Blatt sheet: 1/1 | | Dok. Art doc. type LBZ | |
| Ind. vs | Änderungs-Nr. change number | Datum / date Bearb./edited | | Gepr./check. | | Ersatz für / substitute for: BS04_2889-3 | | DIN A 4 | | | |

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 xx = Ø 25, 25.4, 28, 30, 38, 40, 42, 45
 yyyy = PPR = 1024, 2048, 4096
 zzz = 130 = 13m, 200 = 20m, blank = 10m

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 Industriestraße 7 • D-65366 Geisenheim
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 Fax: +49(0)6722/99 65-70
 eMail: wdg@wachendorff.de
 www.wachendorff-automation.de

Montageanleitung Hohlwellengeber, D56

Assembly instructions hollowshaft encoder, Notice de montage codeur rotatif à arbre creux, Instrucciones de montaje encoder ad albero cavo, istruzioni di montaggio encoders de eje hueco

(-30 °C ... +80 °C
 -22 °F ... +176 °F)
 (-20 °C ... +70 °C
 -4 °F ... +158 °F)

Montage nur qualifiziertes Personal
 Assembly only qualified personnel
 Montage par qualifié personnel
 Montaje solamente personal calificado
 Montaggio solo personal qualificato

DIN EN 100015-1

| Kabel ø cable, Câble, Cable, cavo | R1 | R2 | Temperatur Temperature, Température, Temperatura, Temperatura |
|---|---------|----------|---|
| 6,3 mm | 31,5 mm | 94,5 mm | T > -20 °C (-4 °F) |
| 8,3 mm | 41,5 mm | 124,5 mm | T > -20 °C (-4 °F) |

| | Kabel, cable, Câble, Cable, cavo |
|----------|--|
| | SUBD9 9-pin |
| | K3 |
| Minus U- | 7 |
| Plus U+ | 9 |
| A | 2 |
| B | 3 |
| N | 5 |
| A inv. | 1 |
| B inv. | 4 |
| N inv. | 6 |
| n. c. | - |

Steckergehäuse/Schirm mit Gebergehäuse leitend verbunden
 Connector housing/shield electrically connected to encoder housing
 Bâtier de connexion/Ecran avec boîtier d'ementeur liés de manière conductrice
 Caja de conector/Pantalls conectada en conductancia con caja de transmisor
 scatola prese/Schemo con scatola trasmettitore collegata da condurre

WH: weiss, white, blanc, bianco
BN: braun, brown, brun, marrón, marrone
GN: grün, green, vert, verde, verde
YE: gelb, yellow, jaune, amarillo, giallo
GY: grau, grey, gris, gris, grigio
PK: rosa, pink, rose, rosa, rosa
RD: rot, red, rouge, rojo, rosso
BK: schwarz, black, noir, negro, nero
BL: blau, blue, bleu, azul, blu
VT: violett, violet, violet, violeta, violetto
Litze: Litze, Flex, Toron, Cordon, Cavetto

100H

| d/mm | WDG 100H |
|---------------------------|----------|
| 25,25.4,28,30,38,40,42,45 | |

$\frac{t_L}{T} = \frac{t_H}{T} = 50\% \pm 4,2\% *$
 $360^\circ \text{el} = \frac{360^\circ \text{mech}}{n \text{ Imp.}}$

alle % bezogen auf 360°el
 all % refer to 360°el
 tous les % se réfèrent à 360°el
 todos los % se refieren a 360°el
 tutta la % riferita a 360°el

| | Vcc | I _{supply} | Output TTL / RS422 | I _{OUT,max} |
|---|---------------|---------------------|--|---|
| G05, H05, I05, R05 | 4,75...5,5VDC | ≤70mA | V _H >2,5V _{DC} V _L <0,5V _{DC} | 40mA |
| Bemerkungen Remarks Notas Observaciones osservazioni | | * | Ohne Last Without load resistance Sans charge Sin carga senza carico | Pro Kanal Per channel Par canal Por canal Per canale |

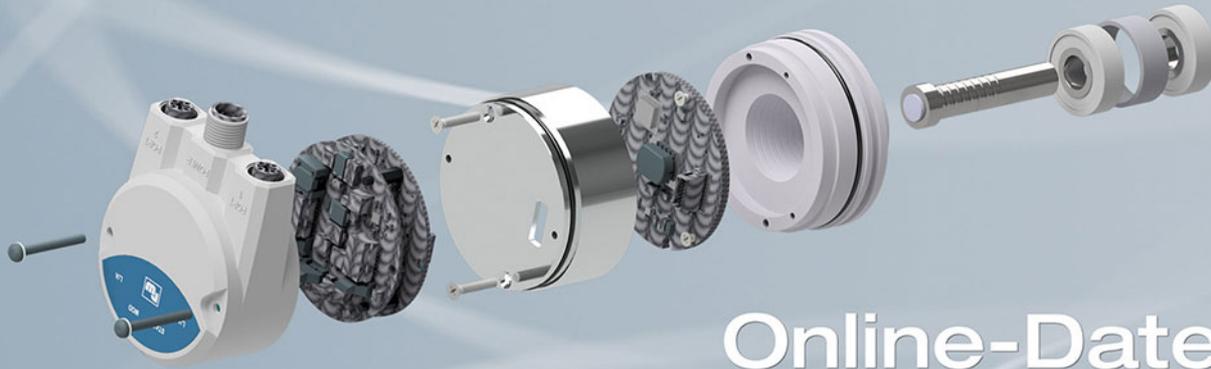
Abstand zu Störquellen!
 Distance to sources of interference!
 Distance aux source des parasites!
 Distancia a las fuentes de interferencias!
 Distanza dalle fonti di disturbo!

$L \leq L_{MAX}$

*Nur, only, seulement, solamente, soltanto G24, H24, I24, R24, 245: hat Verpolschutz, ist kurzschlussfest; Protection against polarity reversal, short circuit protection; Protezione contro l'inversione di polarità, Protection court-circuit; Protegido contra inversión de polaridad, protección contra cortocircuito; protezione contro inversione di polarità, protezione contro corto circuito

Technical Support
 Germany:
 Tel.: +49 (0) 67 22 / 99 65 131
 Fax: +49 (0) 67 22 / 99 65 70
 email: support-wdgi@wachendorff.de

Other countries, please contact your distributor.
 Autres pays, veuillez contacter votre distributeur.
 Otros países, rogamos contacten a su distribuidor.
 Per gli altri paesi si prega di contattare il vostro distributore.



