

Product Catalogue

TW63B drive

ThyssenKrupp Aufzugswerke



ThyssenKrupp

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Issued by

thyssenkrupp Aufzugswerke GmbH

Bernhäuser Strasse 45

73765 Neuhausen a. d. F.

Germany

E-mail: Doku.elevator.plant.de@thyssenkrupp.com

Internet: www.thyssenkrupp-elevator-eli.de

Table of Contents

1	Product Family Description - Machines with Worm Gears	1
1.1	W Series machines	1
1.2	TW Series machines	1
2	Description of TW63B machine	2
2.1	Versions of the TW63B machine	3
3	Technology	9
3.1	Gear unit	9
3.2	Operational brake	10
3.3	Traction sheave	11
3.4	Motor versions	12
3.5	Machine versions	15
3.6	Combination of versions/options	20
3.7	Technical data	21
3.8	Maintenance instructions	27
3.9	Survey diagrams	27
3.10	Machine dimension sheets	29
3.11	Machine base frame	34
3.12	Machine base frame dimension sheets	41
3.13	Specification and order sheets	50
4	Scope of Supply and Packaging	51
4.1	Scope of supply	51
4.2	Packaging	52

1 Product Family Description - Machines with Worm Gears

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

1.1 W Series machines

The designation of this series is derived from the combination of the German word "Winde" (meaning: winch = W) and axle 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).

1.2 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. C).

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

2 Description of TW63B machine

The TW63B machine (ThyssenKrupp Wormgear / Q = 630 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 lower to mid-range of performance.

The TW63 machine, which is designed for installations with a rated load of Q = 630 kg at v = 1.0 / 1.6 m/s and suspension r = 1:1, consists of a worm gear with integrated brake and overhung traction sheave and a flange-mounted type A4 or IMB5 / V1 three-phase motor.

The TW63B machine replaces the TW63 version with motors of the A4 type.

The use of two different versions of the gear housing results in the following possible arrangements of motor and traction sheave position:

- Vertical upright motor position with traction sheave position on left
- Horizontal motor position with traction sheave position on left/right

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

For the version with horizontal motor position, a left-handed or right-handed version of the traction sheave position is enabled by the corresponding installation of the drive shaft and AS/BS bearing brackets of the gear.

By allocating the components - motor, sensor and handwinding wheel or flywheel rim - accordingly, it is possible to configure the TW63B machine for various drive systems:

- Pole-changing installations (AC2, only 6.8kW with flywheel D360)
- Frequency-controlled installations (V3F)

The version of the TW63 available for phase-lag-controlled installations (ACVV) does not apply after a changeover to TW63B.

2.1 Versions of the TW63B machine

2.1.1 Version with vertical motor position IMV1

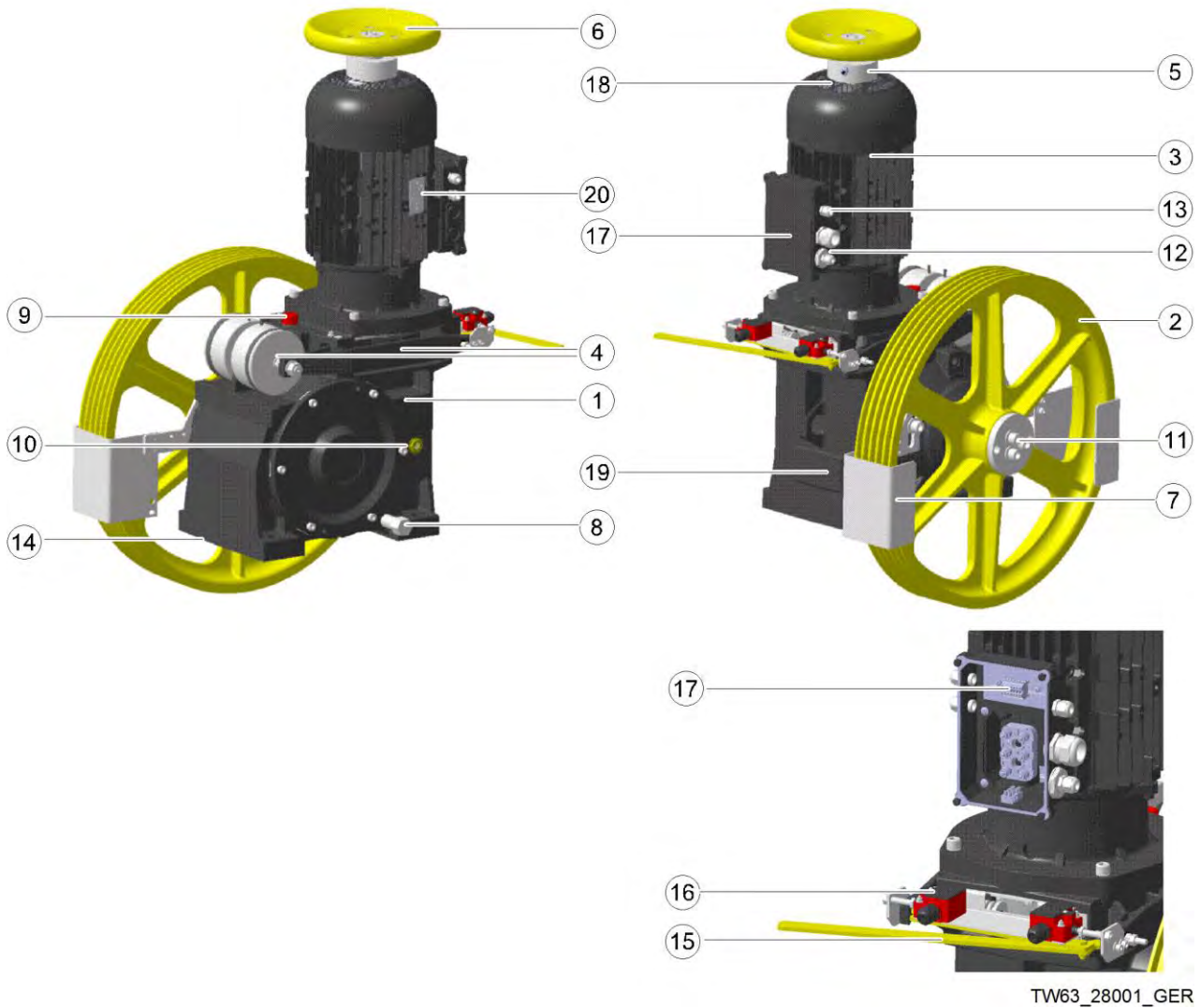
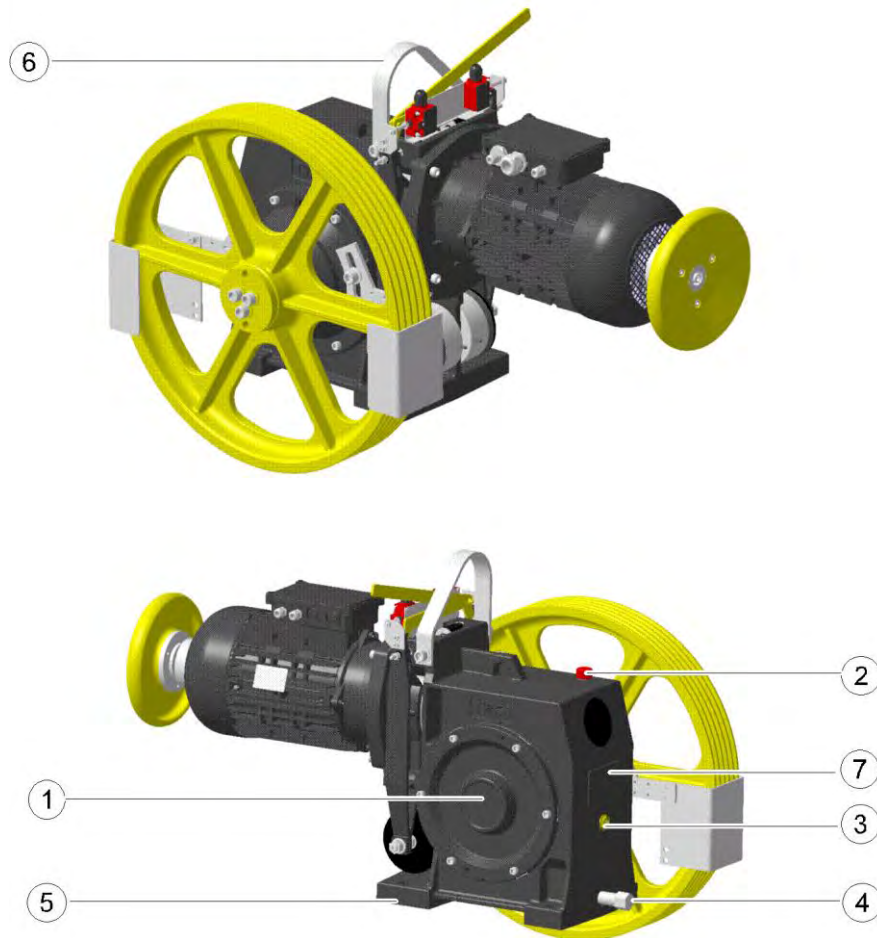


Fig. 2-1: TW63B Machine with motor version V3F (shown is the vertical motor position IMV1 - and brake monitoring - SA3/3.1)

Description of items for Fig. 2-1

1	Driving gear (vertical version)	2	Traction sheave (standard version)
3	Motor of type IMB5/V1 in accordance with building code BV6530-06/Bl.6 with integrated special flange (standardised motors) or BV6530-06/Bl.1 with additional intermediate flange	4	Operational brake
5	Actual-value sensor (type WDG100) with V3F	6	Handwinding wheel (D270) with V3F and/or flywheel rim with AC2
7	Rope guard (adjustable)	8	Oil drain (3/4")
9	Oil filling hole and ventilation (R3/4")	10	Oil level monitoring (gauge glass)
11	Traction sheave mount	12	Connection for motor and temperature monitoring
13	Intermediate terminal and connection of the operational brake (only available for the standardised motors)	14	Mounting surface for machine base frame
15	Lever for manual brake release (not mounted)	16	Brake monitoring - SA3/3.1
17	Motor terminal box in extended version for intermediate terminal connection of the operational brake (only available for the standardised motors)	18	Air entry openings for motor with screen grid
19	Machine name plate	20	Motor type plate

2.1.2 Version with horizontal motor position IMB5



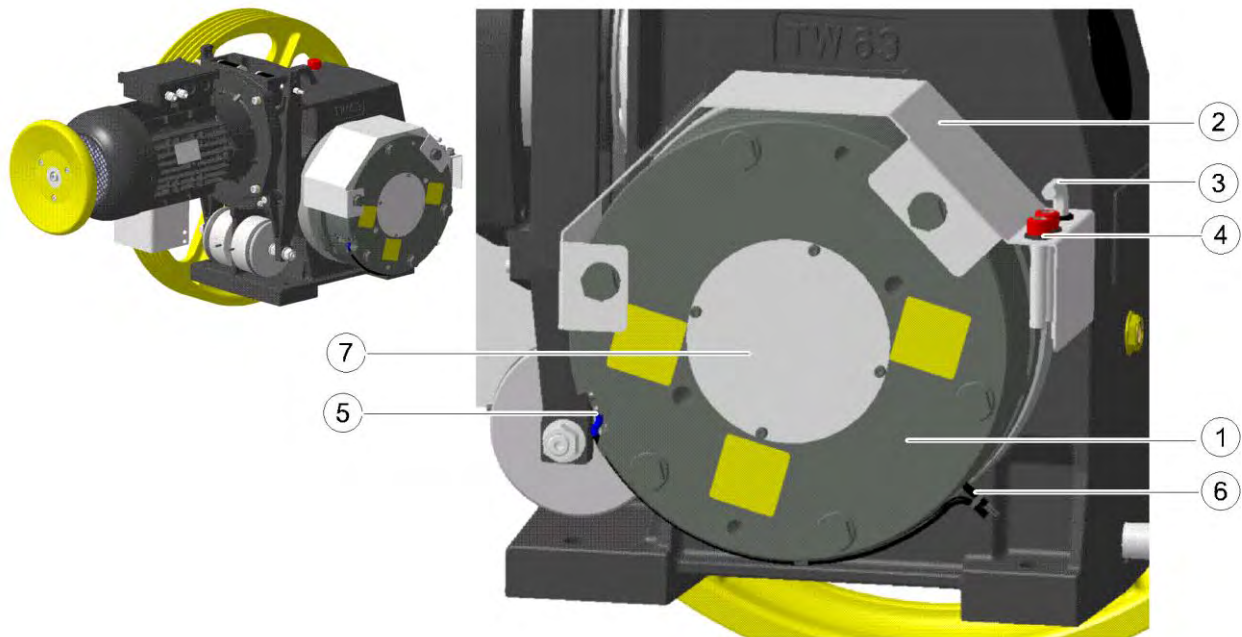
TW63_24001_GER

Fig. 2-12: Machine TW63B with motor version V3F (shown with horizontal motor position IMB5)

Description of items for Fig. 2-12

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

2.1.3 Version with emergency brake, NBS



TW63_23001_GER

Fig. 2-3: TW63B machine with NBS emergency brake system (shown in the horizontal motor position, and left-hand traction sheave position)

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 (length approx. 1 m)	6	Connection line for brake voltage (length approx. 1 m)
7	Protective cover for brake		

