

TECHNICAL DATA

CHAIN HOIST ATHLO *chain*



ORIGINAL INSTRUCTIONS

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1 UPDATE HISTORY

Section	Changes	Date	Handled by
All	New document created	11/2019	ISOTAPA
3.1, 3.5, 3.6, 3.7, 3.8, 3.9.2 , 4.1, 4.2, 4.3.3, 4.4, 4.5.1, 4.5.3, 4.7.3, 4.7.4, 4.8.1, 4.8.4, 4.8.5, 5.2	First update release Technical information updated in the following chapters, 1-speed configuration added: <ul style="list-style-type: none"> • Product code example for chain hoist: Corrections and additions to values • Product range: Corrections, 1-speed data added • Product features: Corrections, updated details • Weights of the chain hoist: Corrections to the hoist and chain weights • Materials and coatings: Internal information removed, column 'Norm' removed • Lubricants for the chain hoist: Updates to lubricant types and fill amounts • Motor of the chain hoist: 60 Hz data and 1-speed motors added • Gear of the chain hoist: 60 Hz speeds added • Brake coil voltages and resistance: Corrections and updates • Slipping clutch: Updated data, new view for size 02-05 • Pendant controller: Note about magnets added • Hand control on hook (option): Corrections to technical data • Chain: Chain technical data updated, DAT chain data added • Chain bucket: Corrections to chain bucket DIM data • Standard hook: Corrections to hook DIM data • Single fall hook blocks: Corrections to hook DIM data • Two-fall hook blocks: Corrections to hook DIM data • Wiring principle: 1-speed configuration added. 	06/2021	ISOTAPA/XJAUHIJA
3.1, 3.4, 3.5, 3.7, 4.1, 4.2	AME release <ul style="list-style-type: none"> • Imperial (IMP) conversion added for the document (all relevant chapters) • Data in imperial (IMP) units or in 60 Hz added to the following chapters: <ul style="list-style-type: none"> ◦ Product code example: Loads in short tons (ston) ◦ Load range and duty classes: ASME rating ◦ Product range: AME range, speeds in ft/min, power in HP, temperatures in F ◦ Weights of the chain hoist: Weights in lbs ◦ Motor of the chain hoist: Power in HP ◦ Gear of the chain hoist: Speeds in ft/min. 	06/2021	ISOTAPA

Section	Changes	Date	Handled by

2 INTRODUCTION

2.1 About these instructions

2.1.1 How to use these instructions

This manual presents the product range, features, and functional description of an electrical chain hoist, the ATHLO *chain* version.

This manual helps to provide the following:

- Range of use of the different hoist types, loads, and hoisting speeds
- Standards considered in the design of the product
- List of features available for the range of these hoists
- Technical details about the product

2.1.2 Copyright notice

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2.2 About this product

2.2.1 Design principles

Certifications, standards and other technical documents

The product fulfills the requirements of the following standards: Machine directive EC, ASME HST-1, ASME B30.16, and EN14492/2.

This product

- is in conformity with the relevant provisions of the Machinery Directive 2006/42/EC and EMC Directive 2004/108/EC
- has ASME duty rating up to H4 (ISO M4 – M6), depending on hoist type and hoisting speed ¹⁾ For information about ASME Hoist Duty Service Classification, see ASME publication catalog ASME HST-1M and ASME B30.16 (latest edition) for electric chain hoists
- is external sound level tested
- is RoHS compliant

¹⁾ For 60 Hz motors.

2.2.2 Sound pressure level

For the size AA–AC electrical chain hoists, the maximum noise level (of the chain hoist) does not exceed 70 dB at 1 m (3.3 ft) height.

3 PRODUCT DESCRIPTION

3.1 Product code example for chain hoist

C	05 (GE09)	(empty)	08 (SPD03)	01 (DES27)	050 (LOA01)	5 (DIM01)	N (DES01)	120	405 (ELE01)	E (EL04)	A (ELE02)/ (EL05)	080 (DIM02)
1-3	4, 5	6	7, 8	9, 10	11-13	14	15	16-18	19-21	22	23	24-26

Pos.	Code	Feature code	Feature	Available properties								
1-3			Short product name	ATHLO chain SWF								
4, 5	05	(GE09)	Frame size	02 AA 05 AB 10 AC			GE09 value NM02 NM05 NM10					
6				Empty space								
7, 8	08	(SPD03)	Hoisting speed (high)	04 4 m/min 06 6 m/min 08 8 m/min		SPD03 value 4 6 8			12 12 m/min 16 16 24 24 m/min		SPD03 value 12 16 24	
9, 10	01	(DES27)	Reeving system	01 1 x 1 falls, normal reeving 02 1 x 2 falls, normal reeving			DES27 value 01 02					
11-13	050	(LOA01)	Load	006 60 kg (1/16 ston) 012 125 kg (1/8 ston) 025 250 kg (1/4 ston) 032 320 kg 050 500 kg (1/2 ston) 080 800 kg 100 1000 kg (1 ston)		LOA01 value 60 125 250 320 500 800 1000			125 1250 kg (1 1/4 ston) 160 1600 kg (1 1/2 ston) 200 2000 kg (2 ston) 250 2500 kg (2 1/2 ston) 320 3200 kg 400 4000 kg 500 5000 kg (5 ston)		LOA01 value 1250 1600 2000 2500 3200 4000 5000	
14	5	(DIM01)	Hoist duty group	4 ISO M4 5 ISO M5 6 ISO M6 7 ISO M7			DIM01 value M4 M5 M6 M7					
15	N	(DES01)	Trolley type	N Normal headroom trolley L Low headroom trolley F Fixed hoist Y Push trolley			DES01 value N L F Y					
16-18	120		Beam width rating	Beam width in mm								
19-21	405	(ELE01)	Main voltage (voltage 1)	Main voltage 50 Hz (ELE03 = 50) 235 230 V 405 400 V 505 500 V		ELE01 value 230 400 500			Main voltage 60 Hz (ELE03 = 60) 206 208 V 236 230 V 406 400 V 466 460 V 576 575 V		ELE01 value 208 230 400 460 575	
22	E	(ELE04)	Electric norm	E IEC C CSA			ELE04 value IEC CSA					
23	A	(ELE02)/ (EL05)	Control voltage (voltage 2) (ELE02) / Electric provision (EL05)	A 48 V AC B 115 V AC C 230 V AC		ELE02 value 48 115 230			D ACF		EL05 value ACF	
24-26	080	(DIM02)	Height of lift	060 6 m 080 8 m 120 12 m 150 15 m		DIM02 value 6 8 12 15			160 16 m 300 30 m 500 50 m		DIM02 value 16 30 50	

3.2 Functional description of the chain hoist

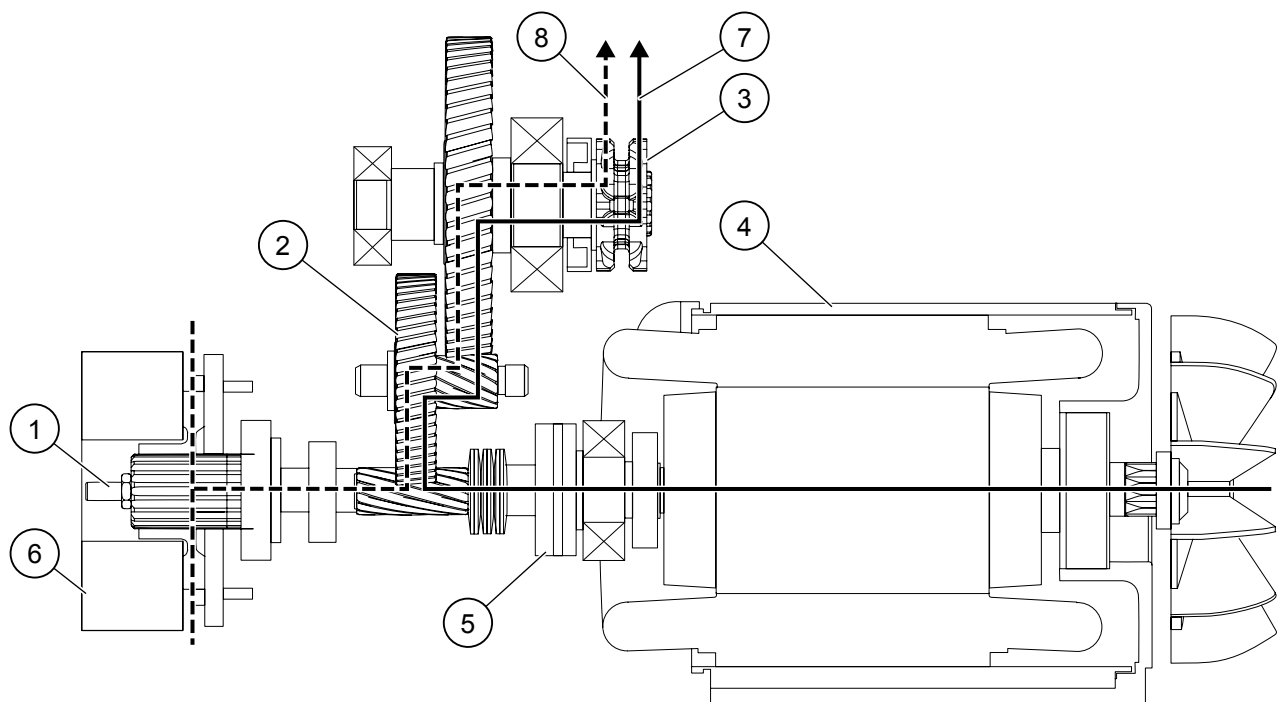


Figure 1. Kinematic chain of the electrical chain hoist

- | | |
|---------------------|--------------------|
| 1. Adjustment screw | 5. Slipping clutch |
| 2. Hoisting gear | 6. Hoisting brake |
| 3. Chain sprocket | 7. Motor torque |
| 4. Hoisting motor | 8. Brake torque |

3.3 Main parts of the electrical chain hoist

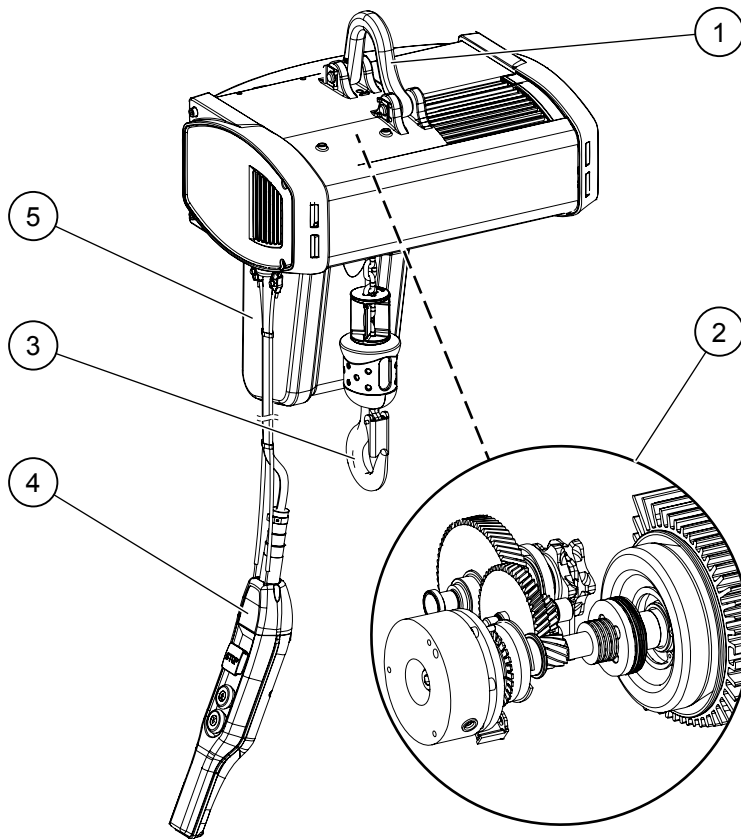


Figure 2. Main components of the electrical chain hoist

- | | |
|--|---|
| 1. Suspension bracket | 3. Hook |
| 2. Hoisting machinery (consists of hoist frame, hoisting motor, hoisting gear, and hoisting brake) | 4. Controller (pendant controller in the example) |
| | 5. Chain bucket |

3.4 Load range and duty classes

Hoist classifications

The mechanism group – M4, M5, M6, or M7 – of an electric chain hoist depends on the operating time per working day and on the class of load spectrum.

The hoist operating time (O_t) can be calculated by using the following formula:

$$O_t = \frac{2 \times \text{HOL(m)} \times \text{No. of cycles} \left(\frac{1}{h}\right) \times \text{working time} \left(\frac{h}{\text{day}}\right)}{60 \left(\frac{\text{min}}{h}\right) \times \text{lifting speed} \left(\frac{m}{\text{min}}\right) 60}$$

Figure 3. Hoist operating time (O_t) calculation

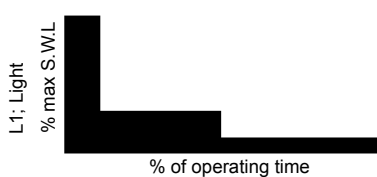
The actual load spectrum factor can be calculated using the following schema:

Load %	Lifting time %		Factor k³		Load spectrum factor
100%	<input type="text"/>	*	<input type="text" value="1"/>	=	<input type="text"/>
	+				

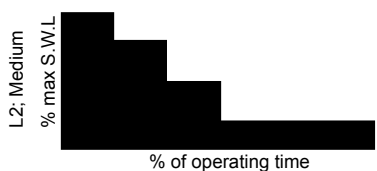
80%		*	0.51	=	
	+				
60%		*	0.22	=	
	+				
40%		*	0.06	=	
	+				
20%		*	0.01	=	
	+				
0%		*	0	=	
	=				
Sum:	100%				
				Sum :	
			Divide by 100:		/100 =
			Load spectrum factor, km:		

Class of load spectrum	Load spectrum km
L1	$km \leq 0.125$
L2	$0.125 < km \leq 0.250$
L3	$0.250 < km \leq 0.500$
L4	$0.500 < km \leq 1$

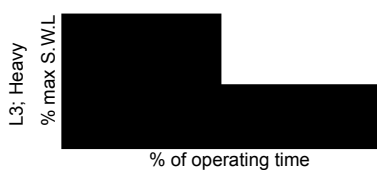
Load spectrum classes



L1 Light
Mainly operated at very low loads and in exceptional cases at maximum loads.

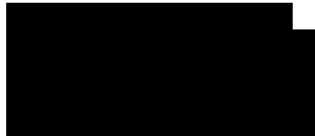


L2 Medium
Operated continually at low loads and frequently at maximum loads.



L3 Heavy
Operated continually at medium loads and frequently at maximum loads.

L4; Very heavy
% max S.W.L



L4 Very heavy

Operated regularly at maximum and at almost maximum loads.

