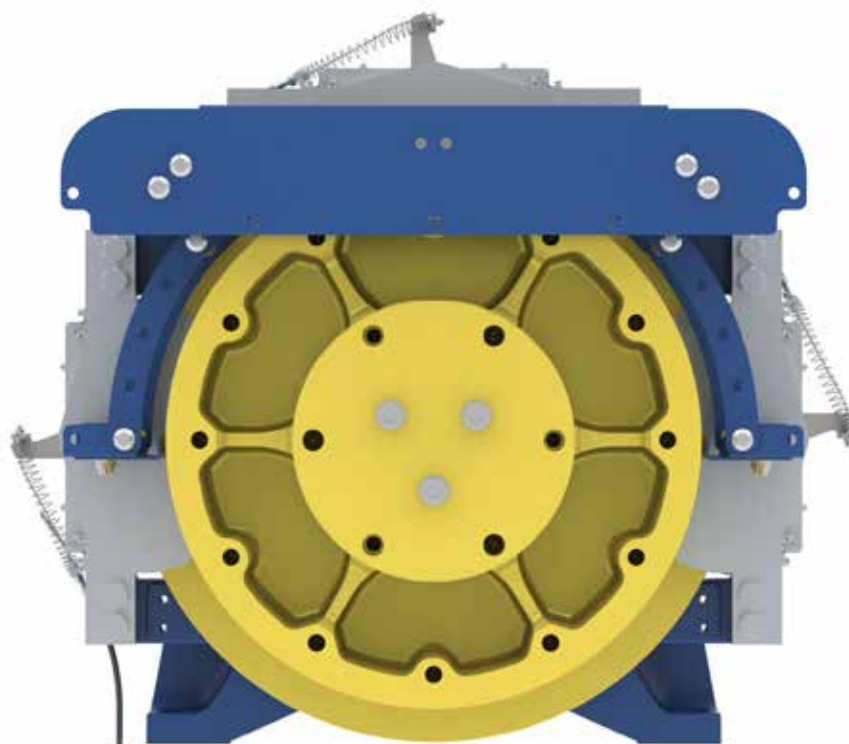


Movement by Perfection



ZAtop

SM315.100A

Bowden cable system

Issue 2025/13

Assembly instructions
Store for future use!

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1 Introduction

1.1 Liability

Compliance with the following specifications serves to ensure product safety. Should the information specified especially with regard to general safety, transport, storage, assembly, operating conditions, start-up, service, maintenance, cleaning and disposal/recycling not be observed, safe operation of the product may not be guaranteed posing a possible danger to life and limb of users and third parties. Thus, deviations from the specifications below can lead to the loss of legal materials defect liability as well as to the buyer's liability for the product rendered unsafe by deviation from the specifications.

1.2 Validity and scope of the instructions

These installation instructions serve as a supplement and do not replace the original operating instructions for the elevator machine.

These instructions only apply to the product of ZIEHL-ABEGG SE and not to the complete system. If additional devices are used or installed, the relevant instructions must be observed.

The instructions provide instructions for safe work.

1.3 Target group of the instructions

The target group of these instructions is transport personnel, fitters who have been instructed in mechanical and electrical engineering, electricians, electrically instructed personnel, start-up and maintenance personnel, see *Requirements placed on the personnel, page 3*.

1.4 Applicable documents

Observe the following documents for instructions:

- Order confirmation
- Design
- Instructions for the elevator machine

2 Safety instructions

2.1 Intended use

The product is not ready for use, but rather designed as a component of the elevator machine.

The instructions are part of the product. The product is only intended for use according to these instructions.

2.2 Requirements placed on the personnel

The client of the required measures in the product life cycle is responsible for ensuring that the personnel carrying out the work are sufficiently qualified.

Personnel	Minimum requirements, knowledge and experience
Planners and project designers	They are responsible for the project planning of the complete system. They have knowledge of applicable standards, legal requirements and safety regulations.
Transport personnel	They can deal safely with industrial trucks, loads and transport regulations. They can identify and avoid hazards that can occur when transporting the product. They have also been instructed and trained in the necessary protective equipment and protective measures to use.

Personnel	Minimum requirements, knowledge and experience
Assembly personnel	They can deal safely with tools, loads and assembly instructions. They can identify and avoid hazards during assembly of the product. They have also been instructed and trained in the necessary protective equipment and protective measures to use.
Electrician	<p>They have technical training in the field of electrical engineering. They can identify and avoid hazards associated with electricity. They have also been instructed and trained in the necessary protective equipment and protective measures to use.</p> <p>They comply with the technical regulations and have the following electrotechnical knowledge:</p> <ul style="list-style-type: none"> ▫ Read and fully understand electronic connection diagrams. ▫ Understand all relationships regarding the safety devices. ▫ Are familiar with the function and design of the electrical components used.
Electrically trained personnel	Personnel instructed or supervised by a qualified electrician. They can identify and avoid hazards associated with electricity. They have been instructed in the assigned tasks and possible hazards in the event of improper conduct. They have also been instructed and trained in the necessary protective equipment and protective measures to use.
Start-up technician	They handle the entire system safely. They can identify and avoid hazards that may occur during start-up. They have also been instructed and trained in the necessary protective equipment and protective measures to use.
Maintenance personnel	They handle the entire system safely. They can identify and avoid hazards that may occur during service and maintenance. They have also been instructed and trained in the necessary protective equipment and protective measures to use. They can detect and avoid hazards associated with electricity.