2.1.4 Version for traction sheave position in the shaft (SA9)

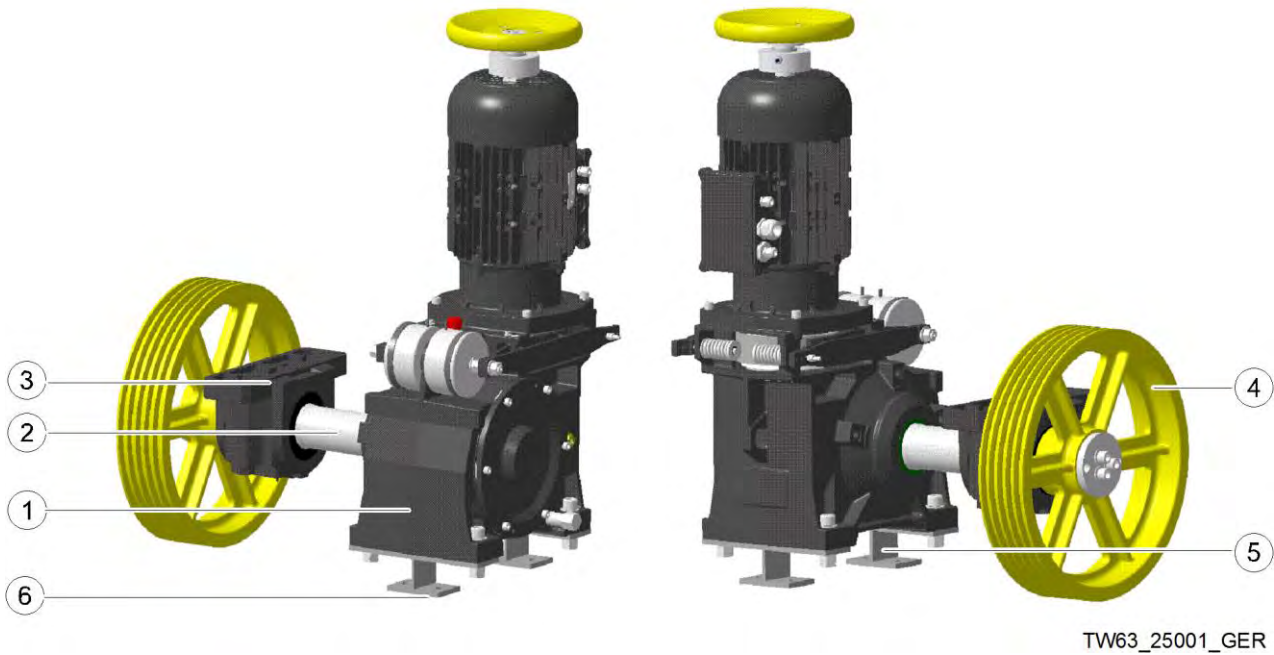


Fig. 2-4: TW63B machine for version with traction sheave position in the shaft (shown: vertical motor position)

Description of items for Fig. 2-4

1	TW63B machine	2	Traction sheave shaft (SA9 version)
3	External bearing (bearing housing with self-aligning bearing on adapter sleeve; shown is the vertical installation position for upward rope pull direction)	4	Traction sheave (SA9 version)
5	Compensating support (for statically defined machine mounting)	6	Mounting surfaces for machine base frame

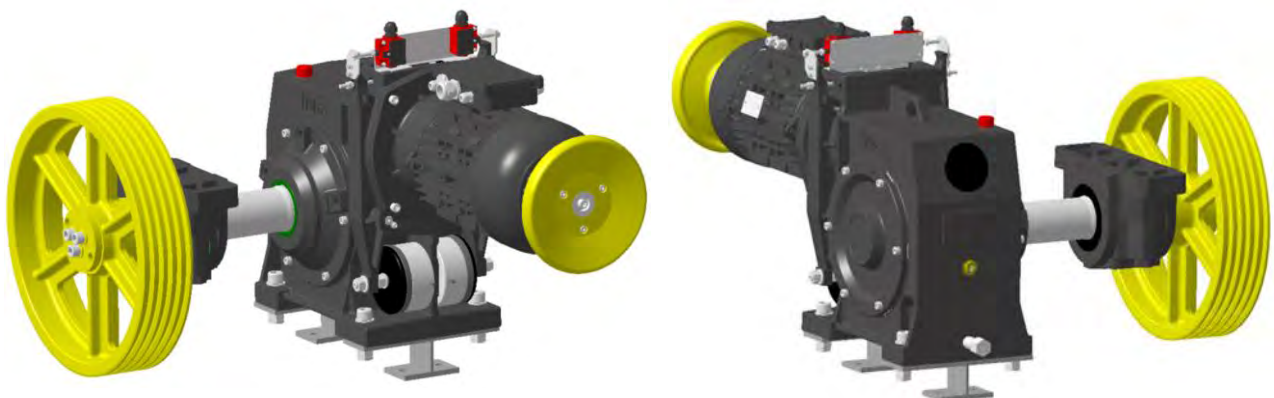


Fig. 2-5: Machine TW63B in version with position of traction sheave in shaft (shown: motor position - horizontal)

2.1.5 Version with safeguard measures complying with EN81-77

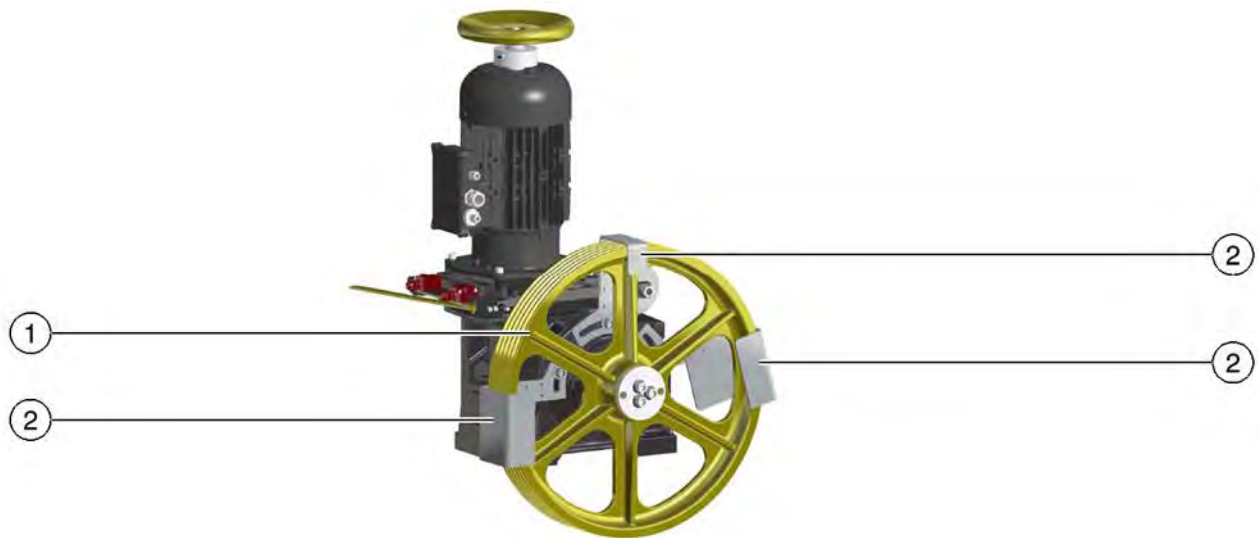


Fig. 2-6: TW63B machine - version for location in machine room (shown: traction sheave position on left / motor position vertical and earthquake safeguard complying with EN81-77)

Description of items for Fig. 2-6

1	Traction sheave (D450 / D510 / D520 / D590 / D675)	2	Earthquake safeguard complying with EN81-77
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3 Technology

3.1 Gear unit

Single-stage worm gear with:

- Housing in monoblock design made of EN-GJL 250; in the case of vertical motor position, with one-sided integrated AS bearing bracket and separate BS bearing bracket; in the case of horizontal motor position, with separate AS and BS bearing brackets; housing version adapted for motor position (vertical/horizontal); integrated motor flange (special type in accordance with building code BV 6530-06)
- Worm shaft made of case-hardened steel (16MnCrS5), rolling bearings (grease/oil lubrication)
- Flexible coupling (plug-in type) for motors of type IMB5/V1
- Worm wheel made of centrifugally cast bronze (CuSn12Ni-C-GZ) with screw-connected hub
- Drive shaft made of tempering steel (C60 or 42CrMo4 for emergency brake system and Mayr brake RSO800 / 2200 Nm), mounted on roller bearings (oil-bath lubrication)
- Extended drive shaft version is possible for the traction sheave position in the shaft, incl. external bearing (SA9)
- Contact pattern position of gear teeth adjustable; backlash not adjustable
- With vertical motor position, gear teeth run under oil; with horizontal motor position, with transport oil from oil sump via worm wheel gear teeth
- Oil level monitoring via gauge glass; oil drain (R3/4"); casing ventilation
- Rope guard components as per EN81-1 / 9.7 resp. EN81-20/5.5.7 or EN81-77.
- Machine name plate

name	unit	technical data
manufacturer		ThyssenKrupp Elevator
gear type		TW63B
axle distance	mm	155
gear ratio		54:1 / 48:1 / 33:1 / 48:2 / 43:3
oil filling	l	vertical motor position: approx. 11 horizontal motor position: approx. 9
type of oil		synthetic gear oil (polyalkyleneglycol with additives)
designation		SM1
circumfer. backlash	°	0.025 - 0.07
weight	kg	approx. 190

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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 15° downwards in reference to the vertical tangent. For the version with the traction sheave in the shaft (SA9) or in the case of rope departure directions outside the adjustable range, installation-specific rope guard measures must be taken in accordance with EN81-1 / 9.7 or EN81-20/5.5.7 or EN81-77.

3.2 Operational brake

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

An integrated flexible coupling is located on the brake disc to connect the motor and worm shafts (motors generally of type IMB5/V1).

Designation	Unit	Technical data	
Manufacturer		thyssenkrupp Aufzugswerke	
Type		TW63B	
Braking torque	Nm	max. 2 x 90	
Braking torque setting		possible	
Design		Dual-circuit outside brake shoe with brake disc made of EN-GJL 250	
Brake linings		asbestos-free	
Brake disk diameter	mm	200	
Air gap	mm	0.3	
Air gap setting		possible	
Electrical release		1 magnetic clamp per brake circuit (2 magnetic clamps connected in series)	
Nominal force - magnetic clamp	N	2500	
Operating voltage ¹⁾	VDC	180 - over-excitation 90 - holding voltage	
Rated current ¹⁾	A	1.1 / 1.0 ¹⁾	
Monitoring devices		Brake test switch	
Manual release		Brake release lever (not mounted)	
Protection type, magnetic clamp		IP65 (standard version)	
		 II 2 G Ex mb IIC T5 Gb ¹⁾	 II 2 D Ex mb IIIC T95°C Db ¹⁾
Type examination certificate		without on standard version	
		IBExU17ATEX1137 X ¹⁾	
Connection cable length	m	1.3	1.5 ¹⁾
Type approval code		without (not required)	

¹⁾ version for explosion protection

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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 SA9 - Traction sheave position in the shaft

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

The one-part traction sheaves are 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).

name	unit	technical data				
machine design		standard / SA9				
diameter - DT	mm	450	510	590	520	675
rim width - B	mm	132			110	96
max. number of grooves - z x d ²⁾		9 x 8			7 x 8	6 x 8
		8 x 9			7 x 9	6 x 9
		7 x 10/11			6 x 10	5 x 10/11
			6 x 12 ³⁾	5 x 11/12	4 x 12 ³⁾	
			6 x 13 ³⁾	5 x 13 ³⁾	4 x 13 ³⁾	
groove type		seat / vee groove ¹⁾				
angle of the vee grooves	°	depends on order ¹⁾				
weight	kg	50	60	70	50	70
material		special alloyed EN-GJL 250				

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

²⁾ With minimum groove clearance - RA_{min} in accordance with product description groove profiles

³⁾ with T_{min} for hardened grooves in accordance with product description groove profiles TW63_30301_ENG

Table 3-3: Traction sheave data

3.4 Motor versions

The specified electrical data apply to the following site conditions:

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

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

Please refer to the product catalogue "Elevator motors" for detailed technical data for the motors and actual-value sensor.

In general, motors of the type IMB5/V1 are used for the TW63B machine.

The mechanical versions (flange dimensions, AS/BS shaft end, encoder, handwinding wheel or mounted flywheel rim) comply with the building codes BV 6530 - 06 / BI.1, BI.6. or BV6530-07 / BI.1.

- Standardised motors comply with BV6530-06 / BI.1 with integrated special flange. These motors have an additional extended motor terminal box (including terminal block and cable glands) for intermediate terminal connection of the brake magnets
- Non-standardised motors can be designed in line with BV6530-06 / BI.6 with a standard A300 flange. Separate intermediate flanges are used to adapt the mounts for these motors. These motors require an additional terminal box for intermediate terminal connection of the brake magnet (for motors up to type of protection IP54, see special version SA12).

The connection from motor and gear is by means of a plug-in type flexible coupling. (Special version SA14).

In the case of the version with special motors horizontal motor position, it can occur that components of the motors (e.g. forced ventilation) may project beyond the machine foot height. During project planning it will be necessary in these cases, 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).

3.4.1 Standardised motors for V3F (frequency-controlled)

Name	technical data							
version	frequency-controlled (VVVF)							
manufacturer	EME (CEG)						Motorlift	
type	MT132STD 20705S	MT132STD 22557S	MT132STD 22164S	CMRF160L1				
motor version name TKAW	C 5.2 400 TW63 00	C 7.0 400 TW63 00	C 10.0 330 TW63 00	ML 13.0 400 TW63 00				
S5 - operation data	180 c/h / 50% ED							
speed range [1/min]	1000 → 1249	1250 → 1800	1000 → 1249	1250 → 1800	1000 → 1249	1250 → 1650	1000 → 1249	1250 → 1650
performance range [KW]	4.2 → 5.2	5.2 → 7.0	5.6 → 7.0	7.0 → 10.0	8.0 → 10.0	10.0 → 13.0	10.5 → 13.0	13.0
torque range [Nm]	40	40 → 28	54	54 → 37	77	77 → 58	100	100 → 75
rated current [A]	12.5		16.5		28		32	
allowed starting torque [Nm]	70	70 → 63	88	88 → 79	125		170	
allowed starting current [A]	20		25		44		48	
effectiv power [V]	340		340		290		340	
cos φ	0.87		0,88		0.84		0.82	
efficiency	0.82		0.82		0.85		0.85	
structural shape	BV6530-06/Bl.1 ²⁾							
type of protection	IP55						IP54	
ventilation	internal ventilator							
handwinding wheel ¹⁾	D270 (Kunststoff)							
kproj. [mm]	539 ²⁾				577 ²⁾		639 ²⁾	
weight [kg]	56		62		70		TBD	
real value generator (standard)	WDG100-38-1024/4096 TTL							
real value generator (special)	WDG100-38-1024 HTL / WDG100-38-1024 Sinus/Cosinus							

¹⁾ optional without handwinding wheel for location of machine in headroom / pit

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

TW63_30402_ENG

Table 3-4: Data for standardised IMB5/V1 motors for V3F including actual-value sensor and handwinding wheel

