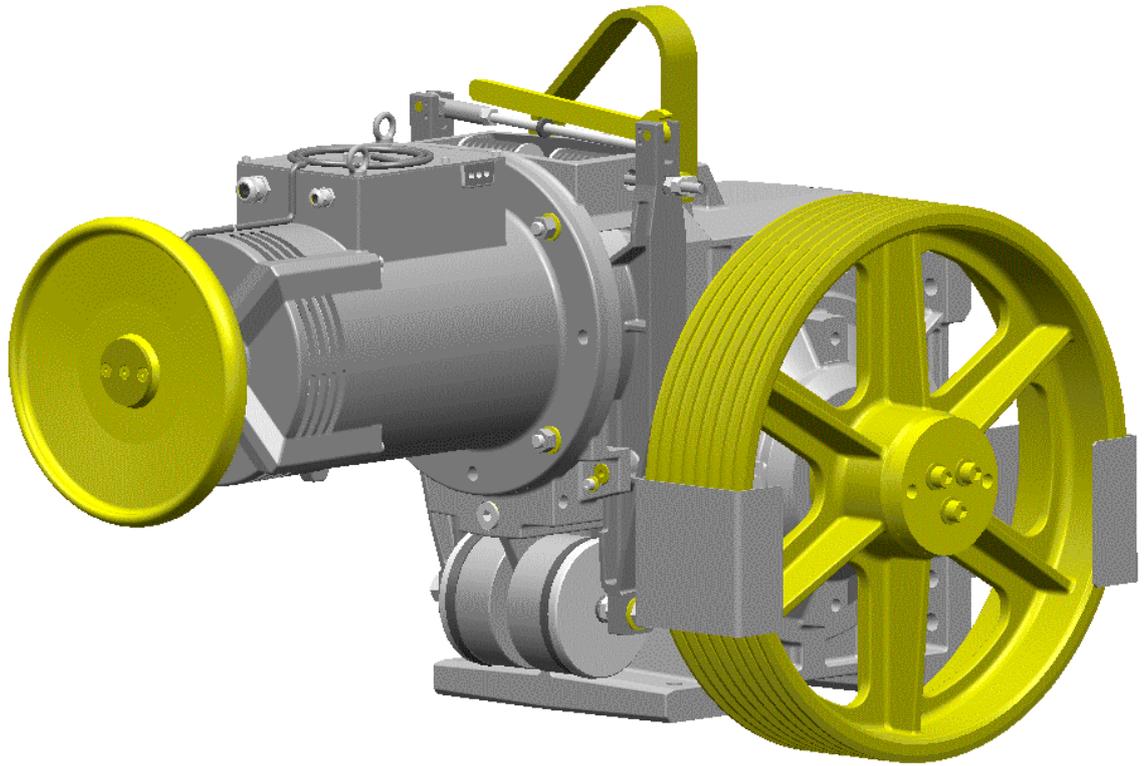


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# Product Catalogue

## TW130 machine

ThyssenKrupp Aufzugswerke



ThyssenKrupp

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# 1 Product Family Description - Machines with Worm Gears

## 1.1 Overview of product family

ThyssenKrupp Aufzugswerke GmbH offers the following series of machines with worm gears:

Range of performance	W series machines		TW series machines	
	type	axle distance	type	axle distance
lower	-	-	TW45C	120 mm
lower / medium			TW63B	155 mm
medium			TW130	191 mm
medium / upper	W263C	263 mm	TW160	225 mm
upper	W332C	332 mm	-	-

TWM\_10001\_ENG

Table 1-1: Overview of product family - machines with worm gears

## 1.2 W Series machines

The designation of this series is derived from the combination of the German word Winde (W) (meaning: winch) and centre distance in mm (e.g. 332 mm), as well as an identifier for the generation (e.g. C).

These single-stage worm gears are designed with plain bearings except for the thrust bearing on the worm shaft. The lubrication used is a synthetic gear oil (polyalkylene glycol with additives) of viscosity class 220 (transition from petroleum approx. start / mid-2011).

## 1.3 TW Series machines

The designation of this series (successor generation to the W Series) is derived from the combination of ThyssenKrupp Wormgear (TW) and a parameter for the main performance point (e.g. Q=1600 kg → 160) of the machine, as well as an identifier for the generation (e.g. B).

Within the framework of technical further development these machines are designed completely with low-friction rolling bearings.

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

## 2 Description - TW130 machine

The TW130 machine (ThyssenKrupp Wormgear / Q = 1300 kg) is used within the framework of the TW Series (machines with worm gears, rolling bearings, lubrication with synthetic gear oil) for traction elevators in the medium range of performance.

The TW130 machine designed for installations with a rated load of approx. Q=1300 kg (1250/1350 kg) at  $v = 1.6/2.5$  m/s and suspension  $r = 1:1$  consists of a worm gear with integrated brake and overhung traction sheave and a flange-mounted type IMB5 three-phase motor.

Design variants for the motor and traction sheave positions:

- Traction sheave position - left / motor position horizontal or vertical
- Traction sheave position - right / motor position horizontal or vertical

The variation of the traction sheave position - left / right - is achieved in this machine by means of two different gearbox casings each with an integrated bearing bracket on the traction sheave side.

By allocating the components - motor, sensor and handwinding wheel or flywheel rim - accordingly, it is possible to configure the machine for various drive systems:

- Pole-changing installations (AC2)
- Phase-shift-controlled installations (ACVV)
- Frequency-controlled installations (V3F)

## 2.1 Standard versions of the machine

### 2.1.1 Version with horizontal motor position

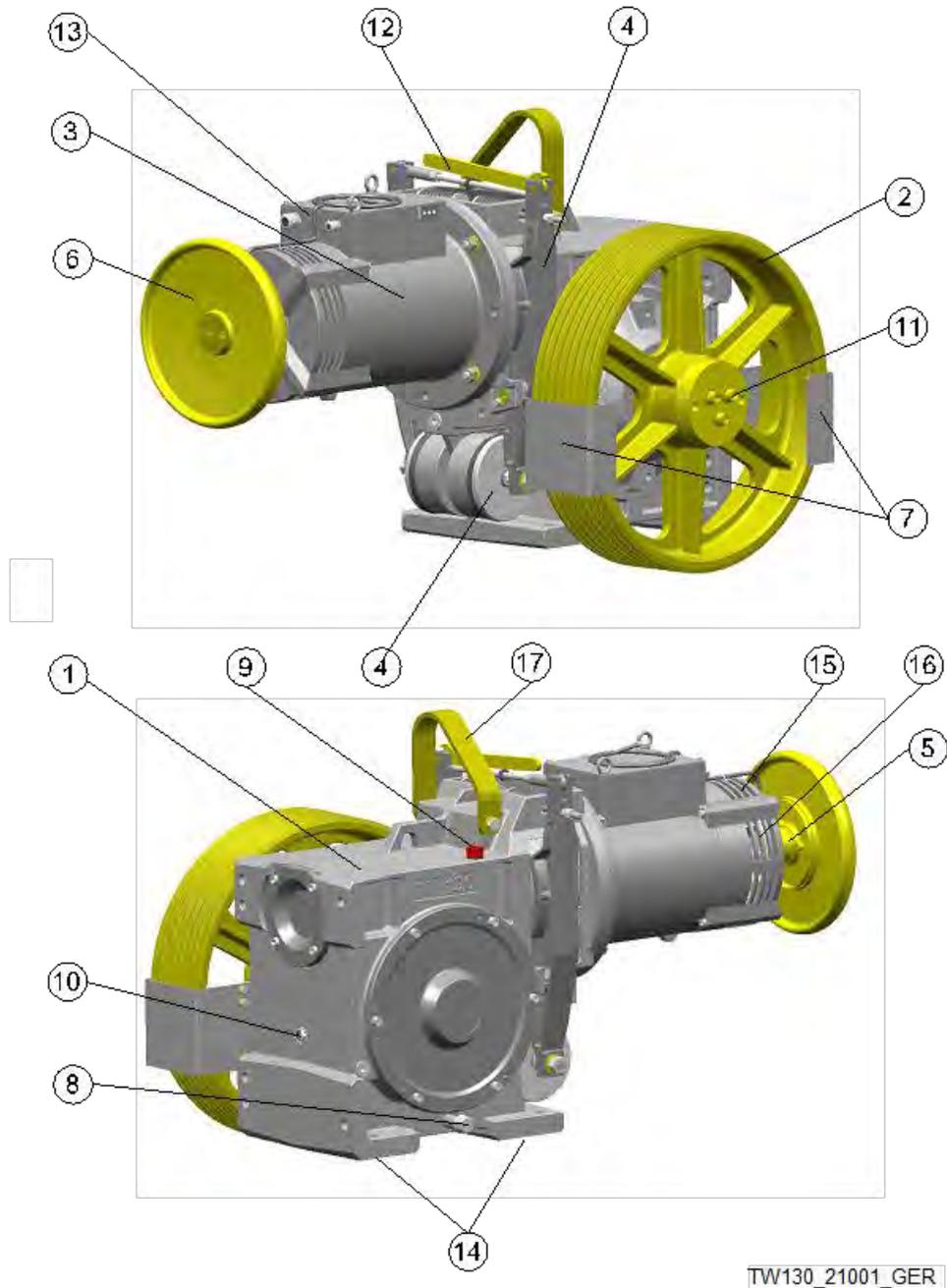


Fig. 2-1: TW130 machine with horizontal motor position, standard version (pictured: machine with motor version - V3F and traction sheave position - right)

Description of items for Fig. 2-1

1	Driving gear	2	Traction sheave (standard version)
3	Motor (version V3F, frequency controller)	4	Operational brake
5	Actual-value sensor (type WDG100)	6	Handwinding wheel
7	Rope guard (adjustable); only in the case of traction sheaves with diameter DT = 540, 640 and 720	8	Oil drain (3/4")
9	Oil filling hole with casing ventilation	10	Oil level monitoring (gauge glass)
11	Traction sheave mount	12	Brake release lever (fitted); in the case of traction sheave diameter DT = 900 mirror-inverted
13	Motor terminal box with connection	14	Mounting surface for machine base frame
15	Internal ventilator for motor cooling	16	Air vents for motor
17	Transport hanger (for transportation only)		

2.1.2 Version with vertical motor position

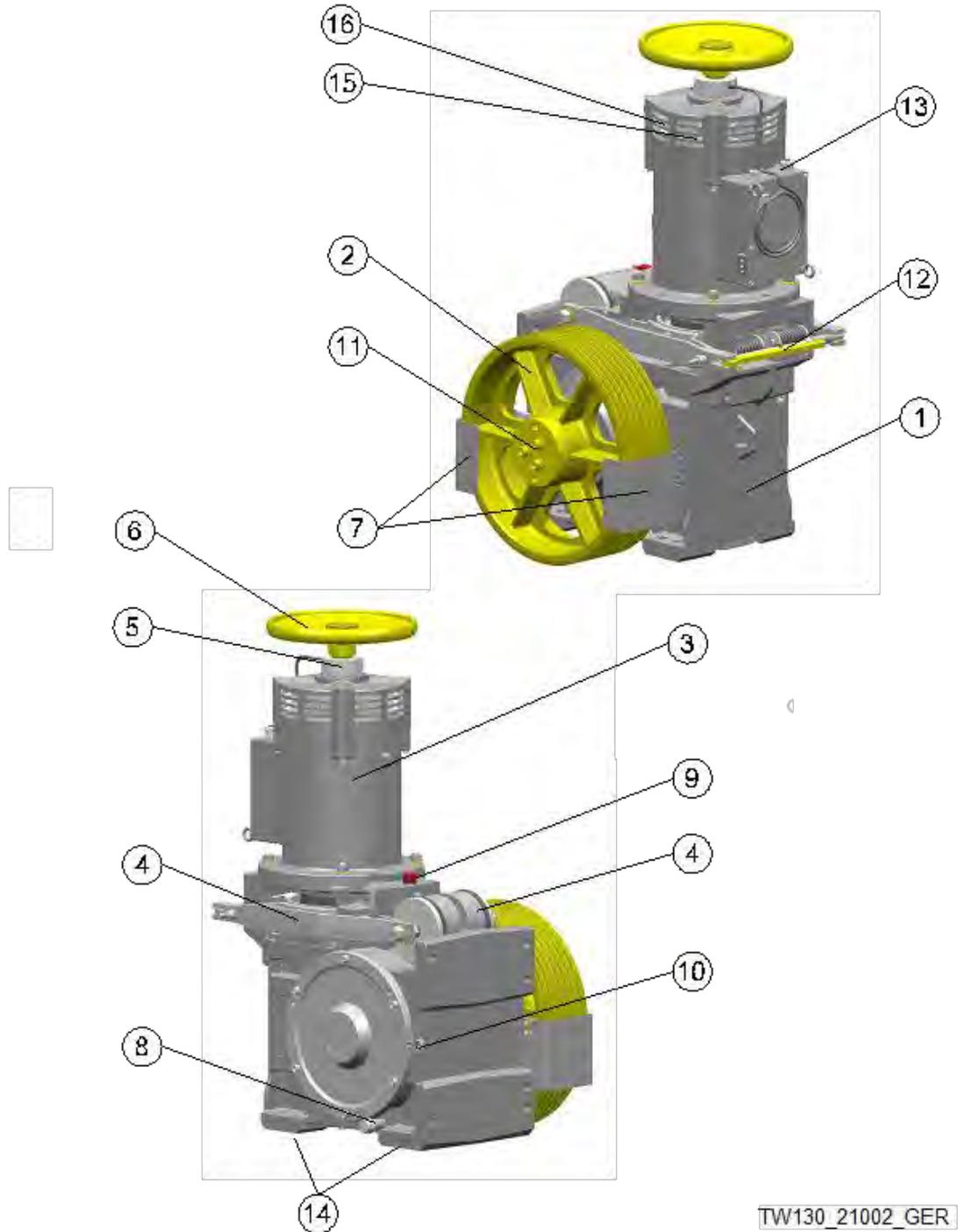


Fig. 2-2: TW130 machine with vertical motor position, standard version (pictured: machine with motor version - V3F and traction sheave position - right)

