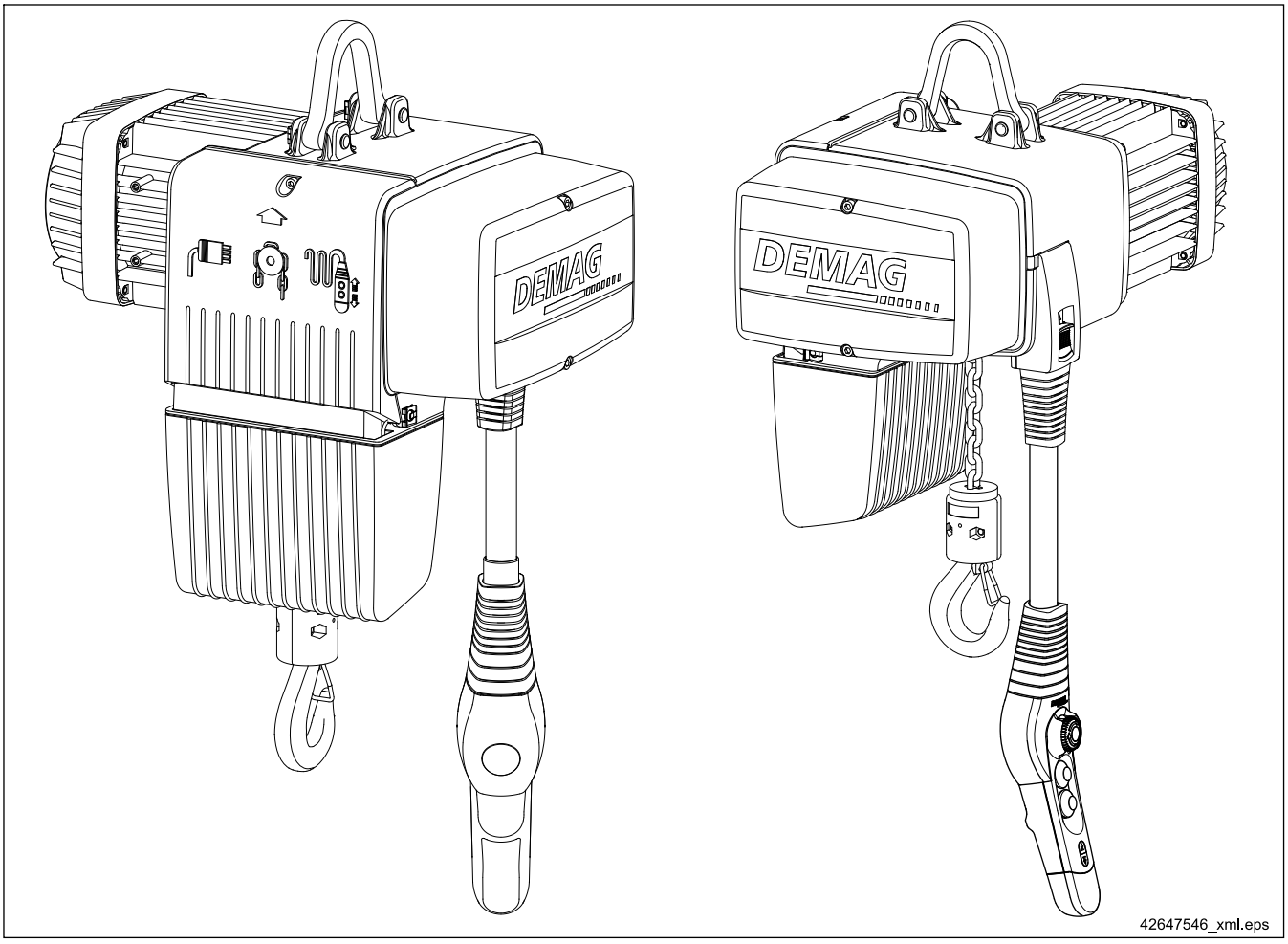
DEMAG
Cranes & Components

Operating instructions / Accessories / Component parts

Demag DC-Com 1 – 10 chain hoist



Original operating instructions

Manufacturer

Demag Cranes & Components GmbH
P.O. Box 67
58286 Wetter
Phone: +49 (0) 2335 92-0
Telefax +49 (0) 2335 92-7676
www.demagcranes.de
E-mail: **info@demagcranes.com**

Please fill in the following table before first putting the unit into service. This provides you with a definitive documentation of your Demag DC chain hoist and important information if you ever have to contact the manufacturer or his representative.

Owner
Where in use
Size
Serial number
Year of manufacture
Operating voltage
Control voltage
Frequency
Wiring diagram number

Tab. 1

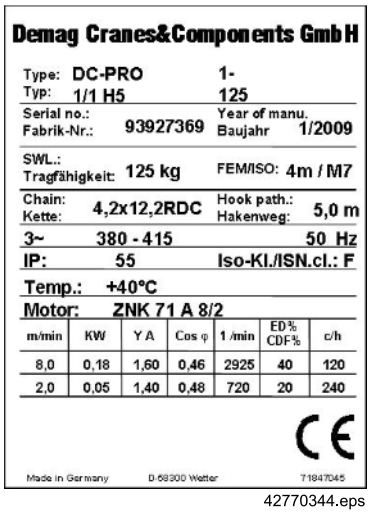


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Fig. 1 Example type plate

Item	Designation	
1	Manufacturer	see above
2	Chain hoist type	⇒ "Model code", Page 17, ⇒ "Selection table", Page 18
3	Serial no., calendar week, year of manufacture	
4	SWL, group of mechanism	⇒ "Model code", Page 17, ⇒ "Selection table", Page 18
5	Chain type, hook path	⇒ "Available hoist chains", Page 83, ⇒ "Model code", Page 17, ⇒ "Selection table", Page 18
6	Voltage, frequency	⇒ "Hoist motor data ", Page 20
7	Type of enclosure, insulation class	⇒ "Operating conditions", Page 28, ⇒ "Hoist motor data ", Page 20
8	Ambient temperature	⇒ "Operating conditions", Page 28
9	Motor type	⇒ "Selection table", Page 18, ⇒ "Hoist motor data ", Page 20
10	Electrical key values	⇒ "Hoist motor data ", Page 20
11	Conformity symbol	
12	Manufacturer address	see above

Tab. 2

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1 General

1.1 DC-Com chain hoist

You have purchased a Demag quality product.

This chain hoist was manufactured to European standards and regulations in accordance with state-of-the-art engineering principles. The requirements of the EC directive are complied with.

1.2 DC-Com documentation

Further documents are available for sub-assemblies/components in addition to these operating instructions. If required, the corresponding documents are supplied or can be ordered separately, even if special designs or additional options deviating from these operating instructions are ordered.

Documents[1)]	Part no.:
Technical data / Catalogues	
Demag DC-Pro 1 - 25 chain hoist Demag DCS-Pro 1 - 10 chain hoist	203 525 44
Demag DC-Com chain hoist	203 571 44
CF5-DC/DCM trolley	203 568 44
U11-DC/DCM/DK trolley	203 569 44
E11-E34 DC travel drive (circuit diagrams)	203 698 44
RU/EU56 trolley	203 691 44
Electrical accessories DC	203 656 44
Electrical accessories POLU box	203 682 44
Clamp-fitted buffers	203 313 44
Operating instructions	
DC-Pro 1 - 10 chain hoist	214 741 44
DC-Pro 16 - 25 chain hoist	211 033 44
DC-Com chain hoist	214 802 44
DCS-Pro chain hoist	214 827 44
DC-Di chain hoist	211 068 44
DC-Wind chain hoist	211 010 44
KDC chain hoist	211 017 44
Assembly - Setting - Dimensions	
E11-E34 DC travel drive	214 810 44
DRC-DC radio remote control	214 689 44
DRC-DC brief instructions	211 045 44
DC geared limit switch	211 011 44
PGS parallel grippers	214 095 44
Friction force checking device	206 973 44
DC PWM/3ST signal converter	211 094 44
DSC-EX control pendant	214 832 44
DSE10-C control pendant	214 998 44
DC protective sleeve	203 673 44
DC tandem box	211 108 44
VG11-34 EU11-34 dual-output gearbox	211 122 44
DSC strain relief	211 092 44
DC test and inspection booklet	214 745 44
Certificates	235 309 44

Tab. 3

1.3 Symbols/signal words

Important safety information and instructions are marked by corresponding symbols and signal words.

The safety instructions must be followed. Exercise particular caution to ensure that accidents, injuries and damage are avoided in such cases.

[1)] The documents can be ordered from the relevant Demag office.

The relevant local accident prevention regulations for the application and general safety instructions must also be complied with.

The following symbols and instructions warn against possible personal injuries or damage to property and are intended to assist you in your work.

DANGER

This symbol indicates an immediate hazard which can result in serious injury or death.

– Follow these instructions at all times and be particularly careful and cautious.

WARNING

This symbol indicates a possibly hazardous situation which might result in serious injury or death.

– Follow these instructions at all times and be particularly careful and cautious.

CAUTION

This symbol indicates a possibly hazardous situation which might result in medium to light injury or damage.

– Follow these instructions at all times and be particularly careful and cautious.

Operating hazard for the machine

- This symbol indicates information on the appropriate use of the machine.
- This symbol in the operating instructions indicates all warnings which, if not complied with, may result in malfunctions or damage.

1.4 Information on the operating instructions

These operating instructions are an integral part of the machine. They describe the safe and appropriate use of the machine.

These operating instructions are designed to provide the owner and operator with useful instructions for transportation, putting into service, operation and maintenance of our chain hoists.

Persons entrusted with this work must know and comply with the safety regulations and the operating instructions.

The machine may only be operated by personnel who are fully familiar with the operating instructions. In particular, this includes the "Safety" chapter and the relevant safety instructions in the working sections of these operating instructions. The operating instructions must be available to the operating personnel at all times in order to prevent operating errors and to ensure smooth and trouble-free operation of our products. They must be kept available in the immediate vicinity.

1.5 Liability and warranty

All information included in these operating instructions has been compiled on the basis of the relevant regulations, state-of-the-art engineering principles and our many years of experience.

These operating instructions must be read carefully before starting any work on and with the chain hoist, especially before it is put into service for the first time. The manufacturer does not assume any liability for damage resulting from the following:

- non-compliance with the operating instructions,
- inappropriate use,
- untrained personnel,
- unauthorized conversions,
- technical modifications.

Wearing parts are not subject to liability for defects.

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We reserve the right to incorporate technical modifications within the scope of improving the operating characteristics and further development of the product.

1.6 Copyright

These operating instructions are only intended to be used by people who work with or on the chain hoist.

Any and all content, texts, drawings, images and any other information are protected within the sense of copyright law and are subject to further industrial rights. Any misuse is an offence.

No part of this documentation, in whole or in part, may be reproduced, distributed, shown in public or used in any other way without specific prior consent. Infringements are an offence resulting in obligatory compensatory damages. Further rights reserved.

All industrial rights reserved.

1.7 Use of spare parts

We urgently recommend that only spare parts and accessories approved by us be used. Only then can we ensure the safety and normal service life of the installation.

Spare parts not approved by us may cause unpredictable hazards, damage, malfunctions or complete failure of the chain hoist.

The use of unauthorized spare parts may render any claims for guarantee, service, damages or liability against the manufacturer or his appointed personnel, dealers and representatives null and void.

1.8 Definition of personnel

Manufacturer

The manufacturer is the person who

- manufactures equipment under his name and places it on the market for the first time;
- resells equipment of others under his name; however the reseller shall not be considered as manufacturer, if the name of the manufacturer (under 1.) appears on the equipment;
- imports equipment to Germany and places it on the market for the first time or
- exports equipment into another member state of the European Union and makes it directly available to a user.

Owner

Owners (employer, company) are defined as persons who own the machine and who use it appropriately or allow it to be operated by suitable and trained persons.

Operating personnel/operator

Operating personnel or machine operators are defined as persons entrusted by the owner of the machine with operation of the equipment. The person must be trained by the owner in accordance with the tasks to be performed.

Trained person

Trained persons are defined as persons who have been instructed and trained for the tasks assigned to them and on the possible hazards resulting from inappropriate conduct. Personnel must be informed about the required protective devices, protective measures, relevant regulations, codes of practice, accident prevention regulations and operating conditions and must provide verification of their competence. The person must be trained by the owner in accordance with the tasks to be performed.

Specialist personnel

Specialist personnel are defined as persons assigned by the owner of the machine to carry out special tasks such as installation, setting-up, maintenance and fault elimination. The person must be trained by the owner in accordance with the tasks to be performed.

Qualified electrician

Qualified electricians are defined as persons who, owing to their technical training, knowledge and experience of electrical installations as well as knowledge of the relevant valid standards, codes of practice and regulations, are able to assess the tasks given to them and to identify and eliminate potential hazards. The person must be trained by the owner in accordance with the tasks to be performed.

Experienced technician

Experienced technicians are defined as persons who, owing to their technical training and experience, have sufficient knowledge in the field of the machine. They must be familiar with the relevant national industrial safety regulations, codes of practice, accident prevention regulations, directives and generally accepted engineering standards enabling them to judge the safe operating condition of machines.

Assigned expert engineer (in the Federal Republic of Germany according to BGV D8, § 23, for determining the S.W.P.)

An assigned expert engineer is defined as an experienced technician specifically assigned by the manufacturer to determine the remaining duration of service (S.W.P. = safe working period) and to carry out a general overhaul of machines.

Authorized expert engineer (according to BGV D6, § 28 in Germany)

In addition to the expert engineers of the Technical Supervisory and Inspection Board, an authorized expert engineer for the inspection of machines is defined as an expert engineer authorized by the Industrial Employers' Mutual Insurance Association.

1.9 Test and inspection booklet

A test and inspection booklet filled in with all details must be available for the hoist (in the Federal Repblic of Germany according to BGV D6, § 28). The results of the regular tests and inspections must be entered into the test and inspection booklet and must be certified by the inspector. Test and inspection booklet ident. no.: ⇒ Tab. 3, Page 7

1.10 After-sales service

Our after-sales service will provide you with technical information on our products, etc.

Please keep the serial or order number (see test and inspection booklet, load capacity plate on the crane) for any correspondence or spare part orders. Specifying these data ensures that you receive the correct information or the required spare parts.

Demag Cranes & Components GmbH

Telefon +49 (0)180 / 5 - 741268

www.demagcranes.com

2 Safety

2.1 General

The "Safety" chapter provides an overview of all important safety aspects for optimum protection of personnel as well as for safe and reliable operation of the machine.

At the time of placing it on the market the machine has been built according to the state-of-the-art and is considered as safe to operate. However, it may cause hazards if it is used inappropriately by personnel which have not been trained specially.

Knowledge of the contents of the operating instructions are one of the requirements necessary to protect personnel from hazards and to avoid malfunctions and, therefore, to operate the machine safely and reliably.

Modifications of any kind and additions to or conversions of the machine must not be carried out without the written consent of Demag.

2.2 Safety signs on the equipment

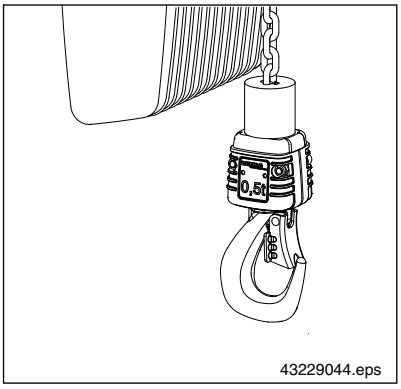

Fig. 2

Any pictograms, signs or labels on the machine must be obeyed and must not be removed. Pictograms, signs or labels that are damaged or no longer legible must be replaced immediately.

2.3 Intended use

The machine may only be used as intended and in compliance with the requirements for the owner resulting from these operating instructions and the following limitations. Any other use may result in a danger to life and limb and/or cause damage to the machine and/or the load.

- Chain hoists are only intended for lifting, lowering and moving loads and may be used as stationary or travelling units.
- The suspension/support structure for the chain hoist must be designed for loads caused by operation of the chain hoist. The maximum safe working load is the load capacity specified on the capacity plate. This must not be exceeded. The maximum permitted load of the chain hoist includes the load and the load handling attachment.
- The machine may only be installed, operated, maintained and removed when in perfect working order by trained personnel. The personnel must meet the requirements according to ⇒ "Operating personnel requirements", Page 13.
- Appropriate use includes compliance with the safety instructions as well as any other instructions on assembly and disassembly, commissioning, function and operation, maintenance and fault elimination as well as compliance with the instructions on the machine safety devices, any possible remaining hazards and protection against hazards.
- The machine may only be used in compliance with the permissible technical data, ⇒ "Technical data", Page 16.
- The machine must be maintained appropriately at the specified regular intervals and inspected according to ⇒ "Inspection and maintenance schedule", Page 74 by specially trained personnel. Wear parts must be exchanged in good time.
- The accident prevention regulations UVV/BGV D8 §23 (2) and/or BGV D6 (1) must be complied with.

No liability for inappropriate use

The manufacturer is exempt from any liability for use other than the purpose which is technically possible and acceptable according to these operating instructions. In particular, the manufacturer assumes no liability for damage due to inappropriate or any other prohibited use of the machine in the sense of the "Intended use" section.

No liability in the case of structural modifications

The manufacturer is not liable for unauthorized structural modifications which have not been agreed with him. This includes incorrect connection of the machine to devices or equipment that do not belong to our scope of delivery, or the installation or use of accessories, equipment or sub-assemblies of other manufacturers that are not approved by the manufacturer.

Depending on the type and scope of the machine, an inspection must be carried out by an expert engineer before handing it over to the owner.
DC-Com chain hoist are designed for operation at temperatures of -20 °C up to +40 °C. At extreme temperatures and in aggressive atmophere or under conditions deviating from the section "Operating conditions", special measures must be taken by the owner in agreement with Demag.

Use of the control pendant
Powered lifting and lowering and, if applicable, cross-travel and long-travel motions are controlled by means of the corresponding control elements on the control unit. The slow speeds are intended for attaching the load, lifting it free and depositing it. Loads can be precisely positioned at slow speeds.
Short transport times can be achieved at higher speeds. They are suitable for travelling without a load or with a safely suspended load if no hazard can be caused by the faster motion sequences.

Inching must be avoided, as it causes increased wear and load sway.

2.4 Hazards which may be caused by the machine

The machine has been subject to a risk assessment. The design and execution based on this analysis corresponds to state-of-the-art engineering principles. Nevertheless there are residual risks!

The machine is operated at high electrical voltage.

DANGER

Live components

Danger to life and limb.

Electrical energy may cause serious injuries. If the insulation or individual components are damaged, there is danger to life caused by electrical current.

- Before carrying out maintenance, cleaning or repair work, switch off the machine and secure against restarting.
- Switch off the power supply when carrying out any work on the electrical installation. Check the components to be replaced for being de-energized.
- Do not remove safety equipment or render it inoperative by modifications.

WARNING

Crushing hazard

The lifting or lowering of loads may cause crushing hazards for parts of the body.

When lifting or lowering loads, it must be ensured that no persons are in the immediate danger zone.

WARNING

Suspended load! Falling parts!

There is danger to life and limb, when suspended loads fall down.

Persons must keep out of the danger zone.

- Keep a sufficient safety distance.
- Do not walk under the suspended load.

Certain work and practices are prohibited when using the machine as they may involve danger to life and limb and result in lasting damage to the machine. Please note the safety instructions in the chapters:

- ⇒ "Fitting", Page 39
- ⇒ "Putting into service for the first time", Page 59

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- ⇒ "Operation", Page 61
- ⇒ "Maintenance/repair", Page 68

2.5 Responsibility of the owner

Information on safety at work refers to the regulations of the European Union that apply when the machine is manufactured. The owner is obliged to ensure that the specified industrial safety measures comply with the latest rules and regulations and to observe new regulations during the entire service life of the machine. Local industrial safety legislation and regional regulations and codes of practice must be observed outside the European Union.

General safety, accident prevention and environmental protection regulations that apply where the machine is in operation must be observed and complied with in addition to the safety instructions contained in these operating instructions.

The owner and any personnel authorised by him are responsible for correct operation of the machine and for clearly defining responsibilities for installation, operation, maintenance and cleaning. The operating instructions must be followed in full and without any limitations.

Special local conditions or applications can lead to situations which are not considered in these operating instructions. In such cases, the required safety measures must be defined and implemented by the owner. Necessary measures may also relate, for example, to the handling of hazardous materials or tools and the provision/wearing of personal protection equipment. The operating instructions must, if required, be supplemented by the owner with instructions relating to the organization of work, working procedures, authorized personnel, supervising and reporting obligations, etc. For further information please refer to ⇒ "Safety instructions for operation", Page 61.

Furthermore, the owner must ensure that

- any futher working and safety instructions resulting from risk assessment of the machine workplaces are specified in operating procedures.
- personnel who work with or on the machine are provided with appropriate first-aid equipment. The personnel must be trained in the use of the first-aid equipment.
- the operating instructions are always kept available in the immediate vicinity of the machine for installation, operating and maintenance personnel.
- the personnel are trained in accordance with the work to be performed.
- the machine is only operated when in safe and proper working order.
- the safety devices are always kept freely accessible and are checked regularly.
- the national regulations for the operation of cranes and lifting applinces are observed.
- the specified regular checks and inspections are carried out on time and are documented.

The owner is urged to develop procedures and guidelines to cover malfunction situations, to instruct users and to apply these instructions at a suitable place in a readily legible manner.

2.6 Operating personnel requirements

Only authorised and trained personnel may operate the machine. The personnel must have received instruction on the machine functions and any hazards that may occur.

Every individual given the task of working on or with the machine must have read and understood the operating instructions before any work on the machine is started.

Persons under the influence of drugs, alcohol or medicines which affect their reactions must not work on or with the machine.

Age and job-specific regulations relevant at the place where the machine is operated must be observed for the selection of any personnel.

Personnel are obliged to report to the owner without delay any changes to the machine that impair safety.

For independent operation (machine operator) or maintenance (trained maintenance fitter) of the DC-Com chain, the owner may only employ persons

- who are at least 18 years of age,

- who are mentally and physically suitable,
- who have been instructed in the operation and maintenance of chain hoists and who have proven their qualification to the owner in this respect.

2.7 Personal protection equipment

When work is carried out on or with the machine, the following must always be worn:

- Protective clothing, closely-fitting working clothes (low tear strength, no loose sleeves, no rings or any other jewellery, etc.);
- Safety shoes to protect against heavy falling parts and against slipping;
- Safety helmet to be worn by everybody in the danger zone;

2.8 Emergency stop device

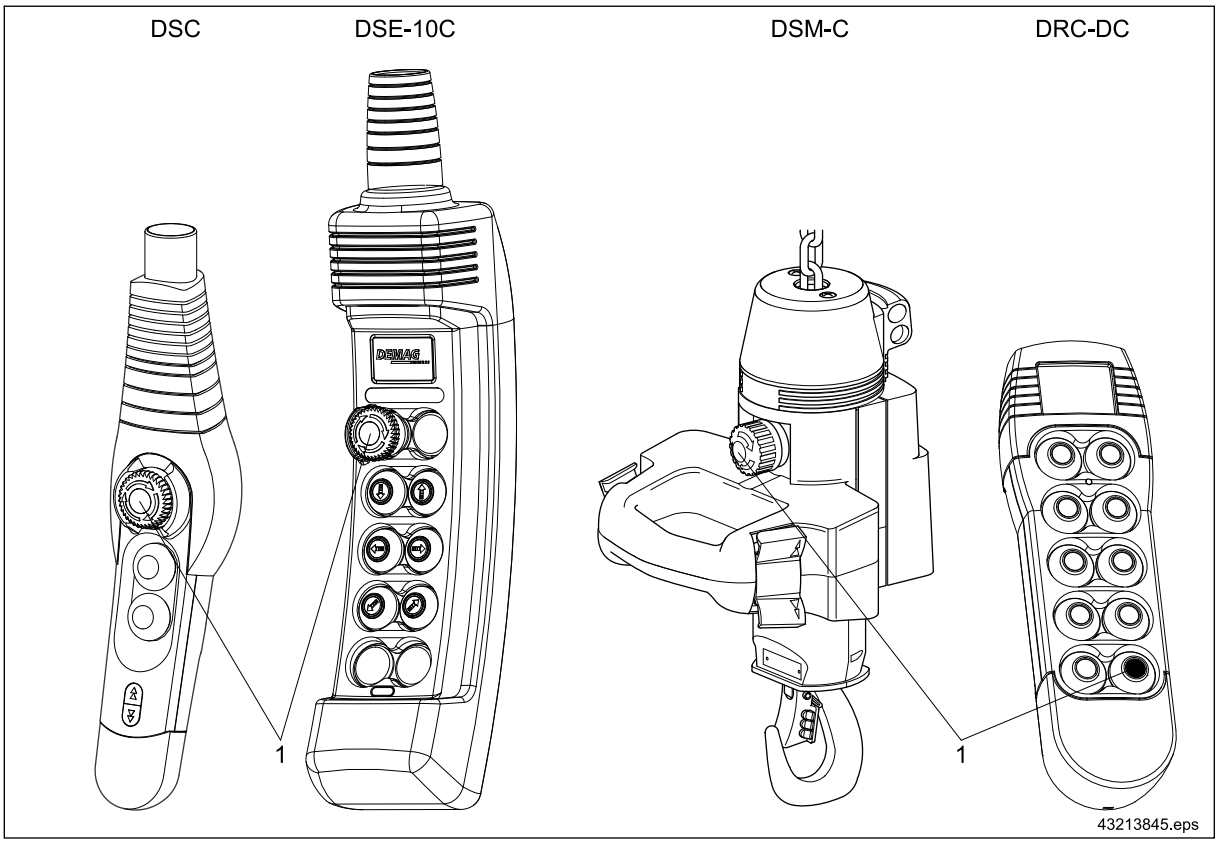

Fig. 3 Position of the emergency stop device (1)

To prevent damage and injuries, the machine is fitted with an emergency-stop device (1). This is located on the control unit. The emergency-stop operating function must be checked regularly.