3.4.2 Standardised motors for AC2 (pole changing)

Designation	Unit	Technical data
Manufacturer		Motorlift
Type		VKM132L2
Motor version		ML 6.8 motor
TKAW designation		400 TW63 00
Voltage/frequency	[V / Hz]	400 / 50
S5 - operating data		180 c/h / 40% DC
Rated speed	[rpm]	1380 / 315
Power output (asynchronous)	[kW]	6.8 / 1.7
Rated torque	[Nm]	47
Rated current	[A]	16.5
Perm. starting torque	[Nm]	113 / 70
Perm. starting current	[A]	63 / 18
Protection class		IP21
Ventilation ³⁾		Own
		Other (single-phase 230V / 50 Hz)
kproj.	[mm]	592 ²⁾
Weight	[kg]	TBD
Flywheel rim		¹⁾

¹⁾ Size and version depends on project specs

²⁾ Motor with integrate special flange and extended motor terminal box
for intermediate terminal connection of the brake magnets

³⁾ self-ventilated as well as additional forced ventilation as of 70°C motor temperature

TW63_30401_ENG

Table 3-5: Data for standardised IMB5/V1 motors for AC2

3.5 Machine versions

3.5.1 Standard version for machine in the machine room

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

- Driving gear (including oil filling) in the version with vertical or horizontal motor position
- Operational brake 2x90 Nm (for operation acc. to EN81-20/50 incl. brake monitoring SA3.1)
- Motor of type IMB5/V1
- Flexible coupling between motor and driving gear
- Actual-value sensor and handwinding wheel dia. 270 or flywheel rim
- Traction sheave (standard version)
- Rope guard components
- Blocking clamp

3.5.2 Special versions

- SA 3 Brake monitoring (light barrier sensor)
- SA 3.1 Brake monitoring (micro switch)
- SA 9 Traction sheave position in the shaft (extended traction sheave shaft with pedestal bearing and machine on compensating supports for statically defined mounting/mounting of the drive shaft)
- SA 11 Side oil drain with extension (R3/4"); only on version with horizontal motor position (with motor position - vertical, the oil drain is generally at the side)
- SA 12 additional terminal box (e.g. for special motor of type IMB5/V1 without additional of the terminal box in accordance with BV 6531 for intermediate terminal connection of the brake magnets); with the standardised motors in accordance with 3.4.1 and 3.4.2, no SA12 is required!
- SA14 flexible coupling for motors of IMB5/V1 type (standardised motors and motors in accordance with BV6530-06)
- SA 15 "Full Ex" protection (incl. 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 micro switch - 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 generally the brake monitoring SA3.1 (micro switch) has to be provided. 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 Ex db IIC T6, T5 Gb II 2D Ex tb IIIC T80°C, T95°C
type examination certificate		-	-	PTB 03 ATEX 1070 X
Cable entry		cable gland M16 x 1.5		potted connecting cable 4 x 0,75 mm ² 5 m length

TW63_30502_ENG

Table 3-6: Data for brake test switches SA3 and full Ex (SA15)

Traction sheave position in the shaft (SA9)

For this version, the machine has an extended traction sheave 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 = 450, 510, 520, 590 and 675 mm.

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



Note on the machine base frame (not standardised):


The permissible tolerance for the horizontal offset between the plane for the compensating supports and the mounting surface for the outside bearing is ± 1 mm.

"Full Ex" protection (special version SA15)

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


The machine (not including the electrical components) has been assessed for potential ignition sources in accordance with DIN EN ISO 80079-36:2016-12 and complies with the requirements of Directive 2014/34 EU. According to Directive 2014/34/EU, the machine (not including the electrical components) receives the following identification depending on the thickness of the coating:

- **EX-groups IIC-IIIC** for coating thickness $\leq 0.2\text{mm}$ (standard version):

 II 2 G Ex h IIC T4 Gb

 II 2 D Ex h IIIC T135°C Db

- **EX-groups IIB-IIIB** for coating thickness $> 0.2\text{mm} / \leq 2\text{mm}$:

 II 2 G Ex h IIB T4 Gb

 II 2 D Ex h IIIB T135°C Db

(Equipment group: II = other than mining; category: 2 = zone 1, 21; explosive atmosphere: G = gases and D = dust; type of protection h (c = protection by constructional safety and k = fluid protection); zone with danger of gas explosion: EX-groups IIB or IIC; dust explosion hazardous area: EX-groups IIIB or IIIC; temperature class: T4 or = max. 135°C).



The maximum permissible inclination angle of the machine to the horizontal is 2° to ensure ; type of protection "k" in accordance with DIN EN ISO 80079-37:2016-12 Section 7.1.






For special coatings for increased corrosion protection, e.g. C5-M with coating thickness $\geq 0.24\text{mm}$, the classification according to IIB or IIIB is only possible!



The maximum permitted rope speed at the traction sheave is limited to 3.2 m/s. Related to the rated speed, this means a maximum of 3.2 m/s with 1:1, a maximum of 1.6 m/s with 2:1 and a maximum of 0.8 m/s with 4:1.

The operational brake is generally monitored with brake control switches.

Design of the electrical components:

- Brake magnets in  according to Table 3-2: Data for operational brake.
- Brake control switch in  according to Table 3-6
(Note: These brake control switches are generally part of the SA15).
- Motor and encoder, if applicable, as well as additional terminal box for the holding magnets in  are commission-dependent.

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 or EN81-20/5.6.6 and unintended elevator car movements in accordance with EN81-1:2010-06 / 9.11 (EN81-1/A3) or 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 in accordance with Table 3-7
- Driving gear in emergency brake system (NBS) version (bearing bracket NBS, brake flange NBS for fitting the brake)
- Traction sheave/worm wheel shaft NBS (including components for sealing)

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

The certificate for the calculation of the traction sheave shaft for the TW63B 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 as well as an additional safety switch at the overspeed governor (Thyssen) to activate the facility in the event of overspeed.

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

¹⁾ DC-side shutdown (emergency stop)

²⁾ acc. to EN81-20/50 and EN81-1:1998+A3:2009

³⁾ acc. to EN81-1:1998+A3:2009

TW63_30501_ENG

Table 3-7: 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, thus releasing the brake/armature base plate of the disc brake. During normal operation, the screws and a socket wrench are kept in the guard plate of the brake.

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

Later fitting of the emergency brake, NBS, on existing TW63B 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 / 510 / 520 / 590 / 675.

The rope guard is designed in such a way that all standard gaps between the ropes on the rope departure can be covered with the TW63 NO/2:1, TW63 NO/MSR and TW63BO/MSR base frames.

3.6 Combination of versions/options

Kombination	450,520,510,590,675	SA3	SA9	SA11	SA12	SA15	V	H	NBS
450,520,510,590,675									
SA3	X								
SA9	X	X							
SA11	X	X	X						
SA12	X	X	X	X					
SA14	X	X	X	X	X				
SA15	X	O	X	X	O				
V	X	X	X	O	X	X			
H	X	X	X	X	X	X	O		
NBS	X	X	O	X	X	O	X	X	

explanation:

- X combination possible
- O combination not possible
- 450,510,520,590,675 diameter of traction sheave [mm]
- SA.... special versions
- V upright motor
- H Horizontal Motor
- NBS version with NBS emergency brake system

TW63_30601_ENG

Table 3-8: Overview of the combination options

3.7 Technical data

3.7.1 Performance chart

r	V _{nenn}	n ₁	DT	i	v _{n1}	Q _{max}	P _{max}	q%	Remarks
1:1	0.63	1280	450	48:1	0.63	1050	1700	50	
						1125	1800	45	
		1280 (1250)	510 (520)	54:1	0.63	1000	1200	45	
						1500	450	54:1		0.65	1000	1500	45
		1050	1200	45					
		0.80	1270	590	48:1	0.82	800	1200		50
	900						1000	45	
	1270		675	54:1	0.83	630	1200	50	
						675	1400	45	
	1500		510	48:1	0.83 (0.85)	800	1200	50	
						950	1200	45	
	1500	590	54:1	0.86	750	1200	45		
	1.00	1270 (1250)	510 (520)	33:1	1.03	975	1000	50	
						1050	1400	45	
		1350	675	48:1	1.00	630	1300	50	
						675	1500	45	
		1400	450	33:1	1.00	1050	1250	50	
						1125	1600	45	
		1500	450	33:1	1.07	1000	1300	50	
						1050	1700	45	
		1500	590	48:1	0.97	675	1500	50	
						750	1500	45	
		1500	675	54:1	0.98	630	1200	45	
						675	900	45	
1550	590	48:1	1.00	675	1400	50			
				750	1400	45			
1.25	1330	590	33:1	1.25	750	1400	50		
					825	1500	45		
	1650	675	48:1	1.22	630	1100	45		
					750	1400	50		
1330	590	33:1	1.25	750	1400	50			
				825	1500	45			

TW63_30701_ENG

Table 3-9: Performance chart, Part 1

r	v _n	n ₁	Dt	i	v _{n1}	Q _{max}	P _{max}	q%	Remarks
1:1	1.50	1400	675	33:1	1.50	630	1100	50	
						675	1300	45	
		1350 (1320)	510 (510)	48:2		750	1500	50	
						825	1500	45	
						675	1200	50	
						750	1200	45	
	1.60	1270	590	48:2	1.63	675	1300	50	
						750	1300	45	
		1440 (1410)	510 (520)	33:1	1.60	750	1300	50	
						800	1500	45	
		1490	675	33:1	1.60	630	1400	45	
						675	1150	45	
		1650	590	33:1	1.55	630	1400	50	
						675	1500	45	
	1.75	1360	590	48:2	1.75	630	1400	50	
						750	1100	45	
	1630	675	33:1	33:1	1.75	630	1200	45	
	2.00	1360	675	48:2	2.00	600	900	50	
						630	1100	45	
1550		590	48:2	2.00	630	1400	45		
					675	1200	45		
2.50	1340 (1320)	510 (520)	43:3	2.50	675	1500	45/50		
					1650	675	48:2	2.43	525	1250	45
2:1	0.40	1270	590	48:1	0.41	1600	2800	50	
						1800	2800	45	
		1440 (1410)	510 (520)	48:1	0.40	1800	2500	50	
						2000	2500	45	
		1500	510 (520)	48:1	0.42 (0.43)	1800	1800	50	
						2000	1800	45	
		1500	590	54:1	0.43	1450	2000	50	
						1600	2000	45	
	0.63	1280	450	48:2	0.63	2000	2500	50	
						2200	2500	45	
		1340	590	33:1	0.63	1600	2800	50	
						1800	2400	45	
		1500	510 (520)	33:1	0.61 (0.62)	1800	2400	50	
						2000	2400	45	

TW63_30702_ENG

Table 3-10: Performance chart, Part 2

r	v _n	n ₁	Dt	i	v _{n1}	Q _{max}	P _{max}	q%	Remarks
2:1	0.63	1560 (1530)	510 (520)	33:1	0.63	1800	2000	50	
						2000	2000	45	
		1650	675	48:1	0.61	1250	1800	50	
						1350	2200	45	
	0.80	1270	590	48:2	0.82	1500	2000	50	
						1600	2800	45	
		1500	510 (520)	48:2	0.83 (0.85)	1600	2200	50	
						1800	2000	45	
		1500	675	33:1	0.80	1350	1700	50	
						1425	2500	45	
	1.00	1250	450	43:3	1.03	1600	3000	45/50	
						1250	1800	50	
		1350	675	48:2	1.00	1350	2200	45	
						1350	2000	50	
		1500	590	48:2	0.97	1500	2000	45	
						1350	1800	50	
		1550	590	43:3	1.00	1500	1800	45	
						1500	1800	45	
	1.25	1340 (1310)	510 (520)	43:3	1.25	1500	2000	45/50	
						1050	2000	50	
1650		675	48:2	1.21	1200	1800	45		
					1200	1600	45/50		
1.50	1390	590	43:3	1.50	1200	1800	45/50		
					1050	1600	45/50		
1.60	1300	675	43:3	1.60	1200	1600	45/50		
					1200	1600	45/50		
1.75	1620	590	43:3	1.75	1200	1600	45/50		
					1000	1600	50		
2.00	1630	675	43:3	2.00	1050	1600	45		
					1050	1600	45		
	0.40	1270	590	48:2	0.41	3000	4000	50	
						3400	3700	45	
1500	510 (520)	48:2	0.42 (0.43)	3200	4200	50			
				3500	4800	45			
4:1	0.63	1350 (1320)	510 (520)	43:3	0.63	3000	4500	45/50	
						1500	450		0.62	3500	4000
	1310	675	43:3	0.80	2200					2500
					1500	590	43:3		0.81	2500	3000

TW63_30703_ENG

Table 3-11: Performance chart, Part 3

Explanations:

r		.....	Rope suspension
v_n	(m/s)	.....	Rated speed
n_1	(1/min)	.....	Motor rpm
DT	(mm)	.....	Diameter traction sheave
i		.....	Gear ratio
v_{n1}	(m/s)	.....	Actual velocity (at n_1)
Q_{max}	(kg)	.....	Rated load (maximum)
P_{max}	(kg)	.....	Mass of car (maximum at Q_{max})
q%	(%)	.....	Percent compensation for car mass

Specifications including rope weight for:

H = 20 m for v_{rated} of up to 0.63 m/s

H = 40 m for v_{rated} up to 1.25 m/s

H = 60 m for v_{rated} up to 1.60 m/s

LH = 100 m for v_{rated} up to 2.50 m/s

TW63_30704_ENG

Table 3-12: Performance chart - explanations

All specified performance data apply to the following application conditions:

- Operating data max. 180 c/h at 50% operating time
- Ambient temperature + 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.

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



In the case of versions with Ex protection (SA15) and partial Ex protection (SA4), the maximum permitted rope speed on the traction sheave is limited to 3.2 m/s. Related to the rated speed, this means a maximum of 3.2 m/s with 1:1, a maximum of 1.6 m/s with 2:1 and a maximum of 0.8 m/s with 4:1.

3.7.2 Load data - traction sheave shaft

The load values $F_{t_{zul}}$ set out below represent the limiting 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 of TR 03 - 011.

- Traction sheave shaft - standard version: $F_t \leq 43 \text{ kN}$
- Traction sheave shaft - SA 9 (with external bearing): $F_t \leq 41 \text{ kN}$

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.

The permitted load and necessary constructive measures are to be clarified with tkAW on request.

3.7.3 Gear efficiency

The specified gear efficiencies η_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 η_n provides information on the value η_G that can be achieved under optimum operating conditions.