Online-Datenblatt

Drehgeber WDG 100H

www.wachendorff-automation.de/wdg100h

Wachendorff Automation

... Systeme und Drehgeber

- Komplette Systeme
- Industrierobuste Drehgeber für Ihren Anwendungsfall
- Standardprogramm und Kundenversionen
- Höchste zulässige Lasten
- 48 Stunden Eilproduktion
- Fertigung in Deutschland
- Weltweites Distributoren-Netzwerk

Drehgeber WDG 100H



- Robuster und extrem flacher Hohlwellengeber für den Anbau an Leistungsmotoren
- Durchgehende Hohlwelle mit max. 45 mm Bohrung
- Voller Anschlussschutz bei 10 VDC bis 30 VDC
- Einfache Montage
- Hohe Schutzart IP54
- Bis zu 20.480 I/U
- Optional: -40 °C bis +80 °C, Schutzart IP55 rundum

www.wachendorff-automation.de/wdg100h

| Auflösung | |
|-----------------------------|--|
| Max. Impulszahl | bis 20480 I/U |
| Mechanische Daten | |
| Gehäuse | |
| Flanschtyp | Hohlwelle (durchgehend) |
| Flanschmaterial | Aluminium |
| Flanschmaterial Rückseite | Aluminium, beschichtet |
| Drehmomentstütze | inkl. 1 Drehmomentstütze WDGDS10001 |
| - 1. Federblechausgleich | axial: ±0,8 mm, radial: ±0,2 mm |
| Gehäusedurchmesser | Ø 100 mm |
| Welle(n) | |
| Wellenmaterial | Edelstahl |
| Anlaufdrehmoment | ca. 1,5 Ncm bei Raumtemperatur |
| Befestigung | 2 x M4, DIN 913; Anzugsdrehmoment: 2,5 Nm |
| Wellendurchmesser | Ø 25 mm |
| Wellenlänge | L: 42 mm |
| Max. Wellenbelastung radial | 200 N |
| Max. Wellenbelastung axial | 100 N |
| Wellendurchmesser | Ø 25,4 mm |
| Wellenlänge | L: 42 mm |
| Max. Wellenbelastung radial | 200 N |
| Max. Wellenbelastung axial | 100 N |
| Wellendurchmesser | Ø 28 mm |
| Wellenlänge | L: 42 mm |
| Max. Wellenbelastung radial | 200 N |
| Max. Wellenbelastung axial | 100 N |
| Wellendurchmesser | Ø 30 mm |
| Wellenlänge | L: 42 mm |
| Max. Wellenbelastung radial | 200 N |
| Max. Wellenbelastung axial | 100 N |
| Wellendurchmesser | Ø 32 mm |
| Wellenlänge | L: 42 mm |
| Max. Wellenbelastung radial | 200 N |
| Max. Wellenbelastung axial | 100 N |

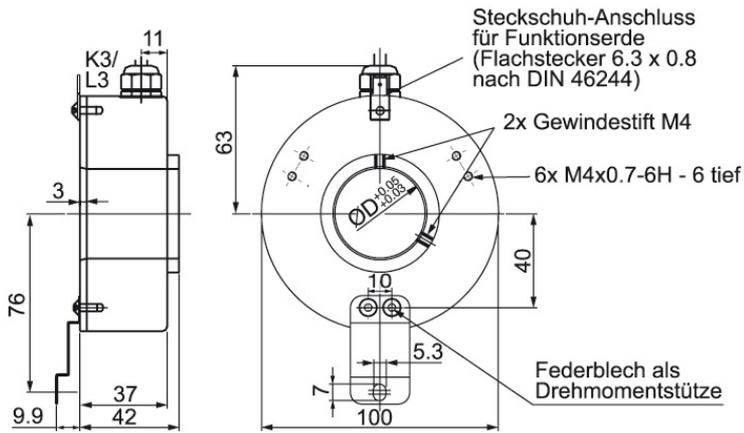
| Wellendurchmesser | Ø 35 mm |
|--------------------------------------|--|
| Wellenlänge | L: 42 mm |
| Max. Wellenbelastung radial | 200 N |
| Max. Wellenbelastung axial | 100 N |
| Wellendurchmesser | Ø 36 mm |
| Wellenlänge | L: 42 mm |
| Max. Wellenbelastung radial | 200 N |
| Max. Wellenbelastung axial | 100 N |
| Wellendurchmesser | Ø 38 mm |
| Wellenlänge | L: 42 mm |
| Max. Wellenbelastung radial | 200 N |
| Max. Wellenbelastung axial | 100 N |
| Wellendurchmesser | Ø 40 mm |
| Wellenlänge | L: 42 mm |
| Max. Wellenbelastung radial | 200 N |
| Max. Wellenbelastung axial | 100 N |
| Wellendurchmesser | Ø 42 mm |
| Wellenlänge | L: 42 mm |
| Max. Wellenbelastung radial | 200 N |
| Max. Wellenbelastung axial | 100 N |
| Wellendurchmesser | Ø 45 mm |
| Wellenlänge | L: 42 mm |
| Max. Wellenbelastung radial | 200 N |
| Max. Wellenbelastung axial | 100 N |
| Lager | |
| Lagertyp | 2 Präzisionskugellager |
| Lebensdauer | 3 x 10 ¹⁰ U bei 100 % Lagerlast 1 x 10 ¹¹ U bei 40 % Lagerlast 1 x 10 ¹² U bei 20 % Lagerlast |
| Max. Betriebsdrehzahl | 3500 min ⁻¹ |
| Kenndaten für funktionale Sicherheit | |
| MTTF _d | 200 a |
| Gebrauchsdauer (TM) | 25 a |
| Lebensdauer Lager (L10h) | 1 x 10 ¹² U bei 20 % Lagerlast und 3500 min ⁻¹ |
| Diagnosedeckungsgrad (DC) | 0 % |

| Elektrische Daten | |
|---|---|
| Betriebsspannung/ Eigenstromaufnahme | 4,75 VDC bis 5,5 VDC: typ. 100 mA |
| Betriebsspannung/ Eigenstromaufnahme | 5 VDC bis 30 VDC: typ. 70 mA |
| Betriebsspannung/ Eigenstromaufnahme | 10 VDC bis 30 VDC: typ. 100 mA |
| Ausgangsschaltung | TTL TTL, RS422 kompatibel, inv. HTL HTL, inv. 1 Vss Sin/Cos |
| Impulsfrequenz | TTL bis 5000 I/U: max. 200 kHz HTL bis 5000 I/U: max. 200 kHz TTL über 1200 I/U: max. 2 MHz HTL über 1200 I/U: max. 600 kHz 1 Vss Sin/Cos: max. 100 kHz |
| Kanäle | AB ABN und invertierte Signale |
| Belastung | max. 40 mA / Kanal bei 1 Vss Sin/Cos: min. 120 Ohm |
| Anschlussschutz | nur bei H24 und R24 |