2.9 Regular inspections

The owner of the machine may be obliged to carry out regular inspections by national industrial safety legislation and regional regulations. In Germany, this is specified by the accident prevention regulations for winches, lifting and towing devices (BGV D8) and the accident prevention regulations for cranes (BGV D6), for example. These specify that

- the machine must be inspected before it is put into operation,
- the machine must be inspected regularly,
- the elapsed share of the theoretical safe working period must be calculated,
- a record of tests and inspections must be kept.

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The owner is obliged to ensure that the machine complies with the latest rules and regulations and to observe new regulations at all times.

If no comparable inspection regulations or requirements apply at the place where the machine is operated, we recommend compliance with the above-mentioned regulations.

3 Technical data

3.1 Design overview

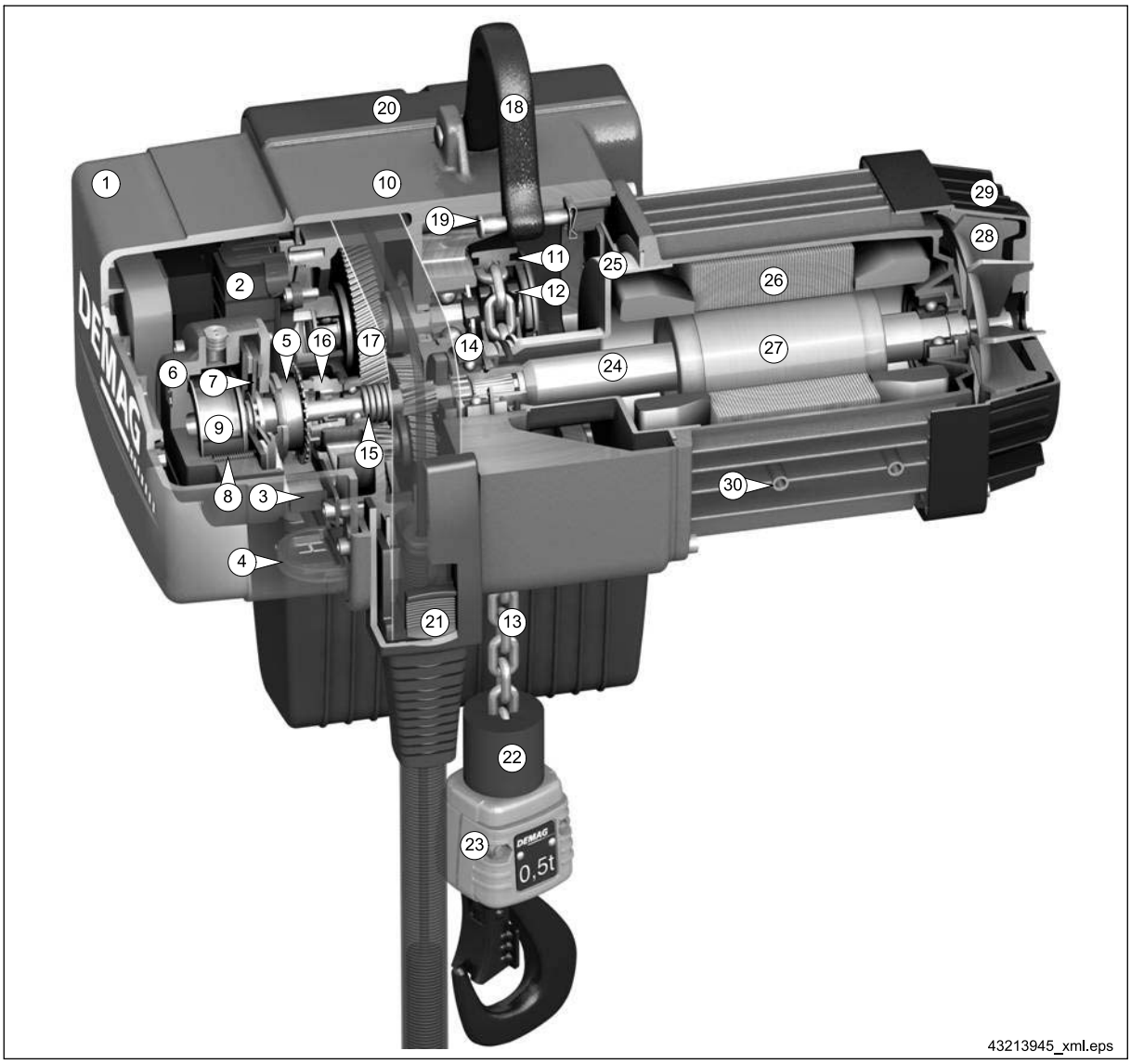

Fig. 4 Single-fall design

Item	Designation	Item	Designation	Item	Designation
1	Electrical equipment cover	11	Chain guide	21	Adjusting mechanism for control cable
2	Control	12	Sprocket	22	Switch-off buffer for operating limit switch [2]
3	Operation hours counter	13	Round section steel chain	23	Hook assembly with capacity plate [2]
4	Window [2]	14	Slipping clutch	24	Motor shaft
5	Pulse wheel for speed monitoring	15	Dished washer pack	25	Winding head cap
6	Magnet brake	16	Slipping clutch adjusting nut	26	Stator
7	Brake disk with linings	17	DC 1 - 5 two-stage helical gearbox DC 10 three-stage helical gearbox	27	Rotor
8	Brake springs	18	Suspension bracket	28	Fan
9	Brake magnet	19	Suspension bolt	29	Fan cover
10	Gearbox housing	20	Service cover	30	Mounting points

Tab. 4

[2] Figure deviating from scope of supply

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3.2 Model code

E	K	L	D	DC-Com	10 -	2000	2/1	H5	V6/1,5	380 - 415 /	50	24/6	200	220 - 480
														Voltage range / Voltage travel drive[V]
													Max. flange width of trolley [mm]	
												Travel speed [m/min]		
											Frequency [Hz]			
										Voltage range chain hoist [V]				
										Hoist speed [m/min]				
									V	2-stage = Main / creep lifting				
									VS	Stepless = VS at nominal load up to VS_{max} in the partial load range				
								Hook path [m]						
							Reeving							
						Load capacity [kg]								
					Size [3]									
				DC-Pro	2-stage chain hoist (Demag chain hoist)						DC-ProDi	2-stage chain hoist for direct control		
				DCM-Pro	2-stage Manulift						DC-ProFi	Variable speed chain hoist for control by means of an external frequency inverter		
				DCS-Pro	Variable speed chain hoist									
				DCMS-Pro	Variable speed Manulift									
				DCRS-Pro	Rocker switch stepless						DC-Com	2-stage chain hoist basic version		
			D	Articulated curve-running trolley										
		L		Long monorail hoist										
	K			Low headroom monorail hoist										
	U			Standard-headroom monorail hoist										
			11	Trolley size load capacity [kg • 100]										
			22											
			34											
			56											
R				Push-travel trolley										
E				Travel drive										
C	F		5	Click-Fit (push-travel trolley)										

Tab. 5

Not all features of the mounting code can be combined.

[3] The designations of sizes DC 10 and DC 20 have been changed to DC 10 1/1 and DC 10 2/1 since 04/2006.

3.3 Selection table

SWL	Size [4]	Reeving	Group of mechanisms	Hoist speed		Standard hook path [5]	Motor size [6]	Max. weight at hook path		
	Chain hoist		DIN EN 14492	at 50 Hz	at 60 Hz	H		4 m	5 m	8 m
[kg]	DC-Com		FEM / ISO	[m/min]	[m/min]	[m]		[kg]	[kg]	[kg]
80	1	1/1	3m/M6	8,0/2,0	9,6/2,4	4, 5 and 8	ZNK 71 A 8/2 [7]	21	22	24
100			2m/M5							
125										
160	2			6,0/1,5	7,2/1,8		ZNK 71 B 8/2			
200			1Am/M4							
250										
315	5		2m/M5	4,5/1,1	5,4/1,3		ZNK 80 A 8/2	27	28	30
400			1Am/M4							
500										
630	10		2m/M5	4,0/1,0	4,8/1,2		ZNK 100 A 8/2	47	48	52
800			1Am/M4							
1000										
1250		2/1	2m/M5				ZNK 100 B 8/2	63	65	73
1600			1Am/M4							
2000										

Tab. 6

Hoist speeds until 09/2008 (no longer available)

SWL	Size	Reeving	Group of mechanisms	Hoist speed		Standard hook path [5]	Motor size [6]	Max. weight at hook path		
	Chain hoist		DIN EN 14492	at 50 Hz	at 60 Hz	H		4 m	5 m	8 m
[kg]	DC-Com		FEM / ISO	[m/min]	[m/min]	[m]		[kg]	[kg]	[kg]
160	2	1/1	2m/M5	4,0/2,0	4,8/2,4	4, 5 and 8	ZNK 71 B 8/4	21	22	24
200			1Am/M4							
250										
315	5		2m/M5				ZNK 80 A 8/4	27	28	30
400			1Am/M4							
500										

Tab. 7

[4] The designations of sizes DC 10 and DC 20 have been changed to DC 10 1/1 and DC 10 2/1 since 04/2006.
[5] Larger hook paths on request.
[6] Motor data ⇒ "Hoist motor data ", Page 20.
[7] ZNK 71 A 8/2 with 380-415 V / 50 Hz only for initial delivery; for replacement requirements, the motor is replaced by the ZNK 71 B 8/2 motor.

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3.4 Electrical key values

3.4.1 Hoist motor data

Size	Motor size	No. of poles	P_N	CD F	n_N	Starts/h	Min. / max. currents and starting current				
							$I_{N\ min.}$	$I_{N\ max.}$	I_{max} 8)	$I_A/I_{N\ max.}$	cos φ_N
			[kW]	[%]	rpm		[A]	[A]	[A]		
220-240 V, 50 Hz, 3 ~ (CE) 9)											
DC-Com 1	ZNK 71 B 8/2	8	0,05	20	720	240	1,75	2,10	2,10	1,45	0,48
		2	0,18	40	2950	120	2,10	2,80	2,80	2,75	0,46
DC-Com 2	ZNK 71 B 8/2	8	0,07	15	695	240	1,80	2,10	2,35	1,45	0,52
		2	0,30	25	2880	120	2,30	2,80	3,20	2,75	0,55
DC-Com 5	ZNK 80 A 8/2	8	0,10	15	720	240	1,90	1,90	2,15	2,50	0,46
		2	0,41	25	2910	120	3,60	4,70	5,50	4,70	0,49
DC-Com 10	ZNK 100 A 8/2	8	0,19	15	705	240	2,80	3,10	3,65	1,90	0,48
		2	0,75	25	2850	120	3,50	4,00	4,50	4,85	0,65
	ZNK 100 B 8/2	8	0,37	15	735	240	-				
		2	1,50	25	2955	120					
380-415 V, 50 Hz, 3 ~ (CE) 9)											
DC-Com 1	ZNK 71 A 8/2 10)	8	0,05	20	700	240	0,95	1,10	1,10	1,20	0,66
		2	0,18	40	2840	120	1,20	1,40	1,40	2,60	0,57
	ZNK 71 B 8/2	8	0,05	20	700	240	1,00	1,20	1,20	1,45	0,48
		2	0,18	40	2840	120	1,20	1,60	1,60	2,75	0,46
DC-Com 2	ZNK 71 B 8/2	8	0,10	20	675	240	1,00	1,20	1,35	1,45	0,52
		2	0,37	40	2825	120	1,30	1,60	1,85	2,75	0,55
DC-Com 5	ZNK 80 B 8/2	8	0,18	20	665	240	1,10	1,10	1,25	2,50	0,46
		2	0,72	40	2745	120	2,10	2,70	3,20	4,70	0,49
DC-Com 10	ZNK 100 A 8/2	8	0,27	20	690	240	1,60	1,80	2,10	1,90	0,48
		2	1,10	40	2745	120	2,00	2,30	2,60	4,85	0,65
	ZNK 100 B 8/2	8	0,57	20	675	240	3,90	4,60	5,40	2,30	0,42
		2	2,30	40	2790	120	5,40	6,30	7,70	5,10	0,49
500-525 V, 50 Hz, 3 ~ (CE/CSA) 9)											
DC-Com 1	ZNK 71 B 8/2	8	0,05	20	720	240	0,75	0,95	0,95	1,45	0,48
		2	0,18	40	2925	120	0,90	1,25	1,25	2,75	0,46
DC-Com 2	ZNK 71 B 8/2	8	0,10	20	675	240	0,80	0,95	1,10	1,45	0,52
		2	0,37	40	2825	120	1,10	1,25	1,45	2,75	0,55
DC-Com 5	ZNK 80 B 8/2	8	0,18	20	665	240	0,90	0,90	1,00	2,50	0,46
		2	0,72	40	2745	120	1,70	2,15	2,55	4,70	0,49
DC-Com 10	ZNK 100 A 8/2	8	0,27	20	690	240	1,30	1,40	1,70	1,90	0,48
		2	1,10	40	2745	120	1,70	1,80	2,00	4,85	0,65
	ZNK 100 B 8/2	8	0,57	20	675	240	3,30	3,70	4,30	2,27	0,42
		2	2,30	40	2790	120	4,15	5,00	6,10	5,13	0,49

Tab. 8

8) I_{max} = maximum rated current for lowering operation.

9) The tolerance of the voltage range must not exceed ± 10%. Motors are designed in compliance with insulation class F.

10) ZNK 71 A 8/2 with 380-415 V / 50 Hz only for initial delivery; for replacement requirements, the motor is replaced by the ZNK 71 B 8/2 motor.

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Size	Motor size	No. of poles	P_N	CD F	n_N	Starts/h	Min. / max. currents and starting current				
							$I_{N\ min.}$	$I_{N\ max.}$	I_{max} 11)	$I_A/I_{N\ max.}$	cos φ_N
			[kW]	[%]	rpm		[A]	[A]	[A]		
220-240 V, 60 Hz, 3 ~ (CSA) 12)											
DC-Com 1	ZNK 71 B 8/2	8	0,06	20	870	240	2,10	2,50	2,50	1,45	0,47
		2	0,22	40	3525	120	2,50	3,35	3,35	2,75	0,45
DC-Com 2	ZNK 71 B 8/2	8	0,09	15	845	240	2,10	2,50	2,80	1,45	0,51
		2	0,36	25	3480	120	2,70	3,30	3,85	2,75	0,54
DC-Com 5	ZNK 80 B 8/2	8	0,12	15	870	240	2,30	2,30	2,60	2,50	0,45
		2	0,49	25	3510	120	4,40	5,60	6,60	4,70	0,48
DC-Com 10	ZNK 100 A 8/2	8	0,23	15	855	240	3,35	3,75	4,40	1,90	0,47
		2	0,90	25	3450	120	4,20	4,80	5,40	4,85	0,67
	ZNK 100 B 8/2	8	0,44	15	885	240	-				
		2	1,80	25	3555	120					
380-400 V, 60 Hz, 3 ~ (CE) 12)											
DC-Com 1	ZNK 71 B 8/2	8	0,06	20	870	240	1,35	1,60	1,60	1,45	0,47
		2	0,22	40	3525	120	1,70	2,00	2,00	2,75	0,45
DC-Com 2	ZNK 71 B 8/2	8	0,09	15	845	240	1,40	1,60	1,70	1,45	0,51
		2	0,36	25	3480	120	1,80	2,00	2,20	2,75	0,54
DC-Com 5	ZNK 80 B 8/2	8	0,12	15	870	240	1,55	1,55	1,75	2,50	0,45
		2	0,49	25	3510	120	3,00	3,50	4,10	4,70	0,48
DC-Com 10	ZNK 100 A 8/2	8	0,23	15	855	240	2,30	2,50	2,80	1,90	0,47
		2	0,90	25	3450	120	2,70	2,90	3,30	4,85	0,64
	ZNK 100 B 8/2	8	0,44	15	885	240	5,75	6,40	7,10	2,30	0,41
		2	1,80	25	3555	120	7,30	8,90	10,00	5,10	0,48
440-480 V, 60 Hz, 3 ~ (CSA) 12)											
DC-Com 1	ZNK 71 B 8/2	8	0,06	20	870	240	0,96	1,15	1,15	1,45	0,47
		2	0,22	40	3525	120	1,15	1,55	1,55	2,75	0,45
DC-Com 2	ZNK 71 B 8/2	8	0,09	15	845	240	1,05	1,25	1,40	1,45	0,51
		2	0,36	25	3480	120	1,35	1,70	1,95	2,75	0,54
DC-Com 5	ZNK 80 B 8/2	8	0,12	15	870	240	1,15	1,15	1,30	2,50	0,45
		2	0,49	25	3510	120	2,20	2,80	3,30	4,70	0,48
DC-Com 10	ZNK 100 A 8/2	8	0,23	15	855	240	1,65	1,85	2,20	1,90	0,47
		2	0,90	25	3450	120	2,10	2,40	2,70	4,85	0,64
	ZNK 100 B 8/2	8	0,44	15	885	240	4,10	4,80	5,60	2,30	0,41
		2	1,80	25	3555	120	5,60	6,60	8,00	5,10	0,48
575 V, 60 Hz, 3 ~ (CSA) 12)											
DC-Com 1	ZNK 71 B 8/2	8	0,06	20	870	240	1,10		1,10	1,22	0,49
		2	0,22	40	3525	120	1,20		1,20	3,50	0,41
DC-Com 2	ZNK 71 B 8/2	8	0,09	15	845	240	0,80		0,90	1,65	0,60
		2	0,36	25	3480	120	1,00		1,15	2,75	0,55
DC-Com 5	ZNK 80 B 8/2	8	0,12	15	870	240	0,95		1,10	2,50	0,45
		2	0,49	25	3510	120	1,80		2,10	4,70	0,48
DC-Com 10	ZNK 100 A 8/2	8	0,23	15	855	240	1,30		1,50	2,20	0,46
		2	0,90	25	3450	120	1,60		1,80	5,70	0,73
	ZNK 100 B 8/2	8	0,44	15	885	240	3,00		3,50	2,33	0,43
		2	1,80	25	3555	120	3,90		4,70	5,60	0,60

Tab. 9

11) I_{max} = maximum rated current for lowering operation.

12) The tolerance of the voltage range must not exceed ± 10%. Motors are designed in compliance with insulation class F.

Hoist speeds until 09/2008 (no longer available)

Size	Motor size	No. of poles	P_N	CD F	n_N	Starts/h	Min. / max. currents and starting current				
							$I_{N\ min.}$	$I_{N\ max.}$	I_{max} [13]	$I_A/I_{N\ max.}$	cos φ_N
			[kW]	[%]	rpm		[A]	[A]	[A]		
220-240 V, 50 Hz, 3 ~ (CE) [14]											
DC-Com 2	ZNK 71 B 8/4	8	0,09	15	665	240	2,10	2,20	2,50	1,25	0,52
		4	0,18	25	1405	120	2,10	2,10	2,40	2,30	0,56
DC-Com 5	ZNK 80 A 8/4	8	0,18	15	710	240	2,60	2,90	3,30	1,70	0,49
		4	0,36	25	1455	120	3,10	3,80	4,50	2,70	0,52
380-415 V, 50 Hz, 3 ~ (CE) [14]											
DC-Com 2	ZNK 71 B 8/4	8	0,09	15	665	240	1,20	1,30	1,45	1,25	0,52
		4	0,18	25	1405	120	1,20	1,20	1,40	2,30	0,56
DC-Com 5	ZNK 80 A 8/4	8	0,18	15	710	240	1,50	1,70	1,90	1,70	0,49
		4	0,36	25	1455	120	1,80	2,20	2,60	2,70	0,52
500-525 V, 50 Hz, 3 ~ (CE/CSA) [14]											
DC-Com 2	ZNK 71 B 8/4	8	0,09	15	665	240	1,00	1,05	1,15	1,25	0,52
		4	0,18	25	1405	120	0,85	0,95	1,10	2,30	0,56
DC-Com 5	ZNK 80 A 8/4	8	0,18	15	710	240	1,20	1,35	1,50	1,70	0,49
		4	0,36	25	1455	120	1,45	1,75	2,05	2,70	0,52
220-240 V, 60 Hz, 3 ~ (CSA) [14]											
DC-Com 2	ZNK 71 B 8/4	8	0,11	15	815	240	2,50	2,70	3,00	1,25	0,51
		4	0,22	25	1705	120	2,50	2,50	2,90	2,30	0,55
DC-Com 5	ZNK 80 A 8/4	8	0,22	15	860	240	3,10	3,50	4,00	1,70	0,48
		4	0,43	25	1755	120	3,80	4,60	5,45	2,70	0,51
380-400 V, 60 Hz, 3 ~ (CE) [14]											
DC-Com 2	ZNK 71 B 8/4	8	0,11	15	815	240	1,70	1,70	2,00	1,25	0,51
		4	0,22	25	1705	120	1,45	1,60	1,80	2,30	0,55
DC-Com 5	ZNK 80 A 8/4	8	0,22	15	860	240	2,00	2,25	2,40	1,70	0,48
		4	0,43	25	1755	120	2,60	2,75	3,30	2,70	0,51
440-480 V, 60 Hz, 3 ~ (CSA) [14]											
DC-Com 2	ZNK 71 B 8/4	8	0,11	15	815	240	1,25	1,35	1,50	1,25	0,51
		4	0,22	25	1705	120	1,25	1,25	1,45	2,30	0,55
DC-Com 5	ZNK 80 A 8/4	8	0,22	15	860	240	1,55	1,75	2,00	1,70	0,48
		4	0,43	25	1755	120	1,90	2,30	2,70	2,70	0,51
575 V, 60 Hz, 3 ~ (CSA) [14]											
DC-Com 2	ZNK 71 B 8/4	8	0,11	15	815	240	0,95		1,10	1,25	0,47
		4	0,22	25	1705	120	0,95		1,10	2,30	0,57
DC-Com 5	ZNK 80 A 8/4	8	0,22	15	860	240	1,20		1,35	1,70	0,44
		4	0,43	25	1755	120	1,45		1,70	2,70	0,49

Tab. 10

[13] I_{max} = maximum rated current for lowering operation.

[14] The tolerance of the voltage range must not exceed ± 10%. Motors are designed in compliance with insulation class F.

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3.4.2 Mains connection delay fuse links

CAUTION

For safety reasons we recommend using 3-pole automatic circuit breakers / circuit breakers (acc. to DIN EN 60898-1, tripping characteristics B or C) instead of individual fuses. Thus all poles are disconnected from the energy source in the case of a short circuit.

Voltage		220-240 V	380-415 V	500-525 V	220-240 V	380-400 V	440-480 V	575 V
Frequency		50 Hz			60 Hz			
Size	Motor size	[A]	[A]	[A]	[A]	[A]	[A]	[A]
DC-Com 1	ZNK 71 A 8/2	6	6	6	6	6	6	6
	ZNK 71 B 8/2							
DC-Com 2	ZNK 71 B 8/2							
DC-Com 5	ZNK 80 A 8/2	10			10			
DC-Com 10	ZNK 100 A 8/2							
	ZNK 100 B 8/2	-	10	10	-	16	10	6

Tab. 11

Mains connection fuse link for hoist speeds until 09/2008 (no longer available)

Voltage		220-240 V	380-415 V	500-525 V	220-240 V	380-400 V	440-480 V	575 V
Frequency		50 Hz			60 Hz			
Size	Motor size	[A]	[A]	[A]	[A]	[A]	[A]	[A]
DC-Com 2	ZNK 71 B 8/4	6	6	6	6	6	6	6
DC-Com 5	ZNK 80 A 8/4							

Tab. 12

3.4.3 Supply lines

Supply lines 1[15]) for 5% voltage drop $_{\Delta}U$ and start-up current I_A

Voltage		220-240 V		380-415 V		500-525 V		220-240 V		380-400 V		440-480 V		575 V	
Frequency		50 Hz						60 Hz							
Size	Motor size	[mm²]	[m]	[mm²]	[m]	[mm²]	[m]	[mm²]	[m]	[mm²]	[m]	[mm²]	[m]	[mm²]	[m]
DC-Com 1	ZNK 71 A 8/2	1,5	89	1,5	100	1,5	100	1,5	76	1,5	100	1,5	100	1,5	100
	ZNK 71 B 8/2														
DC-Com 2	ZNK 71 B 8/2														
DC-Com 5	ZNK 80 A 8/2		67						56						
DC-Com 10	ZNK 100 A 8/2		34						29		80				
	ZNK 100 B 8/2	-	-		38		61	-	-		26		43		59

Tab. 13

Supply lines for hoist speeds until 09/2008 (no longer available)

Voltage		220-240 V		380-415 V		500-525 V		220-240 V		380-400 V		440-480 V		575 V	
Frequency		50 Hz						60 Hz							
Size	Motor size	[mm²]	[m]	[mm²]	[m]	[mm²]	[m]	[mm²]	[m]	[mm²]	[m]	[mm²]	[m]	[mm²]	[m]
DC-Com 2	ZNK 71 B 8/4	1,5	100	1,5	100	1,5	100	1,5	100	1,5	100	1,5	100	1,5	100
DC-Com 5	ZNK 80 A 8/4		67						56						

Tab. 14

[15]) The lengths of the supply lines are calculated on the basis of an earth-loop impedance of 200 mΩ.

