

Operating Manual

Drive W263B

ThyssenKrupp Aufzugswerke



ThyssenKrupp

Imprint

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Preface

We are delighted that you have decided upon a quality product from the company THYSSENKRUPP AUFZUGSWERKE GmbH.

These operating instructions will help you to get to know our products and to benefit from their intended applications. Important safety and hazard instructions will help you to operate our products safely and properly.

Subject to technical alterations.

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1.0 Safety

1.1 Symbols

The following pictograms and designations are used in this operating manual:



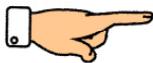
Danger

This symbol indicates extreme danger to life and the health of persons. Nonobservance can lead to death or severe injury!



Warning

This symbol warns against imminent danger. Nonobservance can lead to bodily injury or extensive damage to property. Warnings must always be observed!



Note

This symbol indicates important information and operating instructions. Nonobservance can lead to damage, danger or malfunctions.



Check

Test steps are specified with this symbol. The test instructions marked in this way must be followed without fail. They contribute to preventing personal injury or damage to property.

1.2 Safety instructions



Notes regarding the operating manual

A requirement for safe handling and non-disruptive operation this assembly is knowledge of the fundamental safety regulations.

This operating manual contains the most important information that is required to operate the assembly safely.

The operating manual, in particular the safety instructions, is to be complied with by all persons that work on this assembly.

Furthermore, the rules and regulations covering accident prevention that apply to the usage site are to be complied with.

Obligations of the operator and/or of the installation firm

The operator or installation firm undertakes only to allow persons to work on the assembly who

- are familiar with the regulations regarding work safety and accident prevention and have been instructed in handling the assembly.
- have read the chapter on safety and the warnings in this operating manual.



Note: Check the safety awareness of the personnel at regular intervals.

Obligations on the part of personnel

Persons assigned to work on subassemblies undertake before starting work to

- observe the regulations regarding work safety and accident prevention.
- read the chapter on safety and the warnings in this operating manual.

Training of the personnel

Only trained and instructed qualified personnel may work on the assembly.

The responsibility of the personnel is to be clearly defined for all tasks involving commissioning, operation, maintenance and repair.

Organisational measures

The required personal protective equipment is to be provided by the operator or installation firm, as the case may be.

All existing safety device are to be checked regularly in accordance with the maintenance plan.

Informal notes on the safety measures

- The operating manual is to be kept permanently at the usage site of the installation.
- Complementary to the operating manual, the generally applicable and local regulations for accident prevention and environmental protection are to be provided and complied with.
- Legally prescribed safety instructions are to be provided for the users at clearly visible positions.
- Keep all safety and hazard warnings on the installation in a legible condition.

**Use in line with intended purpose**

The W263B has been constructed using state-of-the-art technology and in line with the recognised technical safety regulations. The W263B may only be

- deployed in line with the intended purpose and
- used when all the technical safety features are in perfect condition.

The exclusive intended purpose of the W263B is to drive elevators.

Any other or additional form of use shall be regarded as non-compliant with the intended use. ThyssenKrupp Aufzugswerke GmbH shall not be liable for any damage arising from such use and any damage arising due to operator errors. Proper use in line with the intended purpose also includes:

- observance of all instructions in the operating manual
- adherence to commissioning instructions, system description and inspection and maintenance work.

Warranty and liability

As a general principle, the “General Terms of Sale and Delivery” of THYSSENKRUPP AUFZUGSWERKE GmbH apply.

Warranty and liability claims in the event of personal injury and damage to property shall be excluded if they arise due to any of the following causes:

- improper use that is not in line with the intended purpose of the W263B
- installation, commissioning, operation and maintenance of the W263B that is not in line with accepted technical principles
- operation of the W263B with defective and/or malfunctioning safety and protective devices
- nonobservance of the instructions in the operating manual with regard to transport, storage, assembly, commissioning, operation and maintenance of the W263B
- constructional changes to the W263B performed by the operator
- changes to the drive ratios (power output etc.) performed by the operator
- deficient monitoring of parts that are subject to wear
- repairs that are carried out improperly
- cases of catastrophe due to third-party interference and force majeure.

Constructional changes to the W263B performed by the operator



The W263B is set at the plant and delivered ready for operation.

Note: before commissioning, add the supplied **oil!**

If changes are made to the gear drive, the entire warranty of ThyssenKrupp Aufzugswerke GmbH shall become null and void.



Dangers in handling the W263B

The traction sheave and the handwinding wheel of the W263B are designed without a safety cover and may only be used in an enclosed machine room. It must be ensured when persons are in the machine room that there is adequate safety clearance to all revolving (marked in yellow) parts.

In the event of improper use, 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 diminish safety are to be rectified immediately.

2.0 Product description

2.1 Description

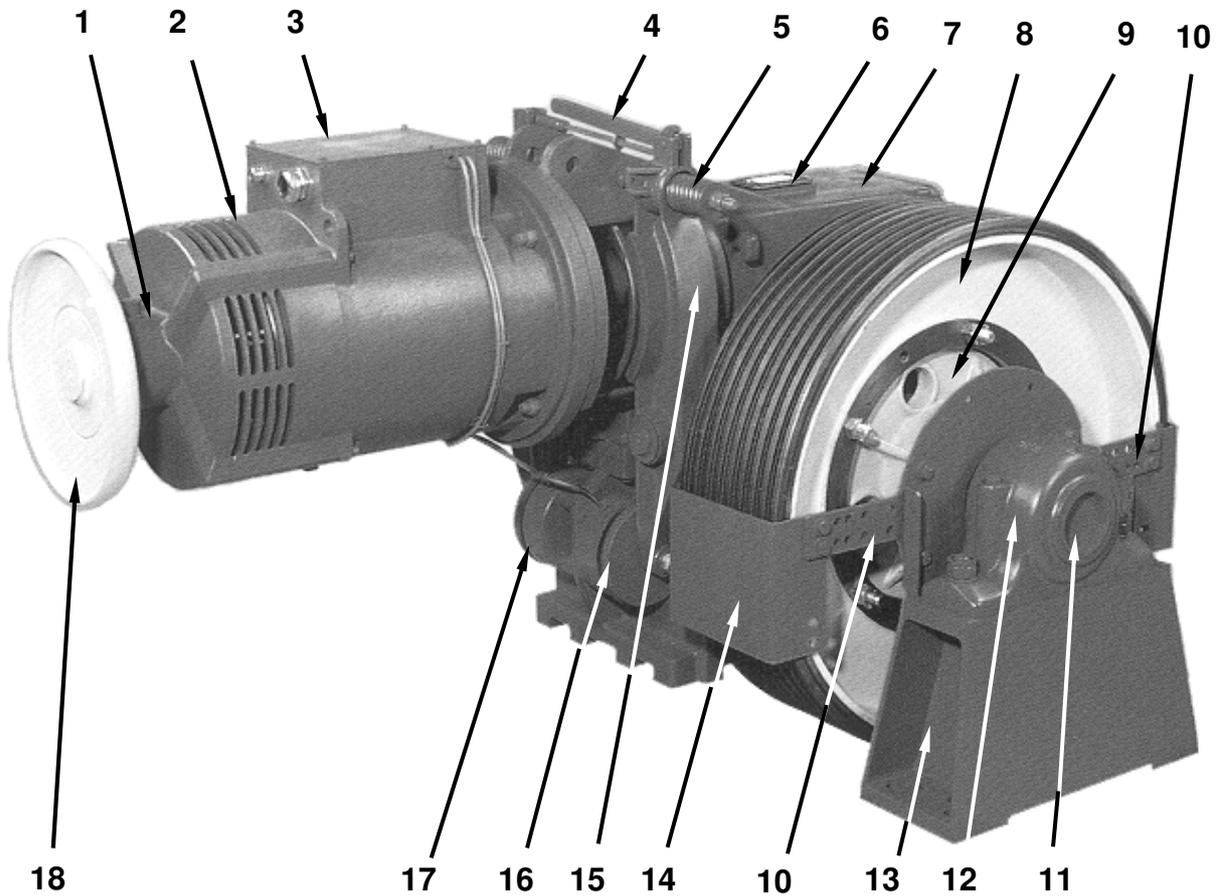


Fig. 2.1

The machine consists of:

Item	Part designation	Item	Part designation
1	Pulse encoder	10	Rope guard carrier
2	Motor	11	Bearing cover plate
3	Terminal box	12	Outside bearing
4	Brake release lever	13	Pedestal bearing
5	Brake spring	14	Rope guard plate
6	Handhole cover	15	Brake blocks
7	Gear box casing	16	Armature base plate on brake
8	Traction sheave rim	17	Magnetic clamp
9	Traction sheave hub	18	Handwinding wheel

Versions:

The following versions of the gear drive can be chosen by the customer:
gear reduction, right-hand / left-hand design
(illustration Fig. 2.1 in right-hand design)
traction sheave version, motor version.
Special versions, see chapter 8.

2.2 Functional description

The W263B machine consists of a single-stage worm gear (gear drive) with flange-connected three-phase motor. The gear box casing is split in the middle of the wheel shaft (upper and lower part). The motor flange is integrated in the upper part of the casing.

The power transmission of the motor takes place via a coupling to the worm shaft, via worm wheel, wheel shaft to the traction sheave.

In general, the motor position is horizontal.

The wheel shaft mounted on sleeve bearings and the overhead worm shaft mounted on sleeve and roller bearings are lubricated with mineral gear oil.

The forces on the installation surface are transferred on the traction sheave side via an outside bearing (self-aligning bearing), on the machine side via two compensating supports fitted at the plant under the gear box casing (Fig. 2.1. item 16).

Coupling: on engines of B9 design, the power transmission takes place via a rigid coupling between the motor and worm shaft via worm wheel, wheel shaft to the traction sheave.

On motors of IMB5 design, a flexible coupling (SA14) is required between the brake disc and motor.

Motor: by assigning the corresponding components such as specific motor, pulse generator and handwinding wheel or flywheel rim, the machine can be used in different drive systems:

- Pole changing installations (AC2) – optional special solution
- Operating-angle-controlled installations (ACCV) – optional special solution
- Frequency-controlled installations (VVVF)

Brake: the dual circuit shoe brake is spring actuated. Two independently acting brake blocks press the brake lining with preset spring force onto the brake disc.

The braking force is set in such a way that one of the brake blocks is sufficient to bring an elevator car loaded with full weight to a standstill.

The brake is released by electrically operated magnetic clamps.

For manual operation, a brake release lever is fitted.

Traction sheave:

The traction sheave is two-part.

In the standard version, the traction sheave **hub** is firmly pressed onto the wheel shaft and fitted with a feather key.

The traction sheave rim is positive fitted on the traction sheave hub, centered and screw-connected with hexagon screws.

In the event of replacement, it can be pressed off the hub through the thread present in the traction sheave rim.

In the case of the special version "traction sheave in the shaft" (SA9), the traction sheave is arranged at the shaft end of the wheel shaft. The traction sheave is pressed onto the conical shaft end and secured by a disc with 3 microencapsulated screws on the front of the shaft.

Pulse generator:

As standard, a pulse generator is fitted on the shaft end of the motor (before the handwinding wheel), see Fig. 2.1.

Depending on the control systems, there is a choice of different digital pulse generators, see chapter 9.

Tacho-generator and/or pulse generator (optional SA7.1 – 7.4):

for control systems with analog input, it is possible to fit a tacho-generator or pulse generator at the shaft end of the worm shaft. More details and connecting information for fitting the tacho-generator and pulse generator can be found in chapter 8 / 9.

Ambient conditions:

The environment at the location of the drive (moisture, temperature) must correspond to normal indoor climate conditions for machine rooms.

(According to EN 81. between +5° and +40 °C)

The relative air humidity must not exceed 70%.

3.0 Technology

3.1 Technical data

Gear ratios of the W332B: 40:1; 41:2; 50:2; 60:2

Backlash: 0.021° - 0.05°

Permitted load of the traction sheave shaft:

for standard version	max. 84 kN
for SA4	max. 67 kN
for SA9	max. 76 kN
for SA13	max. 126 kN
for SA13 + SA4	max. 100 kN

Mass moments of inertia J_{rot} : 1.520 kgm²

The value for the mass moments of inertia includes the driving gear with brake disc and coupling as well as a proportion for the traction sheave.

Version of the machine for motor in design:	Unit	J_{rot}
B9	kgm ²	0.4075
IMB5		0.4130

It does not include the mass moments of inertia for the motor with handwinding wheel or flywheel rim hub as well as the flywheel rim for AC2 versions.

Additional flywheel masses:

In the case of machines with pole changing motor versions (AC2), flywheel masses are required on the motor shaft depending on the installation data. The additional flywheel mass consists of a flywheel rim hub and the flywheel rim screw-connected onto it.

Designation	Unit	Mass moments of inertia J_{rot} [kgm ²]									
		330	360	370	380	400	410	430	455	480	510
SizeØ	MM										
Flywheel rim	kgm ²	0.285	0.458	0.533	0.600	0.758	0.900	1.070	1.435	1.750	2.280
Flywheel rim hub		0.057									
Total		0.342	0.515	0.590	0.657	0.815	0.957	1.127	1.492	1.807	2.337

Brake data:

On the W263B gear drive, the two brake magnets are switched in succession (in series).

Brake magnet connection:

Connection values per magnetic clamp:

Rated voltage:	50 V	Power supply	
Rated current:	1.7 A	for field forcing device:	180 V
Type of protection:	IP65	for retentive voltage:	90 V

Magnetic clamp nominal force: 2* 5000 N

Max. braking torque : approx. 2* 320 Nm (adjustable)

Brake disc diameter: 320 mm

Air gap: 0.3 mm (adjustable)

Manual release: with fitted brake release lever

Brake test switches (SA3) for brake monitoring are available as options.

Protection type for explosion-proof version (SA4) II2G EEx m II T5

The brake linings are made without asbestos.

Motor connection:

The terminal connecting plan for the motor and magnetic clamps is located on the inside of the motor terminal box.

The connection data are on the type plate.

Weight data:

Gear drive (without motor and traction sheave)	610 kg
Traction sheave according to order Ø 540 – 800 mm	125 - 230 kg
Motor according to version, see type plate	- kg

On machines in the pole changing version (AC2), the weight data are increased to include the values of the additional flywheel masses.

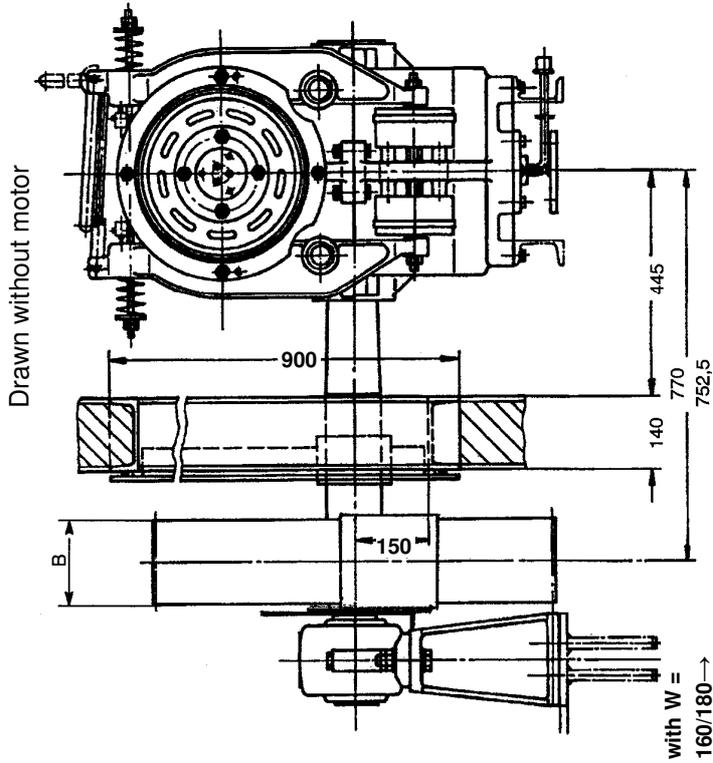
Flywheel rim size Ø	MM	330	360	370	380	400	410	430	455	480	510
Weight	kg	14	20	22	24	28	31	35	42	48	57

The weight of the standard **machine base frame** is approx. 250 kg.

Traction sheave data for standardised traction sheaves:

DT = diameter	n cable * cable diameter	Width / mm	Weight / kg
540	7 * 13	160	125
640	7 * 13 / 8 * 13	160	150
700	8 * 13	180	185
740	7 * 10 / 7 * 13	160	195
800	7 * 13	160	230

W263B SA4 (with wall duct and extended wheel shaft)



Left-hand design as drawn, right-hand design mirror-inverted

S = centre of gravity

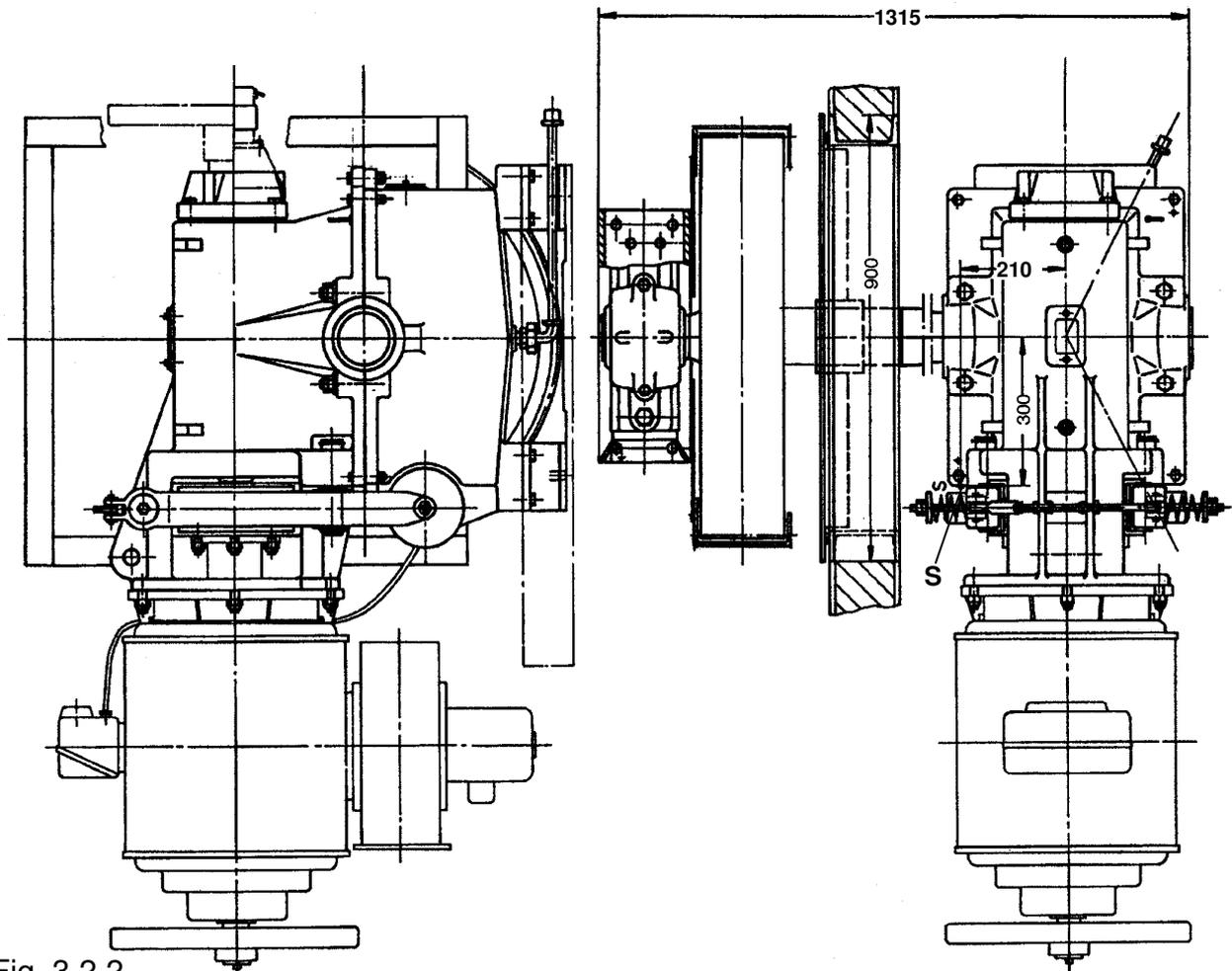


Fig. 3.2.2

W263B SA9 (with outside bearing and extended traction sheave shaft)

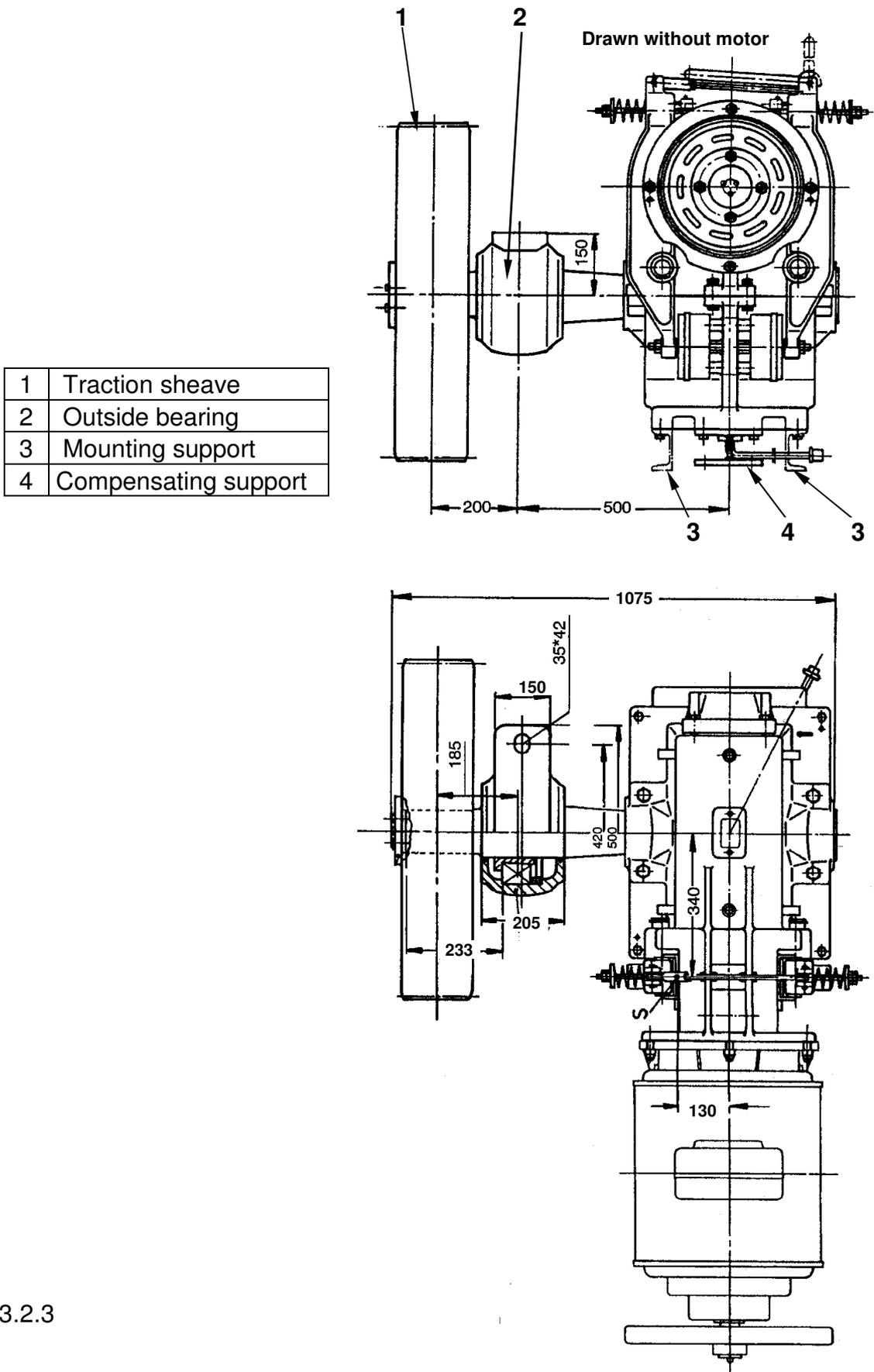


Fig. 3.2.3

3.3 Machine base frame (optional)

Standardised versions

Version:

1. **Without deflecting pulley**, for direct rope departure elevator car – counterweight, or 2:1 suspension. Version, see Table 1. Illustration, Fig. 3.3.1.
2. **With deflecting pulley**, base frame on concrete supports and pulley frame bolted under the machine base frame with deflecting pulley \varnothing 540 mm in sleeve or roller bearing version.
Arrangement in left-hand or right-hand design (determined by location of machine and deflecting pulley). Versions, see illustrations in Fig. 3.3.2.

