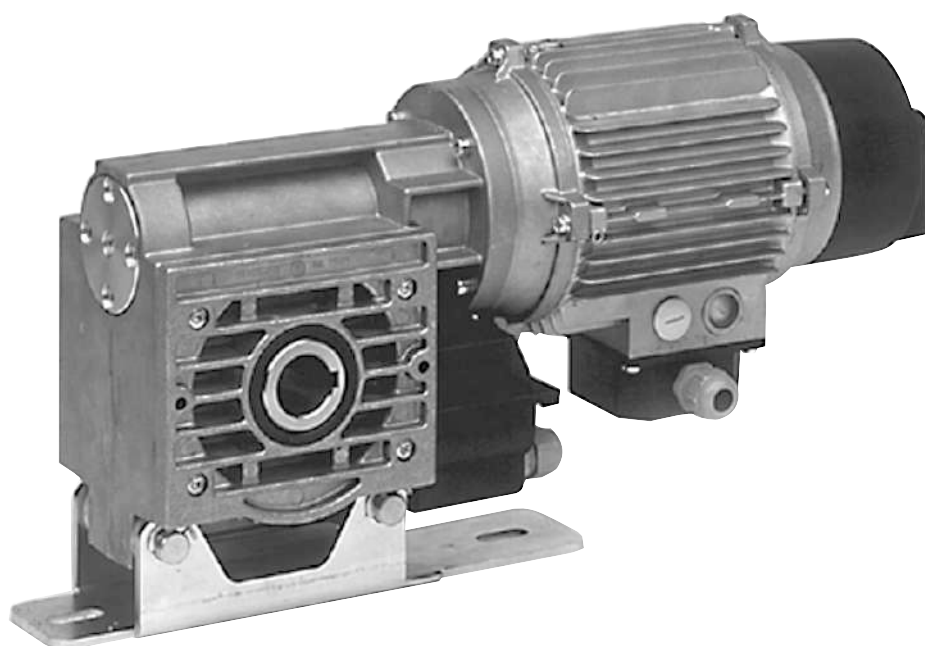


Assembly instructions (translation)








For the safety of persons it is important to follow these assembly instructions!
Keep the assembly instructions in a safe place!

Contents	Page
1. Safety instructions	2-4
2. Scope of supply	4
3. Installation	5
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4. Manual operation	
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1. Safety instructions

1.1 Structure of the safety instructions


	Signal word
	Type and source of danger
	Possible effect(s) of the danger
	Accident prevention measures

	Signal word	Meaning	Result if disregarded
 General danger	WARNING!	Potentially dangerous situation	Death or serious bodily injury.
 Electrocution	CAUTION!	Potentially dangerous situation	Slight bodily injury
	STOP!	Possible damage to property	Damage of the drive or its surroundings
	NOTICE!	Useful tips Simplify the handling of the drive	

1.2 Exclusion of liability

Following the assembly instructions is the basic requirement for the safe operation of rolling door drives and for the achievement of various product characteristics and performance features.

elero GmbH assumes no liability for personal injuries, property damages and financial losses that arise from non-observance of the operating instructions. Liability for material defects is excluded in such cases.

	STOP!
	<p>Observance of the assembly instructions is the prerequisite for disturbance-free operation and fulfilment of any claims related to defects.</p> <ul style="list-style-type: none"> • Therefore, first read the assembly instructions before you use the device! • Ensure that the assembly instructions are always available to the user in legible form. • This device is not intended to be used by persons (including children) with impaired physical, sensory or mental abilities or lack of experience and/or knowledge, unless they are supervised by a person who is responsible for their safety or they are instructed by that person on how the device is to be used. • The operator must ensure that the basic safety instructions are observed and fulfilled. • Make sure that these assembly instructions are kept to hand and can be found near the door. • The operator must have completely read and understood the assembly instructions. • The following safety and installation instructions solely refer to the drive and not the accessories, regulation and control equipment.

1. Safety instructions

1.3 Safety function

Doors which are fitted with an elero rolling door drive and operated with an elero control system, have to have the legally prescribed accessories for safe operation (e.g. opto-electric door-edge security systems, wind-up protection systems, light barriers, etc.).

This higher-level safety system guarantees additional personal and property protection.

1.4 Transport

If the drive arrives in a damaged condition despite proper packaging, then it must not be commissioned. Immediately complain about the damage to the transport company. Repair notes can be found on page 14.

In case of unauthorised removal of the necessary covers, improper use, incorrect installation or operation, there is a danger of severe injury to persons and substantial damage to property.

1.5 Target group

All installation, initial operation and troubleshooting work must be carried out by an electrician.

(Please observe IEC 60364 and/or CENELEC HD 384 or DIN VDE 0100 and IEC 60664 or DIN VDE 0110 and national accident prevention regulations).

An electrician in the sense of these general safety instructions is a person acquainted with the assembly, installation and initial operation of the product with appropriate qualifications.

All work in the other areas, for example operation and disposal, must be carried out by suitably instructed persons.


1.6 Intended use

Rolling door drives are only designed for use with rolling doors, roller grilles or sectional doors without counterweight.

Commissioning (i.e. beginning of intended operation) is only allowed if the valid EMC guidelines (2004/108/EU) are observed.

The technical data and the information on connection conditions can be found on the type plate and in this documentation and must be strictly adhered to.