3.5 Hook dimensions C

DC-Com chain hoist with suspension bracket

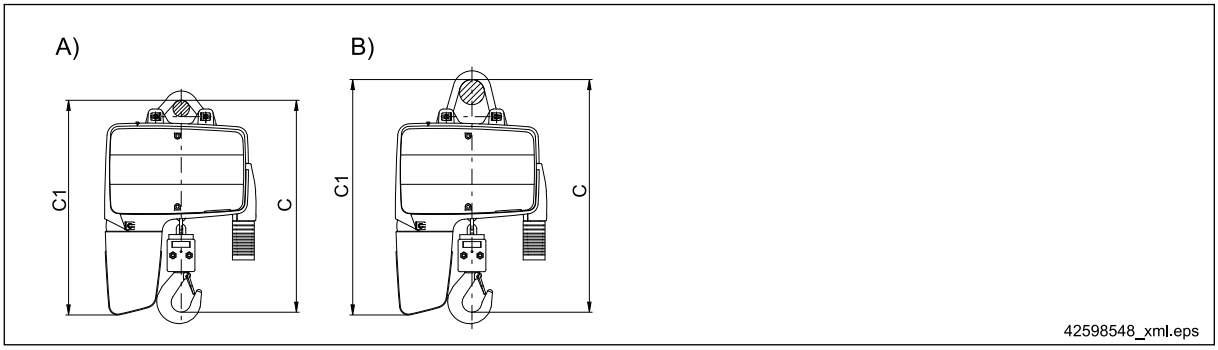

Fig. 5

A DC-Com with short suspension bracket (optional)

B DC-Com with long suspension bracket

Size	Reeving	Motor size	Short suspension bracket			Long suspension bracket		
			C	C1[16] Chain collector box		C	C1[16] Chain collector box	
				H4 / H5	H8		H4 / H5	H8
DC Com 1/2	1/1	ZNK 71 …	326	335	365	364	373	403
DC-Com 5		ZNK 80 …	378	395	425	416	435	465
DC-Com 10		ZNK 100 A 8/2	472	493	582	505	526	615
		ZNK 100 B 8/2		582			615	
	2/1	ZNK 100 B 8/2	564		632	597		665

Tab. 15

[16] For higher hoist speeds a larger chain collector may be required, see ⇒ "Buffer design", Page 92

DC-Com chain hoist with tolley

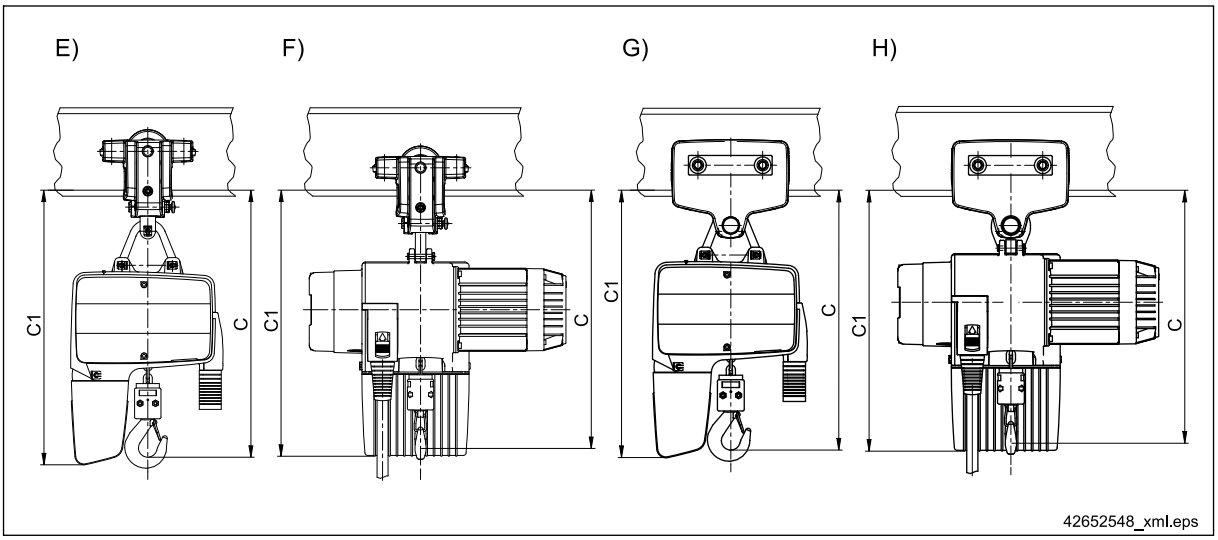

Fig. 6

E CF 5 trolley transverse to girder

F CF 5 trolley parallel to girder

G U 11, U22, U 34 trolley transverse to girder

H U 11, U22, U 34 trolley parallel to girder

Size [17]	Reeving	Trolley	Transverse to girder			Parallel to girder		
			C	C1		C	C1	
				Chain collector box			Chain collector box	
				H4 / H5	H8		H4 / H5	H8
DC Com 1/2	1/1	U 11	416	425	455	411	420	450
		CF 5	406	415	445	401	410	440
DC-Com 5		U 11	468	487	517	463	482	512
		CF 5	458	477	507	453	472	502
DC-Com 10		U 11	557	578	667	581	602	672
		U 22	569	590	679	593	614	703
	2/1	U 22 / U 34	661	679	679	685	703	803

Tab. 16

[17] Dimensions C and C1 decrease when the short suspension bracket is used: for DC-Com 1-5 by 38 mm and for DC-Com 10 by 33 mm, see also ⇒ "Suspension", Page 34.

3.6 Noise emission / sound pressure level

The sound pressure level acc. to DIN 45635 (L_{pAF}) at a distance of 1 m from the chain hoist is:

Type		DC-Com 1	DC-Com 2	DC-Com 5	DC-Com 10
Hoist speed up to	[m/min]	8	6	4,5	4
Sound pressure level	[dB (A)]	65+2	65+2	69+2	69+2

Tab. 17

These noise emission levels were measured under maximum load.

Structural influences such as

- transmission of noise via steel structures,
- reflection of noise from walls, etc. were not allowed for in the above measurements.

3.7 Transport, packing and storage

3.7.1 Safety instructions

WARNING

Falling parts

During transport and loading or unloading there is a danger of injury due to parts falling down.

– Do not walk under the suspended load. Keep a sufficient safety distance.

– Spaciously close off the working area.

WARNING

Transport damage

The chain hoist may be damaged or destroyed by inappropriate transport.

Sling lifting and handling equipment only at the correspondingly marked points.

3.7.2 Scope of delivery

If special designs or additional options are ordered or latest technical modifications are incorporated, the actual scope of supply may deviate from the data and information as well as from the illustrations described here. If you have any questions, please contact the manufacturer.

3.7.3 Transport inspection

- Check the delivery for completeness and transport damage immediately upon receipt.
- In the case of transport damage visible from the outside, do not accept the delivery or only under reserve. Note scope of damage in shipping documents / delivery note of the forwarding company. Bring your claim to attention.
- Claim any defects not immediately detected immediately on detecting the defects, since claims for damages may only be asserted within the valid time for complaints.

3.7.4 Packing

Demag chain hoists, the accessories and the trolleys are shipped in cardboard packing.

If no agreement on the return of the packing material has been made, separate the material according to type and size and make it available for further use or recycling.

Environmental protection:

- Always dispose of packing material in an environmentally sound way and according to the locally applicable disposal regulations.
- If required, a recycling company must be charged with the disposal.

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3.7.5 Storage

Keep the equipment and accessories locked and stored only under the following conditions:

- Do not store it outdoors.
- Store in dry and dust-free places, relative air humidity: max. 60%.
- Do not expose it to aggressive media.
- Protect it against solar radiation.
- Avoid mechanical vibrations.
- Storage temperature: -25 to +70 °C.
- Avoid strong temperature fluctuations (condensed water).
- Oil all blank machine parts (rust protection).
- Check the general condition of all parts of the packing at regular intervals. If required, refresh or renew preservation.
- If stored in damp locations, the equipment must be packed tight and protected against corrosion (desiccant).

3.8 Surface protection and painting

The motor and gearbox housing of the chain hoist consist of uncoated aluminium.

Colours		
Load hook and suspension bracket	RAL 9005	Jet black

Tab. 18

3.9 Operating conditions

CAUTION

Operating safety at risk

Safe operation is only possible at the specified operating conditions. In the case of other operating conditions please contact the manufacturer ⇒ "After-sales service", Page 10

The chain hoist and the trolley can be operated at:

Ambient temperature:	-20 °C to +40 °C,
Humidity:	max. 80 % relative humidity,
Height:	up to 1000 m above sea level,
Type of enclosure:	IP55,
Electromagnetic compatibility:	Resistance to interference in industrial environments, Interference emissions for residential, commercial and light-industrial environments.

Tab. 19

Demag chain hoists operating outdoors should be provided with a canopy against the weather. Chain hoists, trolley and travel drive should be kept under shelter if they are not used for a considerable length of time.

Special operating conditions may be agreed with the manufacturer in individual cases. However, in this case we recommend that the DC-Pro chain hoist be used.

Such operating conditions may occur for the following applications, for example:

- galvanizing or electroplating plants,
- hygiene areas,
- low-temperature or hot applications.

On request, suitable optimised equipment and important information for safe, low-wear operation may be supplied for these applications.

Under certain ambient conditions, application of re-inforced switch-off springs is required:

- DC1-10 reeving 1/1 hook assembly - Use of switch-off springs (optional)
  - for very high mechanical demands on the buffers, e.g. frequent contact with sharp edges,
  - for extreme ambient conditions (hot atmospheres, foundries, etc.).
- DK10 bottom block with external switch-off springs (optional)
  - for extreme ambient conditions (hot atmospheres, foundries, etc.).

4 Technical description

4.1 Drive and brake

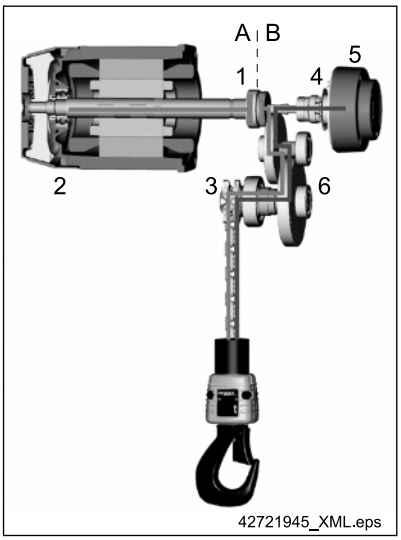
A robust pole-changing AC asynchronous motor is used as hoist motor. The brake is arranged on the load side so that after an eventual tripping of the slipping clutch, the load is safely braked and held. The bake is released electrically. Pressure springs ensure automatic brake application when the motor current is switched off or in the event of a power failure. When the slipping clutch is tripped and fault states occur, the motor is automatically switched off, at the same time the brake is applied.

First the hoist drive decelerates by switching from the fast speed (2-pole winding) to the creep lifitng speed (8-pole winding). Mechanical braking is performed when the creep lifting speed is almost reached.

When the emergency-stop button is actuated, mechanical braking is immediately performed independent of the lifting speed.

Electrical or regenerative braking of the motor considerably recudes wear of the mechanical brake.

4.2 Gearbox and slipping clutch



A	Driving	B	brakes
1	Slipping clutch	4	Speed detection
2	Motor	5	Brake
3	Chain drive	6	Gearboxes

Tab. 20

Fig. 7 Transmission of power

The slipping clutch is arranged between the motor shaft and the gearbox input shaft. In connection with the end stops on the chain, it performs the function of the emergency limit stop device for the highest and lowest hook position and protects the Demag chain hoist against overload. The additional electrical operating limit switches (DC-Com 10 reeving 2/1 as standard, DC-Com 1-10 reeving 1/1 optional)) for the highest and lowest hook position prevent the slipping clutch from being approached as an emergency limit stop device during normal operation. The slipping clutch also fulfills the EC directive requirements for a load control device from a load capacity of 1000 kg on.

The brake arranged on the load side prevents load sinking when the unit is at rest. Monitoring the slipping clutch and automatically switching off the drive in the event of slip increase the service life and protect the slipping clutch against overload and incorrect use. The gearbox is maintenance-free for up to 10 years.

4.3 Chain drive

The special Demag chain is of high strength ageing-resistant material with a high degree of surface hardening, galvanised with additional surface treatment. The dimension tolerances of this chain have been precisely adapted to the chain drive. We therefore urgently recommend that the Demag special chain be used to ensure safe operation. The maximum service life of the chain can only be reached, if the specified regular lubrications are appropriately carried out. When a chain is replaced, always the entire chain drive is replaced. For this purpose a chain set that can easily be replaced is available.

The chain set offers the following benefits:

- the optimum duration of service is ensured for the chain;
- reliable decision for replacing the individual chain drive components;
- reduction in service costs by replacement in one installation process; it is not necessary to dismantle the motor or the gearbox.

4.4 Housing

The housing of the chain hoist is of strong light-weight die-cast aluminium. The fan cover on the motor, the service cover, the electrical equipment cover and the movable chain collector box are of particularly impact-resistant plastic material.

4.5 Electrical equipment

4.5.1 Control

The chain hoist is provided with a 24-V contactor control system. The contactor control system is supplemented by an electronic system with programmed functions. This electronic system detects the control commands that are tripped by the operator with the control pendant. Permissible control commands generate switching commands for the contactors to control the hoist motor. The electronic system monitors the control sequence specified by the operator based on the speed feedback from the drive shaft, the operating limit switch contacts and, if applicable, from the thermal contacts of the motor. In the event of any discrepancies, the chain hoist is automatically brought to a safe status and warning or error messages are generated. The positively disconnected emergency stop contact of the control pendant immediately opens the circuit for the contactor supply so that the motor is de-energized and the brake is applied.

As standard, the control system features the following characteristics:

- Operating limit switch for lifting and lowering (DC-Com 1 - 10 reeving 1/1 optional, DC-Com 10 reeving 2/1 as standard);
- Plug-type connections for control pendant, power supply, motor connection, brake, operating limit switches;
- Connection for the E 11 - E 34 trolley control system;
- 7-segment display for operating hours, operating status and error messages;
- Infrared interface for wireless transmission of service data;
- Replaceable contactor with socket for DC-Com 10.
- Signal transmission in steps with 24 V tri-state signals for controlled DC chain hoists (half-wave evaluation);

For manual control, Demag control pendants are connected via plug-in connectors. For Demag DC chain hoists without electric trolleys, the compact DSC optimised for this application is used, the DSE-10C for applications with electric trolleys.

For integrating the DC chain hoist in existing installations with contactor control, please note the information in the brochure DC electrical accessories ⇒ Tab. 3, Page 7. For controlling pole-changing AC motors (with or without brake) of cross and long travel units the Polu box with integrated contactor control is required, see brochure Electrical accessories Polu box ⇒ Tab. 3, Page 7.

4.5.2 7-segment display for operating status and error display

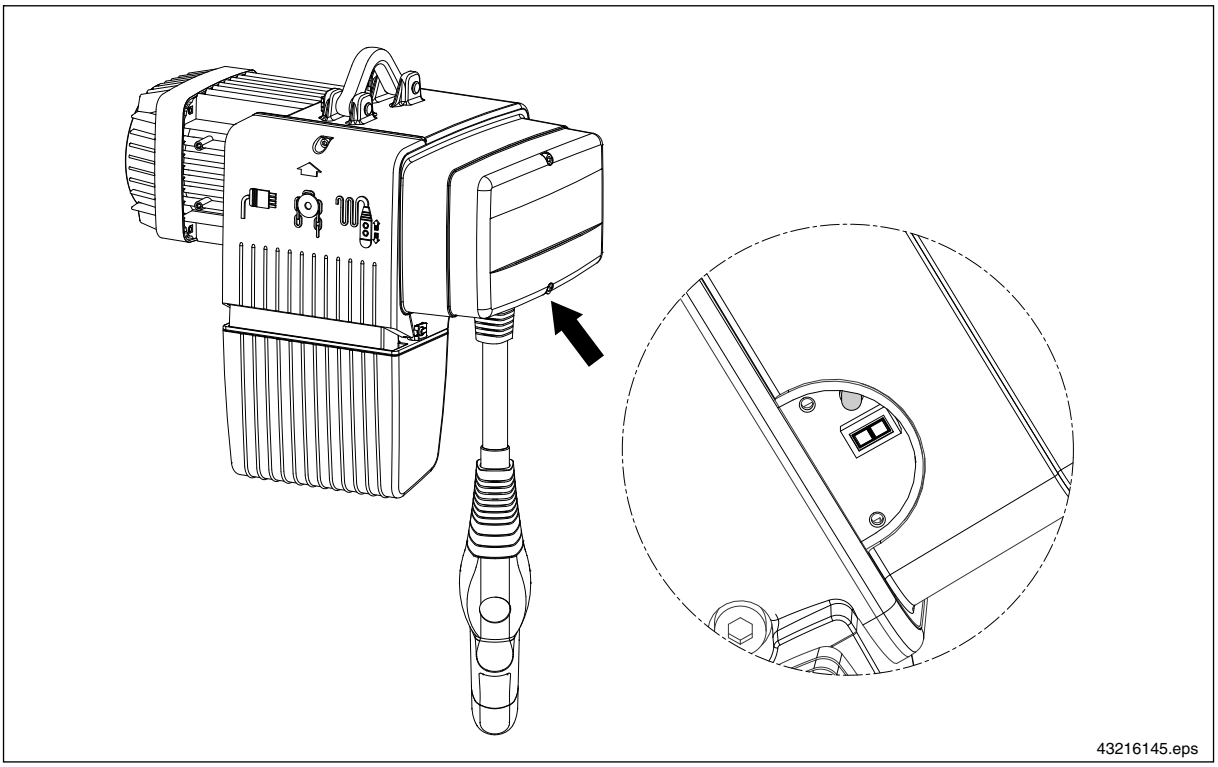


Fig. 8

The 7-segment display is arranged on the control card under the electrical equipment cover, it can be read on the lower side of the chain hoist (arrow, lower side of electrical equipment cover) after the electrical equipment cover has been removed (figure deviating from scope of supply).

The 7-segment display is supplied as standard with:

- DC-Com 1 - 5 from year of manufacture 2007
- DC-Com 10

The following data can be read:

- Software version ⇒ Fig. 9, Page 31,
- Operating hours⇒ Fig. 10, Page 32,
- Operating statuses⇒ Fig. 12, Page 32,
- Warning messages⇒ "Warning messages", Page 104,
- Error messages ⇒ "Error messages", Page 105.

4.5.3 Software version, operating hours, number of cycles, operating statuses

Display of the software version

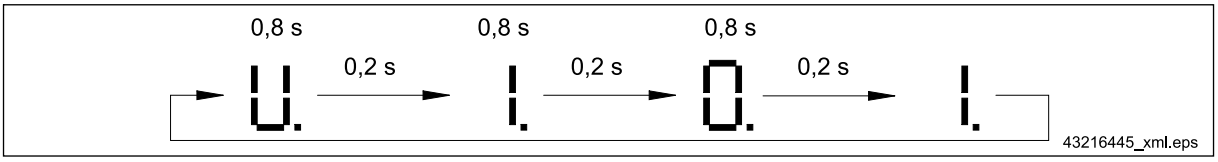


Fig. 9

Every time, power is switched on or after an emergency-stop, the software version is displayed (from software version 1.01).

Example: Software version 1.01

Display of the operating hours

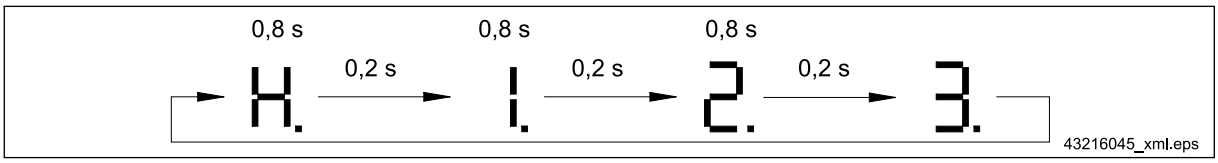


Fig. 10

The display appears after 3 sec. without any lifting motion (example for 123 operating hours)

Display of the number of cycles of the K1 contactor

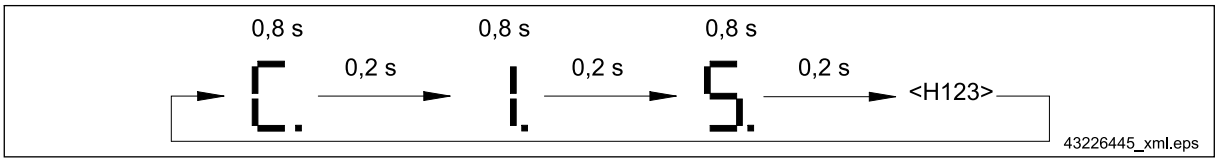


Fig. 11

Alternatively displayed with the operating hours.

C 5 corresponds to 5 x 100.000 = 500.000 K1 switching cycles

Example: C 15 corresponds to 15 x 100.000 = 1,5 m K1 switching cycles

For preventive maintenance see ⇒ "Service life of the contactor", Page 70

Display of operating statuses

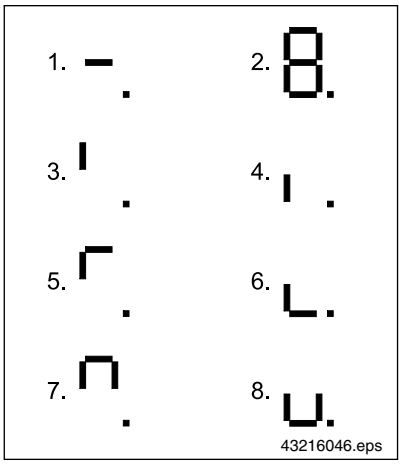


Fig. 12

No.	Function	No.	Function
1	Flashing: READY FOR OPERATION	2	Emerg. stop pressed
3	LIFTING start-up	4	LOWERING start-up
5	LIFTING V1	6	LOWERING V1
7	LIFTING V2	8	LOWERING V2

Tab. 21

4.6 Central service enclosure

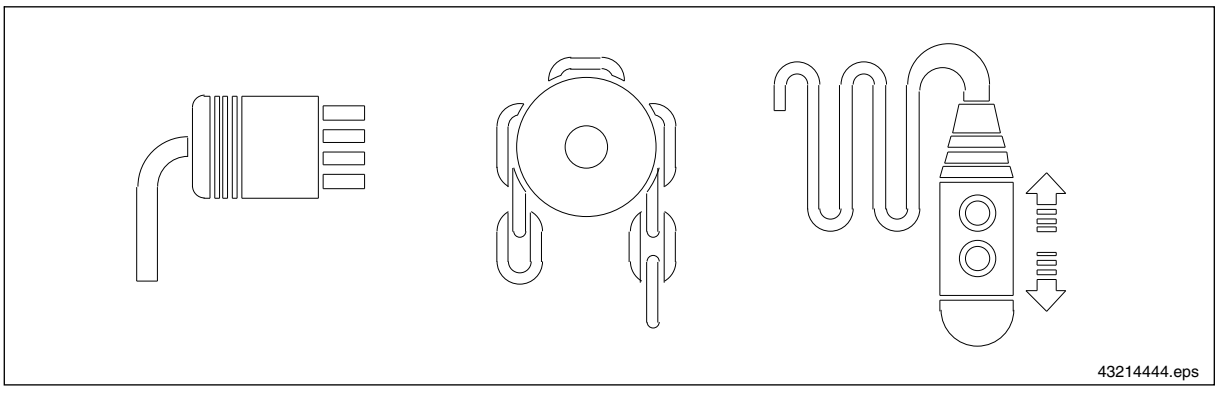


Fig. 13

All important service work can be carried out at a central point, the service enclosure. The relevant connectors for power supply, control pendant and travel drive are arranged under the impact-resistant plastic cover. From this point, the chain is also lubricated.

In addition, any control cable length that is not required is kept under the cover.

The plastic cover also provides mechanical protection for the components fitted under it. The functions are described by pictograms fitted on the outside of the service cover.