Setting up

To insulate the body, the machine base frame is placed on insulation elements. These differ according to the type of mounting:

- a) Rubber block 100 x 100 x 50 high without base
For mounting the machine on the machine room floor without a cement floor or directly surface mounted on the cement floor.
- b) Rubber block same as "a" however with an additional support 140 x 140 x 80 mm high, for mounting on a cement floor, whereby the support is cast in the cement floor (coating thickness of cement floor \leq 60 mm).



Note: for the layout of the insulation, the load per insulation element should be around $7 \text{ kN} \div 12 \text{ kN}$.

Mounting the base frame

In the case of a base frame with deflecting pulley, the pulley frame is supplied separately.

Place the machine base frame with the insulation elements on the concrete supports according to the plan of installation. Fit the pulley supports on the correct side. Mount the deflecting pulley with axle on the pulley supports are use an axle holder to secure it. Use lifting gear to place the machine on the base frame.

- a) Base frame **without** deflecting pulley: the traction sheave must be located within the frame profiles. Align the machine to the base frame centre.
Fig. 3.3.1 Base frame **with** deflecting pulley: the traction sheave must be on the same side as the deflecting pulley. Move the machine sideways on the base frame until the required **ASL** dimension (parallel gap between the ropes at the rope departure) is reached.
Bolt the machine onto the base frame. Align the traction sheave and deflecting pulley as parallel.
Balance out uneven surfaces by inserting the enclosed shims.
The machine housing must not be tensioned.
Screw tightening torque, see chapter 9.

Plumb the rope departure on the rope pulley at the elevator car and counterweight.

Explanation of the abbreviated designations:

ASL = parallel distance of the ropes at the rope departure

ØDT = diameter of the traction sheave

ØSR = diameter of the deflecting pulley



Note: the specification of left-hand or right-hand design of the machine is to be understood as follows: traction sheave arrangement on the right when viewed from the motor to the machine corresponds to right-hand design.

Machine base frame without rope pulley

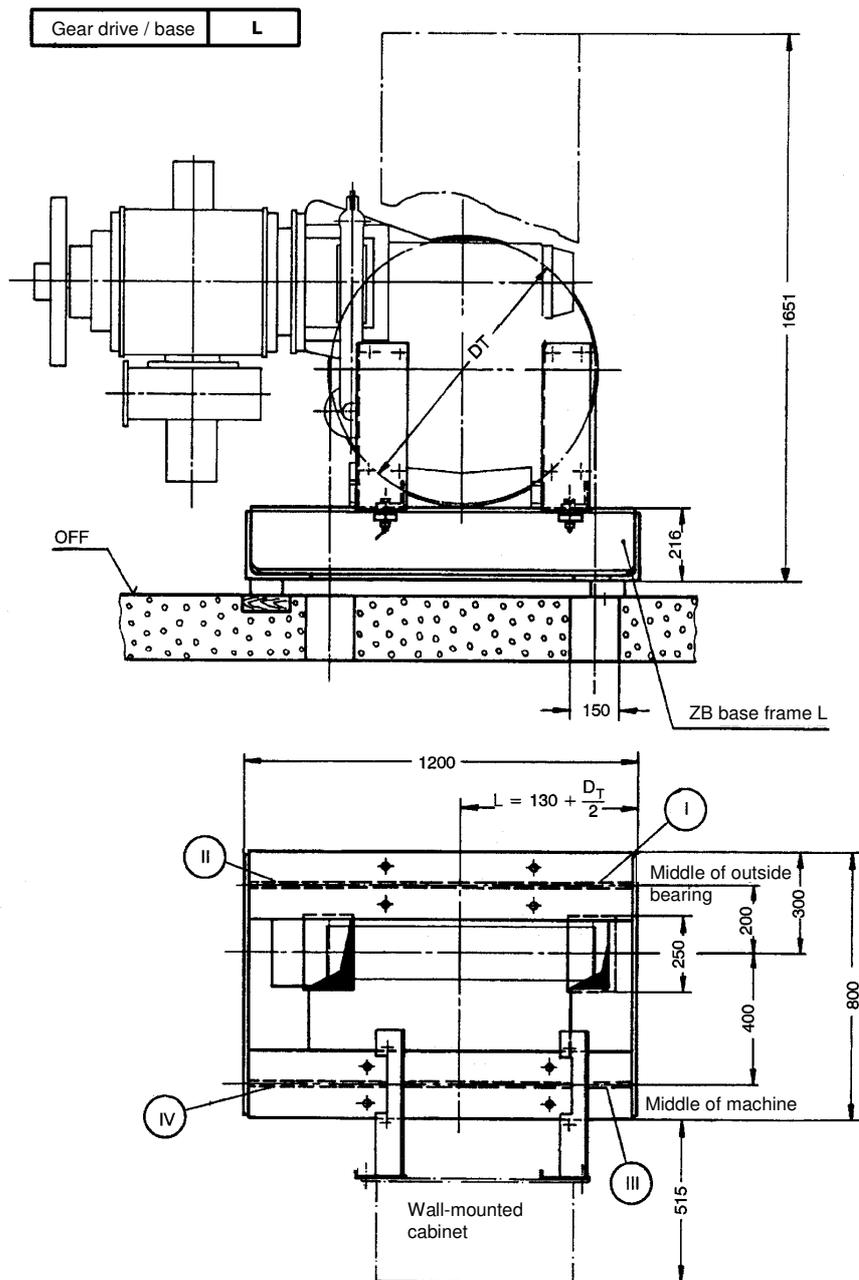


Fig. 3.3.1

The location of the insulation elements is to be specified in the plan of installation.

Number and arrangement of insulation elements

Insulation element number		I	II	III	IV
Static shaft load Ft [kN] / number of elements per point of support	100	4	3	2	2
	80	3	2	2	1
	60	3	2	2	1
	40	2	1	1	1

Machine base frame with rope pulley

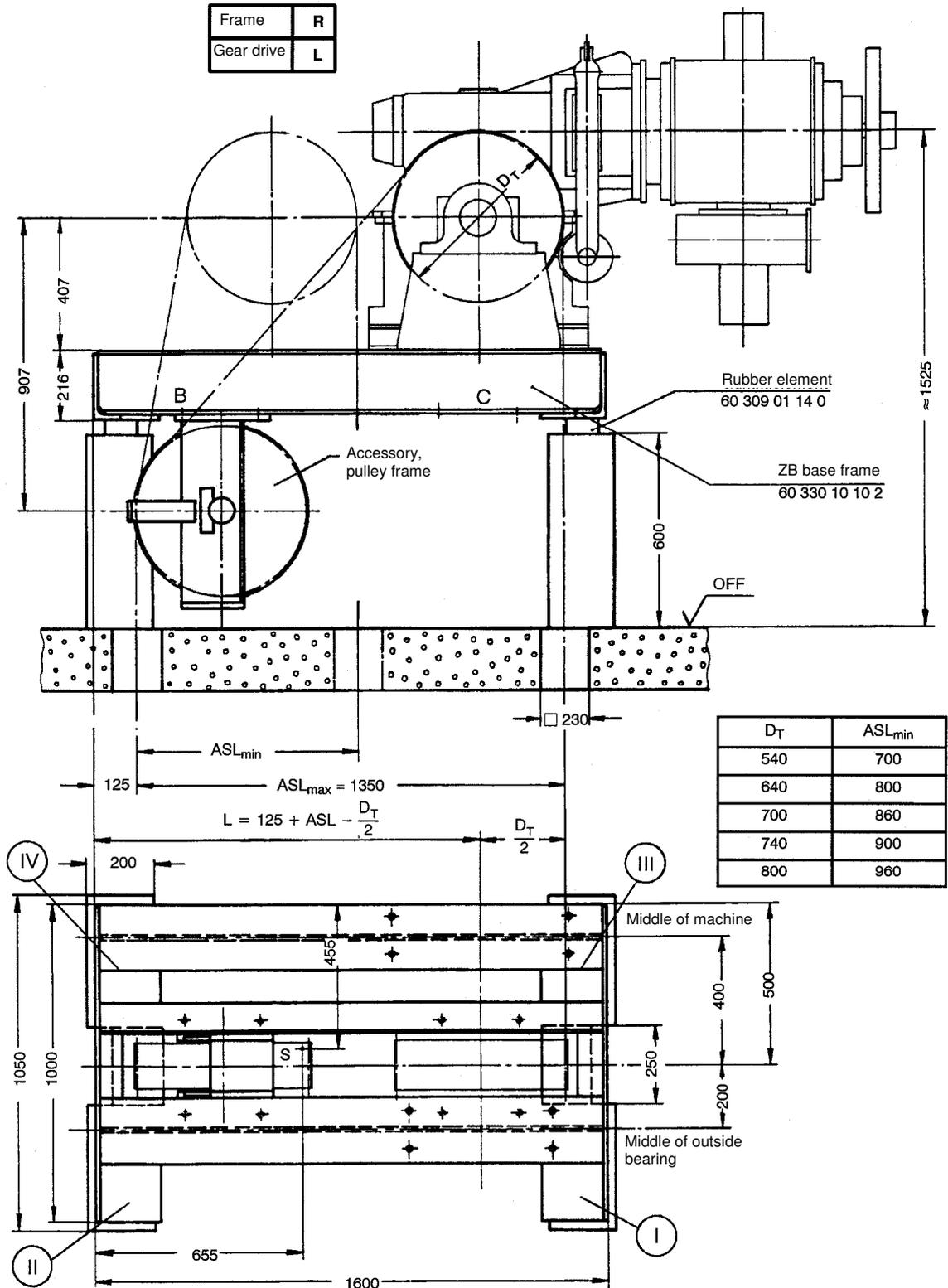


Fig. 3.3.2

Arrangement options for W263B

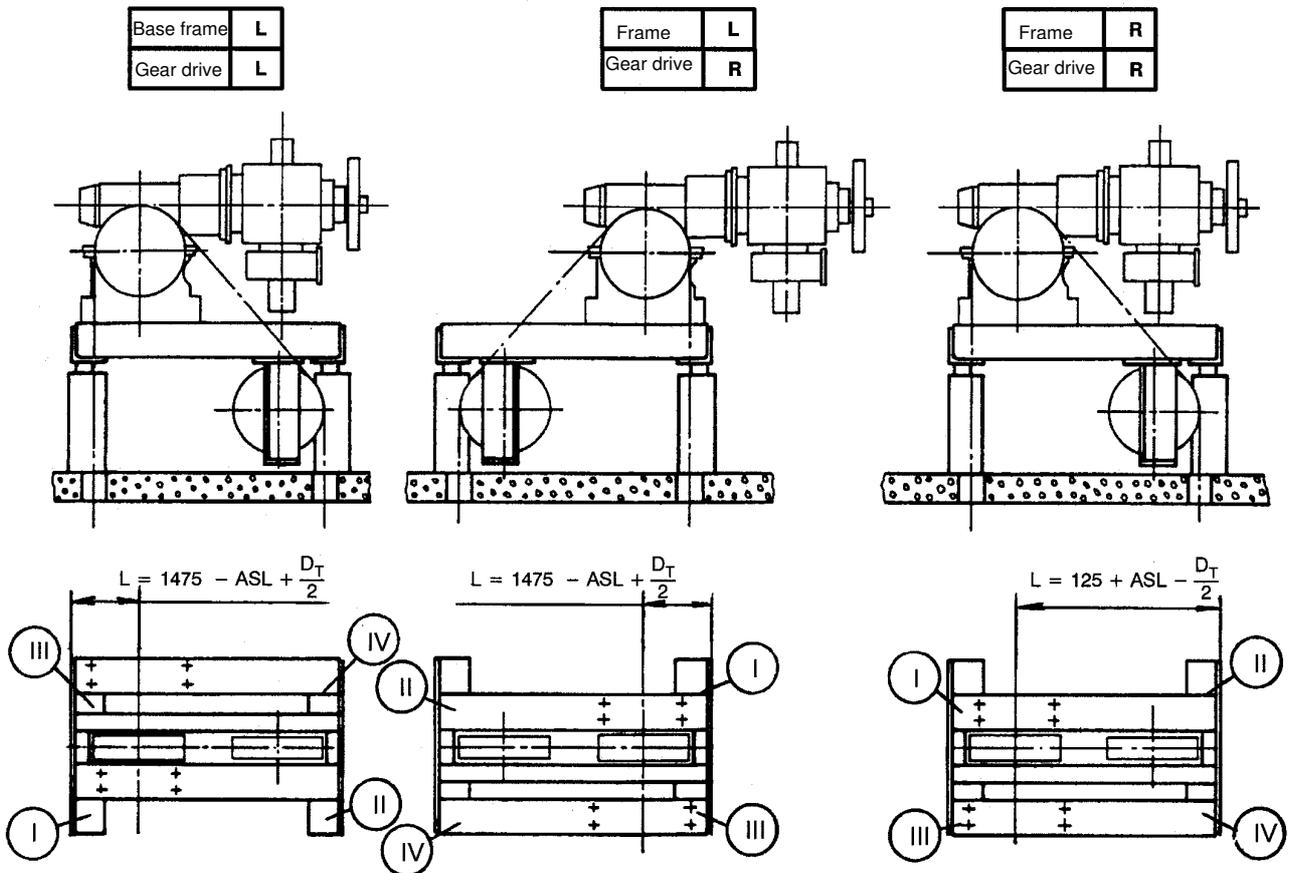


Fig. 3.3.3

Number and location of insulation elements:

		ASL _{min}				1000				ASL _{max}			
Insulation elements:		I	II	III	IV	I	II	III	IV	I	II	III	IV
Stat. shaft load P (kN)	100	3	4	2	2	3	3	2	2	5	2	3	1
	80	2	3	1	2	3	3	2	2	4	2	2	1
	60	2	2	1	1	2	2	1	1	3	1	2	1
	40	1	2	1	1	2	1	1	1	2	1	1	1

Project planning dimensions of machine base frame

Version of traction sheave DT	Unit	Rope distance elevator car – counterweight	
		ASL _{min}	ASL _{max}
540	MM	700	1350
640		800	
700		860	
740		900	
800		960	

4.0 Transport and storage

Packaging:



Fig. 4.1



Fig. 4.2

U-profiles are placed under the gear housing and the gear housing is bolted onto the special pallet

Other packaging depends on the order and is effected on a country-specific basis (air / sea / truck or other freight).



Transport:

Transport must be effected in **compliance with the safety regulations** and observing the centre of gravity of the machine.

Fork-lift truck transport:

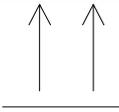
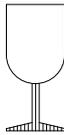
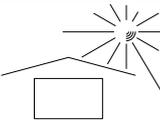
- In the case of transport with a fork lift, the forks used must be long enough to prevent the transported goods from tipping over.
- Always pick up the transport pallet with the forks, not the machine itself.
- Pay attention to protruding parts! Danger of injury and damage!



Crane transport:

- Do not walk underneath suspended loads!
- Use transport hangers to mount the transportation chain or rope.
- Do not lift by the housing!
- After transport, remove the transport hangers.

Pay attention to the icons on the packaging or elsewhere.

					
Top	Fragile goods	Protect against water	Protect against heat	Hand hooks prohibited	Attach here

Dimensions and weight

The weight data is specified on the packaging on a label below the transport hangers.

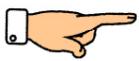
Please refer to the delivery note for the dimensions.

**Check on acceptance by the recipient**

The delivered parts and their packaging are to be checked for completeness, damage or other conspicuous features.

Reporting and documenting damage in transit

On delivery, make sure that no damage in transit has occurred.



Information

- Any damage that is determined is to be documented immediately (sketch, photo, description of the damage).
 - Forward the corresponding documents without delay to THYSSENKRUPP AUFZUGSWERKE GmbH.
-



Unpacking**Information**

- Dispose of packaging materials in an environmentally compatible manner or reuse them.
 - Specific transport aids and shipping braces remain with the customer.
-

Intermediate storage

- If the assembly is not installed immediately after delivery, it must be stored carefully in a protected location. On covering, attention is to be paid to ensuring that no condensation can form and that no moisture can penetrate.
- The assembly must not be stored outdoors. Bare parts have no long-term preservation.

Ambient conditions

Information

The environment at the final location (moisture, temperature) must correspond to normal indoor climate conditions for machine rooms in line with regulations.

5.0 Mounting the machine

5.1 Machine setup

Depending on the scope of the order, the machine is delivered mounted on the machine base frame. The base frame is set up depending on the customer on supports, beams, a concrete pedestal or on the machine room floor.

In order to comply with regulations for noise abatement and sound transmission, insulation elements are to be inserted between the frame supports and the ground.

The number of rubber elements is based on the total weight load. The required individual load should be between 7000 and 12 000 N / per element. The location and arrangement of the rubber elements can be found in the plan of installation.



Note: on arrangement of the supports, it is to be taken into account that the overall centre of gravity lies within the rubber elements (also in the case of elevator car suspension on the deflecting pulley side).

In the case of a cement floor, the insulation elements are to be inserted with wooden supports. Here, the elements are to be cast in a section of wood (approx. 80 mm) pointing downwards.

Mounting with inclined pulling or rope departure upwards (SA1)

For the machine and base frame mount, the forces that arise in the pulling direction are also to be taken into account.

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 on the elevator car mounting or elevator car rope pulley. The machine should stand horizontally aligned on the rubber elements. Irregularities are to be balanced out by inserting shims or wooden slats under mounting surfaces.

SA9 Gear drive with extended worm wheel shaft and outside bearing



NB: On setting up a gear drive with outside bearing, it must be ensured without fail that

- the pedestal supports are mounted and secured according to instructions
- the worm wheel shaft is aligned horizontally
- the sheave shaft bearing of the machine and outside bearing are exactly aligned

5.2 Connecting the motor

The wiring diagram for connecting the motor is attached to the inside of the lid of the motor terminal box or is loose in the box.

Alongside the terminal connecting information, the corresponding building regulations are to be complied with.

In the following chapters, you will find the terminal connection diagrams for the standardised motors and pulse generators as well as terminal connecting information in line with building codes.

Please comply with the special instructions and manufacturer specifications in chapter 9.

Technical data, see Type plate.



NB: In the case of operating-angle-controlled motors Isostop 12 / 16M (Isostop 25M), comply with the special instructions for the bridge connection of terminals 16 and 9, as the printed circuit board (brake board) will be destroyed if incorrectly connected. (see 5.4.3.1).