1.7 Important safety instructions

	WARNING!
	Observe the following safety instructions Failure to observe them can lead to bodily injuries!
	General <ul style="list-style-type: none">• The assembler must check that the ambient temperature range stated on the drive is suitable for the installation site.• Never install or commission devices which are damaged.• Never hammer the drive as this will damage the bearings and housings.• Only use unmodified original elero® parts.• If the device is opened without permission or used in an improper manner, or if it is incorrectly installed or operated, there is a risk of damage to persons and property.• The device contains small parts which can be swallowed.
	Installation <ul style="list-style-type: none">• All installation work must be carried out by an electrician.• The place of installation must be cordoned off due to the danger of falling objects.• This electrician must be suitably qualified.• Observe any country-specific conditions when installing the device.• The device may only be used by persons who have read and understood the operating instructions.
	Operation <ul style="list-style-type: none">• Only use indoors (please observe the stated degree of protection).• If the rolling door drive is used outdoors, then the connecting cable has to be laid properly in a shield tube and the stated degree of protection followed.• If one or more transmitters are used for controlling the system, its operating range must stay visible during operation.• Keep people away from the system until it is at standstill.• Keep children away from the (remote) control units.• Ensure that there are no children within the door's operating range.• Observe the control documentation.

1. Safety instructions

2. Scope of supply

1.8 Manufacturing note

The rolling door drives are made as per the following guidelines:

- **DIN EN 12453** (Industrial, commercial and garage doors and gates - Safety in use of power operated doors);
- **DIN EN 12604** (Industrial, commercial and garage doors and gates - Mechanical aspects);
- **DIN EN 60335-1** (Household and similar electrical appliances - Safety);
- **DIN EN 60335-2-103** (Particular requirements for drives for doors, gates and windows)



All the rolling door drives are all subject to testing by elero before delivery.

1.9 Testing and maintenance

According to EN 12635 "DOORS – Installation and use" the door system has to be checked for safety by an expert before initial operation and after regular maintenance. The door manufacturer defines the frequency for maintenance and inspections. The execution of the testing has to be documented in a log book.

Important: The system may not be operated when repairs, maintenance or adjustments are being carried out!

1.10 Safety instructions for the electrical connection

 	CAUTION!	
	<p>Observe the following safety instructions. Failure to observe them can lead to bodily injuries!</p> <p>Risk of injury due to electrocution.</p> <ul style="list-style-type: none"> • The connections to the 230 V/400 V mains must be made by an electrician. • Use only unmodified elero® original parts and original elero® control units. • Before accessing the connection terminals all mains circuits must be switched off. Check that there is no power. • The regulations of the local energy supply company as well as the regulations for wet and damp rooms according to VDE 0100 must be followed when making the connections. • Check the system (gates and doors) regularly for wear or damage to connection cable, fixing devices and safety equipment. • When working on the system (servicing, cleaning), always separate it from the mains supply. 	

2. Scope of supply

Rolling door drives are delivered without mounting angles/brackets.

The door installer must mount appropriate angles or brackets that are matched to the door and the drive.

Drive design	DFM-NHK WFM-NHK	DFM-SHK WFM-SHK
Adjusting tool A/F 2.5 mm	•	•
1 emergency crank handle with attachments	•	
3 m round steel chain DIN 766 A4 x 16 (approx. 1.4 m suspended) with wall chain holder		•
Operating instructions	•	•

3. Installation

Rolling door drives

3.1 Safety instructions for installation



CAUTION!

Observe the following safety instructions.

Failure to observe them can lead to bodily injuries!

- Rated torque, speed, voltage, operating time, stop torque, protection class and degree of protection must be adapted to the requirements of the driven product.
- It must be ensured that an entrapment between the driven part and the surrounding fixed parts due to the movement of the driven part is prevented.
- Before installing the drive, it is necessary to check whether the driven part is in good mechanical condition, its weight is balanced and it can be opened and closed easily.
- Always use a suitable aid for a drive that weighs more than 20 kg.
A hole is available for this in the gearbox casing.
- The drive must be installed at a height of at least 2.50 m above the floor or any other access height.
- If the drive is controlled by a pushbutton (jogging mode/dead-man's safety system), then this actuator must be installed at a height above 1.5 m and be separated from moving parts.
- The operating range of the system must always be visible during operation.
- After installation, check that the security system and manual mode are working properly.

3. Technical data

Rolling door drives

Type		WF. 170/14	DF. 100/90	DF. 170/12,5	DF. 250/12,5	DF. 250/27	DF. 350/13,5	DF. 500/11	DF. 500/31	DF. 750/8	DF. 750/11	
Rated voltage	V	230	3 ~ 230/400									
Rated frequency	Hz	50										
Rated current	A	6,7	5,5/3,2	3,2/1,85	4,5/2,6	5,2/3,0	4,2/2,4	5,7/3,3	10/6,0	5,9/3,4	6,9/4,0	
cos f		0,92	0,8	0,58	0,45	0,8	0,6	0,74	0,8	0,6	0,68	
Insulation class		H										
Rated power consumption	kW	1,4	1,25	0,75	0,80	1,1	1,0	1,7	2,2	1,4	1,9	
Rated torque ⁵⁾	Nm	170	100	170	250	250	350	500	500	750	750	
Degree of protection	IP	54										
Rated operating time	S3	4 min	40%	60%	40%	40%	40%	60%	60%	40%	40%	
Max. torque for rolling door operation ³⁾												
RTB 80%	Nm	–	80	170	200	200	300	500	500	600	650	
RTB 100%	Nm	–	60	150	170	170	250	400	400	500	550	
Coil temperature limiter	C°/F°	130/266										
Door cycles per hour ⁴⁾	1/h	10	70	50	40	50	40	50	50	40	40	
Permitted temperature range	C°/F°	–10 °C to +40° C/14 °F to 104 °F										
Continuous sound pressure level	db (A)	< 70	< 60									
Electromagnetic brake		•	•			•	•	•	•	•	•	
Rated speed n2	min ⁻¹	14	90	12,5	12,5	27	13,5	11	31	8	11	
Mechanical limit switch range ²⁾ (centrally set at 9 revs.)	II	18 revs.										
Digital limit switch range	II	19 revs.										
Hollow shaft inside Ø	mm	30						40				
Key width	mm	8						12				
Integrated safety brake	Type	F 40						F 80				
Stop torque	Nm	884						2302				
Deceleration	g	< 1,5						< 2,0				
TÜV SÜD certificate no.:	TorFV	5/061						5/062				
VDE checked				•	•		•	•			•	
VDE-EMC			•	•	•	•	•	•			•	
Drive weight	approx. kg	19	22	21	21	21	22	31	31	34	31	

Note: If the drive is to be painted subsequently, then the shaft seals must remain free of paint.
Other voltages and frequencies upon request.