4.7 Control pendant height adjustment / control cable

The control cable is protected by a flexible, easily bent strain relief hose. Its suspension height can be specifically adapted to the requirements at the workplace at any time by means of an adjusting mechanism. To do this, it is not necessary to cut the cable conductors or to shorten the strain relief hose. The control cable that is not required is accommodated under the service cover. The strain relief hose is fixed at the selected suspension height by means of a self-locking clamp mechanism. The control pendant can be adjusted to a different suspension height by unlocking the clamp mechanism.

The strain relief hose for the control pendant consists of an abrasion-resistant fabric hose with flame-protection impregnation.

The control cable is reinforced by means of rubber-elastic filler material in the gripping area (0,8 m) of the strain relief hose.

4.8 Control pendant

For manual cable-connected control of the chain hoist, the DSC control pendants (lifting/lowering) or the DSE-10C (2 to 3 axes) are to be used. Both control pendants feature the same plug-in connection for the control cable. The control cable and the control pendant are connected by means of a bayonet lock.

The shock and impact-resistant DSC and DSE-10C housings of high quality thermoplastic are resistant to fuels, salt water, greases, oils and alcaline solutions, type of enclosure IP 65. Strong mineral (e.g. hydrochloric or sulphuric) acids may, however, corrode pendant switch housings. To avoid this, they must be replaced in good time.

The rubber button caps may be subject to premature wear under aggressive operating conditions (contact with corrosive substances or special chemicals). Replace any damaged button caps in good time.

4.9 Suspension

Standard suspension

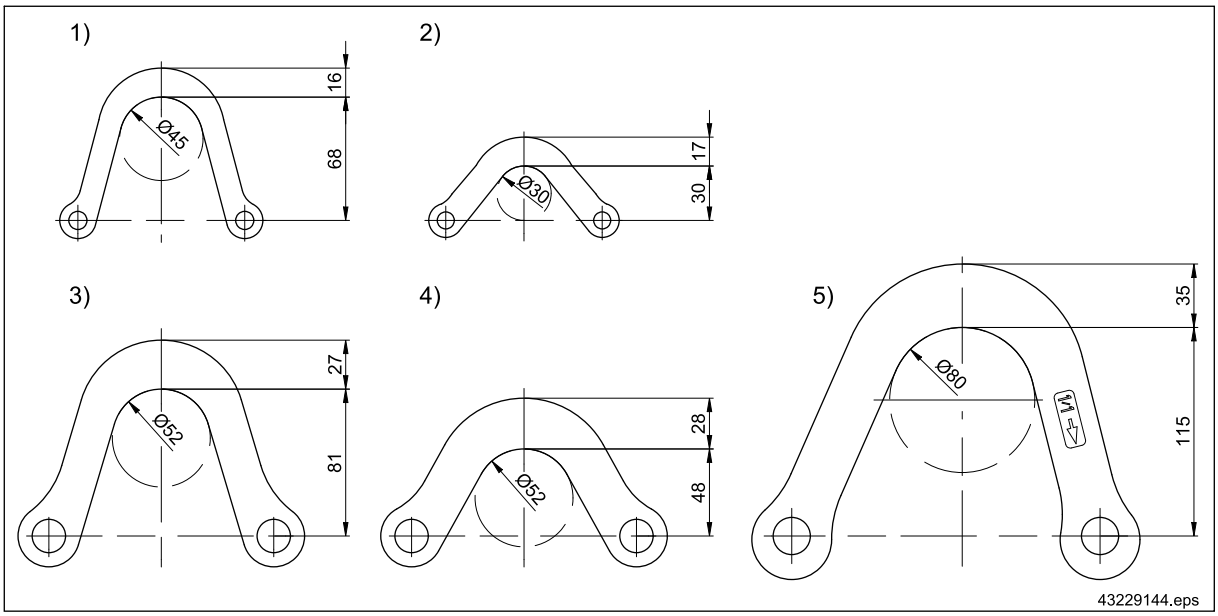


Fig. 14

DC-Com 1-10 chain hoists are supplied with a long suspension bracket as standard. An optional short suspension bracket can be supplied.

The suspension bracket facilitates installation, since the chain hoist can be directly suspended from the trolley. It is not necessary to dismantle existing trolleys.

Chain hoists with short or long suspension brackets can be combined with the trolleys from ⇒ Tab. 23, Page 35.

Optional suspension

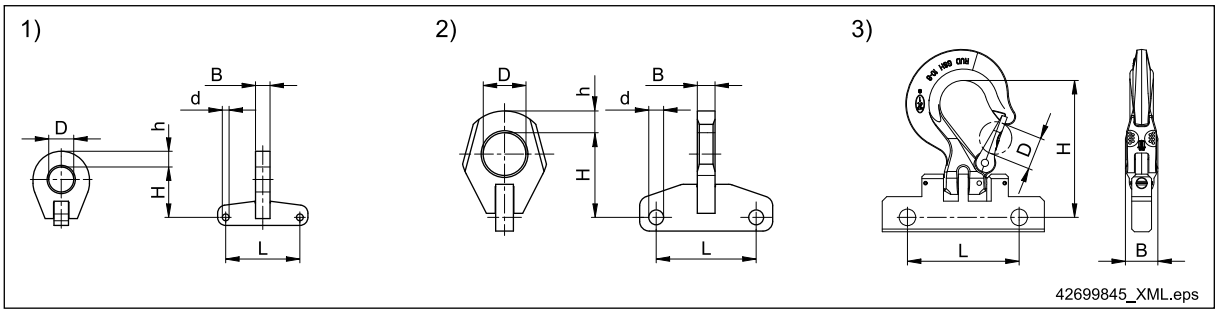


Fig. 15

Item	Designation	Size	Part no.:	Dimensions [mm]					
				L	B	H	h	D	d
1	Suspension ring for suspension parallel to track girder	DC 1-5	718 278 45	92	18	62,5	19,5	31	8,4
2		DC 10	715 278 45	124	22	105	27	53	18,4
3	Suspension hook, folding	DC 1-5	718 910 45	92	22	104	-	25	-
		DC 10	715 910 45	124	36	152	-	36	-

Tab. 22

Assigment of standard suspensions

Chain hoist load capacity [kg]						80-125	80-250	160-500	315-1250	1250-2500
Reeving						1/1				2/1
Trolley size		Trolley load capacity [kg]	Flange width [mm]	Flange thickness [mm]	Crossbar diameter [mm]	DC 1	DC 2	DC 5	DC 10	
						See ⇒ Fig. 14, Page 34				
RU 3		450	60-90	12	21	1+2	1+2	1+2 [18]		
RU 6		450	58-143	20	30					
			144-300	18	35	1	1	1 [18]		
		700	58-143	20	30	1+2	1+2	1+2		
			144-300	18	38	1	1	1		
RU / EU 11 DK		850	58-300	16	34					
		1350	58-143							
			144-300		45					
RU / EU 22 DK		2600	82-300	22	51				3+4	3+4
RU / EU 36 DK		3600	106-300	30	56					
RU / EU 55 DK		5500	106-186		70					
			187-300		82,5					
CF 5		550	50-91	15	16	1+2	1+2	1+2	3+4 [19]	3+4 [20]
U / EU 11 DC		1100	58-200	22	30					
			201-310							
U / EU 22 DC		2200	82-200	30	40	1	1	1		
U / EU 34 DC		2200	201-310							
		3400	82-310							
RU /EU 56 DC		5600	98-200	30	55				3 [21]	3 [21]
			201-310							
KBK trolley	100	100				2	2	2		
	I	300								
	II	600							3+4 [22]	
	III	1300				1	1	1	3	
KBK articulated frame (double trolley)	I	400								
	II	1200							3	
	III	2600								3
KBK crane traverse	100	200				1	1	1		
	I	600								
	II	1400-2200							3	
	III	2600								3
KBK crab frame	100	200								
	I	600								
	II	1200/2400							3	3
	III	3300								

Tab. 23

[18] up to 400 kg
[19] DC 10 - 1250 1/1 with U / EU 22 DC
[20] DC 10 - 2500 2/1 with U / EU 34 DC
[21] DC 10 with RU / EU 56 on request
[22] up to 500 kg

4.10 Trolley

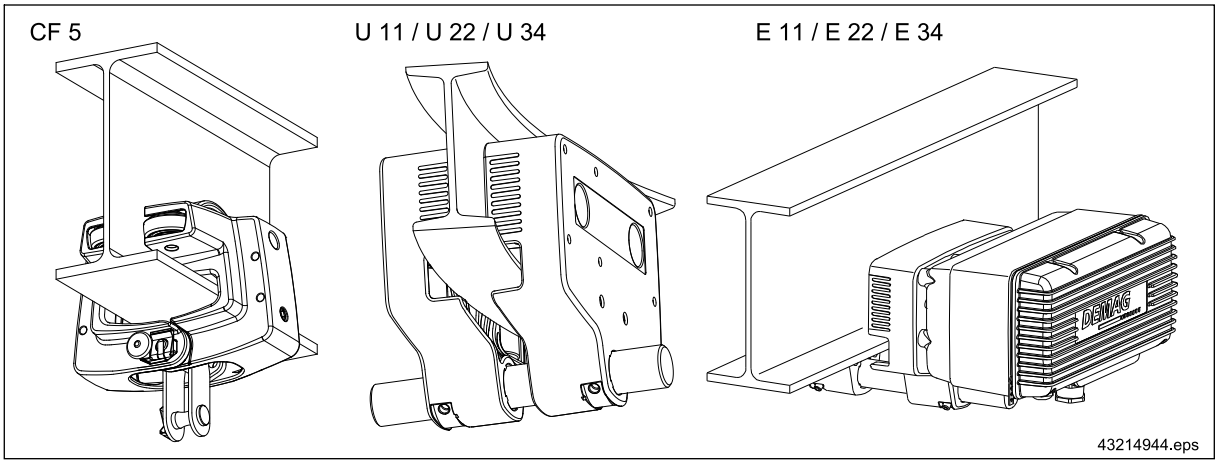


Fig. 16

WARNING

Overload

There is danger to life and limb due to a possible excessive load of the trolley.

The load capacity of Demag chain hoists must not exceed the load capacity of the trolley.

I beam track

The use of I beams with parallel or sloping flanges according to DIN 1025 as tracks is possible.

The curve radii should be as large as possible in order to ensure good travel characteristics.

I beam tracks should be bent with the utmost care in order to obtain a clean, regular curve.

Hoist travel on I beam tracks must in no way be obstructed by protruding suspension bolts, screw heads, clamping plates, joint flanges, etc.

Resilient buffers should be mounted at travel wheel axle level at the ends of tracks in order to prevent the trolley from derailing (e.g. Demag clamp-fitted buffers).

For further information on the trolleys and the power supply, see following table.

Designation	Part no.:
CF 5 trolley	203 568 44
U 11 / U 22 / U 34 trolley	203 569 44
E 11 / E 22 / E 34 travel drive	214 810 44
E 11 / E 22 / E 34 travel drive (circuit diagrams)	203 698 44
KBK 0 + 25 trailing cable power supply	202 487 44
KBK 0 + 25 power supply lines	202 386 44
Clamp-fitted buffers	203 313 44

Tab. 24

Curve radii for trolleys

The specified curve radii apply for normal applications. Contact the manufacturer or his representative for frequent curve travel operation (e.g. automatic installations).

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Curve radii in mm							
Trolley size		SWL	Runway girder				Travel wheel material
			Push travel		Electric travel		
			Flange width[23]	Rmin	Flange width[23]	Rmin	
		[kg]	[mm]	[mm]	[mm]	[mm]	
CF 5		550	50-91	800	-	-	Plastic
U 11 DC	EU 11 DC	1100	58-310	1000	58-310	2000	Plastic[24]
U 22 DC	EU 22 DC	2200	82-200	2000	82-200	3000	Spheroidal graphite cast iron
U 34 DC	EU 34 DC	2200	201-310		201-310		Spheroidal graphite cast iron
		3400	82-310		82-310		
RU 56 DC	EU 56 DC	5600	98-310	2000 [25]	98-310	2500 [25]	

Tab. 25

SWL	Chain hoist	Reeving	Possible cross-travel speeds in approx. ... m/min							
			V14/3		V12/4		V24/6		V40/10	
[kg]	DC-Com		Trolley	Travel drive	Trolley	Travel drive	Trolley	Travel drive	Trolley	Travel drive
80 to 500	1 to 5	1/1	-	-	-	-	U 11 DC	E 11 DC	-	-
200 to 1000	10 [26]	1/1			EU 56 DC	ZBF 80 A 12/4	U 11 DC EU 56 DC	E 11 DC ZBF 71 A 8/2	EU 56 DC	ZBF 80 A 8/2
1250		2/1					U 22 DC EU 56 DC	E 22 DC ZBF 71 A 8/2		
1600		2/1								
2000										
2500			U 34 DC	E 34 DC			EU 56 DC	ZBF 71 A 8/2		

Tab. 26

For further possible applications see Technical data Demag DC-Com chain hoist .

- If the EU 56 DC travel drive is used with small flange widths it is necessary to fit supporting rollers to the trolleys.
- If several trolleys are operated on one girder, we recommend the use of trolley buffers to dampen any collisions between the trolleys.

[23] Max. flange width 500 mm (except CF 5)

[24] Steel travel rollers optional

[25] From flange width 106 mm

[26] If DC-Com 10 is combined with EU 56 DC, a special crossbar is required.

KBK track

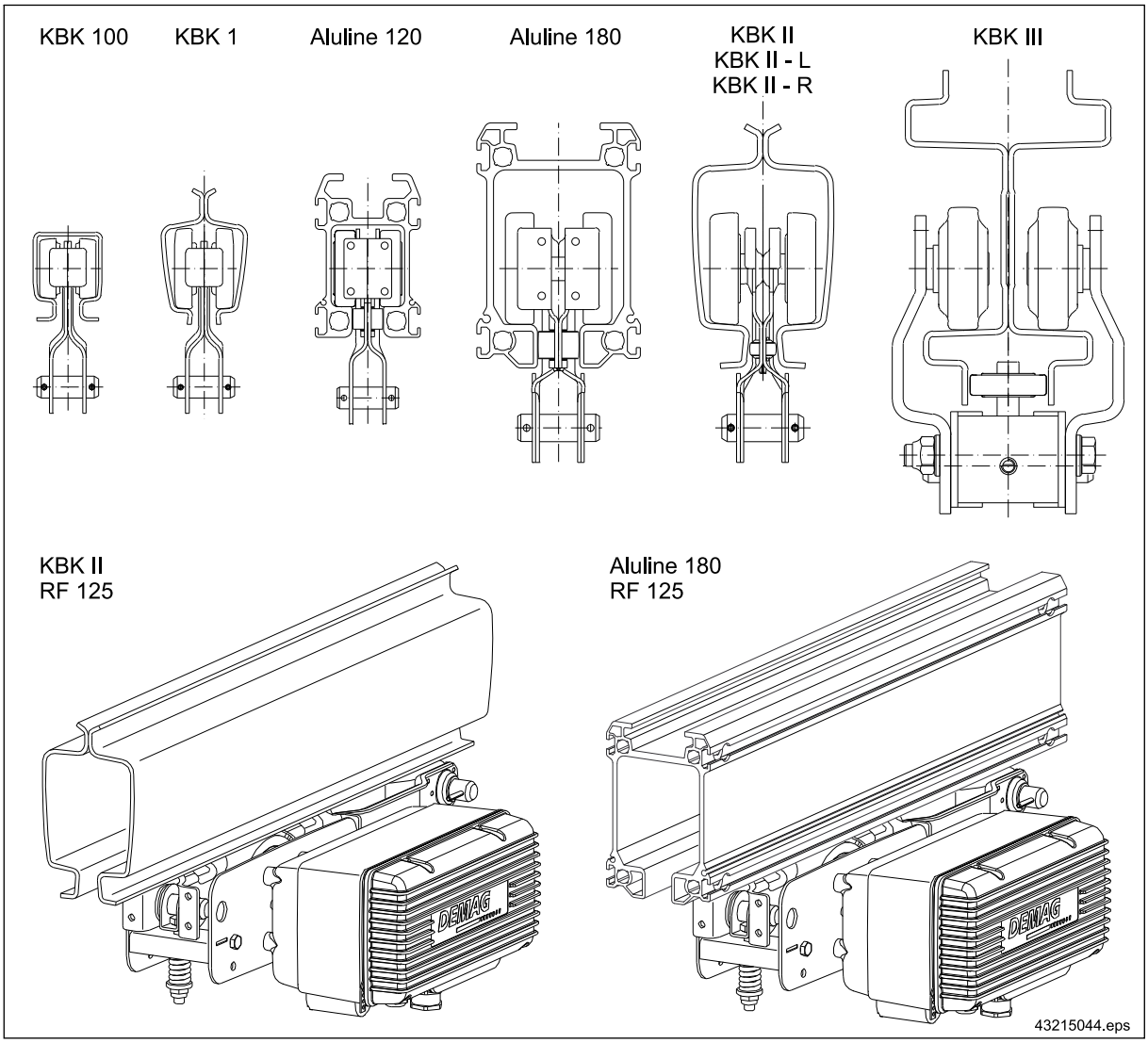

Fig. 17

When selecting a track, we suggest you specify our KBK crane construction kit track section of special design. They feature in particular quiet running characteristics, a low rolling resistance and a low deadweight. The cold-rolled track sections feature a smooth running surface and offer the advantage of simple power supply by means of trailing cables or integrated conductor lines.

KBK profile sections can also be used for more complex installations including curved sections, track switches and turntables.

Special fittings on the KBK profile sections, e.g. for terminal boxes or limit switches, avoid any obstruction by suspension bolts, screw heads, butt straps, clamping plates.

For further information on the trolleys and the power supply, see following table.

Designation	Part no.:
KBK classic (steel, powder-coated)	202 976 44
KBK Aluline (anodized)	203 245 44

Tab. 27

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5 Fitting

5.1 General

These assembly instructions enable the owner to fit and/or refit or replace the DC-Com himself. The owner must appoint a coordinator who is authorized to issue instructions before assembly work commences.

Despite detailed information, mistakes when fitting by the customer cannot be excluded. For this reason, we recommend this work be carried out by our trained specialists or by persons authorized by us.

The wiring of the Demag chain hoist complies in all respects with current DIN VDE and accident prevention regulations.

Unauthorized intervention and modifications result in eliminating compliance with these regulations.

DANGER

Live components

Danger to life and limb.

It must be possible to switch off powerfeed by means of a device for disconnecting the powerfeed (e.g. mains connection or isolator switch with padlock).

The chain hoists are supplied with power from an AC power network. The voltage and frequency of the AC power network must match the data specified on the rating plate of the chain hoist.

5.2 Safety instructions for assembly

DANGER

Inappropriate assembly

Danger to life and limb.

Inappropriate assembly may result in serious personal injury and / or material damage. Therefore only authorized and trained personnel who is familiar with the operating principle of the machine may carry out this work in compliance with all safety regulations.

- Before starting work ensure that sufficient working clearance is available.
- Secure working and danger zone.
- When using a working platform for assembly, only systems designed for passenger transport should be used that provide for a stable position and work without any risk.
- Only suitable, tested and calibrated tools and accessories may be used for assembly or disassembly work.
- Wear protective clothing!
- Caution on open sharp-edged parts! Risk of injury!
- Ensure order and cleanliness at the workplace. Machine parts or fittings that are not required must be stored so that they cannot fall down.
- Appropriately fit component parts. Tighten screws with the prescribed tightening torque. Inappropriately fixed component parts may fall down and result in severe injuries.
- Welding work may only be carried out by persons having a special qualification. The requirements of DIN regarding welding work must be complied with. The electrode holder and earth must be connected to the same assembly when welding work is carried out. Otherwise serious damage may be caused to the hoist.
- Customer-specific regulations must be observed.

DANGER

Live components

Danger to life and limb.

Work on electrical equipment may only be carried out by qualified specialist personnel(⇒ "Definition of personnel", Page 9) in compliance with the safety instructions.

Before starting work, the electrical supply must be switched off. The mains connection or isolator switch must be secured against unauthorized or accidental reconnection by means of a padlock.

Mechanical safety

All bolted connections must be correctly tightened.
Self-locking nuts must not be replaced by other types of nuts. Self-locking nuts must be replaced when they have been tightened and untightened five times. The clamping torque of a self-locking nut must not be lower than the screw-off torque specified by EN ISO 2320.
Only by tightening to the specific tightening torque can a sufficiently secure connection be guaranteed.
Bolted connections must not be lubricated as otherwise the specified tightening torque values will be too high.
Check that pin connections are properly secured.
All assembly work must be completed in accordance with the operating instructions and the hoist chain must be greased. Operation with defective or damaged chains results in a high risk of accident for persons and the chain hoist and is therefore prohibited.
Any change or modification which prejudices safety must immediately be reported to the nearest person responsible.
Repairs may only be carried out by experienced technicians.
Ensure that all suspension fittings are freely accessible for checks and inspections or that free access can be provided.
The control device (e.g. control pendant) must be marked in such a way that the direction of movement is clear and distinct. The arrow symbol on the control elements must correspond to the direction of movement.

Electrical safety

The chain hoist operating instructions must be referred to when Demag chain hoists are used.
These operating instrutions only contain standard circuit diagrams. Depending on the type of chain hoist an order-specific circuit diagram may apply.

Protective earth conductor

The protective earth conductor in insulated leads and cables must be coloured green and yellow along its entire length.
The protective earth conductor must not be connected to mounting bolts or screws.
Earth junctions and connections must be protected against self-loosening (e.g. by using serrated lock washers to DIN 6798). It must be possible to disconnect each individual connection.
Protective earth conductors must not carry any current in operation
The same number of protective earth connection points must be provided as electrical power infeed and outfeed points.
Continuity of the PE conductor connection must be checked.

Mains connection switch

A mains connection switch must always be provided for the main power supply line of the machine. This switch must be arranged to disconnect all poles of the DC-Com chain hoist from the mains supply.
Ensure that the switch is installed in an easily accessible position near your machine and clearly marked.

Isolator switch

If two or more hoists are fed from a common main supply line, each one should be provided with an isolator switch. This makes it possible to carry out maintenance work on individual hoists, without affecting operation of the rest of the system.

Power supply system

The power supply line / cable to be used depends on the motor size, see section "Hoist motor data".

5.3 Tightening torques DC-Com chain hoist

Tightening torques [Nm]		DC-Com 1	DC-Com 2	DC-Com 5	DC-Com 10	
Reeving		**1/1**			**1/1**	**2/1**
Motor		9,5			25,0	
Fan cover		4,0				
Gearbox sealing		5,5				
Brake		5,5				
Operating limit switches		-			3,0	
Control set		3,0				
Electrical equipment cover		9,5				
Service cover		5,5			7,5	
Limit stop		4,0		4,3	7,4	
Anchorage halves		-				10,5
Guide plate		5,5				
Hook assembly		6,8		9,5	25,0	-
Bottom block with external switch-off springs		-				55,0
Bottom block with internal switch-off springs	Bottom block halves					52,0
	Guide halves					5,5
Control cable lock		11,0				

Tab. 28

CAUTION

Loose connections

Loose connections mean danger for life and limb or risk of machine damage.

Metal nuts featuring a locking element (self-locking nuts) are mainly used for Demag chain hoists.

– Self-locking nuts must not be replaced by other types of nut.

5.4 Assembly procedure

1. Unpack and dispose of packing material in an environmentally compatible way ⇒ "Transport, packing and storage", Page 26.
2. Check for completeness ⇒ "Transport inspection", Page 26.
3. Connect control pendant, as required ⇒ "Connecting the control pendant", Page 42.
4. Which suspension bracket is suitable for suspension? ⇒ "Suspending the chain hoist", Page 43.
5. Adjust control pendant height ⇒ "Height adjustment of the control pendant", Page 46.
6. Connect to power supply ⇒ "Line connection", Page 48.
7. Adjust lower hook position as required ⇒ "Setting the lower hook position", Page 58.
8. Carry out inspections prior to putting the hoist into service for the first time ⇒ "Inspection prior to putting into service for the first time", Page 60.
9. The unit is ready for operation. ⇒ "Operation", Page 61.