2.3 Live parts

Touch live parts poses a risk of death due to electric shock.

- ▷ Do not touch connection points of wires, terminal points, parts of the motor winding, or the capacitor.
- ▷ Disconnect the product from the power supply before carrying out any work and secure it against being switched back on.
- ▷ The safe isolation from the supply must be checked using a two-pole voltage detector.
- ▷ Do not insert objects or limbs through openings.
- ▷ Use the product according to the IP degree of protection.
- ▷ Check the product for damage; do not use the product if the insulation is defective.

2.4 Protect the product from contamination

Contamination on the product and safety-relevant components can lead to serious injuries.

- ▷ Protect the product from dust, dirt, welding work and water. Cover the product when working in or on the elevator.
- ▷ Remove any assembly residue in the machine room or elevator shaft.
- ▷ Do NOT expose the brakes and traction sheave to lubricants; in particular, the rotor braking surface and the grooves of the traction sheave must be clean.
- ▷ DO NOT clean electrical components, e.g. microswitches, with water or other liquids.

2.5 Modifications and spare parts

Unauthorised modifications and unauthorised spare parts can lead to serious injuries.



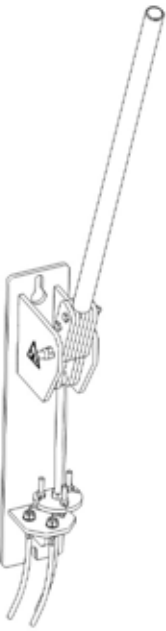
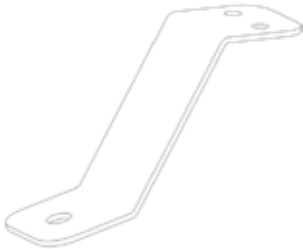
- ▷ Do not modify the product.
- ▷ Before making changes, obtain written approval from ZIEHL-ABEGG SE.
- ▷ Use spare parts from ZIEHL-ABEGG SE.

2.6 Do not disassemble components

Dismantling components can cause serious injury.

- ▷ DO NOT remove or decommission any components, e.g. traction sheave cover, brake release monitoring.

3 Scope of delivery

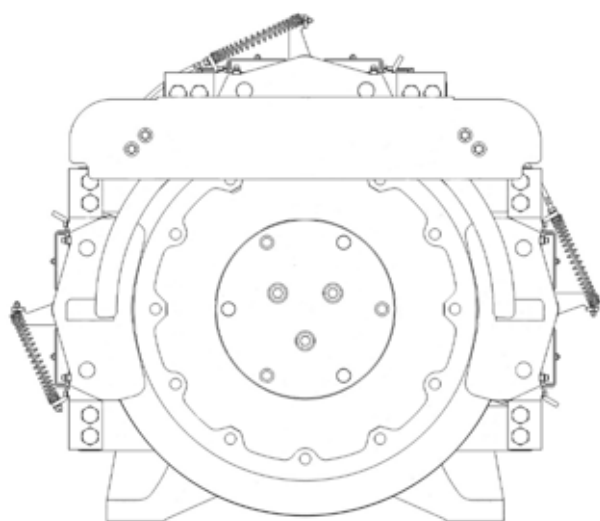
Designation	Figure	Number
Hand release unit		1
Bowden cable 5 m		3
Compression spring		3
Bowden cable guide without forced ventilation		2
Bowden cable guide		1
Cylinder head safety screw M5 x 10 - 100		2
Hexagon head screw M12 x 100 - 8.8		1

Designation	Figure	Number
Hexagon nut, M10 - 8		6
Hexagon nut, M8 - 8		6
Hexagon nut, M6 - 8		6
Hexagon nut with clamping part M12 - 8 NSS min. 400h		1
Hexagon nut with clamping part M8 - 8 NSS min. 200h		3
Washer, 12 - 200 HV		2
Washer, 10 - 200 HV		6
Washer, 8 - 200 HV		6
Washer, 6 - 200 HV		6
Fixed anchor, W-FAZ / S M12 x 85		2
Cable tie, 4.8 x 188 mm		5

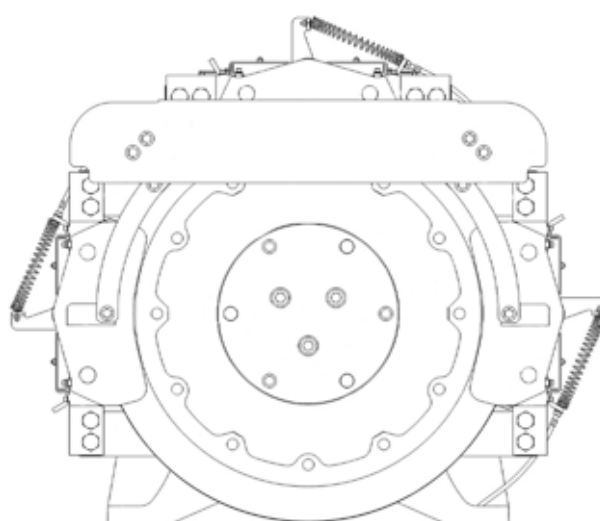
4 Product overview

4.1 Bowden cable

Example:



Bowden cable mounted on left



Bowden cable mounted on right

5 Installation

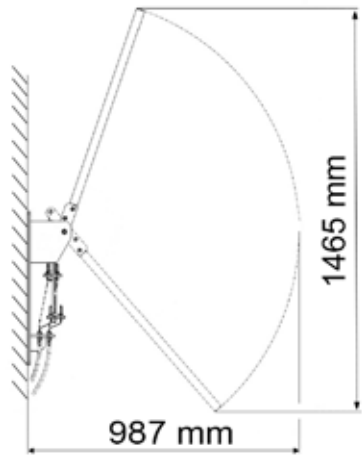
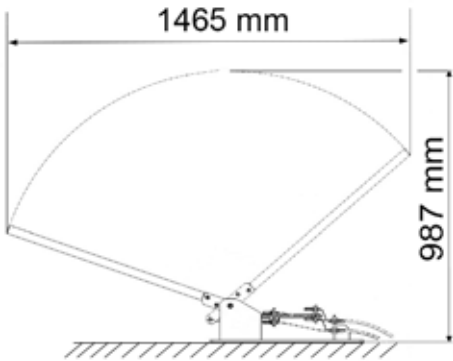
Personalqualifikation: Montagepersonal

5.1 Installing the hand release unit

Procedure:

Fasten the hand release unit to the wall or floor with the 2 heavy-duty anchors HSA M12 20/5/- with a dowel length of 100 mm from the scope of delivery:



Wall installation dimensions:	Floor installation dimensions:
	
-Lever stroke 1465 mm -Distance to the front 987 mm	-Lever stroke 1465 mm -Distance upwards 987 mm

Mount heavy-duty anchors according to the instructions in the system, see *Data sheet for fixed anchor W-FAZ/S M12 x 85, page 16*.

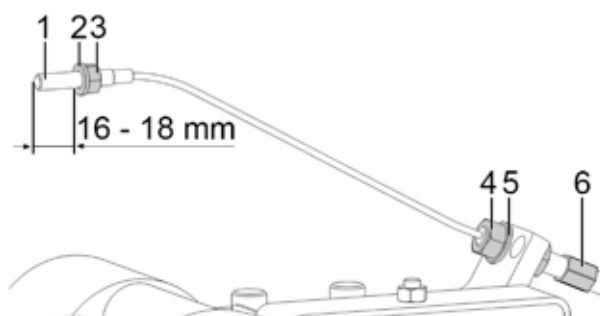
5.2 Mounting the Bowden cable on the brake

ATTENTION Material damage due to damage to the Bowden cable.

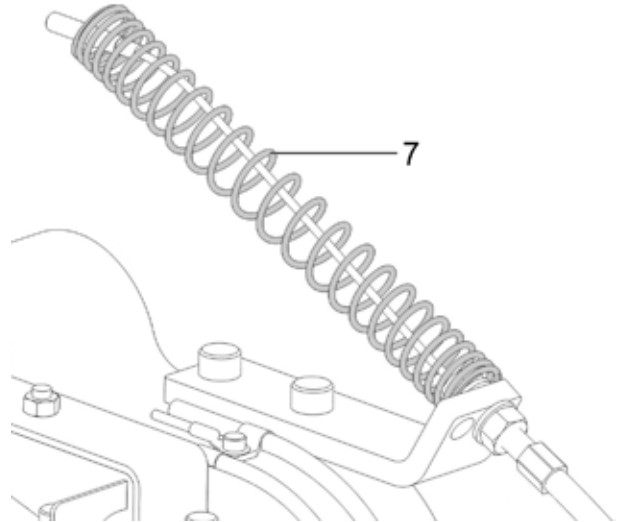
- ▷ Make sure the Bowden cable does not fall below the minimum bending radius of 300 mm.
- ▷ Lay the Bowden cable with a maximum of 3 bends, which must be 90° or greater.
- ▷ Do not twist the Bowden cable.

Procedure:

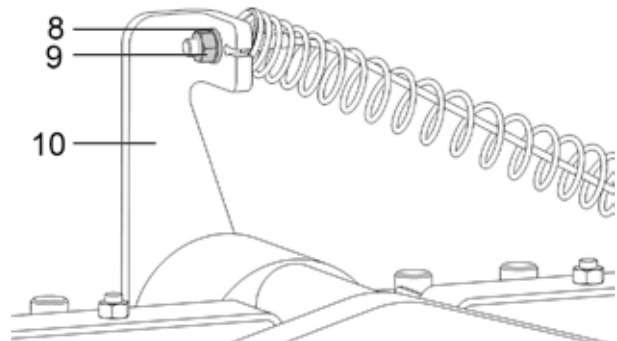
1. Screw the M8 nut (4) and a washer (5) hand tight onto the M8 threaded hose socket (6).
2. Guide the Bowden cable through the borehole on the mounting bracket on the housing and screw on with washer (5) and M8 nut (4) to 15 Nm.
3. Screw an M6 nut (3) with a washer (2) hand tight onto the M6 threaded bar (1). The distance from the start of the threaded bar (1) to the washer (2) is 16 mm to 18 mm.