5.3 Overview of connections

Motor Winding **Temperature Monitoring** **Pulse** **Brake magnet** **Brake monitoring switch only with SA3 and Ex version**

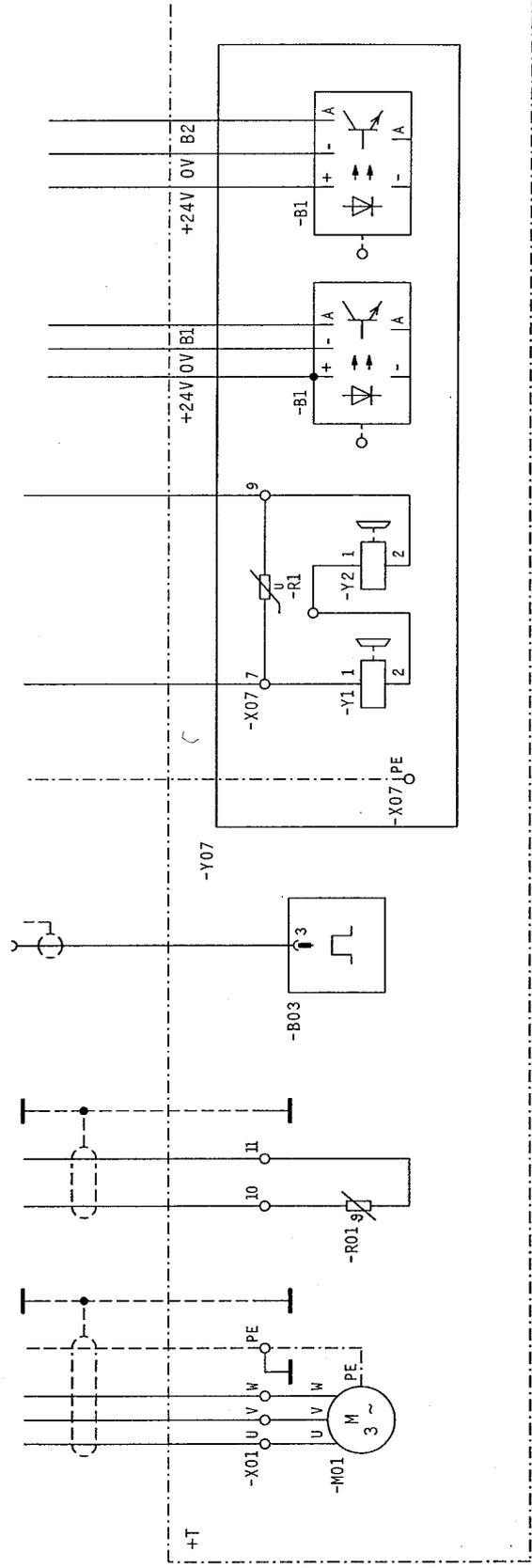


Fig. 5.3.1

5.4 Terminal connecting plan for gear drive motor and magnetic clamps

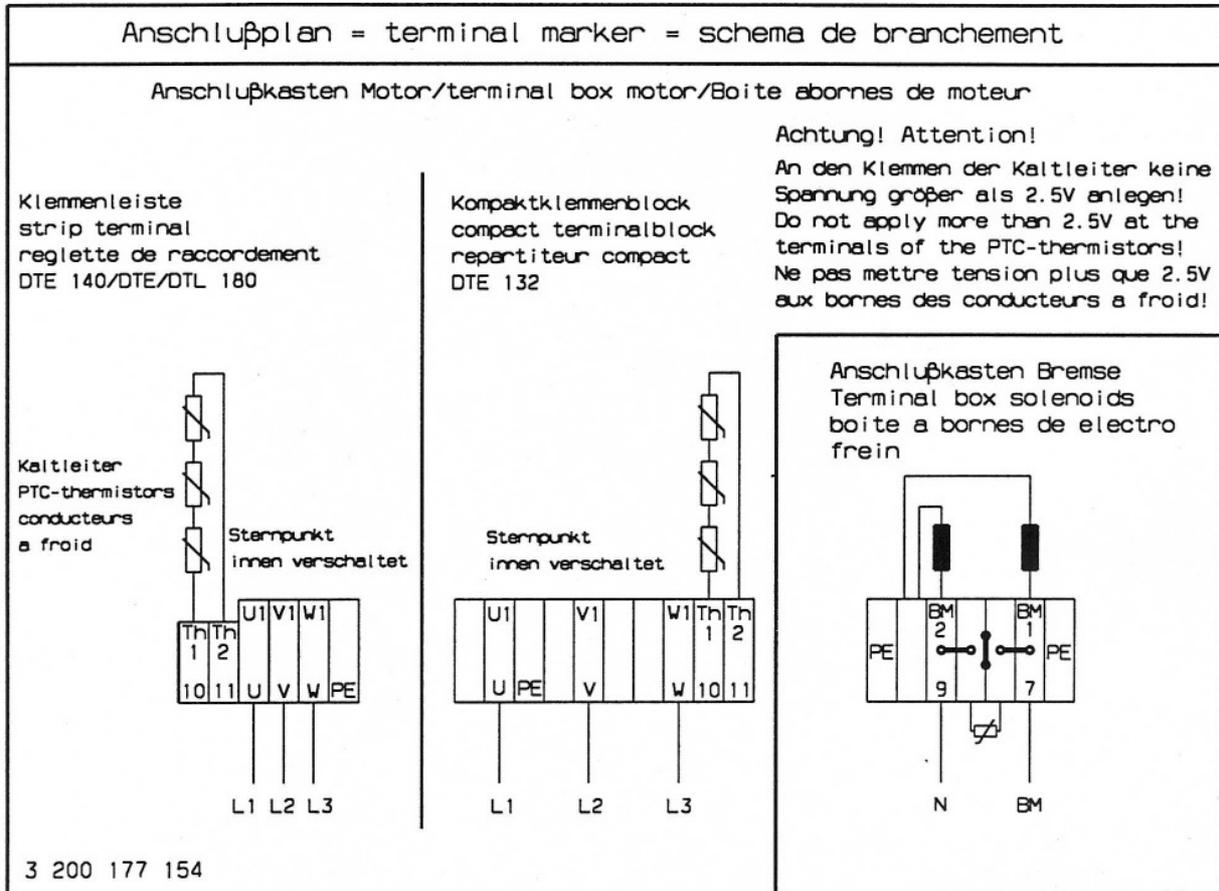


Fig. 5.4.1

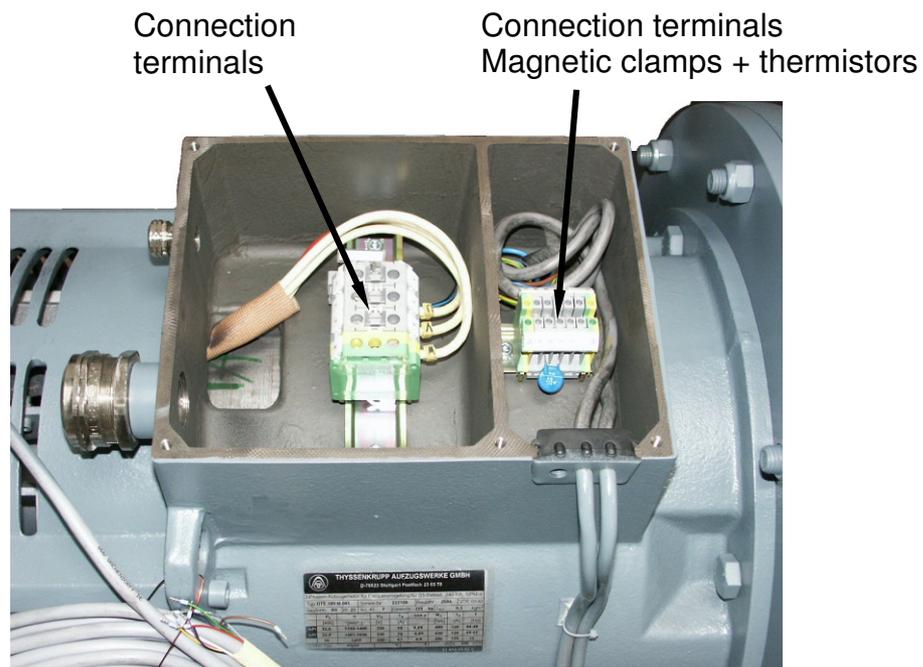


Fig. 5.4.2

5.4.1 Terminal connecting information for motors complying with BV 6531 -09

pole changing for three-phase motors

Schaltung nach Angabe am Leistungsschild.
 Connection as stated on the rating plate.
 Branchement suivant indication sur la plaque indicatrice.

 = Kaltleiter
 PTC thermistors
 Conducteurs à froid

Achtung! Attention!

An die Klemmen der Kaltleiter keine Spannung größer als 2,5V anlegen.

Do not apply more than 2.5V at the terminals of the PTC thermistors.

Ne pas mettre tension plus que 2,5V aux bornes des conducteurs à froid.

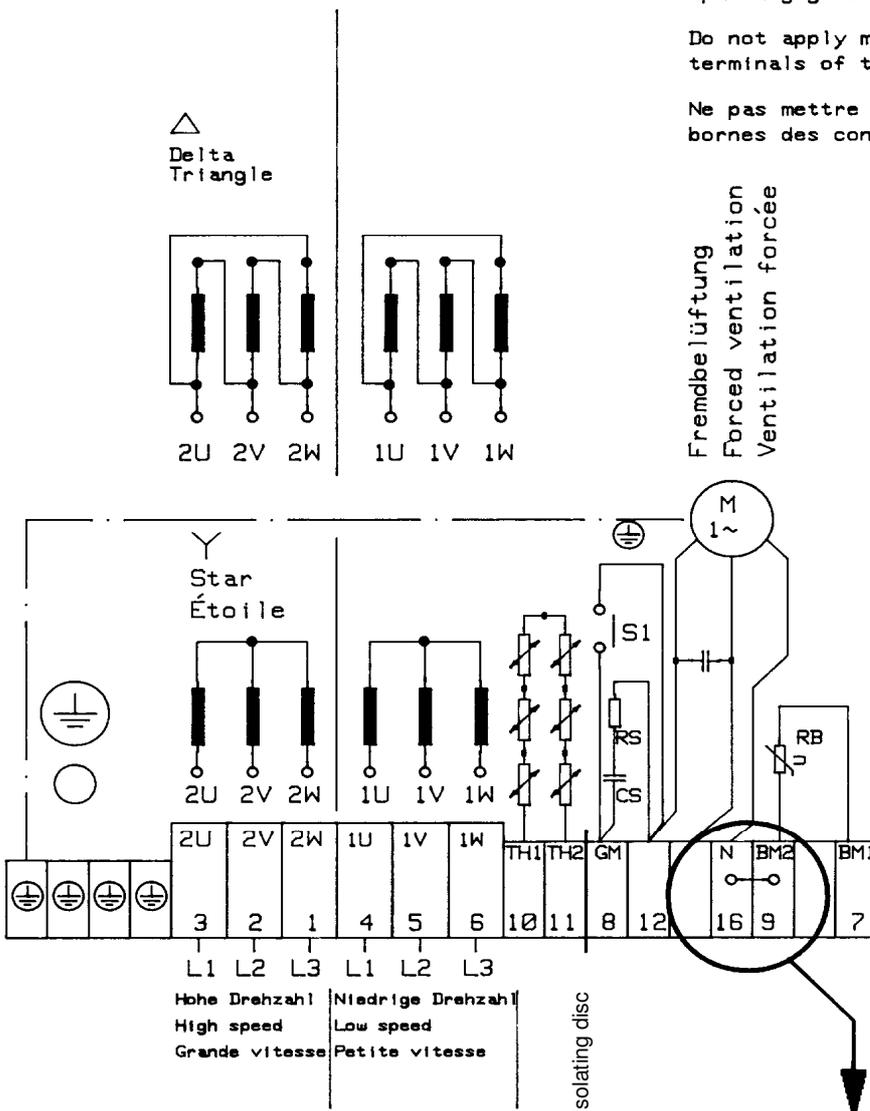


Fig. 5.4.1.1

NB: follow the instructions regarding bridge connection!

●	○
Am Wickelkopf verbunden Connected in the winding head Raccordé à tête du bobinage	An Klemme geführt Connected with terminal Raccordé à la borne

5.4.2 Terminal connecting information for motors complying with BV 6531 14 for operating-angle-controlled three-phase motors with direct current brake winding

Schaltung nach Angabe am Leistungsschild.
 Connection as stated on the rating plate.
 Branchement suivant indication sur la plaque indicatrice.

Bremswicklung
 Brake winding
 Bobinage au frein
 Electrical circuit depending on winding design

 Kaltleiter
 PTC thermistors
 Conducteurs à froid

Achtung! Attention!
 An die Klemmen der Kaltleiter keine Spannung größer als 2,5V anlegen.
 Do not apply more than 2.5V at the terminals of the PTC thermistors.
 Ne pas mettre tension plus que 2,5V aux bornes des conducteurs à froid.

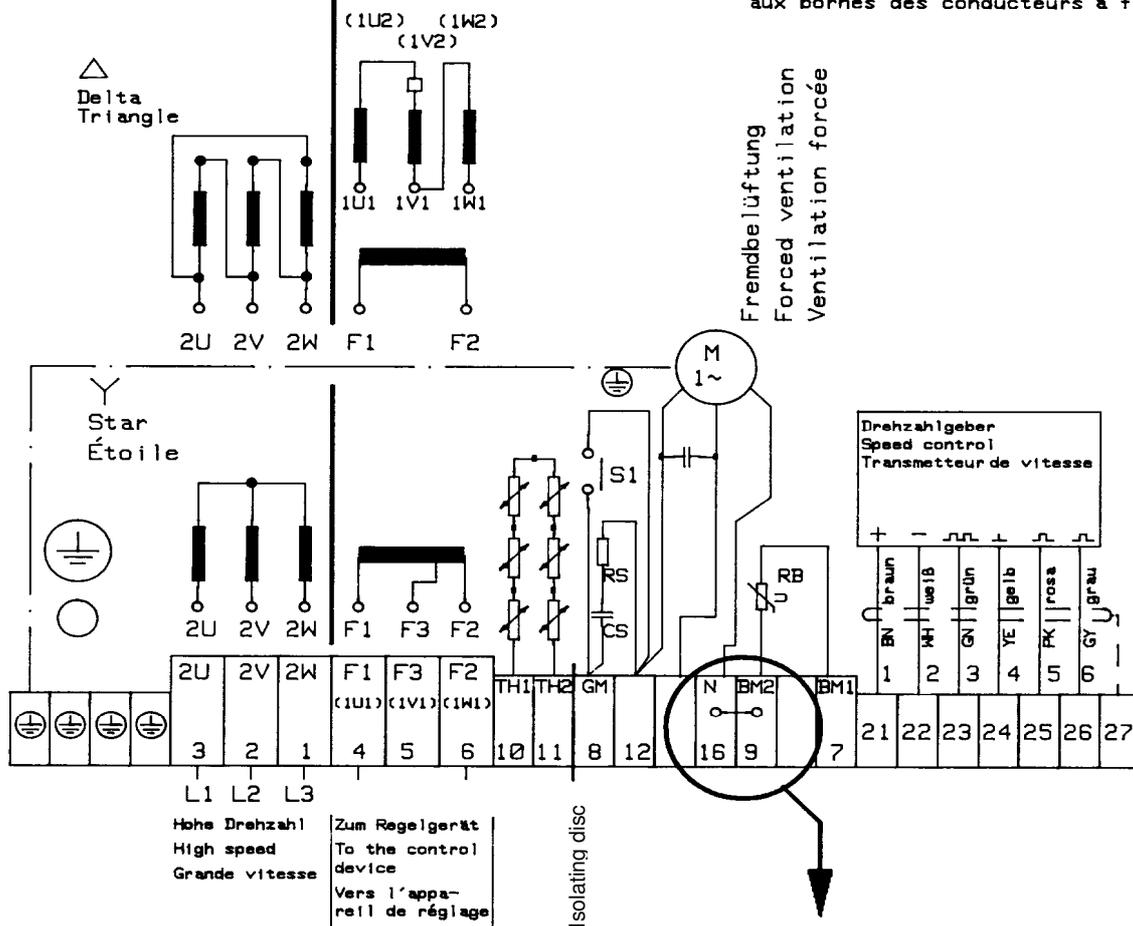


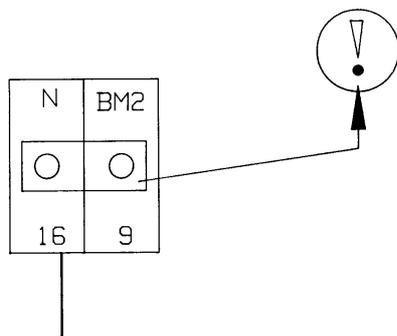
Fig. 5.4.2.1

<p> Am Wickelkopf verbunden Connected in the winding head Raccordé à tête du bobinage</p>	<p> An Klemme geführt Connected with terminal Raccordé à la borne</p>	<p> Verbindung lose im Anschlusskasten (Lüsterkl.) Connection loose in the terminal box. Raccord mobilement dans la boîte de jonction.</p>
--	--	--

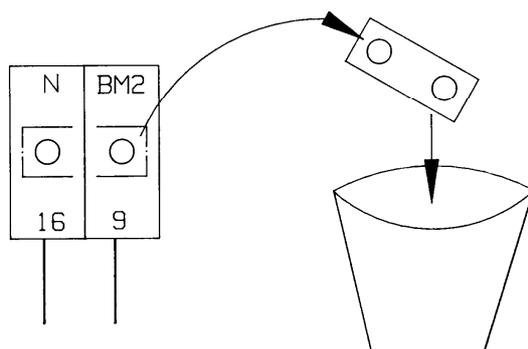
5.4.3 Bridge connection at motor terminals

Concerns operating-angle-controlled motors with the control systems Isostop 12 M, 16M and 25M

On shipment of the machine, motor terminals 16 - 9 are bridged.



If there is only one external supply line for terminals 16 - 9, the bridge must remain!



If terminals 16 and 9 are each connected with a separate external supply line, the bridge must be removed!

Fig. 5.4.3.1



NB: if the instructions are not complied with, the printed circuit board (brake board) will be destroyed!

5.5 Mounting the rope guard for the traction sheave

After opening the bearing screws, the rope guard carrier bracket can be shifted towards the traction sheave. Use the enclosed screws to bolt the rope guard onto the rope guard carrier. Pivot the rope guard carrier to set the guard is such a way that the gap between the rope and guard on the rope run-in and run-out side of the traction sheave is as small as possible (1 - 2 mm).

With **inclined pulling**, the location of the rope guard is to be adapted by remounting the rope guard carrier in the changed rope pull direction.



Note: Tighten the securing bolts of the rope guard carrier on the gear drive after alignment with the prescribed torque.

Tightening torque, see table in the Appendix of the operating manual.

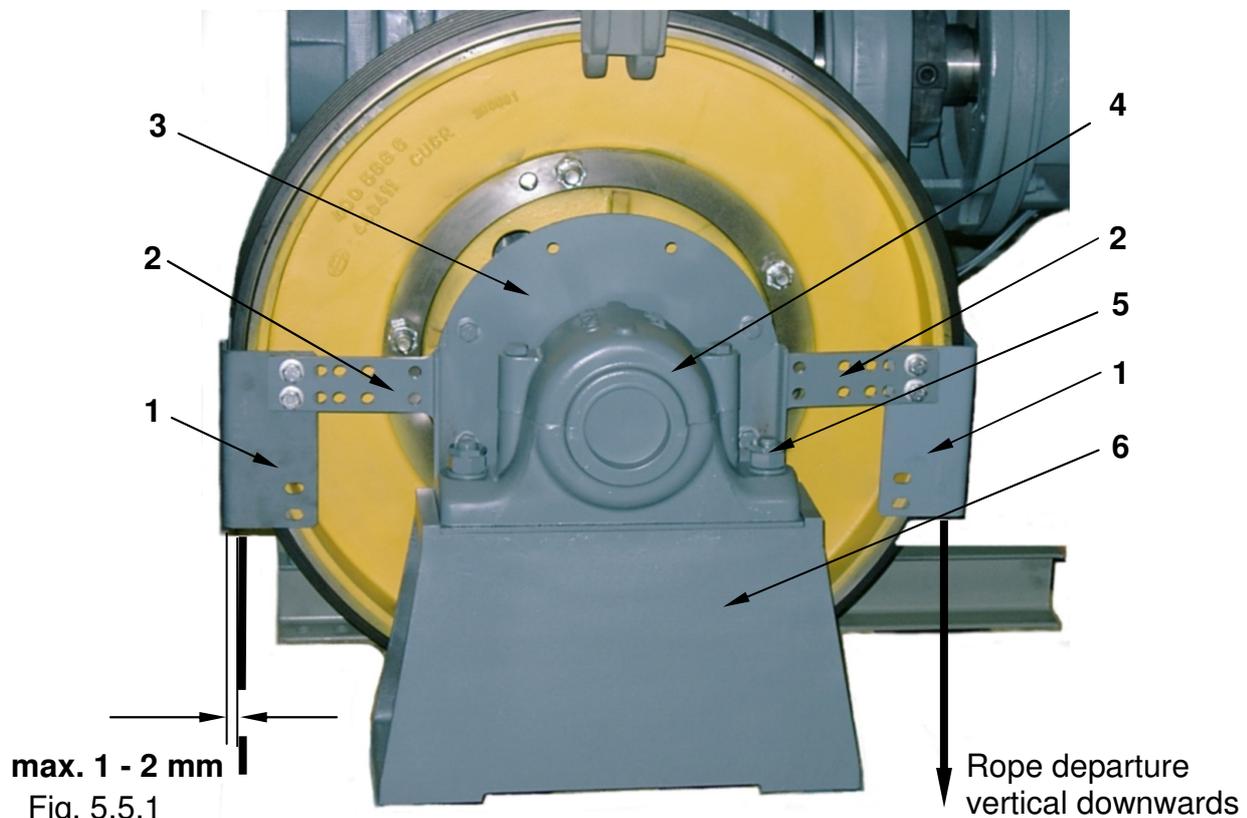


Fig. 5.5.1

1	Rope guard	4	Outside bearing
2	Rope guard carrier	5	Bearing bolt
3	Mounting elbow	6	Outside bearing console



NB:

For machines with rope run-in direction from 0 - 90° above horizontal (e.g.: machine arrangement down/up beside), an additional rope guard is required to prevent foreign bodies penetrating between the rope and grooves.

If the rope run-in zone is protected within the machine base frame, the function "protection against injury" is not required.

5.6 Connection data for the pulse generator

Pulse generator for mounting on the motor

The distinction is made by type depending on the control system used

1. TTL for Thyssen control system CPI

2 x 1024 impulses

2 x 4096 impulses

The connection is made with a cable and SUB-D 9 connector

2. HTL for third-party control systems

2 x 64 impulses

Connection takes place with a cable and wire end sleeves.