- 2) Only for three-phase motors, custom manufactured
Limit switch range 44 revolutions.

Designation: with additional D..X; only for cable application, etc.

- 3) **Rolling door operation RTB:** Rolling door drives with rolling doors are operated dynamically with load change.
The S 3 operating mode with intermittent duty in accordance with DIN EN is tested at the rated torque related to 10 minutes operating time with the defined duty cycle in %.

- 4) One door cycle is: 5 revolutions OPEN – 30 s pause – CLOSE.

- 5) The rated torques of the drives are guaranteed
from -20 °C to 60 °C / -4 °F to 140 °F.

Correction table for three-phase mains power supply with frequency of 60 Hz

Motor designed for 50 Hz and	Operated with 60 Hz mains and	Speeds are increased by ...%	Rated torque and door weights are reduced by%.
3 ~ 230 V	230 V	+ 20 %	- 23 %
3 ~ 400 V	400 V	+ 20 %	- 20 %
	415 V	+ 20 %	- 17 %
	440 V	+ 20 %	- 12 %
	460 V	+ 20 %	- 7 %

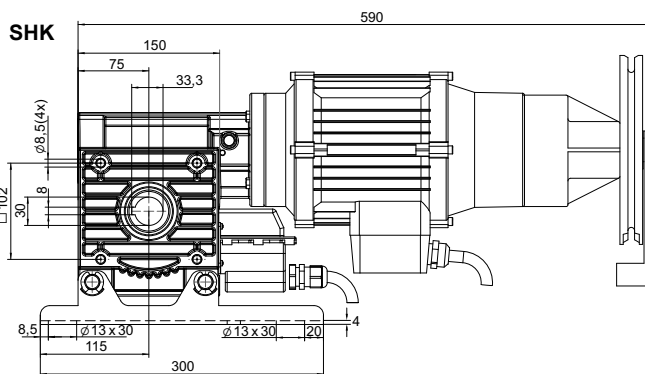
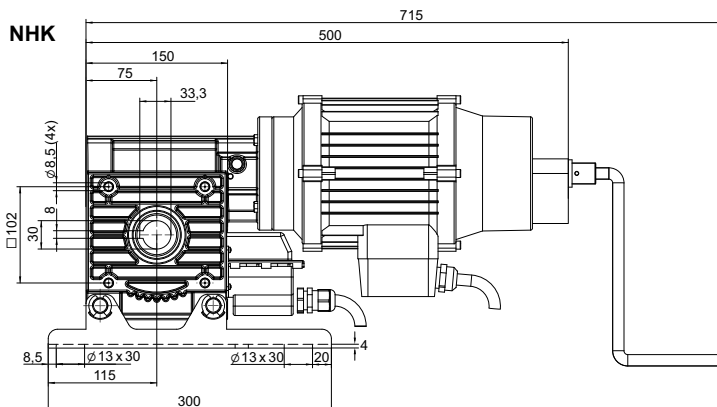
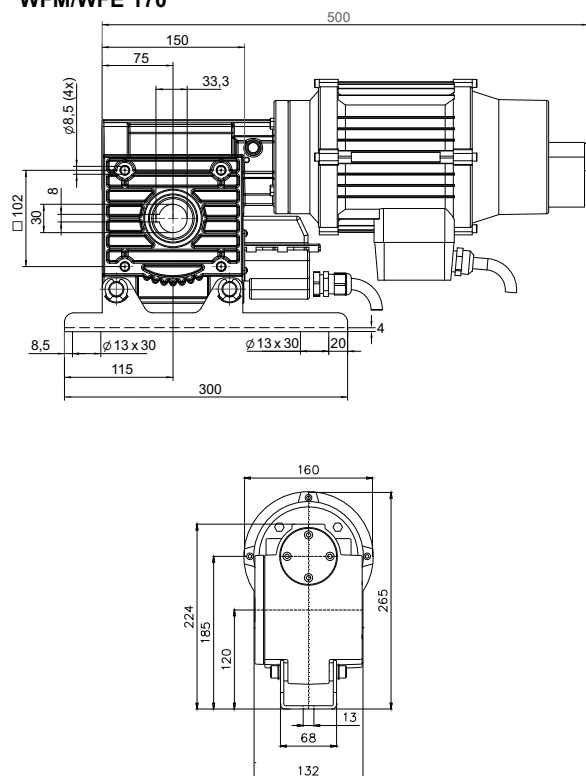
3. Installation