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

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

ratio / speed [rpm]	η_g		$\eta_{g'}$		η_n	η_{an}	$\eta_{an'}$
	800 - 1249	1250 - 1800	800 - 1249	1250 - 1800	1250 - 1800	-	-
54:1	0.72	0.74	0.74	0.76	0.80	0.37	-0.20
48:1	0.74	0.76	0.76	0.78	0.82	0.38	-0.15
33:1	0.76	0.78	0.79	0.81	0.84	0.44	0.12
48:2	0.79	0.81	0.84	0.86	0.88	0.54	0.42
43:3	0.83	0.85	0.89	0.91	0.92	0.64	0.63

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Table 3-13: Gear efficiency

3.7.4 Mass moment of inertia

The total mass moment of inertia of the machine is composed of the individual values for the gear drive (driving gear, brake disc, proportion for the traction sheave), the motor proportion (rotor) as well as either the proportion for the handwinding wheel (dia. 270) or the flywheel rim on a AC2 version.

name	mass moment of inertia J_{rot} [kgm ²]						
version	motor type	machine ¹⁾	motor	handwinding wheel	flywheel rim	total	
Motorlift AC2 ...	ML 6.8	0.054	0.057		0.52 ²⁾		
VVVF	C 5.2		0.017	0.01		-	0.027
	C 7.0		0.024				0.034
	C 10.0		0.036				0.046
	ML 13.0		0.165				0.175

¹⁾ including traction sheave proportion

²⁾ diameter 360mm

TW63_30706_ENG

Table 3-14: Mass moments of inertia of the machine

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

3.7.5 Weight data

name	unit	weight	motor structural shape		
gear part		180	x	x	x
additional parts for SA9		40			x
accessories for EBS		50		x	
traction sheave D590/675 ²⁾		70	x	x	x
complete AY machine ¹⁾			250	300	290

¹⁾ without motor weight

²⁾ weight for traction sheave D440 ca. 50 kg and D510 ca. 60 kg

TW63_30708_ENG

Table 3-15:

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

Standardised motors in accordance with Tables 3-4 and 3-5

- custom-order motors from the manufacturers' motor lists

In the pole-changing version (AC2 with 6.8Kw and flywheel D360) the weight data are increased by the values for the flywheel: mD360 = 20 kg.

3.7.6 Acoustic specifications

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

- Version with internal ventilator (V3F) ≤ 65 dB(A)
- Version with forced ventilation (AC2) ≤ 67 dB(A)

3.8 Maintenance instructions

- Oil change: for the first time after 4 years, then every 8 years
- Grease application: re-lubrication of external bearing on SA9 annually
- Other components: maintenance-free

3.9 Survey diagrams

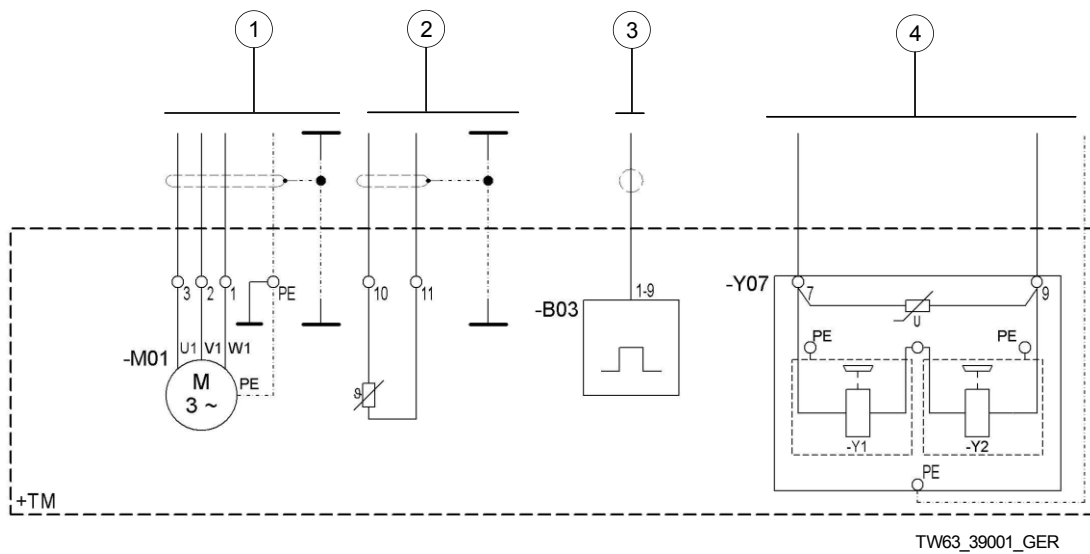
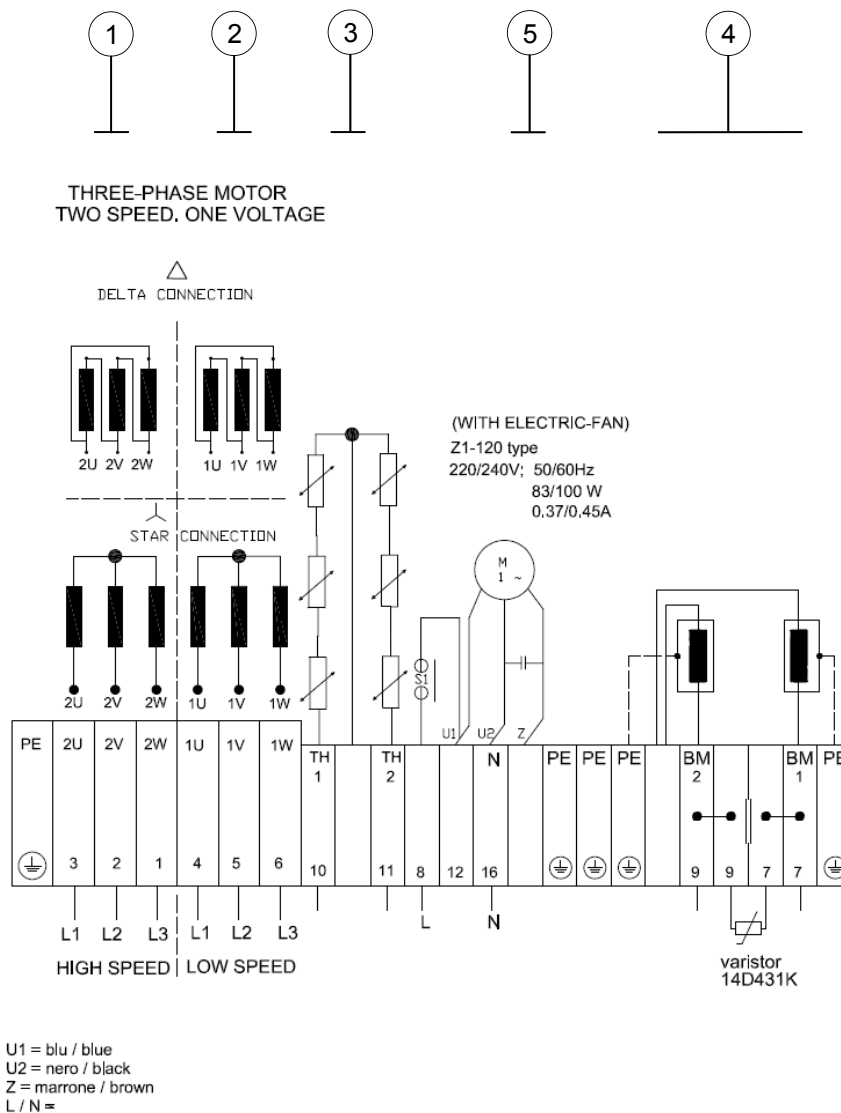


Fig. 3-1: Survey diagram for standardised V3F motors (additional optional brake test switches)

Description of items for Fig. 3-1

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



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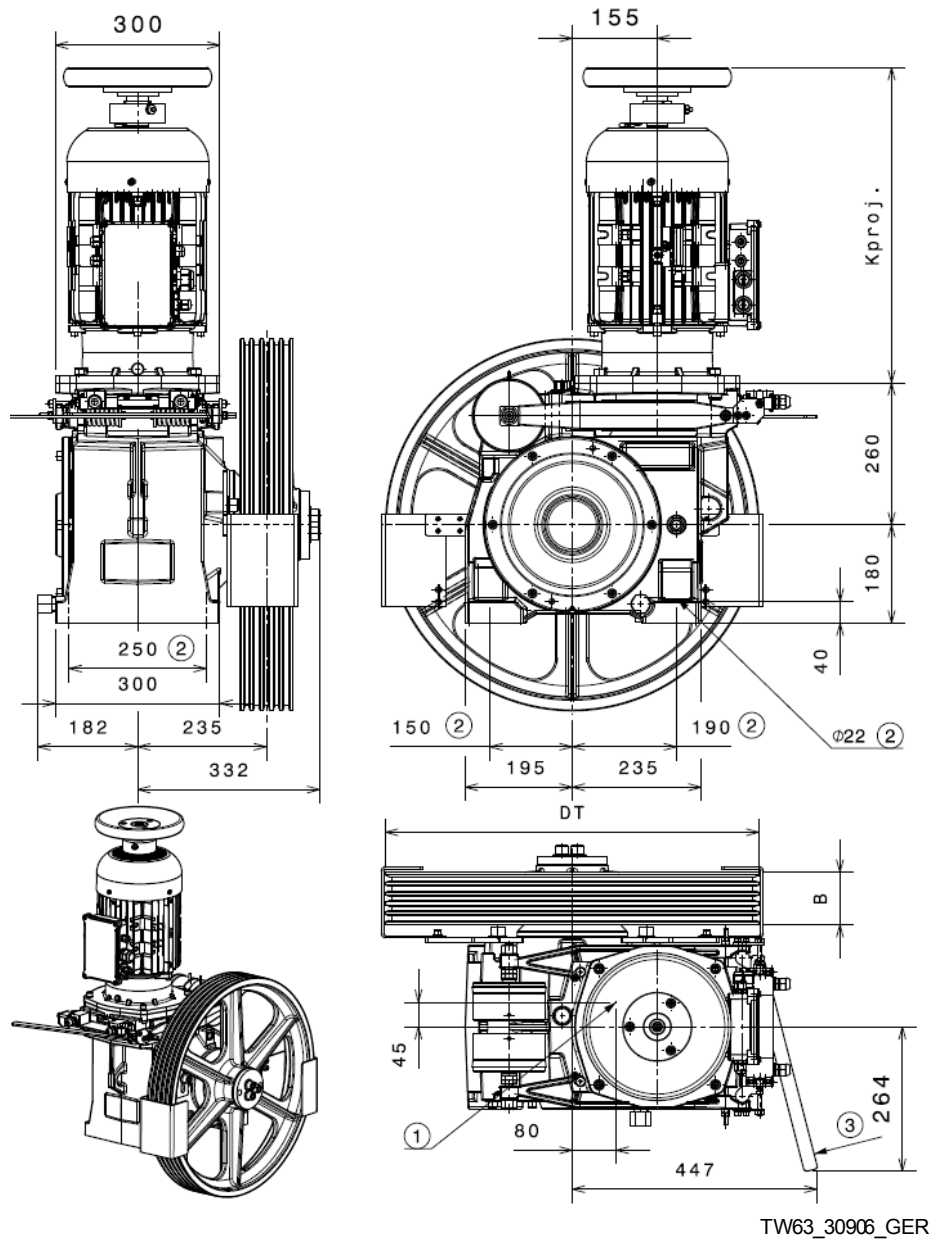
Fig. 3-2: Survey diagram for standardised AC2 motors (additional optional brake test switches)

Description of items for Fig. 3-2

1	Motor (fast speed); (cable gland PG11)	2	Motor (slow speed); (cable gland PG11)
3	PTC thermistor (cable gland PG9)	4	Intermediate terminal connection for brake (cable gland PG9)
5	Forced ventilation with temperature switch (70°C); (cable gland PG9)	6	

3.10 Machine dimension sheets

3.10.1 Version with vertical motor position



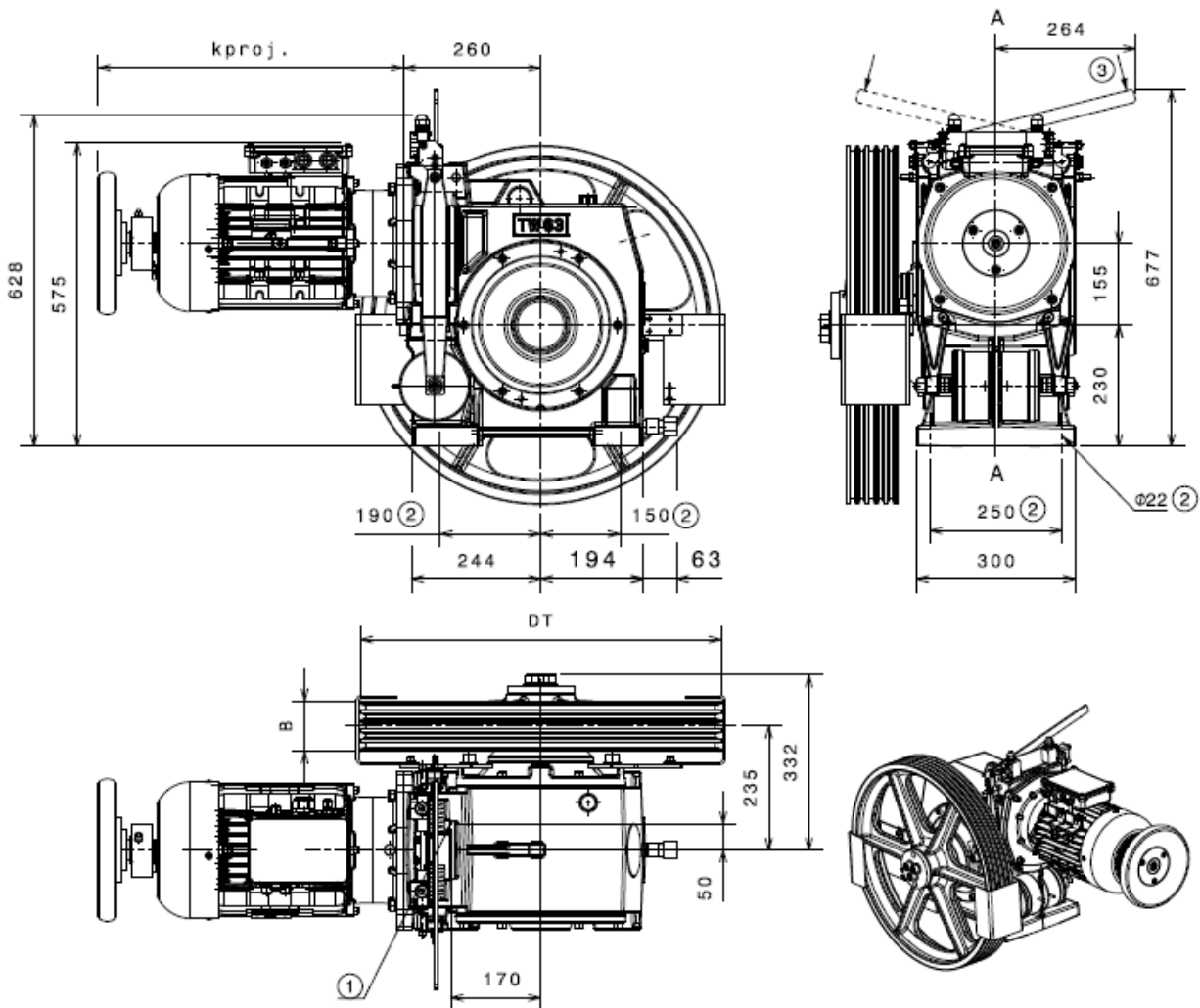
TW63_30906_GER

Fig. 3-3: TW63B machine with vertical motor position, shown with motor version V3F)