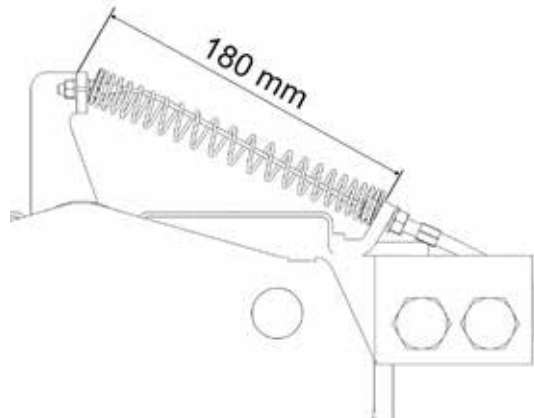
4. Pull the Bowden cable through the compression spring (7).



5. Guide Bowden cable through borehole on the brake lever (10) and allow the end of the threaded bar to protrude by 3 to 5 mm.
6. Screw the washer (8) and nut (9) onto the Bowden cable with a tightening torque of 8 Nm.



7. Adjust the distance to 180 mm between the upper edge of the brake lever and the upper edge of the Bowden cable mounting bracket.



ATTENTION! Material damage due to insufficient distance

- ▷ First check that the Bowden cable engages easily and readjust.
- ▷ Secondly, remove the hand release unit.
- ▷ Finally, take the elevator system out of operation and ZIEHL-ABEGG SE contact.

8. Install the two other Bowden cables in the same way as the first one.

5.3 Installing the Bowden cable to the hand release unit

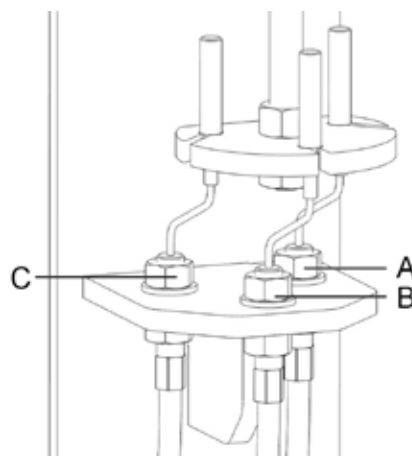
Procedure:

1. Connecting the Bowden cables to the hand release unit:

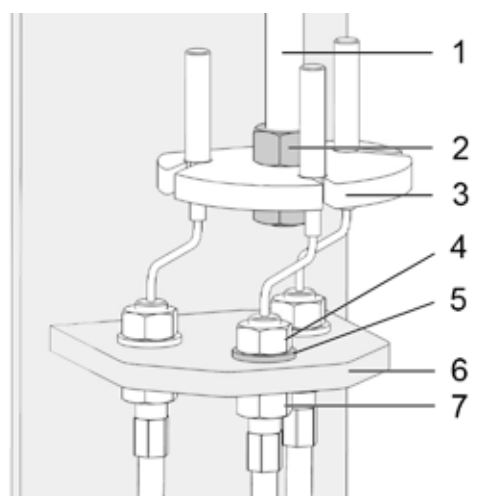
Right brake (A) on the right side.

Upper brake (B) in the middle.

Left brake (C) on the left side.



2. Screw the M10 nuts (7) with washers (5) onto the Bowden cables.
3. Insert the Bowden cables through the holes in the hand release unit.
4. Screw the nuts (4) with washers (5) to the Bowden cables with 25 Nm.
5. Join the plate (3) with the eye bolt (1) and screw on nuts (2).



6. Fit the self-locking M8 nuts (8) and screw them hand tight up to the arrester.
7. Hook in all Bowden cables.



5.4 Laying the Bowden cable

Looking at the traction sheave

Elevator machine with forced ventilation

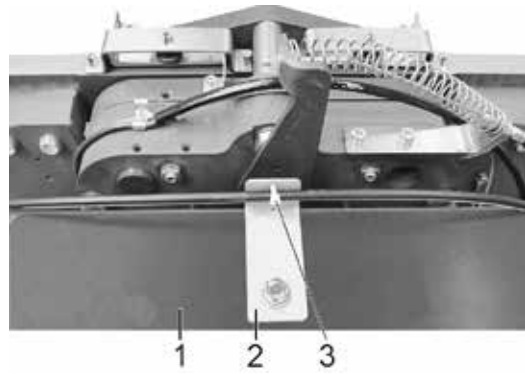
Procedure:

1. Screw the fixing bracket (2) onto the forced ventilation (1) with an M8 screw.

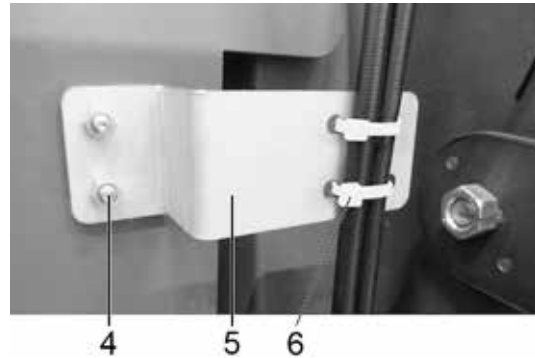
CAUTION! Risk of injury from sharp edges and cut-off cable ties.