Description of items for Fig. 2-2

1	Driving gear	2	Traction sheave (standard version)
3	Motor (version V3F, frequency controller)	4	Operational brake
5	Actual-value sensor (type WDG100)	6	Handwinding wheel
7	Rope guard (adjustable); only in the case of traction sheaves with diameter DT = 540, 640 and 720	8	Oil drain (3/4")
9	Oil filling hole with casing ventilation	10	Oil level monitoring (gauge glass)
11	Traction sheave mount	12	Brake release lever (fitted); in the case of traction sheave diameter DT = 900 mirror-inverted
13	Motor terminal box with connection	14	Mounting surface for machine base frame
15	Internal ventilator for motor cooling	16	Air vents for motor

## 2.2 Version with emergency brake - NBS

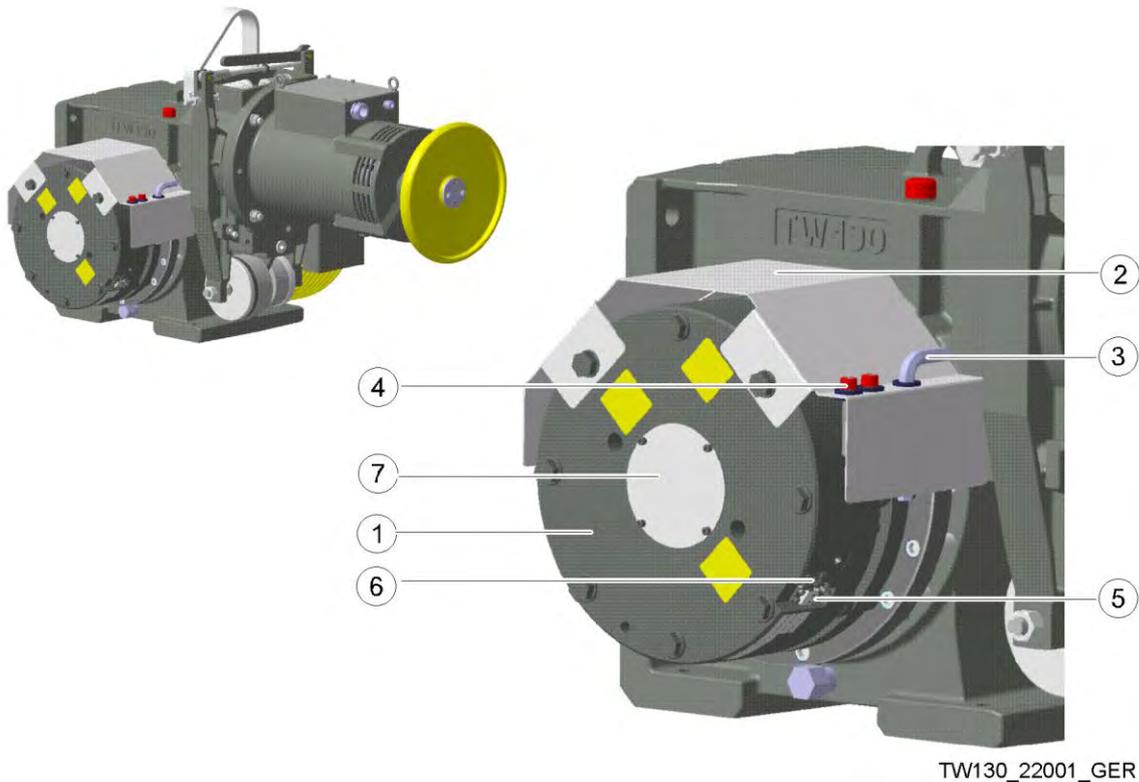


Fig. 2-3: TW130 machine with emergency brake NBS (pictured: machine with horizontal motor position and traction sheave position on right)

Description of items for Fig. 2-3

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

### 2.3 Version for traction sheave in the shaft SA9

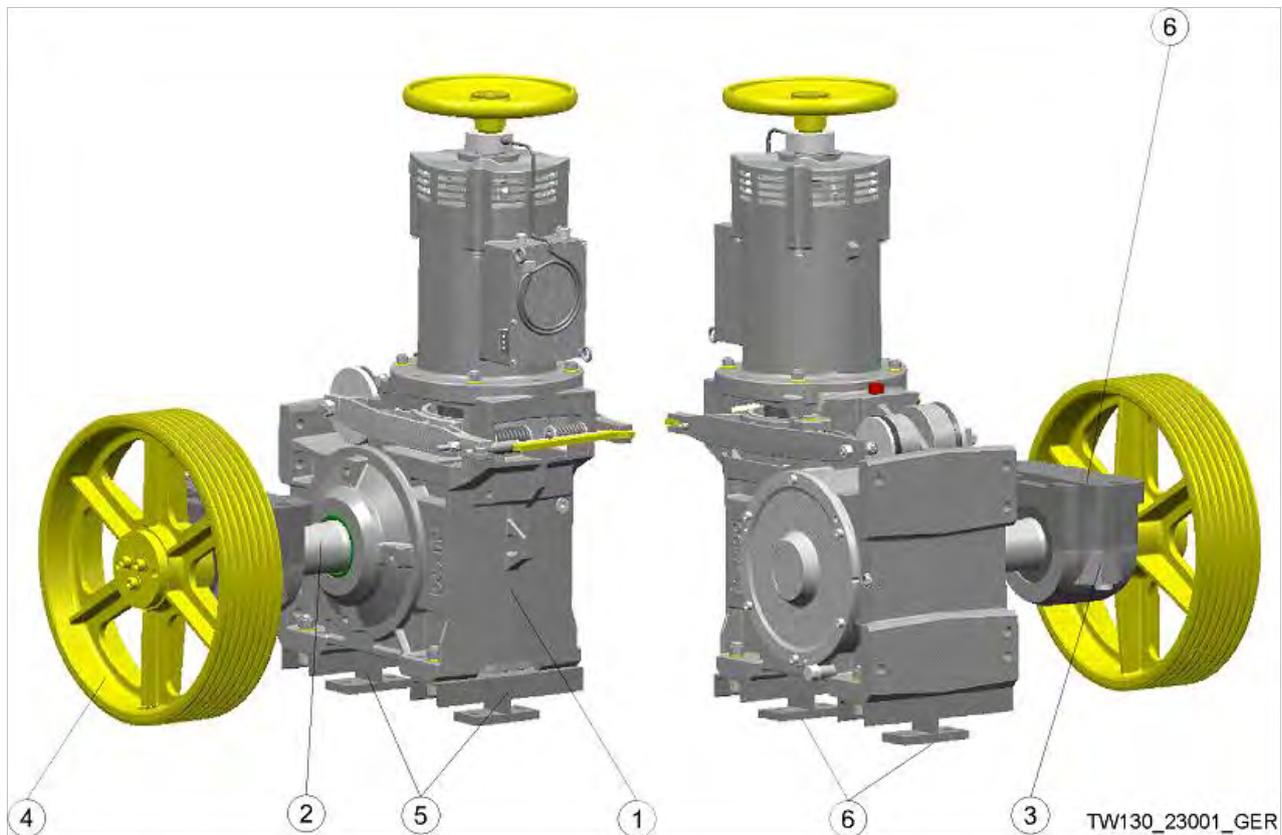


Fig. 2-4: TW130 machine with traction sheave in the shaft - SA9 (pictured: machine in vertical motor position, traction sheave position - right and rope pull direction upwards)

Description of items for Fig. 2-4

1	TW130 machine SA9	2	Traction sheave shaft, SA9 version
3	External bearing (bearing housing with self-aligning bearing on adapter sleeve)	4	Traction sheave, SA9 version
5	Compensating support (for statically defined machine mounting)	6	Mounting surfaces for machine base frame

## 2.4 Version for vapour-proof partition wall SA4 (Partial Ex)

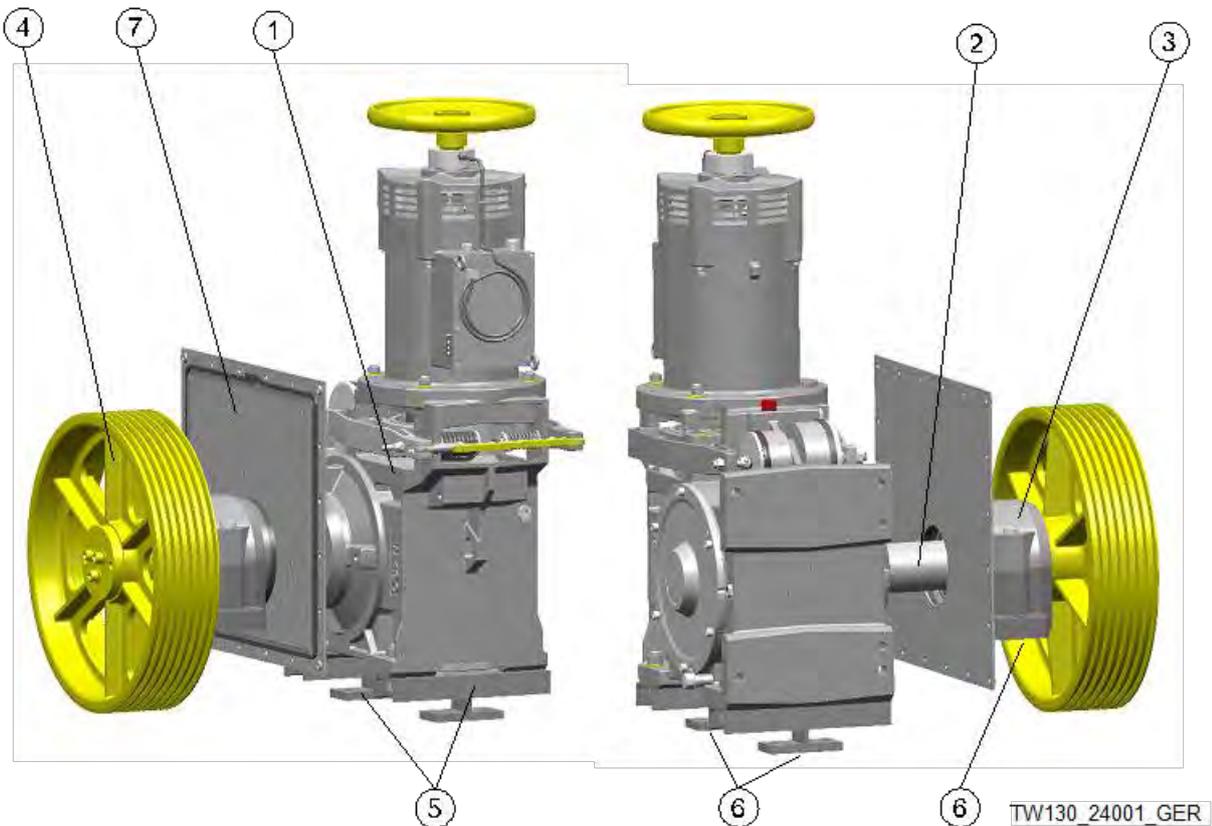
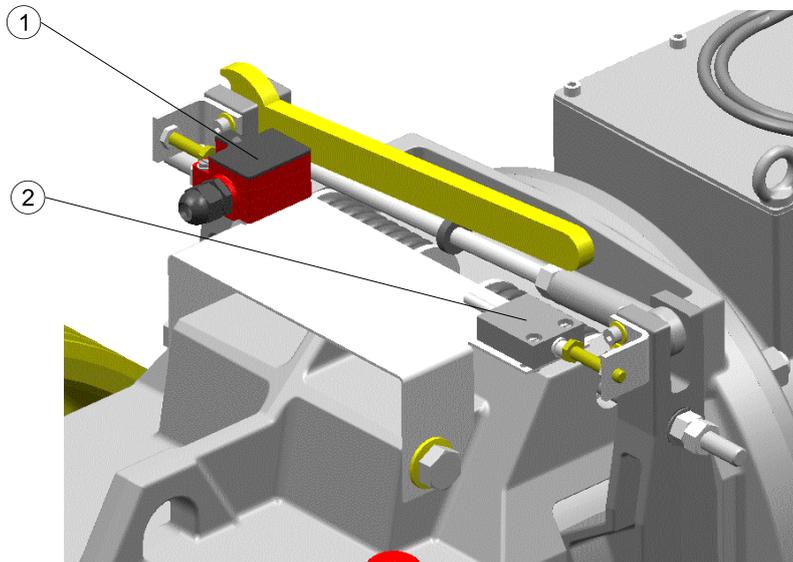


Fig. 2-5: TW130 machine for vapour-proof partition wall - SA4 (pictured: machine in vertical motor position and traction sheave position - right)

Description of items for Fig. 2-5

1	TW130 machine SA4	2	Traction sheave shaft, SA9 version
3	External bearing (bearing housing with self-aligning bearing on adapter sleeve)	4	Traction sheave, SA9 version
5	Compensating support (for statically defined machine mounting)	6	Mounting surfaces for machine base frame
7	Partition wall with seal for TW130 machine base frame SA4		

## 2.5 Special versions SA3 / 3.1 / SA15



TW130\_25001\_GER

*Fig. 2-6: TW130 machine - special versions - SA3 / SA15*

Description of items for *Fig. 2-6*

1	Brake monitoring SA3 / 3.1	2	Brake monitoring for SA15
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## 2.6 Version with safeguard measures complying with EN81-77

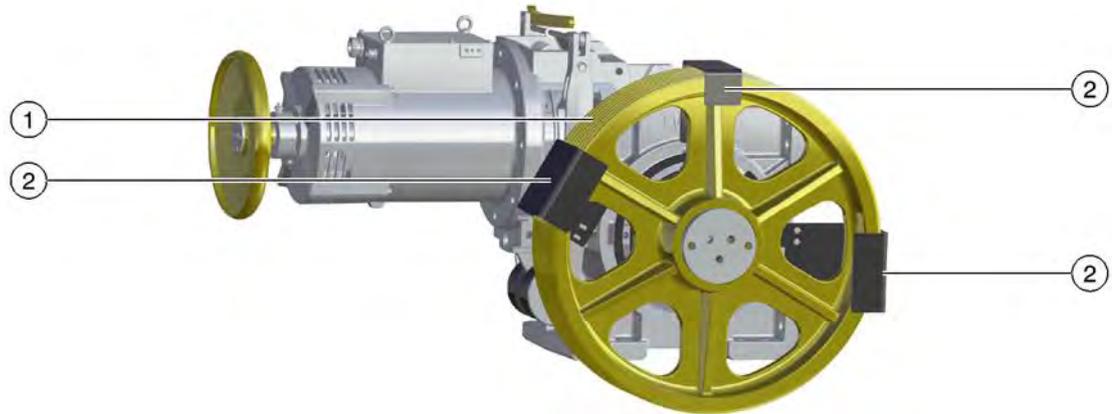


Fig. 2-7: TW130 machine with safeguard measures complying with EN81-77

Description of items for Fig. 2-7

1	Traction sheave (D540 / D640 / D720)	2	Earthquake safeguard complying with EN81-77
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### 3 Technology