Description of items for Fig. 3-3

1	Machine centre of gravity	2	Mount of machine on machine base frame
3	Lever for manual brake release (plug-in)		

3.10.2 Version with horizontal motor position



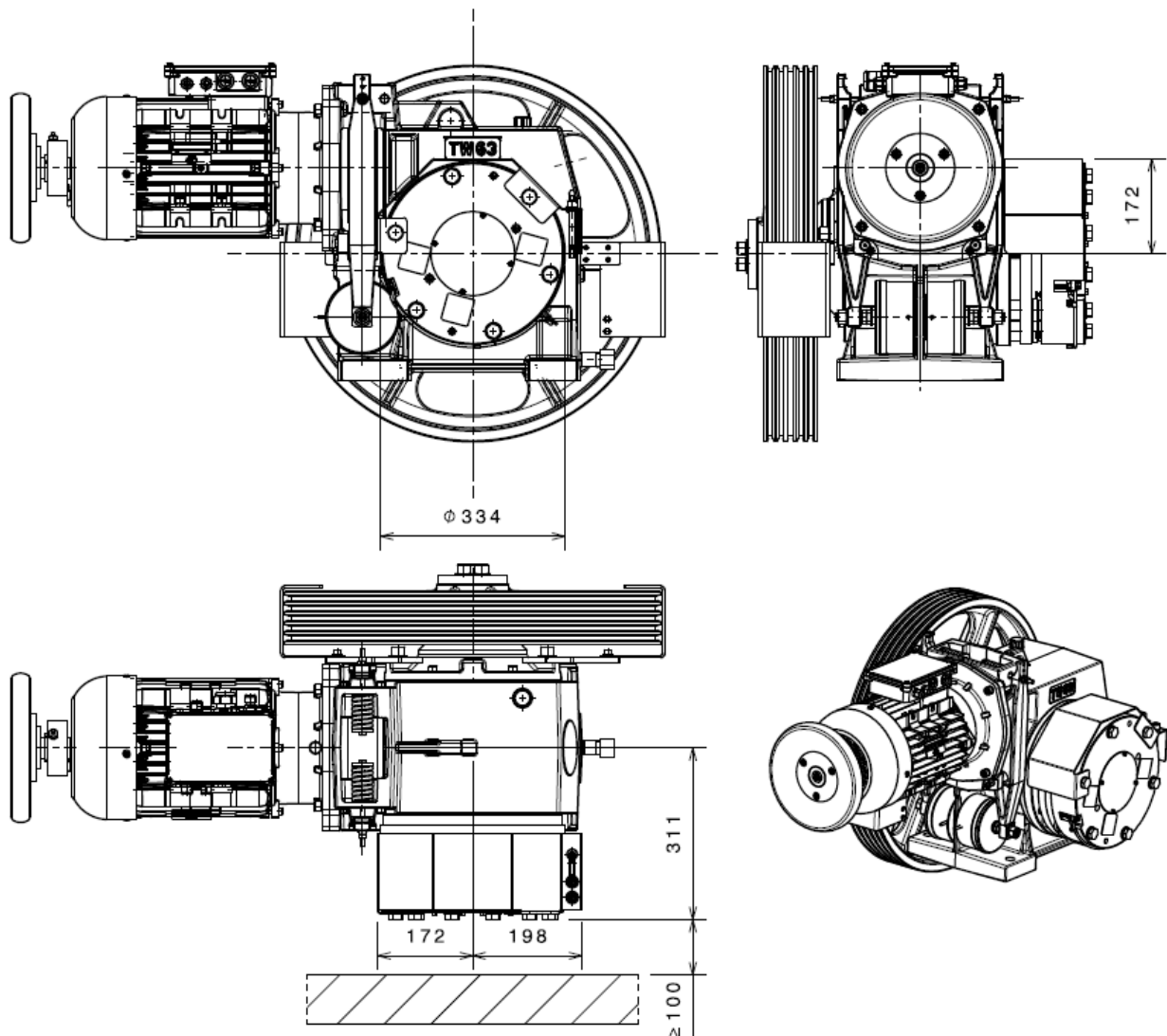
TW63_30907_GER

Fig. 3-4: TW63B machine with horizontal motor position (shown is the version with traction sheave position on the left (execution on the right, mirror-inverted to A-A), motor version V3F

Description of items for Fig. 3-4

1	Machine centre of gravity	2	Mount of machine on machine base frame
3	Lever for manual brake release (plug-in)		

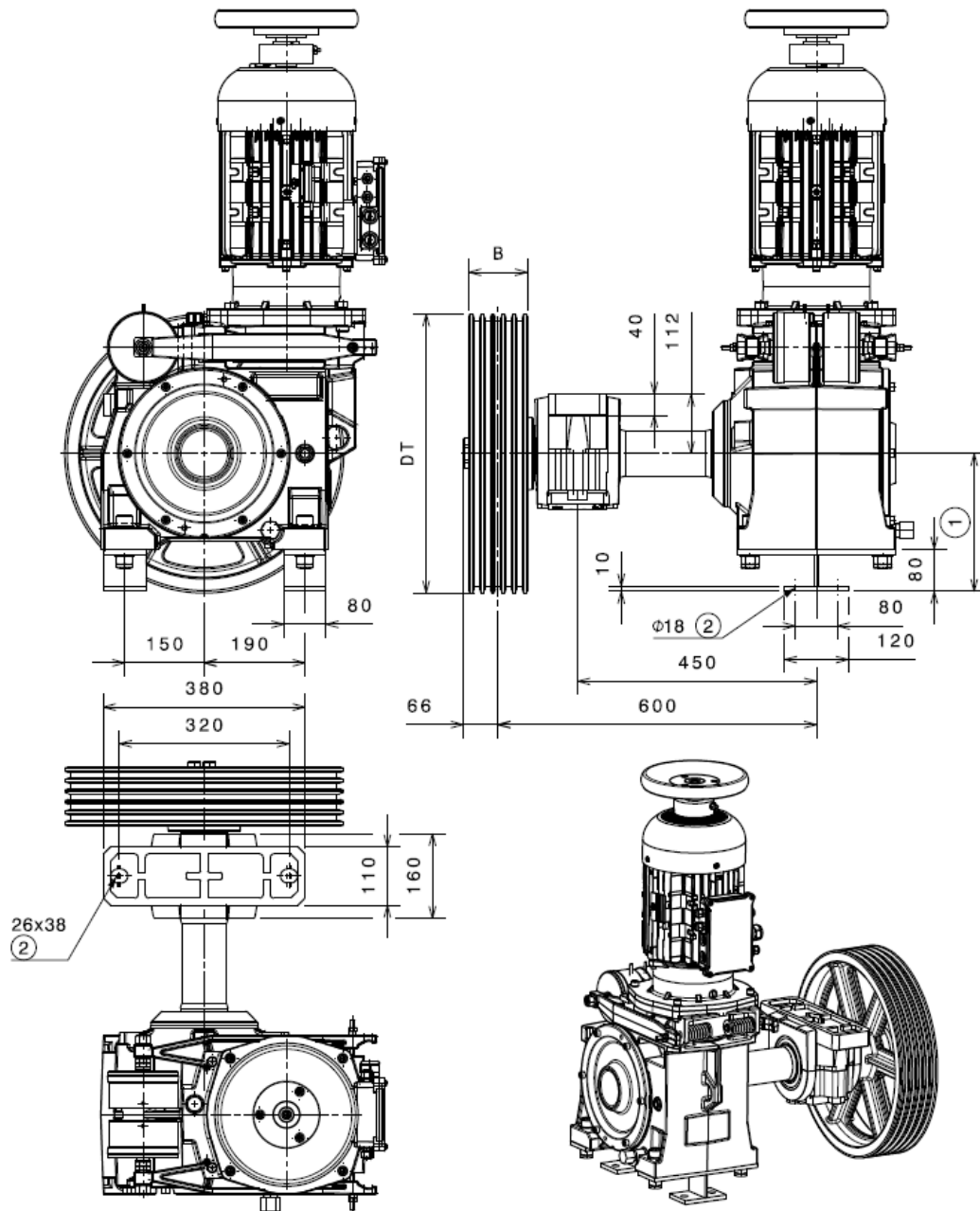
3.10.3 Version with emergency brake, NBS (additional dimensions)



TW63_30908_GER

Fig. 3-5: TW63B machine - additional dimensions for version with NBS emergency brake (shown is the machine with horizontal motor position, motor version V3F)

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



TW63_30909_GER

Fig. 3-6: TW63B machine - additional dimensions for version with traction sheave in the shaft (SA9)(shown: vertical motor position, motor version V3F and support of external bearing upwards)

Description of items for Fig. 3-6

1	260	2	Mount of machine and external bearing on machine base frame
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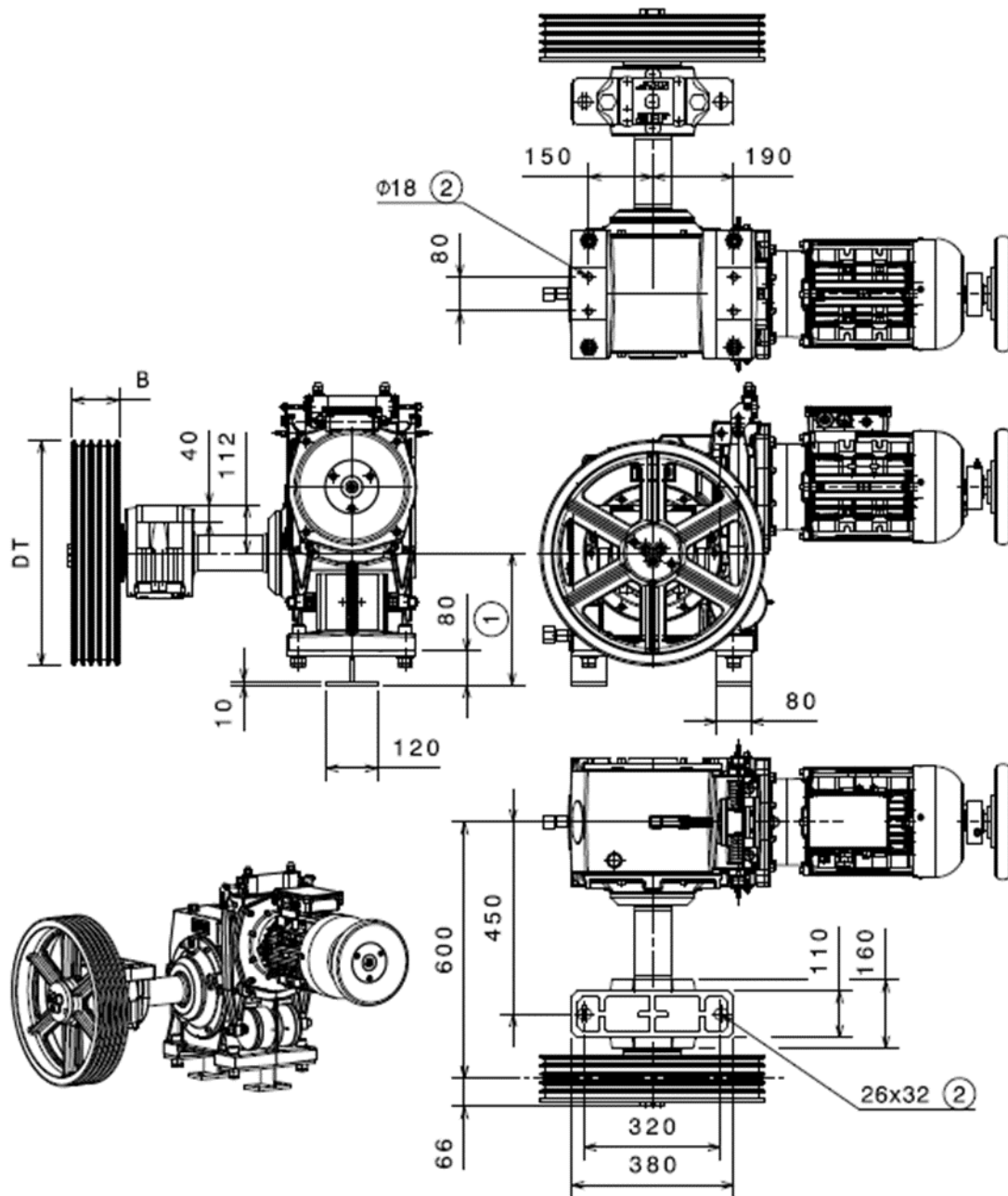


Fig. 3-7: TW63B machine - additional dimensions for version of traction sheave in the shaft (SA9)(shown: motor position - horizontal, motor version V3F and support for external bearing upwards)

Description of items for Fig. 3-7 Fig. 3-6

1	310		2	Mount of machine and external bearing on machine base frame
---	-----	--	---	---

3.11 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 or below, beside the shaft.