| Genauigkeit | |
|--------------------------|--|
| Phasenversatz | 90° ± max. 7,5 % einer Teilungslänge |
| Impuls-/Pausenverhältnis | 5000 I/U: 50 % ± max. 7 % Ausgangsschaltungen F24, P24, F05, P05, 645: 50 % max. ±10 % |

| Allgemeine Daten | |
|-------------------------|---|
| Gewicht | ca. 720 g |
| Anschluss | radialer Kabel- oder Steckerabgang |
| Schutzart (EN 60529) | IP54 |
| Arbeitstemperatur | -20 °C bis +80 °C 1 Vss: -10 °C bis +70 °C |
| Lagerungstemperatur | -30 °C bis +80 °C |

| Weitere Informationen | |
|---|--|
| Allgemein technische Daten und Sicherheitshinweise http://www.wachendorff-automation.de/atd | |
| Passendes Zubehör http://www.wachendorff-automation.de/zub | |

Kabelanschluss K3, L3 mit 2 m Kabel

Beschreibung
ABN inv. möglich
K3 radial, Schirm offen

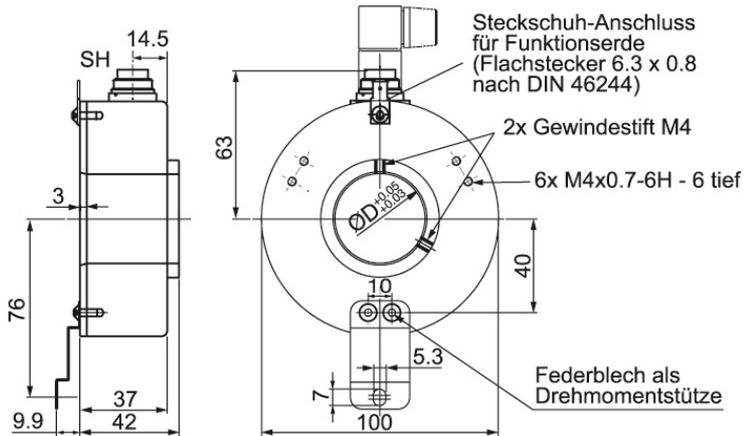
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L3 radial, Schirm mit Gebergehäuse leitend verbunden

•

Anschlussbelegungen

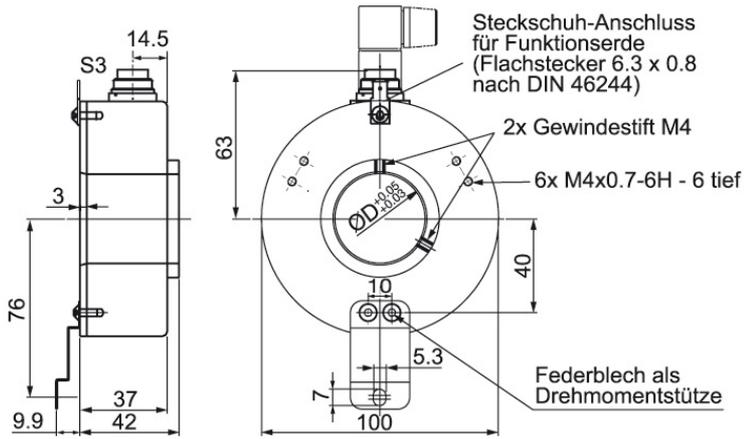
| | K3, L3 | K3, L3 | L3 | L3 |
|------------------------|-------------------------|-----------------------------------|-------|-------|
| Schaltung | F05, H05, F24, H24, H30 | P05, R05, P24, R24, 245, 645, R30 | SIN | SIF |
| GND | WH | WH | WH | WH |
| +UB | BN | BN | BN | BN |
| A | GN | GN | GN | GN |
| B | YE | YE | GY | GY |
| N | GY | GY | BK | BK |
| Frühwarnausgang | - | - | - | RD |
| A inv. | - | RD | YE | YE |
| B inv. | - | BK, (BU bei ACA) | PK | PK |
| N inv. | - | VT | VT | VT |
| Schirm | Litze | Litze | Litze | Litze |

Stecker (M16x0,75) SH, 5-, 6-, 8-, 12-polig

Beschreibung
ABN inv. möglich

| | | |
|-------------|--|---|
| SH5 | radial, 5-polig, Stecker mit Gebergehäuse leitend verbunden | - |
| SH6 | radial, 6-polig, Stecker mit Gebergehäuse leitend verbunden | - |
| SH8 | radial, 8-polig, Stecker mit Gebergehäuse leitend verbunden | • |
| SH12 | radial, 12-polig, Stecker mit Gebergehäuse leitend verbunden | • |

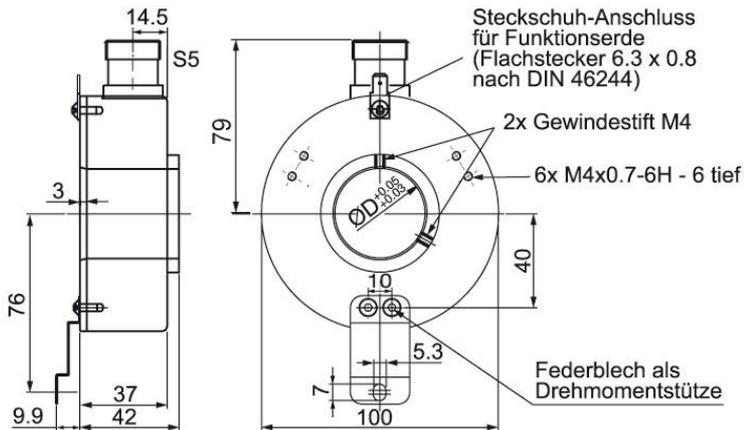
Anschlussbelegungen

| | SH5 | SH6 | SH8 | SH8 | SH8 | SH12 | SH12 | SH12 |
|------------------------|-------------------------|-------------------------|-------------------------|-----------------------------------|---------|-----------------------------------|-------------------------|----------|
| | 5-polig | 6-polig | 8-polig | 8-polig | 8-polig | 12-polig | 12-polig | 12-polig |
| Schaltung | F05, H05, F24, H24, H30 | F05, H05, F24, H24, H30 | F05, H05, F24, H24, H30 | P05, R05, P24, R24, R30, 245, 645 | SIN | P05, R05, P24, R24, 245, 645, R30 | F05, H05, F24, H24, H30 | SIN |
| GND | 1 | 6 | 1 | 1 | 1 | K, L | K, L | K, L |
| +UB | 2 | 1 | 2 | 2 | 2 | M, B | M, B | M, B |
| A | 3 | 2 | 3 | 3 | 3 | E | E | E |
| B | 4 | 4 | 4 | 4 | 4 | H | H | H |
| N | 5 | 3 | 5 | 5 | 5 | C | C | C |
| Frühwarnausgang | - | - | - | - | - | - | - | - |
| A inv. | - | - | - | 6 | 6 | F | - | F |
| B inv. | - | - | - | 7 | 7 | A | - | A |
| N inv. | - | - | - | 8 | 8 | D | - | D |
| n. c. | - | 5 | 6, 7, 8 | - | - | G, J | A, D, F, G, J | G, J |
| Schirm | - | - | - | - | - | - | - | - |