#### 3.1 Gear unit

Single-stage worm gear with:

- Monoblock casing made of EN-GJL 250 with integrated AS bearing bracket and separate BS bearing bracket; separate versions of the casing for traction sheave position - left /right; vertical/horizontal motor position possible; motor flange (construction size A400) integrated
- Worm shaft made of case-hardened steel (16MnCrS5), rolling bearings (grease/oil lubrication); worm wheel made of centrifugally case bronze (CuSn12Ni-C-GZ) with screw-connected hub
- Drive shaft made of tempering steel (C60 or 42CrMo4 for emergency brake system and Mayr brake RSO1300/4000 Nm), mounted on roller bearings (oil lubrication); extended-design drive shaft for traction sheave in the shaft - SA9 or for vapour-proof partition wall - SA4 (Partial Ex) incl. external bearing
- With vertical motor position, gear teeth partially submerged in oil; with horizontal motor position, with oil delivered from oil sump via worm wheel gear teeth; adjustable gear teeth contact pattern position; backlash cannot be adjusted
- Oil level monitoring via gauge glass; oil drain (R3/4"); casing ventilation; installation in accordance with vertical/horizontal motor position
- Rope guard components as per EN81-1/9.7 resp. EN81-20/5.5.7 or EN81-77.
- Machine name plate

Designation	Unit	Technical data
Manufacturer		ThyssenKrupp Aufzugswerke
Gear type		TW130
Axle distance	[mm]	191
Gear ratios		52:1 / 42:1 / 35:1 / 45:2 / 43:3
Oil filling	[L]	Horizontal motor position: approx. 20 Vertical motor position: approx. 25
Oil grade		Synthetic gear oil (polyalkylene glycol with additives)
Designation		SM1
Backlash	[°]	0.02 - 0.06

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Table 3-1: Data for gear unit

The rope guard components are adjustable for rope departure directions of the relevant rope line up to 90° upwards and approx. 45° downwards referred to the vertical tangent.

For the version with the traction sheave in the shaft (SA9) and traction sheave with diameter DT = 900 mm or in the case of rope departure directions outside the adjustable range, installation-specific rope guard measures must be taken in accordance with EN81/ -1/9.7.

In conjunction with the standardised machine base frame for the version with vapour-proof partition wall - SA4 (see chapter 3.10.3), the components for the rope guard are an integral part of the machine base frame.

### 3.2 Operational brake

Redundant electromagnetic dual-circuit outside brake shoe on the motor / worm shaft integrated in the gear or motor flange.

Depending on the installation data, two different versions of the operational brake are used.

An integrated flexible coupling is located on the brake disc to connect the motor and worm shafts (motors basically of the IMB5 type).

Designation	Unit	Technical data			
Manufacturer		ThyssenKrupp Aufzugswerke			
Type		TW 130			
Braking torque	[Nm]	max. 2 x 125		max. 2 x 200 <sup>2)</sup>	
Braking torque setting		possible			
Design		Dual-circuit outside brake shoe with brake disc made of EN-GJL 250			
Brake linings		asbestos-free			
Brake disc diameter	[mm]	265			
Air gap	[mm]	0.3			
Air gap setting		possible			
Electrical ventilation		1 magnetic clamp per brake circuit (2 magnetic clamps connected in series)			
Nominal force - magn.clamps	[N]	2500		5000	
Operating voltage <sup>1)</sup>	[VDC]	180 - over-excitation 90 - holding voltage			
Rated current <sup>1)</sup>	[A]	1.5		1.7	
S5 - operating data		40% DC/240 c/h 60% DC/180 c/h			
Monitoring devices		Brake test switch (optional)			
Manual release		Brake release lever (mounted)			
Protection type, magnetic clamps		IP65		IP65	
			II 2 G EEx m II T5		II 2 G EEx m II T5
Connection cable length	[m]	1.3	1.5	1.7	1.5
Type approval code		without (not required)			

<sup>1)</sup> Details for magnetic clamp in series connection

TW130\_30201\_ENG

<sup>2)</sup> not possible in combination with traction sheave DT = 900 mm

Table 3-2: Data for operational brake

### 3.3 Traction sheave

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

- Standard version: traction sheave position in the machine room
- Special version SA4: vapour-proof partition wall in the machine room
- Special version SA9: traction sheave position in the shaft

The traction sheaves for the standard versions differ from the SA4/9 versions in the dimensional assignment of traction sheave middle to cone. The use of SA4/9 versions in machines for the machine room - and vice versa - is not possible.

The one-part traction sheaves are fastened overhung on the drive shaft by using a cone (1:15) and a mounting plate including 3 screws (M16-8.8 microencapsulated with locking washer).

Designation	Unit	Technical data			
Machine version		Standard			
		SA4/9			-
Diameter - DT	[mm]	540	640	720	900 <sup>3)</sup>
Rim width - B	[mm]	150			134
Max. number of grooves - z x d <sup>2)</sup>		10 x 8			9 x 8
		9 x 9			8 x 9
		8 x 10 /11			7 x 10/11
		7 x 12 / 13			6 x 12/13
		7 x 1/2"			6 x 1/2"
					6 x 14/15
					5 x 16
			5 x 5/8"		
Groove type		Seat / vee groove <sup>1)</sup>			
Vee groove angle	[°]	Depends on project specs <sup>1)</sup>			
Weight	[kg]	75	90	140	150
Material		Specially alloyed EN-GJL 250			

<sup>1)</sup> Version in accordance with product description of groove profiles with hardened groove flanks (min. 50 HRC)

<sup>2)</sup> With minimum groove clearance - RA<sub>min</sub> in accordance with product description of groove profiles

<sup>3)</sup> not possible in combination with brake 2x200 Nm

Table 3-3: Traction sheave data

### 3.4 Motor versions

#### 3.4.1 Standard motors

Type IMB5/V1 frequency-controlled three-phase motors are used as standard.

The motor shaft - worm shaft connection is provided by a flexible coupling (make: Centaflex® A size 50).

name	unit	technical data	
solution		frequency-controlled (VVVF)	
manufacturer		ThyssenKrupp Aufzugswerke	Siemens Motorlift
type		DTE132 - DTL180	1LA6 166-4AA-11Z 1LA6 186-4AA-11Z 1LG4 220-4AA-31Z CMRF160
voltage / frequency	V / Hz	see Product catalogue "Elevator motors"	
S5 - operation data		240 c/h / 50% ED	
speed range	rpm	1250 - 1650	1250 - 1500
nominal power	kW	11 - 42	13 - 33.5
structural shape		IMB5/V1	
system of protection		IP21	IP54/55
ventilation		internal ventilator <sup>2)</sup>	
handwinding	mm	D270 <sup>3)</sup> / 360 (plastic)	D270 <sup>1)</sup> / D360 (plastic)
kproj.	mm	see Product catalogue "Elevator motors"	
real value generator (standard)		WDG100-38-1024/4096 TTL	
real value generator (special)		WDG100-38-1024 HTL WDG100-38-1024 Sin/Cos	

<sup>1)</sup> only for type 1LA6 166 and CMRF160

<sup>2)</sup> type DTL180 with forced ventilation

<sup>3)</sup> only for type DTE132

TW130\_30401\_ENG

Table 3-4: Data for standard motors, encoder, handwinding wheel

The specified electrical data apply to the following site conditions:

- Maximum altitude 1000 m amsl
- Maximum temperature + 40° C at maximum 50% air humidity
- Max. relative air humidity 70% at 20 °C

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



Please refer to the product catalogue "Elevator motors" for detailed technical data for the motors.

In Siemens motors the motor terminal box features no possibility for intermediate terminals for the brake magnets. If these motors are used, the special version SA12 will be required for the machine.

The actual-value sensors (see product description electrical elevator parts 66 300 01 00 0) contain a 10 m long connection cable incl. connectors (types 2x64 and 1024/4096 TTL) for connecting to TAW frequency inverters, etc. or free cable ends with end sleeves (type 1024 HTL and type 1024 sine/cosine).

### 3.4.2 Special motors

For areas of application in which a standard version motor cannot be used, a custom-order type IMB5/V1 motor is used, e.g.:

- 4/16- and 6/24-pole motors for pole-changing (AC2) or phase-shift-controlled operation (ACVV)
- Basically all special motors (e.g. explosion-proof versions, special customer-requested motors, etc.)

The mechanical layout (flange dimensions, AS/BS shaft ends, sensor, handwinding wheel or flywheel rim hub, etc.) is executed in accordance with building code BV 6530-05 / Pages 3-7.

The electrical layout (terminal assignment, terminal connecting plan, etc.) is executed for the AC2 and ACVV versions preferably in accordance with building codes BV 6531-04 (AC2/ACVV), BV 6531-05 and -09 (AC2) and BV 6531-14 and -20 (ACVV). In these motors, the brake magnets can be provided with intermediate clamping in the motor terminal box.

Special version SA12 is provided for the machine for motors (except explosion-proof motors) with a terminal box where it is not possible to provide the brake magnets with intermediate terminals.

In motor versions with forced ventilation the blower motor may project over the machine foot height. During project planning it will be necessary in this case, depending on the motor dimensions, to provide sufficient clearance at the machine base frame or to change the position of the forced ventilation system on the motor (on the side or at the top).

## 3.5 Machine versions

### 3.5.1 Standard version for machine in the machine room

The standard version of the TW130 machine comprises the following components:

- Driving gear (incl. oil filling; vertical/horizontal motor position; traction sheave position - left/right)
- Operational brake (2 x 125 Nm or 2 x 200 Nm): for operation acc. to EN81-20/50 incl. brake monitoring SA3.1)
- Type IMB5/V1 V3F motor
- Actual-value sensor and handwinding wheel
- Traction sheave (standard version)
- Rope guard components
- Blocking clamp

### 3.5.2 Special versions

SA 1	Reinforced machine mounting for rope pull resultant - horizontal or vertical pointing upwards
SA 3	Brake monitoring (light barrier sensor)
SA 3.1	Brake monitoring (micro switch)
SA 4	"Partial Ex" protection
SA 9	Traction sheave position in the shaft
SA 12	Additional terminal box (e.g. for IMB5 type special motors without layout of the terminal box as per BV 6531 for intermediate terminals for the brake magnets)
SA 15	"Full Ex" protection (including micro switch for brake monitoring)

#### Brake monitoring (special version SA3 /SA3.1)

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



For using the machine in combination with TKAW frequency inverters (type RPI/MFR), brake monitoring is generally to be provided.  
For using the machine in accordance with EN81-20/50, the brake monitoring SA3.1 (micro switch) has to be provided generally. Exception: for full ex-machines, this is already part of SA15).

Description	Unit	Technical Data		
		Standard SA3	Special SA3.1	Full Ex (SA15)
Version		Standard SA3	Special SA3.1	Full Ex (SA15)
Manufacturer		Bernstein		Steute
Switching principle		contactless (light barrier)	switch with contacts (1 break contact, 1 closing contact)	
Switching display		LED	-	-
Operating voltage	[V]	24 (DC)	240 (AC) / 24 (DC)	250 (AC)
max. switching current	[A]	0.2	3	6
Type of protection		IP65		IP67
Explosion protection		-	-	II 2G EEx d IIC T6 II 2D IP65 T80°C
Cable entry		cable gland M16 x 1.5		potted connecting cable 4 x 0,75 mm <sup>2</sup> 5 m length

TW63\_30502\_ENG

Table 3-5: Data for brake test switches SA3, SA3.1 and full Ex (SA15)

#### "Partial Ex" protection (special version - SA4)

The "Partial Ex" machine version is used in installations in potentially explosive atmospheres in which there is a possibility of dividing the machine room by means of a partition wall into an area for the machine (machine area) and an area which accommodates the traction sheave and the suspension ropes (shaft area).

The partition means that no specially prescribed measures or markings for explosion protection are required for the area housing the machine.

## TW130 machine

For this version the machine has an extended drive shaft with an external bearing, two compensating supports underneath the machine for statically defined mounting, and a special machine base frame (SA4) with a wall duct.

This version is standardised for traction sheaves with diameter DT = 540, 640 and 720 mm.

The machine base frame is inserted in the area of the external bearing into the partition wall, and walled in and sealed by the customer. The machine therefore cannot be erected so that it is insulated to prevent transmission of structure-borne noise to the machine room.

The structural sealing elements on the machine base frame and on the external bearing and the measures taken by the customer help to provide a vapour-proof partition (max. gap width 0.4 mm) of the area for the machine.

In addition, suitable ventilation measures must be provided on the installation side to prevent explosive media (gases or dust) from getting into the area housing the machine.

The machine components which are located in the area containing the explosive media (shaft area) and which have been assessed as ignition sources in accordance with EN 13463-1 comply with the requirements of Directive 94/9/EC (ATEX 100a).

This part of the machine designated as the "traction sheave unit" is assigned the following identification in accordance with Directive 94/9/EC:  $\text{CE} \text{Ex}$  II 2 GD c IIC T4

(equipment group : II = other than mining; category: 2 = zone 1, 2, 21, 22; explosive atmosphere: G = gases and D = dust; type of protection: c = protection by constructional safety; explosives group: IIC ; temperature class: T4 = max. 135°C)

#### **Traction sheave position in the shaft (SA9)**

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

This version is standardised for traction sheaves with diameter DT = 540, 640 and 720 mm.

The components for the rope guard are not an integral part of the machine in this version.



Note on the machine base frame (not standardised):

The permissible tolerance for the horizontal offset between the plane for the compensating supports and the mounting surface for the external bearing is  $\pm 1$  mm.