% of operating time

Load spectrum		Average operating time (O _t) per working day [hrs]			
L1	Light	1 < O _t ≤ 2	2 < O _t ≤ 4	4 < O _t ≤ 8	8 < O _t ≤ 16
L2	Medium	0.5 < O _t ≤ 1	1 < O _t ≤ 2	2 < O _t ≤ 4	4 < O _t ≤ 8
L3	Heavy	0.25 < O _t ≤ 0.5	0.5 < O _t ≤ 1	1 < O _t ≤ 2	2 < O _t ≤ 4
L4	Very heavy	0.12 < O _t ≤ 0.25	0.25 < O _t ≤ 0.5	0.5 < O _t ≤ 1	1 < O _t ≤ 2
FEM/ISO/ASME rating		1Bm / M3 / H2	1Am / M4 / H3	2m / M5 / H4	3m / M6 / H4

The following table shows the theoretical service lifetime for the available FEM, ISO, and ASME ratings.

Load spectrum		Theoretical service life [hrs]			
L1	Light	3150	6300	12500	25000
L2	Medium	1600	3200	6300	12500
L3	Heavy	800	1600	3200	6300
L4	Very heavy	400	800	1600	3200
FEM/ISO/ASME rating		1Bm / M3 / H2	1Am / M4 / H3	2m / M5 / H4	3m / M6 / H4

3.5 Product range

Load [kg]	Frame size	Falls	Duty group ISO	Chain size	Motor type	Power HS [kW]	Lifting speed [m/min]				Max. amb. temp. [°C] 1), 2), 3), 4)
							50 Hz		60 Hz		
							HS	LS	HS	LS	
63	AA	1	M6	4.1 x 12.1	MT06NB104	0.36	8	2	9.6	2.4	40
	AA	1	M6	4.1 x 12.1	MT06NB104	0.36	12	3	14.4	3.6	40
	AA	1	M6	4.1 x 12.1	MT06NB104	0.36	16	4	19.2	4.8	40
125	AA	1	M6	4.1 x 12.1	MT06NB100	0.36	6	-	7.2	-	40
	AA	1	M6	4.1 x 12.1	MT06NB104	0.36	8	2	9.6	2.4	40
	AA	1	M6	4.1 x 12.1	MT06NB104	0.36	12	3	14.4	3.6	40
160	AA	1	M5	4.1 x 12.1	MT06NB104	0.36	16	4	19.2	4.8	40
	AA	1	M6	4.1 x 12.1	MT06NB104	0.36	8	2	9.6	2.4	40
	AB	1	M5	5.1 x 15.1	MT08NB104	0.72	12	3	14.4	3.6	40
250	AA	1	M6	4.1 x 12.1	MT06NB104	0.36	8	2	9.6	2.4	40
	AA	1	M5	4.1 x 12.1	MT06NB100	0.36	6	-	7.2	-	40
	AB	1	M4	5.1 x 15.1	MT08NB104	0.72	12	3	14.4	3.6	40
320	AB	1	M5	5.1 x 15.1	MT08NB104	0.72	4	1	4.8	1.2	40
	AB	1	M6	5.1 x 15.1	MT08NB104	0.72	8	2	9.6	2.4	40
	AB	1	M5	5.1 x 15.1	MT08NB104	0.72	16	4	19.2	4.8	40
500	AB	1	M5	5.1 x 15.1	MT08NB104	0.72	4	1	4.8	1.2	40
	AB	1	M5	5.1 x 15.1	MT08NB104	0.72	8	2	9.6	2.4	40
	AC	1	M6	7.2 x 21.1	MT10NA104	1.80	4	1	4.8	1.2	40
630	AC	1	M6	7.2 x 21.1	MT10NA104	1.80	8	2	9.6	2.4	40
	AC	1	M5	7.2 x 21.1	MT10NA104	1.80	16	4	19.2	4.8	40
	AB	2	M5	5.1 x 15.1	MT08NB104	0.72	4	1	4.8	1.2	40
1000	AC	1	M4	7.2 x 21.1	MT10NA104	1.80	16	4	19.2	4.8	40
	AB	2	M5	5.1 x 15.1	MT08NB200	0.40	2	-	2.4	-	40
	AB	2	M5	5.1 x 15.1	MT08NB104	0.72	4	1	4.8	1.2	40
1000	AC	1	M5	7.2 x 21.1	MT10NB200	1.60	4	-	4.8	-	40
	AC	1	M5	7.2 x 21.1	MT10NA104	1.80	4	1	4.8	1.2	40
	AC	1	M5	7.2 x 21.1	MT10NA104	1.80	8	2	9.6	2.4	40

Load [kg]	Frame size	Falls	Duty group ISO	Chain size	Motor type	Power HS [kW]	Lifting speed [m/min]				Max. amb. temp. [°C] 1), 2), 3), 4)
							50 Hz		60 Hz		
							HS	LS	HS	LS	
1250	AC	1	M4	7.2 x 21.1	MT10NA104	1.80	4	1	4.8	1.2	40
	AC	1	M4	7.2 x 21.1	MT10NA104	1.80	8	2	9.6	2.4	40
	AC	2	M5	7.2 x 21.1	MT10NA104	1.80	4	1	4.8	1.2	40
1600	AC	2	M5	7.2 x 21.1	MT10NA104	1.80	4	1	4.8	1.2	40
2000	AC	2	M5	7.2 x 21.1	MT10NB200	1.6	2	-	2.4	-	40
	AC	2	M5	7.2 x 21.1	MT10NA104	1.80	4	1	4.8	1.2	40
2500	AC	2	M4	7.2 x 21.1	MT10NA104	1.80	4	1	4.8	1.2	40

¹⁾ With rated duty cycle of 60% at +40°C and with 300 starts per hour for all hoist duty classes.

²⁾ Maximum ambient temperature is +50°C with 40% ED and 240 starts per hour.

³⁾ 1/3 of the cycle is with low speed and 2/3 with high speed.

⁴⁾ In case of a frequency converter driven trolley, the ambient temperature range is -10°C...+40°C for the whole system.

Duty cycle (ED %) and starts per hour depending on hoist duty group or rating

Standard	Duty group / rating	Duty cycle [ED %] ¹⁾	Starts/hour ¹⁾
ISO	M3	25	150
	M4	30	180
	M5	40	240
	M6	50	300

¹⁾ The calculation is based on the ISO classification with full load.

3.6 Product features

3.6.1 Standard features

Mechanics	
No	Feature
1	Mechanical overload device (slipping clutch)
2	Disc brake that is located on a separate load path after the motor and the slipping clutch. The brake is linked directly to the load, and holds the load even if the motor or the slipping clutch fails.
3	2-step (frame sizes AA-AB) or 3-step (frame size AC) helical gear
4	Sprocket on output shaft in cantilever position
5	Hoist body with epoxy powder paint of 70 µm thickness, C2-M according to EN12944-2 and EN12944-5
6	Lower hook according to DIN classification
7	Zinc plated and quenched tempered chain (class T) or Zinc plated and case-hardened chain (class DAT) ¹⁾
8	Long suspension bracket. The standard bracket suspension can be replaced alternatively by the hook suspension type.

¹⁾ Depending on the sales region.

Electrics	
No	Feature
1	Dual speed motors ¹⁾ with 4:1 ratio for frame sizes AA-AC
2	Single speed motors with fan for frame sizes AA-AC
3	Motor thermal protection with bi-metal switch
4	Motors with TEFC classification and insulation class F
5	All components connected by plugs
6	Low voltage control ²⁾
7	Emergency stop with main contactor
8	Separate brake rectifier that is connected to the contactor (frame sizes AA-AC)
9	Mechanical upper and lower limit switches
10	IP55 protection
11	Operation temperature with rated load and speed: -20°C to +40°C (+50°C) ³⁾
<p>¹⁾ Not available for the 1-phase chain hoist configuration.</p> <p>²⁾ Not available for the 1-phase 60 Hz chain hoist configuration.</p> <p>³⁾ The operation temperature is +40°C for all hoists at 60% duty cycle with 300 starts per hour for all duty classes. Maximum ambient temperature is +50°C with 40% duty cycle and 240 starts per hour. If the hoist is equipped with a frequency converter driven trolley ¹⁾, the ambient temperature range is -10°C to +40°C for the whole system.</p>	

3.6.2 Optional features

Mechanics		
No	Feature	Description
1	Secondary brake ¹⁾	The hoist has two brakes. The one closer to the hoist body acts as the operational brake, if the main brake fails.
2	2- or 4-step rotating geared limit switch (GLS) ¹⁾	The limit switch is available for solutions that need 2 or 4 adjustable stops.
3	Self-locking hook	A hook which cannot be opened, if there is a load in the hook
4	Stainless steel hook block	The material of the stainless steel hook block is AISI316.
5	Stainless steel chain	The stainless steel chain is available as an option instead of the standard electro-galvanized chain. The material of the stainless steel chain is AISI316.
6	DAT chain ²⁾	The DAT chain has a more robust outer surface due to the case hardening treatment. The DAT chain has a much higher lifetime than the standard chain in case of insufficient lubrication.

Mechanics		
No	Feature	Description
7	Manual brake release	The brake can be released manually and the load lowered to the ground level. The brake is released using the specially designed manual brake release lever.
8	Hand control on hook ¹⁾	In the hand control on hook solution, the controls for lowering and lifting the load are implemented onto the load hook.
9	IP66	A higher protection class that is available as an option
10	Short suspension or suspension hook	The standard bracket suspension can be replaced alternatively by the short suspension or the hook suspension type.
11	Rain cover	The rain cover for hoist helps to avoid direct contact of the hoist with rain.
12	Food safety lubricant	Lubricant for lifting chain or gear that is NSF H1 listed
13	<p>Selection of trolleys:</p> <ul style="list-style-type: none"> • Trolley types: normal headroom trolley, low headroom trolley ¹⁾, swiveling trolley ¹⁾, and trolley for LCS (push trolley inside hollow profile) • Trolley drive types: motorized ¹⁾, manual / push, and hand-gearred <p>Inclusive:</p> <ul style="list-style-type: none"> • Rubber buffers on trolleys • Integrated wheel catch and trolley retaining device 	
¹⁾ Not available for the 1-phase chain hoist configuration.		
²⁾ Depending on the sales region.		

Electrics		
No	Feature	Description
1	4-button pendant controller ¹⁾	A pendant controller for applications that need two motions
2	6-button pendant controller ¹⁾	A pendant controller for applications that need three motions
3	Key switch on the E/S button on pendant controller	A 2-button pendant controller that is equipped with a key switch on the emergency stop button
4	Magnet on pendant controller	The pendant controller can be equipped with a magnet that is located on the back of the pendant controller.
5	Optional pendant controller	The pendant controller can be replaced with a Schneider/XAC type pendant controller.

Electrics		
No	Feature	Description
6	ACF card ¹⁾	The ACF card uses the main voltage to control the brake, and it has a low voltage control. The hoist does not have any limit switches. If the switches are needed, they need to be adapted to the available controls on site.
7	External power plug ¹⁾	A special plug for the power feeding
8	Flat cable gland	Flat cable gland instead of round cable
9	Time meter/hour counter ¹⁾	A device which counts the lifting time
10	Hard wired controls ¹⁾	The connections of the electrical parts are created by using wires instead of a printed circuit board.
11	Radio remote control ¹⁾	The control of the hoist(s) is done by using a remote control device.
12	Non-supply of pendant controller and pendant controller cable	The hoist is delivered without a pendant controller and pendant controller cable.
13	Frequency converter controlled trolley traveling ¹⁾ with electronic potentiometer (EP) or multi-step mode (MS) – trolley movement with frequency converter or contactors	

¹⁾ Not available for the 1-phase chain hoist configuration.

3.7 Weights of the chain hoist

Frame size	Falls	Chain hoist weight [kg] ¹⁾	
		Chain hoist ^{2), 3)}	Chain [kg/m]
AA	1/1	24.2	0.38
AA	2/1	25.3	0.38
AB	1/1	33.9	0.62
AB	2/1	20.8	0.62
AC	1/1	61.6	1.20
AC	2/1	60.2	1.20

¹⁾ The weight values are valid for the standard configuration of the chain hoist. Optional features (such as GLS, frequency converter, or double brake) are not included here.

²⁾ For the chain hoist frame sizes 02–10, the 1-fall hoist weight includes the counterweight.

³⁾ The weights are calculated for the lifting height (HOL) of 3 m (9.8 ft).

3.8 Materials and coatings

Materials		
Part	Fabrication	Material type
Frame	Die casting	Aluminum alloy
Bracket suspension hook	Forging	QT steel
Covers	Die casting	Aluminum alloy
Profiles	Extruded	Aluminum alloy

Materials		
Part	Fabrication	Material type
Gear wheels	Machined	Case hardening steel
Chain bucket	Injection molded	Polyethylene/polypropylene
Hooks	Forging	QT steel
Hook blocks	Die casting	Aluminum alloy
Chains	Bent and welded	Special steel - EN 818-7
Rubber parts	Injection molded	Santoprene/Geolast
Wheels	Forging/casting	QT steel/cast iron

Coatings	
Component	Coating
Aluminum alloy components	Epoxy polyester powder painting (60–80 µm)
Steel components	Zinc phosphating
Chain	Galvanized with additional surface treatment

Color codes	
Component	Color code
Body	RAL 7021
Frame cover	RAL 9006
Hook	RAL 1021
Upper bracket	RAL 9005

3.9 Lubrication

3.9.1 Lubrication points of the chain hoist

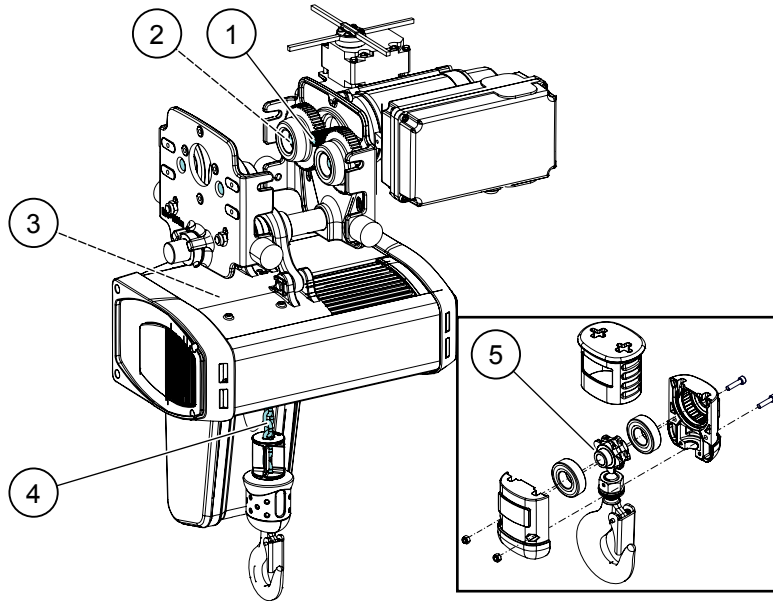


Figure 4. Lubrication points of the chain hoist and chain hoist trolley

Pos.	Component	Lubrication interval
1	Secondary shaft (traveling gear)	Annual (depending on the usage)
2	Trolley wheel bearings	Lubricated for the design working period of the product
3	Hoisting gear	Lubricated for the design working period of the product
4	Chain	From 1 week up to a year (depending on the usage)

3.9.2 Lubricants for the chain hoist

1. Traveling gear (secondary shaft)

Installation	Trade name and number	Quantity [l]	Quantity [pt]
Factory installed	MOBILITH SHC 460	0.075	0.16

Available as an option: Food industry lubricant (grease)

Installation	Trade name and number	Quantity [l]	Quantity [pt]
Factory installed	Klübersynth UH1 14-151	0.075	0.16

2. Hoisting gear

Lubricated with oil. Lubrication lasts for the design working period of the hoist.