Stecker (M16x0,75) S3, 7-polig

Beschreibung
ABN inv. möglich
S3 radial, 7-polig, Stecker mit Gebergehäuse leitend verbunden

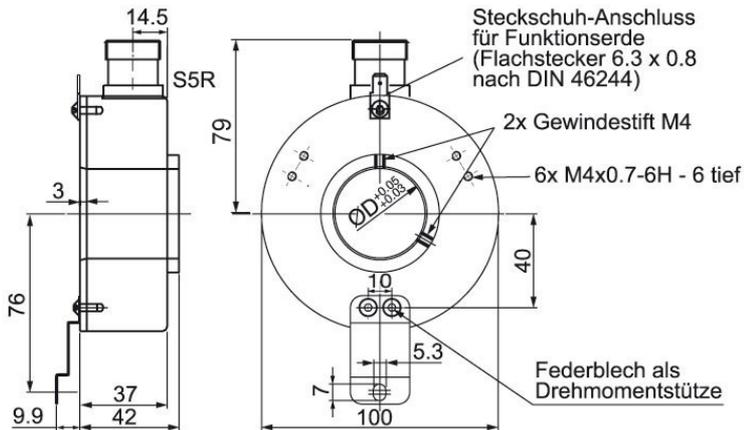
-

| Anschlussbelegungen | |
|------------------------|---|
| | S3 |
| | 7-polig |
| |  |
| Schaltung | F05, H05, F24, H24, H30 |
| GND | 1 |
| +UB | 2 |
| A | 3 |
| B | 4 |
| N | 5 |
| Frühwarnausgang | - |
| A inv. | - |
| B inv. | - |
| N inv. | - |
| n. c. | 6, 7 |
| Schirm | - |

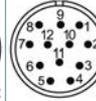
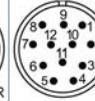
Stecker (M23) S5, 12-polig

Beschreibung
ABN inv. möglich
S5 radial, 12-polig, Stecker mit Gebergehäuse leitend verbunden

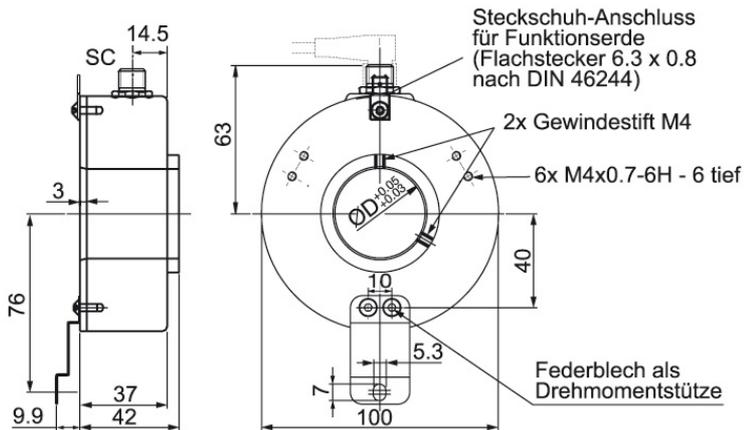
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| Anschlussbelegungen | | | | |
|------------------------|---|---|---|---|
| | S5 | S5 | S5 | S5 |
| | 12-polig | 12-polig | 12-polig | 12-polig |
| |  |  |  |  |
| Schaltung | F05, H05, F24, H24, H30 | P05, R05, P24, R24, 245, 645, R30 | SIN | SIF |
| GND | 10 | 10 | 10 | 10 |
| +UB | 12 | 12 | 12 | 12 |
| A | 5 | 5 | 5 | 5 |
| B | 8 | 8 | 8 | 8 |
| N | 3 | 3 | 3 | 3 |
| Frühwarnausgang | - | - | - | 7 |
| A inv. | - | 6 | 6 | 6 |
| B inv. | - | 1 | 1 | 1 |
| N inv. | - | 4 | 4 | 4 |
| n. c. | 1, 2, 4, 6, 7, 9, 11 | 2, 7, 9, 11 | 2, 7, 9, 11 | 2, 9, 11 |
| Schirm | - | - | - | - |

Stecker (M23) S5R, 12-polig (rechtsdrehend)

Beschreibung
ABN inv. möglich
S5R radial, 12-polig, Stecker mit Gebergehäuse leitend verbunden

•

| Anschlussbelegungen | | | | |
|------------------------|---|---|---|---|
| | S5R | S5R | S5R | S5R |
| | 12-polig | 12-polig | 12-polig | 12-polig |
| |  |  |  |  |
| Schaltung | F05, H05, F24, H24, H30 | P05, R05, P24, R24, 245, 645, R30 | SIN | SIF |
| GND | 10 | 10 | 10 | 10 |
| +UB | 12 | 12 | 12 | 12 |
| A | 5 | 5 | 5 | 5 |
| B | 8 | 8 | 8 | 8 |
| N | 3 | 3 | 3 | 3 |
| Frühwarnausgang | - | - | - | 7 |
| A inv. | - | 6 | 6 | 6 |
| B inv. | - | 1 | 1 | 1 |
| N inv. | - | 4 | 4 | 4 |
| n. c. | 1, 2, 4, 6, 7, 9, 11 | 2, 7, 9, 11 | 2, 7, 9, 11 | 2, 9, 11 |
| Schirm | - | - | - | - |

Sensor-Stecker (M12x1) SC, 4-, 5-, 8-polig

Beschreibung
ABN inv. möglich

| | | |
|------------|---|---|
| SC4 | radial, 4-polig, Stecker mit Gebergehäuse leitend verbunden | - |
| SC5 | radial, 5-polig, Stecker mit Gebergehäuse leitend verbunden | - |
| SC8 | radial, 8-polig, Stecker mit Gebergehäuse leitend verbunden | • |