#### **"Full Ex" protection (special version SA15)**

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

The machine (not including the electrical components) has been assessed for potential ignition sources in accordance with EN 13463-1 and complies with the requirements of Directive 94/9/EC (ATEX 100a). The machine (without the electrical components) is assigned the following identification in accordance with Directive 94/9/EC:  $\text{CE} \text{Ex}$  II 2 GD c,k IIC T4

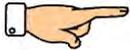
(equipment group : II = other than mining; category: 2 = zone 1, 2, 21, 22; explosive atmosphere: G = gases and D = dust; type of protection: c = protection by

constructional safety and k = fluid protection; explosives group: IIC ; temperature class: T4 = max. 135°C)

The operational brake is generally monitored by brake test switches.

Layout of electrical components:

- Brake magnets in  II 2 G EEx m II T5 (for technical data, see product description electrical elevator parts 65 810 01 00 0)
- Brake test switches



These brake test switches are generally part of SA15; for technical data, see table Table 3-5 )

- Motor and if necessary encoder are dependent on project specs

### 3.5.3 Version with emergency brake NBS

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

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

- Type-approved electromagnetic disc brake
- Driving gear in emergency brake NBS version (bearing bracket NBS, brake flange NBS for fitting the brake)
- Traction sheave/worm wheel shaft emergency brake system (including components for sealing)

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

The certificate for the calculation of the traction sheave shaft for the TW130 machine with NBS (emergency brake system) must be attached to the technical documentation.

The emergency brake is activated via a separate control unit including terminal box and connecting lines (see product description electrical elevator parts: 65 000 19 00 0 – activation of the emergency brake system for gear drives) as well as an additional safety switch at the overspeed governor (ThyssenKrupp) to activate the facility in the event of overspeed.

Designation	Unit	Technical data
Manufacturer		Chr.Mayr GmbH
Type		Mayr RSO1300/4000 Nm
Braking torque	[Nm]	4000
Braking torque setting		not possible
Design		4-surface disc brake
Version of brake linings		asbestos-free
Brake disc diameter	[mm]	283.5
Air gap	[mm]	0.65 - 0.1/+ 0.15
Air gap setting		not possible
Electrical ventilation		1 magnetic clamp with armature base plate
Operating voltage	[VDC]	207 - overexcitation 104 - holding voltage
Operating current	[A]	2.96 - overexcitation 1.49 - holding current
Performance data	[W]	613 - overexcitation 155 - stopping power
Monitoring devices		Release monitoring (microswitch)
Manual emergency release		2 x M16 screws
Connection cable length	[m]	approx. 1.0
Protection class		IP54
Weight	[kg]	approx. 107
Type approval code		EU-BD 891 <sup>2)</sup> resp. ABV 891 <sup>3)</sup>
Type approval code with response times t10 / t50 / t90 <sup>1)</sup>	[ms]	EU-BD 891 <sup>2)</sup> resp. ESV 891 <sup>3)</sup> 115/190/300
Certificate for traction sheave shaft Test number		TW130-RSO1300/4000 Nm

<sup>1)</sup> DC - direct current cut-off (emergency stop)

<sup>2)</sup> acc. to EN81-20/50 and EN81-2: 1998+A3:2009

<sup>3)</sup> acc. to EN81-1: 1998+A3:2009

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**Table 3-6: Data for emergency brake, NBS**

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

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

Later fitting of the emergency brake, NBS, on existing machines is not possible.

### 3.5.4 Version with earthquake safeguard complying with EN81-77

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

The rope guard fitted as standard is replaced with the modified rope guard which, in the event of an earthquake, prevents the ropes from leaving the groove of the traction sheave.

Attention should be paid to ensuring that the rope guard is installed in accordance with the installation instructions.

The rope guard complying with EN81-77 is standardised for the traction sheaves dia. 450 / 640 / 720.

The rope holder is designed in such a way that all standard gaps between the ropes on the rope departure can be covered with the TW130O SR and TW130 M SR base frames.

### 3.6 Combination of versions / options

combination	SA1	SA3 / 3.1	SA4	SA9	SA12	SA15	2x125	2x200	540/640/720	900	NBS	horizontal	upright
SA1													
SA3 / 3.1	X												
SA4	O	X											
SA9	O	X	O										
SA12	X	X	X	X									
SA15	X	O	X	X	O								
2x125	X	X	X	X	X	X							
2x200	X	X	X	X	X	X	O						
540/640/720	X	X	X	X	X	X	X	X					
900	X	X	X	O	X	X	X	O	O				
NBS	X	X	O	O	X	O	X	X	X	X			
horizontal	X	X	X	X	X	X	X	X	X	X	X		
upright	X	X	X	X	X	X	X	X	X	X	X	O	

explanations:

X	combination possible
O	combination not possible
SA ...	special versions
2x125/2x200	version with operational brake (braking torque)
NBS	version with emergency brake - NBS
horizontal/upright	motor position
540/640/720	version traction sheave
900	version traction sheave

TW130\_30601\_ENG

Table 3-7: Overview of the combination options of the special versions

### **3.7 Technical data**

#### **3.7.1 Performance chart**

All specified performance data apply to the following application conditions:

- Operating data max. 180 c/h at 50% duty cycle
- Temperature, machine room + 5 °C to + 40 °C
- Installations with no tower configuration

For types of performance not shown in the chart or deviating installation data, there is the possibility to use a simplified calculation procedure (see TR 3 -010) to check the configuration of the machine.

In the case of installations which are laid out using the TLD calculation program, a check is generally carried out in accordance with the installation-specific data.

r	v <sub>n</sub>	n <sub>1</sub>	Dt	i	v <sub>n1</sub>	Q <sub>max</sub>	P <sub>max</sub>	q%	remarks		
1:1	0.63	1160	540	52:1	0.63	1725	2500	45			
		1250				1600	2000	50			
	0.80	1240	640		0.68		1350			2500	45
		1470	540			0.80		1450			
	1.00	1240		540	35:1		1.00	1800		2200	50
		1115	720			1250		2500			
		1250	640	42:1	1425					2000	45
		1490	540		1350	1500		2500			
	1.25	1310	640	35:1	1.25		1350			2200	45
		1550	540			1250	50				
	1.50	1570	640		1.50	1275	1800	2200		45	
						1200	2200				
	1.60	1190	900	35:1	1.60	1050	1400	45			
			1270	540		45:2	1500			2500	
		1485	720	35:1		1125	1750				
			1670			640	1125			2200	
	1.75	1175	640	45:2	1.75	1250	2500	45			
			1390			540	1400			2500	
		1015					540			43:3	2.00
			1200			720	45:2			1125	
	1340	640	1200	2000							
	1590	540	1350	1250	2500						
	2.50	1070	640		43:3	2.50	1200	2300		45	
			1270	540			1050				1350
		1490		720	45:2			1275			2600
			1680	640			1050	1500			
	3.00	1280	640	43:3	3.00	1050	2200	45			
			1520			540				1200	

TW130\_30701\_ENG

Table 3-8: Performance chart, part 1

r	v <sub>n</sub>	n <sub>1</sub>	Dt	i	v <sub>n1</sub>	Q <sub>max</sub>	P <sub>max</sub>	q%	remarks	
2: 1	0.50	1115	720	42:1	0.50	2500	3500	50		
		1240	540	35:1		3400	4000	45		
		1250	640	42:1		2700	3500	50		
						3000		45		
	0.63	1320	540	35:1	0.63	2750	3200	50		
		1560				3000	3500	45		
						3200	50			
	0.80	1270	540	45:2	0.80	3000	4000	50		
						3350		45		
		1670	640	35:1		2350	3000	50		
						2600	3400	45		
	1.00	1200	720	45:2	1.00	2250	3000	50		
						2400		45		
		1340	640			2650	3500	45		
						2550	4000	50		
		1590	540			2800		3200		45
						3000	3200			
	1.25	1270	640	43:3	1.25	3000	3200			
				45:2		2300	3000			
	1.50	1280	540	43:3	1.50	2400	3200			
						2600				
	1.6	1220	720		1.60	2000	3200			
						1370		2300		
						1620		2500		
1.75	1500	640	1.75		2200	3000				
					2000					
2.00	1520	720	2.00		1750	3000				
					2000					
4:1	0.40	1270	540		45:2	0.40	6000	7000	50	
		1670	640		35:1		4700			
	0.50	1200	720		45:2	0.50	4500	6000		
				5000						
		1590	540	5400						
	0.63	1280	540	43:3	0.63	5500	5000			
				45:2		4300				
	0.80	1370	640	43:3	0.80	4500	4500			
						4650	6000			
	1.00	1520	720		1.00	3500	4500			
						1710		3800		

TW130\_30702\_ENG

Table 3-9: Performance chart, part 2

performance chart explanations

r	-	.....	suspension
$v_n$	(m/s)	.....	rated speed
$n_1$	rpm	.....	motor speed
Dt	(mm)	.....	traction sheave diameter
i	-	.....	gear ratio
$v_{n1}$	(m/s)	.....	actual speed (with $n_1$ )
$Q_{max}$	(kg)	.....	rated load (max.)
$P_{max}$	(kg)	.....	car mass (max. for $Q_{max}$ )
q%	(%)	.....	compensation ratio for car mass

performance data incl. suspension rope weight  $M_{SR}$  for travel height:

H = 20 m for  $v_n$  up to 0.63 m/s

H = 40 m for  $v_n$  up to 1.25 m/s

H = 100 m for  $v_n$  up to 2.50 m/s

as well as from  $v_n = 1.6$  m/s suspension rope compensation  $M_{CR}$  (compensating ropes, etc.)

TW160\_30704\_ENG

Table 3-10: Performance chart - explanations

### 3.7.2 Load data - traction sheave shaft

The load values  $F_{tzul}$  set out below represent the limit value of the permissible radial load on the traction sheave shaft calculated from the overall masses present at the installation.

The overall masses of the installation are determined and the traction sheave shaft is checked as part of the TLD calculation program on the basis TR TR3-011.

- Traction sheave shaft - standard version:  $F_t \leq 77$  kN
- Traction sheave shaft - emergency brake NBS:  $F_t \leq 70$  kN
- Traction sheave shaft - SA4/9 (with external bearing):  $F_t \leq 60$  kN

For the machine with the traction sheave shaft in the standard version or in the version for emergency brake NBS, there are restrictions in place for  $F_t$  for the horizontal and vertical upwards rope departure directions:

- Machine with horizontal motor position:  $F_t \leq 50$  kN
- Machine with vertical motor position:  $F_t \leq 60$  kN

### 3.7.3 Gear efficiency

The specified gear efficiencies  $\eta_G$  and  $\eta_{G'}$  are extreme values which are to be applied for dimensioning the motor, frequency inverter and braking resistor, etc.

The rated efficiency  $\eta_n$  provides information on the value  $\eta_G$  that can be achieved under optimum operating conditions.

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

- $\eta_g$ : design efficiency - driving
- $\eta_{g'}$ : design efficiency - driven (braking)
- $\eta_n$ : rated efficiency - driving
- $\eta_{an}$ : starting efficiency – driving
- $\eta_{an'}$ : starting efficiency – driving

ratio/ speed (rpm)	$\eta_g$		$\eta_{g'}$		$\eta_n$	$\eta_{an}$	$\eta_{an'}$
	800 - 1249	1250 -1800	800 - 1249	1250 -1800	1250 -1800	-	-
52: 1	0.68	0.70	0.70	0.72	0.78	0.38	-0.17
42: 1	0.72	0.74	0.76	0.78	0.82	0.44	0.11
35: 1	0.74	0.76	0.79	0.81	0.84	0.45	0.13
45:2	0.79	0.81	0.86	0.88	0.89	0.57	0.48
43:3	0.81	0.83	0.89	0.91	0.92	0.65	0.65

TW130\_30705\_ENG

Table 3-11: Gear efficiency

### 3.7.4 Mass moment of inertia

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

- Mass moment of inertia:  $J_{rot} = 0.14 \text{ kg/m}^2$

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

The value for the mass moment of inertia of the motor can be taken in the case of:

- normalised versions in accordance with a product description (see notes in the chapter 'Engine versions')
- custom-order motors from the motor lists (e.g. Loher, Siemens, VEM, Motorlift, etc.)

#### Additional flywheel masses

In the case of machines with pole-changing motor versions (AC2), additional flywheel masses are required on the motor shaft depending on the installation data.

The additional flywheel mass consists of a flywheel rim hub and a bolted flywheel rim.

Designation	Unit	Mass moment of inertia $J_{rot}$ [kgm <sup>2</sup> ]									
		330	360	370	380	400	410	430	455	480	510
Flywheel rim	mm	0,285	0,458	0,533	0,600	0,758	0,900	1,070	1,435	1,750	2,280
Flywheel rim hub	kgm <sup>2</sup>	0,057			0,057			0,057			
Total		0,342	0,515	0,590	0,657	0,815	0,957	1,127	1,492	1,807	2,337

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Table 3-12: Mass moments of inertia for additional flywheel masses

### 3.7.5 Weight data

Designation	Unit	Weight	Machine version						
			Without motor			With DTE140 motor <sup>2)</sup>			
Assembly, winch TW130 <sup>1)</sup>	kg	350	x	x	x	x	x	x	
Additional parts for SA9		60		x				x	
Additional parts for NBS emergency brake system		80				x			x
Traction sheave D640 <sup>2)</sup>		90	x	x	x	x	x	x	x
DTE140 motor <sup>3)</sup>		120					x	x	x
Assembly, entire machine				440	500	520	560	620	640

<sup>1)</sup> without motor

<sup>2)</sup> Weight for traction sheave D540 approx. 75 kg / D720 approx. 140 kg / D900 approx. 150 kg

<sup>3)</sup> Weight for other motor versions, see chapter - 'Motor versions'

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Table 3-13: Weight data

The weight data for the type IMB5/V1 motor can be taken in the case of:

- Normalised versions in accordance with a product description (see notes in the chapter - Type IMB5/V1 motors)
- custom-order motors from the motor lists (e.g. Loher, Ziehl-Abegg, etc.)