Standard lubricant

Installation	Trade name and number	Quantity
Factory installed	Donax TD (10W30)	Lubricated for the design working period of the chain hoist

If you must add lubricant for the hoisting gear, see the following table for the correct fill amount.

Frame size	Quantity [l]	Quantity [pt]
AA	0.23	0.49
AB	0.3	0.63
AC	0.6	1.27

Available as an option: Food safety lubricant (oil)

Installation	Trade name and number	Quantity
Factory installed	Klüberoil 4 UH1- 220 N	See table

Frame size	Quantity [l]	Quantity [pt]
AA	0.23	0.49
AB	0.3	0.69
AC	0.6	1.27

3. Chain

- Lubricate the chain carefully before the first run (commissioning).
- To extend the chain lifetime, continue to lubricate the chain within regular intervals.
- Chain lubrication interval varies from a minimum of one week to one year, depending on the usage.

Standard lubricant: Grease lubricant

Installation	Trade name and number	Quantity
Lubricate before first run	RENOLIT special chain grease 55395066	As required

Available as an option: Food safety lubricant (oil)

Installation	Trade name and number	Quantity
Lubricate before first run	66402844 Klüberoil - 4 UH1-1500 N	As required

4 MAIN COMPONENTS

4.1 Motor of the chain hoist

The hoisting motor is specially designed for hoisting purposes with good efficiency. The motor is classified as a TEFC motor – totally enclosed fan-cooled motor. This includes an aluminum frame with cooling ribs for efficient cooling, and a cooling fan for the motor.

NOTE The size of the main fuse for the hoist power supply is 10A.

Abbreviations	
HS	High speed
LS	Low speed
Io	Current without load
In	Nominal current
Ist	Starting current

4.1.1 2-speed motors

50 Hz																
Motor type	Frame size	Spd ratio	Power N [kW]		Speed [n/rpm]		Torq. [Nm]	Cos φ		Nominal voltage ¹⁾ 380-415 V – Amps						JMOT [kgm ² .10 ⁻³]
			HS	LS	HS	LS		HS	LS	Io		In		Ist		
										HS	LS	HS	LS	HS	LS	
MT06NB104	AA	1/4	0.36	0.09	2820	650	1.30	0.67	0.76	1.3	1.2	1.60	1.20	4.64	1.32	0.5
MT08NB104	AB	1/4	0.72	0.18	2745	665	2.58	0.77	0.51	2.1	1.4	2.4	1.6	7.2	2.35	1.67
MT10NA104	AC	1/4	1.80	0.45	2790	695	6.20	0.8	0.5	3	3.2	4.9	3.1	20.09	6.51	2.65

¹⁾ The voltage values are considered as +/-5% of the nominal voltage range.

50 Hz																
Motor type	Frame size	Spd ratio	Power N [kW]		Speed [n/rpm]		Torq. [Nm]	Cos φ		Nominal voltage ¹⁾ 220-240 V – Amps						JMOT [kgm ² .10 ⁻³]
			HS	LS	HS	LS		HS	LS	Io		In		Ist		
										HS	LS	HS	LS	HS	LS	
MT06NB104	AA	1/4	0.36	0.09	2820	650	1.30	0.67	0.76	2.2	2.1	2.90	2.20	8.12	2.42	0.5
MT08NB104	AB	1/4	0.72	0.18	2745	665	2.58	0.77	0.51	3.7	2.5	4.2	2.8	12.6	4.06	1.67
MT10NA104	AC	1/4	1.80	0.45	2790	695	6.20	0.8	0.55	5.4	5.5	8.5	5	34.9	10.5	2.65

¹⁾ The voltage values are considered as +/-5% of the nominal voltage range.

50 Hz																
Motor type	Frame size	Spd ratio	Power N [kW]		Speed [n/rpm]		Torq. [Nm]	Cos φ		Nominal voltage ¹⁾ 500-525 V – Amps						JMOT [kgm ² .10 ⁻³]
			HS	LS	HS	LS		HS	LS	Io		In		Ist		
										HS	LS	HS	LS	HS	LS	
MT06NB104	AA	1/4	0.36	0.09	2820	650	1.30	0.67	0.76	1.0	1.0	1.30	0.95	4.55	1.33	0.5
MT08NB104	AB	1/4	0.72	0.18	2745	665	2.58	0.77	0.51	1.7	1.1	1.9	1.25	5.7	1.81	1.67
MT10NA104	AC	1/4	1.80	0.45	2790	695	6.20	0.8	0.55	2.4	2.55	3.9	2.3	16.0	4.8	2.65

¹⁾ The voltage values are considered as +/-5% of the nominal voltage range.

60 Hz																
Motor type	Frame size	Spd ratio	Power N [kW]		Speed [n/rpm]		Torq. [Nm]	Cos φ		Nominal voltage ¹⁾ 460-480 V – Amps						JMOT [kgm ² .10 ⁻³]
			HS	LS	HS	LS		HS	LS	Io		In		Ist		
										HS	LS	HS	LS	HS	LS	
MT06NB104	AA	1/4	0.42	0.10	3420	800	1.3	0.66	0.75	2.1	1.4	1.6	1.2	4.48	1.32	0.5
MT08NB104	AB	1/4	0.86	0.22	3295	815	2.5	0.76	0.5	2.1	1.4	2.4	1.6	7.2	2.35	1.67
MT10NA104	AC	1/4	2.16	0.54	3390	845	6.2	0.8	0.5	3.1	3.2	4.9	3.1	20.0	6.5	2.65

¹⁾ The voltage values are considered as +/-5% of the nominal voltage range.

60 Hz																
Motor type	Frame size	Spd ratio	Power N [kW]		Speed [n/rpm]		Torq. [Nm]	Cos φ		Nominal voltage ¹⁾ 208-230 V – Amps						JMOT [kgm ² ·10 ⁻³]
			HS	LS	HS	LS		HS	LS	I _o		I _n		I _{st}		
										HS	LS	HS	LS	HS	LS	
MT06NB104	AA	1/4	0.20	0.10	3420	800	1.3	0.66	0.75	2.8	2.6	3.46	2.6	4.4	2.85	0.5
MT08NB104	AB	1/4	0.86	0.22	3295	815	2.5	0.76	0.5	4.5	3.0	5.2	3.46	15.5	5.1	1.67
MT10NA104	AC	1/4	2.16	0.54	3390	845	6.2	0.8	0.5	6.5	6.9	10.6	6.7	43.5	14.1	2.65

¹⁾ The voltage values are considered as +/-5% of the nominal voltage range.

60 Hz																
Motor type	Frame size	Spd ratio	Power N [kW]		Speed [n/rpm]		Torq. [Nm]	Cos φ		Nominal voltage ¹⁾ 575 V – Amps						JMOT [kgm ² ·10 ⁻³]
			HS	LS	HS	LS		HS	LS	I _o		I _n		I _{st}		
										HS	LS	HS	LS	HS	LS	
MT06NB104	AA	1/4	0.42	0.10	3420	800	1.3	0.66	0.75	1.3	1.2	1.3	1.0	4.4	1.1	0.5
MT08NB104	AB	1/4	0.86	0.22	3295	815	2.5	0.76	0.5	1.5	1.0	1.75	1.1	5.25	1.6	1.67
MT10NA104	AC	1/4	2.16	0.54	3390	845	6.2	0.8	0.5	4.1	2.1	3.9	2.5	16.0	5.25	2.65

¹⁾ The voltage values are considered as +/-5% of the nominal voltage range.

4.1.2 1-speed motors

50 Hz																
Motor type	Frame size	Spd ratio	Power N [kW]		Speed [n/rpm]		Torq. [Nm]	Cos φ		Nominal voltage ¹⁾ 380-415 V – Amps						JMOT [kgm ² ·10 ⁻³]
			HS	LS	HS	LS		HS	LS	I _o		I _n		I _{st}		
										HS	LS	HS	LS	HS	LS	
MT06NB100	AA	1	0.36	-	2820	-	1.2	0.67	-	1.3	-	1.6	-	4.64	-	0.5
MT08NB200	AB	1	0.40	-	1400	-	2.7	0.76	-	0.72	-	1.1	-	5.0	-	1.48
MT10NA200	AC	1	1.60	-	1440	-	10.6	0.59	-	2.65	-	3.1	-	13.85	-	2.65

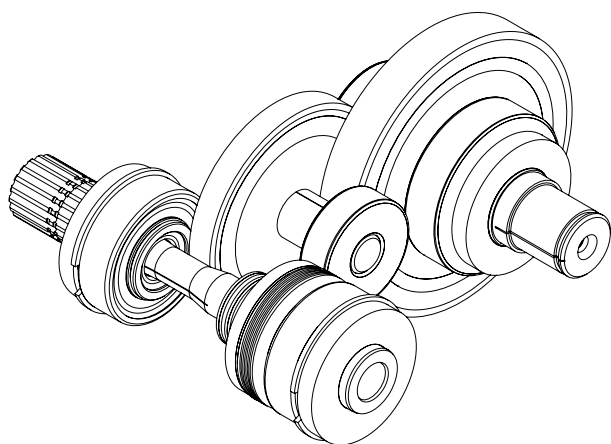
¹⁾ The voltage values are considered as +/-5% of the nominal voltage range.

60 Hz																
Motor type	Frame size	Spd ratio	Power N [kW]		Speed [n/rpm]		Torq. [Nm]	Cos φ		Nominal voltage ¹⁾ 460-480 V – Amps						JMOT [kgm ² ·10 ⁻³]
			HS	LS	HS	LS		HS	LS	I _o		I _n		I _{st}		
										HS	LS	HS	LS	HS	LS	
MT06NB100	AA	1	0.42	-	3420	-	1.3	0.67	-	1.3	-	1.6	-	4.64	-	0.5
MT08NB200	AB	1	0.48	-	1700	-	2.7	0.76	-	0.72	-	1.1	-	5.0	-	1.48
MT10NA200	AC	1	1.90	-	1740	-	10.6	0.59	-	2.65	-	3.1	-	13.85	-	2.65

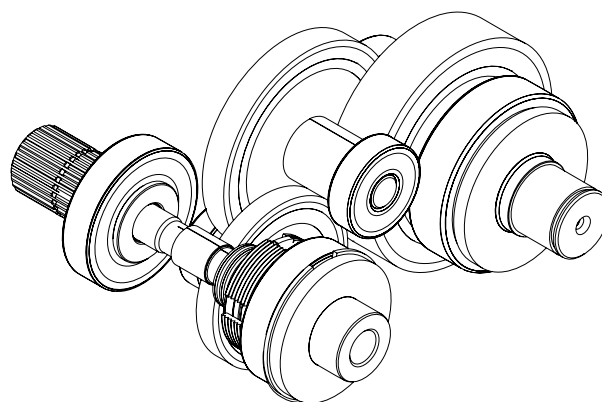
¹⁾ The voltage values are considered as +/-5% of the nominal voltage range.

4.2 Gear of the chain hoist

The hoisting gear of the chain hoist is specially developed for hoisting appliances and has two or three helical steps. The gear is lubricated with oil so that the lubrication lasts for the design working period of the hoist.



2-step gear



3-step gear

Frame size	Main lifting speed ¹⁾		Gear type	Gear ratio
	50 Hz [m/min]	60 Hz [m/min]		
AA	8	9.6	2-step	54.9
	12	14.4	2-step	34.7
	16	19.2	2-step	27.3
	24	28.8	2-step	17.2
AB	4	4.8	2-step	96.6
	8	9.6	2-step	54.6
	12	14.4	2-step	35.1
	16	19.2	2-step	28.2
AC	4	4.8	3-step	141.0
	6	7.2	3-step	100.2
	8	9.6	3-step	75.7
	12	14.4	3-step	53.1
	16	19.2	3-step	34.6

¹⁾ Valid for the 1-fall chain hoist configurations.

4.3 Brakes of the chain hoist

4.3.1 Single brake

The chain hoist is equipped with a disc brake which includes a rotating disc with two friction linings. The brake coil is energized by a DC voltage coming from the brake rectifier. The brake rectifier converts the AC voltage into a DC voltage. To ensure the self-cleaning function, the rotating parts of the brake are not enclosed.

The brake is designed so that it lasts for the design working period of the chain hoist. The brake wear can be checked at the brake coil, through an inspection hole. The brake lining wear criteria is indicated on a sticker that can be found on the brake, next to the brake wear measurement hole. If the brake wear exceeds the allowed measurement criteria, the brake must be replaced.

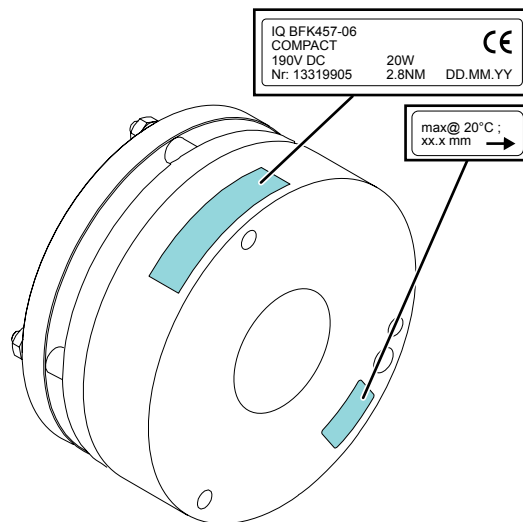


Figure 5. Single brake

Brake characteristics

Frame size	Brake torque		Brake measurement [20°C] [mm] ¹⁾
	[Nm]	[lbf.ft]	
AA	2.8	2.1	25.3
AB	6.8	5.0	25.3
AC	14	10.3	30

¹⁾ The brake measurement value that is given in the table is only a theoretical value. The value varies according to manufacturer and brake series. For each case, the maximum value that must not be exceeded is indicated on the sticker that can be found on the brake.