Anschlussbelegungen

| | SC4 4-polig | SC5 5-polig | SC8 8-polig | SC8 8-polig | SC8 8-polig |
|------------------------|---|---|---|---|---|
| |  |  |  |  |  |
| Schaltung | F05, H05, F24, H24, H30 | F05, H05, F24, H24, H30 | F05, H05, F24, H24, H30 | P05, R05, P24, R24, R30, 245, 645 | SIN |
| GND | 3 | 3 | 1 | 1 | 1 |
| +UB | 1 | 1 | 2 | 2 | 2 |
| A | 2 | 4 | 3 | 3 | 3 |
| B | 4 | 2 | 4 | 4 | 5 |
| N | - | 5 | 5 | 5 | 7 |
| Frühwarnausgang | - | - | - | - | - |
| A inv. | - | - | - | 6 | 4 |
| B inv. | - | - | - | 7 | 6 |
| N inv. | - | - | - | 8 | 8 |
| n. c. | - | - | 6, 7, 8 | - | - |
| Schirm | - | - | - | - | - |

Optionen

Niedrig Temperatur

Bestell-Code

Der Drehgeber WDG 100H mit den Ausgangsschaltungen F24, H24, P24, R24, F05, H05, P05, R05, 245, 645 ist auch mit dem erweiterten Temperaturbereich -40 °C bis +80 °C (gemessen am Flansch) lieferbar.

ACA

IP55 rundum (nicht bei 1 Vss Sin/Cos)

Bestell-Code

Der Drehgeber WDG 100H ist auch mit der hohen Schutzart IP55 rundum lieferbar.

ACP

Max. Betriebsdrehzahl: 1500 min⁻¹

Zulässige Wellenbelastung, axial: 100 N

Zulässige Wellenbelastung, radial: 120 N

Max. Impulszahl: 5000 I/U

Anlaufdrehmoment: ca. 5 Ncm bei Raumtemperatur

Kabellänge

Bestell-Code

Der Drehgeber WDG 100H ist auch mit mehr als 2 m Kabel erhältlich. Die max. Kabellänge ist abhängig von der Betriebsspannung und der Frequenz; siehe www.wachendorff-automation.de/atd

XXX = Dezimeter

Bei der Bestellung ergänzen Sie bitte die Bestellnummer mit einer 3-stelligen Ziffer welche die Länge in Dezimeter angibt.

Beispiel: 5 m Kabellänge = 050

| Beispl. Bestell-Nr. | Typ | | Ihr Drehgeber | | |
|---------------------------------------|---|-------------------------------|------------------------------|-------------------------|-------------------------|
| WDG 100H | WDG 100H | | WDG 100H | | |
| | Hohlwellendurchmesser | | | | |
| 25 | 25; 1Z=Ø 25,4 mm, Ø 1"; 28; 30; 32; 35; 36; 38; 40; 42; 45 | | | | |
| | Impulszahlen: | | | | |
| 1024 | 512, 1024, 2048, 2500, 3600, 4096, 4500, 5000, 8192, 10240, 16384, 20480 1 Vss Sin/Cos nur bei 1024, 2048 Andere Impulszahlen auf Anfrage | | | | |
| | Impulsfolge: | | | | |
| ABN | AB, ABN | | | | |
| | Ausgangsschaltung | | | | |
| H24 | Auflösung I/U | Betriebsspannung VDC | Ausgangsschaltung | Frühwarnausgang | Bestellschlüssel |
| | bis 2500 | 5 - 30 | HTL | - | H30 |
| | | 5 - 30 | HTL invertiert | - | R30 |
| | bis 5000 | 4,75 - 5,5 | TTL | - | H05 |
| | | 4,75 - 5,5 | TTL, RS422 komp., invertiert | - | R05 |
| | | 10 - 30 | HTL | - | H24 |
| | | 10 - 30 | HTL invertiert | - | R24 |
| | 8192 bis 20480 | 10 - 30 | TTL, RS422 komp., invertiert | - | 245 |
| | | 4,75 - 5,5 | TTL | - | F05 |
| | | 4,75 - 5,5 | TTL, RS422 komp., invertiert | - | P05 |
| | | 10 - 30 | HTL | - | F24 |
| | 1024, 2048 | 10 - 30 | HTL invertiert | - | P24 |
| | | 10 - 30 | TTL, RS422 komp., invertiert | - | 645 |
| | | 4,75 - 5,5 | 1 Vss Sin/Cos | • | SIF |
| | | 4,75 - 5,5 | 1 Vss Sin/Cos | - | SIN |
| | | Elektrischer Anschluss | | | |
| K3 | Beschreibung | | | ABN inv. mögl. | Bestellschlüssel |
| | Kabel: Länge (2 m Standard, WDG 58T: 1 m) | | | | |
| | radial, Schirm offen | | | • | K3 |
| | radial, Schirm mit Gebergehäuse leitend verbunden | | | • | L3 |
| | Stecker: (Stecker mit Gebergehäuse leitend verbunden) | | | | |
| | Stecker, M16x0,75, 5-polig, radial | | | - | SH5 |
| | Stecker, M16x0,75, 6-polig, radial | | | - | SH6 |
| | Stecker, M16x0,75, 8-polig, radial | | | • | SH8 |
| | Stecker, M16x0,75, 12-polig, radial | | | • | SH12 |
| | Stecker, M16x0,75, 7-polig, radial | | | - | S3 |
| | Stecker, M23, 12-polig, radial | | | • | S5 |
| | Stecker, rechtsdrehend, M23, 12-polig, radial | | | • | S5R |
| | Sensorstecker, M12x1, 4-polig, radial | | | - | SC4 |
| | Sensorstecker, M12x1, 5-polig, radial | | | - | SC5 |
| Sensorstecker, M12x1, 8-polig, radial | | | • | SC8 | |
| | Optionen | | | | |
| | Beschreibung | | | Bestellschlüssel | |
| | Keine Option gewählt | | | Leer | |
| | Niedrig Temperatur | | | ACA | |
| | IP55 | | | ACP | |
| Kabellänge | | | XXX = Dezimeter | | |

| | | | | | | | | | | | | | | |
|--------------------------|----------|----|------|-----|-----|----|--|----------|--|--|--|--|--|----------------------|
| Bsp-Bestell-Nr. = | WDG 100H | 25 | 1024 | ABN | H24 | K3 | | WDG 100H | | | | | | Ihr Drehgeber |
|--------------------------|----------|----|------|-----|-----|----|--|----------|--|--|--|--|--|----------------------|

Ansprechpartner



Für technische Fragen
(Anwendungsberatung, Anpassungsentwicklung, inkrementale Drehgeberauswahl)
wenden Sie sich bitte an:

Technische Anwendungsberatung inkrementale Drehgeber

Thomas Post

Tel: +49 6722 9965131

Fax: +49 6722 996570

E-Mail: support-wdgi@wachendorff.de



Für kaufmännische Fragen und Angebote
wenden Sie sich bitte an:

Vertriebsinnendienst

Tatjana Weigelt

Tel: +49 6722 9965242

Fax: +49 6722 996570

E-Mail: sales-wa@wachendorff.de



Im deutschsprachigen Ausland
wenden Sie sich bitte an:

Ihren Distributor

<https://www.wachendorff-automation.de/distributoren.html>



Wachendorff Automation GmbH & Co. KG
Industriestrasse 7 • D-65366 Geisenheim

Tel: +49 67 22 / 99 65 25

Fax: +49 67 22 / 99 65 70

E-Mail: wdg@wachendorff.de

www.wachendorff-automation.de

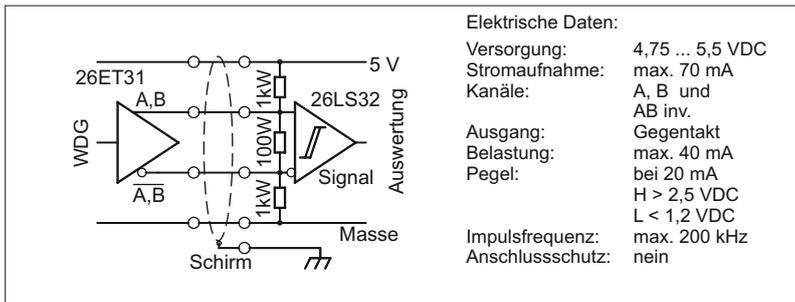


Hohlwellen - Drehgeber WDG 100H

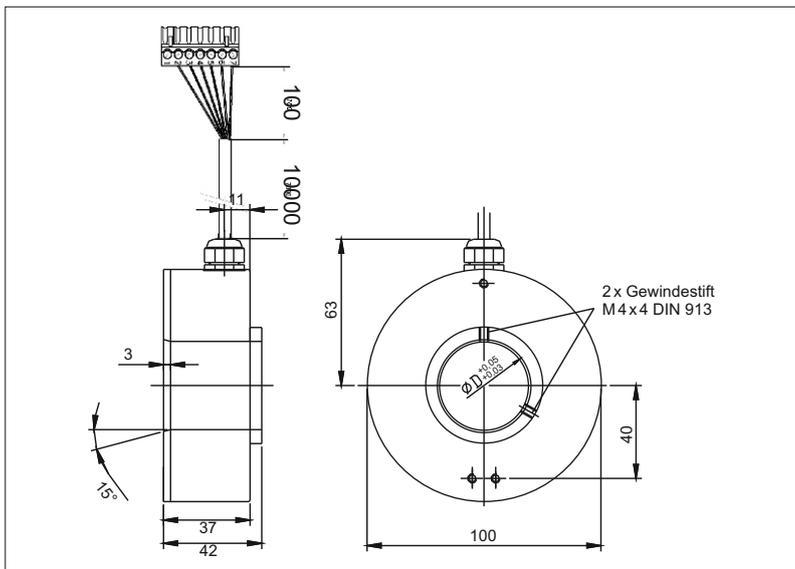
Bestell-Nr.: WDG 100H-38-1024-AB-R05-K3-J66-100

 Empfohlene Wellenanpassung:
 für Hohlwellendurchmesser 38mm: 38m6 (k6, j6)
 Max. Rundlaufabweichung der Antriebswelle: 0,05 mm

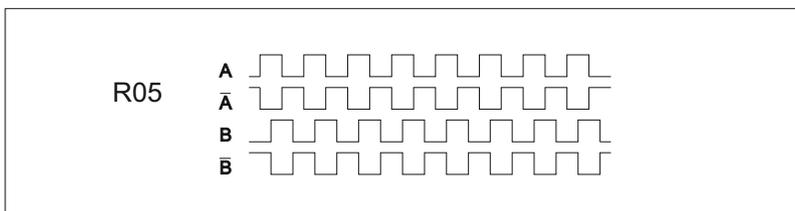
Thyssen-Sachnummer: 9950 001 1304



Ausgangsschaltung 5 VDC: R05



Maßzeichnung WDG 100 H, Angaben in mm



Impulsfolge bei Blick auf Nabe, Drehung im Uhrzeigersinn.

Spezifikationen
Mechanische Daten
Gehäuse

- Flansch: Aluminium
- Rückseite: Aluminium
- Durchmesser: 100 mm
- Tiefe: 42 mm
- Befestigung: über Hohlwelle mit 2 Gewindestiften M4

Hohlwelle

- Material: Edelstahl
- Durchmesser: 38 mm
- Belastung am Wellenende: max. 200 N radial
max. 100 N axial
- Anlaufmoment: 1,5 Ncm
- Befestigung: 2 x M4, DIN 913

Lager

- Typ: 2 Präzisionskugellager
- Lebensdauer: 3 x 10¹⁰ U bei 100% Lagerlast

- 4 x 10¹¹ U bei 40%
- 3 x 10¹² U bei 20%

max. 3.500 U/min

ca. 720 g

Anschluss: radialer Kabelabgang mit 10m Kabel und konfektionierter, 7-pol. Phönixklemme

Elektrische Daten

 Allgemeine Auslegung: gem. DIN VDE 0160
 Versorgung/Ausgänge: ® Ausgangsschaltung
 Kabellänge: max. 100 m

Optik

 Lichtquelle: IR - LED
 Lebensdauer: typ. 100.000 Std.
 Abtastung: differentiell

Genauigkeit

in % einer Periodendauer des Signals A

Phasenversatz: 90° ± 7,5%

Impuls-/Pausen - verhältnis: 50% ± 7%

Umwelt - Daten

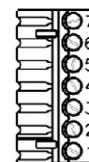
bei geerdetem Gehäuse und gegen im Eingebauten Zustand berührbare Teile.