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

Designation	Unit	Weight m [kg]									
		330	360	370	380	400	410	430	455	480	510
Flywheel rim	mm										
	kg	14	20	22	24	28	31	35	42	48	57

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Table 3-14: Weight data of additional flywheel masses

### **3.7.6 Acoustic specifications**

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

- with type DTE132 - DTE140 motors:  $\leq 70$  dB(A)
- with type DTE180 - DTL180 motors:  $\leq 74$  dB(A)

### **3.8 Maintenance instructions**

- Oil change: for the first time after 4 years, then every 8 years
- Other components: maintenance-free

### 3.9 Machine dimension sheets

#### 3.9.1 Standard version with horizontal motor position

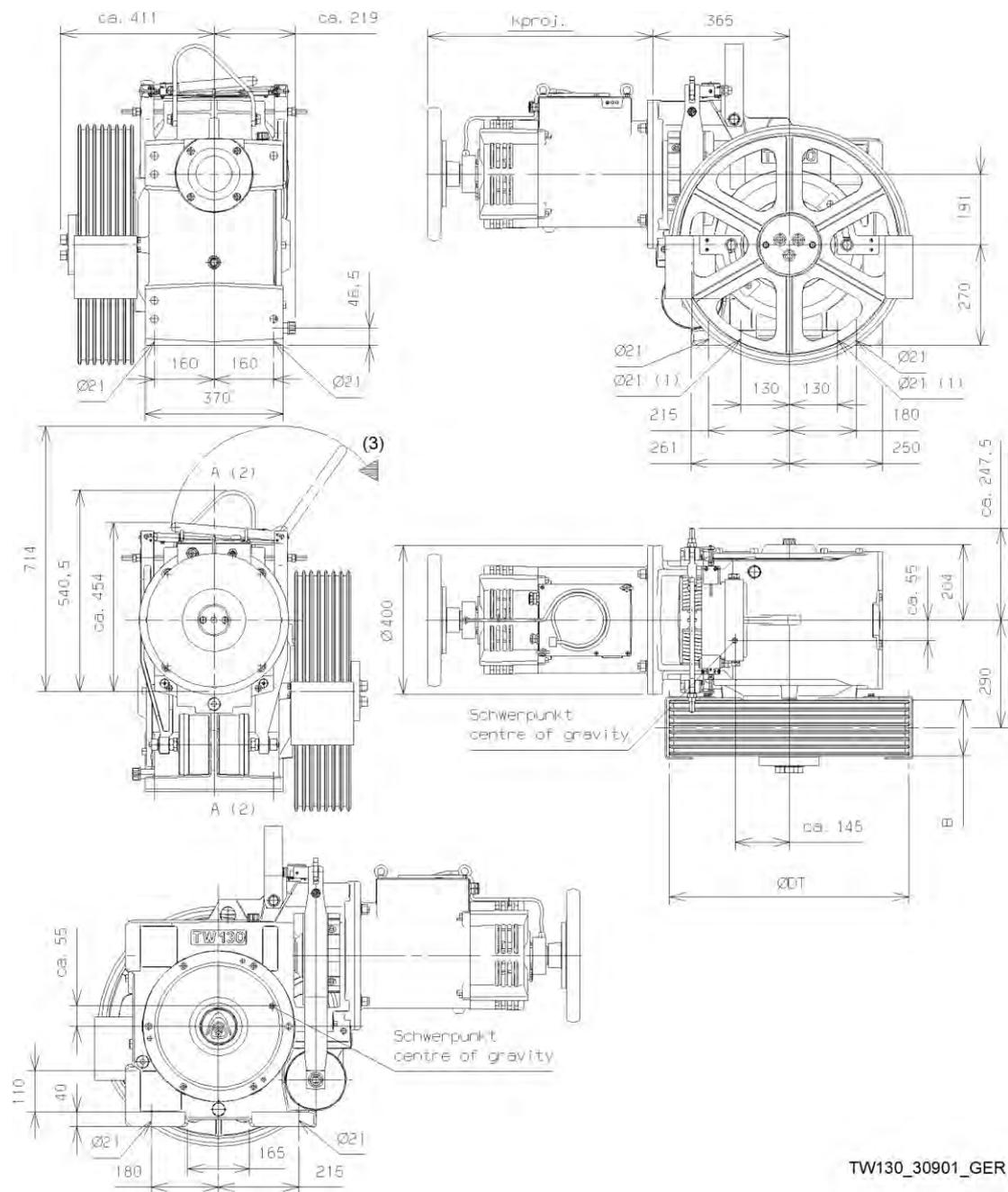
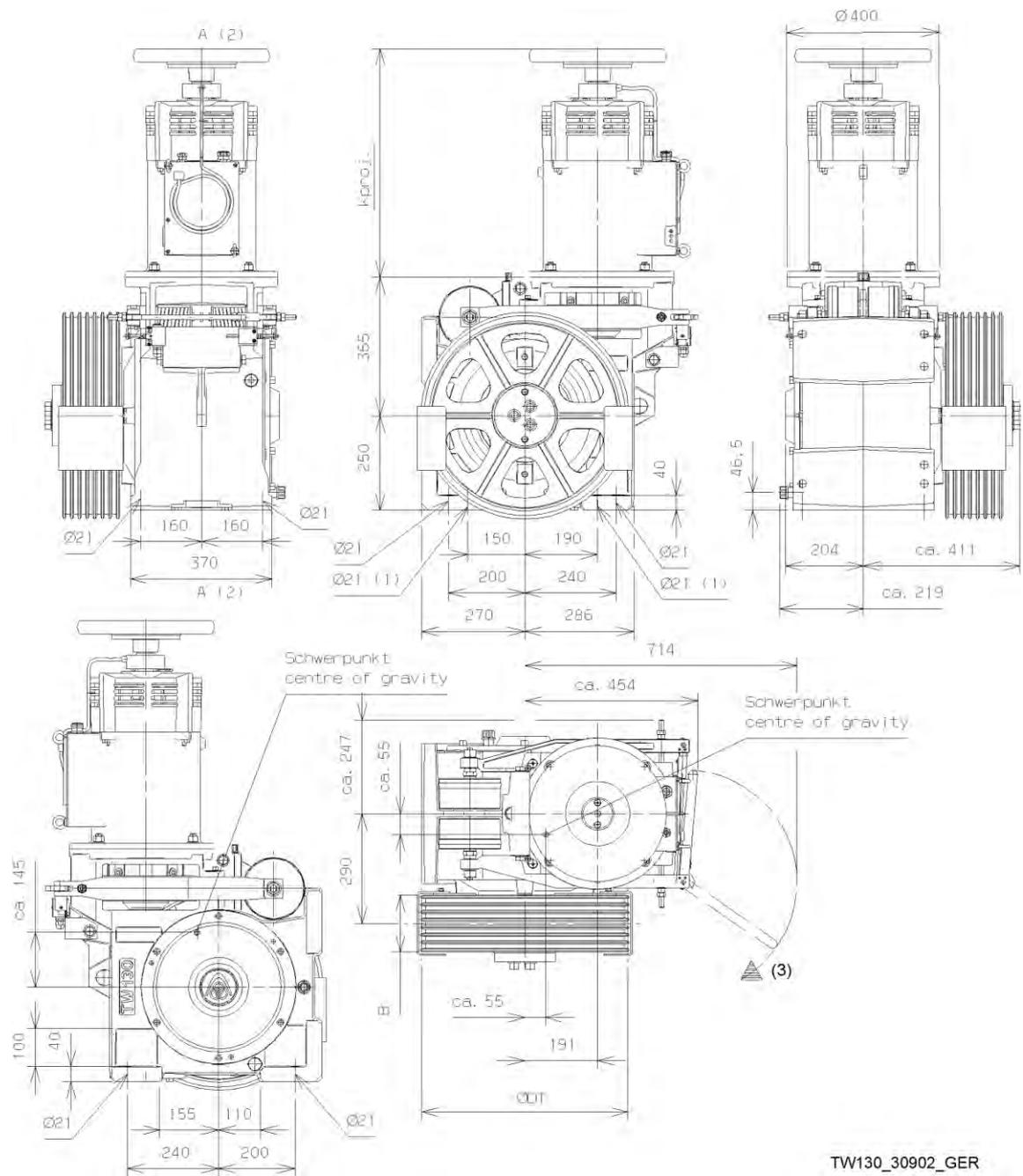


Fig. 3-1: TW130 machine - Standard version with horizontal motor position  
(pictured: machine in traction sheave position - right)

Description of items for Fig. 3-1:

(1)	Additionally for SA1	(2)	Pictured: traction sheave position right / left mirror-inverted to A-A
(3)	Position of brake release lever for traction sheave diameter DT = 540, 640 and 720; for traction sheave diameter DT = 900 mirror-inverted to A-A,		

3.9.2 Standard version with vertical motor position



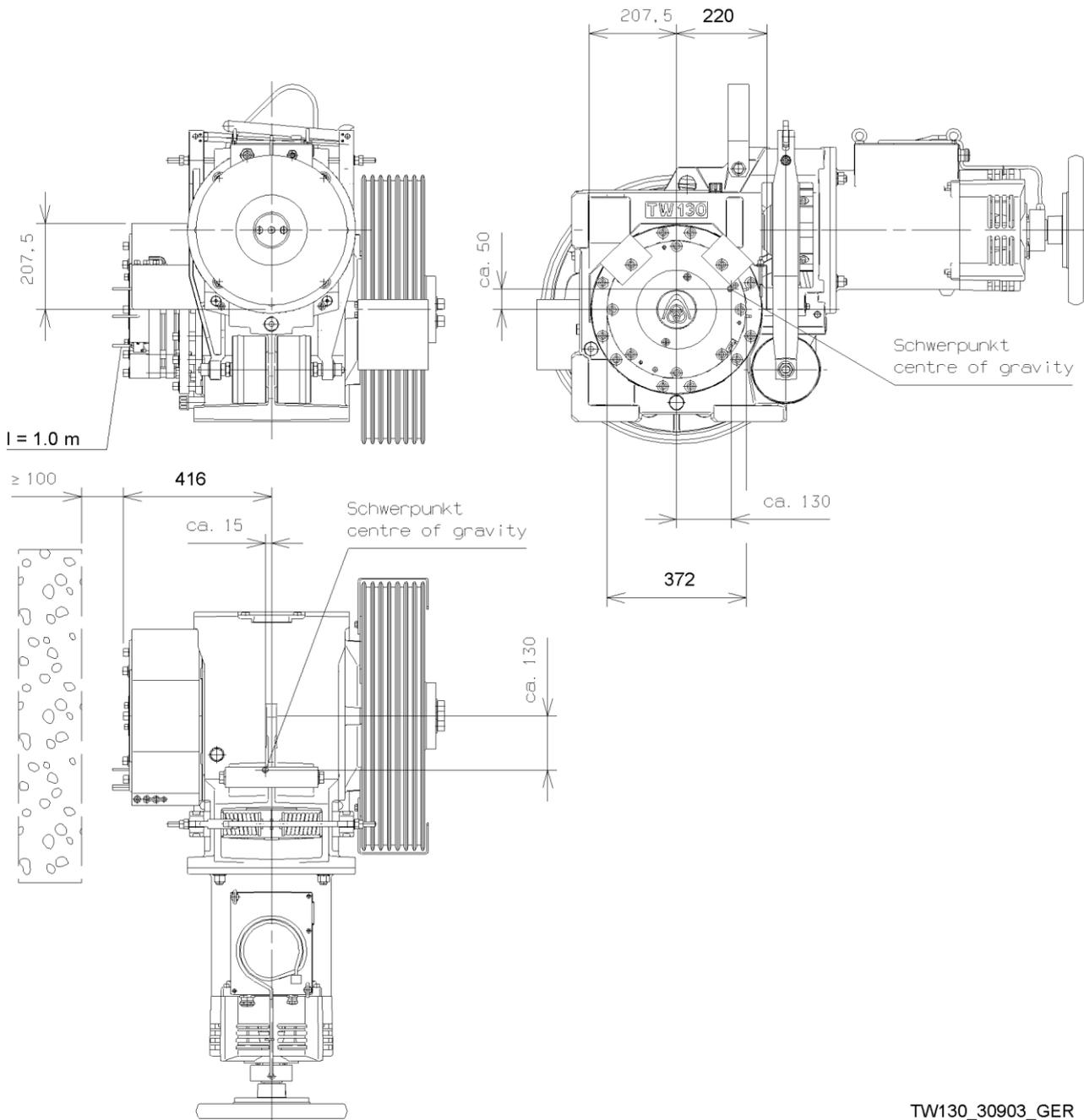
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Fig. 3-2: TW130 machine - Standard version with vertical motor position  
(pictured: machine in traction sheave position - right)

Description of items for Fig. 3-2:

(1)	Additionally for SA1	(2)	Pictured: traction sheave position right / left mirror-inverted to A-A
(3)	Position of brake release lever for traction sheave diameter DT = 540, 640 and 720; for traction sheave diameter DT = 900 mirror-inverted to A-A,		

3.9.3 Version with emergency brake NBS



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Fig. 3-3: TW130 machine with emergency brake NBS (pictured: machine with horizontal motor position and traction sheave position on right)