Rolling door drives

3.3 Mounting dimensions

DFM/DFE 100–350

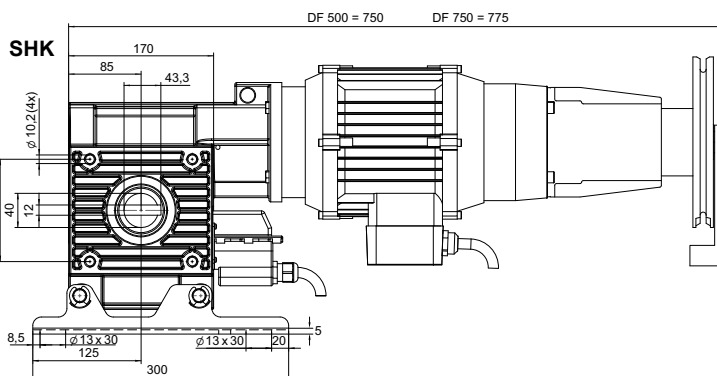
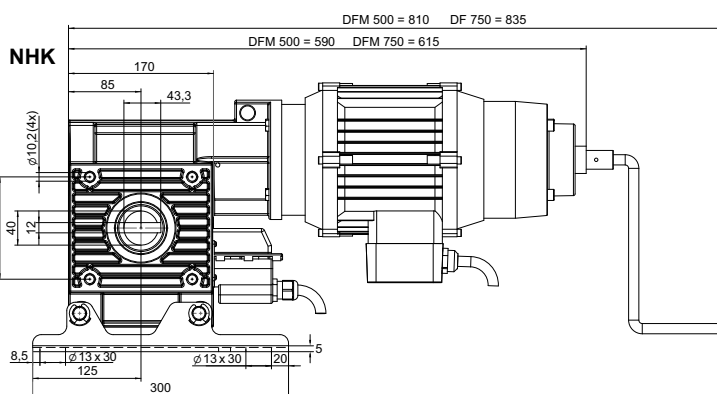
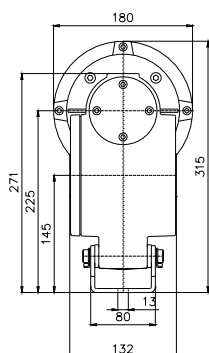
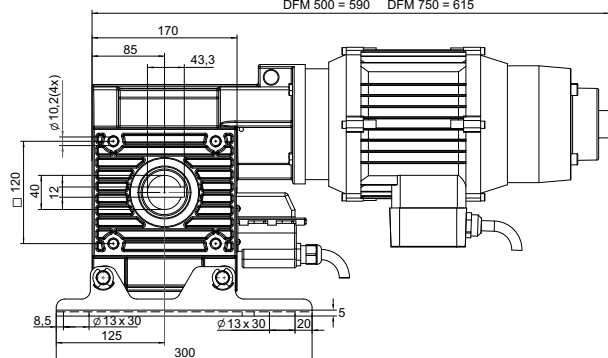
WFM/WFE 170*



* The connected motor capacitor is attached to the side of gearbox casing.

DFM/DFE 500–750

DFM 500 = 590 DFM 750 = 615



See page 12 regarding assembly of shaft mounted drives.

3. Installation

Lifting capacity chart and safety brake

3.4 Lifting capacity chart for WF./DF. drives in [kg]

Type	Rated torque Nm	up to shaft Ø mm	Nominal bar thickness up to 20 mm, single-walled door height up to			Nominal bar thickness up to 30 mm, double-walled door height up to		
			3 m	5 m	7 m	3 m	5 m	7 m
WF. 170 DF. 170	170	100	209	175	154	177	146	128
	170	133	186	163	146	164	139	122
	170	159	168	152	139	151	132	119
	170	168	162	149	136	147	130	118
	170	193	142	136	128	138	124	112
	170	219	126	125	120	124	115	107
DF. 250	250	100	307	258	226	260	215	188
	250	133	273	240	214	242	204	180
	250	159	247	224	205	222	194	175
	250	168	239	219	200	216	191	173
	250	193	209	200	188	203	182	165
	250	219	186	185	176	182	169	157
DF. 350	350	100	430	361	317	364	301	264
	350	133	382	336	300	338	286	252
	350	159	346	313	286	311	272	245
	350	168	334	307	280	303	268	243
	350	193	293	281	263	284	255	231
	350	219	260	258	247	254	237	220
DF. 500	500	133	546	479	429	484	408	360
	500	159	494	448	409	444	389	350
	500	168	478	439	401	433	383	347
	500	193	419	401	375	405	365	330
	500	219	371	369	352	363	339	315
	500	244	335	335	326	328	318	301
DF. 750	750	133	819	719	643	725	613	540
	750	159	741	671	614	666	583	526
	750	168	716	658	601	649	574	520
	750	193	628	601	563	608	547	494
	750	219	557	554	528	545	508	472
	750	244	502	502	489	492	477	452

The above data is for the complete rolling door curtain in kg, with 15% allowance for friction. Please observe the permissible load on the roller tube and the door weight for the safety gear systems.

3.5 Chart of permissible door weights for the safety gear systems

Safety gear **F 40** (up to 350 Nm driving torque), permissible door weights in Newton [N]

Shaft diameter up to [mm]	100 x 3			133 x 4			159 x 4,5			168,3 x 4,5			193,7 x 5,4					
Door width [m]	3	6	9	3	6	9	3	6	9	3	6	9	3	6	9			
Profile thickness of curtain: 20 mm																		
	3	5512	2613	1583	4875	4876	3899	4326	4327	4329	4137	4139	4141	3665	3668	3672		
Door height [m]	5	4846	2613	1583	4416	4417	3899	4059	4061	4063	3932	3934	3936	3590	3593	3597		
	7	4346	2613	1583	4046	4047	3899	3787	3789	3791	3693	3695	3697	3434	3437	3441		
Profile thickness of curtain: 30 mm																		
	3	4779	2613	1583	4328	4329	3899	3957	3959	3960	3825	3827	3829	3475	3478	3481		
Door height [m]	5	4091	2613	1583	3827	3857	3828	3597	3598	3600	3512	3514	3516	3280	3283	3286		
	7	3651	2613	1583	3468	3468	3469	3305	3306	3308	3244	3246	3247	3073	3076	3079		

Safety gear **F 80** (up to 750 Nm driving torque), permissible door weights in Newton [N]