5.5 Connecting the control pendant

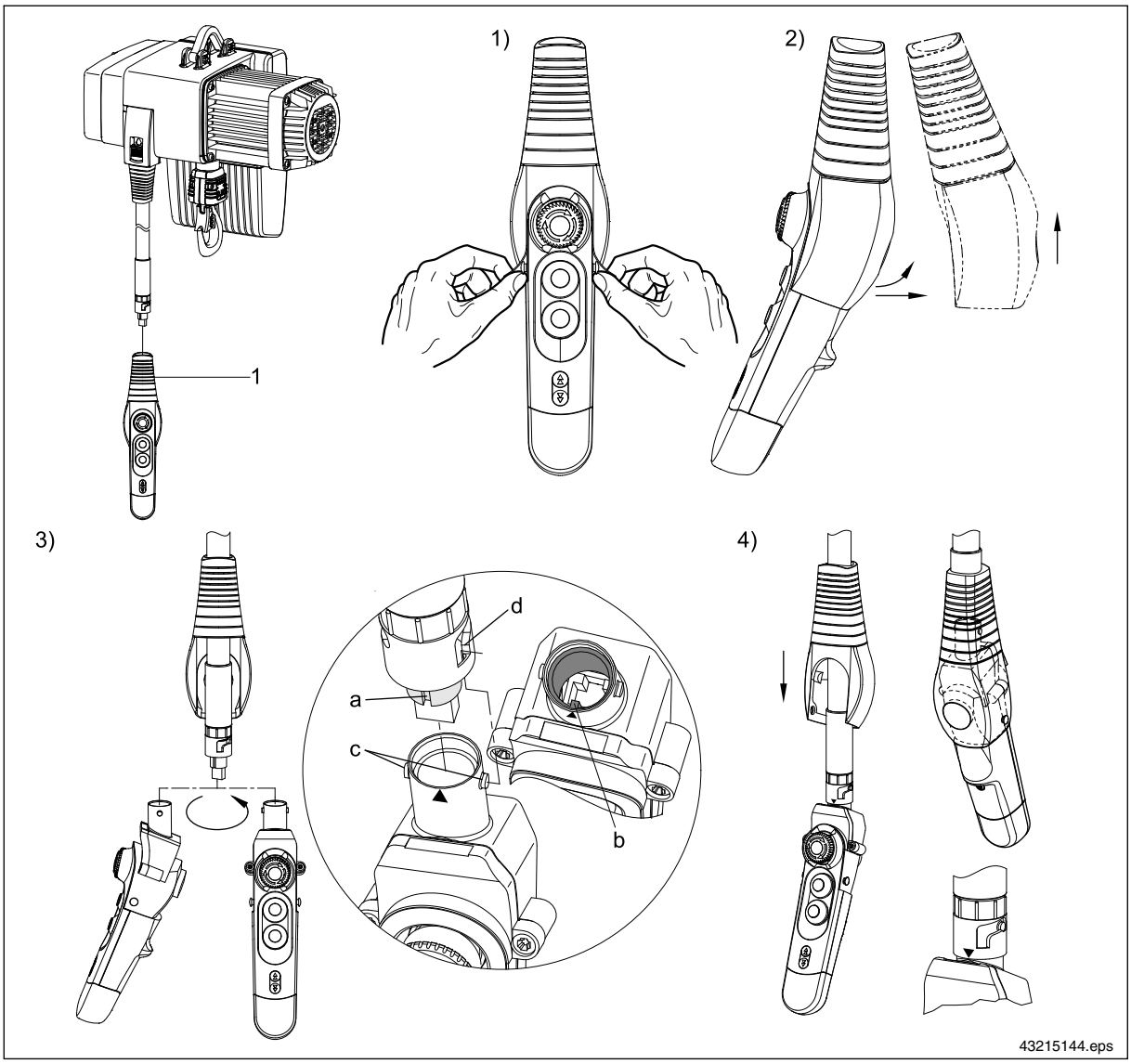

Fig. 18

The control pendant is of plug-in design. The connector at the end of the control cable is locked in the bayonet sleeve and can be turned. If a connector is not locked, it can be pulled out and must be locked again by pressure.

Unless the chain hoist is supplied with fitted control pendant, connect the DSC control pendant with the control cable and lock the connection with the bayonet lock, proceed as follows:

1. Lift the bend protection sleeve (1) on the control pendant off the two pins.
2. Then pull the bend protection sleeve (1) off the control pendant.
3. Slide the bend protection sleeve (1) onto the control cable. Plug the control cable into the control pendant and turn the bayonet lock until it is locked. Ensure that
   - the groove (a) of the connector holder matches the swivel lock (b) in the control pendant housing and
   - that the two pins (c) on the control pendant housing match the bayonet lock (d).
4. Slide the bend protection sleeve (1) over the control pendant again. Pay attention to the positioning help. Press the bend protection sleeve (1) firmly onto the control pendant.

The control pendant can be fitted on the chain hoist as a stationary unit or installed as a travelling unit, see ⇒ "Mobile control system", Page 47.

5.6 Suspending the chain hoist

5.6.1 Supporting structure

DANGER

Overload

There is a danger to life and limb due to overloading the supporting structure.

The supporting structure must be designed for the maximum load of the chain hoist when being used appropriately.

According to DIN EN 14492-2, hoist units with a load capacity ≥ 1000 kg must be equipped with an overload protection.

DC-Com chain hoists are equipped with a slipping clutch which directly acts as overload protection. The slipping clutch must be adjusted to the load capacity of the chain hoist. Information on the adjustment see brochure "Friction force checking device" ⇒ Tab. 3, Page 7.

According to DIN EN 14492-2, the force limitation factor for DC-Com chain hoists with a load capacity ≥ 1000 kg is:

$\phi_{DAL} = 1,6$

The static and dynamic forces which occur when the overload protection is tripped must be taken into account when designing the supporting structure.

5.6.2 Suspension bracket

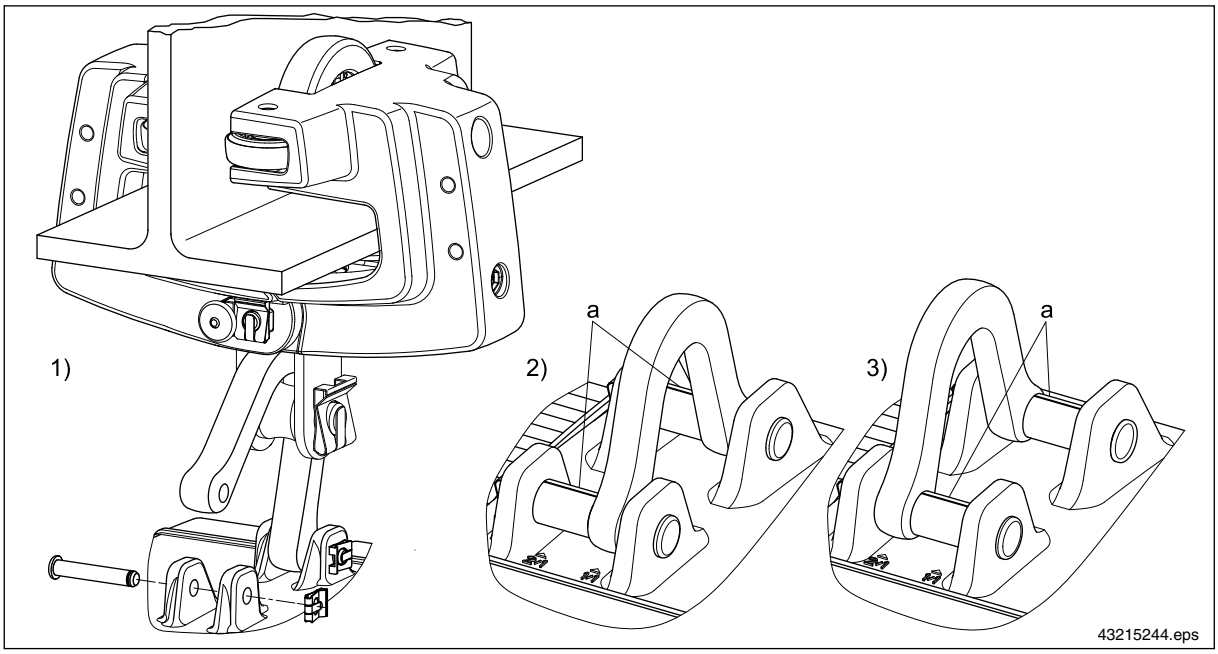

Fig. 19

1	DC-Com 1 - 5 suspension bracket opened	3	DC-Com 10 reeving 2/1
2	DC-Com 10 reeving 1/1	a	Spacer tube

WARNING

Overload

There is a danger to life and limb due to overloading the components.

– The suspension / supporting structure for the chain hoist must be designed for the loads.

DANGER

Falling down of the chain hoist

There is danger to life and limb and of material damage.

Do not move the chain hoist or leave it unsupervised when the suspension bracket is open.

The chain hoist is delivered with the long suspension bracket completely fitted to the chain hoist. The short suspension bracket can be ordered for an optimum C dimension.

Fitting:

1. Remove the retaining clip and pin on one side.
2. Suspend the suspension bracket (DC 10 according to the reeving) in the trolley.
3. Slide the pin through the suspension and the suspension bracket (for DC 10 additional spacer tube (a)) and secure with the retaining clip again.

Make sure that the suspension bracket is fitted in accordance with the reeving arrangement of the chain hoist. If the suspension bracket is fitted inappropriately, the chain hoist is suspended at an angle. Suspension of the chain hoist at an angle results in premature wear of the chain drive. In the case of special fittings on the chain hoist, make sure that an appropriate counterweight compensation is taken into account.

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5.7 Control cable

5.7.1 Techncal data of the control cable

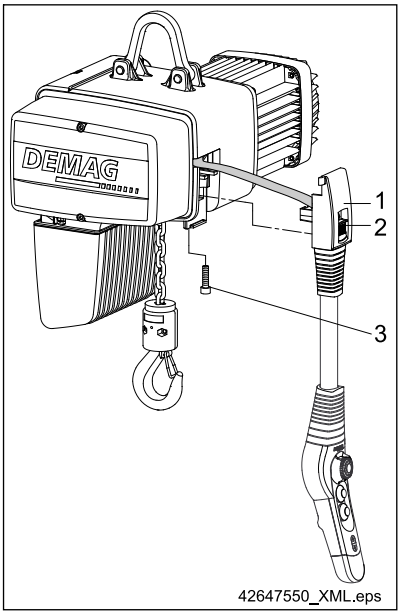

Fig. 20

Item	Designation	Tightening torque [Nm]
1	Hose pocket	-
2	Operating buttons of the control cable stop	-
3	Screw of the control cable stop	11

Hook path	Cable lengths
H4	0.8 m - 2.8 m
H5	0.8 m - 3.8 m
H8	3.8 m - 6.8 m
H11	6.8 m - 9.8 m

Tab. 29

The control pendant is supplied with standard cable lengths. The adjustable height variation is 2 or 3 m.

Longer control cable lengths are provided, for example, with a 2TY control cable and DST-C or DSE-C control pendants.

Ergonomic workplace!

- The suspension height can be adjusted by means of a self-locking mechanism at any time to suit individual requirements.
- To ensure an ergonomic position for operation of the control pendant, adjust the suspension height in such a way that the operating elements are arranged at elbow height.

5.7.2 Handling the control cable

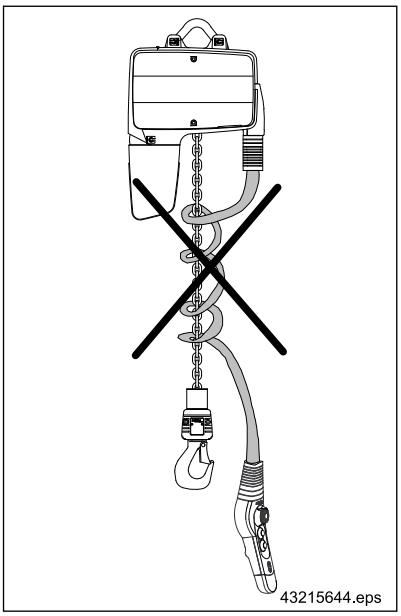

Fig. 21

Do not allow the control cable to be wound around the chain when lifting motions are performed.

A winding protection for the upper area of the control cable can be used as an option.

Designation	Part no.:
Protective sleeve with fitting material	720 085 45

Tab. 30

5.7.3 Height adjustment of the control pendant

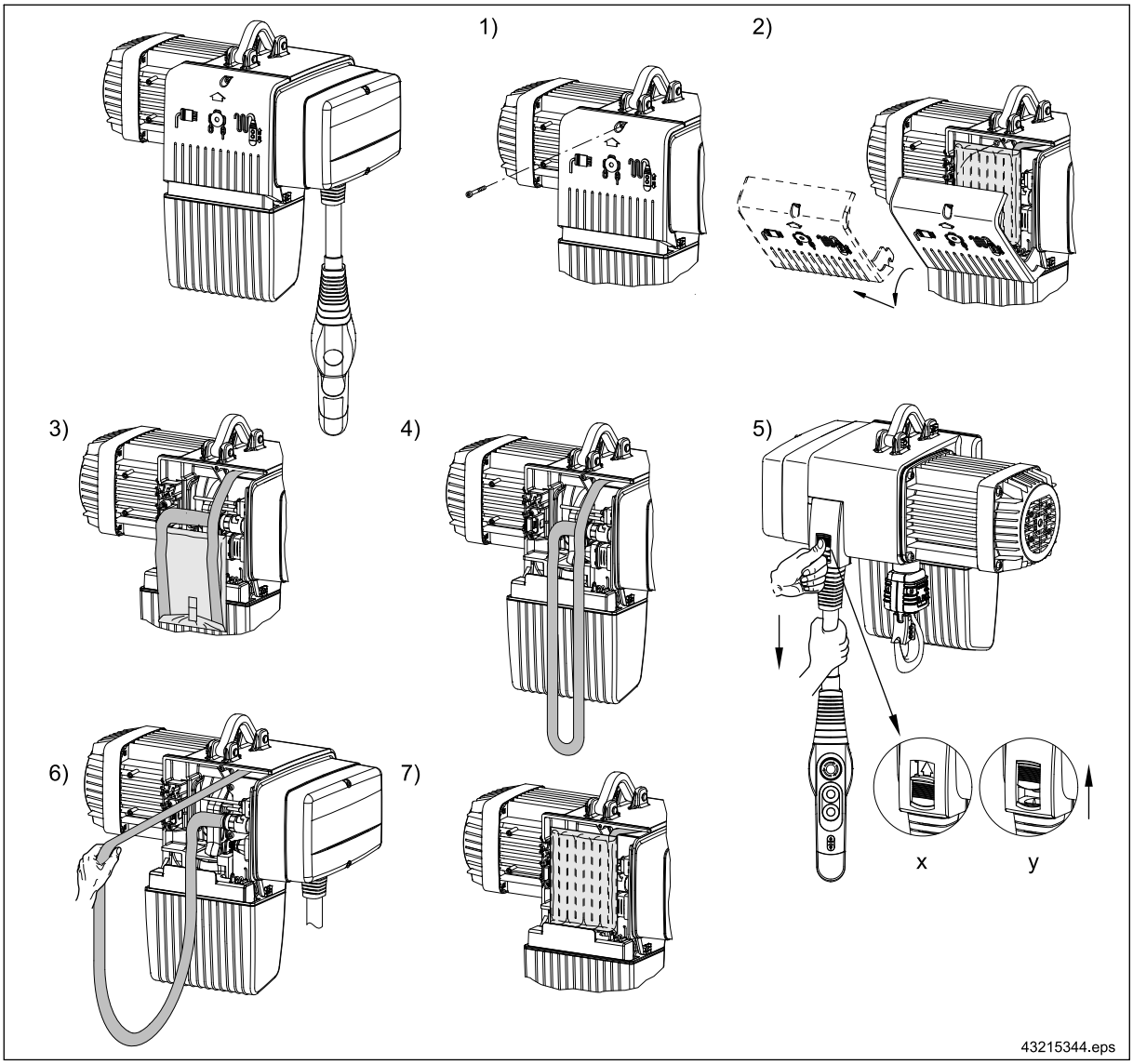

Fig. 22

x Control cable stop fixed

y Control cable stop loose

1. Loosen the screws of the service cover.
2. Open and disengage the service cover.
3. Remove and open the pocket with the control cable.
4. Take the control cable out of the bag.
5. Slide the operating button of the control cable stop upwards and hold it. At the same time, pull the control cable until the correct height has been reached for the control pendant.
6. If the position is too low, pull on the control cable hose hanging behind the service cover. Slide the operating button of the control cable stop downwards and fix the stop by a short, strong pull on the control cable above the control pendant.
7. Lay the remaining control cable in loops and store it in the pocket. The pocket must be behind the edge of the chain collector box. Close the service cover (tightening torque 5,5 Nm).

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5.7.4 Mobile control system

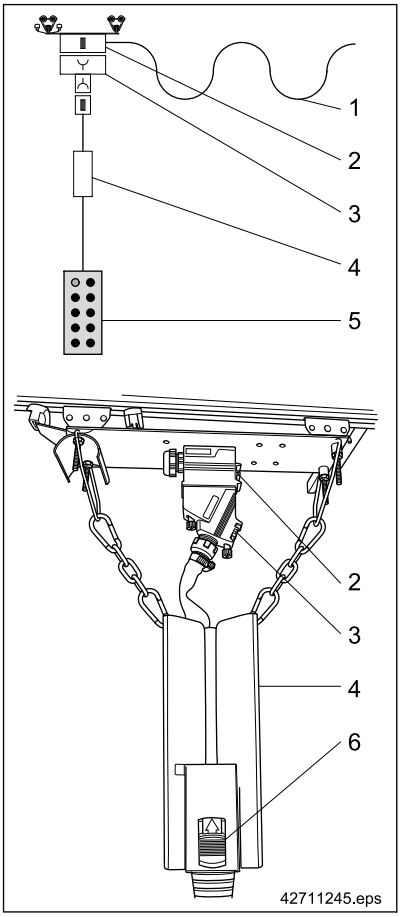

Fig. 23

Component parts			
Item	**Designation**	**comprising**	**Part no.:**
1	11-pole + PE flat cable		720 139 45
2	Connector enclosure cpl.	Socket enclosure	720 187 45
		Fitting frame	
		Pin insert VC-AMS8	
		Flat cable union	
3	Connector adapter cpl.	Bayonet lock	720 087 45
		Bush enclosure VC-MP-1-R-M25	
		Bush frame VC-TR1/2M	
		Socket insert VC-TFS8	
4	Cable collector		720 065 45
5	DSE10-C control pendant		773 352 45
6	Control cable lock		-

Tab. 31

For use of the cable collector, the height-adjustable standard control cables H4, H5, H8, H11 are used.

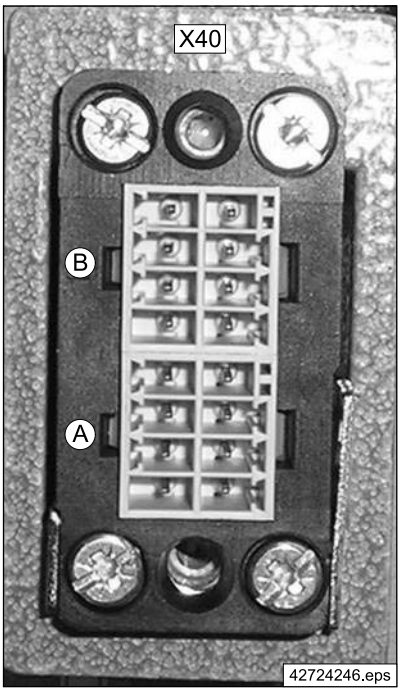

Fig. 24

X40 plug connector connections					
Signal	**Conductor**	**PIN**		**Conductor**	**Signal**
-	-	B4	B8	11	Reference potential (24 V)
PE	PE	B3	B7	-	-
-	-	B2	B6	-	-
Special 2 (horn)	8	B1	B5	10	Right
Left	4	A4	A8	7	Lowering
Lifting	3	A3	A7	9	Control voltage (24 V, STS)
Emergency stop	2	A2	A6	6	Backward
Forward	1	A1	A5	5	Special 1 (F1/F2)

Tab. 32

5.8 Line connection

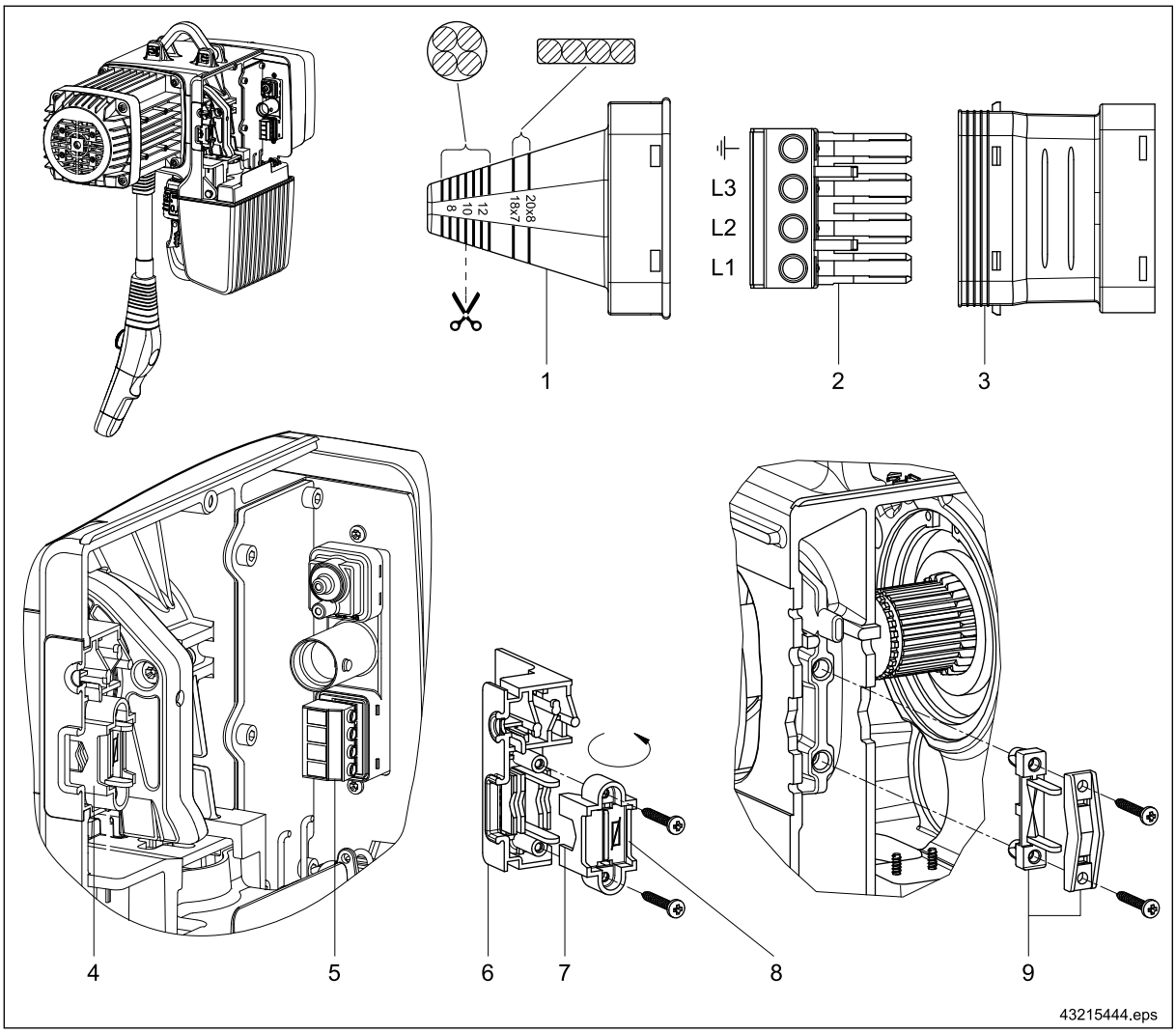

Fig. 25

1	Seal, sleeve	6	DC-Com 1 - 5 strain relief attachment
2	4-pole connector	7	Recess for round cable
3	Connector enclosure	8	Recess for flat cable
4	Strain relief attachment	9	DC-Com 10 strain relief attachment
5	Line connection		

To connect the chain hoist to the power supply, the mains connection cable, the mains connection fuse links and the devices for disconnecting and switching the powerfeed must be available on site. For power supply, a 4-lead cable with an earth lead (PE), which complies with the table in ⇒ "Hoist motor data ", Page 20 is required.

Please note that the length of the supply cable specified for a given cross section must not be exceeded in order to avoid excessive voltage drop and malfunctions during start-up of the motor caused by undervoltage.

Make electrical connection

- First check whether the voltage and frequency specified on the capacity plate match your mains supply. Ensure that the mains connection cable is at zero voltage and secured against accidental restoration of the power supply.
- Remove the service cover to connect the supply cable.
- Use the mains connection set included in the scope of delivery to produce the plug-and-socket connection for the mains connection cable.
- Cut the sleeve (1) to suit the geometry of the mains cable.

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- For a round cable in the marking area of 7 to 13, for a flat cable in the marking area of 18 x 7 to 20 x 8. Cable cross-sections 4x1,5 mm^2 or 4x2,5 mm^2 are taken into account.
- Slide the sleeve (1) onto the mains cable. Make sure the sleeve (1) tightly encloses the cable to comply with the type of enclosure.
- Connect the mains cable on the connector (2) to terminals L1, L2, L3 and to the PE. If required, use the wire end sleeves included in the delivery.
- Slide the connector (2) into the enclosure (3) until it latches and close the enclosure (3) with the sleeve (1).
- Then place the connector (2) into the control system until the enclosure (3) latches with the board bracket.
- Finally, insert the mains cable into the union on the gearbox housing and fix it with the strain relief clamp. For DC-Com1 to 5 units, the strain relief clamp must be turned to suit the cable contour depending on the cable type (flat or round cable).