4.3.2 Double brake (option)

The double brake assembly consists of the main brake (single brake) and the secondary brake (double brake) that are assembled on the same brake hub. During the hoisting motion, the brake board energizes both brakes simultaneously. When the hoisting motion stops, the main brake switches off immediately. The motor inductive effect keeps the secondary brake energized still for a few milliseconds.

The main brake holds the first position (located 'on the top') in the double brake assembly, which makes checking of the brake wear easier.

The secondary brake is a holding brake that works as a back-up for the main brake. The secondary brake is the functional brake only if the main brake is damaged and cannot hold the load. If the main brake operates normally, you do not need to check the wear on the secondary brake.

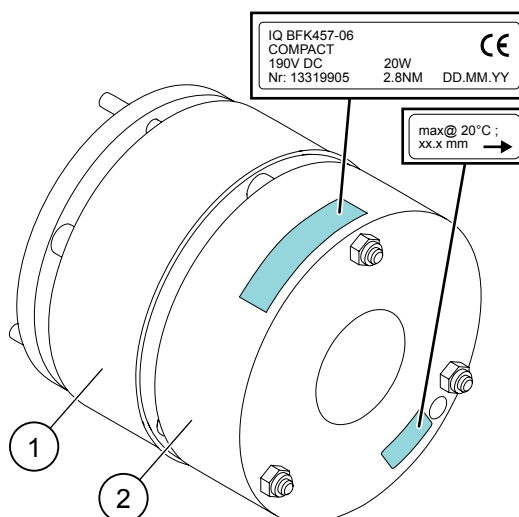


Figure 6. Double brake

1. Secondary brake
2. Main brake

Brake characteristics

Frame size	Brake (pcs)		Brake torque				Brake measurement [20°C] [mm] ²⁾
	Single brake	Double brake	Main brake		Secondary brake ¹⁾		
			[Nm]	[lbf.ft]	[Nm]	[lbf.ft]	
AA	1	2	2.8	2.1	2.8	2.1	25.3
AB	1	2	6.8	5.0	6.8	5.0	25.3
AC	1	2	14	10.3	14	10.3	30

Frame size	Brake (pcs)		Brake torque				Brake measurement [20°C] [mm] ²⁾
	Single brake	Double brake	Main brake		Secondary brake ¹⁾		
			[Nm]	[lbf.ft]	[Nm]	[lbf.ft]	
¹⁾ If the hoisting brake operates normally, you do not need to check the wear on the back-up brake. ²⁾ The brake measurement value that is given in the table is only a theoretical value. The value varies according to manufacturer and brake series. For each case, the maximum value that is not to be exceeded is indicated on the sticker that can be found on the brake.							

4.3.3 Brake coil voltages and resistance

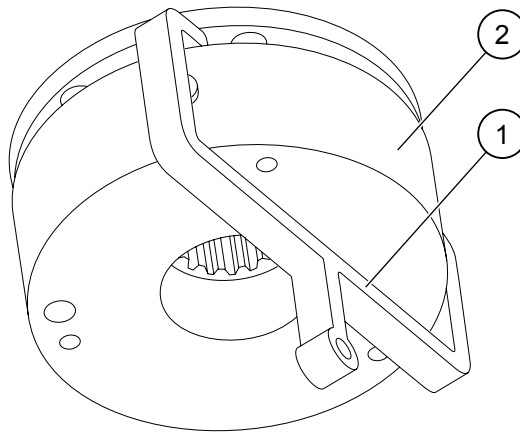
Brake coil voltage

Motor voltage [V AC]	Frequency [Hz]	Brake voltage [V DC]
208 V	60	103
220–240 V	50	103
208–230 V/460 V reconnectable	60	190
380–415 V	50/60	190
440–480 V	60	190
500–525 V	50	255
575 V	60	320

Brake coil resistance

Frame size	Brake type [single brake]	Brake torque		Rated voltage [V]	Coil resistance [20°C]	
		[Nm]	[lbf.ft]		Min. [Ω]	Max. [Ω]
AA	BFK457-06	2.8	2.1	103	496.6	564.9
AA	BFK457-06	2.8	2.1	190	1661	1949
AA	BFK457-06	2.8	2.1	255	2439	2816
AA	BFK457-06	2.8	2.1	320	4736	5548
AB	BFK457-06	6.8	5.0	104	496.6	564.9
AB	BFK457-06	6.8	5.0	180	1661	1949
AB	BFK457-06	6.8	5.0	216	2439	2816
AB	BFK457-06	6.8	5.0	258	4736	5548
AC	BFK457-08	14	10.3	103	398.9	449.8
AC	BFK457-08	14	10.3	190	1366	1552
AC	BFK457-08	14	10.3	255	2167	2454
AC	BFK457-08	14	10.3	320	3418	3921

4.3.4 Manual brake release (option)



1. Manual brake release lever
2. Hoisting brake

The manual brake release feature is available as an option for the single brake assembly. This feature allows you to release the brake by hand in situations where you must lower the load manually.

The manual brake release should only be used in emergency situations where the brake cannot be released normally. Extensive use of the manual brake release and high lowering speed can result in immediate wear-out of the brake lining.

4.4 Slipping clutch

The overload protection of the hoisting unit is ensured through a direct acting limiting device, the slipping clutch. The slipping clutch meets the requirements of the EN14492-2 standard that are set for this type of hoisting units.

The setting of the slipping clutch allows the hoist to lift a load that corresponds to the dynamic test load of 110% (EUR) and 125% (US) of the SWL (safe working load). The slipping clutch function prevents the hoist from lifting a load of 160% of the SWL. The slipping clutch enables the brake to hold the load without any interaction with the slipping clutch.

The construction of the slipping clutch assembly varies according to the chain hoist frame size. The AA–AB chain hoists use a slipping clutch construction that has just one torque limiter disc, whereas the AC chain hoist is built with a slipping clutch construction that has two torque limiter discs.

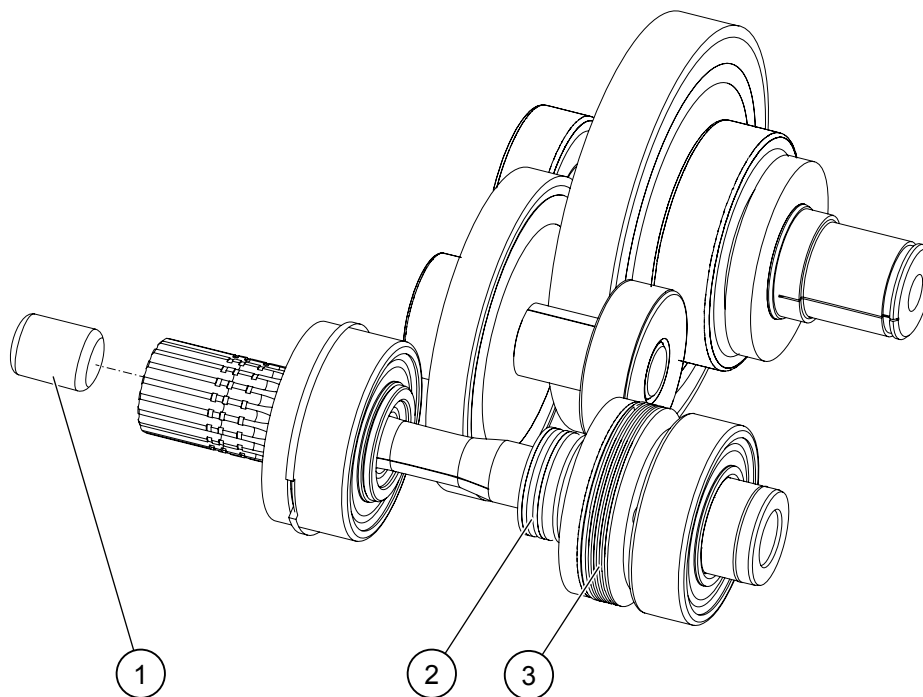


Figure 7. Slipping clutch construction with one torque limiter disc

- | | |
|-----------------------|-------------------|
| 1. Setting screw | 3. Torque limiter |
| 2. Belleville washers | |

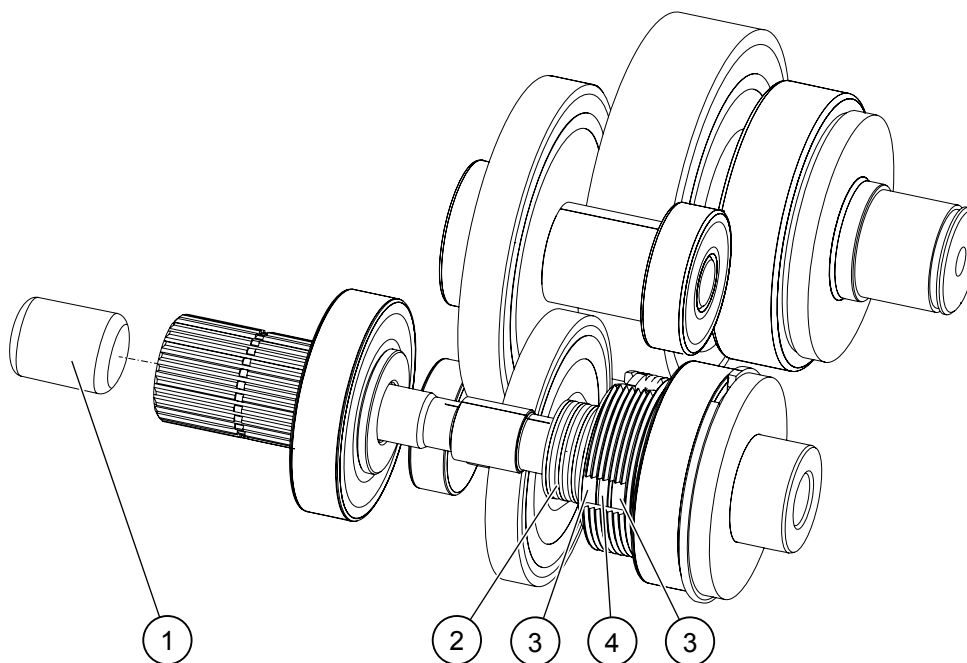


Figure 8. Slipping clutch construction with two torque limiter discs and an intermediate disc

- | | |
|-----------------------|-------------------------------------|
| 1. Setting screw | 3. Torque limiter discs with lining |
| 2. Belleville washers | 4. Intermediate torque limiter disc |

The slipping clutch construction of the AC chain hoist consists of two torque limiter discs and an intermediate disc between them. The construction with an intermediate torque limiter disc allows to engage altogether three friction surfaces, which results in an increased torque.

4.5 Controller

4.5.1 Pendant controller

You can control the chain hoist lifting and trolley traveling by using a pendant controller which is connected to the chain hoist with a control cable.

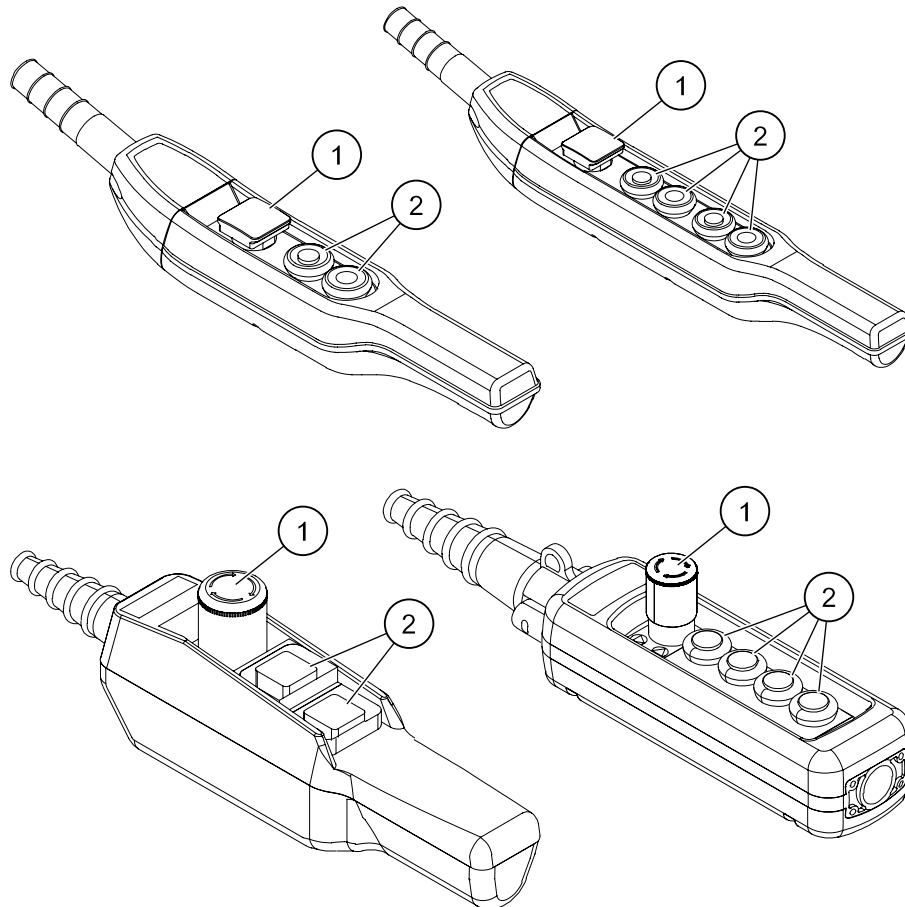


Figure 9. Examples of pendant controller types

1. Emergency stop
2. Direction controls

As an option, the pendant controller can have a magnet on the opposite side of the buttons. With the magnet, you can pull aside the pendant controller and its cable and attach it to magnetic material, for example, a steel shelf. The optional magnet is only available for the POQ pendant controller models.