Shaft diameter up to [mm]	133 x 4			159 x 4,5			168,3 x 4,5			193,7 x 5,4			244,5 x 6,3			
Door width [m]		3	6	9	3	6	9	3	6	9	3	6	9	3	6	9
Profile thickness of curtain: 20 mm																
	3	8412	4796	2982	7475	7432	4925	7151	7103	5578	6299	6221	6142	4875	4729	4582
Door width [m]	5	7247	4796	2982	6670	6631	4925	6462	6417	5578	5886	5813	5739	4800	4656	4511
	7	6386	4796	2982	5983	5949	4925	5835	5795	5578	5413	5345	5277	4573	4436	4298
	9	5739	4796	2982	5437	5406	4925	5324	5287	5251	4996	4933	4871	4320	4190	4060
Profile thickness of curtain: 30 mm																
	3	7162	4796	2982	6558	6520	4925	6342	6298	5578	5749	5677	5605	4644	4504	4365
Door width [m]	5	5971	4796	2982	5671	5585	4925	5486	5449	5411	5111	5047	4983	4355	4224	4093
	7	5170	4796	2982	4930	4902	4873	4839	4806	4773	4573	4516	4459	4011	3891	3770
	9	4594	4796	2982	4417	4391	4366	4349	4319	4289	4146	4094	4042	3704	3593	3481

The permissible bending stress in the winding shaft (90% of the yield point for steel St-37.2) is allowed for in the event of safety stop. The drop distance specified in EN 12604, no. 4.3.4 must not exceed 0.3 m.

Type	F 40	F 80
Max. drop distance [m]	0,030	0,046
Lever crank [m]	0,115	0,128

Calculation example:

$$\text{Actual drop distance in m} = \frac{\text{Max. drop distance} \times \text{roll diameter}}{\text{Lever crank} \times 2} = \frac{0,030 \times 0,5}{0,115 \times 2}$$

Type F 40: a drop distance of 0.065 m = **6.5 cm** is given for a roll diameter of 0.5 m.

All values are guide values. No liability can be accepted.

3. Installation

Electrical connection

3.6 Electrical connection

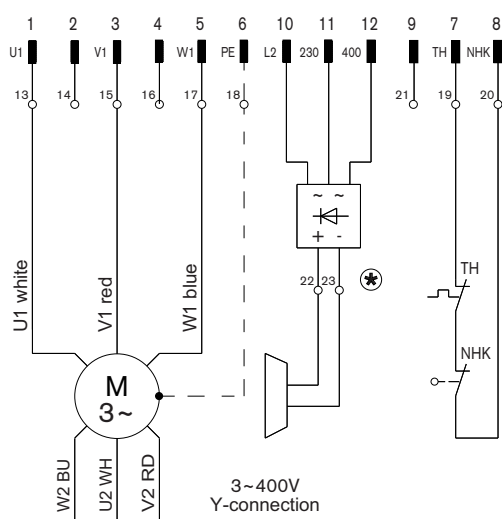


Caution!

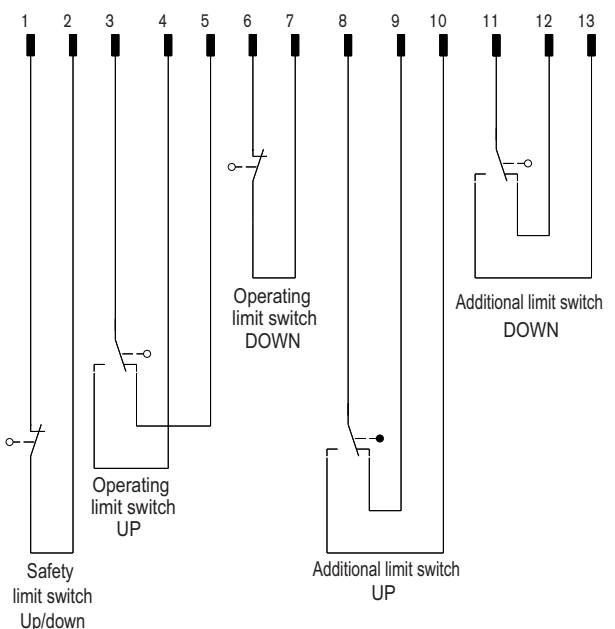
- It is necessary to fix the strand with the star terminals in the clamps of the terminal or card cage, when making a 3~400 V Y-connection.
- The on-site control units that are from another manufacturer must be designed for **elero** drives. Responsibility for the guarantee is adopted by the control unit manufacturer (or the company that integrates the control system) as appropriate.
- The motor brake may **not** be connected **parallel** to the motor connection phase (U1; V1; W1) or to a motor phase and N.
- **Drive with electromagnetic brake may only be put into operation when the brake is connected.**
- Please adopt the elero control unit connections from the wiring diagrams for elero control units.
- Temperature limiters TH and NHK must be connected (terminals 7 & 8).

DF. 100–750

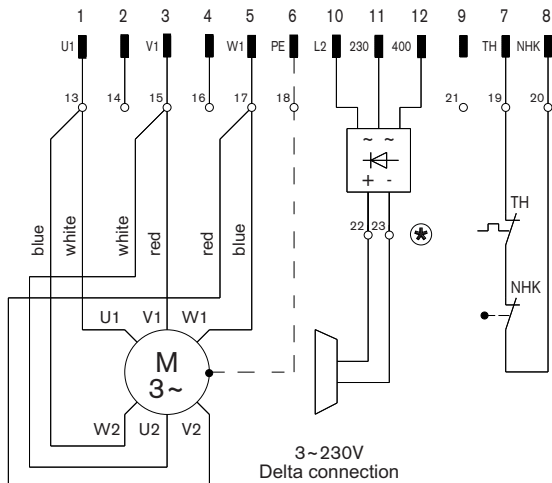
Rated voltage: 3~400 V 50 Hz



Mechanical limit switch**

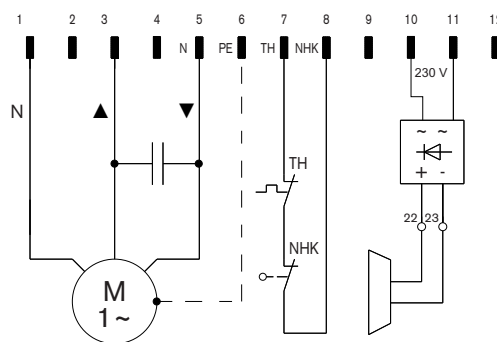


Rated voltage: 3~230 V 50 Hz



WF. 170

Rated voltage: 1~230 V 50 Hz



⊛ Brake and brake rectifier W see technical data

Brake connection:

Nominal voltage 230 V: Assign to terminal 10/11
Nominal voltage 400 V: Assign to terminal 10/12

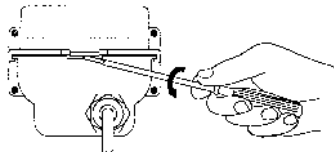
** Electronic position switch
Page 11

3. Installation

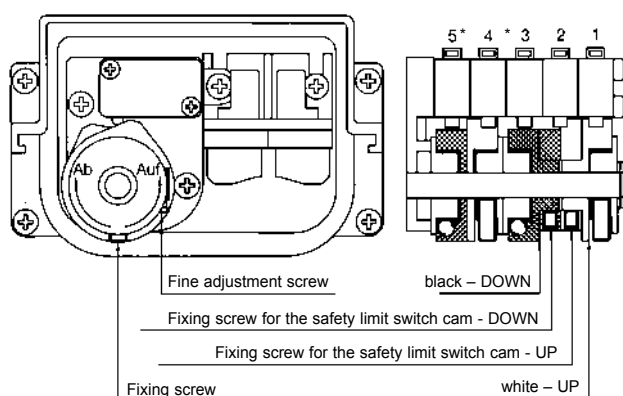
Setting the end positions and ZE-additional functions

3.7 Limit switch settings

Remove the cover from the limit switch housing using a screwdriver.



Note: To set, use the adjustment key supplied (A/F 2.5)
• Tightening torque 40–60 Ncm for the fixing screws.

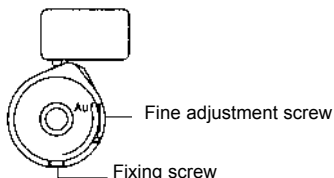


Switch 1 – Operating limit switch UP * Switch 4 – Potential-free UP
Switch 2 – Safety limit switch * Switch 5 – Potential-free DOWN
Switch 3 – Operating limit switch DOWN *only with ZE configuration

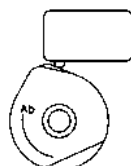
Note: To set, use the adjustment key supplied (A/F 2.5).
• Tightening torque 40–60 Ncm for the fixing screws

3.8 Adjusting the operating limit switch

1. Use the **UP** button to approach the door to the desired **upper** end position.
2. Turn the **white** control cam anticlockwise until it reaches the pin of the micro switch and fasten the fixing screw. Use the fine adjustment screw (black) to turn it for another max. 35° until the micro switch switches.



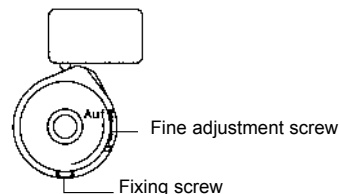
3. Approach the door to the desired **lower** end position.
4. Turn the **black** control cam clockwise until it reaches the pin of the micro switch and fasten the fixing screw. Use the fine adjustment screw (black) to turn it for another max. 35° until the micro switch switches off.



5. Run a test travel and if required make corrections using the fine adjustment screws.
6. Slide the cover onto the limit switch housing until it engages audibly.

3.9 Set the winter mode (½ door opening)

1. Approach the door to the desired winter position.
2. Turn the **red** control cam anticlockwise until it reaches the pin of the micro switch and fasten the fixing screw. Use the fine adjustment screw (black) to turn it for another max. 35° until the micro switch switches off.

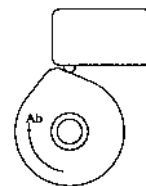


3. Run a test travel and if required make corrections using the fine adjustment screws.
4. Slide the cover onto the limit switch housing until it engages audibly.

3.10 Set the “Lower” neutralisation

The neutralisation option is used to suppress the door-edge disconnection. The neutralisation limit switch can e.g. be set to a position 5 cm before the lower limit switch.

1. Move the door to approx. 5 cm above the lower door position.
2. Turn the **green** control cam clockwise until it reaches the pin of the micro switch and fasten the fixing screw. Use the fine adjustment screw (black) to turn it for another max. 35° until the micro switch switches off.



3. Run a test travel and if required make corrections using the fine adjustment screws.
4. Slide the cover onto the limit switch housing until it engages audibly.

3.11 Setting the safety limit switch

Factory setting:

The safety limit switch is set automatically with the limit switch setting. The switching points are around 100° later on the winding shaft than the upper and lower end positions.

The safety limit switch can be corrected so that the drive comes to a standstill in the end positions, so that it remains in a safe condition and does not constitute a hazard.

For example: Inversion of the phase rotation direction or for reasons connected with the installation site. Release black (DOWN) or white (UP) safety limit switch cam (A/F 2), correct and re-tighten.

Check the limit switch settings and correct if necessary.