3. HTL for third-party control systems

2 x 1024 impulses

Connection takes place with a cable and wire end sleeves.

4. Sine-cosine for third-party control systems

2 x 1024 impulses

Connection takes place with a cable and wire end sleeves.

Comply with the manufacturer's instructions in chapter 9

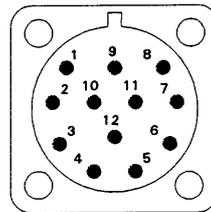
5.6.1 Tachometer and pulse generator fastening on worm shaft

(Optional) drive with tachometer and pulse generator fastening:

Contact assignment of the pulse generator flange tube for pulse generator HG 90 THY 1 024 and HG 90 THY 4 096

Pulse generator type: HG 90 THY
HG 90 THY

number of impulses: 1 024
4 096

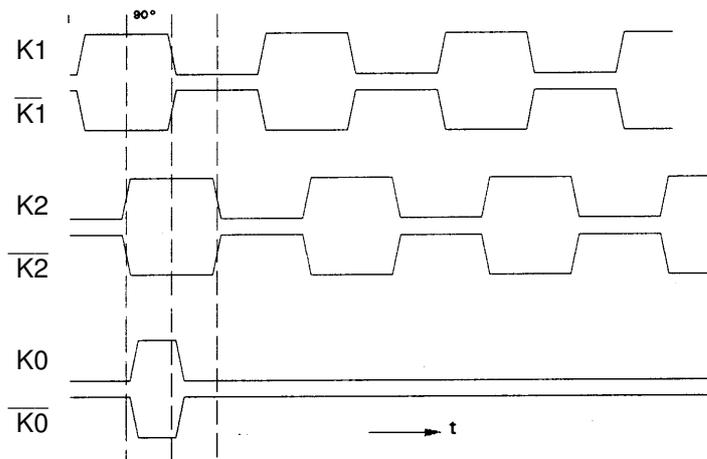


1	2	3	4	5	6	7	8	9	10	11	12
$\overline{K2}$	/	K0	$\overline{K0}$	K1	$\overline{K1}$	/	K2	/	0 V	0 V	+5V

Ausgangssignale

Output signals

Signaux de sortie



Note: other specifications, see chapter 9

For the connection of the tachometer-pulse generator with the control system, an optional connection line (round plug, 12-pin on a SUB-D 9 ribbon connector with screw retention) is provided.

6.0 Commissioning



Before commissioning the machine, the following points should be checked and carried out:

- Safety, auxiliary and installation tools removed from the danger zone
- Setup of the machine, base frame, pedestal and rope departure checked
- Oil drain pipe with dip stick mounted and drainage opening closed with cap
- Gear oil added, oil level checked
- Outside bearing (only with SA9) filled with grease at plant
- Mounting of the machine and outside bearing checked
- Bolts tightened and secured with the prescribed torque (see table 'Tightening torques')
- Brake block stroke and setting checked
- With SA3, setting and function of the brake test switch checked
- Brake test carried out with one brake block in each case
- Function of handbrake release checked
- Distance of rope fixing beam to traction sheave / ropes set
- Power connections and earthing of motor, forced ventilation and brake magnet connected and secured
- Special add-on components (tachometer / pulse generator add-on mounted and checked)
- Direction arrow (Up / Down) attached above traction sheave and clearly visible on the motor near the handwinding wheel



Warning: before the first travel, add oil to the top oil pockets, as otherwise the bearings will be damaged!

To do so, remove the top cover of the gear drive and use a funnel or oil can to pour approx. 0.2 litres of M1 gear oil in the left-hand and right-hand oil pan above the sleeve bearings.

Before switching on, close the opening with the cover and sealing ring.

NB: the W263B machine must not be operated for longer than 40 seconds in creepage mode. This applies particularly to pole changing motors with low rpm. The oil supply to the sleeve bearings of the worm shaft and wheel shaft is too low here; there is a danger that they might seize.

6.1 Run-in operation of the drive



On commissioning W263B drives, these are to be run in with the following loads.

During the run-in operation, no smoke should form due to the oil.

Furthermore, the surface temperature of the gear is to be checked. Here, the thrust bearing cover can heat up to 80 °C (ambient temperature plus 50 °C to 60 °C).

Sequence:

24-hour run-in operation (operating time \leq 40%) with the following load

a) $q\% / 100 \times 0.5 \times$ rated load

b) $q\% / 100 \times 1.5 \times$ rated load

With $q\%$ = Factor for offset load (e.g. 45%)

Explanation of abbreviated designations:

ASL = parallel gap between the ropes on the rope departure

ØDT = diameter of traction sheave

ØSR = diameter of rope pulley

Note: The specified direction for left-hand or right-hand design of the machine defines the arrangement of the traction sheave, viewed from the motor onto the machine.

The **guide value** for the design of the machine base frame is defined by the location of the rope pulley in relation to the traction sheave looking at the traction sheave in front of the machine, see Fig. 3.2.

7.0 Maintenance / service

Maintenance period: maintenance of the machine should take place within the framework of central maintenance of the elevator, at least once a year.



Note: commissioning and maintenance work may only be carried out by trained and instructed qualified personnel.

All laws and regulation for elevator systems as well as accident prevention regulations must be known and complied with.

More details on the sequence, settings and data can be found in chapter: ↓

• Check the oil level; top up if necessary.	
• Carry out oil change	7
• Check brake blocks for wear, remaining lining thickness must be at least 3 mm	7
• Check the brake setting; the block stroke should be within 0.3 mm + 0.1 mm.	7
• Check armature base plate setting (pretension)	7
• Check the braking deceleration	7
• Check the worm gear tothing for wear	
• Check the backlash between the worm shaft and worm wheel (max. 2.5 mm)	7
• Check groove profile on the traction sheave for damage and wear	
• Check secure seating of bolts of the traction sheave mount	9
• Check pulley grooves for damage and wear.	
• Check motor bearings for wear (noise, backlash)	
• (SA9) Check grease filling (type F1*) and seating of the groove nuts on the outside bearing. If required, top up and/or tighten.	
• Check proper and adequate condition and safety of electrical connections	
• Check that protective and safety devices are present and correctly set	

7.1 Lubrication

Lubricant	Replacement interval	Filling amount
Synthetic gear oil SM1/220 ¹⁾	For the first time after 3 years then every 6 years	20 litres

¹⁾ For machines from year mid / late 2010
(see SM1/220 marking on the nameplate of the machine)

Oil change



- Before the oil change, run the gear until it reaches operating temperature (approx. 35°C)

NB: after longer periods of operation, there is a risk of scalding!

- Discharge the gear oil by removing the cap on the oil drain pipe.
- Collect the old oil in a container specifically designed for the purpose.
- After draining the gear, close the cap on the oil drain pipe with sealing tape and check whether everything is sealed tightly.
- Remove the cover of the upper opening on the gear box casing and fill the machine with the prescribed oil quantity.
- Check the level at the oil dip stick (see illustration below).
- Enter the date for the next oil change on the type plate of the machine and close the fill opening.
- Never mix various types of oil.
- Do not let any oil seep through to the groundwater.
- Dispose of old oil as well as cloths contaminated with oil and grease according to prevailing regulations.
- Only use lubricants approved by THYSSENKRUPP AUFZUGSWERKE GmbH.



Note: THYSSENKRUPP AUFZUGSWERKE GmbH shall not be liable for losses caused by the use of non-approved lubricants.

Oil level monitoring

Pull out the oil dipstick to check the oil level. The oil on the dip stick should be within the markings.

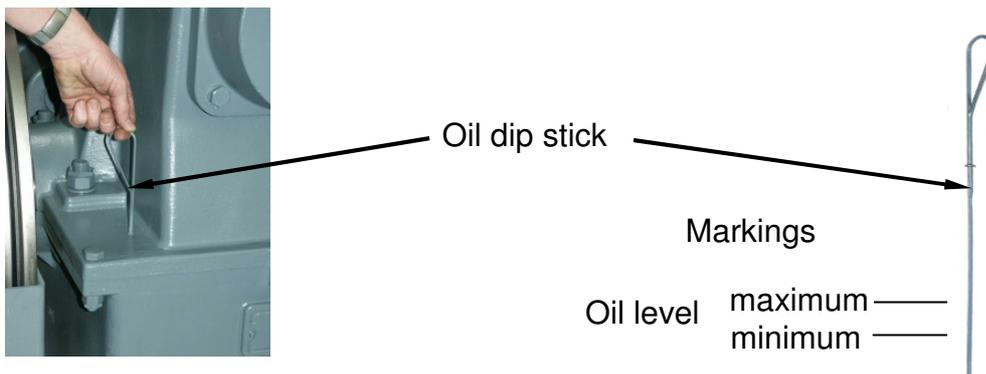


Fig. 7.1.1

7.2 Setting brake block stroke and armature base plate

Before first commissioning and of both during monitoring, the working stroke of the brake blocks, the pretension and movement of the armature base plates are to be checked. The working stroke of the brake blocks is set at the plant to the height of the centre of the brake disc, measured to 0.3 mm + 0.1 mm by adjusting the armature screw with armature base plate.

When opening the brakes, ensure that both brake blocks are operating with the same stroke. To set the working stroke, the lock nut of the armature screw must be loosened and the prescribed stroke of the brake block set by turning the screw. After a longer period of use, it can occur that the rubber disc settles between the armature base plate and brake block, and this means that the pretension of the armature base plate is insufficient. To restore the pretension, place spacer washers between the armature base plate and brake blocks. Correct pretension is achieved when the armature base plate can be turned on the armature screw despite light suction.

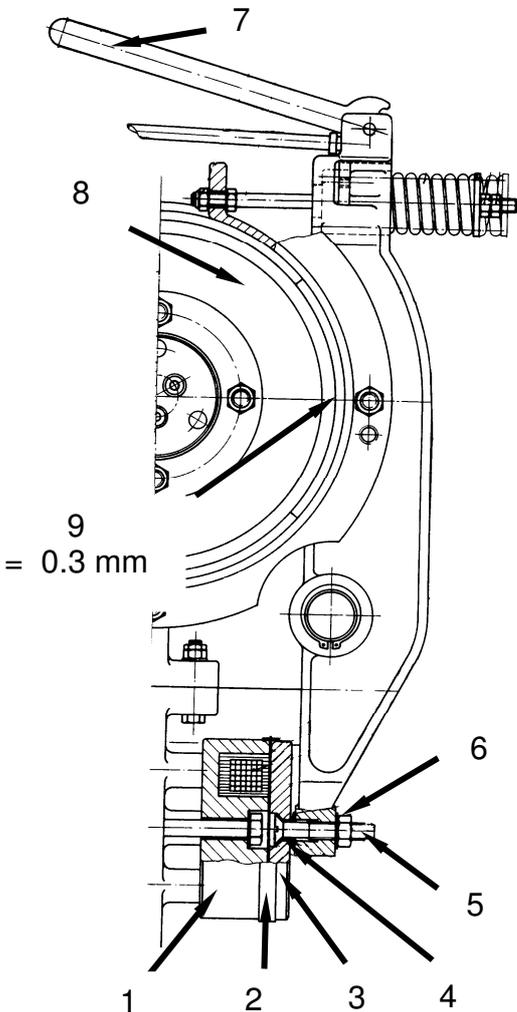


Fig. 7.2.1 Brake adjusting

1	Magnetic clamp
2	Cover ring
3	Armature base plate
4	Rubber disc
5	Armature screw
6	Lock nut
7	Brake release lever
8	Brake disc
9	Working stroke of blocks 0.3 mm



Note: if brake test switches SA3 are present, these must be checked or adjusted after brake adjusting.

See SA3 brake monitoring circuit, chapter 8

Fig. 7.1.1

7.3 Replacing brake blocks



Note: with a remaining lining thickness below 3 mm, or if the lining surfaces are soiled or bare and hardened, the brake linings must be replaced.



- Before starting work, secure the counterweight and elevator car; switch off the power to the installation.
- Remove one brake block; mount the brake linkage and armature base plates on new brake blocks.
- Fit the pre-assembled brake block and align to the middle of the brake disc. Ensure that the brake linkage is aligned.
- Set the brake block stroke. The brake block stroke should be 0.3 mm, measured to the middle of the brake disc.
- Pretension the springs by approx. 25 mm.
- Modify, replace and set the second brake block in the same manner.

- After replacement, operate with electrical recall and observe whether both brake blocks open evenly.
- Check the stroke paths, adjust if required.

7.4 Setting braking deceleration

The brake adjustment is to be carried out only with one effective brake block with the elevator car loaded with loading capacity 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.

The braking torque must be set on uniformly on both brake blocks by pretensioning the brake spring depending on the installation.

		Machine with flywheel mass		Machine with handwinding wheel		
		≤	≤	≤	≤	>
V	m/s	0.63	1.25	0.63	1.25	1.25
- a (full down)	m/s²	0.2	0.3	0.3	0.4	0.50
- a (empty up)	m/s²	0.4	0.5	0.5	0.6	0.75

Table: brake deceleration values



Note: If brake test switch SA3 is present, this must be checked or adjusted after brake adjusting.
See SA3 Mounting the Brake test switches.

7.5 Traction sheave replacement



Removal:

- Disconnect the power from the installation and secure the car and counterweight
- Take the load off the traction sheave, take off the ropes, and use a rope to secure the traction sheave on the lifting gear.
- Remove the rope guard; remove the securing bolts on the outside bearing console
- Undo the screws on the traction sheave hub and screw them into the pressure thread of the traction sheave.
- By tightening the screws diagonally and evenly, push the traction sheave off the shaft.

NB: the worm wheel shaft must be supported (self-aligning bearing!) before removing the outside bearing.

Remove the outside bearing, use lifting gear to lay down the traction sheave.

Mounting:

- Clean the hub diameter and traction sheave mounting hole; do not oil or grease fit surfaces.
- Position the new traction sheave with lifting gear to the hub fitting point.
- Align the position of the holes by loosely mounting the securing bolts to one another
- By tightening the screws diagonally and evenly, hoist the traction sheave onto the hub.
- Fit the hexagon screws, detent edged washers and nuts and tighten with a torque wrench. This must be repeated alternately in a circle until no rotational movement can be perceived and the prescribed torque is reached.
- Screw on new lock nuts.
- **Danger:** if mounted incorrectly, the traction sheave can come loose.
- Ensure that the mounting parts are tight and the tightening torque has been used!



See chapter 9

7.6 Motor replacement



Removal:

Place the new motor in position; check the technical data.



Disconnect the power from the installation and secure the car and counterweight.

Attach and secure the motor to the lifting gear.

Unplug the electrical connections and lines from the motor (motor and magnetic clamp connections).

Remove the nuts from the brake and coupling disc.

In the case of motors with design B5 **SA14**, follow the installation instructions for the flexible coupling in the Appendix (see chapter 9).

Remove the nuts from the motor flange.

Carefully pull the motor from the mounting bolts and place on the ground.

Mounting:

Attach and secure the motor to the lifting gear.

Raise the motor using the lifting gear and align the motor coupling and brake disc. The locations of the securing holes must match those of the screws.

Push the motor and coupling onto the screws on the gear drive and brake disc. Screw on the nuts and tighten evenly with the prescribed torque (see chapter 9)



Note: in the case of motors of B5 design **SA14** (see chapter 9)

7.7 Checking the backlash



Wear enlarges the backlash on the worm drive between the worm wheel and worm shaft.

If the **wear limit value** (backlash) of **2.5 mm** is reached, the gear drive can no longer be deployed for safety reasons.

The gear set (worm wheel and worm shaft) is to be replaced or the gear drive is to be replaced.

Measurement possibility:

- Take the load off the gear drive; (remove ropes from the traction sheave)
Run the measuring operation with the brake closed; block the brake disc axially by placing a wooden wedge between the housing and brake disc
Apply the measuring attachment to the traction sheave; e.g. screw clamp
Specify the measured radius (M) and mark the measuring point
The radius (r) for the **W263B = 221 mm**
- Attach a dial gauge with magnet stator at the gear drive housing and align to the measuring point (M).
- Turn the traction sheave by hand until the dial gauge pointer moves.
Move the traction sheave back and forth until resistance is felt in both directions. The tooth flanks of the worm wheel should be applied a load of approx.
20 - 50 N.
- Read off the dial gauge (ME).
- Use the formula below to calculate the backlash.
- This measurement is to be carried out in at least three different positions on the wheel circumference!

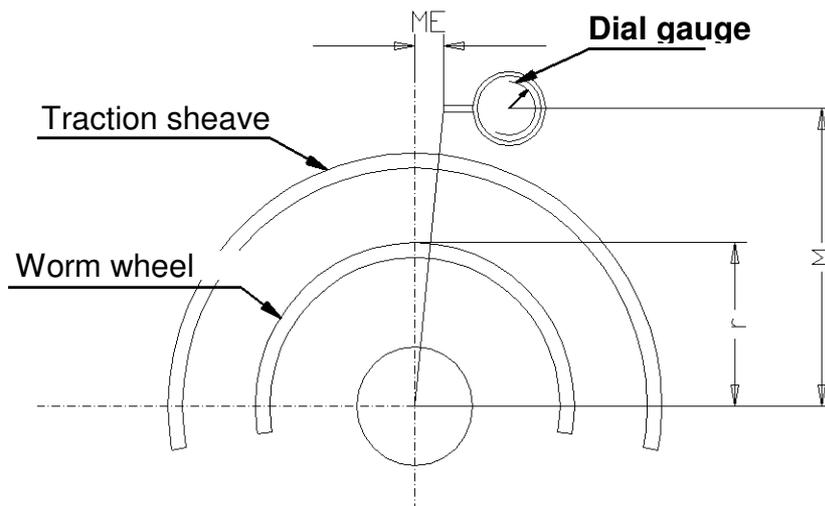


Fig. 7.7.1

M = radius
ME = measurement result
r = radius of worm wheel
All dimensions in mm

$$\text{Backlash} = \frac{ME * r}{M}$$

7.8 Bearing replacement at the outside bearing

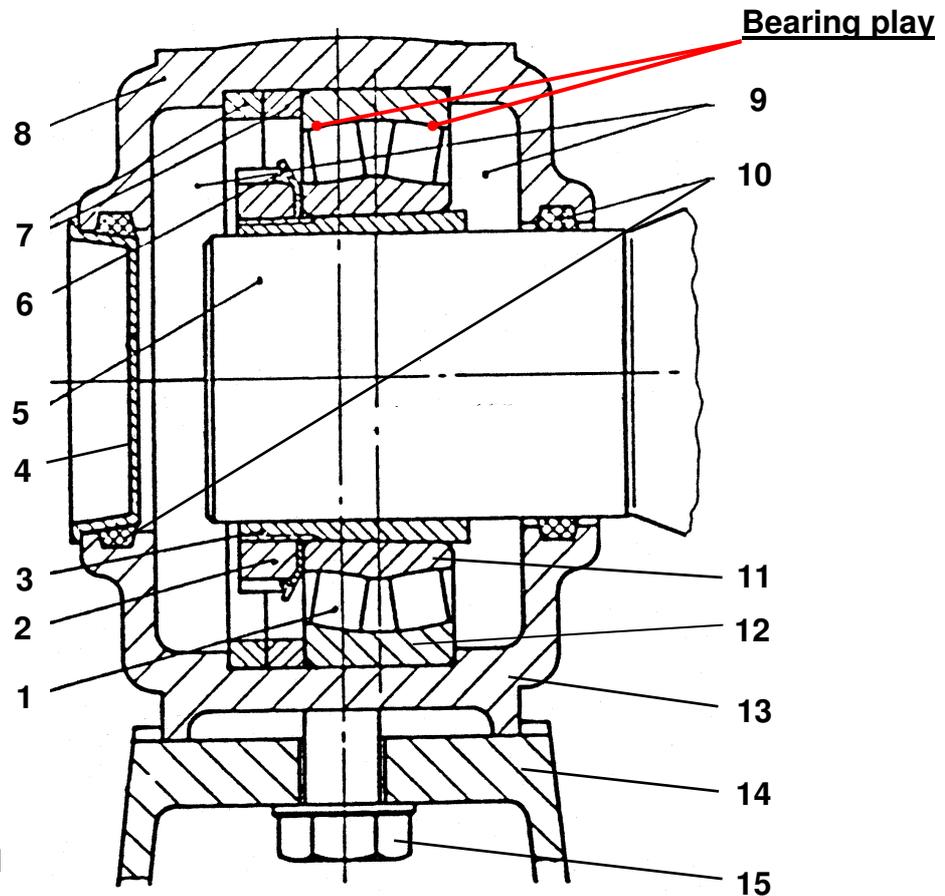


Fig. 7.8.1

Illustration: outside bearing arranged on the shaft end of the wheel shaft (without rope guard carrier fitted)

1	Self-aligning bearings	9	Grease chamber
2	Groove nut	10	Sealing ring (felt)
3	Adapter sleeve	11	Bearing inner ring
4	Bearing cover	12	Bearing outer ring
5	Traction sheave shaft	13	Lower part of the housing
6	Safety plate	14	Console
7	Integral collars	15	Hexagon screw
8	Upper part of the housing		



Note: due to the different bearing dimensions, different setting and control values apply for the minimum permitted radial play / backlash after installation for the various versions (standard, SA4/SA9/SA13). Values, Tables 7.8.5 and 7.8.6

Removing

- Support the wheel shaft with a supporting structure or with lifting gear (two-point mounting, pedestal supports)
- Remove the traction sheave from the shaft end (only with version in SA9)
- Remove the outside bearing console (not with SA9)
- Unscrew the upper part of the bearing housing
- Wipe off the grease and remove the two spacer rings
- Bend open the bent tooth of the toothed lock washer in the groove of the groove nut
- Loosen the groove nut with sickle spanner A135-145; for SA9 with A 205 – 220
- Loosen the adapter sleeve using light knocks (make sure that the seals on the bearing housing are not damaged!)
- Push the housing half and bearing to the shaft end and remove

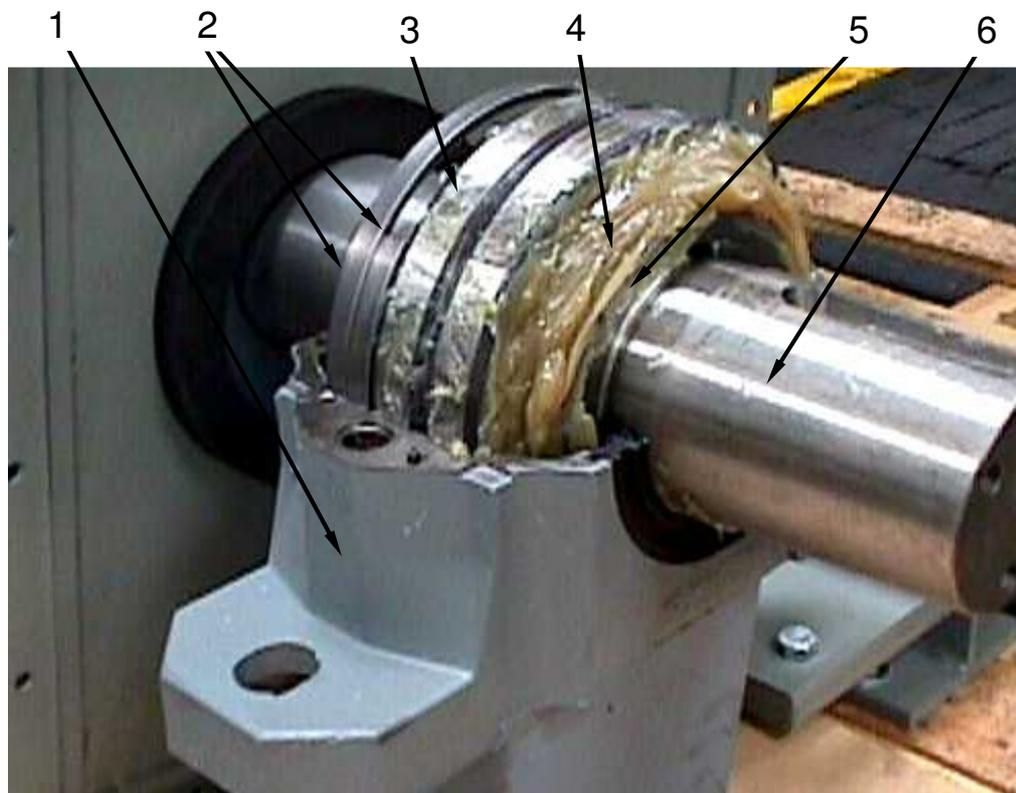
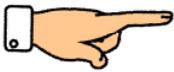


Fig. 7.8.2

Illustration: outside bearing without upper bearing half and traction sheave

Bearing supported in the shaft centre arranged before the traction sheave (SA9)

1	Lower part of bearing housing
2	Integral collars
3	Self-aligning bearings
4	Toothed lock washer
5	Adapter sleeve
6	Traction sheave shaft

Mounting:

Note: the washed mounting borehole as well as the seating of the shaft and adapter sleeve may only be oiled extremely thinly. Otherwise there is a danger that the fixed bearing ring and the adapter sleeve shift during operation.