- **All enclosure parts must be securely latched to ensure the unit is sealed.**
- **After connection of the mains cable and before putting the chain hoist into operation, check the continuity of the earth lead connection.**
- **The mains connector must never be disconnected under load.**

Phase sequence for connection to the AC power network

The chain hoist is configured for connection to an R-S-T network turning clockwise. For connection of the mains phases R-S-T to L1-L2-L3 in the specified sequence, the lifting and lowering buttons correspond to the movements of the load hook. Then check the movement directions as described in the following. If the phase sequence of the connection cable is unknown, this is the way to establish the connection with the correct phases.

Checking the direction of movement

To check whether all phases are correctly connected, the chain hoist must be switched. Switch on the power supply, unlock the emergency stop and actuate the **"Lifting"** pushbutton on the control pendant. The load hook must now move upwards.

WARNING

Incorrect direction of movement

There is a danger to life and limb due to an incorrect direction of movement.

– If the direction of movement is incorrect, switch off the power supply on the mains connection switch and check that the unit is deenergized.
– Change over leads L2 and L3 of the supply cable on the mains connection switch.

5.9 Circuit diagrams and control cards

5.9.1 Circuit diagram DC-Com 1 - 10 solo hoist

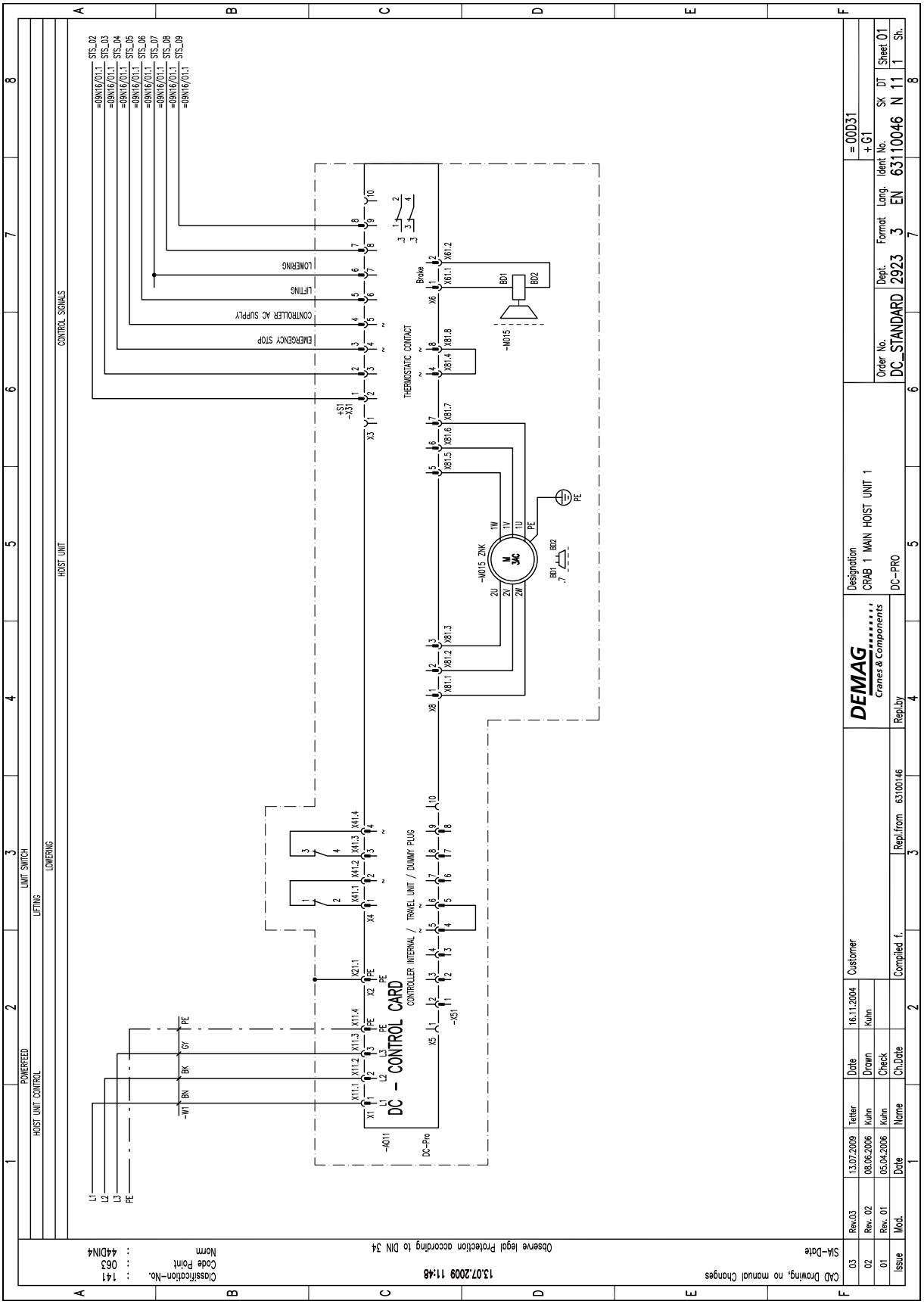
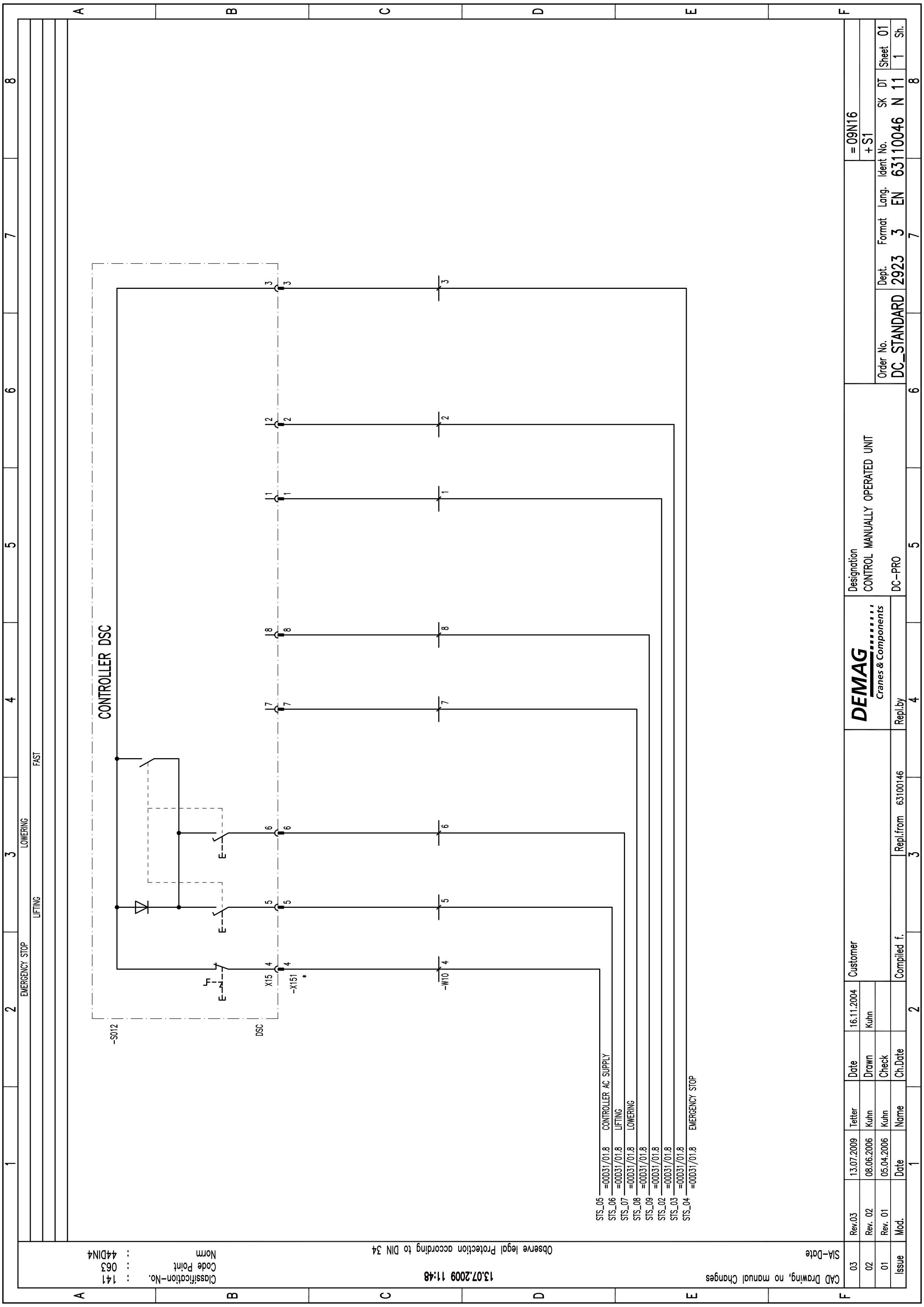


Fig. 26



CONTROLLER DSC
EMERGENCY STOP
LIFTING
LOWERING
FAST
CONTROLLER AC SUPPLY
DEMAG
Cranes & Components
Designation
CONTROL MANUALLY OPERATED UNIT
DC-PRO
Order No.
DC_STANDARD
Dept.
2923
Format
3
Lang.
EN
Ident No.
63110046
= 09N16
+ S1
Repl.from 63100146
CAD Drawing, no manual Changes
Observe legal Protection according to DIN 34
13.07.2009 11:48

Fig. 27

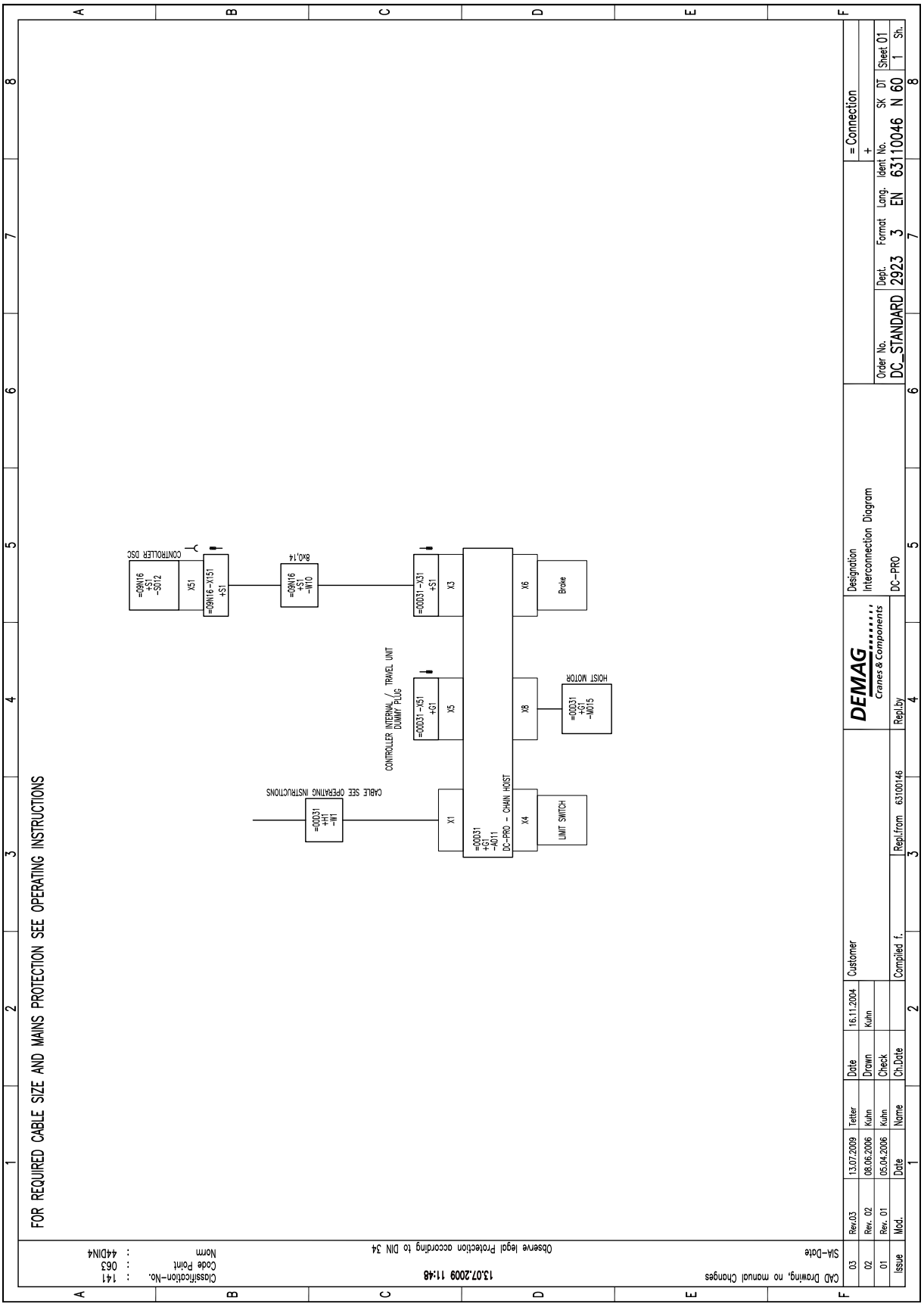

FOR REQUIRED CABLE SIZE AND MAINS PROTECTION SEE OPERATING INSTRUCTIONS
CONTROLLER DSC
=09N16 +S1 -SG12
X51
=09N16-X151 +S1
=09N16 +S1 -W10
8x0,14
=00D31-X31 +S1
X3
X6
Brake
CONTROLLER INTERNAL / TRAVEL UNIT DUMMY PLUG
=00D31-X51 +G1
X5
X8
HOIST MOTOR
=00D31 +G1 -M015
CABLE SEE OPERATING INSTRUCTIONS
=00D31 +H1 -W1
X1
=00D31 +G1 -A011 DC-PRO - CHAIN HOIST
X4
LIMIT SWITCH
DEMAG Cranes & Components
Designation Interconnection Diagram
DC-PRO
Repl.by
Repl.from 63100146
Compiled f.
Customer
Order No. DC_STANDARD
Dept. 2923
Format 3
Lang. EN
Ident No. 63110046
SK N 60
DT
Sheet 01
1 Sh.
= Connection
+
03 Rev.03 13.07.2009 Tetter
02 Rev. 02 08.06.2006 Kuhn
01 Rev. 01 05.04.2006 Kuhn
Issue Mod. Date Name
Date 16.11.2004
Drawn Kuhn
Check
Ch.Date
CAD Drawing, no manual Changes
SIA-Date
13.07.2009 11:48
Observe legal Protection according to DIN 34
Classification-No. : 141
Code Point : 063
Norm : 44DIN4

Fig. 28

5.9.2 Circuit diagram with E 11 - E 34 travel drive

For further circuit diagrams with E 11 - E 34 travel drive see ⇒ Tab. 3, Page 7 Technical data E 11 - E 34 DC travel drive.

For further information on the E 11 - E 34 travel drive see ⇒ Tab. 3, Page 7 Assembly instructions E 11 - E 34 DC travel drive.

For further information on the cross-travel limit switch, part no. 716 663 45, see ⇒ Tab. 3, Page 7 Assembly instructions E 11 - E 34 DC travel drive.

5.9.3 Control card

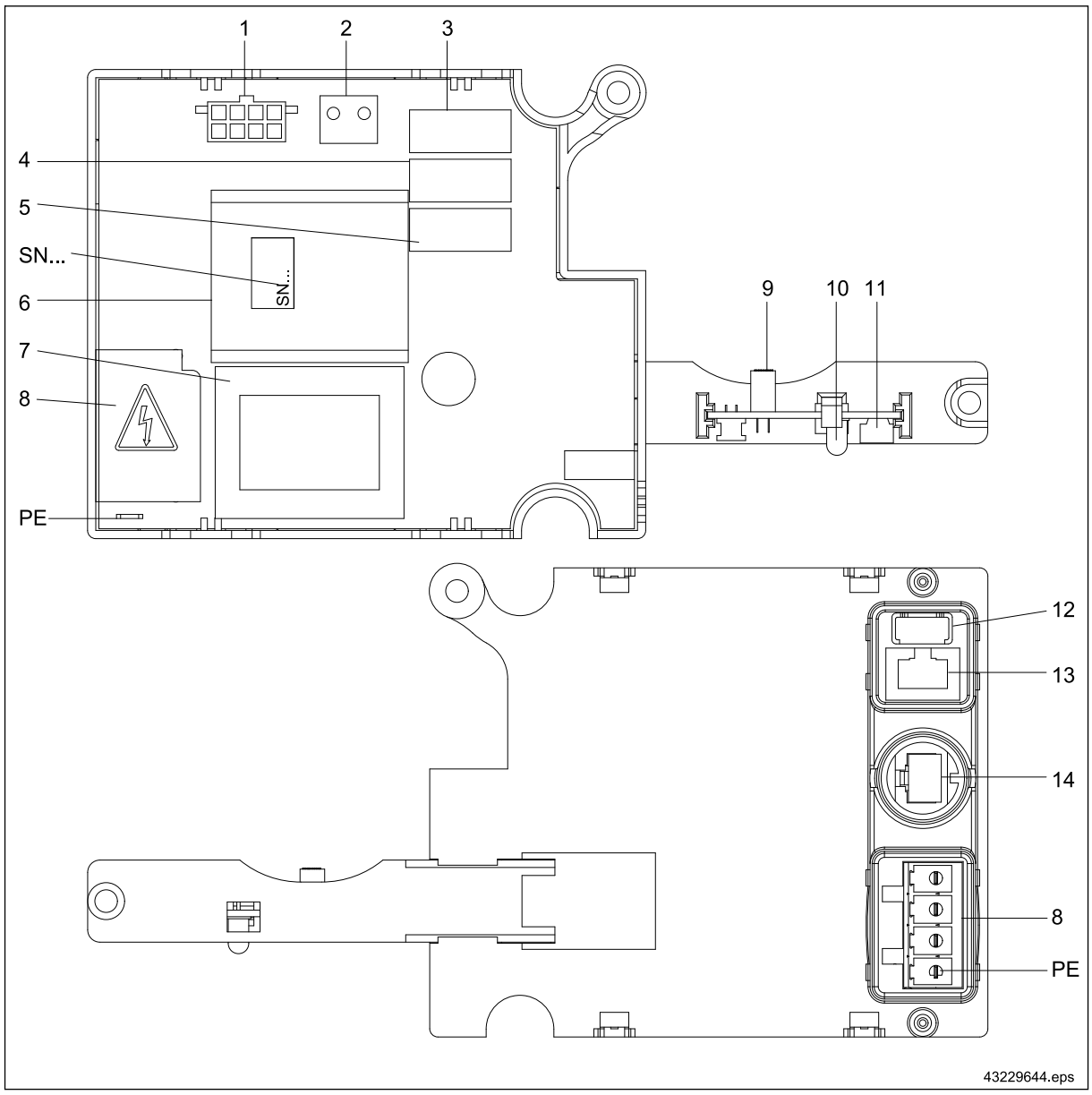


Fig. 29

Item	Designation	Terminal strip	Function
1	Plug-and-socket connector	X8	Motor
2	Plug-and-socket connector	X6	Brake
3	relay		Slow / Fast
4	relay		Lifting / Lowering
5	relay		Lifting / Lowering (from 2009)

Item	Designation	Terminal strip	Function
6	Contactor		On / Off
7	Transformer		
8	Plug-and-socket connector	X1	Line
9	Fork light barrier		Pulse generator
10	IR transmitter diode		IR interface
11	7-segment LED		Multi-function display, e.g.: Elapsed operating time counter, status indicator, error code display
12	Plug-and-socket connector	X4	Lifting limit switch
13	Dummy plug	X5	Trolley (optional)
14	Plug-and-socket connector	X3	Control cable
SN...	Serial number		

Tab. 33

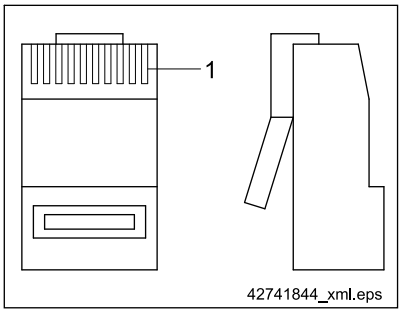


Fig. 30 Pin 1 (1)

RJ45 connector	Function assignment	
PIN	Control cable X3 (14)	Trolley X5 (13)
1	Special F1	Special F1
2	Crane forward	Crane forward
3	Crane Reverse	Crane Reverse
4	Emergency stop	Emergency stop
5	Supply control pendant	Supply control pendant
6	Lifting	24 V AC from chain hoist
7	Lowering	Reference potential control pendant
8	Trolley right	Trolley right
9	Trolley left	Trolley left
10	Special F2	Special F2

Tab. 34

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5.10 Setting parameters with the control pendant

5.10.1 General

It is possible to set parameters in order to adapt the chain hoist to specific applications. The parameters are set by means of the control pendant in connection with the 7-segment display on the bottom side of the chain hoist.

5.10.2 Meaning of keys

Fig. 31

1 “Lift” – Accept selection

2 “Lower” – Move to next parameter or selection value

3 “Emergency stop” – End parameter programming (changes are saved)

5.10.3 Meaning of parameters

From software version SW 2.10, the following parameters can be programmed:

Display of parameter no.	Parameter name	Display of parameter value	Remarks
0	-		
1	-		
2	Hoist only V2 speed	n.	**Factory setting** V1/V2
		Y.	V2
3	Interlocking of the control pendant	n.	**Factory setting** Control pendant is interlocked when several pushbuttons are actuated.
		Y.	If “Lifting” and “Lowering” are actuated together, the pushbutton actuated first has priority.
4	Time-controlled start-up (e.g. for tandem operation)	n.	**Factory setting** Speed-dependent start-up
		Y.	Time-controlled start-up
5	-		
6	-		
7	-		
8	-		
9	-		

Tab. 35

5.10.4 Starting parameter setting mode

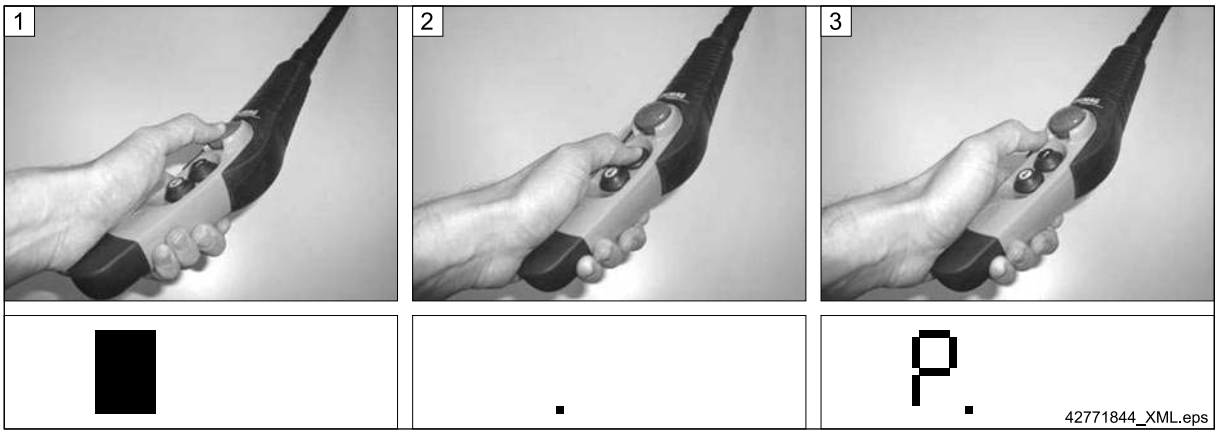

Fig. 32

1st step: Actuate “Emergency stop”.	**2nd step:** Press and hold down the “Lift” key and unlock the emergency stop. Wait for approx. 10 seconds.	**3rd step:** When “P.” is displayed, release the “Lift” key.
7-segment display: (display dark)	**7-segment display:** (display spot)	**7-segment display:** P.