4.5.2 Radio controller

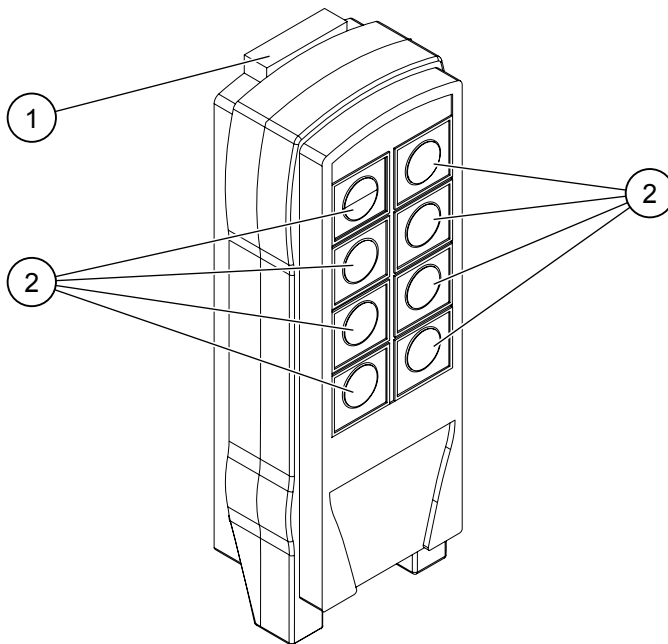


Figure 10. Radio controller

1. Emergency stop
2. Direction controls

4.5.3 Hand control on hook (option)

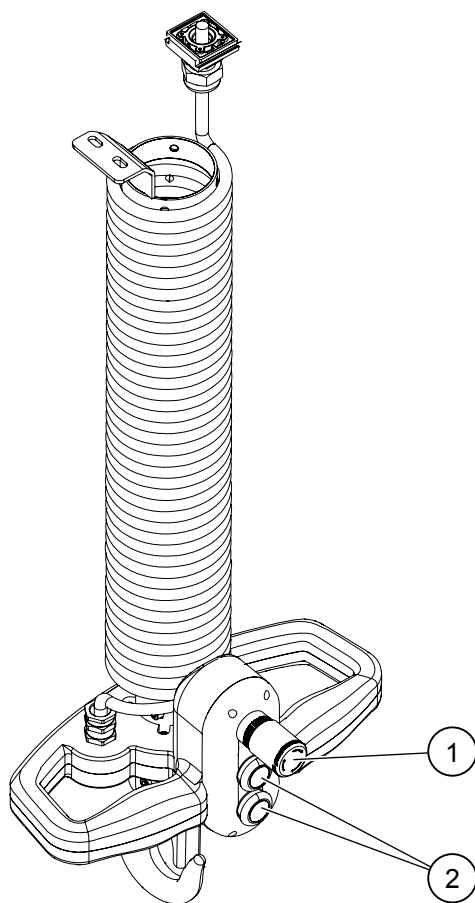


Figure 11. Hand control on hook

1. Emergency stop
2. Direction controls

Frame size	Max. load [kg]	Max. HOL [m]	C-dimension [mm]	
			Chain hoist suspension bracket	
			Long	Short
AA	320	5	906	868
AB	500	5	906	868
AC		1)		

1) Configuration not available.

Operating conditions

Ambient temperature	-20°C to +40°C
Protection class	IP55 as standard
Side pulling angle	3 degrees maximum
Sound pressure level	70 dB (impact on the environment)

Technical characteristics

Rated capacity	125–500 kg
Max. lifting height (HOL)	5 m
Max. control cable length (pendant controller)	5 m
Hook	Movable
Low voltage control	48/115 V

4.6 Suspension types of the chain hoist

4.6.1 Suspension bracket

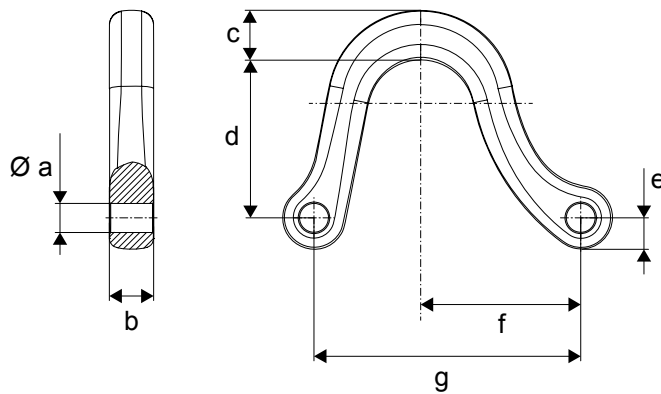


Figure 12. Dimensions of the suspension bracket

Dimensions [mm]								
Frame size	$\varnothing a$	b	c	Bracket long ¹⁾	Bracket short ²⁾	e	f	g
				d				
AA	12.5	19	21.5	68	30	13.5	69	115
AB	12.5	19	21.5	68	30	13.5	69	115
AC	20	26	26	81	-	18	102	170
1) Standard.								
2) Optional.								

NOTE The bracket has markings “I” and “II” according to the reeving (1-fall or 2-falls). The markings must match with the markings on the chain hoist body.

4.6.2 Suspension eye

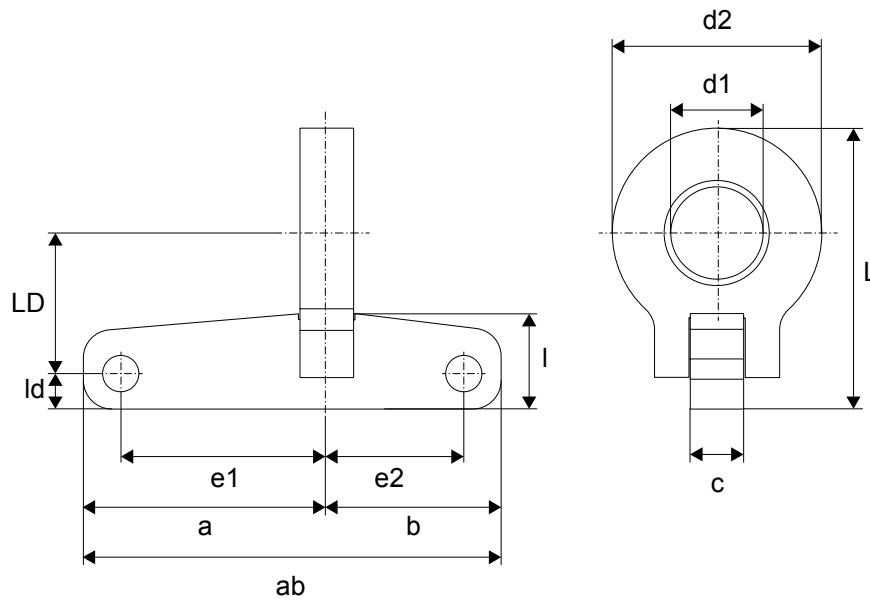


Figure 13. Dimensions of the suspension eye

Frame size	Dimensions [mm]											
	a	ab	b	c	d1	d2	e1	e2	i	ld	L	LD
AA	81.5	140	58.5	18	31	70	69	46	32	12	94	47
AB	81.5	140	58.5	18	31	70	69	46	32	12	94	47
AC	120	210	90	22	53	98.1	100	70	58	17	161	90.5

4.6.3 Suspension hook

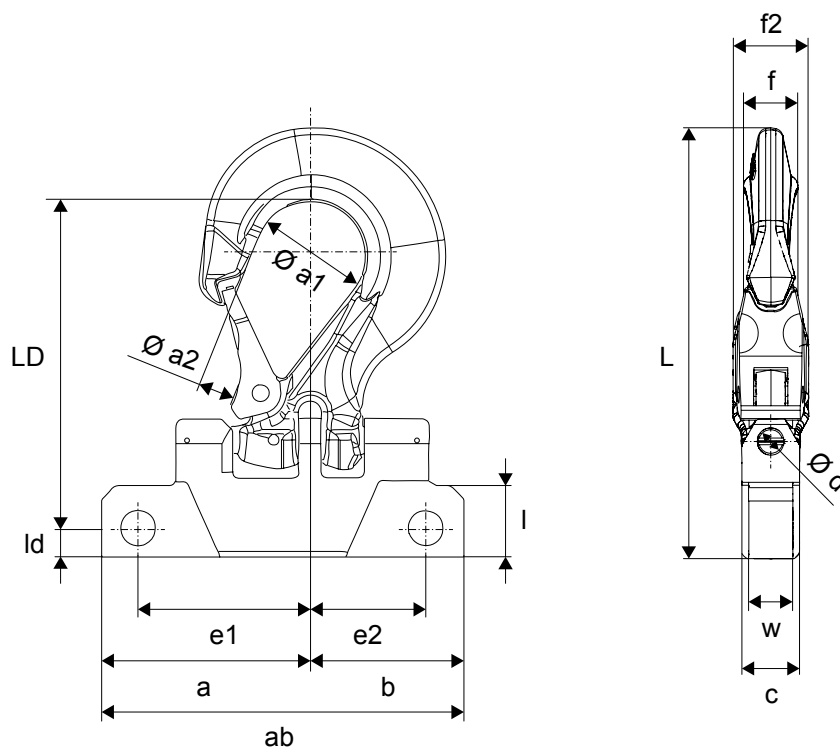


Figure 14. Dimensions of the foldable suspension hook

Frame size	Hook	Dimensions [mm]															
		a	ab	a1	a2	b	c	d	e1	e2	f	f2	l	ld	L	LD	w
AA	RUD GSH 8	88	153	42	30	65	22	12.3	69	46	20	28	30	13	170	130	19
AB	RUD GSH 8	88	153	42	30	65	22	12.3	69	46	20	28	30	13	170	130	19
AC	RUD GCH 13	123.5	214	65	40	90.5	34	16	102	68	30	46	41	17	253	193	26

NOTE *1-fall chain hoists: The hook opens towards the back of the chain hoist. 2-fall chain hoists: The hook opens towards the front of the chain hoist. This is marked with markings 'I' and 'II' on the top of the chain hoist body.*

4.6.4 Fixed suspension (option)

The fixed suspension connects to the hoist over the long suspension bracket and is fixed to the center bolt.

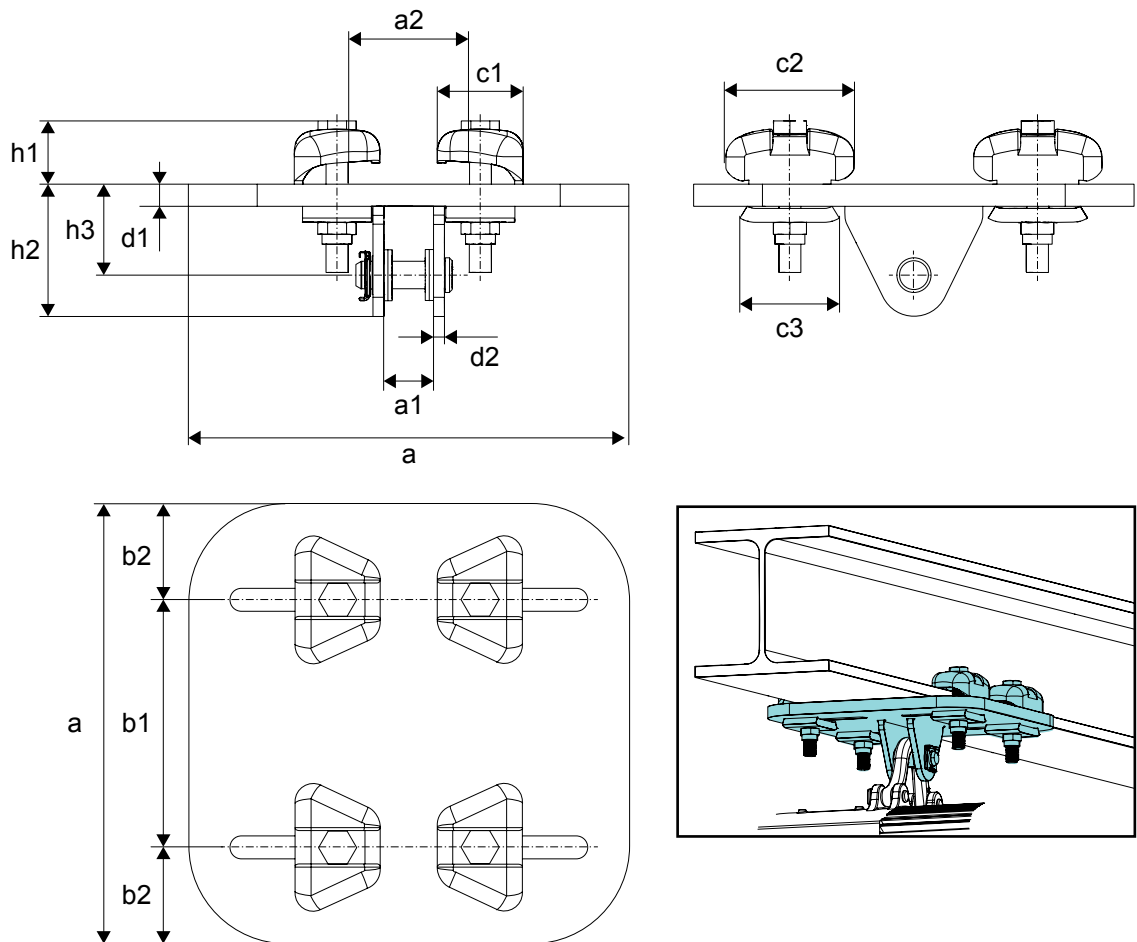


Figure 15. Dimensions of the fixed suspension

Frame size	Dimensions [mm]												
	a	a1	a2	b1	b2	c1	c2	c3	d1	d2	h1	h2	h3
AA	320	36	58-200	180	70	62	93	72	16	8	46	96	66
AB	320	36	58-200	180	70	62	93	72	16	8	46	96	66
AC	1)												

1) Data not available yet.

4.7 Chain drive

The chain drive of the electrical chain hoist includes the following components:

- Chain guide
- Chain sprocket
- Return sprocket (in 2-fall chain hoist versions)
- Chain.

4.7.1 Chain sprocket

The chain sprocket of the electrical chain hoist has six pockets in the chain hoist frame size 02, and five pockets in the chain hoist frame sizes 05 and 10.

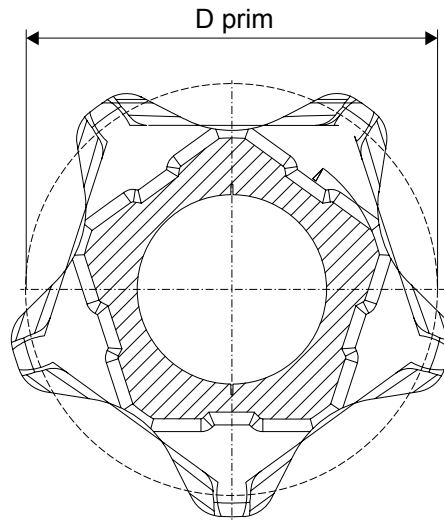


Figure 16. Dimensions of the chain sprocket

Dimensions [mm]				
Frame size	Chain sprocket	Chain	Nbr of pockets	D prim [mm]
AA	SINGLE	4.1 x 12.1	6	46.4
AB	SINGLE	5.1 x 15.1	5	48.88
AC	SINGLE	7.2 x 21.1	5	68.71

4.7.2 Return sprocket

The return sprocket is included only in the 2-fall chain hoist configurations.