3.9.4 Version for traction sheave in the shaft SA9

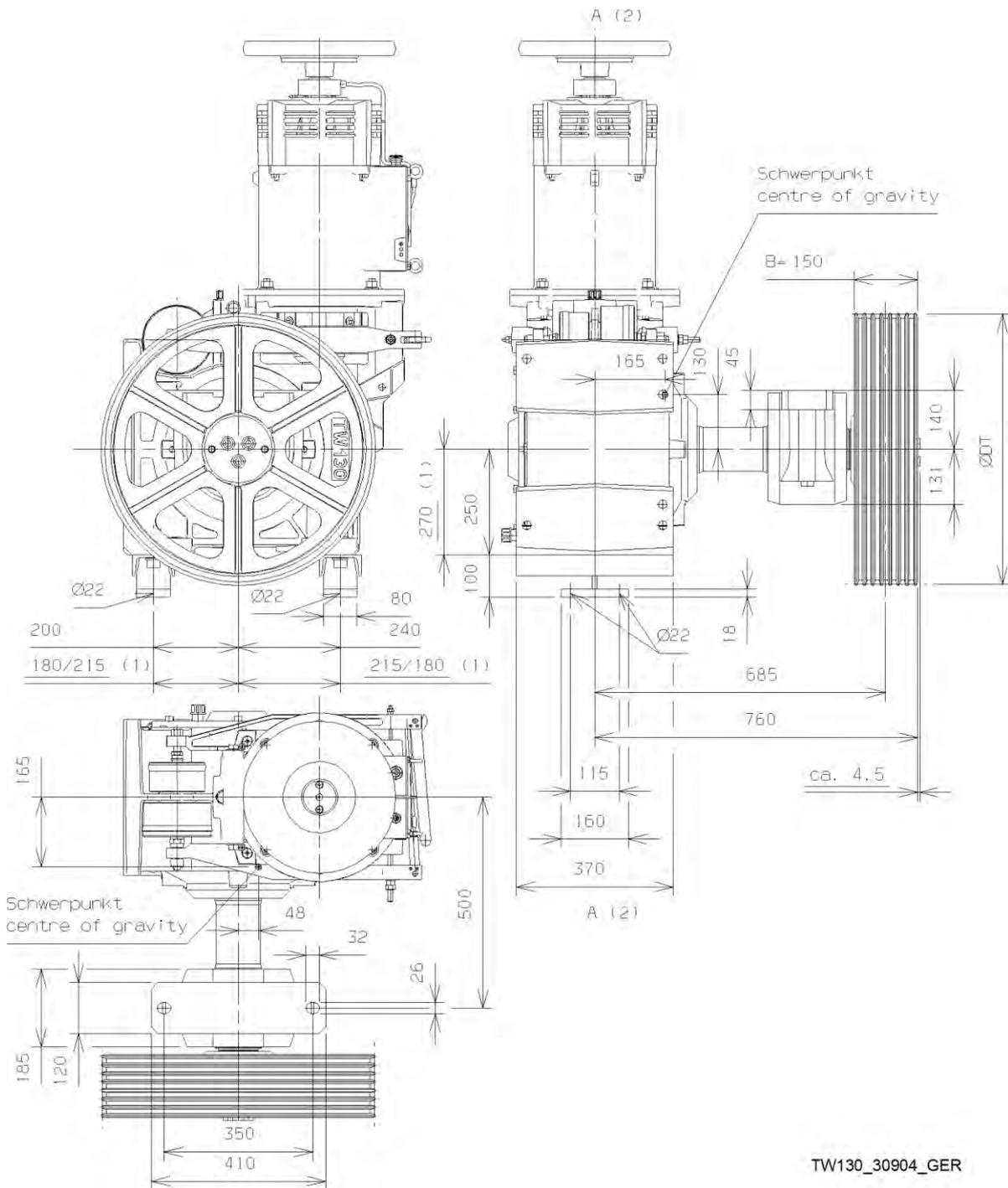
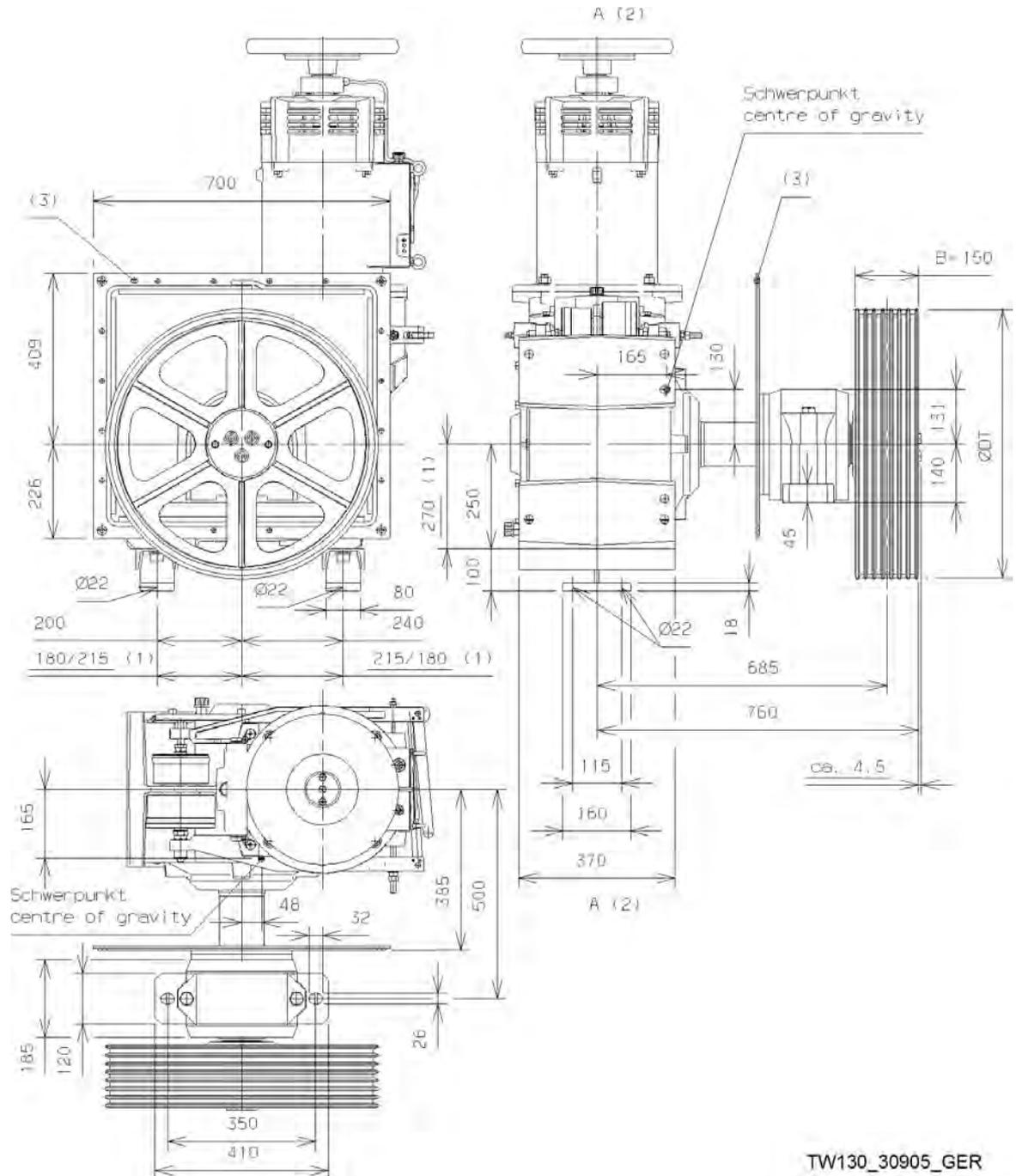


Fig. 3-4: TW130 machine - Version for traction sheave in the shaft - SA9  
(pictured: machine in traction sheave position – right)

Description of items for Fig. 3-4:

(1)	With horizontal motor position (dimensions dependent on traction sheave position)	(2)	Pictured: traction sheave position - right / left mirror-inverted to A-A
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3.9.5 Version for vapour-proof partition wall SA4 (Partial Ex)



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Fig. 3-5 TW130 machine - Version with vapour-proof partition wall - SA4 (pictured: machine in traction sheave position - right; for further dimensions, see standard version)

Description of items for Fig. 3-5:

(1)	With horizontal motor position (dimensions dependent on traction sheave position)	(2)	Pictured: traction sheave position - right / left mirror-inverted to A-A
(3)	Partition wall for machine base frame SA4		

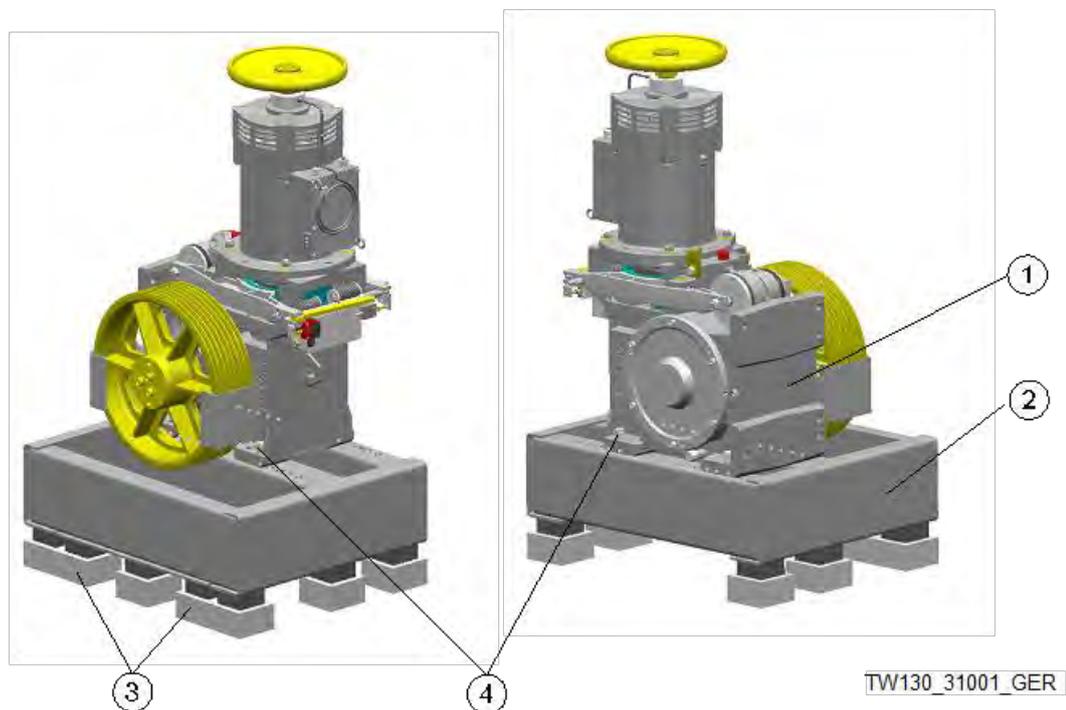
### 3.10 Machine base frame

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

#### 3.10.1 Assembly, machine base frame TW130 O SR - 6233 000 8411

Machine base frame version without rope pulley for use in:

- Installations with 1:1 rope suspension and direct rope departure for an elevator car - counterweight rope distance  $ASL \leq (DT + 100)$  mm depending on diameter of traction sheave
- Installations with 2:1 or 4:1 rope suspension



*Fig. 3-6: TW130 O SR machine base frame - Version without rope pulley (pictured with machine in vertical motor position and traction sheave position - right)*

Description of items for Fig. 3-6:

1	TW130 machine	2	TW130 O SR machine base frame
3	Insulation elements	4	Mounting parts for machine / base frame

The machine base frame consists of three plated-edge longitudinal brackets with two cross-sections welded at the ends incl. supporting surfaces for the insulation elements.

The hole pattern in the machine base frame is designed for all versions of the machine (vertical / horizontal motor position, traction sheave position - left / right) and for the use of standardised traction sheaves with dia. 540 mm, dia. 640 mm and dia. 720 mm.

**Technical data**

- Weight of machine base frame: approx. 135 kg

**Project planning dimensions**

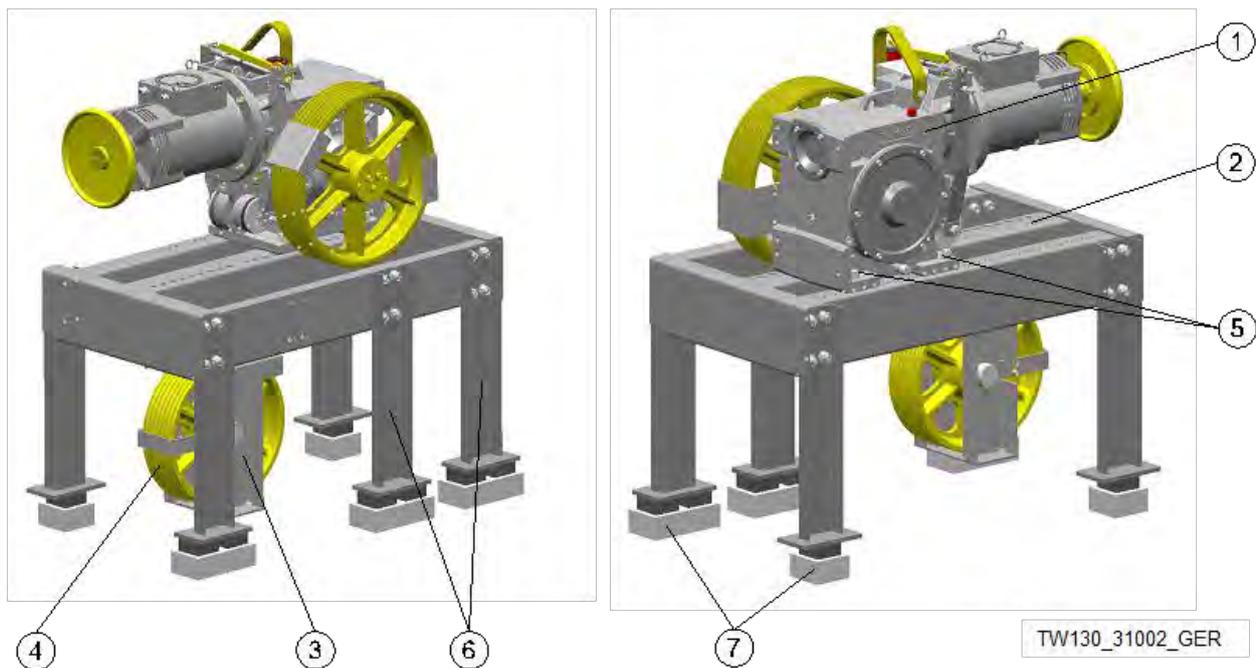
- For project planning dimensions, see dimension sheet (chapter 3.11)

**3.10.2 Assembly, machine base frame TW130 M SR - 6233 000 8410**

Machine base frame in version with rope pulley depending on the pulley hub position in left-hand or right-hand configuration for use with:

- Installations with 1:1 rope suspension and elevator car - counterweight rope distance ASL with approx. 700 ÷ 1300 mm in conjunction with the standardised traction sheaves dia. 540 and 640 mm. Depending on the vertical / horizontal motor position, the traction sheave position - left / right and the traction sheave diameter DT there are different values for the ASL dimension that can be set on the machine base frame (see chapter 3.11.2).

The versions with D450 and D540 (for rope pulleys, see product description mechanical elevator parts 60 720 12 00 0) are used for the rope pulley. The rope pulleys have maintenance-free rolling bearings.