- Push the rope guard mount onto the shaft. (Comply with the direction of installation!)
- Push the adapter sleeve with the collar side aligned towards the machine onto the shaft end of the wheel shaft
- Push the bearing and groove nut onto the adapter sleeve. Lightly tighten the groove nut with sickle spanner (A 120 -130 or A 180 – 195 for SA9) to pretension the bearing.
- Check the dimension of the gap of the bearing to the traction sheave hub or with SA9 to the shaft end.
In the case of SA9, the bearing is to be mounted 233 mm away from the shaft end. See Fig. 7.8.3
- If required, correct the dimension of the gap. The adapter sleeve can be shifted on the shaft by knocking it lightly.
- Remove the groove nut, insert the safety plate and screw on the groove nut once again.
- Use a sickle spanner to tighten the groove nut until the prescribed radial bearing play is reached on both rows of pulley bodies.
See description "Checking radial play / backlash" in this chapter.
- Secure this setting by bending one of the teeth of the toothed lock washer into the groove of the groove nut.
- Insert felt packing in the outer ring grooves on the lower part of the housing of the pedestal bearing.
- Raise the lower part of the housing and join from below to the rolling bearing.
- Push the console under the lower part of the housing, align the mounting holes and loosely bolt the lower part of the housing onto the console.
- Insert integral collars in the lower part of the housing before the self-aligning bearing.
- Insert felt packing, oil and align in the outer ring grooves in the upper part of the housing.
- Grease the bearings with rolling bearing grease type F1
- Position the outer bearing housing upper part and bolt onto the lower part.
- Remove the strut of the traction sheave shaft, check the horizontal position and, if required, correct it by adding shims to the compensating support or outside bearing.
In the case of SA9, mount the traction sheave on the shaft end and secure the conical spring washer with new microencapsulated screws before checking.
- Tighten the console and bearing housing screw connection; mount and set the traction sheave rope guard, if present.



Note: in the case of inclined pulling (SA1), align the console in such a way that the bearing housing makes contact at the collar on the pull side.

Arrangement of outside bearing for standard and SA13 version

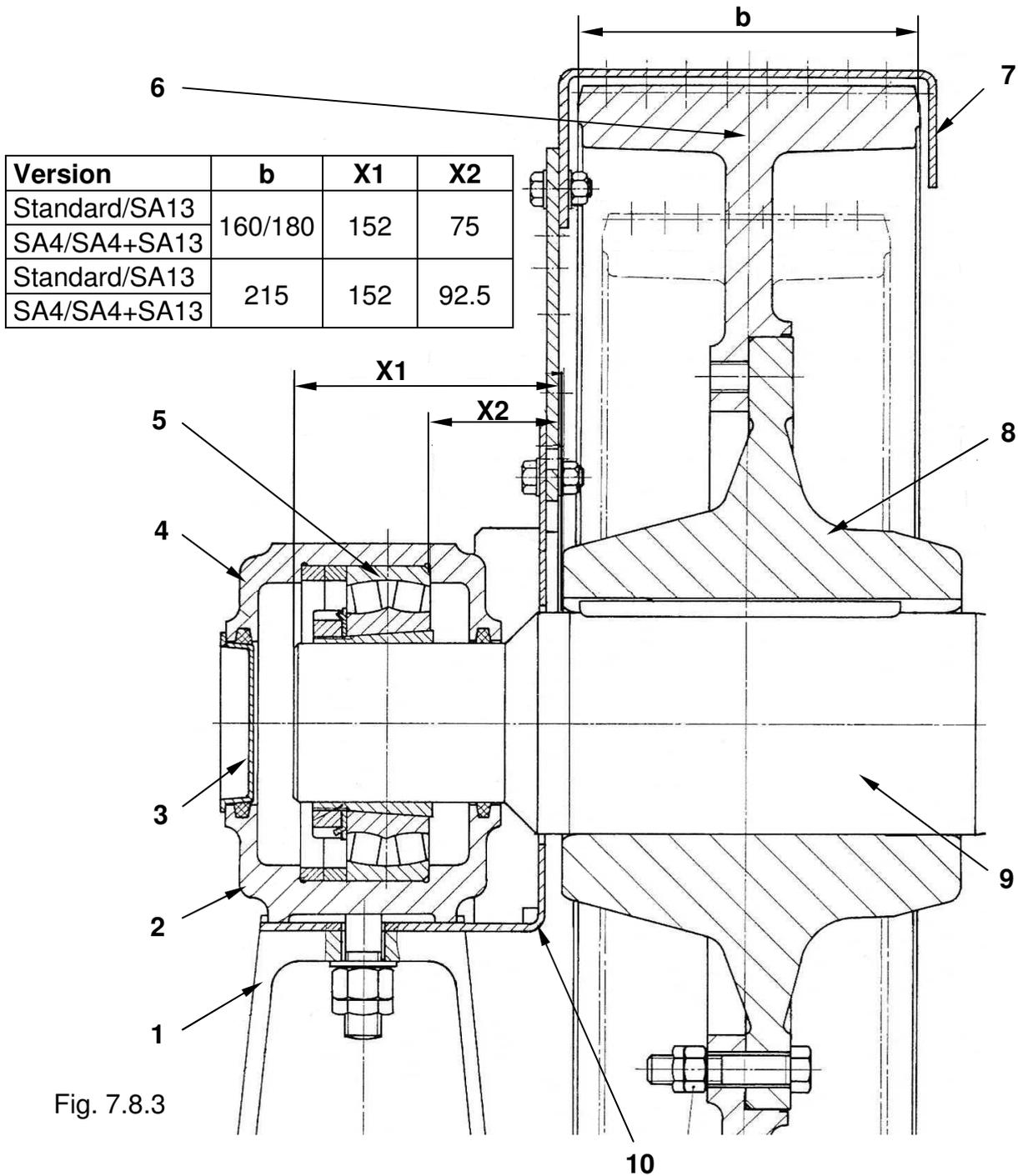


Illustration of outside bearing

1	Console	6	Traction sheave rim
2	Lower part of the housing	7	Rope guard carrier
3	Protective cover	8	Traction sheave hub
4	Upper part of the housing	9	Wheel shaft
5	Upper part of the housing	10	Rope guard carrier

Arrangement of supporting bearing for SA9 version

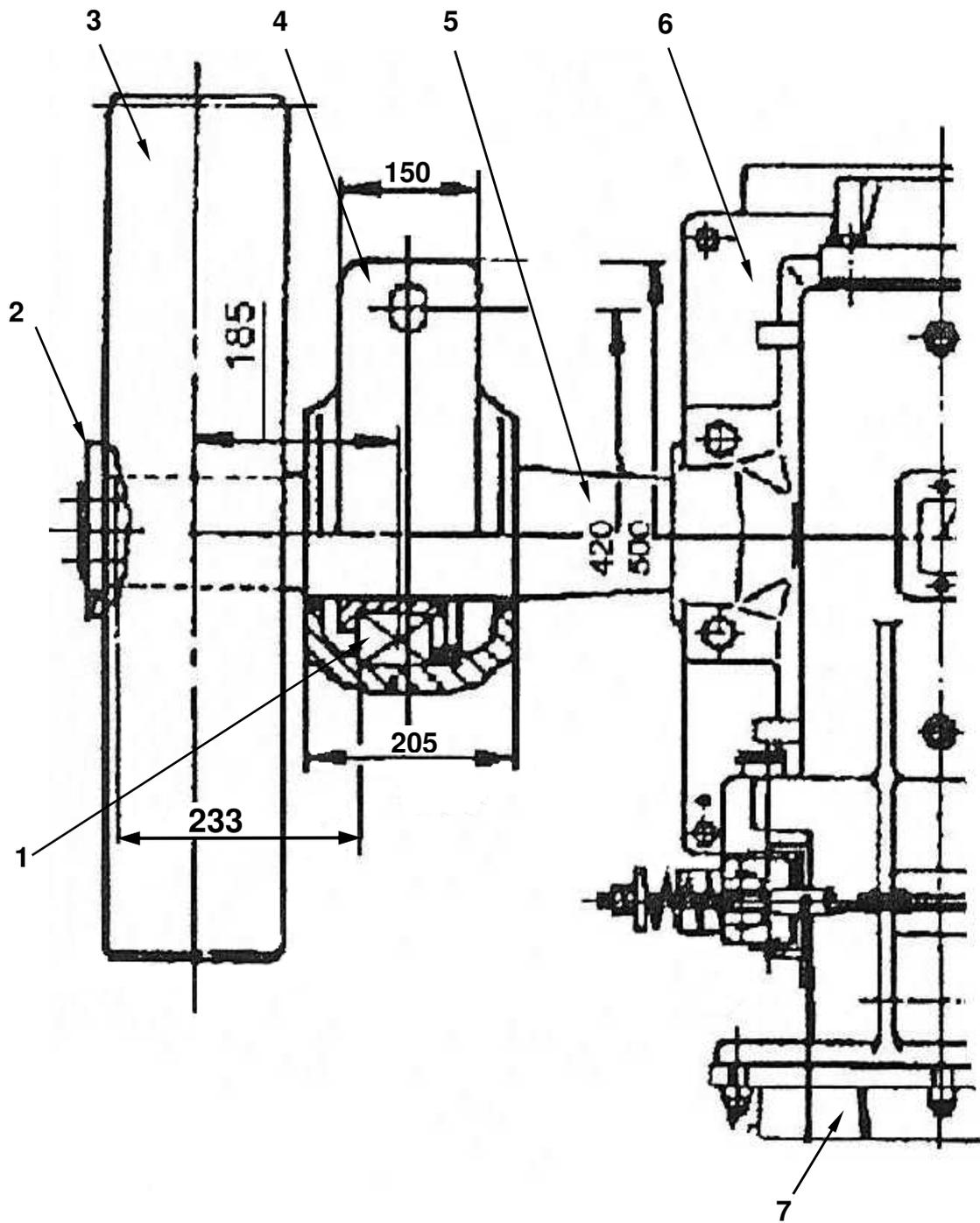


Fig. 7.8.4

1	Self-aligning bearings	5	Wheel shaft SA9
2	Disc	6	Gear box casing
3	Traction sheave	7	Motor flange
4	Supporting bearing		

Checking the radial play / backlash on the outside bearing / self-aligning bearing

The radial play / backlash on the self-aligning bearing must be checked at rows of pulley bodies. Use a feeler gauge with different thicknesses of gauge plates for the measurement.

Check the radial play / backlash before, during and after installation of the bearing.

Run the check between the bearing outer ring and pulley without load (Fig. 7.8.5)

Before each check, turn the bearing a number of times, allowing the pulleys to evenly distribute around the circumference of the bearing.

Only if both rows of pulleys have the same check values is it ensured that the inner ring is not laterally offset in relation to the outer ring.

For installation, determine the permissible bearing play on the basis of the mounting borehole and radial backlash group.

The radial backlash group is based on the operating conditions and is marked on the outer ring of each bearing.

Group **C0** is prescribed for the outside bearing. If another group is used, we shall not assume any service life guarantee!

Check values for bearing play **before** installation:

Radial backlash group	Ø up to 100 mm Standard, SA4 and 13		Ø up to 125 mm for SA9	
	min.	max.	min.	max.
C0 [mm]	0.08	0.11	0.12	0.16

Table .7.8.5

Check values for the **smallest permitted** bearing play **after** installation

Radial backlash group	Ø to 100 mm Standard and SA4	Ø to 125 mm for SA9
C0 [mm]	0.035	0.055

Table .7.8.6

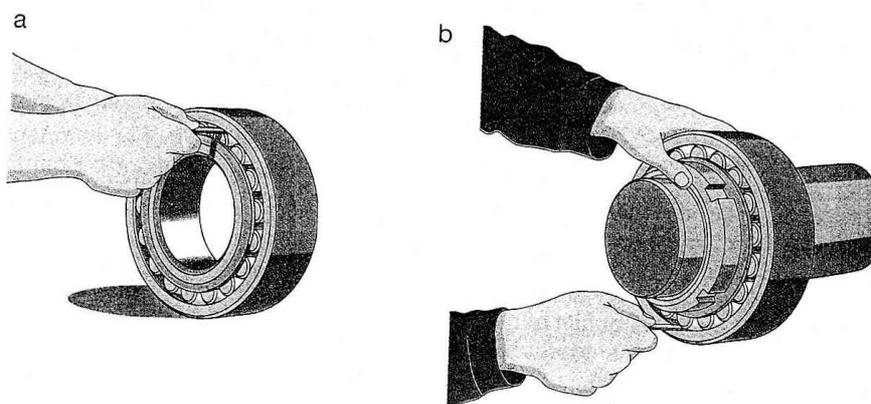


Fig. 7.8.5

Check the radial play / backlash with a feeler gauge

7.9 Checking for escaping grease / oil

Examine the area around the bearing cover, brake drum and brake linings for traces of oil.

A small amount of escaping oil means individual drops of oil or traces of oil in the area of the bearing seal.

Contamination level	Procedure	
No escaping oil determined	Check regularly within the framework of maintenance	Every 3 months (6 months if elevator used infrequently, < 50 000 runs per year)
If a small amount of escaping oil is determined	Clean and check regularly within the framework of maintenance	Every 3 months (6 months if elevator used infrequently, < 50 000 runs per year)
If a large amount of escaping oil is determined or oil is escaping from the brake disc / brake linings present	Clean the drive and, if necessary, the brake and carry out short-term repairs Before continuing operation until modification, run a brake test. If the braking effect is inadequate, shut down the installation.	Repair after 4 weeks at the latest

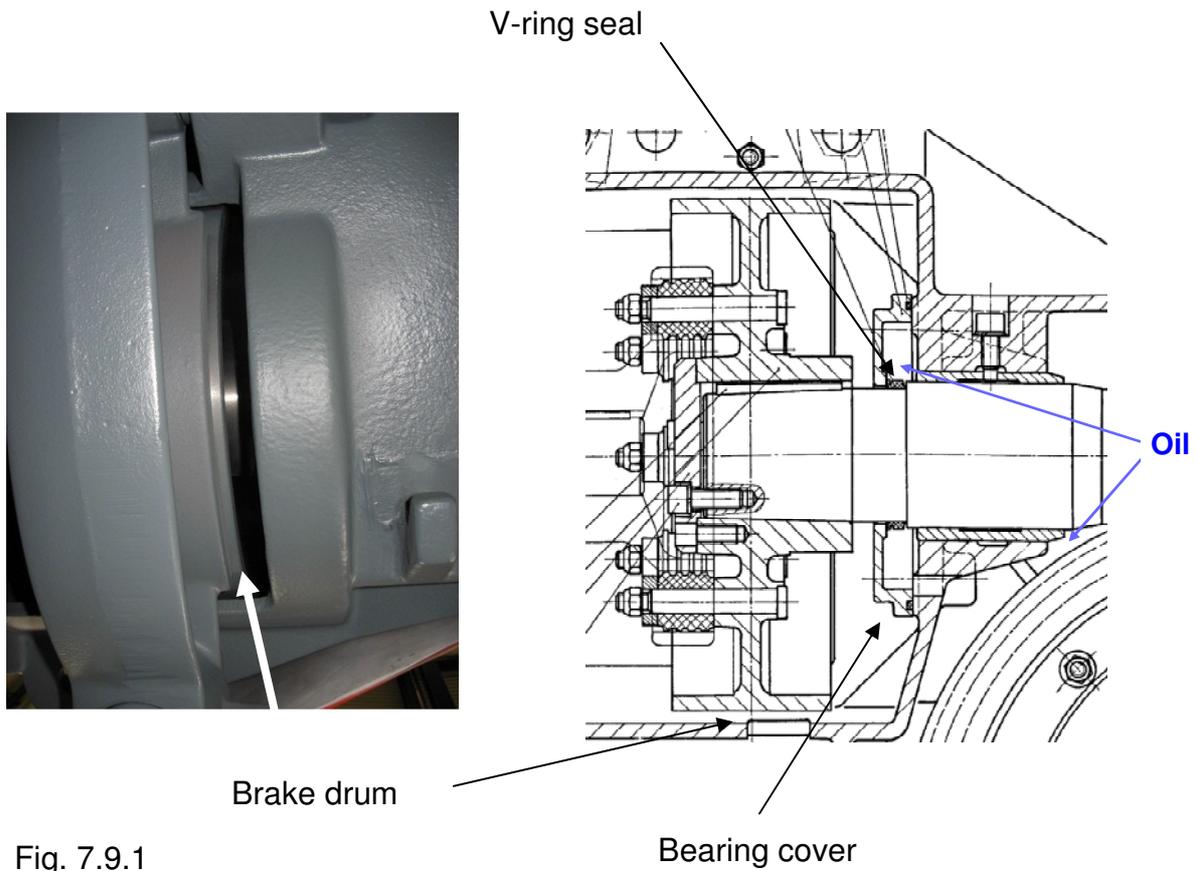


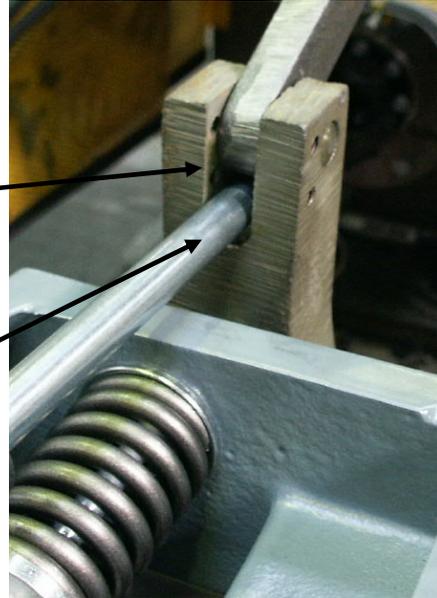
Fig. 7.9.1

7.10 Check of the brake linkages

The brake linkages could chafe against the cast edge of the brake block. In the process, material could be removed and the braking effect impaired. Make sure that the brake linkages are "free" and unable to chafe.

Break the cast edge at the brake block (debur or radius)

Examine the brake release rod for traces of chafing; grease if necessary



Remedy:

If necessary, debur the cast edge with a file so that there is no longer a sharp edge at this position and the brake linkages do not get stuck. If necessary, twist, align or grease the brake linkage.

8.0 Special versions (optional)

8.1 Overview of special versions

(extras for certain applications)

Overview:

- SA1** With bearing bushes turned by 90° for horizontal rope departure
- SA2** Extended worm shaft for additional mounting of handwinding wheel / flywheel rim on the gear drive
- SA3*** With brake monitoring
- SA4** Wall bearing with vapour-proof shaft duct and extended worm wheel shaft for Ex / partial Ex version
- SA7.1*** With tacho-generator (1 collector)
- SA7.2*** With tacho-generator (2 collectors)
- SA7.3*** With tacho-generator / pulse generator
- SA7.4*** With pulse generator **a)** analog; **d)** digital
- SA9** With traction sheave position in the shaft - extended worm wheel shaft with pedestal bearing support
- SA11** With side oil drain
- SA12** With additional terminal box for intermediate connection of brake magnets for motors without their own terminal box
- SA14** With elastic coupling for motors in B5 design
- SA15** With brake magnets in version sG4 (Ex)

The special versions marked with * are delivered separately due to the risk of damage in transit.