- ESD (EN 61000-4-2): 8 kV
- Burst (EN 61000-4-4): 2 kV
- Schutzart (EN 60529): IP 54
- Vibration (IEC 68-2-6): 50m/s² (10-2000 Hz)
- Stoß (IEC 60068-2-27): 1000m/s² (6 ms)
- Arbeitstemperatur: -20 - +80°C
- Lagertemperatur: -30 - +80°C

Steckerbelegung

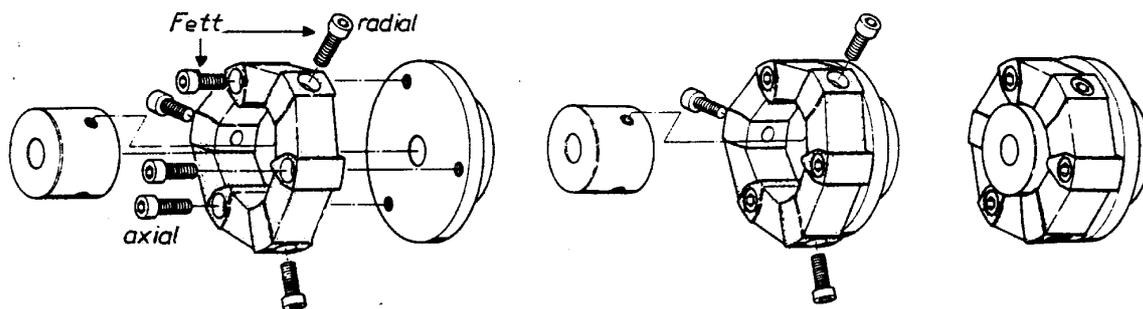
Funktion Pin Farbe

- Minus 6 weiß
- Plus 7 braun
- A 5 grün
- A inv. 4 grau
- B 3 gelb
- B inv. 2 rosa
- Schirm 6 Litze



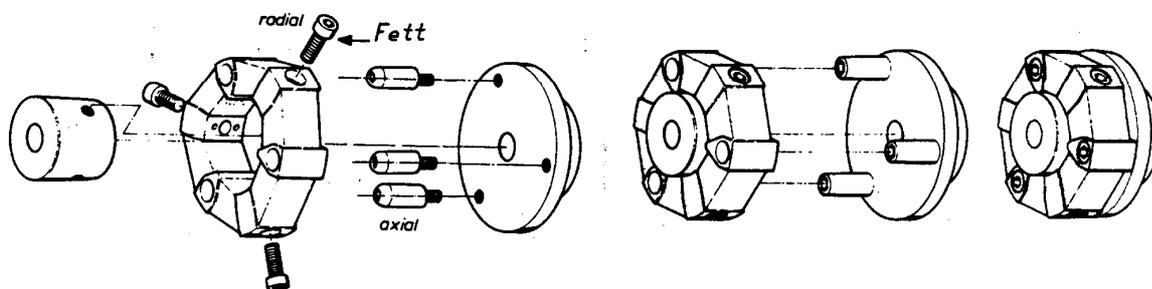
Montageanleitung für Centaflex-Kupplungen Type A

a) Normalbauform



- 1.) Naben auf Wellen bzw. Anschlußflansche an Schwungräder montieren
- 2.) Gummiteil zuerst mit Achsialschrauben an Flanschnabe, bzw. Flanschplatte, bzw. Schwungrad montieren
- 3.) Auf Welle montierte zylindrische Nabe heranschieben und dann das Gummielment mit radialen Schrauben darauf befestigen. Dabei wird das Gummielment radial zusammengezogen und erhält eine Druckvorspannung zur Erhöhung der Leistung.

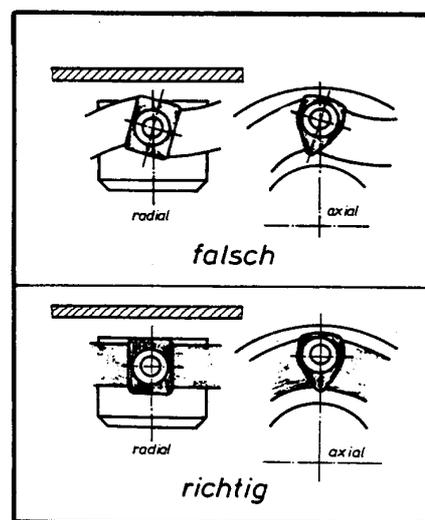
b) Bauform "S" (steckbar)



- 1.) Naben auf Wellen bzw. Anschlußflansche an Schwungräder montieren
- 2.) Achsiale Steckbolzen an Flanschnabe bzw. Flanschplatte bzw. Schwungrad montieren
- 3.) Gummiteil mit radialen Schrauben auf zylindrische Nabe montieren. Dabei wird das Gummielment radial zusammengezogen und erhält eine Druckvorspannung. Danach die gekuppelten Aggregate zusammenschieben und dabei die Kupplung auf die Steckbolzen mit leichtem axialem Druck vorsichtig aufschieben. Dabei wird das Gummielment durch die Steckbolzen noch etwas mehr radial zusammengedrückt und die Druckvorspannung wird erhöht. Zuvor die axialen Bohrungen im Gummielment gut einfetten, damit die Steckbolzen besser gleiten.

Wichtige Hinweise, unbedingt beachten!

- a) Schraubenlänge! Bei Bauform "S" und Gelenkwelle Bauform "GZ" sind die axialen Schrauben länger als die radialen Schrauben. Die kürzeren Schrauben also immer nur für die radiale Verschraubung mit zylindrischer Nabe bzw. Rohr (bei GZ) benutzen.
- b) Darauf achten, daß beim Anziehen der Schrauben die Alubuchsen im Gummiteil nicht mit verdreht werden, sondern gerade sitzen. Daher zur Verringerung der Reibung zwischen Schraubenkopf und Aluteil unbedingt eine kleine Menge Fett vor der Montage unter den Kopf der Schraube geben. Nötigenfalls durch Gegen-druck mit geeignetem Werkzeug ein Verdrehen (Schiefstellen) des Gummiteils beim Anziehen der Schrauben verhindern. Dieser Punkt ist besonders wichtig bei den radialen Schrauben, sonst tragen die zylindrischen Flächen zwischen Aluteil und Nabe nicht richtig vollflächig, sondern nur auf 2 Ecken. In diesem Falle erfolgt unweigerlich ein Lockern der Schrauben und nachfolgend die Zerstörung der Kupplung. Bei den Kupplungstypen, die in der zylindrischen Nabe Stifte aufweisen ergibt sich die richtige Position der radialen Aluteile automatisch. Falls die Kupplung bei Lieferung schon vormontiert ist, sollte sie keinesfalls mehr demontiert werden, sondern in diesem Zustand eingebaut werden.
- c) Die Schrauben, die das Gummielment mit der Nabe verbinden, müssen unbedingt alle (axial und radial) mit dem Drehmomentschlüssel auf das in der folgenden Tabelle angegebene Drehmoment angezogen werden. Das Anziehen mit Drehmomentschlüssel ist besonders wichtig bei den größeren Typen. Anziehen "nach Gefühl" genügt keinesfalls, da in diesem Falle erfahrungsgemäß die Anziehdrehmomente viel zu niedrig sind. Zu geringe Anziehdrehmomente führen unweigerlich zum Lösen der Schrauben und damit zur Zerstörung der Kupplung.