▷ Wear safety gloves.

2. Fasten the Bowden cable for the right brake to the upper fixing bracket with a cable tie (3).



3. Screw the fixing bracket (5) onto the left side with 2 M5 screws (4).
4. Fasten the Bowden cable for the right and upper brake to the fixing bracket on the left-hand side with 2 cable ties (6).



Elevator machine without forced ventilation

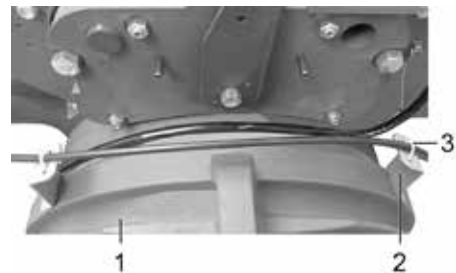
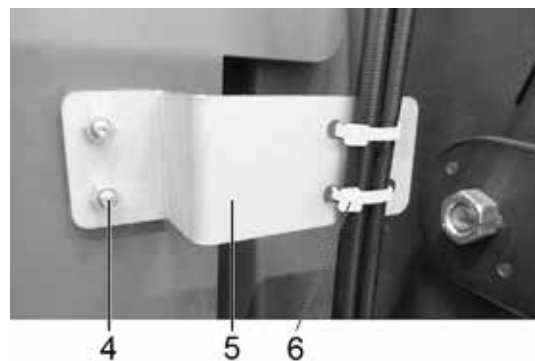
Procedure:

1. Screw the fixing bracket (2) onto the housing (1) with an M8 screw.

CAUTION! Risk of injury from sharp edges and cut-off cable ties.

▷ Wear safety gloves.

2. Fasten the Bowden cable for the right brake to the fixing bracket with a cable tie (3).
3. Secure the fixing bracket (5) onto the left side with 2 M5 screws (4).
4. Fasten the Bowden cable for the right and upper brake to the fixing bracket on the left-hand side with 2 cable ties (6).



5.5 Adjusting the hand release unit

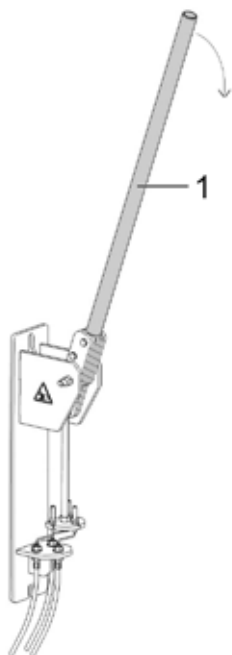
ATTENTION Material damage due to brake failure.

▷ Check the setting of the hand release unit after installation and each time the hand release system is used.

Prerequisite:

- Place the tube extension (1) onto the lever and actuate the hand release unit up to the arrester.

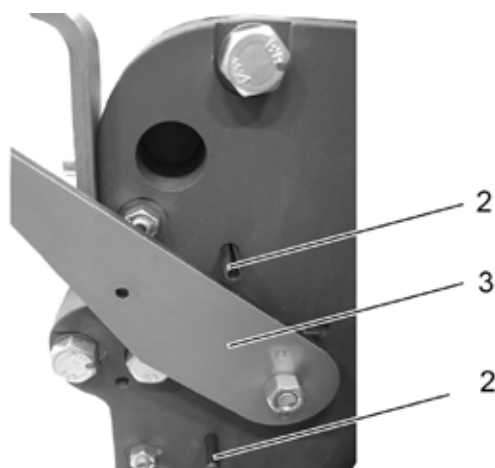




Procedure:

1. To release all 3 brakes equally, check the cable length of the Bowden cables on the brakes.

Maximum distance between lever (3) and mechanical arrester (2) 1 to 2 mm.



2. The distance between the lever (3) and the mechanical arrester (2) must be the same on all 3 brakes.

Use the nuts (5) on the brake lever press-in piece to make minor corrections to the distance.

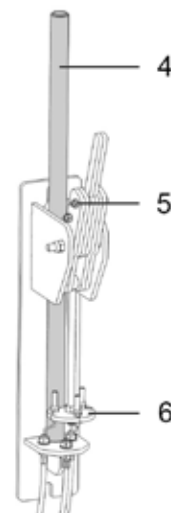
Make corrections to the distance on all 3 brakes via the plate (6) to the M12 eye bolts.

3. After releasing the brake, create an end stop on the Bowden cable lever.

Create an end stop at the first point where the brake is fully released.

4. Adjust the length of the Bowden cable which, after releasing the brake, swivels the hand release unit back to the non-released neutral position.