**Fig. 3-7:** TW130 M SR machine base frame - Version with rope pulley (pictured: pulley hub position - left with machine in horizontal motor position and traction sheave position - right)

Description of items for Fig. 3-7:

1	TW130 machine	2	Upper section, machine base frame
3	Pedestal bearing for rope pulley	4	Rope pulley
5	Mounting parts for machine / base frame	6	Supports for insulation elements
7	Insulation elements		

The complete machine base frame comprises the following components:

- Machine base frame upper section consisting of three plated-edge longitudinal brackets with two cross-sections welded at the ends.
- Pedestal bearing (bolted) for the rope pulley holder with axle; version based on the rope pulley used
- Rope pulley D450-7x dia. 10 (with groove clearance RA = 18 or 20 mm in polyamide version), D450-7/8 x dia. 10/11 (all other groove diameters and groove clearances in version from EN-GJL 250), D540-7 x dia. 12/13 (in general all versions from EN-GJL 250)
- Supports (4/5 units, bolted) for mounting the insulation elements.

The hole pattern in the machine base frame is designed for all versions of the machine (vertical / horizontal motor position, traction sheave position - left / right) and for the use of standardised traction sheaves with dia. 540/640 mm.

It is possible through appropriate mounting of the pedestal bearing with rope pulley and the bolted supports to position the pulley hub on the right or left in the machine base frame.

#### Technical data

- Weight of machine base frame

Version of rope pulley D [mm] (material of rope pulley)	Unit	Weight, including rope pulley
D450 (polyamide)	[kg]	315
D450 (EN-GJL 250)		365
D540 (EN-GJL 250)		380

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Table 3-15: Weight data for M SR machine base frame

#### Project planning dimensions

- For project planning dimensions, see dimension sheet (chapter 3.11.2)

### 3.10.3 AY machine base frame TW130 - partial Ex (SA4)

Machine base frame for "Partial Ex" installations with vapour-proof wall duct (SA4) in a version without a rope pulley for use in:

- Installations with 1:1 rope suspension and direct rope departure for an elevator car - counterweight rope distance  $ASL \leq (DT + 100)$  mm depending on the traction sheave diameter DT used
- Installations with 2:1 or 4:1 rope suspension

The machine base frame is not standardised.

It is possible, after consultation, to use the a modified form of the existing machine base frame for the TW160 (for information, see Product Catalogue TW160 Machine).

The TW130 machine is prepared by the standardised special version SA4 (see Chapter 2.4 and Chapter 3.9.5 ) for use in combination with the above-mentioned machine base frame.

### 3.10.4 Mounting parts, base-frame-mounted machine

A set of bolting elements (4 x M20-8.8) is available (assembly, mounting parts - 62 320 01 98 0) for mounting the TW130 machine on the standardised machine base frame with / without rope pulley.

A reinforced mounting (6 x M20-8.8) is required for individual applications of the TW130 machine with horizontal or vertically upward rope departure - except for the special versions SA4/9.

### 3.10.5 Instructions for setting up machine base frames in the machine room

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

- Insulation elements without underlay (60 309 01 14 0) for a machine room without floor pavement, or for setting up the machine base frame directly on floor pavement
- Insulation elements with support (60 300 04 37 0) for machine room with floor pavement ( $\leq 60$  mm high); support made from Multiplex laminated wood 140 x 140/80 / mm high

### 3.10.6 Version with earthquake safeguard complying with EN81-77

Optional components are available for the TW130 O SR and TW130 M SR base frames; these meet the requirements for protection devices complying with EN81-77.

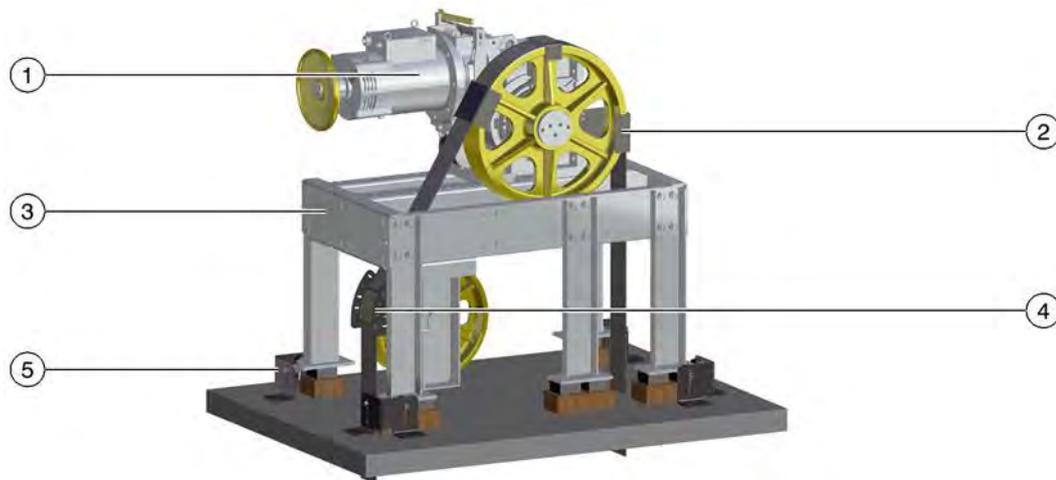


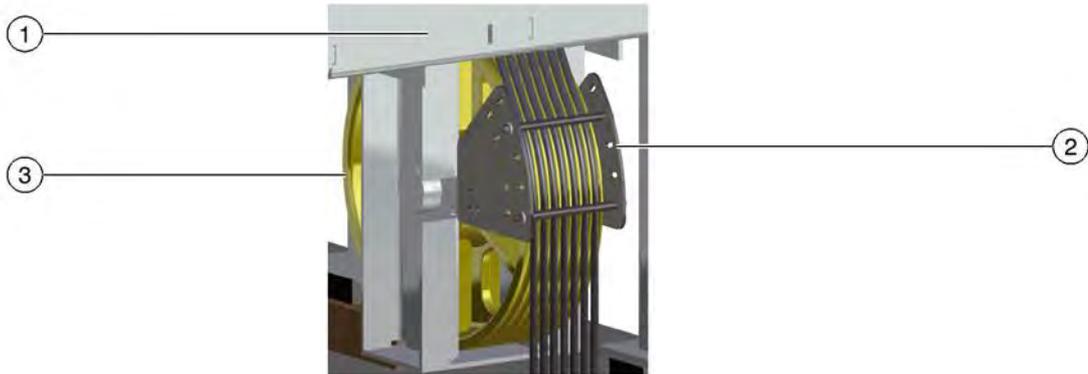
Fig. 3-8: Safeguard measures on AY machine frame unit in accordance with EN 81-77

Description of items for Fig. 3-8

1	TW130 machine	2	Rope guard complying with EN81-77 for traction sheave
3	TW130 M SR machine base frame	4	Rope holder complying with EN81-77 for rope pulley dia. D450 / D540
5	Shift protection complying with EN81-77		

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

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

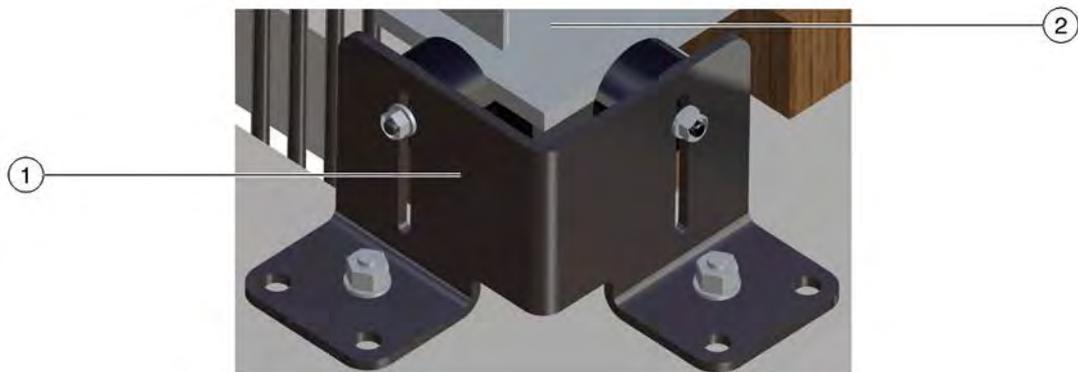


*Fig. 3-9: Earthquake safeguard complying with EN81-77 on machine base frame (shown for rope pulley dia. D450 / D540)*

Description of items for Fig. 3-9

1	TW130 M SR machine base frame	2	Rope holder complying with EN81-77 for rope pulley dia. D450 / D540
3	Rope pulley dia. D540		

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



*Fig. 3-10: Earthquake safeguard complying with EN81-77 on machine base frame (shown is the shift protection)*

Description of items for Fig. 3-10

1	Shift protection complying with EN81-77	2	TW130 M SR machine base frame
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In the case of deployment of the machine in earthquake categories 2 and 3, additional safeguard measures in accordance with EN81-77 are necessary.

### 3.11 Machine base frame dimension sheets

#### 3.11.1 Version without rope pulley

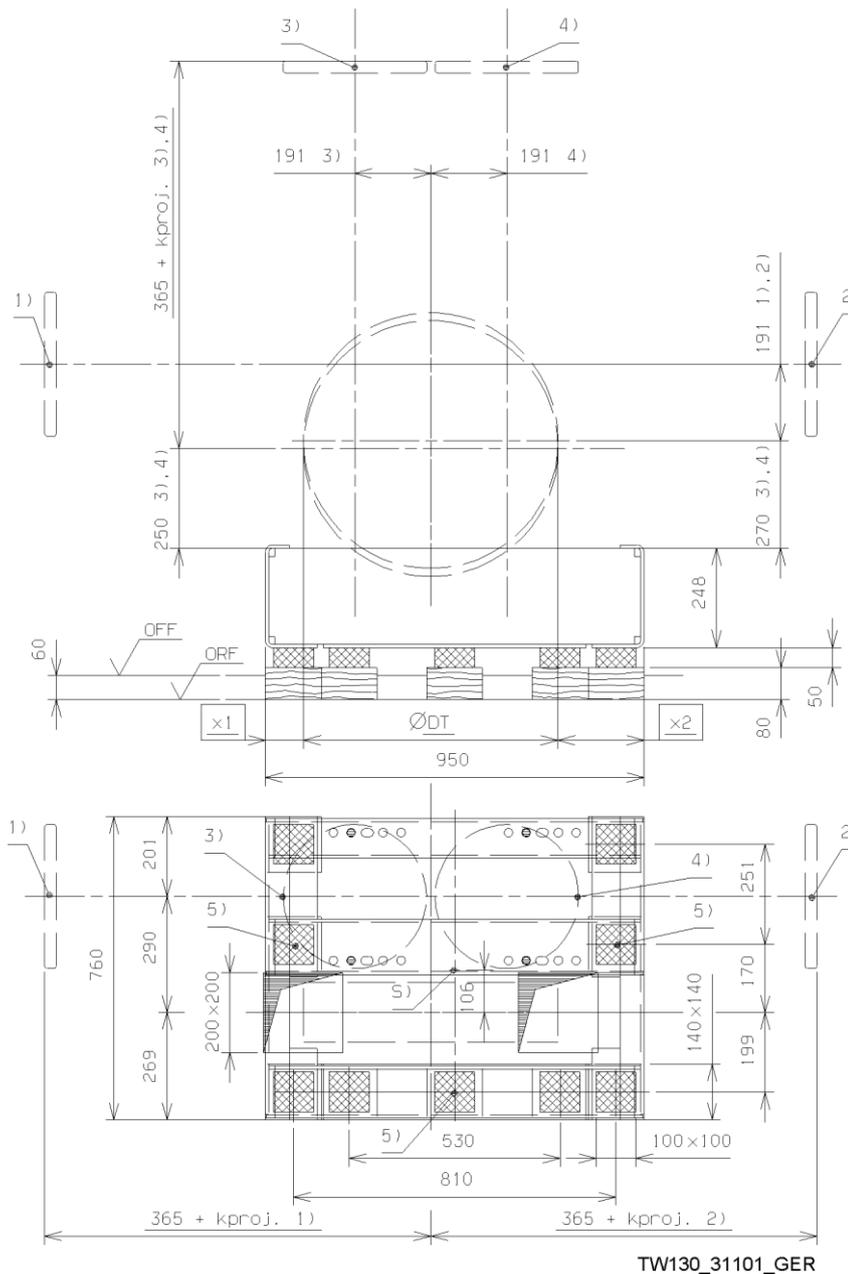


Fig. 3-10: TW130 O SR machine base frame - Version without rope pulley

Description of items for Fig. 3-10:

(1)	Horizontal motor position/ traction sheave position - right	(2)	Horizontal motor position/ traction sheave position - left
(3)	Vertical motor position Traction sheave position - left	(4)	Vertical motor position Traction sheave position - right
(5)	Insulation element additionally for Ft > 55 kN	(S)	Centre of gravity, machine base frame

**Project planning dimensions**

- Project planning dimensions x1 and x2 depending on vertical / horizontal motor position, traction sheave position left / right and traction sheave diameter DT

Designation	Unit	Project planning dimensions x1 and x2							
Motor position		Vertical				Horizontal			
Traction sheave position		Left		Right		Left		Right	
Project planning dimensions		x1	x2	x1	x2	x1	x2	x1	x2
DT 540 traction sheave	[mm]	310	100	100	310	125	285	285	125
DT 640 traction sheave		215	95	95	215	120	190	190	120
DT 720 traction sheave		135	95	95	135	115	115	115	115