3.11.1 AY machine base frame TW63 NO/2:1

Machine base frame version without rope pulley for use in:

- Installations with 1:1 rope suspension and direct rope departure for a rope distance elevator car to counterweight ASL ≤ 775 mm and traction sheave dia. 675 mm (e.g. installations of type NO41/51)
- Installations with 2:1 or 4:1 rope suspension

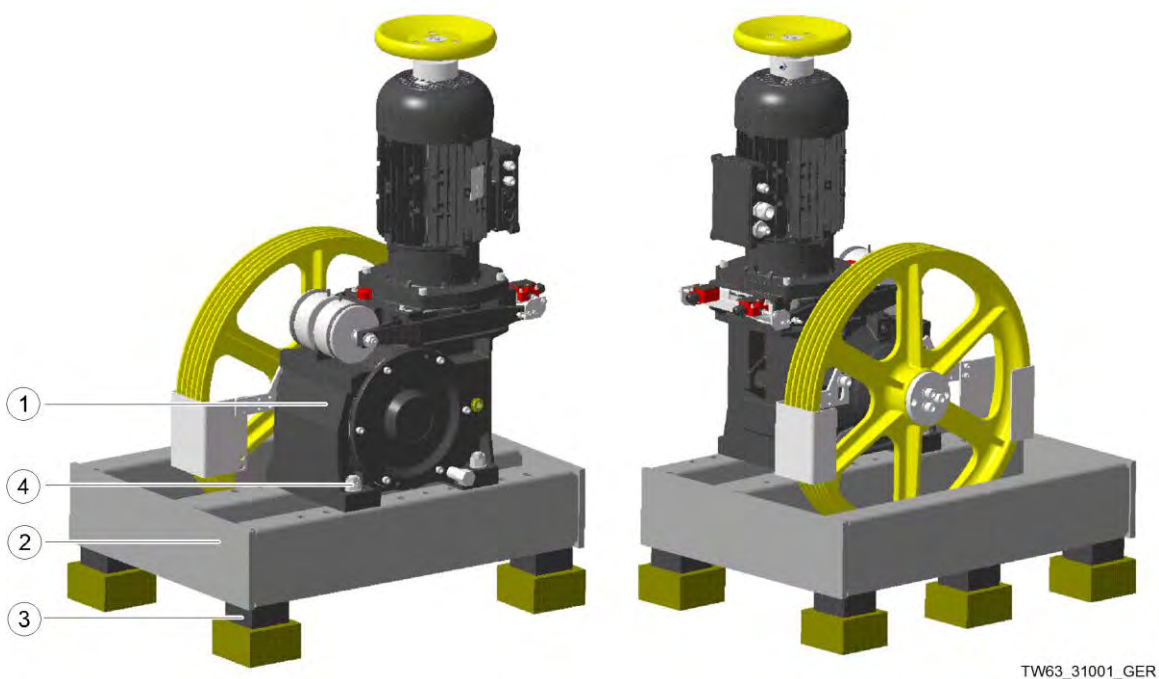


Fig. 3-8: Machine base frame TW63 NO/2:1 (shown with TW63B machine in vertical motor position)

Description of items for Fig. 3-8

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

The machine base frame consists of three plated-edge longitudinal brackets with two welded face plates.

Technical data

- Weight of machine base frame: approx. 80 kg

Project planning dimensions

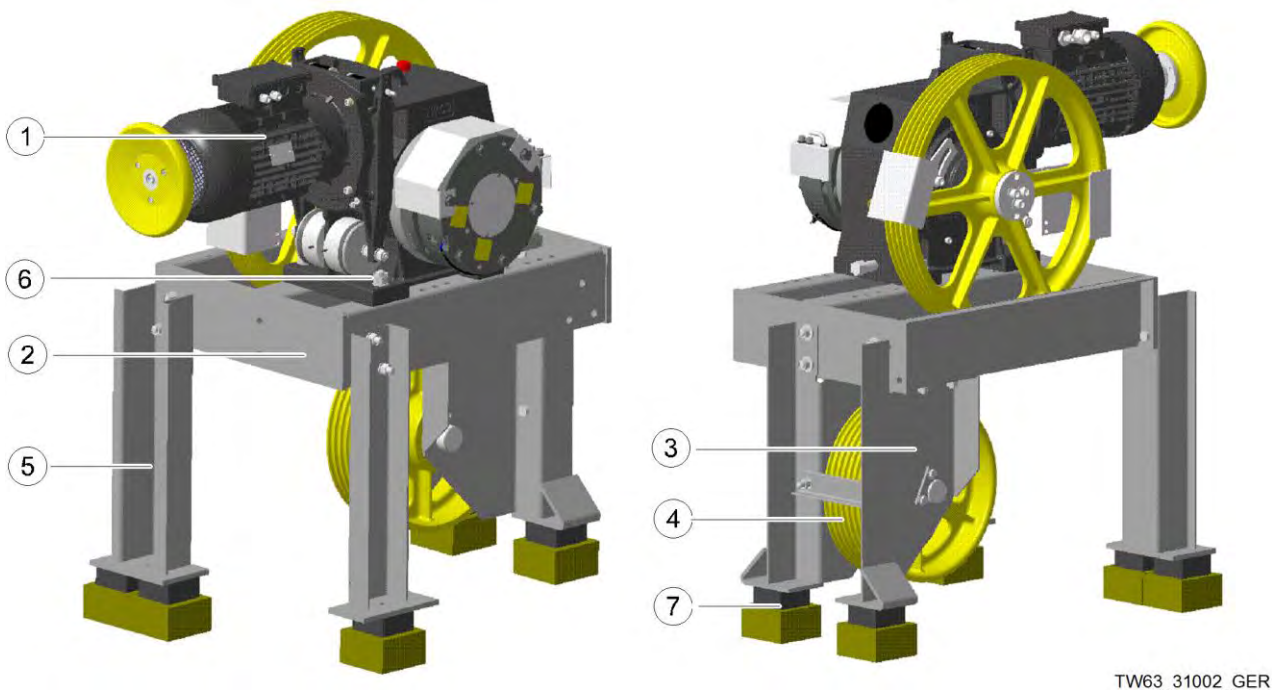
- For project planning dimensions, see dimension sheet (Section 3.12.1)

3.11.2 AY machine base frame TW63 NO/MSR

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 rope distance elevator car to counterweight ASL = 745 ÷ 775 mm in conjunction with traction sheaves dia. 450, 510 and 590 mm (e.g. installations of type NO41/51)

The rope pulley that is used is the version D450-7x dia. 10 with groove clearance RA = 18 mm (rope pulleys, see product description for mechanical elevator parts, type 6070-6079_NBO2 - standard sheet 60 720 12 00 0). The rope pulley has maintenance-free rolling bearings.



TW63_31002_GER

Fig. 3-9: TW63 machine base frame NO/MSR (shown is the machine base frame with rope pulley position on left and TW63B machine in horizontal motor position with NBS emergency brake system and traction sheave position on left)

Description of items for Fig. 3-9

1	TW63B machine	2	Upper frame part NO/MSR
3	Supports for rope pulley D450	4	Rope pulley D450 - 7x10
5	Supports for insulation elements	6	Mounting parts for machine on machine base frame
7	Insulation elements (shown is the version with support)		

The NO/MSR machine base frame comprises the following components:

- Upper frame part in plated-edge design with welded face plates
- Supports for the rope pulley holder with axle
- Rope pulley D450 - 7x dia.10 with groove clearance RA = 18 mm
- Supports (2 units) for mounting the insulation elements.

It is possible through appropriate mounting of 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 (including rope pulley): approx. 170 kg

Project planning dimensions

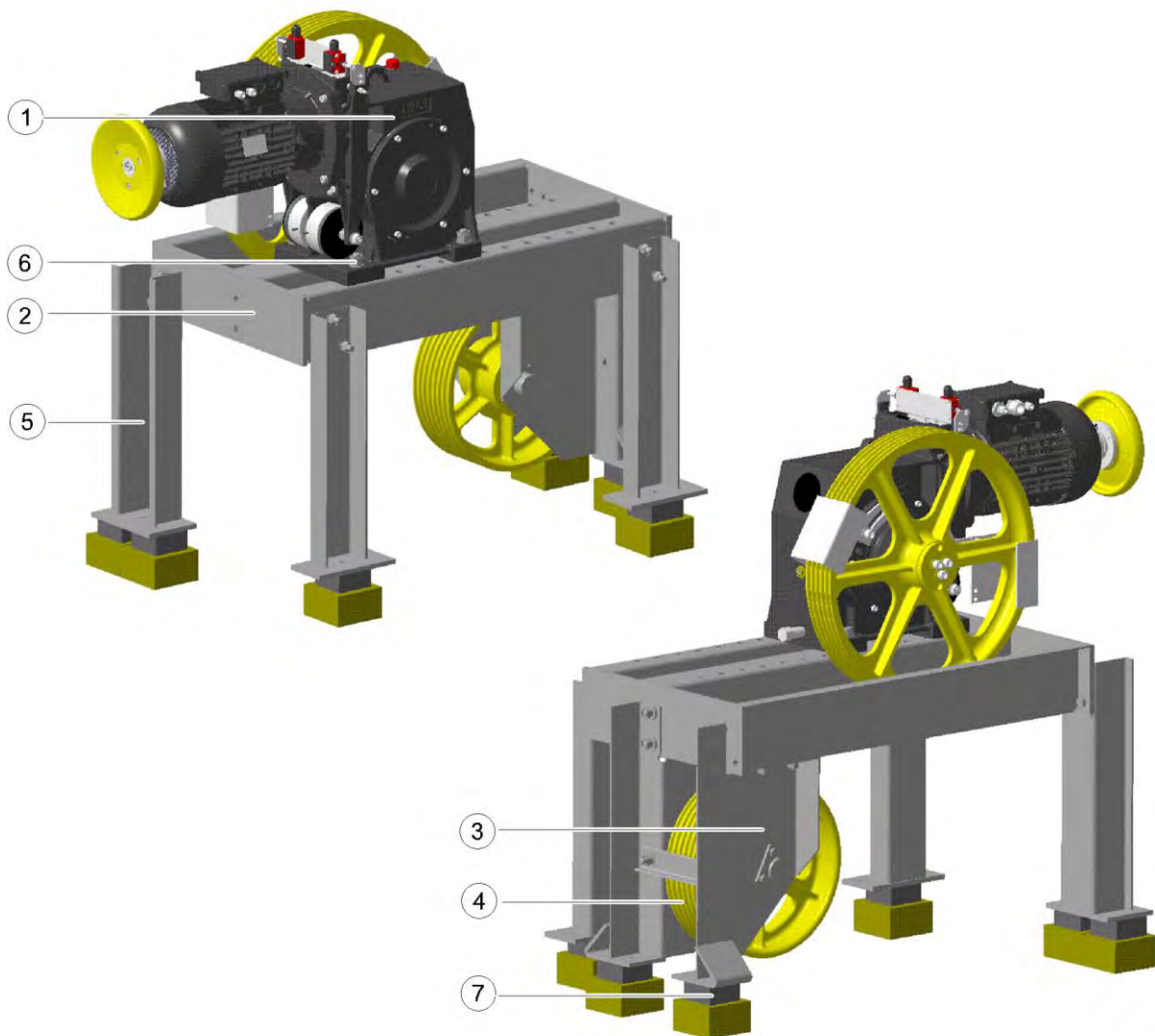
- For project planning dimensions, see dimension sheet (Section 3.12.2 and 3.12.3)

3.11.3 AY machine base frame TW63 NO/MSR

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 rope distance elevator car to counterweight
ASL = 566 ÷ 1143 mm (e.g. installations of type BO/SO 41/51)

The rope pulleys used are the versions D360-7x dia. 8, D450-7x dia. 10 mm or D540-7x dia. 13 (rope pulleys, see product description for mechanical elevator parts, type 6070-6079_NBO2 - standard sheet 60 720 12 00 0). The rope pulleys have maintenance-free rolling bearings.



TW63_31003_GER

Fig. 3-10: TW63 machine base frame BO/MSR (shown is the machine base frame with rope pulley position on left and TW63B machine in horizontal motor position and traction sheave position on left)

Description of items for Fig. 3-10

1	TW63B machine	2	Upper frame part NO/MSR
3	Supports for rope pulley D360, 450 or 540	4	Rope pulley D360, 450 or 540
5	Supports for insulation elements	6	Mounting parts for machine on machine base frame
7	Insulation elements (shown is the version with support)		

The BO/MSR machine base frame comprises the following components:

- Upper frame part in plated-edge design with welded face plates
- Supports for rope pulley holder with axle corresponding to rope pulley used
- Rope pulley D360, 450 or 540
- Supports (3 units) for mounting the insulation elements.

It is possible through appropriate mounting of 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:

rope pulley version[mm]	m	weight including rope pulley
D360	kg	170
D450		200
D540		230

TW63_31007_ENG

Table 3-16: Weight data for machine base frame BO/MSR

Project planning dimensions

- For project planning dimensions, see dimension sheet (Section 0 and 3.12.5)

3.11.4 Mounting parts for machine on machine base frame

A set of bolting elements (M20-8.8) is available for mounting the TW63B NO/2:1, NO/MSR and BO/MSR machine on the machine base frame.

3.11.5 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 high; 45 +/- 5 mm shore (A)) in the machine room.

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

3.11.6 Version with earthquake safeguard complying with EN81-77

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

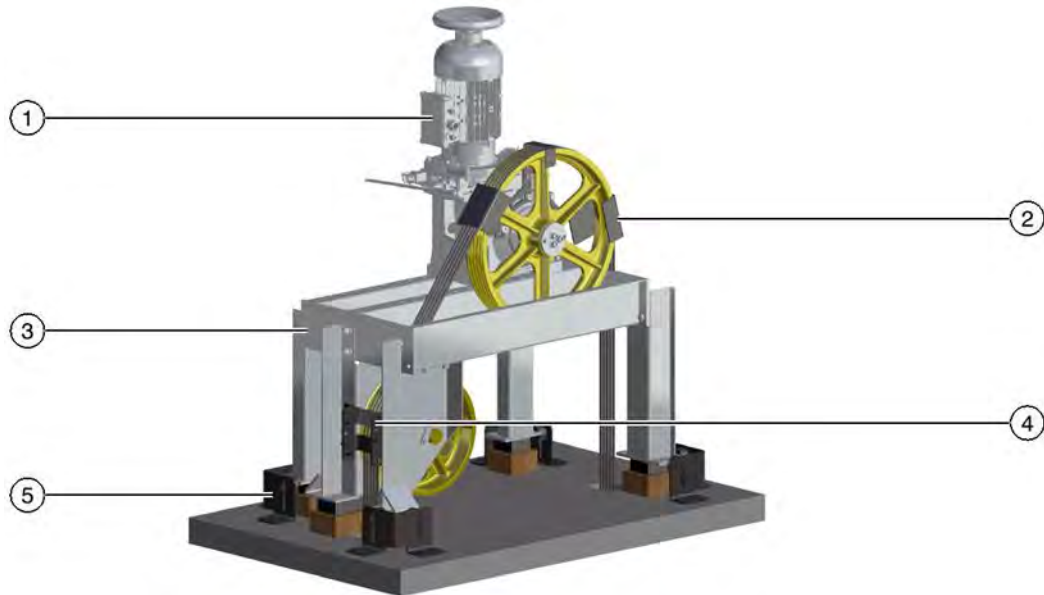


Fig. 3-11: Safeguard measures on AY machine frame unit in accordance with EN 81-77

Description of items for Fig. 3-11

1	Machine TW63B, vertical	2	Rope guard complying with EN81-77 for traction sheave
3	Machine base frame TW63 NO/MSR	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. D360 / D450 or D540 which prevent the ropes departing from the grooves.