5. Insert the tube extension (4) back into the hand release unit after use.



6 Start-up

6.1 Checking the hand release function

⚠ DANGER

Risk of death due to incorrectly installed Bowden cable system.

- ▷ After releasing the brake, fit the Bowden cable lever with an end stop.
At the first point where the brake is fully released, fit the end stop to the Bowden cable lever.
- ▷ The release lever must swivel back to the neutral position after releasing the brakes.
Adjust the Bowden cable system length.

⚠ WARNING

Risk of injury from uncontrolled load movement.

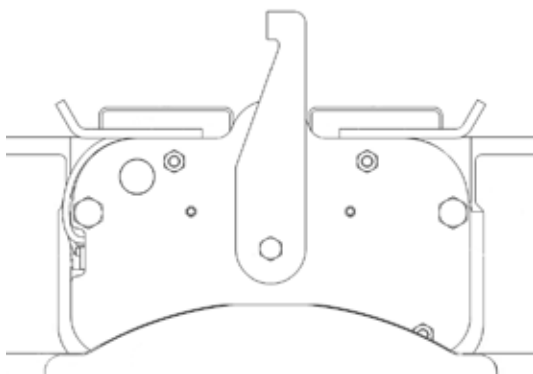
- ▷ Carefully open the mechanical hand release system.
- ▷ Observe the car movement.

ATTENTION Material damage due to permanently open brakes

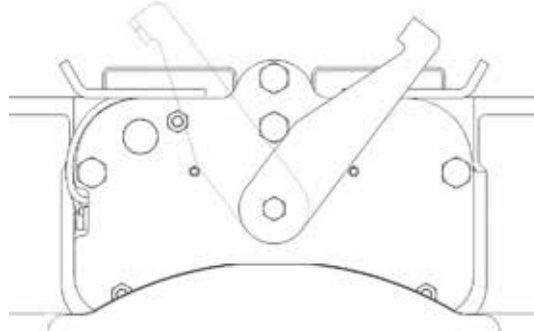
- ▷ DO NOT release the brakes permanently.

Maximum force on the brake lever: 300 N

Mechanical release lever for the RSD9 brake



Unreleased neutral position



Final position

Prerequisite:

- A Bowden cable system is installed and moves easily.

Procedure:

1. Carefully swivel the mechanical release levers for the Bowden cable to the right or left. Only actuate the manual release lever until the car starts moving.
Observe the car movement during the release process. If the speed of the car is too high, stop the release process.



2. Swivel the mechanical release levers for the Bowden cable back to the non-released neutral position, e.g. with the Bowden cable system from ZIEHL-ABEGG or a suitable return spring.

7 Disposal



- ▷ Dispose of the product professionally and in an environmentally friendly way in accordance with the respective national legal stipulations.
- ▷ Separate the materials by type and in an environmentally-friendly way.
- ▷ If necessary, employ a specialised contractor to handle the disposal.

8 Technical data

Technical drawing of a 3-phase asynchronous motor, showing front, side, and detail views. The motor is labeled "3-Phase Asynchronous Motor" and "Type Y".

Dimensions:

- Overall length: 1000 mm
- Frame height: 150 mm
- Flange diameter: 150 mm
- Flange thickness: 10 mm
- Flange hole diameter: 10 mm
- Flange hole pitch: 100 mm
- Flange hole offset: 10 mm
- Flange hole diameter: 10 mm
- Flange hole pitch: 100 mm
- Flange hole offset: 10 mm
- Flange hole diameter: 10 mm
- Flange hole pitch: 100 mm
- Flange hole offset: 10 mm

Callouts:

- 1. 3-Phase Asynchronous Motor
- 2. Type Y
- 3. 3-Phase Asynchronous Motor
- 4. Type Y
- 5. 3-Phase Asynchronous Motor
- 6. Type Y
- 7. 3-Phase Asynchronous Motor
- 8. Type Y
- 9. 3-Phase Asynchronous Motor
- 10. Type Y
- 11. 3-Phase Asynchronous Motor
- 12. Type Y
- 13. 3-Phase Asynchronous Motor
- 14. Type Y
- 15. 3-Phase Asynchronous Motor
- 16. Type Y
- 17. 3-Phase Asynchronous Motor
- 18. Type Y
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- 20. Type Y
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- 84. Type Y
- 85. 3-Phase Asynchronous Motor
- 86. Type Y
- 87. 3-Phase Asynchronous Motor
- 88. Type Y
- 89. 3-Phase Asynchronous Motor
- 90. Type Y
- 91. 3-Phase Asynchronous Motor
- 92. Type Y
- 93. 3-Phase Asynchronous Motor
- 94. Type Y
- 95. 3-Phase Asynchronous Motor
- 96. Type Y
- 97. 3-Phase Asynchronous Motor
- 98. Type Y
- 99. 3-Phase Asynchronous Motor
- 100. Type Y

8.2 Legend for dimension sheet

1	<i>Grooves represented schematically</i>
8	<i>Encoder</i>
50	<i>Bowden cable</i>
51	<i>Minimum bending radius 300 mm</i>
52	<i>Released position</i>
53	<i>Starting position</i>