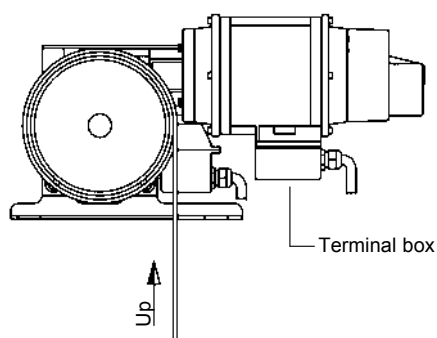
3. Installation

Limit switch setting

3.12 Left-hand roller

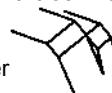
The drive is set up and wired in the factory as a right-hand roller (see sketch).

If the drive is to be set up as a left-hand roller (see sketch) the following **must** be reset:

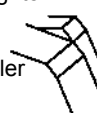


1. Loosen the white safety limit switch cam (A/F 2), turn approx. 20° in anti-clockwise direction and tighten.

Right-hand roller

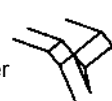


Left-hand roller



2. Loosen the black safety limit switch cam (A/F 2), turn approx. 20° in clockwise direction and tighten.

Right-hand roller



Left-hand roller



3. In the terminal box, change over the phases on terminals 3 and 5 for drives without electromagnetic brake or terminals 15 and 17 for drives with electromagnetic brake.
4. Set the end positions (see page 10)

3.13 Electronic position switch

The digital absolute rotary encoder is designed for end position settings, intermediate positions and other uses together with the D400 BoxControl and **BoxCard E**. . . plug-in card or original **elero**® digital door controls.

For the end position setting and installation instructions please refer to the operating instructions for the digital **elero**® door controls.

A 6 pin AMP plug serves as an interface.

Only use **elero**® plug-in connecting cables for this.
(Data line Li YY 2 x 2 x 0.5)


Interface RS-485
6 pin AMP plug



no function

3. Installation

Mounting of shaft mounted drives

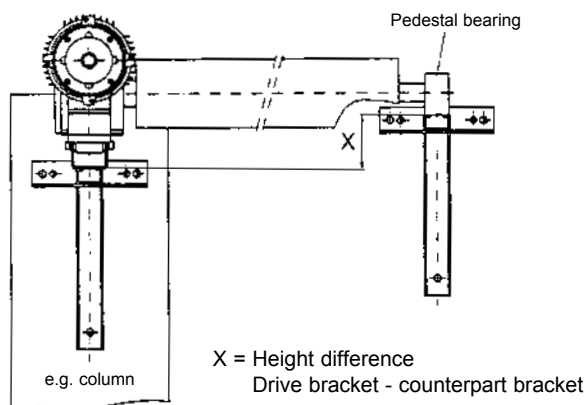
	<p>NOTE!</p> <p>The welding shaft with blanks must be welded centrally in the winding shaft.</p> <p>Mount the drive properly on a bracket or a torque absorber of sufficient strength, compatible to the permissible stop torque of the drive, using two screws M 12 x.../ strength class 8.</p> <p>Grease the hollow shaft before installation and plug in the winding shaft using the plug-in shaft and key.</p> <p>Do not wedge up using force!</p> <p>Before mounting the rolling door, the winding shaft must be secured permanently against axial displacement at the counterpart support at both ends!</p> <p>Do not secure the winding shaft axially on the shaft mounted drive!</p>
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3.14 Mounting of shaft mounted drives

Shaft mounted drives

Install rolling door guide rails and wall brackets or plate bearing surfaces.



1. Install the brackets on the opposite side. The bracket **must** be installed higher by a dimension "X" (see figure).



2. Align and weld the welding shaft with the blanks and the adjustable counterpart support to the winding tube. The material of the winding tube must be welding material meeting the standard DIN 17100.

3. Install the drive and the pedestal bearing.
To connect drive and bracket use hexagonal bolts M 12 x 30 DIN 933 8.8, nuts M 12 DIN 934, spring washers A 12 DIN 127, washers A 13 DIN 9021. Insert the winding tube with the welding shaft and the key into the hollow shaft. Do not wedge up using force! Insert the adjustable counterpart support into the bearing and lock permanently in both axial directions to prevent displacement. The drive bracket is carried in pendulum bearing and compensates for the out-of-round running of the winding shaft.
4. Fix the rolling door curtain to the winding shaft.
5. Install control casing in accordance with the manufacturer's guidelines.
6. Insert the limit switch cable in the limit switch housing of the drive! Do not engage the cover yet.
7. Unscrew the terminal box cover on the motor and connect the motor cable. Replace the cover and fasten the screws.
8. Switch on the mains.
9. **Check the sense of rotation.**
Press the UP button briefly. The door **must run in upward** direction. If this is not the case, disconnect the mains supply to the control unit and swap phases L1 and L2. After that switch on the mains again.
– omitted for WF ..., single-phase motors

3.15 Electrical connection

 	<p>CAUTION!</p> <p>Observe the following safety instructions. Failure to observe them can lead to bodily injuries!</p> <p>Risk of injury due to electrocution.</p> <ul style="list-style-type: none"> • The connections to the 230 V/400 V mains must be made by an electrician. Check the rated voltage before making the electrical connection (3~400 V; 3~230 V or 1~230 V). • Only use unmodified original elero® plug-in connecting cables. • Before accessing the connection terminals all mains circuits must be switched off. Check that there is no power. • During installation, operation and when working on the equipment, it must be possible to isolate all poles of the power supply (all-pole switch with at least 3 mm contact gap or all-pole main switch). • The regulations of the local energy supply company as well as the regulations for wet and damp rooms according to VDE 0100 must be followed when making the connections. • In order to ensure the given strain relief and degree of protection always carefully tighten the cable glands and the screws of the limit switch cover. • The pluggable parts have to be completely inserted. • The control of the sense of rotation and the limit switch settings should only be undertaken in "Control without maintained mode" (dead-man's safety system). • Ensure that the door is not moved beyond the operating limit switches.
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4. Manual operation

4.1 Opening/closing the limit switch cover



STOP!