| Centaflex Größe | 1 | 2 | 4 | 8 / 12 | 16 / 22 | 25 / 28 | 30 | 50 / 80 | 90 | 140 | 200 | 250 |
|------------------|-----|-----|-----|--------|---------|---------|------|---------|------|------|------|------|
| Schraube DIN 912 | M 6 | M 8 | M 8 | M 10 | M 12 | M 14 | M 16 | M 16 | M 20 | M 20 | M 20 | M 20 |
| Anzugsmoment Nm | 10 | 25 | 25 | 50 | 85 | 140 | 220 | 220 | 500 | 500 | 500 | 500 |
| mKp | 1,0 | 2,5 | 2,5 | 5 | 8,5 | 14 | 22 | 22 | 50 | 50 | 50 | 50 |

d) Nur die mitgelieferten Schrauben der Qualität " Inbus Plus " verwenden, die durch eine farbige Masse (z.B. blau) auf dem Gewinde gekennzeichnet sind. Diese Masse enthält mikroverkapselten Klebstoff, der die Schrauben im Gewinde verklebt und damit zuverlässig gegen das Lösen sichert. Die Aushärtezeit dieses Klebstoffes nach dem Einschrauben beträgt bei Raumtemperatur (20°C) ca. 4-5 Stunden für eine ausreichende Wirkung. Vorher sollte die Kupplung nicht in Betrieb genommen werden. Vollaushärtung ist nach 24 Stunden gegeben. Höhere Temperaturen beschleunigen die Härtung, z.B. beträgt die Härtezeit nur noch 15 Minuten bei 70°C (Erwärmung durch Warmluftgebläse). Inbus Plus ist temperaturbeständig von -80 bis + 90°C, und die Schrauben können max. 3mal wieder benutzt werden. Eventuell beim Einschrauben vom Gewinde abgestreifter Klebstoff setzt sich zwischen Nabe und Aluteil. Das ist nicht nachteilig, sondern sogar vorteilhaft, weil dadurch der Reibschluß zwischen diesen Teilen erhöht wird.

Achtung: Anaerobe Klebstoffe (wie Loctite, Omnifit usw.) lösen die Haftung des Gummis am Metall und zerstören somit die Kupplung. Daher sollten diese Klebstoffe nach Möglichkeit nicht benutzt werden. Wenn die Verwendung des Klebstoffes unumgänglich ist (z. B. zur Sicherung von Schrauben), dann sehr sparsam auftragen, damit kein überschüssiger Klebstoff das Gummi benetzt. Durch Klebstoffe defekt gewordene Gummiteile können wir nicht als Reklamation anerkennen.

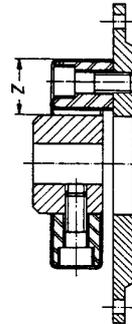
Centaloc Klemmnabe

Falls die Naben mit Centaloc Klemmung ausgerüstet sind, müssen diese Klemmschrauben mindestens mit nachstehenden Drehmomenten angezogen werden:

| Klemmschrauben | Anziehdrehmoment (Nm) |
|----------------|-----------------------|
| M 10 | 30 |
| M 12 | 50 |
| M 14 | 70 |
| M 16 | 120 |
| M 20 | 200 |

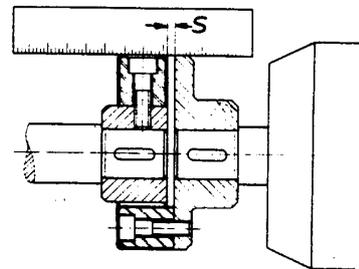
Position der zyl. Naben:

Das längere Ende der zyl. Nabe, meistens durch eine starke Schräge gekennzeichnet, ist normalerweise gemäß den untenstehenden Zeichnungen angeordnet. Bei manchen Sonderausführungen muß die Nabe jedoch umgekehrt eingebaut werden. Daher muß sie im Zweifelsfall gemäß der speziellen Einbauzeichnung montiert werden.



e) Nach der Montage der Kupplung ist diese sorgfältig auszurichten, falls die gekuppelten Aggregate nicht bereits durch Zusammenflanschen gut fluchten. Je höher die Drehzahl der Kupplung, desto sorgfältiger sollte die Ausrichtung erfolgen im Interesse einer langen Lebensdauer der Kupplung. Bei der Bauform 2 kann die Fluchtung sehr leicht durch ein Lineal kontrolliert werden. Dabei muß der Außendurchmesser der Flanschnabe und der Außendurchmesser des Gummielementes an den Stellen, wo die Radialschrauben sitzen, miteinander fluchten; und zwar in verschiedenen Ebenen

f) Die Kupplung ist vollkommen wartungsfrei und erfordert keinerlei Schmierung. Die Benetzung mit Öl und ähnlichen Stoffen sollte vermieden werden, da Naturgummi nicht ölbeständig ist. Gelegentliche geringe Kontakte mit Öl oder Fett sind nicht schädlich, da dieses Öl beim Drehen der Kupplung wieder abgeschleudert wird.



g) Übersichtstabelle : Schraubenlängen und Maß " S " zwischen den Naben.

| CF Größe | 1 | 2 | 4 | 8/12 | 16/22 | 25/28 | 30 | 50/80 | 90 | 140 | 200 | 250 |
|---|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|---------------|---------------|---------------|------------------|
| Normal-Bauf. | M6x10 M6x25 | M8x20 | M8x25 | M10x30 | M12x35 | M14x40 | M16x50 | M16x50 | M20x65 | M20x65 | M20x65 | M20x80 |
| Bauform „S“ Steckbolzen Schrauben | M6 M6x10 | M8 M8x20 | M8 M8x25 | M10 M10x30 | M12 M12x35 | M14 M14x40 | M16 M16x50 | M16 M16x50 | M20 M20x65 | M20 M20x65 | M20 M20x65 | M20 M20x80 |
| Gelenkwelle G | M6x10 M6x25 | M8x20 | M8x25 | M10x30 | M12x35 | M14x40 | M16x50 | M16x50 | M20x65 | M20x65 | M20x65 | M20x80 |
| Gelenkwelle radial GZ axial | M6x10 M6x30 | M8x20 M8x25 | M8x25 M8x30 | M10x30 M10x35 | M12x35 M12x40 | M14x40 M14x45 | M16x50 M16x55 | M16x50 M16x55 | M20x70 | M20x70 | M20x70 | M20x80 M20x90 |
| Maß „S“ mm | 2 | 4 | 4 | 4 | 6 | 6 | 8 | 8/4 | 8 | 8 | 8 | 8 |
| Maß „Z“ mm | 13 | 22,5 | 27,5 | 30/31 | 40 | 42,5 | 50 | 50/52,5 | 67,5 | 67,5 | 77,5 | 90 |



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