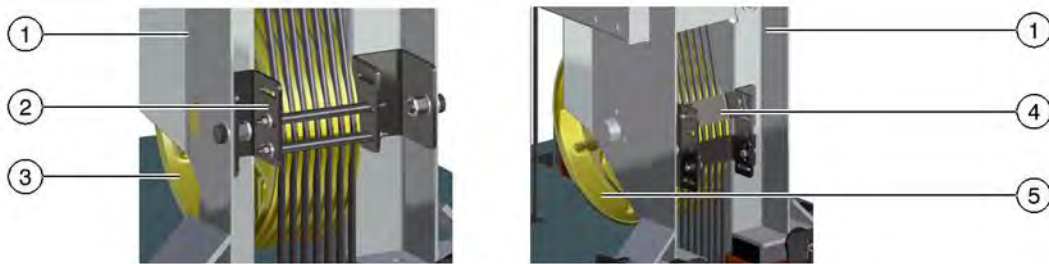


Fig. 3-12: Earthquake safeguard complying with EN81-77 on machine base frame (shown for rope pulley dia. D360 / D450 / D540)

Description of items for Fig. 3-12

1	Machine base frame TW63 NO/MSR	2	Rope holder complying with EN81-77 for rope pulley dia. D360
3	Rope pulley dia. D360	4	Rope holder complying with EN81-77 for rope pulley dia. D450 / D540
5	Rope pulley dia. D450		

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

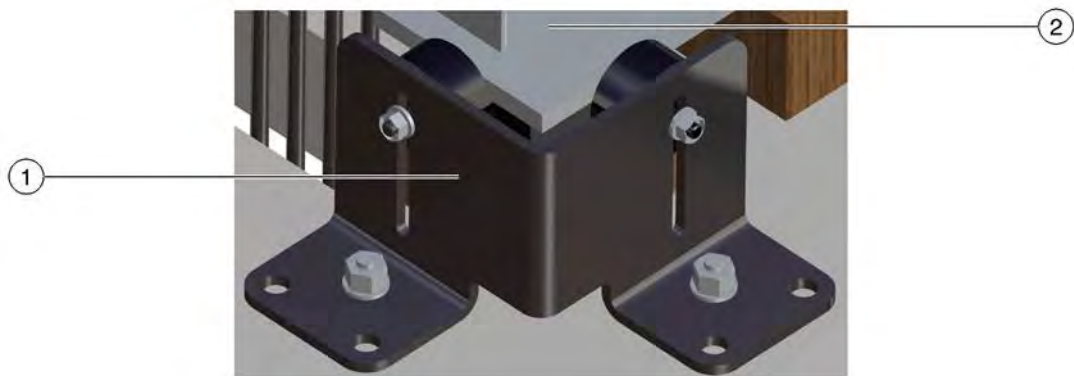


Fig. 3-13: Earthquake safeguard complying with EN81-77 on machine base frame (shown is the shift protection)

Description of items for Fig. 3-13

1	Shift protection complying with EN81-77	2	Machine base frame TW63 BO/MSR
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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.

3.12 Machine base frame dimension sheets

3.12.1 Version without rope pulley NO/2:1

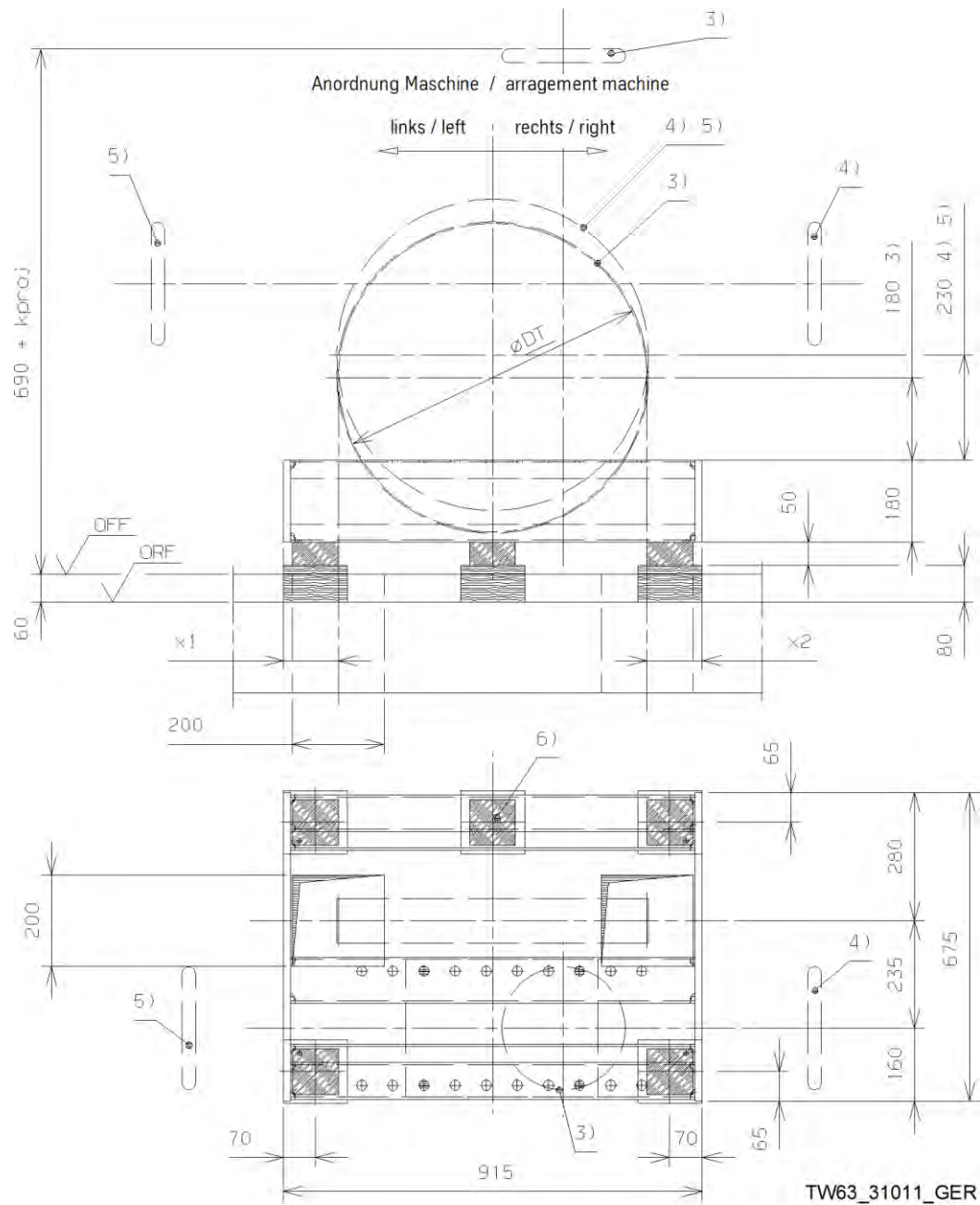


Fig. 3-14: TW63 machine base frame NO/2:1 with TW63B machine

Description of items for Fig. 3-14

3	Vertical motor position	4	Horizontal motor position/traction sheave position - right
5	Horizontal motor position/traction sheave position - left	6	Additional insulation element for load of traction sheave shaft P > 38 kN

Project planning dimensions:

- Project planning dimensions x1 and x2 (see dimension sheet for machine base frame NO/2:1)
- Intermediate values for x1 and x2 in the modular dimension of 68 mm possible

traction sheave version DT [mm]	configuration with machine on frame							
	left ^{1), 2)}		right ^{1), 2)}		left ³⁾		right ³⁾	
	x1 mm	x2 mm	x1 mm	x2 mm	x1 mm	x2 mm	x1 mm	x2 mm
450	96,5	368,5	368,5	96,5	136,5	328,5	340,5	124,5
510	66,5	338,5	338,5	66,5	106,5	298,5	310,5	94,5
520	61,5	333,5	333,5	61,5	101,5	293,5	305,5	89,5
590	94,5	230,5	230,5	94,5	66,5	258,5	202,5	122,5
675	120,0				92,0	148,0	160,0	80,0

Remarks

TW63_31005_ENG

1) machine with upright motor

2) machine with horizontal motor / traction sheave on the right

3) machine with horizontal motor / traction sheave on the left

Table 3-17: *Project planning dimensions for NO/2:1 machine base frame*

3.12.2 Version with rope pulley NO/MSR/rope pulley position on left

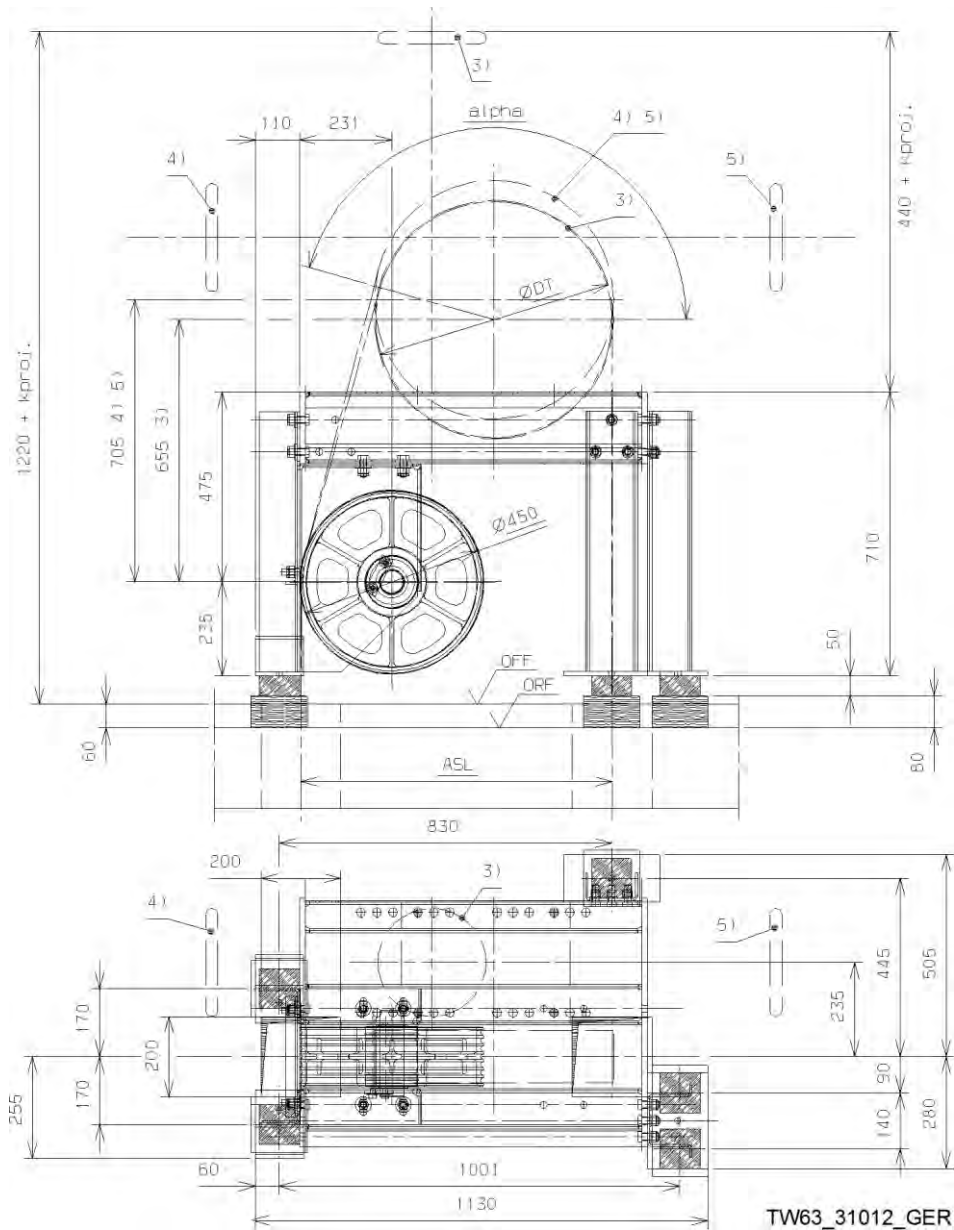


Fig. 3-15: TW63 machine base frame - NO/MSR / left rope pulley position with TW63B machine

Description of items for Fig. 3-15

3	Vertical motor position	4	Horizontal motor position/traction sheave position - right
5	Horizontal motor position/traction sheave position - left		

Project planning dimensions:

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

traction sheave design DT [mm]	ASL [mm]	α [°]	
		1)	2)
450	745	155	156
510	775	158	159
590	775	164	165