SA3 Brake monitoring for checking the brake blocks (opened-closed) and brake lining wear.

Note: After adjusting the brake, the setting of the brake test switches must be checked and readjusted if necessary.

Description of setting, see 8.21 SA3 brake monitoring circuit

SA4 Wall bearing with vapour-proof shaft duct and extended worm wheel shaft as “partial Ex” protection. In the same way as the standard version, the wheel shaft is supported at the shaft end by a pedestal bearing.

With SA4 equipment, a supplementary operating manual with material number 60 000 20 86 0 for installation and operation of the special version is enclosed.

SA7.1-SA7.4 The **tacho-generator / pulse generator** is opposite the motor on the end of the worm gear shaft. The tacho-generator / pulse generator are delivered as loose parts due to the risk of damage.

SA9 With **an extended worm wheel shaft** for separation of the drive and shaft by means of a sealing bearing bracket, partial Ex protection is achieved. The worm wheel shaft is supported here by a bearing. The traction sheave is pressed onto the conical shaft end and secured by a disc with microencapsulated screws.

SA11 Oil drain pipe with angled pipe leading away from the machine **to the side** if there is little space for direct access to the drain.

SA12 Additional **connection box** for connection of the brake magnets on motors without connection box.

SA14 For motors of B5 design, compensate for any alignment inaccuracies between the brake disc and motor coupling with the help of a **flexible coupling**.

Description of the coupling, see Appendix 9 'Flexible coupling for motors of model series B5

8.2.1 Brake monitoring circuit SA3

ThyssenKrupp TCI TCM control systems

The brake monitoring circuit checks the brake blocks. It prevents motor movements when the brake is partially or fully closed. It enables detection of any brake lining wear at an early stage. Switches (sensors) are used to check whether the brake blocks are closed, open, or worn. The travel signal is used for the evaluation. If the monitoring circuit triggers, it switches the drive off once the destination has been reached.

Display is by means of LEDs on the sensors, on the brake monitoring in the control cabinet, and by deactivation of the drive. If a Teleservice device is connected, the fault is shown on the display.

Requirements for later mounting:

brake blocks with cast-on surfaces for mounting the setting screws. If the cast-on surfaces are not present, the brake blocks must be replaced or a mechanical mounting must be created for mounting the screws.

Installation:

1. 2 lines If not included in the scope of delivery, make two cables (0.3*0.75 mm² with PVC jacket) for direct connection of the sensors to the control system and connect them.
2. In the case of gear drives of the W series (W149; W191; W263; W332), attach the sensors with elbow brackets to the pressure rod for the brake springs. See Fig. 8.2.2.3.
3. Screw lock nuts onto the enclosed hexagon screws and screw into the thread on the brake blocks. The switch tappet must be opposite the setting screw, but should not make contact with it.

Setting:

Before starting the sensor setting, the brake block stroke setting must be completed! For description, see chapter 8

4. Switch on the emergency operation switch and elevator control system.
5. Adjust the setting screw for the switch until the LED lights up.
6. Slowly turn the screw back until the LED goes out.
7. Adjust the setting screw by ¼ revolution (corresponds to around 0.3 mm) towards the switch and tighten the nut.
LED lights up continuously.
8. Open and close the brakes by switching the motor on. In doing so, check that the sensors the switch between open and closed brake.

8.2.2 Brake monitoring circuit SA3 BRC

Third-party products (not TCI, not TCM)

The brake monitoring circuit BRC is a set of retrofit electronics for checking the brake blocks. It evaluates the signals of the sensors and forwards them to the downstream control electronics. When the value set at the sensor is reached, the device switches off the drive.

Indication is in the form of light emitting diodes at the sensors and at the BRC brake monitoring in the control cabinet. If a Teleservice device is connected, the fault is shown on the display.

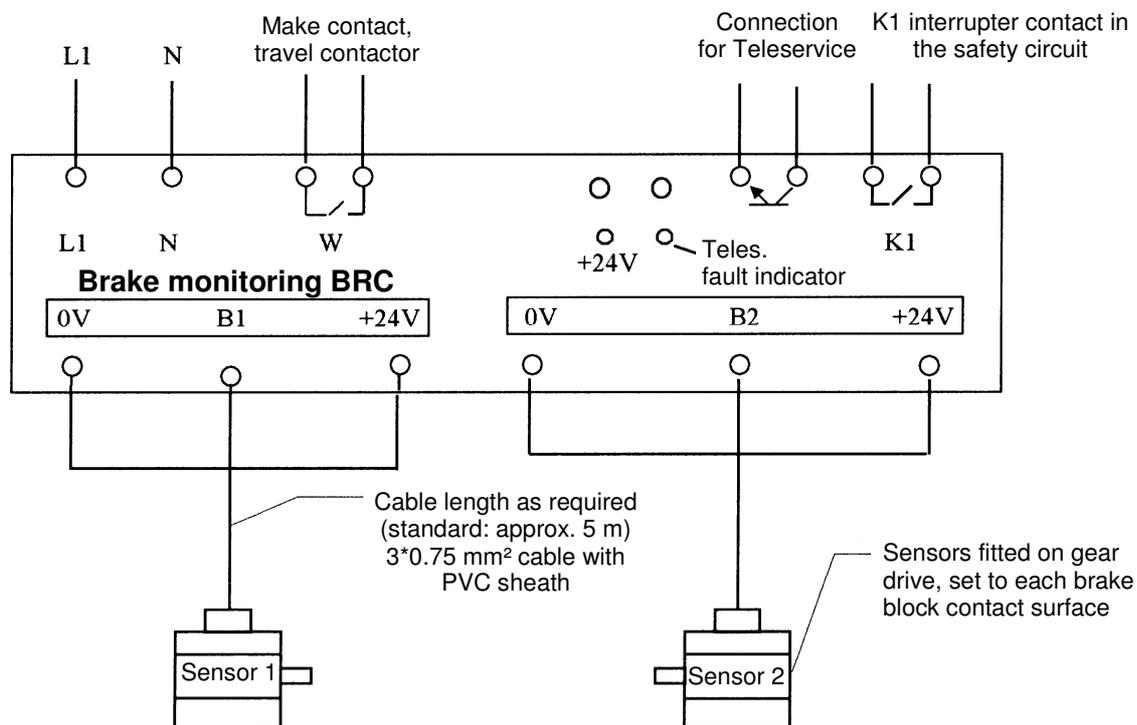


Fig. 8.2.2.1 **Terminal connecting plan for brake monitoring BRC**
Valid for third-party products (not TCI, not TCM)

Connections:

- L1 and N For mains connection 230 V
- W For make contact of the W contactor
- B1 Sensor 1 with power supply 24V/0V
- B2 Sensor 2 with power supply 24V/0V
- K1 Make contact for evaluation (e.g. integration in the safety circuit)
- Teles. For connection to a THYSSENKRUPP Teleservice device (remote monitoring of the elevator)

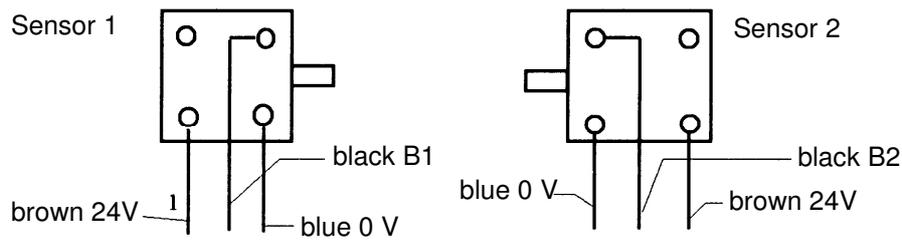


Fig. 8.2.2.2 Terminal connecting plan for sensors

Switch mounting SA3 on gear drives of the W series

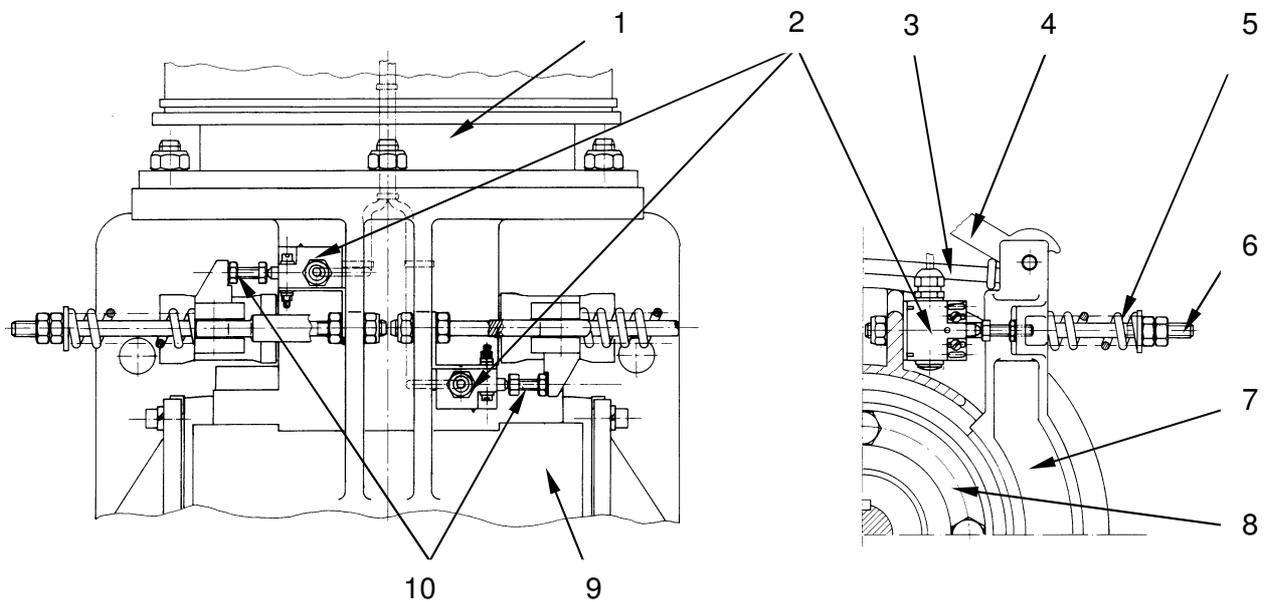


Fig. 8.2.2.3

1	Motor	6	Spring tension screw
2	Test switch (sensor)	7	Brake blocks
3	Pressure rod	8	Brake disc
4	Brake release lever	9	Gear drive
5	Compression spring	10	Setting screw

8.3 Mounting the tachometer and pulse generator SA7

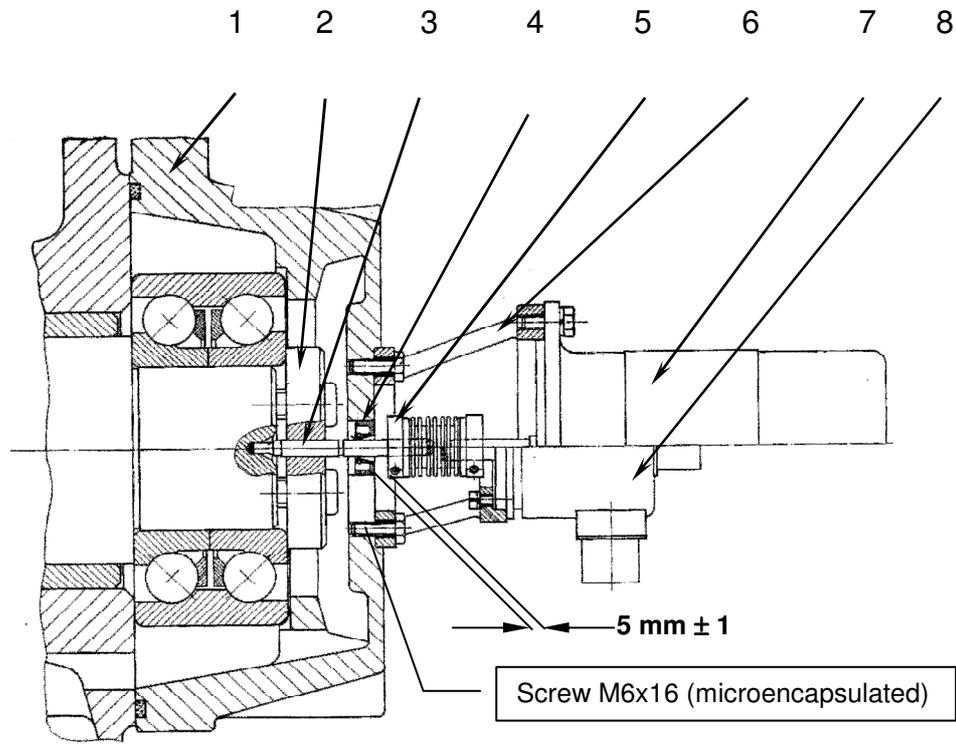


Fig. 8.3.1

1	Bearing cover	5	Coupling
2	Disc	6	Flange
3	Bolt	7	Tacho-generator
4	Shaft sealing ring	8	Pulse encoder

Technical data:

SA7.1 Tacho-generator RE.0444 1 x 60 V / 1000 rpm analog DC
 I_{max} 0.18 A N_{max} 5000 rpm IP 44

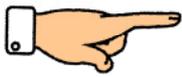
SA7. Tacho-generator RE.0444 2 x 60 V / 1000 rpm
 I_{max} 2 x 0.09 A N_{max} 5000 rpm IP 44

SA7. Tachometer with pulse generator 1 x 60 V / 1000 rpm 2 x 120 imp./rev.
 I_{max} 0.06 A N_{max} 9000 rpm IP 55
 Power supply: 11 – 26 V DC

SA7.4

a Pulse generator analog 2 x 1000 impulses
 I_{max} 0.15 A N_{max} 9000 rpm IP 65
 Power supply: 10 – 30 V DC

d Pulse generator digital 2 x 60 impulses
 Scan frequency = 150 kHz; push-pull: 10 – 30 V DC
 Channel A and B el. offset by 90°, N_{max} 12000 rpm IP 65



Note: the values stated here can vary depending on the manufacturer; consult the type plate for exact details.

Installation

Bearing cover replacement (only with later modification)

NB: take the load the gear drive before starting work!

(set down counterweight, secure elevator car)

- Unscrew the rear bearing cover (Item 1) on the gear drive and disc (Item 2) on the end of the worm gear shaft.
- Press in a new disc with pin (Items 3/4) in the centre of the worm shaft, align and screw on. Use a dial gauge to check the concentric running deviation of the pin (max. 0.05 mm).
If the maximum value is exceeded, correct it by aligning the disc.
- Tighten the screws evenly with the prescribed torque
⇒ see chapter 9
- Loosely screw the new bearing cover (Item 1) onto the gear drive.
- Use a centring sleeve to align the bearing cover centrally to the pin (Item 3); tighten the screws with the prescribed torque.
- Grease the shaft sealing ring (Item 4) with multipurpose grease F1, carefully push over the pin and press into the bearing cover. Pay attention to the installation position!
⇒ see illustration in Fig. 3.2.3

Installing the tachometer / pulse generator

(delivered as loose parts due to risk of damage)

- Remove the transport guard from the bearing cover (not required in the case of modification).
- Before continuing installation, check the concentric running of the pin (max. 0.05 mm) once again and align if necessary.
- Push the coupling (Item 5) onto the pin; secure with screw.
Comply with dimension 5 mm ± 1.
- Use microencapsulated screws to bolt the flange (Item 6) onto the bearing cover. NB: the screws may only be used once.
- Push the drive shaft of the tachometer / pulse generator into the coupling hole; secure with bolt. Firmly bolt the tachometer / pulse generator onto the flange.
- Connect according to the manufacturer's instructions, see chapter 9



Note: comply with safety, installation and terminal connecting instructions in the operating manual and terminal connecting plan of the manufacturer, see chapter 9.

Mounting bolts for:	
Bearing cover (Item 1)	Disc (Item 2)
150 Nm	60 Nm

See "Tightening torques", chapter 9



Note: for alignment of the bearing cover, you need a centring sleeve.

9.0 Appendix

9.1 Tightening torques – tightness values

NB: must be complied with when working on the machine or replacing parts!

	Tightne	DIN/ ISO	Tightenin torque Nm
Disc on worm wheel shaft			
Slotted pan head tapping screw M16 * 50 microencapsulated Detent edged washer SK M16	8.8	4762	180
Motor on gear drive			
Stud M16FO * 40	5.6	939	90
Hexagon nut M16	8	7042	90
Motor shaft on coupling brake disc			
Hexagon fitting bolt M16 * 60	8.8	609	150
Hexagon nut M16	8	7042	150
Brake disc on worm shaft			
Locking screw M10 * 30	8.8	912	40
Lock washer A10		127	
Locking screw on brake block pin			
Slotted set screw with flat point M16 * 16		4017	
Hexagon screw M8 * 16	8.8	4014	
Bearing bracket on housing			
Slotted pan head tapping screw M10 * 30	8.8		190
Slotted pan head tapping screw M10 * 60 (rope guard)	8.8		190
Lock washer A10		127	
Brake magnet on housing			
Hexagon screw M16 * 150	8.8	4014	150
Hexagon nut M16		10511	150
Rear bearing cover on housing			
Locking screw M16 * 55	8.8	4014	100

For use cases not listed in the table, the following apply for

Allen screws DIN 912 ISO 4762

Hexagon screws DIN 931 / 933 ISO 4014 / 4017

Dimensions	Tightening torque M_A (Nm)		
	8.8	10.9	12.9
M4	2.6		
M5	5.3		
M6	9.0	12	15
M8	23	30	35
M10	45	60	75
M12	75	110	130
M16	190	270	320
M20	370	520	620
M24	640	900	1100

The screws are to be tightened with a torque wrench!



Note: microencapsulated screws are to be replaced after they have been used **once**.

9.2 Blocking clamp

A blocking clamp that matches the traction sheave (rim width and design) is part of each machine



Deployment of the blocking clamp:

During installation work on the elevator car or counterweight to prevent movement due to **slipping ropes**.

In the case of work where the rope traction of the system is insufficient, e.g. removing from the safety gear, use the blocking clamp.



Note: the tightening screws of the blocking clamp are to be initially tensioned until it is excluded that ropes will slip.

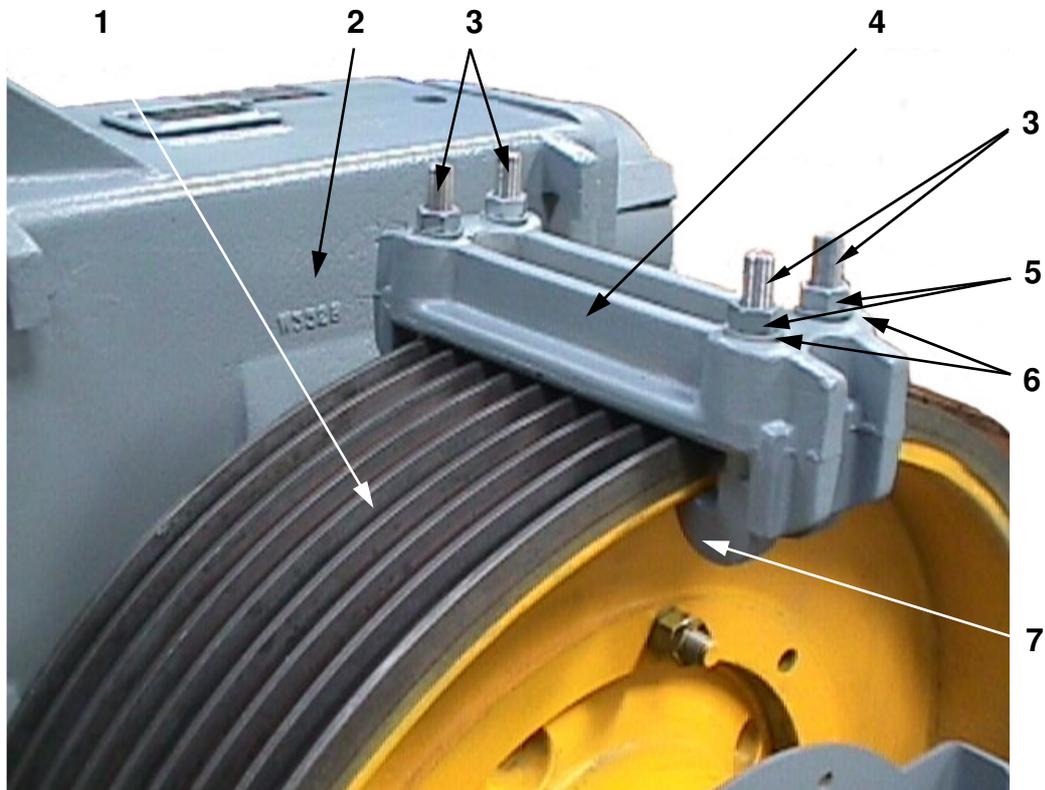


Fig. 9.2.1

Mounting the blocking clamp on the traction sheave

1	Traction sheave
2	Gear
3	Tightening screw
4	Blocking clamp
5	Hexagon nut
6	Washer with tap
7	Tensioning clamp



NB: before commissioning the drive, remove the blocking clamp, as otherwise the system will be damaged.

Fitting instructions for Centaflex couplings

with highly elastic rubber elements

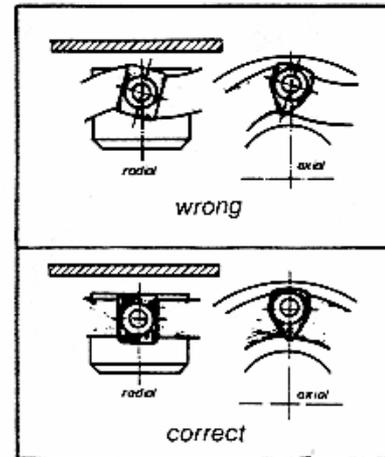
Important notes — observe strictly

The radial and axial screws connecting the rubber element to the hubs must all be tightened to the torque given in the label below, using a **torque wrench**.