Tab. 36

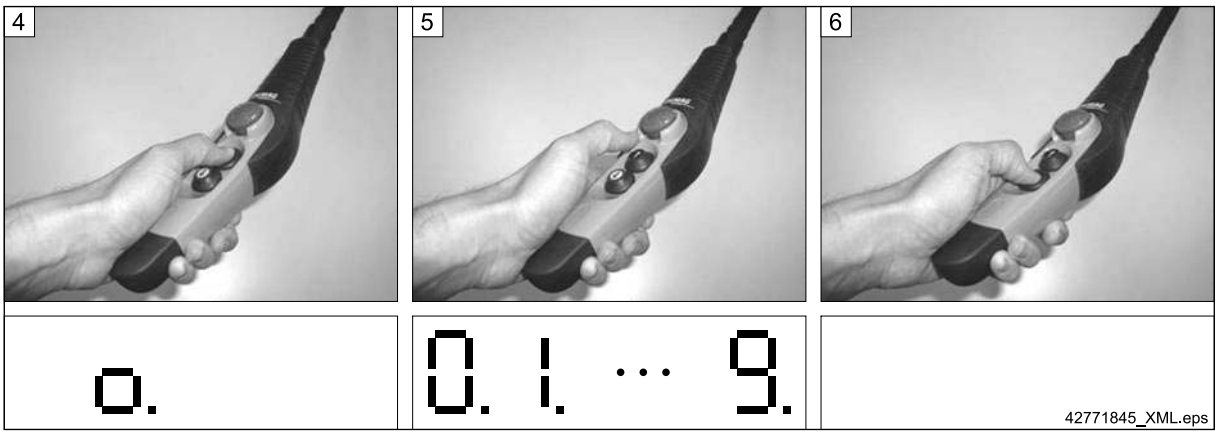

Fig. 33

4th step: “P.” extinguishes after approx. 2 seconds. Press the “Lift” key and hold down again until “o.” (for O.K.) is displayed.	**5th step:** Release key. The parameter programming mode is actice now. When the parameter programming mode has been activated, figures “0.” – “9.” are displayed successively for 2 seconds, each.	**6th step:** Press the “Lower” key to move faster through the menu items. Each figure represents a parameter, see ⇒ "Meaning of parameters", Page 55.
7-segment display: o.	**7-segment display:** 0. → 1. ··· 9.	**7-segment display:**

Tab. 37

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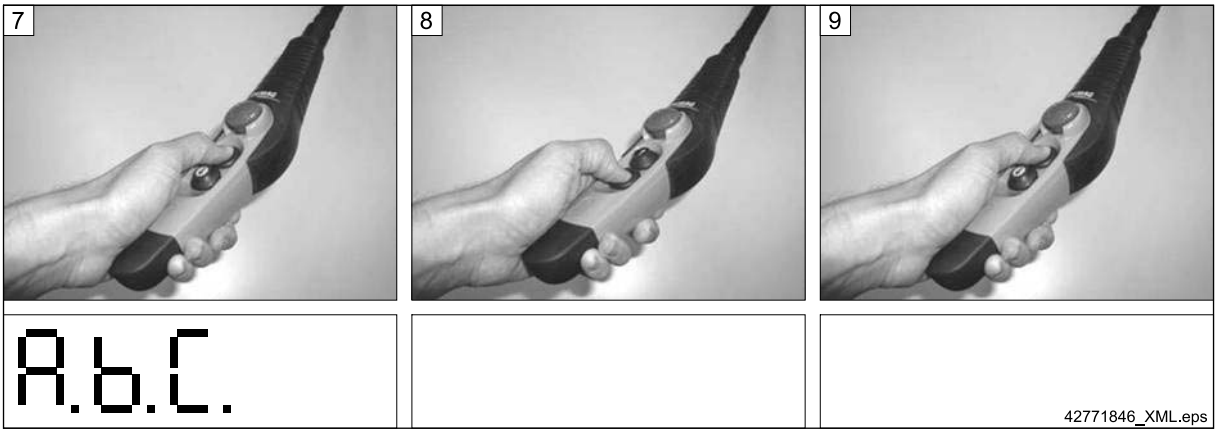

Fig. 34

7th step: Actuate the “Lift” key to select the currently displayed parameter. At the same time, the value selection menu of the parameter is opened. The currently set values are symbolically displayed with the characters “A.”, “b”., “C.”, etc. For the meaning of the characters, see ⇒ "Meaning of parameters", Page 55.	**8th step:** To set a different value, actuate the “Lower” key until the required value is shown in the display.	**9th step:** The value is selected by means of the “Lift” key, the system then also returns to parameter selection mode.
7-segment display: A. b. C.	**7-segment display:**	**7-segment display:**

Tab. 38

Fig. 35

10th step: When the “Emergency stop” key has been actuated, the unit switches back to normal operation. All changes are first saved.
7-segment display:

Tab. 39

5.11 Setting the lower hook position

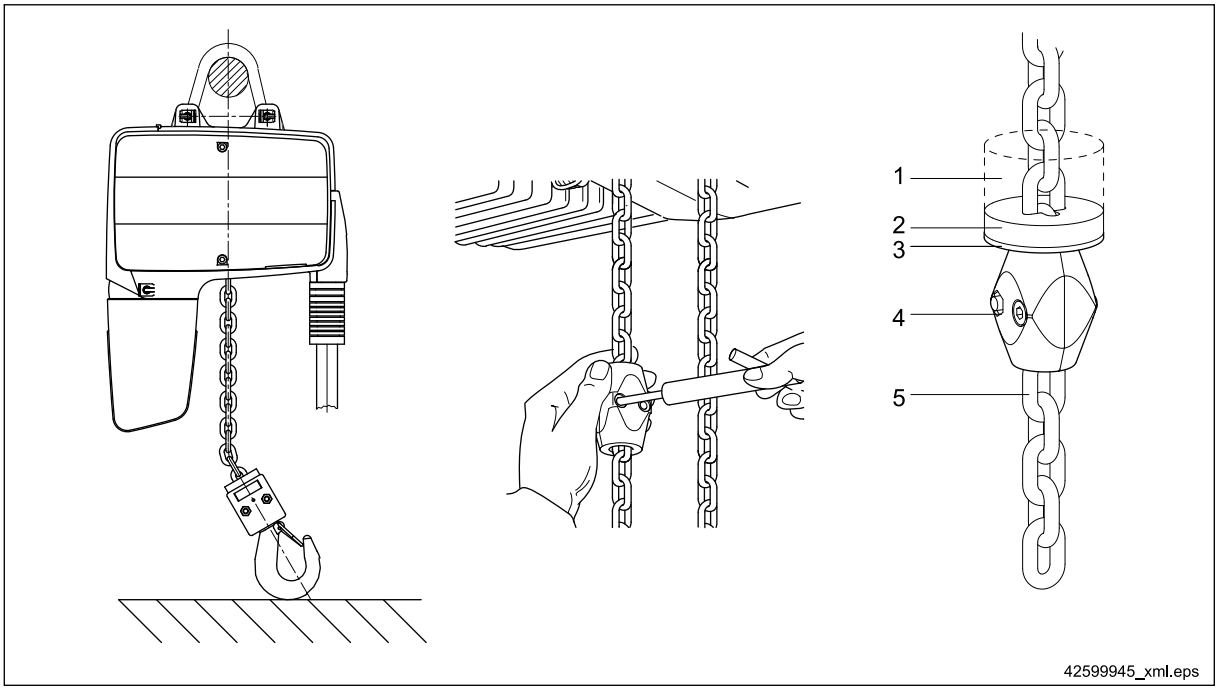

Fig. 36

1 Buffer (limit switch option)
2 Actuator plate
3 Buffer plate
4 Limit stop
5 Unloaded chain fall

For determining the hook path / lifting height, it must be taken into account that in the bottom hook position the load hook rests on the floor. As standard, the chain hoists are provided with a hook path of 4 m, 5 m or 8 m.

Fix limit stop to the 5th link at the dead (unloaded) end of the chain.

- Pay attention to assembly sequence! See also ⇒ "Buffer design", Page 92

Tightening torques [Nm]	DC-Com 1	DC-Com 2	DC-Com 5	DC-Com 10	
Reeving	1/1			1/1	2/1
Limit stop	4,0		4,3	7,4	

Tab. 40

To reduce the hook path, proceed as follows:

1. Move the hook as shown in the figure.
2. Stop the chain hoist by actuating the emergency stop or the mains connection switch and secure it against switching on again.
3. Dismantle the chain collector box ⇒ "Dismantling the chain collector box", Page 77.
4. Detach the limit stop on the chain collector side.
5. Fix the actuating plate directly behind the buffer. The unloaded chain fall behind the limit stop must consist of at least 5 chain links.
6. Place the chain into the collector box and refit to the chain hoist.
7. Switch on the chain hoist and check the setting of the bottom hook position by moving the hook and run the hook path setting once through its entire length.

6 Putting into service for the first time

6.1 Safety instructions when first putting the unit into service

The machine may only be handed over, if its safety has been verified by a corresponding inspection ⇒ "Inspections when first putting into service, handing over", Page 60.

WARNING

When first putting into service, safe operation of the machine is not yet guaranteed.

Machines may only be put into service, when assembly has been completed according to the assemly instructions.

- Putting into service may be carried out by specialist personnel, only.
- Before putting into operation check that the safety equipment is fitted / functioning.
- Check that the mains voltage and frequency match the data specified on the rating plate.
- Move the trolleys by hand and check that they can be moved without resistance by hand over the entire length of the track section (if existing).
- Before starting work ensure that sufficient working clearance is available.
- Secure working and danger zone.
- Wear protective clothing!

Only trained specialist personnel must be employed for first putting into service since:

- it may be necessary to render safety devices or features inoperative when carrying out adjustments or function checks,
- work may need to be performed in the danger zone when first putting into service.

6.2 Inspection regulations

WARNING

Non-compliance with operating and maintenance instructions

Danger to life and limb.

Compliance with all inspection regualtions is an integral part of securing the safe operation of the machine.

Prescribed tests and inspections must be carried out.

All inspections must be arranged at the specified time intervals / points of time and documented by the owner.

- Inspection in accordance with relevant national regulations, e.g. UVV/BGV D6 for cranes; UVV/BGV D8 for winches, hoists and towing devices in Germany.

  The owner is responsible for ensuring that powered chain hoists are inspected by an expert engineer prior to first putting into service and after major modifications have been carried out, before putting into service again. This also applies to manually operated or semi-powered chain hoists with a load capacity of more than 1000 kg.
- Adjustment, maintenance and inspection activities and inspection deadlines including specifications concerning replacement of parts/assemblies prescribed in the operating instructions must be observed.
- For the values for noise emission measurement according to DIN 45635 please refer to ⇒ "Noise emission / sound pressure level", Page 26

This work may only be carried out by specialists.

6.3 Inspection prior to putting into service for the first time

Before putting into service for the first time, the owner is obliged to carry out the following inspections:

Action	Section	Inspection
Check continuity of the PE conductor connection	-	X
Check emergency stop device	-	X
Check direction of movement	⇒ "Line connection", Page 48	X
Check 7-segment display	⇒ "7-segment display for operating status and error display", Page 31, ⇒ "Software version, operating hours, number of cycles, operating statuses", Page 31	X
Check chain lubrication (under arduous conditions, the chain must be lubricated more frequently)	⇒ "Available hoist chains", Page 83	X
Check function of operating limit switch for lifting	⇒ "Checking the operating limit switches", Page 77	X
Check function of operating limit switch for lowering	⇒ "Checking the operating limit switches", Page 77	X
Check swich-off buffer / switch-off spring / operating limit switch actuator	⇒ "Checking the swich-off buffer / switch-off spring", Page 91, ⇒ "Checking the operating limit switch actuator", Page 78	X
Check control cable and control pendant housing for damage	-	X
Check operation of the brake	-	X
Check hook and hook safety catch	⇒ "Checking the load hook", Page 88	X

Tab. 41

6.4 Inspections when first putting into service, handing over

WARNING

Impermissible operation

There is danger to life and limb when the machine is operated without previous inspection.

Machines may only be put into service, when they have been inspected according to the accident prevention regulations.

By means of suitable measures carried out by the owner or on his behalf, the owner ensures that the load handling attachments and machinery ready for operation function in complete safety before first being put into service. The specified measures must allow for the static and dynamic features of the machinery.

The following checks must be carried out when first putting into service:

- The proper condition of the supporting structure and the load capacity of the chain hoist.
- Safety devices must be completely fitted and effective.
- Clearances and safety distances must be complied with.
- The emergency stop device must be checked by actuating the emergency stop.

When putting into service for the first time, all possibilities of intended use must be checked at the corresponding maximum permissible load. The functioning of the safety devices must be checked (e.g. by lifting an overload). At the same time the behaviour of the chain hoist in the case of misuse must be checked.

Before handing over, different inspections of the machine must be arranged for:

- Inspection for suitability for operation
- Acceptance test

As soon as the safe operating status of the chain hoist is ensured, the test and inspection records can be prepared.

When handing over the machine, the test and inspection records (test and inspection booklet; observe the relevant country-specific regulations) are handed over.

After the machine has been handed over, it may be used as intended.

7 Operation

7.1 Safety instructions for operation

WARNING

Inappropriate operation

There is a risk of injury in the case of inappropriate operation.

Inappropriate operation may result in serious personal injury and / or material damage. The unit may only be operated by authorized, instructed personnel in compliance with all accident prevention and safety regulations. National regulations for the use of crane and lifting equipment must be observed and complied with.

– The customer must arrange for the training of the operating personnel.

WARNING

Crushing hazard

When lifting or lowering loads there is a risk of injury due to parts of the body being crushed or clothing or hair becoming entangled.

– Do not touch the chain.
– Do not reach into the upper or lower chain entry point.
– Do not reach into the coupling area when changing the quick-release coupling of the Manulift.
– Do not reach between hook throat and load handling attachment when lifting loads.
– Persons must not stay in the immediate danger zone when depositing the load.

WARNING

Risk of burning

There is a risk of burning when touching the chain hoist during operation.

Do not touch the hot motor housing.

WARNING

Suspended load! Falling parts!

There is danger to life and limb, when suspended loads fall down.

Persons must keep out of the danger zone.

– Keep a sufficient safety distance.
– Do not walk under the suspended load.
– It is not allowed to lift loads above persons.
– Wear protective clothing!

WARNING

Non-compliance with operating regulations / regulations regarding industrial safety

There is a danger to life and limb due to the non-compliance with valid standards.

Machines may only be operated in compliance with the country-specific operating regulations, e.g. Cranes BGV D6 (VBG 9) in Germany.

– If required, apply a copy of the relevant operating regulations, ident. no. 206 093 44, at a suitable place where operators can read them at any time (e.g. at the mains connection switch).

The machine must not be put into operation or must be taken out of service immediately if any defects or irregularities relating to operating safety and reliability or function are detected.

Safety devices must not be rendered inoperative or modified in contradiction to their intended use.

Ensuring safe operation

Special local conditions or special applications can lead to situations which were not known when this chapter was written. In this case, the owner must ensure safe operation or take the machine out of service until measures for safe operation have been clarified and implemented in agreement with Demag or other responsible bodies.

In the event of a stoppage (e.g. if defects regarding safe and reliable operation are detected, in emergency situations, in the event of operating malfunctions, for repairs and maintenance purposes, if damage is detected or after finishing work), the operator must carry out all prescribed safety measures or observe that they are automatically carried out.

Work on electrical equipment may only be carried out by qualified electricians.

7.2 Switching on

7.2.1 Inspections when starting work

Before starting work, the operator must be satisfied that the machine is in safe and correct operating condition.

Ensure that nobody is endangered by operation of the hoist before switching it on or putting it into operation. If the operator notices persons who may be exposed to a risk to health or personal safety by operation of the installation, he must stop operation immediately and may not resume operation until the persons are outside the danger zone.

In the event of defects which endanger safe and reliable operation, the chain hoist must be taken out of service without delay. Defects relevant to safety in this sense are, for example:

- Damage to electrical devices, cables or insulation,
- Delayed functioning or failure of brakes and safety devices,
- Missing covers or housing parts or
- Damage to the chain or to supporting parts.

Anybody who identifies an immediate danger of personal injury must actuate the emergency stop without delay. This also applies in the case of damage occurring to parts of the machine and equipment which makes immediate stoppage necessary.

When the chain hoist has been stopped as a consequence of safety-relevant defects by an emergency stop, it must be secured against putting into operation again until an experienced technician is satisfied that the cause of the hazard situation has been eliminated and that operation of the machineis possible without any hazard.

Before starting work:

- Wear protective clothing!
- Check that no persons are in the danger zone of the unit.

7.2.2 Functional tests

Instructions for users within the scope of application of the BGV D06 accident prevention regulations:

In accordance with BGV D06, the crane operator must also check functioning of the emergency stop device when starting work. This does not apply to slipping clutches used as an emergency-stop device which need not be checked when starting work (BGV D06, §30). DC chain hoists are fitted with a slipping clutch as an emergency-stop device which needs not be checked by the crane operator, therefore a device for by-passing the limit switches which are approached during normal operation is not fitted.

Before starting work the main functions of the machine must be checked:

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Action	Section	Inspec-tion
Check emergency stop device	-	X
Check 7-segment display	⇒ "7-segment display for operating status and error display", Page 31, ⇒ "Software version, operating hours, number of cycles, operating statuses", Page 31	X
Check chain lubrication (under arduous conditions, the chain must be lubricated more frequently)	⇒ "Available hoist chains", Page 83	X
Check function of operating limit switch for lifting	⇒ "Checking the operating limit switches", Page 77	X
Check swich-off buffer / switch-off spring / operating limit switch actuator	⇒ "Checking the swich-off buffer / switch-off spring", Page 91	X
Check control cable and control pendant housing for damage	-	X
Check operation of the brake	-	X
Check hook and hook safety catch	⇒ "Checking the load hook", Page 88	X

Tab. 42

7.3 Operation

7.3.1 General

DANGER

Broken chains and load drop

Frequent approaches of the emergency limit stop device may result in broken chains or load drops.

For chain hoists without operating limit switch or with defective operating limit switch, the slipping clutch of the chain hoist perfoms the function of the emergency limit stop device. This emergency limit stop device may only be approached in exceptional cases, i.e. it must not be approached in normal operation. When the slipping clutch is tripped, high additional loads are exerted on the chain.

Therefore the function "Operating limit switch for lifting" must be checked every day..

WARNING

Overload

Danger to life and limb.

Higher loads than those specified on the load capacity plate must not be handled.

- Please note the maximum permissible load capacities of the hoist.
- Use load handling attachments which are sufficiently dimensioned.
- Use the load handling attachments as intended.

Important information on operation

Please follow the instructions below during operation:

Safety during operation

- Take the machine out of service immediately if functional defects or irregularities are detected.
- The operator is obliged to check the machine for visible damage at least once per shift and to report damage immediately.
- Do not render safety devices inoperative.
- Limits must not be approached in normal operation, e.g. emergency stop devices (emergency limit switches), emergency limit stop devices (slipping clutch or emergency limit switch), track and end buffers for stopping motion of the trolley or crane, hook assemblies or bottom block against end stops. Continuous approaches of these limits may result in severe damage on the chain hoist up to chain breakage.

– Pay attention to regulations pertaining to the correct loading of chains.

– Do not reach into rotating parts and maintain a sufficient safety distance to prevent clothing, parts of the body or hair becoming entangled.

Load pick-up

– The load handling attachment and load must be flexibly suspended. Rigid connections cause uncontrolled forces and lead to fatigue fracture. To protect the chain from impermissible torsion when the load turns, movement of the hook assembly/bottom block must not be restricted.

– The bottom block must not be twisted or turned over for 2/1 reeving arrangements; chain links facing the same direction must be arranged opposite each other without being twisted.

– When attaching the load, ensure that loads or the load handling attachment do not slip out of the hook or that loads do not fall over, fall apart, slip or roll off when being picked up and deposited.

– When the load is lifted, the hook must move to an upright position so that the safety catch is not loaded by the load handling slings and, as a result, may be damaged.

– Transporting persons is not permitted.

– The load specified on the capacity plate indicates the highest permissible load which must not be exceeded. It is the sum total of lifting load and load handling attachment. Only approved load handling attachments may be used. The load capacity of the load handling attachment must not be exceeded.

Moving the load

– During lifting and travelling motions the operator must take a position which provides a free view on the danger zone or a second person must be available who has a view on the danger zone.

– Hoists / trolleys / crane with push travel may only be moved by pulling or pushing on the load, bottom block or load hook assembly. Never pull on the control pendant.

– Hand-moved loads must be guided by hand. The load must never be thrown.

– Do not handle suspended loads above persons.

– Do not pull or drag suspended loads at an angle. At an angle higher than 4° the chain drive may get damaged.

– Do not pull free fixed or obstructed loads with the chain hoist.

– Do not leave suspended loads unsupervised.

– Do not allow the chain to pass over edges or to be used as a load bearing sling.

– Do not allow loads to drop when the chain is in a slack condition.

– Vibration from the load being transported (e.g. when the load is deposited on vibrating machinery) must not be transmitted to the crane.

– Chain hoists must be suspended in such a way that they do not collide with stationary equipment and structures, e.g. when slewing pivoting cranes.

– Do not snatch the load at full speed.

– Avoid inching operation.

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Load distribution

Fig. 37

CAUTION

Premature wear of the chain guide and chain

Danger of load drop

Avoid unequal loading of the chain falls. This results in chain breakage and damage of the chain guide.

Blocked chains or excessive play between chain and chain sprocket destroys the chain guide.

– **Eliminate any knots or blockage of the chains before lifting / lowering.**

Functioning of the emergency stop device

When the emergency stop is actuated, the hoist motor is disconnected immediately from the electrical power supply, the mechanical brake is applied and stops the movement.

Resuming operation by unlatching the emergency stop is only possible, if no lifting or lowering commands are applied (off-position constraint).

The effectiveness of the emergency stop function depends on the proper condition of the mechanical brake. If an unusually long braking distance is noted, impermissible wear on the brake may be the cause. In this case, the brake must be inspected by an experienced technician without delay.

Functioning of the slipping clutch

The chain hoist is fitted with a slipping clutch that is tripped in the event of overload. The brake is then automatically applied and the motor is switched off. After the slipping clutch has been tripped only lowering is possible.

It is therefore not possible to lift an overload from the ground. A load already suspended can be safely deposited by actuating the lowering button. When the lowering motion has been completed, lifting is possible again. If the slipping clutch switches off already at rated load, the slipping force must be measured by an experienced technician and re-adjusted, as required.

Functioning of the lifting path limiter

After the lifting path limiter has been tripped, only the opposite motion is still possible. The lifting path is limited by limit stops on the ends of the chain. As a consequence, the slipping clutch becomes effective as an emergency stop device, the brake is automatically applied and the motor is switched off. Tripping of the emergency stop device causes a warning message on the display. Operating limit switch contacts prevent travelling against the emergency stop device, they are actuated by elastic buffers on the limit stop and cut-out the motion before the emergency stop device is reached. When the DC-Com chain hoist is not eqipped with an operating limit switch, the emergency limit stop device must not be approached.

7.4 Emergency stop

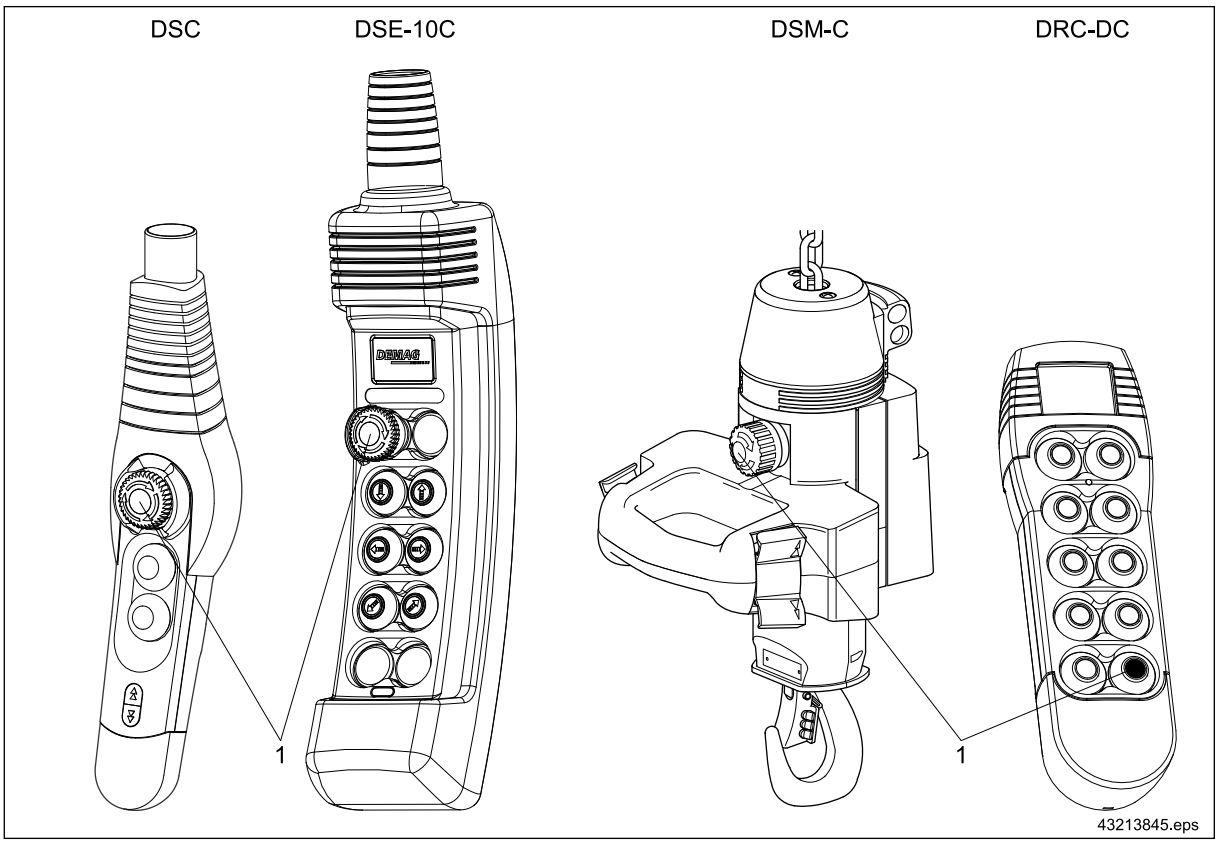

Fig. 38 Position of the emergency stop (1), DC-Com not connected to DSM-C

WARNING

Unauthorised, negligent or accidental switching-on again.