56	<i>Whenever performing maintenance, the functioning of the lever for hand release must be checked.</i>
57	<i>Bowden cable length, max. 5 m Allowed number of bends 3 x 90°</i>
58	<i>Levers for hand release</i>
59	<i>See motor dimension sheet</i>
60	<i>Additional plate for Bowden cable guide</i>

8.3 Data sheet for fixed anchor W-FAZ/S M12 x 85



W-FAZ/S FIXING ANCHOR

02.5

Performance data																
Anchor diameter [in mm]				M8		M10		M12		M16		M20	M24	M27		
Standard anchoring depth/ Reduced anchoring depth				h _{ef} /h _{ef,red} [mm]		46	35 ³⁾	60	40	70	50	85	65	100	115	125
Perm. centered tensile load ¹⁾ of a single anchor with no edge influence	Tensile zone (cracked concrete C20/25 ²⁾ , s ≥ 3 h _{ef} , c ≥ 1.5 h _{ef})			N _{perm} [kN] = C20/25 ²⁾		2.4	2.4	4.3	3.6	7.6	6.1	11.9	9.0	17.1	21.1	24.0
	Pressure zone (uncracked concrete C20/25 ²⁾ , s _{cr,sp} and c _{cr,sp} see approval					5.7	3.6	7.6	4.3	11.9	8.5	16.7	12.6	24.0	29.7	33.6
Perm. trans- verse load ¹⁾ of one individual anchor with no edge influence	Tensile zone (cracked concrete C20/25 ²⁾ , c ≥ 10 h _{ef})			V _{perm} [kN] = C20/25 ²⁾		7.0	7.0	11.5	10.4	17.1	14.5	31.4	21.6	37.1	59.2	67.1
	Pressure zone (uncracked concrete C20/25 ²⁾ , c ≥ 10 h _{ef})					7.0	7.0	11.5	11.5	17.1	17.1	31.4	30.2	37.1	65.1	94.1
Permissible bending torque				M _{perm} [Nm]		13.1	13.1	26.9	26.9	46.9	46.9	123.4	123.4	195.0	513.1	760.9
Permissible load under fire load (R30, R60, R90, R120) see European Technical Approval ETA-99/0011																
Fire resistance	F30 [kN]					2.0	-	5.6	-	9.0	-	16.0	-	-	-	-
	F60 [kN]					1.0	-	2.2	-	3.5	-	7.0	-	-	-	-
	F90 [kN]					0.65	-	1.3	-	2.0	-	4.3	-	-	-	-
	F120 [kN]					0.5	-	0.8	-	1.3	-	3.0	-	-	-	-

Characteristic values																								
Anchor diameter [mm]				M8		M10		M12		M16		M20	M24	M27										
Standard anchoring depth/ Reduced anchoring depth		$h_{ef}/h_{ef,red}$ [mm]		46	35 ³⁾	60	40	70	50	85	65	100	115	125										
Setting depth		h_{nom} [mm]		52	41	68	48	80	60	97	77	114	133	146										
Axial spacing		$s_{ax,N}$ [mm]		138	105	180	120	210	150	255	195	300	345	375										
Edge spacing		$c_{ax,N}$ [mm]		69	52.5	90	60	105	75	127.5	97.5	150	172.5	187.5										
Standard component thickness		$h_{std} \geq$ [mm]		100	-	120	-	140	-	170	-	200	230	250										
Minimum axial spacing		$s_{min} \geq$ [mm]		40	40	-	-	45	45	-	-	60	60	-	60	65	-	95	90	100	100	125	125	
Cracked concrete	Uncracked concrete	for $c \geq$ [mm]		70	80	-	-	70	70	-	-	100	120	-	-	150	180	180	180	300	300	300	300	
Minimum edge spacing		$c_{min} \geq$ [mm]		40	50	-	-	45	50	-	-	60	75	-	-	60	80	-	95	130	100	180	180	
Cracked concrete	Uncracked concrete	for $s \geq$ [mm]		80	100	-	-	90	100	-	-	140	150	-	-	180	150	-	200	240	220	220	540	540
Minimum component thickness		$h_{min} \geq$ [mm]		80	80	100	80	120	100	140	140	-	-	-	-	-	-	-	-	-	-	-	-	
Minimum axial spacing		$s_{min} \geq$ [mm]		40	40	50	50	45	60	50	60	50	70	80	65	65	-	-	-	-	-	-	-	
Cracked concrete	Uncracked concrete	for $c \geq$ [mm]		70	80	60	60	90	140	100	100	100	120	160	160	160	180	170	170	-	-	-	-	
Minimum edge spacing		$c_{min} \geq$ [mm]		40	50	40	40	50	90	65	65	60	75	65	100	80	90	100	170	-	-	-	-	
Cracked concrete	Uncracked concrete	for $s \geq$ [mm]		80	100	185	185	115	140	180	180	140	150	250	185	180	200	250	65	-	-	-	-	
Nom. drill dia.		d_0 [mm]		8	10	10	12	12	16	20	24	28	28	30	30	30	30	30	30	30	30	30	30	
Drill cutting edge dia.		$d_{cut} \leq$ [mm]		8.45	10.45	12.5	16.5	20.55	24.55	28.55	30	30	30	30	30	30	30	30	30	30	30	30	30	
Drill hole depth		h_1 [mm]		60	49	75	55	90	70	110	90	125	145	160	160	160	160	160	160	160	160	160	160	
Through-hole in the component being connected		$d_t \leq$ [mm]		9	12	14	18	22	26	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
Torque for anchoring		$T_{inst} =$ [Nm]		20	25	45	90	160	200	300	300	300	300	300	300	300	300	300	300	300	300	300	300	