Tightening with a torque wrench is particularly important with the larger sizes. Tightening "by feel" will not do as experience has proved the tightening torques in such cases are far too low. Tightening torques which are too low will inevitably lead to slackening of the screws in service and consequently to the destruction of the coupling.

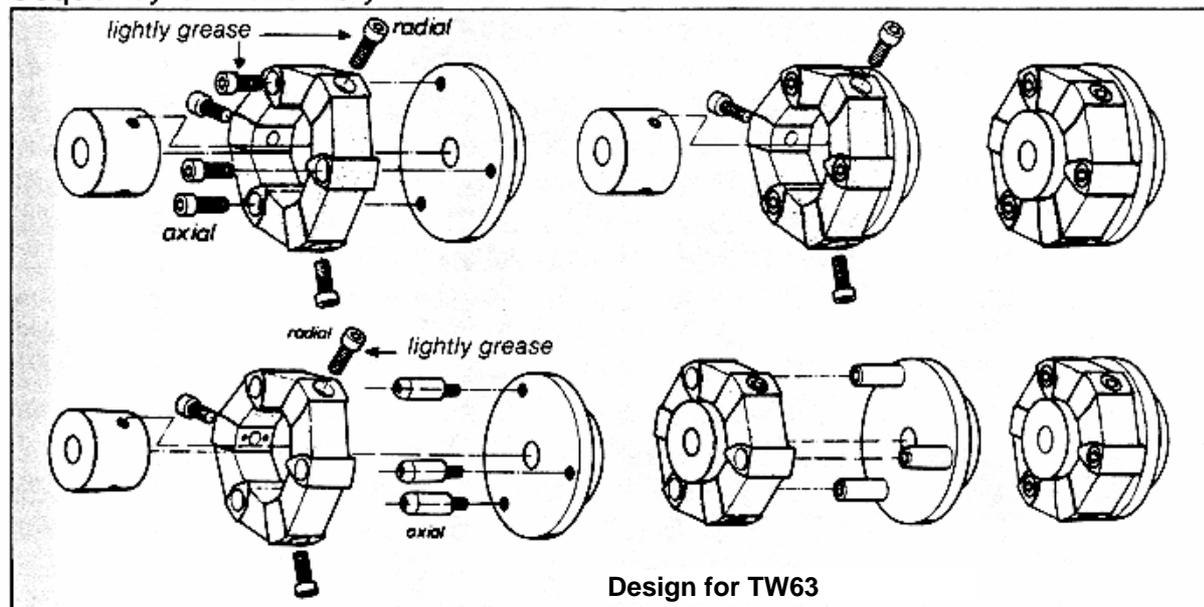
Ensure that on tightening the screws, the aluminium bushes in the rubber part are not twisted at the same time, but sit

straight. In order to reduce friction between the screw head and the aluminium part, a small amount of **grease** should be applied under the head of the screw before fitting. If necessary, use a suitable tool for applying counter pressure on the element to **prevent twisting of the rubber part** during tightening of the screws. This is particularly important with the **radial screws**, otherwise the cylindrical faces between aluminium insert and hub will not engage on the full area, but only on two corners. This will inevitably lead to slackening of the screws and subsequent destruction of the coupling. If the coupling is supplied in a pre-assembled state, do not dismantle it, but fit it in this condition.



Centaflex Size	1	2	4	8/12	16/22	25/28	30	50/80	90/140	200/250	400
Screw Size	M 6	M 8	M 8	M 10	M 12	M 14	M 16	M 16	M 20	M 20	M 20 / M 24
Tightening torque Nm	10	25	25	50	85	140	220	220	500	500	610 / 1050
	mKp	1,0	2,5	2,5	5	8,5	14	22	22	50	50

Sequence of Assembly



Standard Design

Fit the hubs onto the shafts or the adaptor plate onto the flywheel.

Fit the rubber element to the flanged hub or flywheel, by means of **axial screws**. **This must be carried out before engaging the radial screws in the cylindrical hub.**

Push the shaft-mounted cylindrical hub inside the rubber element and then fasten the rubber element on it with radial screws. During this process, the rubber element is compressed radially and is pre-loaded for increased capacity.

Design S (plug-in or blind fitting type)

Fit the hubs onto the shafts or the adaptor plate onto the flywheel.

Fit the axial socket bolts on to the flange hub or adaptor plate on the flywheel.

Position the element with the side having the rubber free face of the axial aluminium inserts towards the flange hub and, using the radial screws, mount it on the cylindrical hub. During this process, the rubber element is pulled together radially and receives its pre-load. Then, push the cou-

pled elements together and in so doing, carefully slide the coupling with light axial pressure onto the socket bolts. The rubber element is subjected to a little more radial compression by the socket bolts, and the pre-load is thus increased. The axial bores in the rubber element should be smeared lightly with grease beforehand to allow the socket bolts to slide easily in the inserts.

Use only the "Inbus Plus" screws provided which are marked on the threads with a micro-encapsulated adhesive which locks the screw in the thread and secures them reliably against slackening. For adequate effect, the hardening period for this adhesive after bolting up is approximately 4-5 hours at room temperature (20° C). The coupling should not be operated before this period has elapsed.

The adhesive will be fully hardened after 24 hours. Higher temperatures will speed up the hardening process, at 70° C (using a hot air blower), for instance, the hardening will take only 15 minutes. Inbus Plus is temperature-proof between -80° and +90° C and the screws can be re-used up to 3 times max. Any adhesive stripped off during bolting up will settle between the hub and the aluminium part, but this will have a beneficial effect in that it enhances the friction grip between these parts.

Note: Anaerobic adhesives (such as Loctite, Omnifit etc.) will loosen the adhesion of the rubber and the insert and will consequently destroy the coupling.

Such adhesives should therefore be avoided if possible. Where the use of this adhesive is unavoidable apply it very sparingly so that no surplus adhesive will moisten the rubber.

We cannot accept any complaints concerning rubber parts which have become defective through the action of adhesives not supplied or recommended by us.

The coupling is completely maintenance-free and does not require any lubrication. Splashing with oil and similar substances should be avoided, since natural rubber is not oil-resistant.

However occasional minor contact with oil or grease is not harmful as this oil will be thrown off during rotation of the coupling.

Installation Table: Screw fastener details, dimension 'S' between the hubs, and dimension 'Z'.

Centaloc Clamping Hub

If the hubs are equipped with Centaloc-clamping (see page 13), the clamping screws must be tightened at least to the following tightening torques:

Clamp screw	Tightening torque (Nm)
M 10	30
M 12	50
M 14	70
M 16	120
M 20	200

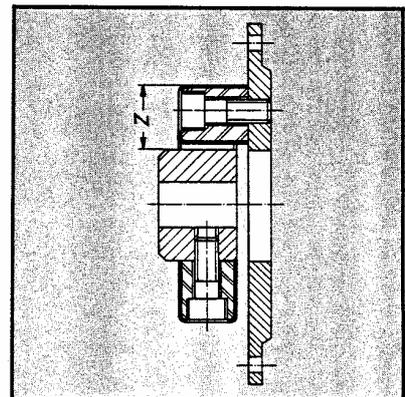
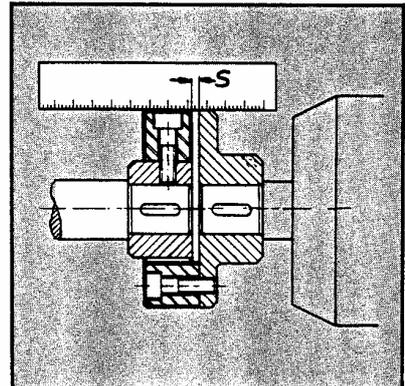
After assembly, the coupling should be carefully aligned if the coupled elements are not already in good alignment by virtue of being spigot located. In the interest of a long service life from the coupling, the higher the speed, the more meticulous should be the alignment. In design type 2, the alignment can very easily be checked with a straight-edge. The outer diameter of the flange hub must be flush with the outer diameter of the rubber element in those areas where the radial screws sit: i.e. in different radial positions.

In design types 1 and 3 the distance "Z" must be measured at all axially bolted points of the rubber element (2, 3 or 4 points depending on the size) and must be set as accurately as possible to the value "Z" quoted in the table below.

For spigot located components there is no need to align the coupling.

Position of cyl. hubs:

The long end of the cyl. hub, usually identifiable by a chamfer, is normally as shown in drawing below. However, in some special applications, the hub must be reversed. When in doubt, install as shown in the relevant installation drawing.



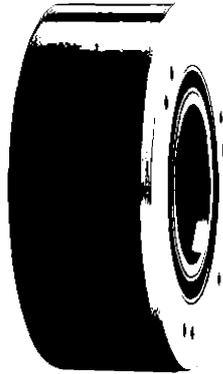
CF Size	1	2	4	8/12	16/22	25/28	30	50/80	90	140	200	250	400
Standard Design	M6x10 M6x25	M8x20	M8x25	M10x30	M12x35	M14x40	M16x50	M16x50	M20x65	M20x65	M20x65	M20x80	M24x100 M20x100
Type „S“ Special Bolt Screws	M6	M8	M8	M10	M12	M14	M16	M16	M20	M20	M20	M20	M24
Universal joint shaft	M6x10												M24x100
G	M6x25	M8x20	M8x25	M10x30	M12x35	M14x40	M16x50	M16x50	M20x65	M20x65	M20x65	M20x80	M20x100
Universal joint shaft	M6x10	M8x20	M8x25	M10x30	M12x35	M14x40	M16x50	M16x50			M20x65	M20x80	M20x100
GZ axial	M6x30	M8x25	M8x30	M10x35	M12x40	M14x45	M16x55	M16x55	M20x70	M20x70	M20x80	M20x90	M24x110
Dimension „S“ mm	2	4	4	4	6	6	8	8/4	8	8	8	8	10
Dimension „Z“ mm	13	22,5	27,5	30/31	40	42,5	50	50/52,5	67,5	67,5	77,5	90	100



WACHENDORFF

ELEKTRONIK GMBH & CO KG
 Industriestrasse 7 • D-65366 Geisenheim
 Tel.: 06722/9965-0 • Fax: 06722/9965-43

Hollow shaft Encoder WDG 100H

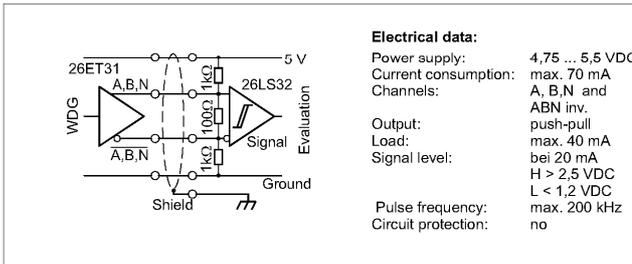


Order-No.: WDG 100H-XX-YYYY-ABN-I05-K3-D56

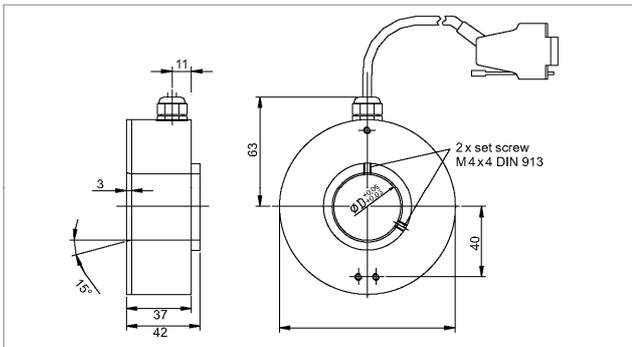
YYYY = No. of lines = 1024, 4096
 XX = Hollowshaft: 30, 38 mm

Suggested shaft adjustment:
 about hollow shaft diameter D (XX) = 38: 38m6 (k6, j6)
 about hollow shaft diameter D (XX) = 30: 30m6 (k6, j6)
 Max. concentricity deviation of motor shaft: 0,05 mm

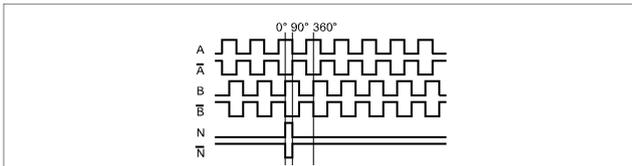
Thyssen-No.: 9950 000 6021 für 1024 lines
 9950 000 6022 für 4096 lines



Output circuit: 5 VDC: I05



Dimensional drawing WDG 100H, Dimensional specifications in mm.



View from shaft end, rotating clockwise.

Specifications

Mechanical Data

Housing
 - Servo flange: Aluminium
 - Housing: Aluminium,
 - Depth: 42 mm
 - Attachment: about Hollow-shaft with
 2 set screw M4

Hollow shaft
 - Material: Stainless steel
 - Diameter: 30, 38 mm
 - Loading on shaft-end: max. 200 N radial
 max. 100 N axial
 - Starting torque: approx. 1.5 Ncm at
 ambient temperatur
 2 x Hub M4, DIN 913

Attachment:
Bearings
 - Type: 2 precision ball
 bearings
 - Service life: 3 x 10¹⁰ revs. at 100%
 of full rated shaft load
 10¹¹ revs. at 10%
 10¹² revs. at 20%
 max. 3.500 r.p.m.

Speed: ca. 720 g
Weight: Connection: radial with 10 m
 shielded cable with
 converted and
 metallised SUB-D9
 connector with knurled
 screw UNC 4-40

Electrical Data

General Layout: DIN VDE 0160
Supply / Output: → Output circuit
Cable length: max. 100 m

Optics

Light source: IR - LED
Service life: typ. 100.000 hrs.
Scanning: differential

Accuracy

in % einer Periodendauer des Signals A

Quadrature phasing: 90° ± 7,5%
Pulse on/off ratio: 50% ± 7%

Environmental Data

Measured mounted and housing grounded.

ESD (DIN EN 61000-4-2): 8 kV
Burst (DIN EN 61000-4-4): 2 kV
Protection rating (EN 60529): IP54
Vibration (DIN EN 60068-2-6): 50m/s² (10-2000 Hz)
Shock (DIN EN 60068-2-27): 1000m/s² (6 ms)
Operating temperature: -10°C to +70°C
Storage temperature: -30°C to +80°C

Pin arrangement:

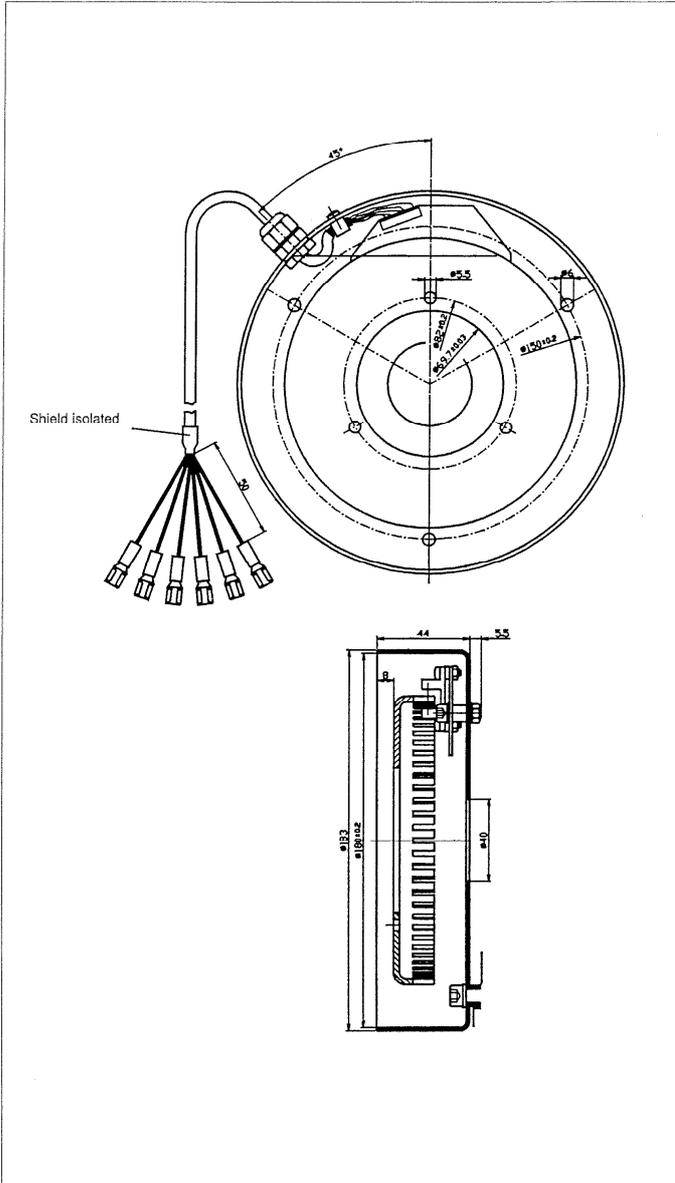
Function:	Pin	Colour:
Negative	7	white
Positive	9	brown
A	2	green
A inv.	1	red
B	3	yellow
B inv.	4	black
N	5	grey
N inv.	6	violet
Shield	8	cord + Connector housing electrically



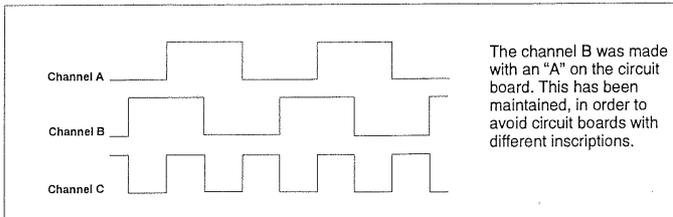
Encoder Kit K3

Ordering Code: K364AB15S-B56

Thyssen Reference No.: 00 990 12 03 0



Dimensional drawing Encoder-Kit with connector cup wheel.



Shaft turning clockwise, when looking at encoder front.

Specifications

max. Permissible line length	30m
max. Speed	1800 r.p.m.
Polarity-reversal protection	no
Short-circuit protection (signals)	yes
Operating temperature	-5° .. +50°C
Storage temperature	-20° .. +70°C
Protection rating	Ip00

Power supply	15V
	+15V / -15V
Tolerance (power supply)	+/-5%
Power consumption +15V	<=90 mA
Power consumption -15V	<=10 mA
Signal-Outputs A/B	3mA max.
Signal-Outputs C	1mA max.

Output level A / B High at max. Load and min. supply	min. 11,7 V
Output level A / B Low at max. Load and max. supply	max. 2,8 V
Rise time (10% .. 90%)	<= 10us
Fall time (90% .. 10%)	<= 10us
Pulse width (A / B)	50% +/-5%
Phase displacement (A / B)	75° .. 105°
max. difference A / B	7%
Connection:	10 m shielded cable connected with terminal sockets 6.3 - 1. Shield connected with Protective cover

Outputs:	A-Channel 64 r.p.m. at 15V
	B-Channel 64 r.p.m. at 15V
	C-Channel 128 r.p.m. at +/- 15V

In case of 15V supply, -15V can be connected to ground. Channel C is available in case of +/- 15V supply only.

Scope of delivery:

Circuit board
 Pre-assembled under galvanized protective cover with 10 m cable (connected) including terminal sockets; Connector cup wheel

Packing : Plastic bag

Connector details:

Function	Pin	Colour
A	6	grey
B	5	rose
C	3	green
Ground	4	yellow
+15V	1	brown
-15V	2	white
Shield	open	

Ground (potential) has been isolated from shield and housing.

09.03.2000/Specifications without engagement, subject to errors and modifications.



WACHENDORFF

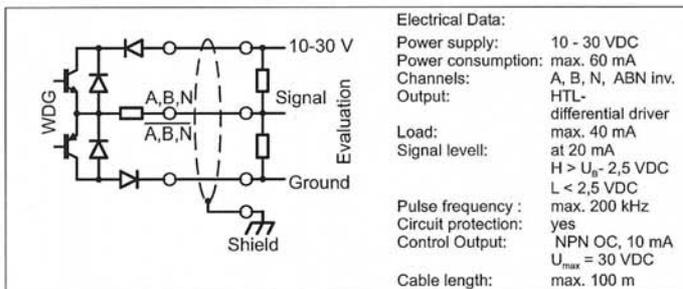
ELEKTRONIK GMBH & CO KG
 Industriestrasse 7 • D-65360 Gaisenheim
 Tel.: 06722/9965-0 • Fax: 06722/9965-43

Hollow-Shaft Encoder WDG 100H

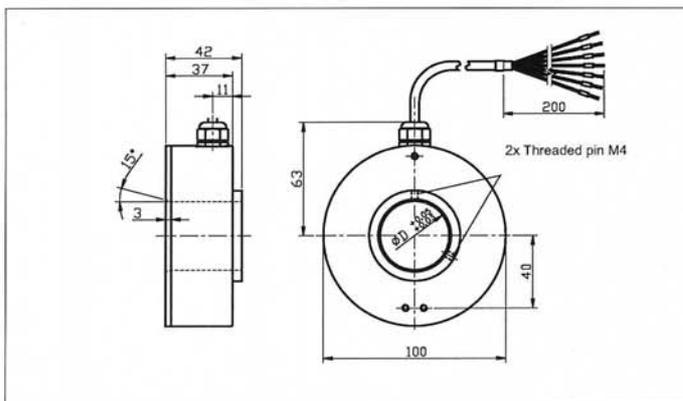


Ordering Code: WDG 100H-38-1024-ABN-I24-K3-C07

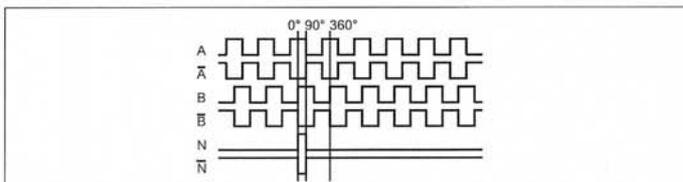
No. of lines: 1024 r.p.m.
 Hollow-Shaft diameter: 38 mm
 Thyssen Reference No.: 0099016030



Output circuit: 10-30 VDC: I24



Dimensional drawing WDG 100 H, Dimensional specifications in mm.



Shaft turning clockwise, when looking at encoder front.