Remarks

TW63_31006_ENG

1) machine with upright motor

2) machine with horizontal motor

Table 3-18: Project planning dimensions for NO/MSR machine base frame

3.12.3 Version with rope pulley NO/MSR/rope pulley position on right

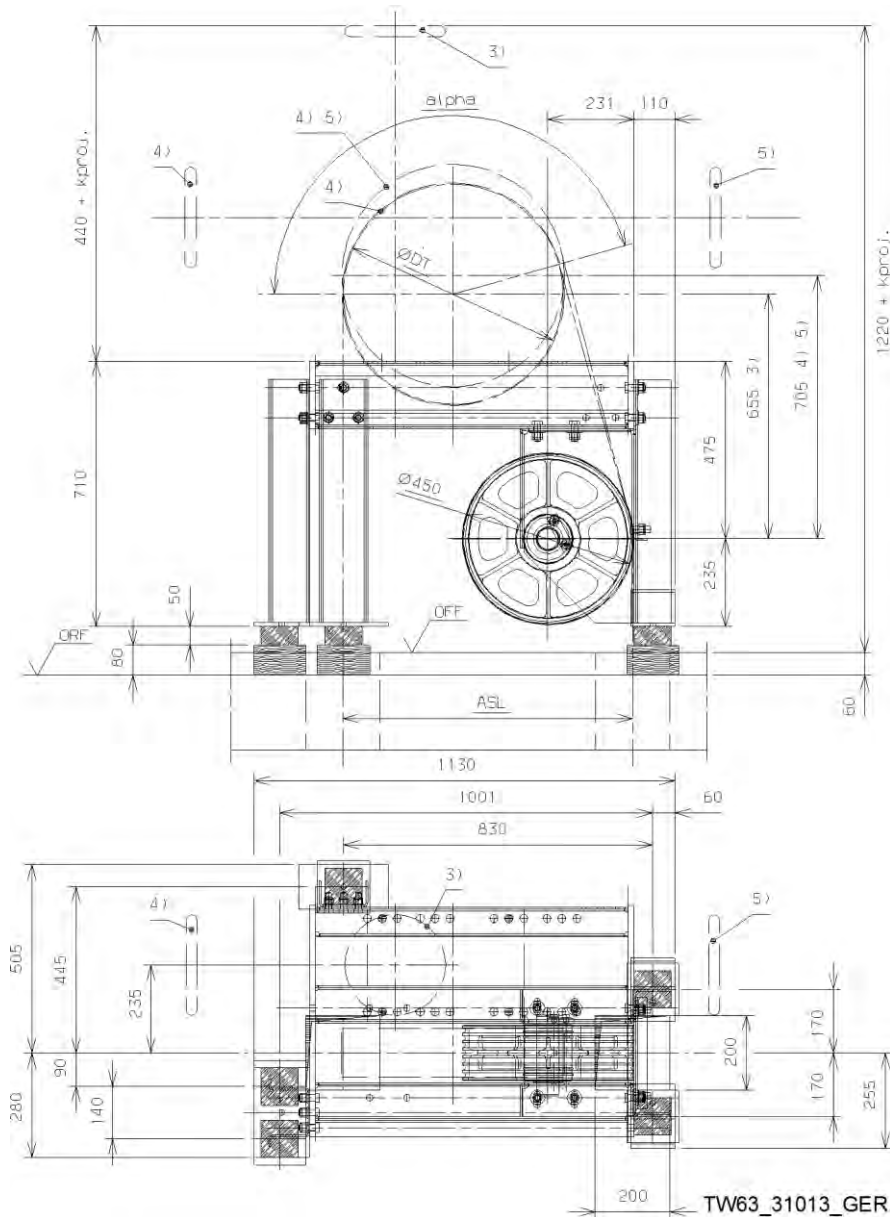


Fig. 3-16: TW63 machine base frame - NO/MSR / right rope pulley position with TW63B machine

Description of items for Fig. 3-16

3	Vertical motor position	4	Horizontal motor position/ traction sheave position - right
5	Horizontal motor position/ traction sheave position - left		

Project planning dimensions:

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

traction sheave design DT [mm]	ASL [mm]	α [°]	
		1)	2)
450	745	155	156
510	775	158	159
590	775	164	165

Remarks

TW63_31006_ENG

1) machine with upright motor

2) machine with horizontal motor

Table 3-19: Project planning dimensions for NO/MSR machine base frame

3.12.4 Version with rope pulley BO/MSR/rope pulley position on left

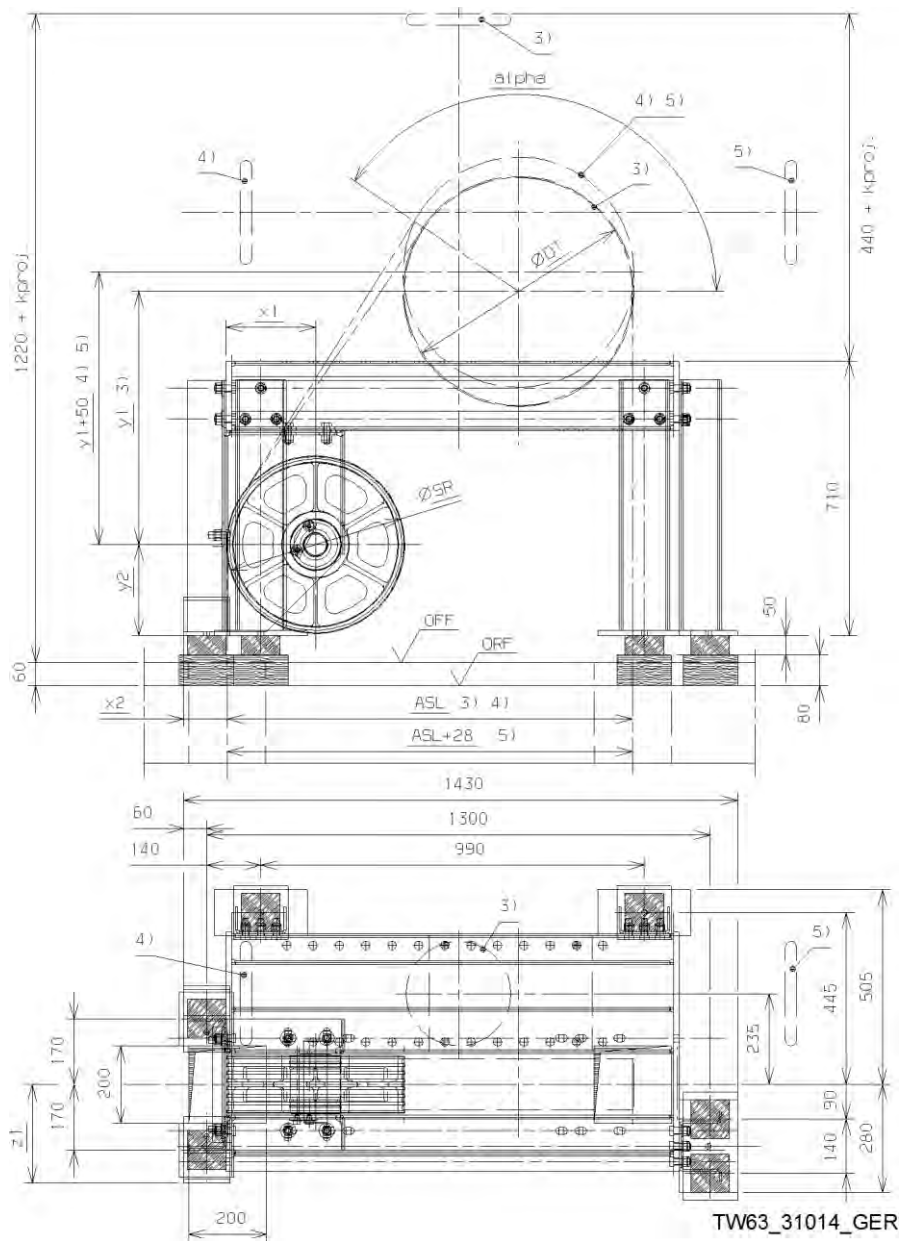


Fig. 3-17: TW63 machine base frame - BO/MSR / left rope pulley position with W63B machine

Description of items for Fig. 3-17

3)	Vertical motor position	4)	Horizontal motor position/ traction sheave position - right
5)	Horizontal motor position/ traction sheave position - left		

Project planning dimensions:

- Rope clearance dimensions elevator car to counterweight ASL and wrap angle α
- Clearance dimensions for ASL possible in the modular dimensions 68 mm

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

TW63_31008_ENG

Table 3-20: Project planning dimensions for BO/MSR machine base frame

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

TW63_31009_ENG

Table 3-21: Project planning dimensions for BO/MSR machine base frame

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

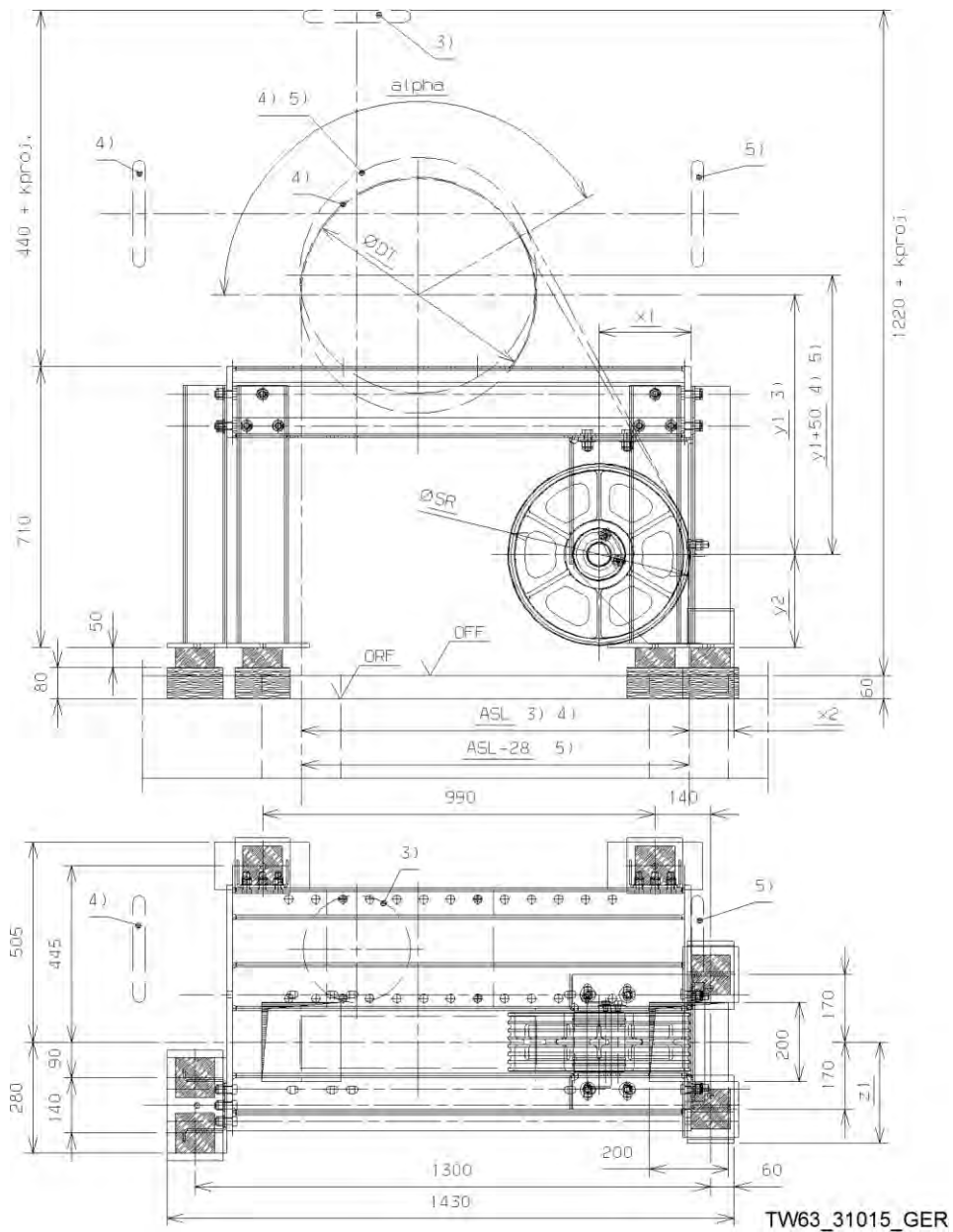


Fig. 3-18: TW63 machine base frame - BO/MSR / right rope pulley position with TW63B machine

Description of items for Fig. 3-18

3	Vertical motor position	4	Horizontal motor position/ traction sheave position - right
5	Horizontal motor position/ traction sheave position - left		

Project planning dimensions:

- Rope clearance dimensions elevator car to counterweight ASL and wrap angle α
- Clearance dimensions for ASL possible in the modular dimensions 68 mm

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

TW63_31008_ENG

Table 3-22: Project planning dimensions for BO/MSR machine base frame

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

TW63_31009_ENG

Table 3-23: Project planning dimensions for BO/MSR machine base frame

3.13 Specification and order sheets

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

- SAP parts list: Assembly, machine base frame unit TW63B - 62 320 02 01 0

4 Scope of Supply and Packaging

4.1 Scope of supply

4.1.1 Main components

The drive comprises:

- Driving gear
- Motor
- Traction sheave
- Machine base frame (optional)

4.1.2 Dispatch information

The following variants are possible:

Drive without machine base frame: The drive is supplied secured on a throw-away pallet to the dispatch department. The machine is packaged ready for dispatch in the dispatch department.



TW63_41201_GER

Fig. 4-1: TW63B on transport pallet (TW63B horizontal, vertical and horizontal with SA9)

Drive with machine base frame (in subassemblies): the gear drive and the machine base frame are sent separately to the dispatch department. The subassemblies are packaged ready for dispatch in the dispatch department.

4.1.3 Standard scope of supply

The standard scope of supply comprises:

- Machine (driving gear including operational brake, motor, traction sheave, handwinding wheel with actual-value sensor and/or flywheel rim)
- Rope guard (except SA9)
- Emergency brake NBS (optional)
- Components for special versions (optional)

The machine is already filled with gear oil at the plant.

4.1.4 Extended scope of supply

- Machine base frame (optionally pre-assembled or in single parts on pallet)
- Operating manual (available in the national languages: German, English, French and Russian)
- Blocking clamp
- Insulation elements
- Mounting parts

4.1.5 Delivery time

Product	Delivery time	Can be supplied as of
TW63B (standard version)	6 weeks	Immediately 1)

1) see notes regarding the standardized motors (3.4.1 and 3.4.2)

4.2 Packaging

The drive is secured on a wooden pallet. The associated small parts are included in cardboard boxes/cartons or in packing unit bags.

Unloading by crane or forklift truck is possible.

The drive is secured on a wooden pallet. The associated small parts are included in cardboard boxes/cartons or in packing unit bags.
Unloading by crane or forklift truck is possible.

thyssenkrupp Aufzugswerke GmbH
Bernhäuser Strasse 45
73765 Neuhausen a. d. F.
Germany

E-mail: Doku.elevator.plant.de@thyssenkrupp.com

Internet: www.thyssenkrupp-elevator-eli.de

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