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Würth system components

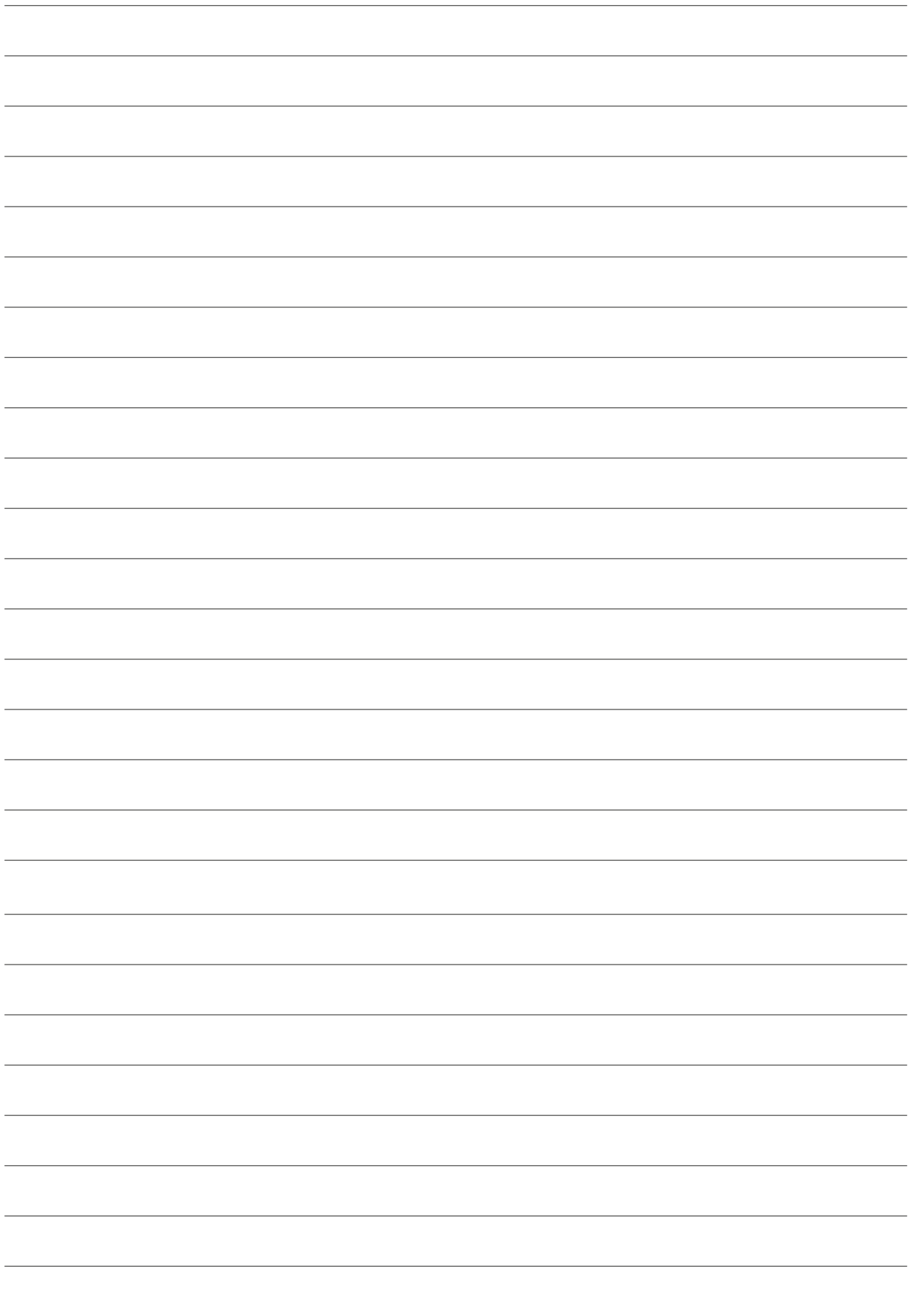


¹⁾ The partial safety coefficients of the resistances regulated in the approval and a partial safety coefficient of the effects of γ_f = 1.4 have been taken into account. For the combination of tensile and transverse loads, for edge influence and anchor groups, please refer to the Guideline for European Technical Approval (ETAG), Appendix C.
²⁾ The concrete has normal reinforcement. Higher values are possible for higher concrete strengths.
³⁾ Use is limited to the anchoring of statically undefined systems.



[illegible]

[illegible]



The Royal League

Service

+49 7940 16 308

drives-service@ziehl-abegg.de

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