Observe the following instructions!

Non observation can lead to destruction of the drive!

- Open the motor and limit switch cover.
- Make sure than no objects etc. get into the connection area.
- Plug in the connecting cables and set the limit switch.
- Carefully close the motor and limit switch cover after the connections and adjustments are done.
- Make sure that there is no dirt or damage on the sealing surfaces.
- Close the motor and limit switch cover again and slide the limit switch cover so far up until it latches into place.
- It is essential to seal the cable gland correctly.

4.2 Safety instructions for manual operation



CAUTION!

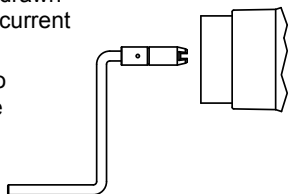
Observe the following safety instructions.

Failure to observe them can lead to bodily injuries!

- Manual operation is exclusively suitable for operating the door in the event of an emergency, e.g.: a mains failure. Operation of NHK or SHK drives with a drill, etc. is forbidden.
- Keep the crank handle in the immediate vicinity of the door so that it is easily accessible at all times.
- Switch off the circuit breaker (main switch) before manual operation.
- No more travel commands must be present or given.
- Manual operation may only be made with the motor stopped and switched off.
- Manual operation may only be made from a safe position.
- Do not move the door beyond its end positions during manual operation.
- Install the supplied wall chain holder so that the reel chain is not hanging in the moving area and does not represent a danger to persons or animals.

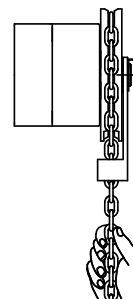
4.3 Using the crank handle

1. Remove the plug from the crankcase of the drive.
2. Insert the crank handle by pushing and turning slightly until it engages.
The control current is switched off.
The door can be opened or closed.
3. The crank handle must be withdrawn after operation and the control current is switched on again.
4. Fix the plug to the crankcase to ensure compliance with degree of protection IP 54/65.
The door can now again be operated electrically.



4.4 Operation with the haul chain

1. Pull the reel chain lightly up to the stop, the control current is switched off.
2. Then open or close the door.
3. After operating the reel chain, turn the reel wheel lightly back to its central position until the emergency crank handle switch switches the control current on again. The door can now again be operated electrically.





Changing the reel chain (round steel chain)

1. Open the reel chain on the closing link.
2. Remove some chain links.
or
Insert another round steel chain DIN 766 A4 x 16.
3. Close the closing link carefully.

The reel chain must not be twisted and **must** run easily on the reel wheel.

5. Service

5. Service

 	CAUTION!
	<p>Observe the following safety instructions. Failure to observe them can lead to bodily injuries!</p> <p>Risk of injury due to electrocution.</p> <ul style="list-style-type: none">• Switch off the drive for cleaning and maintenance.• Do not open the device housing.

5.1 Fault table

Design				
..M	..E	Fault	Cause	Remedy
•	•	Drive does not run	No voltage	Check the mains connection
•	•	Mains ok. Drive does not run	Operating limit switch overrun	Move manually inside the safety limit switch boundaries. Check the phase sequence
•	•	Safety limit switch ok. Drive does not run.	Emergency operation still active	Remove NHK – crank Pull SHK chain into a neutral position.
•	•	Drive is hot and does not run.	Temperature limiter is off	After cooling down the temperature limiter switches on again automatically.
•	•	End position is passed or not reached.	End position not set	Set end positions.

5.2 Notes on repair

Please contact us if you are unable to eliminate a problem.
When contacting our service team, please always state the article name and number from the type plate.

When sending in the device for repair, please state the following:

- Item number
- Item description
- Application site of the drive
- Name of the connected controller
- Type of fault
- Accompanying conditions
- Own presumption
- Previously occurring unusual events

Repair address:

elero GmbH
Antriebstechnik
Linsenhofer Straße 59–63
D-72660 Beuren
Phone (0 70 25) 13-01
Fax (0 70 25) 13-212
www.elero.com

Please visit us on the Internet if you require a contact outside Germany.

5.3 Disposal

Please observe the current national regulations.
Dispose of according to the condition and existing regulations.
e.g. as:

- Electrical scrap (PCB)
- Plastic (Housing parts)
- Sheet metal
- Copper

6. EC Declaration of conformity

EC DECLARATION OF CONFORMITY

We hereby declare that the following mentioned product/s meet/s the Machinery Directive 2006/42/EC.

Product designation: **Chain wheel rolling door drive**

- DKM (-ZE) 170, 250, 350, 400, 500, 750 with NHK / SHK
- WKM (-ZE) 170, 200 with NHK / SHK

Description: Shaft mounted drive for operation of rolling doors with elero control units

The conformity of the above mentioned products with the relevant health and safety requirements is taken into account by the following directives and standards:

- EMC Directive 2004/108/EC
 - DIN EN 61000-3-2 (VDE 0838-2):2006
 - DIN EN 61000-3-3 (VDE 0838-3):1995
 - DIN EN 55014-1 (VDE 0875-14-1):2006
 - DIN EN 55014-2 (VDE 0875-14-2):1997
- Low Voltage Directive 2006/95/EC
 - DIN EN 60335-1 (VDE 0700-1):2007
 - DIN EN 60335-1/A13 (VDE 0700-1/A13):2009
 - DIN EN 60335-2-103 (VDE 0700 Teil 103):2003
 - DIN EN 62233 (VDE 0700-366):2008
 - DIN EN 62233 (VDE 0700-366 Ber. 1):2009
- RoHS Directive 2006/95/EC
- DIN EN 12453:2001
- DIN EN 12604:2000

Beuren, 14.10.2011



Ulrich Seeker
-CE Manager-, -Representative documentation -