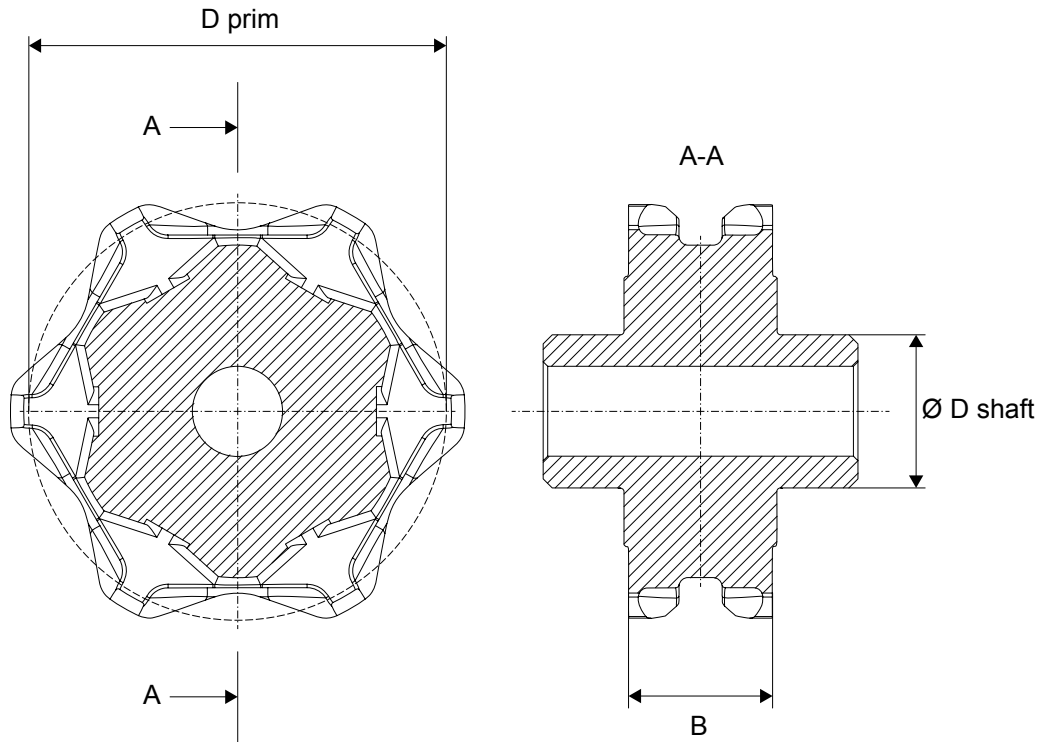


Figure 17. Dimensions of the return sprocket

Dimensions [mm]							
Frame size	Chain sprocket	Chain	Pockets	D prim	D shaft [Ø]	B	
AA	SINGLE	4.1 x 12.1	6	46.4	16H7	17.0	-0.1
AB	SINGLE	5.1 x 15.1	5	48.88	25J7	21.0	±0.1
AC	SINGLE	7.2 x 21.1	5	68.71	32H7	27.0	0/-0.2

4.7.3 Chain

Safety factors of the chain

Frame size	Chain type			
	T/DAT		Stainless steel chain (SS)	
	Max. load [kg]	Static safety factor	Max. load [kg]	Static safety factor
AA	250	8.8	160	10
AB	500	7	320	7.8
AC	1250	5.6	630	7.9

Technical data of the chain

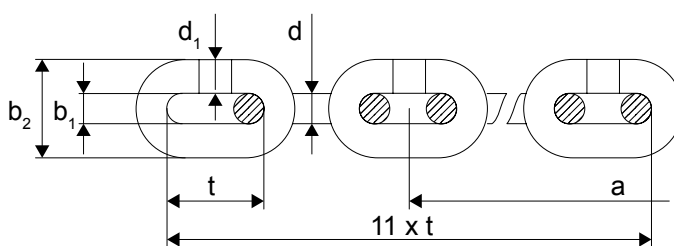


Figure 18. Chain dimensions

Dimensions and weight				
Feature	Unit	Chain hoist frame size		
		AA	AB	AC
Chain type	T/DAT/Stainless steel			
Chain size	t x d	4.1 x 12.1	5.1 x 15.1	7.2 x 21.1
Diameter	d [mm]	4.1	5.1	7.2
Pitch	t [mm]	12.1	15.1	21.1
Control length	11 × t [mm]	134.2	167.2	233.2
Chain weight	G [kg/m]	0.38	0.62	1.20

Technical characteristics										
	Unit	Chain hoist frame size								
		AA			AB			AC		
Chain size	t x d	4.1 x 12.1			5.1 x 15.1			7.2 x 21.1		
Chain type	T/SS ¹⁾ /DAT	T	SS	DAT	T	SS	DAT	T	SS	DAT
Cross section	A [mm ²]	26.4	26.4	26.4	40.9	40.9	40.9	81.4	81.4	81.4
Max. working load	mSWP [kg]	250	160 ²⁾	250 ⁵⁾	500	320 ²⁾	500 ⁵⁾	1250	630 ²⁾	1250 ⁶⁾
Test force	Fm [kN]	13.8	10	13.8	22	16	22	43	32	43
Min. breaking force	FB [kN]	22	16	22	35	25	35	70	50	70
Min. breaking elongation	A [%]	10	15	10	10	15	10	10	15	10
Corrosion protection		3)	4)	3)	3)	4)	3)	3)	4)	3)
Grade		80	60	80	80	60	80	80	60	80
Class		T	S	DAT	T	S	DAT	T	S	DAT
1) Stainless steel.										
2) The lifetime of the stainless steel chain is shortened significantly when the chain is used with high loads. Recommendation for usage is: 70% of max. load: 25-50 cycles per day; 100% of max. load: max. 10 cycles per day.										
3) Galvanized, with additional surface treatment.										
4) Non-rusting, bright.										
5) Group of mechanism M5.										
6) Group of mechanism M4.										

4.7.4 Chain bucket

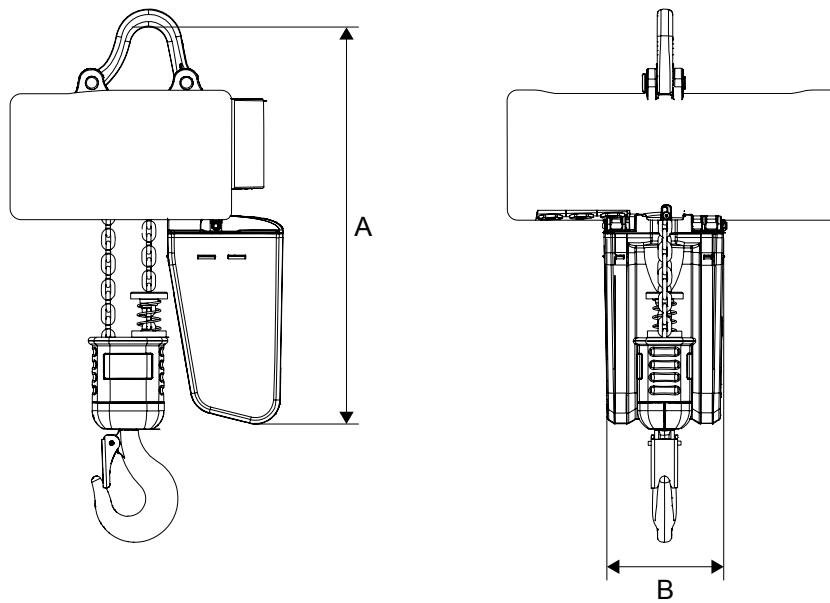


Figure 19. Chain bucket dimensions

Dimensions [mm]					
Frame size	Chain bucket capacity [m] ¹⁾	Chain size	Long bracket	Short bracket ²⁾	B
			A		
AA	6	4.1 x 12.1	469	431	145
AA	16	4.1 x 12.1	571	533	145
AB	6	5.1 x 15.1	483	445	145
AB	16	5.1 x 15.1	584	546	145
AC	6	7.2 x 21.1	483	-	201
AC	12	7.2 x 21.1	584	-	201

¹⁾ Chain bucket capacities shown in the table are valid for standard plastic chain buckets. Configurations with a greater lifting height (HOL) require a flexible chain bucket or a steel chain bucket. The dimension A varies depending on the HOL.

²⁾ Configurations that require a chain bucket with the dimension A for the short suspension bracket may not be available with all trolley configurations.

NOTE

The dimensions of the chain bucket that are given in the table are valid for the 1-fall chain hoist configurations.

Technical characteristics	
Material	High-density polyethylene / PP-C
Weight	0.93-0.97 g/cm ³
Wall thickness	3 mm
Max. temperature	110°C
Color	Black

4.8 Hooks and hook blocks of the chain hoist

4.8.1 Standard hook

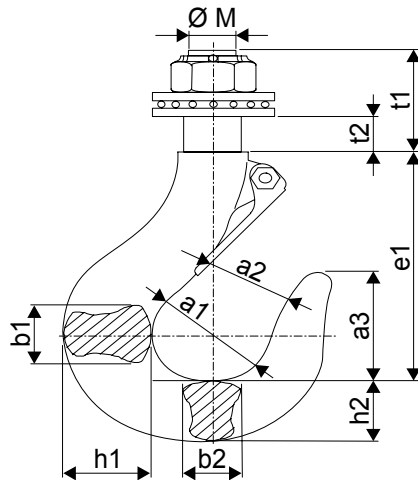


Figure 20. Dimensions of the standard hook

The standard hook of the chain hoist is designed according to the requirements of the DIN15401. The material of the hook is 34 CrMo 4.

Frame size	Falls	Hook size [RSN]	Dimensions [mm]										
			M [Ø]	a ₁	a ₂ ¹⁾	a ₃	b ₁	b ₂	e ₁	h ₁	h ₂	t ₁	t ₂
AA	1/1	012T	12	30	22	34	19	15	71	22	19	32	10.5
AA	2/1	020T	16	34	24	39	21	18	81	26	22	36	13.5
AB	1/1	020T	16	34	24	39	21	18	81	26	22	36	13.5
AB	2/1	05T	20	43	31	49	29	24	102	37	31	39	14.5
AC	1/1	05T	20	43	31	49	29	24	102	37	31	39	14.5
	2/1	08	24	48	35	54	35	29	115	44	37	55	20.5

¹⁾ The dimension a₂ is given with the hook latch installed and opened.

4.8.2 Stainless steel hook

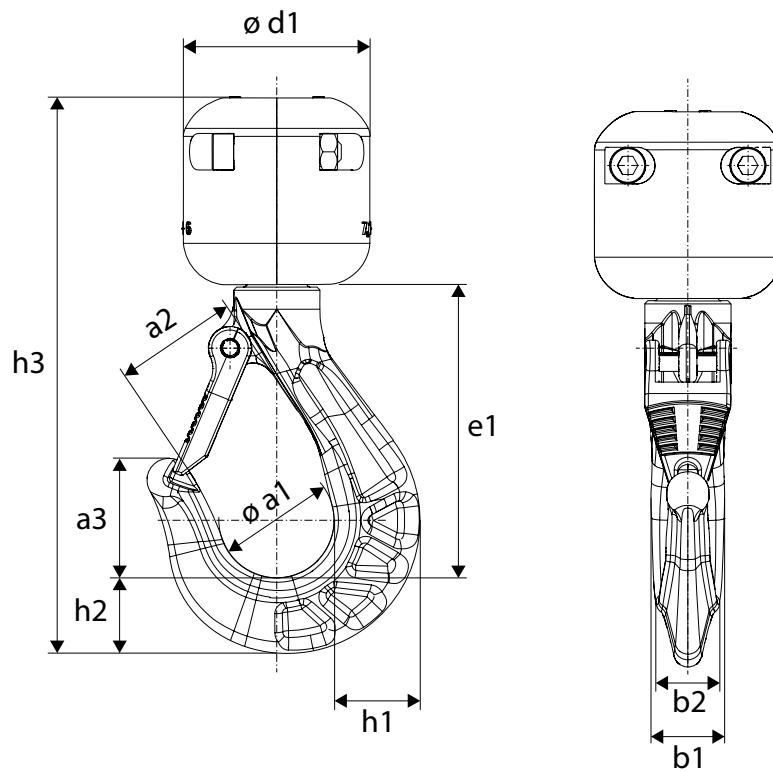


Figure 21. Dimensions of the 1-fall stainless steel hook and hook block

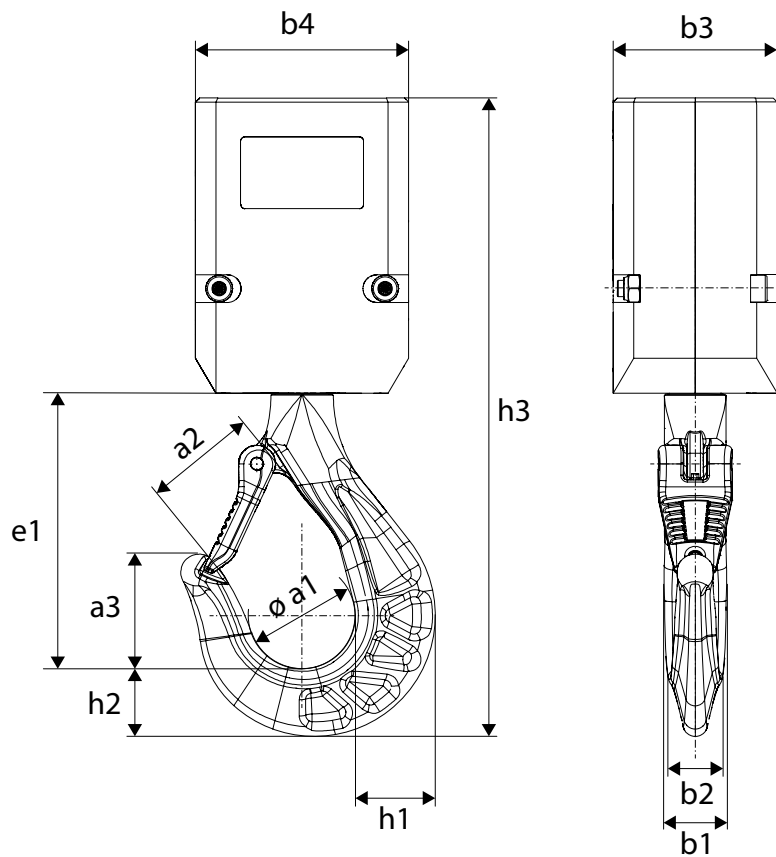


Figure 22. Dimensions of the 2-fall stainless steel hook and hook block

Frame size	Falls	Hook size	Max. load [kg]	Dimensions [mm]											
				a1	a2	a3	b1	b2	b3	b4	d1	e1	h1	h2	h3
AA	1/1	CWHF 40	160	23.0	26.7	22.6	15.9	12.9	-	-	37.0	61.5	18.5	15.5	115.4
AB	1/1	CWHF 50	320	23.0	26.7	22.6	15.9	12.9	-	-	37.0	61.5	18.5	15.5	115.4
AC	1/1	CWHF 71	630	32.0	34.8	33.3	19.7	17.6	-	-	52.0	81.0	24.0	21.0	154.7
AC	2/1	CWHF 90	1250	52.0	53.7	56.0	30.0	25.9	80.0	104.0	-	134.0	39.0	33.0	311.5

4.8.3 Safety hook (option)

The safety hook is a self-locking version of the hook. It is available as an option.