TW130\_31102\_ENG

*Table 3-16: Project planning dimensions, machine base frame*

3.11.2 Version with rope pulley

Version with rope pulley position on left

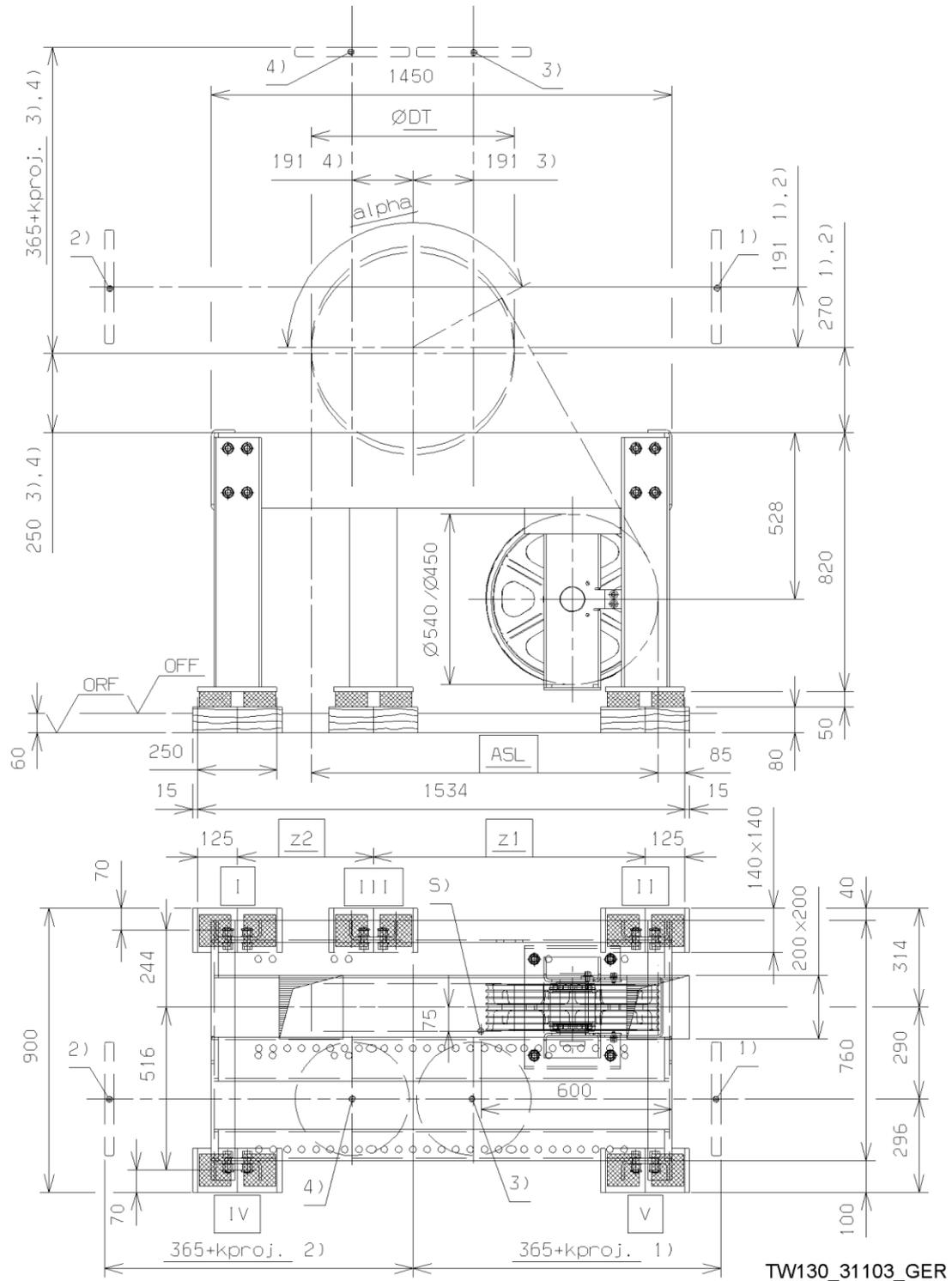


Fig. 3-11: TW130 M SR machine base frame - Version with rope pulley in pulley hub position - left

Description of items for Fig. 3-11:

(1)	Horizontal motor position/ traction sheave position - right	(2)	Horizontal motor position/ traction sheave position - left
(3)	Vertical motor position Traction sheave position - left	(4)	Vertical motor position Traction sheave position - right
(S)	Centre of gravity, machine base frame		



Description of items for Fig. 3-12:

(1)	Horizontal motor position/ traction sheave position - right	(2)	Horizontal motor position/ traction sheave position - left
(3)	Vertical motor position Traction sheave position - left	(4)	Vertical motor position Traction sheave position - right
(S)	Centre of gravity, machine base frame		

### Project planning dimensions

The project planning dimensions are dependent on the vertical / horizontal motor position, the traction sheave position - left / right, and the traction sheave diameter DT.

- Elevator car / counterweight rope clearance dimensions ASL and wrap angle  $\alpha$  for machine with horizontal motor position

Designation	Unit	Project planning dimensions for horizontal motor position							
Traction sheave position		Left				Right			
Project planning dimensions		ASL min	$\alpha$ max	ASL max	$\alpha$ min	ASL min	$\alpha$ max	ASL max	$\alpha$ min
DT 540 traction sheave	[mm]	692	169	1267	137	682	169	1302	136
DT 640 traction sheave	and [°]	787	169	1272	142	777	170	1307	140

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Table 3-17: *Project planning dimensions for M SR machine base frame for horizontal motor position*

- Elevator car /counterweight rope clearance dimensions ASL and wrap angle  $\alpha$  for machine with vertical motor position

Designation	Unit	Project planning dimensions for vertical motor position							
Traction sheave position		Left				Right			
Project planning dimensions		ASL min	$\alpha$ max	ASL max	$\alpha$ min	ASL min	$\alpha$ max	ASL max	$\alpha$ min
DT 540 traction sheave	[mm]	662	171	1282	136	667	170	1287	136
DT 640 traction sheave	and [°]	757	171	1287	140	762	171	1292	140

TW130\_31106\_ENG

Table 3-18: *Project planning dimensions for M SR machine base frame for vertical motor position*

Intermediate values with a modular dimension of 45 mm (one stage 35 mm) between ASL-min and ASL-max are possible for the rope clearance dimensions.

- Position and number of insulation elements or support III dependent on the elevator car - counterweight rope clearance dimensions ASL

Designation	Unit	Rope distance elevator car - counterweight ASL [mm]														
ASL range	[mm]	< 950					950 - 1050					>1050				
Number of supports		5					4					5				
Mounting dimension z1 <sup>1)</sup>	[mm]	428										856				
Support item no.		I	II	III	IV	V	I	II	IV	V	I	II	III	IV	V	
Number of insulation elements per support		2	2	2	1	2	2	2	1	1	2	2	2	1	1	

<sup>1)</sup> Mounting dimension z2 = 1284 - z1

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Table 3-19: Position and number of insulation elements for M SR machine base frame

### 3.12 Specification and order sheets

The specifications for the machine and the machine base frames are made using:

- SAP parts list: AY machine base frame unit TW130 - 6233 000 6922

## 4 Scope of Supply and Packaging

### 4.1 Scope of supply

#### 4.1.1 Main components

The drives of the TW130 Series consist of the following main components:

- Drive
- Traction sheave
- Motor

#### 4.1.2 Dispatch information

The drive is delivered separately from the optional machine base frame.

The drive is bolted down onto a transport pallet for shipping. The accessory part (rope entry protection, mounting parts for installation on the frame) are packed in a bag and included with the delivery.

After leaving ThyssenKrupp Aufzugswerke, the drive unit is packaged ready for shipping at the freight forwarder depending on the intended shipment type and route.



*Fig. 4-1: VTW130 drive ready for shipping*

#### 4.1.3 Extended scope of supply

- Mounting kit for function monitoring of the operational brake
- Blocking clamp
- Rope guard

### 4.2 Transport on the construction site

Unloading and transport by crane or forklift truck is possible.



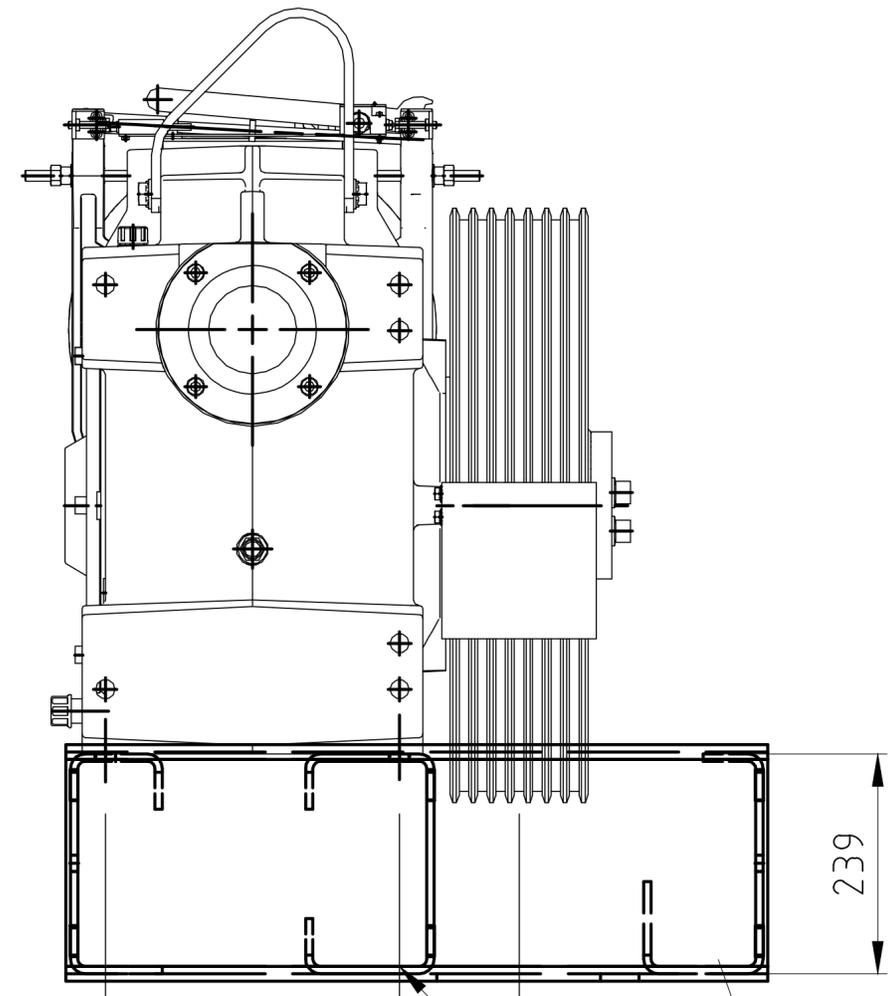
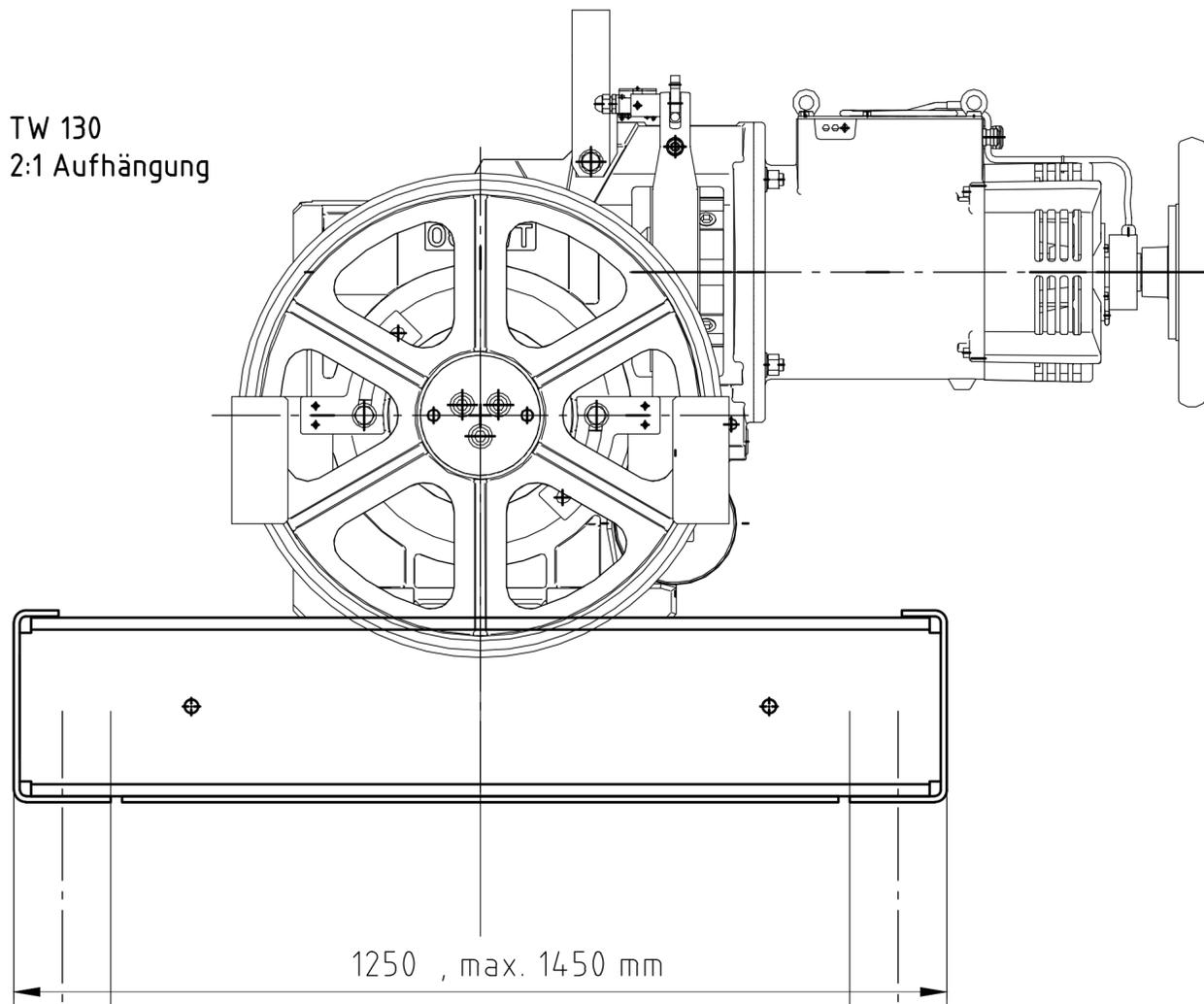
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Version 03/2017

TW 130  
2:1 Aufhängung



**Grenzbelastung bei ASL 1450 mm**  
**Max. load for ASL 1450 mm**

				Oberfläche	Maßstab 1:10	Position -	Menge -
				Datum	Name	Sonderrahmen TW130 Special frame TW130 ASL ≤ 1450 mm	
				Bearb. 17.10.2011	boettner		
				Gepr. 17.10.2011	N. Blum		
				Norm		6233 000 130 72	
Zust.	Änderungen	Datum	Name	Dateiname	6233 000 130 72.dwg		Blatt - Bl