Specifications

Mechanical Data

Housing
 - Flange: Aluminium
 - Housing: Aluminium
 - Diameter: 100 mm
 - Depth: 42 mm
 - Attachment: about Hollow-shaft with 2 set screw M4

Hollow Shaft

- Material: stainless steel
 - Diameter: 38 mm
 - Load on Shaft end: max. 200 N radial
 max. 100 N axial
 - Torque: 1,5 Ncm
 Fastening: 2 x M4, DIN 913

Bearings

- Type: 2 precision ball
 - Life: 3×10^{10} revs. at 100%
 Of full rated shaft load
 4×10^{11} revs. at 40%
 3×10^{12} revs. at 20%
 Speed: 3.500 r.p.m.
 Weight: approx. 720 g
 Connection: radial with 10 m shielded cable with end splice

Electrical Data

General Layout: DIN VDE 0160
 Supply / Output: Output circuit

Optic

Light source: IR - LED
 Life: typ. 100.000 hrs.
 Scanning: differential

Accuracy

Phase shift: $90^\circ \pm 7,5\%$
 Pulse -on/off- ratio: $50\% \pm 7\%$

Environmental - Data

with housing shielded
 ESD (DIN EN 61000-4-2): 8 kV
 Burst (DIN EN 61000-4-4): 2 kV
 -Power supply: 1 kV
 -Signals: 1 kV
 Protection rating (DIN 60529): IP 54
 Vibration (DIN EN 60068-2-6): 50 m/s^2 (10-2000 Hz)
 Shock (DIN EN 60068-2-27): 1000 m/s^2 (11 ms)
 Operating temperature: $-10 - +70^\circ\text{C}$
 Storage temperature: $-30 - +80^\circ\text{C}$

Cable details

Function	Colour
Positive	brown
A	green
B	yellow
N	grey
A inv.	red
B inv.	black
N inv.	violet
Negative	white
Shield	cord



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ELEKTRONIK GMBH & CO KG
 Industriestrasse 7 • D-65360 Geisenheim
 Tel.: 06722/9965-0 • Fax: 06722/9965-43

Hollow-Shaft Encoder WDG 100H

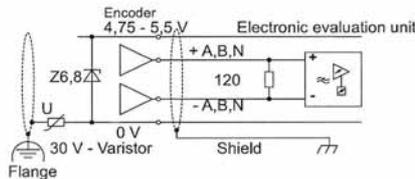


Ordering Code: WDG 100H-38-1024-ABN-SIN-K3-C07

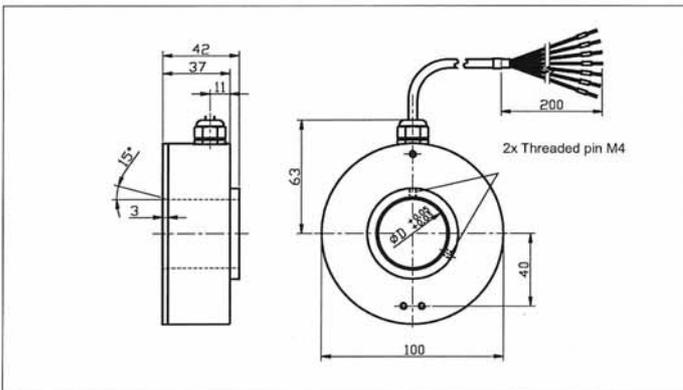
No. of lines: 1024 r.p.m.
 Hollow-Shaft diameter: 38 mm
 Thyssen Reference No.: 0099019030

Electrical Data:

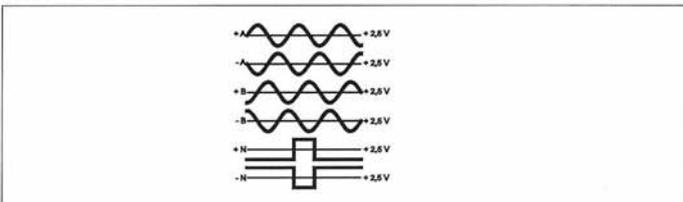
Power supply: 4,75 - 5,5 VDC
 Power consumption: max. 100 mA without load
 Channels: Sinus, Cosinus, N
 Output: push pull
 Load on output: min. 120 Ohm terminating resistor
 between + and - output
 Signal level: 1 V_{SS} +/- 25%
 Pulse frequency (-3dB): 100 kHz
 Circuit protection: no
 Control Output: conducting when defective
 Cable length: max. 150m at <260pF/m
 Design according to: gem. DIN VDE0160



Output circuit Sinus: SIN



Dimensional drawing WDG 100 H, Dimensional specifications in mm



Shaft turning clockwise, when looking at encoder front.

Specifications

Mechanical Data

Housing
 - Flange: Aluminium
 - Housing: Aluminium
 - Diameter: 100 mm
 - Depth: 42 mm
 - Attachment: about Hollow-shaft with 2 set screw M4

Hollow Shaft
 - Material: stainless steel
 - Diameter: 38 mm
 - Load on Shaft end: max. 200 N radial
 max. 100 N axial
 - Torque: 1,5 Ncm
 Fastening: 2 x M4, DIN 913

Bearings
 - Type: 2 precision ball
 - Life: 3 x 10¹⁰ revs. at 100%
 Of full rated shaft load
 4 x 10¹¹ revs. at 40%
 3 x 10¹² revs. at 20%
Speed: max. 3.500 r.p.m.
Weight: approx. 720 g
Connection: radial with 10 m shielded cable with end splice

Optic
 Light source: IR - LED
 Life: typ. 100.000 hrs.
 Scanning: differential

Accuracy

Phase shift: 90° ± 7,5%

Environmental - Data
 with housing earthed

ESD (DIN EN 61000-4-2): 8 kV
 Burst (DIN EN 61000-4-4):
 -Power supply: 2 kV
 -Signals: 1 kV
 Protection rating (DIN 60529): IP 54
 Vibration
 (DIN EN 60068-2-6): 50m/s² (10-2000 Hz)
 Shock
 (DIN EN 60068-2-27): 1000m/s² (11 ms)
 Operating temperature: -10 - +70°C
 Storage temperature: -30 - +80°

Cable details

Function	Colour
Positive	brown
A	green
A inv.	yellow
B	grey
B inv.	rose
N	black
N inv.	violet
Negative	white
Shield	cord

Encoder WDG 58C

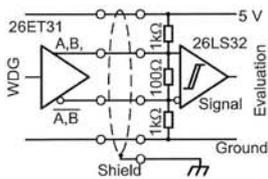


Order-No.: WDG 58C-XXXX-ABN-I05-S5R

No. of lines XXXX: : 250, 500 oder 1000 I/U
 Thyssen-number: 0099010030

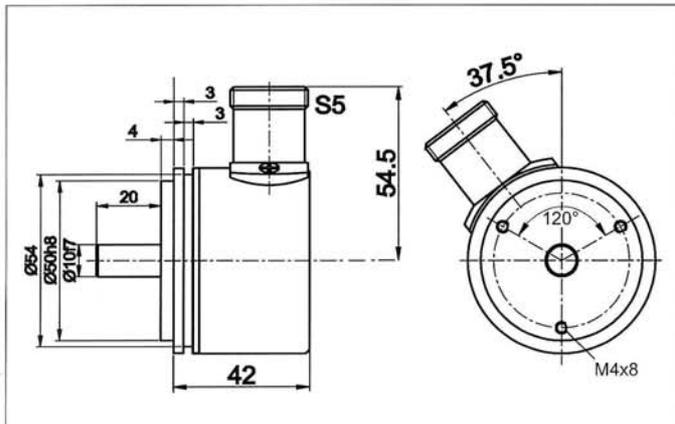
**Output circuit I05
 (RS422 TTL compatible):**

Design according to: DIN VDE 0160

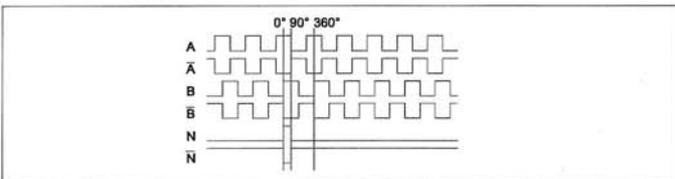


Electrical data:
 Power supply: 4,75...5,5 VDC
 Current consumption: max. 70 mA
 Channels: A, B und AB inv.
 Output: RS 422
 Load: max. 40 mA
 Signal level: at 20 mA
 H > 2,5 VDC
 L < 0,5 VDC
 Pulse frequency: max. 200 kHz
 no
 Circuit protection: conducting
 Early-warning output: when defective
 Cable length: max. 100m

Output circuit: I05



Dimensioned drawing WDG 58C with S5, Dimensions in mm



Shaft turning clockwise, as seen from front of encoder..

Specifications

Mechanical Data

Housing
 - Servoflange: Aluminium
 - Housing: Aluminium, powder coated
 - Cam mounting: pcd. 69 mm

Shaft
 - Material: stainless steel
 - Load on shaft end: max. 150 N radial
 - Torque: max. 80 N axial
 1 Ncm

Bearings
 - Type: 2 precision ball bearings
 - Life: 10⁹ U at 100% of full rated shaft load
 10¹⁰ U at 40%
 10¹¹ U at 20%

Speed: max. 8.000 r.p.m.
Weight: ca. 250 g without plug
Connection: 12-pin-Connector, radially, turning right

Electrical Data
 General layout: acc. DIN VDE 0160
 Supply/output: → Output circuit

Optics
 Light source: IR - LED
 Life: typ. 100.000 hrs.
 Scanning: differential

Accuracy

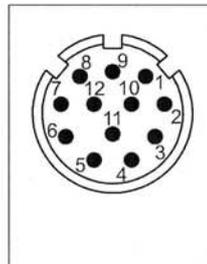
Phase shift: 90° ± 7,5%
 Pulse -on/off-ratio: 50% ± 7%

Environmental Data

With housing earthed
 ESD (DIN EN 61000-4-2): 8 kV
 Burst (DIN EN 61000-4-4): 2 kV
 Protection rating (EN 60529): IP 65
 Vibration (DIN EN 60068-2-6): 50m/s² (10-2000 Hz)
 Shock (DIN EN 60068-2-27): 1000m/s² (11 ms)
 Operating temperature: -10 - +70°C
 Storage temperature: -30 - +80°C

Pin arrangement

Circuit Function	I05, 245 Pin
Negative	10
Positive	12
A	5
B	8
N	3
Output*	11
A inv.	6
B inv.	1
N inv.	4
n.c.	2,7,9



Connector housing electrically connected to encoder housing.

**WACHENDORFF**ELEKTRONIK GMBH & CO KG
Industriestrasse 7 • D-65360 Geisenheim
Tel.: 06722/9965-0 • Fax: 06722/9965-43

Wachendorff incremental encoders WDG

Product information WDG

This product information serves for the installation and connection of the encoder. You will find further information in our catalogue Wachendorff encoders WDG.

Safety-Related Guidelines

General Notes

The product knowledge is written for technically qualified personnel having special knowledge required in the field of measuring and control technology.

The exact information on all safety instructions and warnings contained in this product information as well as their appropriate technical application are prerequisites for safe installation and setup as well as the safety in operation and maintenance of the Wachendorff encoders. This absolutely requires that all measures be taken by qualified personnel. All persons working on the projection and installation of encoders should be familiar with the safety concepts of automation technology and qualified as defined above.

For the sake of clarity, not all details of the handling of encoders in all conceivable cases of application are described in this product information, nor can it cover all conceivable ways of mounting, operation and maintenance.

Should you require further information or face special problems that have not been dealt with in sufficient detail in this product information, please contact us and ask for this information. The technical data are given in the specification.

If these safety guidelines are not respected, this can result in damage to property, personal injury or death.

The Wachendorff encoders can only be operated in the application cases described in this product information.

We would also point out that all obligations of Wachendorff only result from the respective purchase agreement definitely regulating the warranty.

Purpose of application, improper usage

Wachendorff encoders exclusively serve for producing a number of electrical signals proportional to the mechanical turning of the encoder shaft. These signals can be used for the following purposes:

Calculation of a pulse number, e.g. for the determination of a position, a volume or a force.

Calculation of a frequency e.g. for the determination of a speed or speed change.

The evaluation of the signal should be performed using adequate electronic components. Please consider especially that no signals are given when the shaft is turned without power being connected to the unit. Nor can an actual value memory of the evaluating device recognize these turnings.

An encoder should not be used as the only means of averting dangerous conditions of the machines and installations.

The machines and installations must be designed in a way that defective conditions cannot provoke situations dangerous to the operating personnel (e.g. caused by independent limit switches, mechanical locks). Above all make sure that the malfunction or failure cannot result in damage to property or danger to the operating personnel. If this is observed, an encoder can be used to prevent defects in machines or installations.

It is also important to prevent precautions taken for the safety of an installation from being rendered ineffective by the use of encoders. Moreover, an encoder should not be used as a stop or tension device for driving elements. Mechanical and electrical limit values should not be exceeded. „emergency off“ installations have to remain effective in all operating modes of the machine.

28.10.1996/without guarantee (c:\drawing\katwdg96\coreleng\sicher_e.doc)

Notes on mounting

When mounting the unit, you should especially make sure not to exceed the admissible bearing loads. If the encoder shaft is mounted fixed, an adequate sprong or shaft, that keeps housing in place should be used so that the admissible loads of the encoder bearings are not exceeded. The encoder shaft, the flange and the bezel should not be worked on subsequently. The encoder may only be mounted with little force. The encoders should not be thrown or dropped. The min. admissible cable bending radia have to be observed. The connection cable must not be routed with mechanical tension. Please consider the fact that, in spite of their protection mode IP65, the encoders must not be exposed to a constant strong influence of water. The encoder does not contain any parts that have to be maintained by the user; it must not be opened. Repairs may only be carried out by the producer.

The non-observation of these guidelines will result in the loss of the producer's warranty and possibly in a malfunction or the failure of the encoder.

Notes on installation

The encoders have to be installed and connected respecting the relevant EN, DIN and VDE standards. During installation, power must not be connected to the encoder. Install the power supply and signal cables in such a manner as to prevent electric noise signals (e.g. inductive or capacitive interference voltages) from affecting the function of the encoder.

Attention: In case of encoders having a 5VDC power supply as well as certain output circuits the a wrong polarity of the power supply, a short-circuit of the outputs or the connection of power to the outputs can cause the failure of the encoders.

Suitable hardware and software safety measures will have to be taken in order to prevent an interruption of the power supply or signal lines from causing an undefined or dangerous condition.

Notes on mounting, maintenance and repair work

The malfunction of an encoder can result in the following events:

- Breakdown of a channel: The channel either sends a constant voltage signal or no signals at all. Possible cause: cable break, breakdown of parts, measure to take: repair at the factory.
- Too many pulses: The electronic device counts more pulses than those given by the shaft rotations of the encoder. Possible cause: electric noise on the signal lines, defective parts. Measures to take: effective electric noise protection measures, repair at the factory.
- Not enough pulses: The electronic device counts less pulses than those given by the shaft rotations of the encoder. Possible cause: troubles of the power supply, mechanical slippage, limit frequency of the encoder or of the electronic device exceeded. Measures to take: test power supply, remove mechanical slippage, test limit frequencies.
- Electrical breakdown of the encoder: The encoder gives no signals. Possible causes: power supply defective, defective parts in the encoder. Measures to take: test power supply, repair of the encoder at the factory.
- Defective encoder shaft: The encoder shaft can only be turned with difficulty or not at all. Possible cause: defective bearings. Measures to take: test the mechanical load of the encoder shaft, repair at the factory.
- Bezel damage: The bezel of the encoder is damaged visibly (esp. crushed or burst bezels)

In any case of malfunction and especially of visible defects, the safe function of the encoder is no longer guaranteed. The encoder may not be operated any more. Measures to take: put out of action, test the whole system and repair at the factory. Please consider the notes on electrical noise protection.

Encoders do not contain any parts that can or have to be maintained by the user. Repairs may only be carried out by Wachendorff.

Manufacturer information, tachometer / pulse generator

General:

Installation

- Check the alignment of the tachodynamo and motor.
- Use a counter balanced coupling.

Maintenance:

- Every 2000 hours of operation.

Brushes

- Check whether the brushes glide without obstruction in their housing.
- Blow the dust from the brush carriers (do not use compressed air, as it might contain oil particles).
- Replace the brushes at a length of 5 to 6 mm.
- The new brushes are preshaped to the contours of the collector.
- However, exact surface contact is only reached after 10 hours of operation.
- If a check means the brushes must be removed, select their position for later installation at the original location.

Collector

- The layer that has formed under the brush path must not be removed.
- In the event of contamination, clean using a cloth lightly dampened with alcohol.
- It is strictly prohibited to use abrasives.

Lubrication

- The dynamo is equipped with sealed bearings that have been given permanent lubrication at the plant. No other lubrication is required.



Important note

We urgently advise you not to remove the rotor from the stator. Every removal leads to a change in the dynamo calibration.

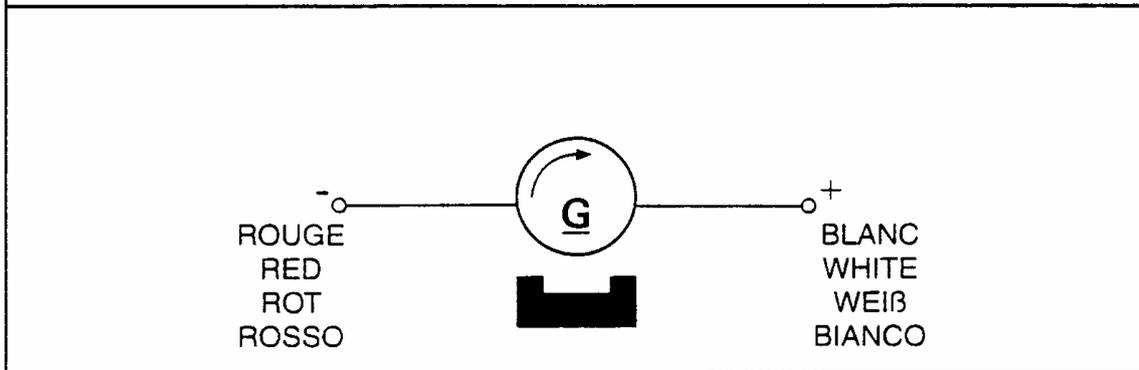
Tacho-generator RE.0444

Note regarding connection

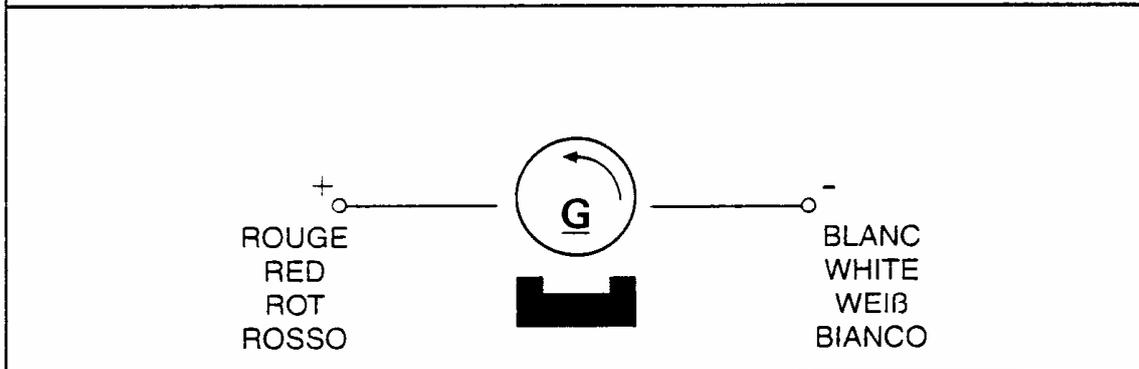
	RADIO-ENERGIE	SCHEMA DE BRANCHEMENT CONNECTING DIAGRAM	43856
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Dynamo Tachymétrique à aimants permanents (1 collecteur)
Tacho Generator with permanent magnets (1 commutator)
Gleichstrom-Tachometerdynamo mit Permanentmagnet-Erregung (1 Kollektor)
Dinamo Tachimetrica a magneti permanenti (1 collettore)

Rotation sens horaire face au bout d'arbre
Clockwise direction facing the shaft end
Rechtsdrehung auf A-Seite gesehen
Rotazione in senso orario guardando frontalmente l'albero



Rotation sens anti-horaire face au bout d'arbre
Anti-clockwise direction facing the shaft end
Linksdrehung auf A-Seite gesehen
Rotazione in senso antiorario guardando frontalmente l'albero



Machine à sorties par cables
Unit with cable connections
Tacho mit Kabelanschluß
Versione con connessione tipo a cavo

A	18/07/97	JLM	Première diffusion - <i>First issue</i>
Indice - <i>Index</i>	Date - <i>Date</i>	Auteur - <i>Name</i>	Désignation - <i>Description</i>

ZI Fontaine de Jouvence - 3, rue Joly de Banneville - 91462 MARCOUSSIS Cedex (France)
 Téléphone : (33) 01 69 80 67 04 - Fax : (33) 01 69 80 67 08 - Téléc : RADERGI 604 359 F

2 windings Voltage: 60 V / 1000 rpm

Tachodynamo with pulse generator

Type TDP 0.2 LT- 4 + OG 9D 120. design B10

Electrical data for tachodynamo:

Tachometer voltage at 1000 rpm	60 V DC
Max. tachometer speed	9000 rpm
Intensity of current max.	67 mA
Protection type	IP 55

Electrical data for pulse generator

Impulses / revolution	2 x 120. el. offset by 90°
Main voltage	+11 V to +26 V DC
Output load current per system	max. 60 mA

Connect the tachodynamo with pulse generator and cable to the rear-wall PCB in the control cabinet.
See wiring diagram of the installation.

ThyssenKrupp Aufzugswerke GmbH

Bernhäuser Strasse 45
73765 Neuhausen a. d. F.
Deutschland

Tel.: +49 7158/12-0

Fax: +49 7158/12-2585

E-Mail: info.aufzuege.de@thyssenkrupp.com

www.thyssenkrupp-aufzuege.de

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