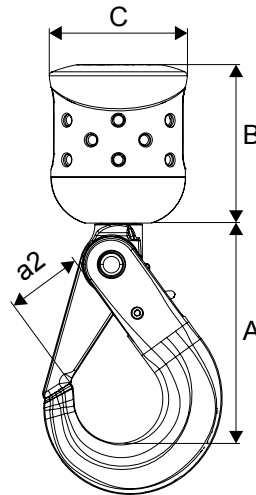


Figure 23. Dimensions of the 1-fall safety hook and hook block

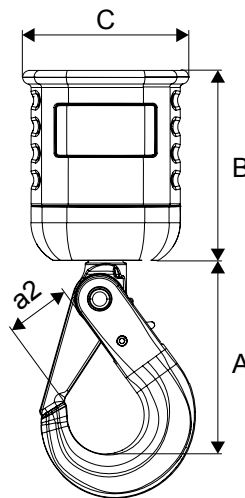


Figure 24. Dimensions of the 2-fall safety hook and hook block

Frame size	Falls	Hook type	Dimensions [mm]				Influence to C-dimension [+mm]
			A	a2	B	C	
AA	1/1	BKT 7/8-10	112	36	67	58	43
AA	2/1	BKT 7/8-10	112	36	102	76	26
AB	1/1	BKT 7/8-10	112	36	80	70	27
AB	2/1	BKT 7/8-10	112	36	115	86	7
AC	1/1	BKT 7/8-10	112	36	97	82	7
AC	2/1	BKT 13-10	172	44	160	126	56

4.8.4 Single fall hook blocks

The material of the hook block rubber part is Santoprene-8221.65.

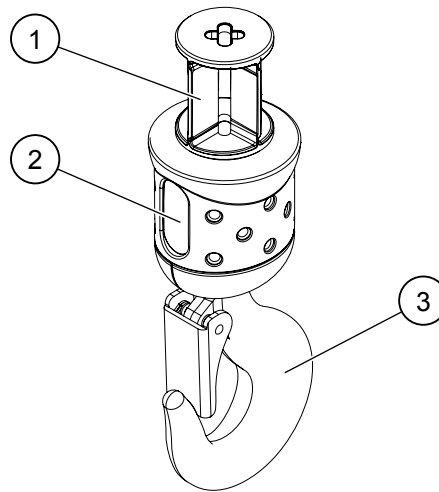


Figure 25. Single fall hook block

- 1. Limit switch activator
- 2. Grip area
- 3. Turnable hook with safety latch, axial needle bearings

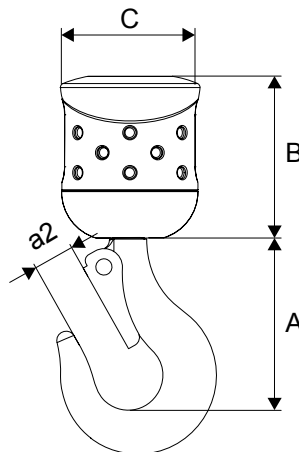


Figure 26. Dimensions of the single fall hook block

Frame size	Reeving	Dimensions [mm]			
		A	B	C	a2 ¹⁾
AA	1/1	75	67	58	22
AB	1/1	85	81	70	24
AC	1/1	106	97	82	31

¹⁾ The dimension a2 is given with the hook latch opened.

4.8.5 Two-fall hook blocks

The material of the hook block rubber part is Santoprene-8221.65.

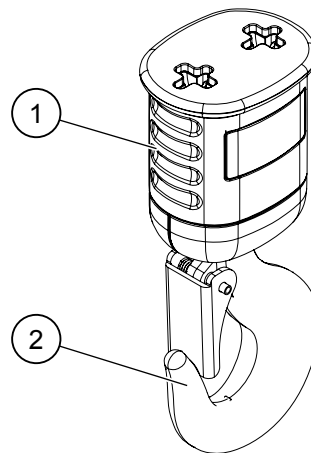


Figure 27. Two-fall hook block

1. Grip area

2. Turnable hook with safety latch, axial needle bearings

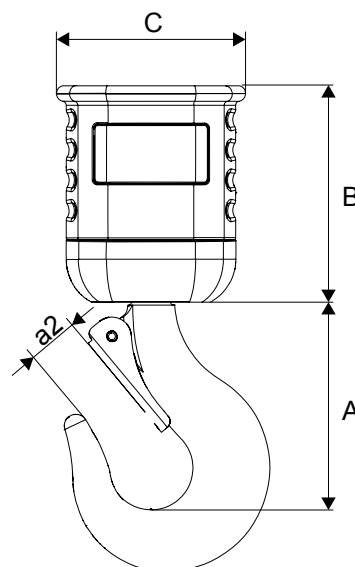


Figure 28. Dimensions of the two-fall hook block

Frame size	Reeving	Dimensions [mm]			
		A	B	C	a ₂ ¹⁾
AA	2/1	86	106	97	24
AB	2/1	106	112	97	31
AC	2/1	117	160	126	35

¹⁾ The dimension a₂ is given with the hook latch opened.

4.9 Rotating geared limit switch (GLS)

The rotating geared limit switch is available as a 2- or 4-step version.

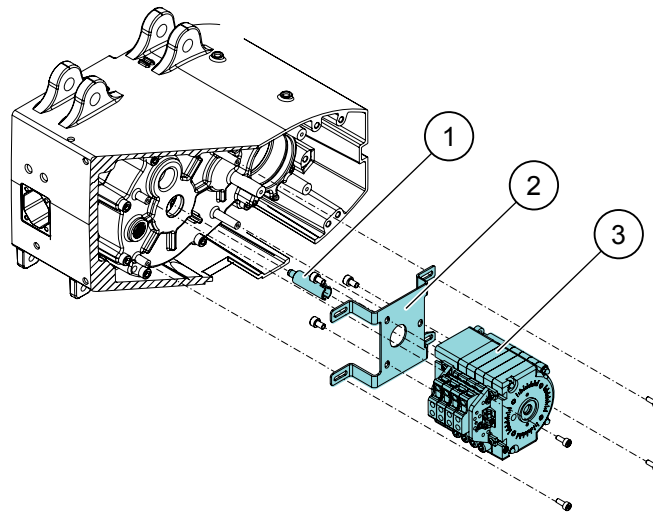


Figure 29. 4-step rotating geared limit switch

- 1. Coupling
- 2. Fixing plate
- 3. Rotating geared limit switch

4.9.1 Rotating geared limit switch types

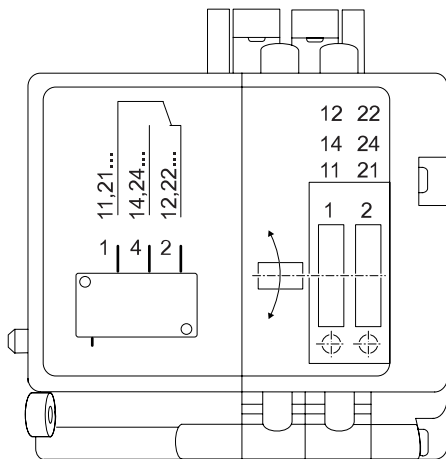


Figure 30. 2-step rotating geared limit switch

The 2-step rotating geared limit switch works together with the internal controls as an adjustable upper and lower stop limit. It is mechanically connected to the hoisting gear and counts the revolutions of the chain sprocket. The internal gear ratio of the geared limit switch must be designed according to the total stroke of the chain hoist.

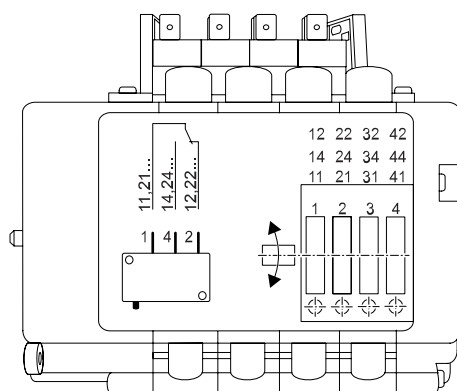


Figure 31. 4-step rotating geared limit switch

The 4-step rotating geared limit switch has a similar operating function as the 2-step geared limit switch, but provides four separately adjustable switching units. There are several configuration possibilities for this feature, but the configuration 1 (see table 4-step geared limit switch) is the standard configuration.

4.9.2 Rotating geared limit switch configurations

2-step geared limit switch

Config.	GLS type	Description	Switch unit
1	2-step GLS + microswitch ^{1), 2)}	Limit switch safety UP stop	Switch X3A ³⁾
		Limit switch safety DOWN stop	Switch X4A ³⁾
		Limit switch working UP stop	GLS UP 1
		Limit switch working DOWN stop	GLS DOWN 1
2	2-step GLS + microswitch	Limit switch UP stop	Switch X3A ³⁾
		Limit switch DOWN stop	Switch X4A ³⁾
		Slow speed UP	GLS UP 1
		Slow speed DOWN	GLS DOWN 1

1) Standard configuration.

2) Only for chain hoist frame sizes AA-AC.

3) The switches X3A and X4A are electro-mechanical limit switches that are installed on the chain guide. They are activated mechanically when touched by the buffer of the hook.

4-step geared limit switch

Config.	GLS type	Description	Switch unit
1	4-step GLS + microswitch ^{1), 2)}	Limit switch safety UP stop	Switch X3A ³⁾
		Limit switch safety DOWN stop	Switch X4A ³⁾
		Limit switch working UP stop	GLS UP 1
		Limit switch working DOWN stop	GLS DOWN 1
		Slow speed UP	GLS UP 2
		Slow speed DOWN	GLS DOWN 2
2	4-step GLS + microswitch	Limit switch safety UP stop	Switch X3A ³⁾
		Limit switch safety DOWN stop	Switch X4A ³⁾
		Limit switch working UP stop	GLS UP 1
		Limit switch working DOWN stop	GLS DOWN 1
		Free for customer use	GLS UP 2
		Free for customer use	GLS DOWN 2
3	4-step GLS + microswitch	Limit switch UP stop	Switch X3A ³⁾
		Limit switch DOWN stop	Switch X4A ³⁾
		Slow speed UP	GLS UP 1
		Slow speed DOWN	GLS DOWN 1
		Free for customer use	GLS UP 2
		Free for customer use	GLS DOWN 2
1) Standard configuration.			
2) Only for chain hoist frame sizes AA-AC.			
3) The switches X3A and X4A are electro-mechanical limit switches that are installed on the chain guide. They are activated mechanically when touched by the buffer of the hook.			

4.9.3 Functional description of the rotating geared limit switch

If the hoist is equipped with a rotating geared limit switch, adjust the cutting points (upper and lower limits) of the geared limit switch before starting to operate the hoist. Instructions on how to set the limits in the different geared limit switch configurations can be found on a sticker. The sticker is placed on the hoist profile, next to the geared limit switch adjustment holes.

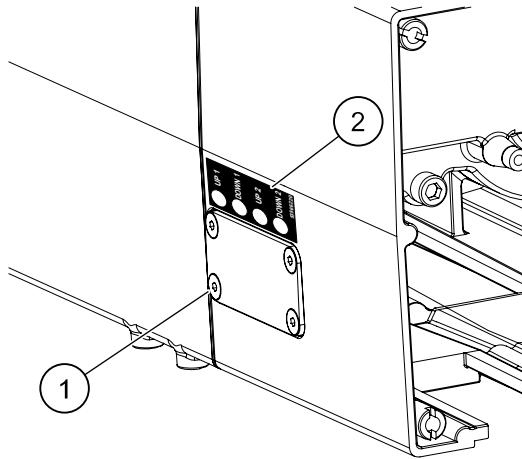


Figure 32. Location of the cover plate and adjustment sticker of the GLS on the hoist profile

1. Cover plate
2. Sticker for GLS adjustment instructions

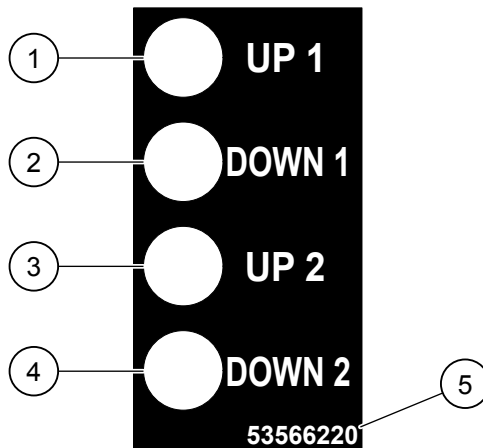


Figure 33. Sticker for GLS adjustment (example of a 4-step GLS)

- | | |
|-------------------------|--------------------------|
| 1. Upper (UP) limit 1 | 4. Lower (DOWN) limit 2 |
| 2. Lower (DOWN) limit 1 | 5. Identification number |
| 3. Upper (UP) limit 2 | |

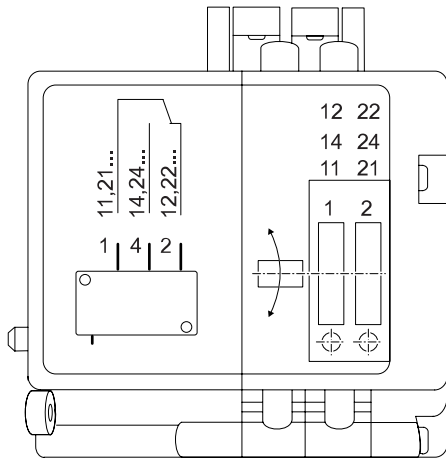


Figure 34. 2-step rotating geared limit switch

The set screw 1 is the upper limit and the set screw 2 is the lower limit.

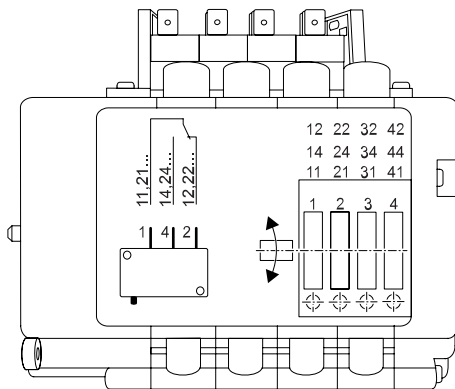


Figure 35. 4-step rotating geared limit switch

The set screw 1 is the upper limit 1 and the set screw 2 is the lower limit 1.

The set screw 3 is the upper limit 2 and the set screw 4 is the lower limit 2.

4.9.4 Rotating geared limit switch operational limits

The operational limits for a standard rotating limit switch are shown in the following table.

Frame size	Max. HOL [m]			
	Ratio 180		Ratio 280	
	1-fall	2-falls	1-fall	2-falls
AA	25	12.5	38	19
AB	25	12.5	40	20
AC	36	18	56	28

4.10 Extension profile

The following optional features extend the hoist length through an extension profile part on the hoist frame:

- Double brake
- Geared limit switch
- Stand-by heating.

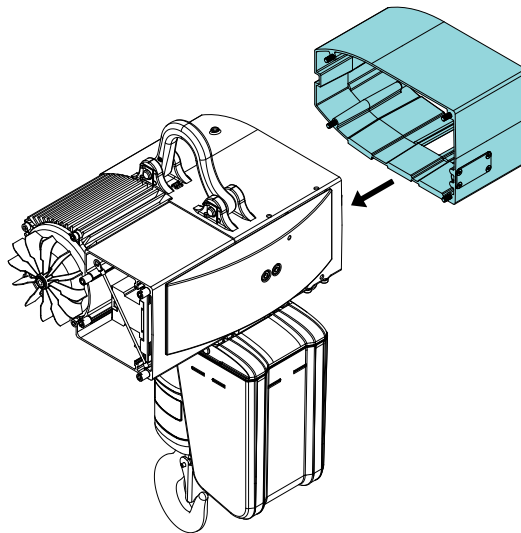


Figure 36. Chain hoist with extension profile

Frame size	Extension profile [mm] ¹⁾
AA	116
AB	132
AC	132

¹⁾ The extension profile length includes the seal.

4.11 Chain hoist trolleys

The electrical chain hoist can be combined with a variety of chain hoist trolleys. The ATHLO *chain* electrical chain hoist is compatible with both C- and M-trolleys of the chain hoist.

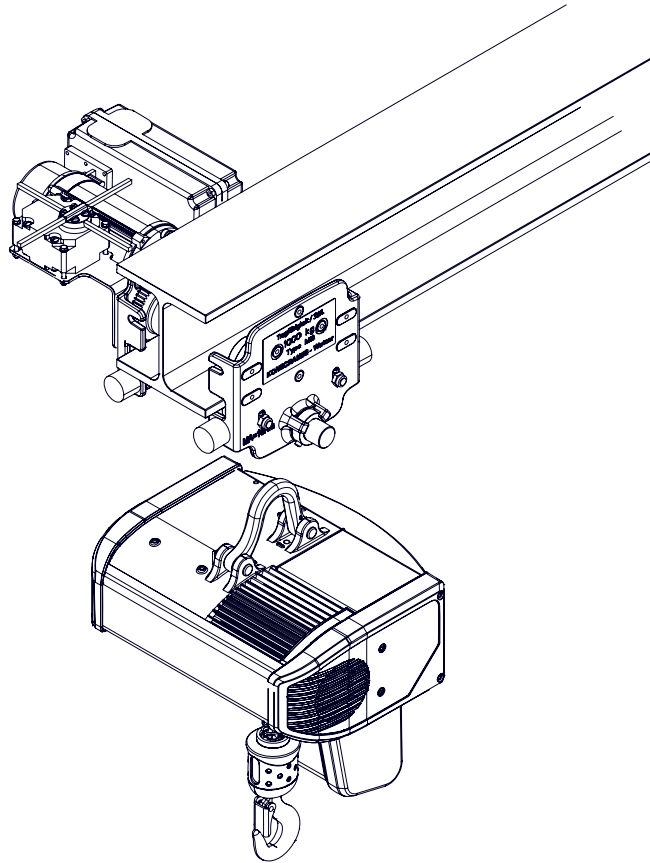


Figure 37. Motorized trolley (normal headroom trolley)

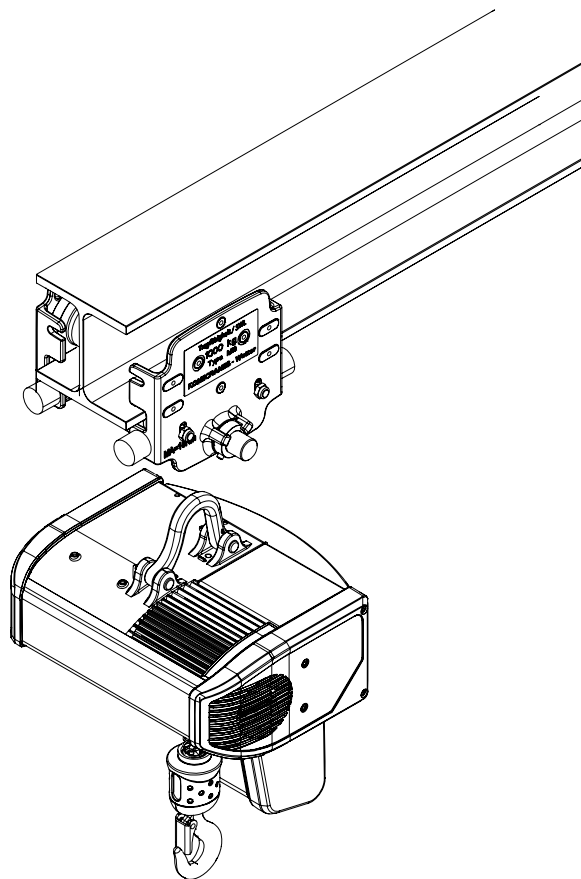


Figure 38. Push trolley

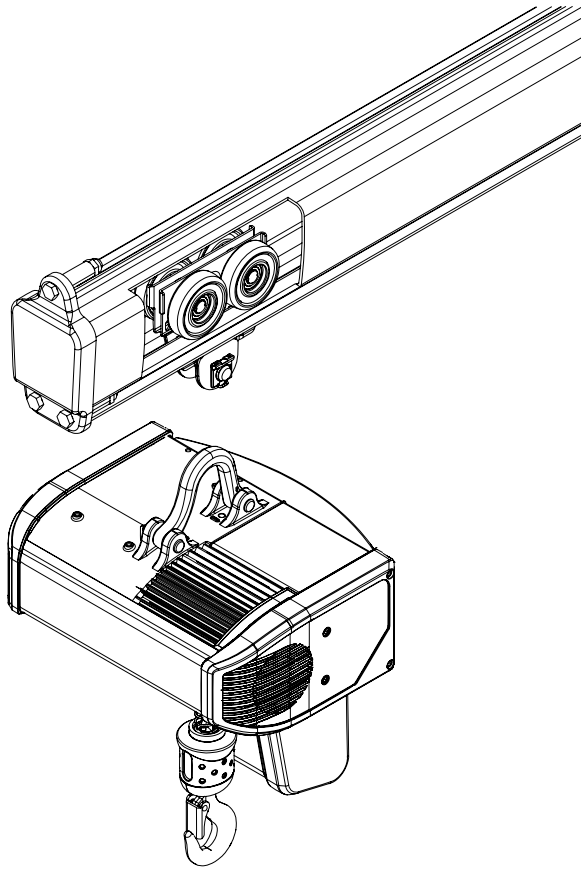


Figure 39. Push trolley inside LCS profile

5 ELECTRICS OF THE CHAIN HOIST

5.1 Cable gland positions on the hoist

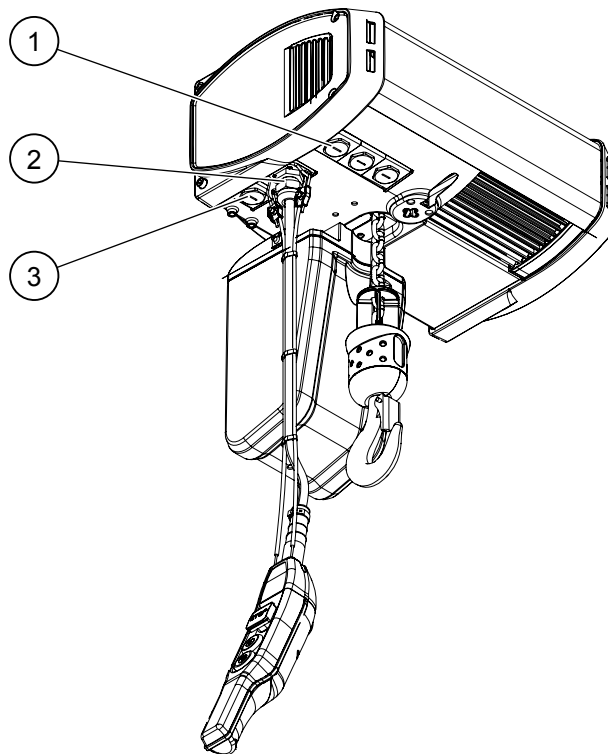


Figure 40. Cable gland positions of the chain hoist

- | | |
|--------------------------------|-----------------------|
| 1. Trolley connection to hoist | 3. Hoist power supply |
| 2. Pendant controller | |

5.2 Wiring principle

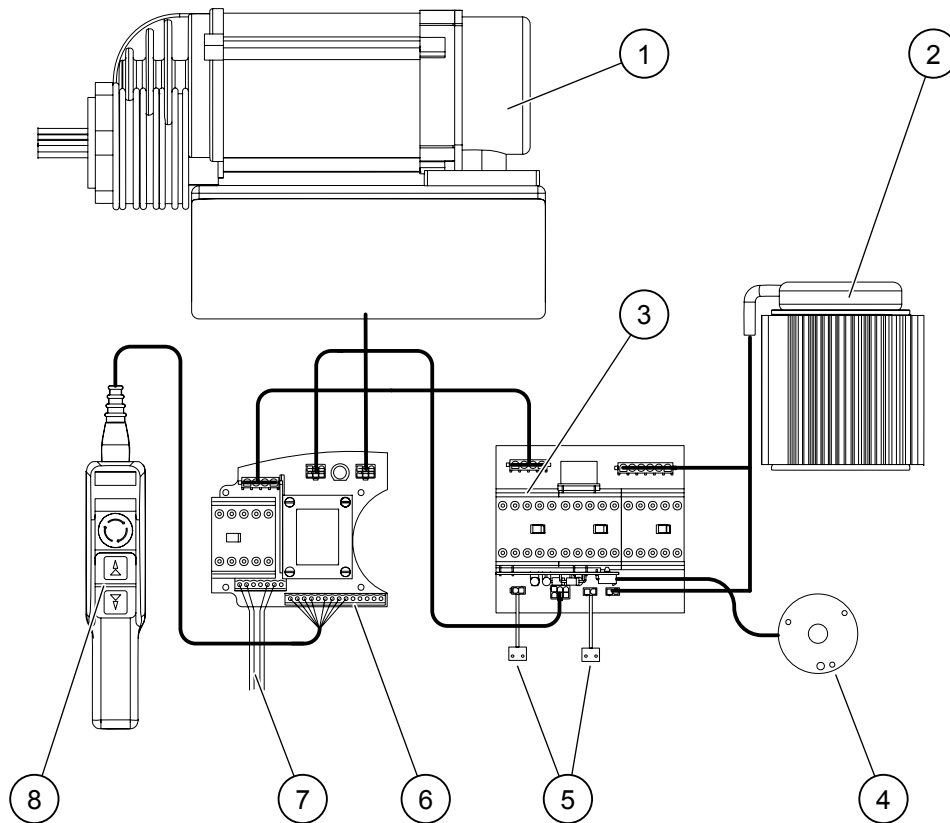


Figure 41. Wiring principle of the 2-speed electrical chain hoist

- | | |
|--|---|
| 1. Traveling motor unit with integrated inverter | 6. Power board (main contactor and transformer) |
| 2. Hoisting motor + bimetal switches | 7. Power supply |
| 3. Motor control board | 8. Pendant controller |
| 4. Brake | |
| 5. Lifting limit switches | |

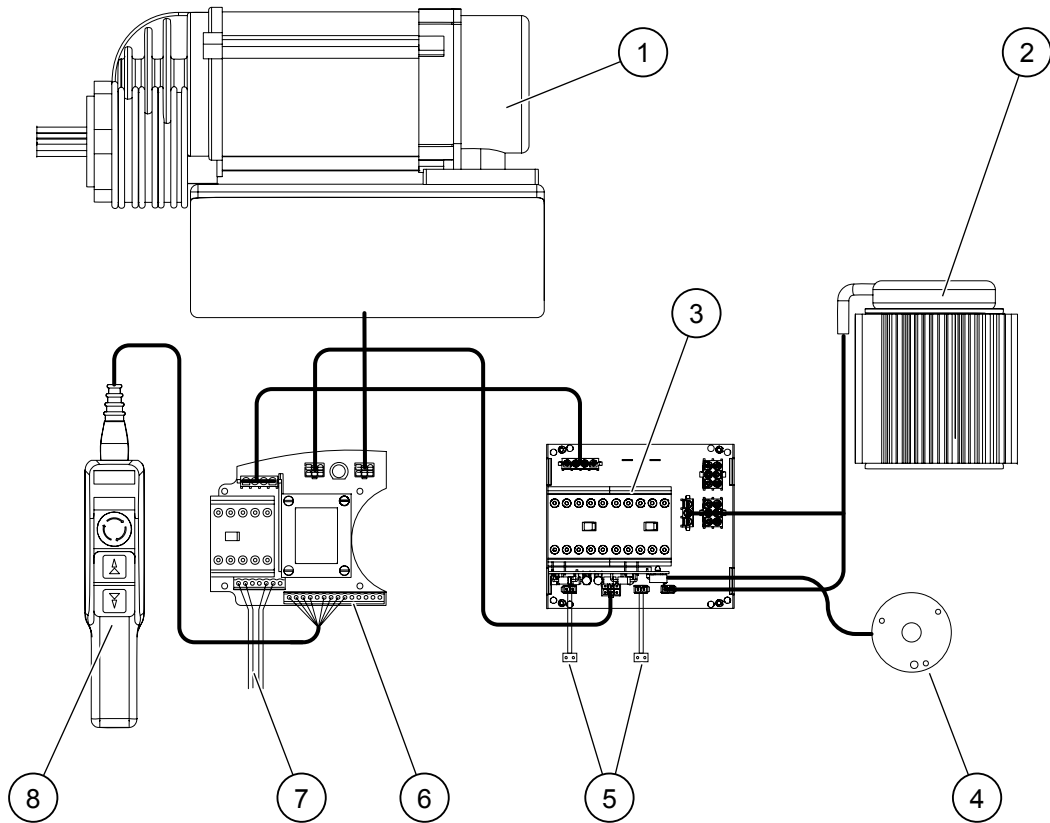


Figure 42. Wiring principle of the 1-speed electrical chain hoist

- | | |
|--|---|
| 1. Traveling motor unit with integrated inverter | 6. Power board (main contactor and transformer) |
| 2. Hoisting motor + bimetal switches | 7. Power supply |
| 3. Motor control board | 8. Pendant controller |
| 4. Brake | |
| 5. Lifting limit switches | |

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