Danger to life and limb.

Check to ensure that the reason for the emergency stop has been eliminated before the machine is switched on again.

The emergency-stop device must not be used to switch off the machine in normal operation.

Every chain hoist features an emergency-stop device with which all motions can be stopped in the event of a hazard.

The emergency-stop is arranged in a clearly visible position on the control pendant. Anybody who identifies an immediate danger of personal injury must actuate the emergency stop without delay. This also applies in the case of damage occurring to parts of the machine and equipment which makes immediate stoppage and securing of the installation necessary.

- To actuate the emergency-stop, press until it reaches the end stop. It then locks automatically and the chain hoist is shut down.
- To unlock the actuated emergency-stop, turn the knob in the direction of the arrow (clockwise) and release.

Following an emergency stop, do not switch the machine on again until you are satisfied that:

- the cause which led to actuation of this function has been rectified and
- continued operation of the machine constitutes no further hazard.

Control pendant

Depending on the requirements the Demag chain hoist can be equipped with different control pendants. The operation of the control pendant and the assigment of buttons can be seen in the corresponding brochures, see ⇒ Tab. 3, Page 7.

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7.5 Taking out of service

7.5.1 Taking out of service in the case of faults

The machine must be switched off immediately in the event of the following faults:

- In the event of damage to electrical devices and cables as well as parts of the insulation.
- Brake and safety device failure.

7.5.2 Taking the hoist out of service on finishing work

The following measures must be carried out on finishing work:

- After work has been finfished, put the load handling attachments, such as hook assembly or bottom block, outside the travel area.
- Drive the chain hoist into the resting position.
- Switch off the chain hoist power supply at the mains connection or isolator switch.

7.5.3 Taking the unit out of service for maintenance and repairs

1. Switch off the mains connection or isolator switch before commencing maintenance and repair work.
2. Secure the mains connection switch with a padlock to prevent unauthorised or accidental reconnection to the supply.
3. Only carry out maintenance work on the chain hoist when the load has been removed.
4. Stop all moving parts and ensure that they cannot start moving while maintenance work is being performed.
5. Observe the relevant accident prevention regulations, instructions concerning appropriate use and statutory regulations for operation and maintenance.
6. Observe the relevant safety regulations when repairing electrical equipment.

8 Maintenance/repair

8.1 Safety Instructions for maintenance/repair

In the following sections maintenance work is described which is necessary for optimum and trouble-free operation of the device.

DANGER

Live components

Danger to life and limb.

Work on electrical equipment may only be carried out by qualified specialist personnel(⇒ "Definition of personnel", Page 9) in compliance with the safety instructions.

Before starting work, the electrical supply must be switched off. The mains connection or isolator switch must be secured against unauthorized or accidental reconnection by means of a padlock.

WARNING

Risk of burning

There is a risk of burning when touching the chain hoist after operation.

Do not touch the hot motor housing. Let motor cool down before starting maintenance and repair work.

WARNING

Inappropriate maintenance

Danger to life and limb. Danger of material damage.

Maintenance and repair work may only be carried out by qualified instructed personnel (⇒ "Definition of personnel", Page 9) in compliance with the safety instructions.

- Secure working and danger zone.
- When using a working platform for maintenace and repair work, only systems designed for passenger transport should be used that provide for a stable position and work without any risk.
- Only suitable, tested and calibrated tools and accessories may be used for maintenance and repair work.
- Only use approved spare parts, see also ⇒ "Use of spare parts", Page 9.
- Wear protective clothing!
- Caution on open sharp-edged parts! Risk of injury!
- Ensure order and cleanliness at the workplace. Machine parts or fittings that are not required must be stored so that they cannot fall down.
- Appropriately fit component parts. Tighten screws with the prescribed tightening torque. Inappropriately fixed component parts may fall down and result in severe injuries.
- Welding work may only be carried out by persons having a special qualification. The requirements of DIN regarding welding work must be complied with. The electrode holder and earth must be connected to the same assembly when welding work is carried out. Otherwise serious damage may be caused to the hoist. Trolleys must not be welded or drilled.
- Customer-specific regulations must be observed.

CAUTION

Loose connections

Loose connections mean danger for life and limb or risk of machine damage.

Metal nuts featuring a locking element (self-locking nuts) are mainly used for Demag chain hoists.

- Self-locking nuts must not be replaced by other types of nut.

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CAUTION

Risk of injury!

Oils and lubricants may be dangerous to health.

Contact with these media may lead to serious damage to health (poisoning, allergy, skin irritation etc.).

CAUTION

Risk of injury!

Leaking oils and lubricants are hazard sources due to increased slippery.

Released oils and lubricants must immediately be absorbed by means of sawdust or oil absorbent and disposed of in an environmentally sound way.

8.2 Basic information on maintenance

General information on maintenance/repair

The specified inspection and maintenance intervals (⇒ "Inspection and maintenance schedule", Page 74) apply to normal operating conditions for the chain hoist. In the course of the annual inspection, all wearing parts are checked.

If routine maintenance reveals that the intervals are too long, they should be adapted to the specific operating conditions.

Electrical components

In the circuits, only fuse links with specified amperage and tripping characteristics may be used. Defective fuse links must not be bridged.

When working on machines or machine equipment the following must be observed:

1. Wear personal protection equipment.
2. Before starting maintenance work, switch off the mains connection switch and protect it against unauthorized or accidental reconnection to the supply by locking it with a padlock.
3. Ensure that the chain hoist is switched off, checked that it is de-energized and, in special cases, isolated,
4. Only carry out maintenance work on the chain hoist when the load has been removed.
5. Ensure appropriate clearance for working. Ensure order and cleanliness at the workplace. Components and tools being loose or lying around may cause accidents.
6. Stop all moving parts and ensure that they cannot start moving while maintenance work is being performed.
7. Observe the relevant accident prevention regulations and statutory regulations for operation and maintenance.
8. Observe the relevant safety regulations when repairing electrical equipment.
9. After having finished maintenance work refit safety devices as prescribed and check for functioning.

Maintenance work which is not possible from the floor may only be carried out from work stands or platforms. If there is a risk of objects falling down, the danger zone below the chain hoist must be made safe.

Instructions for repair work in the course of operation

If maintenance work on the chain hoist must be carried out in the course of operation, special safety precautions are necessary, depending on the operating situation. In each individual case, the owner or the person assigned by him must check whether the maintenance work may be carried out in the course of operation without risk of personal injury and, taking into account the local conditions, implement all necessary safety precautions.

Replace damaged or deformed spring clip fasteners and split sleeves.

Defective bolted connections must be replaced.

Ensure that operating and auxiliary materials and replaced parts are disposed of in an environmentally friendly manner.

8.3 Routine inspections

8.3.1 Prescribed inspections

WARNING

Non-compliance with operating and maintenance instructions

Danger to life and limb.

Prescribed tests and inspections must be carried out.

- An annual inspection as e.g. specified in German accident prevention regulations UVV/BGV D8 § 23 (2) and BGV D6 (1) must be carried out.
- Adjustment, maintenance and inspection activities and inspection deadlines including specifications concerning replacement of parts/assemblies prescribed in the operating instructions must be observed.

This work may only be carried out by specialists.

Cranes and equipment must be inspected by a specialist at least once a year. Routine inspections mainly consist of visual inspections and function checks which should include a check to determine the condition of components and equipment regarding damage, wear, corrosion or other safety devices. The routine inspection must be carried out in accordance with BGV D6 and ZH 1/27 "Principles for the inspection of cranes" in Germany. The results of the inspection must be entered into a test and inspection booklet. It may be necessary to dismantle the unit in order to inspect wearing parts. Load carrying means must be inspected along their entire length, including those parts which cannot normally be seen. Defective parts and components and parts close to failure must be replaced. Please also note ⇒ "Measures for achieving safe working periods S.W.P.", Page 71 and ⇒ "Inspection and maintenance schedule", Page 74.

All inspections must be arranged and documented by the owner.

8.3.2 Service life of the contactor

The switchgear is subject to wear during operation of the chain hoist. Its service life has been rated for the specified loading group. In the case of extreme switching frequencies premature wear is possible.

DC-Com chain hoist	Reeving	Display value C at U_{nom} 380 - 575 V	Display value C at U_{nom} 220 - 240 V
1	1/1	80	80
2		80	60
5		60	50
10		50	20
	2/1	20	-

Tab. 43

The display value C specifies the expected service life of the contactor multiplied by 100.000. This value has been determined at normal operating conditions. Under other operating conditions the service life of the contactor may be shorter or longer, ⇒ "Software version, operating hours, number of cycles, operating statuses", Page 31.

When the corresponding display value is reached, we recommend that the contactor or control module be replaced, ⇒ "Replacing the contactor on the control card", Page 98.

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8.3.3 Measures for achieving safe working periods S.W.P.

8.3.3.1 General

The safety and health provisions of the EC Machine Directive make it a legal requirement to eliminate special hazards which may be caused, for example, by fatigue and ageing.

This requirement is also reflected in the third supplement to German accident prevention regulations UVV/BGV D8 (VBG 8) of 1.4.1996.

This requirement obliges the owner of serial hoist units to determine the actual duration of service of the chain hoist on the basis of the operating hours, load spectra and/or recording factors. This is based on FEM 9.755/06.1993 Measures for achieving safe working periods for powered serial hoist units (S.W.P.).

The objective of this rule is to determine measures for achieving safe working periods over the entire duration of service, although, according to the state-of-the-art, the hoist units are designed for specific periods of operation. Premature failure cannot, however, be ruled out.

The following items have been taken from FEM rule 9.755 with reference to the electric chain hoist:

1. The actual duration of service determined on the basis of operating time and load must be documented at least once per year.
2. The operating time T_i (number of operating hours) can be estimated or read on an elapsed time indicator.
3. The load k_{mi} (load spectrum) must be estimated.
4. The value determined for operating time T_i using an elapsed time indicator must be multiplied by the type of recording factor f = 1,1.
5. The value determined for the estimated operating hours and load spectrum must be multiplied by the type of recording factor f = 1,2.
6. The actual duration of service S is calculated as: $S = k_{mi} \bullet T_i \bullet f$
7. A general overhaul must be carried out when the theoretical duration of service is reached.
8. All checks and inspections and the general overhaul must be arranged by the owner of the hoist unit.

A general overhaul is defined as:

Inspection of the machinery for the purpose of detecting all defective components and/or components and parts close to failure and the replacement of all such components and parts. Following a general overhaul, the machinery is in a condition similar to that of the same machinery in new condition as far as the principle of operation and performance values are concerned.

For electric chain hoists classified according to FEM 9.511, the following theoretical durations of service apply (converted into full load hours):

Group of mechanisms	1Cm	1Bm	1Am	2m	2m+	3m	4m
Duration of service / full load hours [h]	200	400	800	1600	1900	3200	6300

Tab. 44

The actual duration of service is considerably increased if the chain hoist is only operated with partial load. For a chain hoist operated on average with half load, for example, this results in an 8-fold increase in the actual duration of service, with operation at one quarter of the full load, a 64-fold increase.

8.3.3.2 Calculating the actual duration of service S

The actual duration of service S of the electric chain hoist can be determined as follows:

$S = k_{mi} \bullet T_i \bullet f$

k_{mi} : Actual load spectrum factor

T_i : Number of operating hours

f : Factor depending on the type of recording

Calculating the number of operating hours (operating time) T_i (by the owner)

The operating time can be calculated by means of an elapsed time indicator or according to the following method:

Operating time per inspection interval:

$$T_i = \frac{\text{(Lifting+lowering) x cycles/h x operating time/day x days/inspection interval}}{\text{60 x hoist speed}}$$

Tab. 45

Only lifting and lowering movements are counted, long and cross travel times are not taken into consideration.

Estimating the load spectrum factor k_{mi} (by the owner)

To simplify estimation, each type of load can be grouped together into k_m load spectrum modules. The types of load are simplified and quoted as 1/4, 1/2, 3/4 load and full load.

Dead loads are added to the loads. Loads up to 20% of the rated load capacity are not taken into consideration.

The operating time for each type of load is divided up within the inspection interval (e.g. 1 year) in terms of percentage.

The following bar diagram shows the k_m load spectrum modules for the load conditions without load up to full load in time increments of 5 and 10%. Larger shares of the time period must be correspondingly added together.

Load spectrum factor k_{mi} can be obtained by adding together the individual k_m load spectrum modules.

Diagram

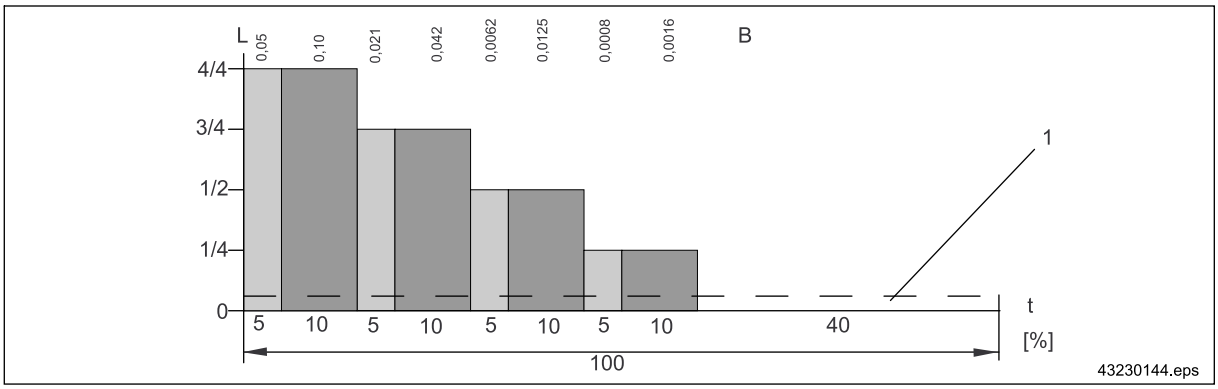

Fig. 39

B	Load	t	Time
L	Load	1	Dead load

Factor depending on the type of recording

- f = 1.1

  For calculating the operating hours using an elapsed time indicator (included in the DC-Com standard scope of delivery)
- f = 1,2

  For estimating the operating hours and the load spectrum

8.3.3.3 Example: DC-Com 10-1000 1/1 H5 V4/1 in 1Am

Hoist speed	4/1 m/min
No. of cycles per hour	10 cycles/h
Lifting and lowering	(2+2) m/cycle = 4 m/cycle
Operating time per day	8 h/day
Days per inspection interval	250 days/inspection interval

Tab. 46

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Calculation

$$T_i = \frac{10 \cdot 4 \cdot 8 \cdot 250}{60 \cdot 4}$$

Tab. 47

With operating time read: 334

With operating time estimated: 333,3

In the operating time as read / estimated above, the chain hoist has transported the following loads:

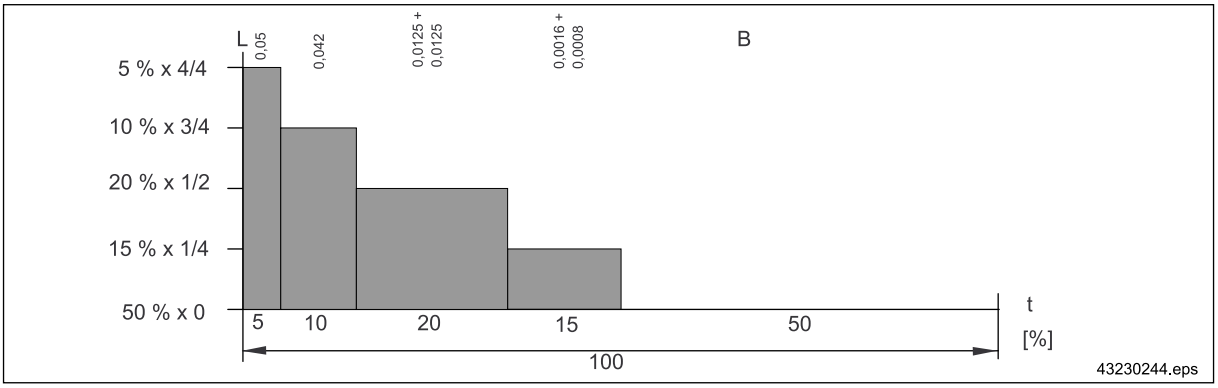

Fig. 40

B Load

L Load

t Time

Adding the load spectrum modules k_m together results in the load spectrum factor k_{mi} = 0,119

Thus, the actual duration of service amounts to S [h] = k_{mi} x T_i x f =

- with operating time read 0,119 x 334 x 1,1 = 43.72
- with operating time estimated 0,119 • 333.3 • 1,2 = 47.6

For classification in FEM group of mechanisms 1Am (see DC-Com data plate) with a theoretical duration of service of 800 hours (see table below) the hoist has a theoretical remaining duration of service of

- with operating time read 756,28 hours
- with operating time estimated 752,4 hours

Documentation:

Enter these values in your test and inspection booklet or crane installation test and inspection booklet. This entry may appear as follows:

Date		Operating hours	Load spectrum module km [%]					Load spectrum factor		Act. duration of service	Theor. duration of service	Remaining duration of service
from	to	T_i value [h]	full	3/4	1/2	1/4	Without	k_{mi}	f	S [h]	D [h]/Group of mech.	D - S [h]
3.1.-	30.12.-	read 334	5	10	20	15	50	0,119	1,1	43,72	800/1Am	756,28
			0,05	0,042	0,025	0,002	-					
3.1.-	30.12.-	estimated 333.3	5	10	20	15	50	0,119	1,2	47,6	800/1Am	752,4
			0,05	0,042	0,025	0,002	-					

Tab. 48

8.3.4 General overhaul GO

The chain hoists are designed for a period of use of at least 10 years until the first general overhaul is carried out. This is based on the condition that the specified group of mechanisms is not exceeded by the actual duration of service. When the actual duration of service has reached the theoretical duration of service valid for the group of mechanisms, further operation of the chain hoist is only permissible after a general overhaul.

The theoretical duration of service D (hours at full load h) depends on the group of mechanisms classification of the chain hoist. The actual duration of service is to be determined annually in accordance with FEM 9.755. During the annual inspection by our after-sales service, you may have the actual service life determined.

Upon expiration of 90% of the theoretical duration of service – if the chain hoists are correctly classified after 8 to 10 years – the owner must arrange for a general overhaul GO to be carried out. A general overhaul must be carried out no later than when the end of the theoretical duration of service is reached.

During the general overhaul the following parts must be replaced in addition to the checks and work specified in the inspection and maintenance schedule:

- Gearbox housing with joined gearing parts,
- Gear oil and gearbox cover with seal,
- Connecting elements,
- Shaft sealing rings, bearings, plugs,
- Brake.

The small parts (screws, washers, etc.) to be replaced during maintenance and assembly work are not listed separately. The general overhaul carried out by the manufacturer or an authorized specialist company fulfills the condition for continued operation of the chain hoist.

Thus the relevant accident prevention regulations and the BGV D8 (VBG 8) are complied with.

Further utilization is approved when an expert engineer has entered the conditions for further utilization into the test and inspection booklet. Completion of the general overhaul must be confirmed in the test and inspection booklet and a further period of utilization in accordance with FEM 9.755 must be entered.

8.4 Inspection and maintenance schedule

Action	Section	Before first putting into operation	Before starting work	In the course of annual inspection
Check continuity of the PE conductor connection	-	X		
Check emergency stop device	-		X	X
Check direction of movement	⇒ „Line connection“, Page 48	X		
Check 7-segment display	⇒ „7-segment display for operating status and error display“, Page 31, ⇒ „Software version, operating hours, number of cycles, operating statuses“, Page 31	X	X	
Check chain lubrication (under arduous conditions, the chain must be lubricated more frequently)	⇒ „Available hoist chains“, Page 83	X	X	X
Check function of operating limit switch for lifting	⇒ „Checking the operating limit switches“, Page 77	X	X	X
Check function of operating limit switch for lowering	⇒ „Checking the operating limit switches“, Page 77	X		X
Check swich-off buffer / switch-off spring / operating limit switch actuator	⇒ „Checking the swich-off buffer / switch-off spring“, Page 91 ⇒ „Checking the operating limit switch actuator“, Page 78	X	X	X
Check control cable and control pendant housing for damage	-	X	X	X
Check operation of the brake	-	X	X	X
Check hook and hook safety catch	⇒ „Checking the load hook“, Page 88	X	X	X
Read the switching cycles C	⇒ „Service life of the contactor“, Page 70			X

Action	Section	Before first putting into operation	Before starting work	In the course of annual inspection
Read operating hours for determining the remaining duration of service	⇒ „7-segment display for operating status and error display“, Page 31 ⇒ „Measures for achieving safe working periods S.W.P.“, Page 71			X
Check electrical switchgear and wiring	-			X
Check operation of the slipping clutch	⇒ „Checking the slipping clutch“, Page 96			X
Check setting of the slipping clutch	⇒ „Adjusting the slipping clutch“, Page 96			X
Check brake wear	⇒ „Brake“, Page 94			X
Check suspension, suspension bracket and securing elements (clip, etc.)	⇒ „Suspension“, Page 76			X
Check fastening screws on hook assembly / bottom block	-			X
Check hooks for cracks, deformation and wear	⇒ „Checking the load hook“, Page 88			X
Check hook safety catch for deformation	-			X
Check hook bearing for wear	-			X
Check rubber lip seal in the bottom block	⇒ „Replacing the (standard) bottom block with internal switch-off springs, reeving 2/1“, Page 90			X
Check sprocket of chain guide, chain sprocket of bottom block, chain guide, guide plate	⇒ „Chain drive“, Page 79			X
Check that the chain and chain collector box are properly secured	-			X
Check the chain for deformation, damage, cracks, pitting, reduction in the thickness of the links or increase in pitch due to wear, elongation caused by deformation	⇒ „Checking the hoist chain“, Page 79			X
Check securing elements (clips, bolts, etc.) for tight fit and corrosion	-			X
Check and apply or supplement corrosion protection, as required	-			X
Check electrical enclosure and gearbox for leakage	-			X
Check trolley, crossbar and status of buffers	⇒ „Checking the swich-off buffer / switch-off spring“, Page 91			X
Change oil	⇒ „Gearbox / oil change“, Page 97	Every 10 years [27)]		
General overhaul				
The general overhaul should coincide with the annual inspection		On reaching 90% of the theoretical duration of service ⇒ „Measures for achieving safe working periods S.W.P.“, Page 71		
Fit chain hoist-specific Demag GO set		X		
The small parts (screws, washers ...) to be replaced during maintenance and assembly work are not listed separately. During the general overhaul, the checks and work specified in the inspection and maintenance schedule must be carried out.				

Tab. 49

[27)] For use in accordance with the FEM classification

8.5 Maintenance work

8.5.1 Suspension

If a check or inspection reveals that the dimensions are lower or higher than those specified due to wear or if cracks can be seen in these parts, they must be replaced at once.

Suspension bracket

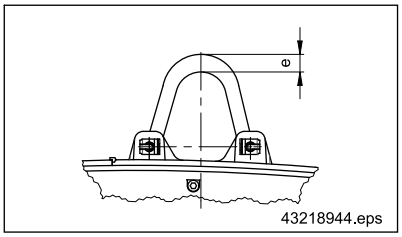

Fig. 41

Chain hoist		DC 1/ 2 / 5		DC 10	
Suspension bracket		short	long	short	long
Min. dimension e suspension bracket	[mm]	15,3	14,4	25,2	24,3

Tab. 50

Suspension ring

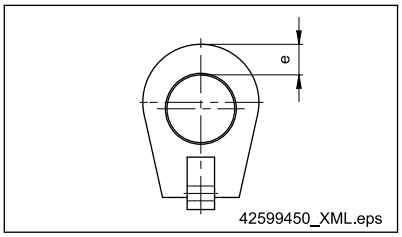

Fig. 42

Chain hoist		DC 1/ 2 / 5	DC 10
Min. dimension e suspension ring turned 90° (chain hoist parallel to girder)	[mm]	17,55	24,3

Tab. 51

8.5.2 Electrical equipment cover

Hold the electrical equipment cover while opening it. Do not let the electrical equipment cover fall into the fall protection.

When closing the electrical equipment cover, make sure that the fall protection does not cover the window or is jammed.

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8.5.3 Dismantling the chain collector box

Fig. 43

– Unscrew and disengage the service cover (1).
– Place the bag (2) with control cable on the top of the chain hoist.
– Disengage the spring (3) and place it in the recess in the chain collector box.
– Remove securing spring (4) from the pin (5) and pull out pin. While doing so, hold the chain collector.
– Deposit the chain collector box (6) on the ground.

8.5.4 Operating limit switch (as standard for DC-Com 10 reeving 2/1)

8.5.4.1 Checking the operating limit switches

DANGER

Broken chains and load drop

Frequent approaches of the emergency limit stop device may result in broken chains or load drops.

For chain hoists without operating limit switch or with defective operating limit switch, the slipping clutch of the chain hoist perfoms the function of the emergency limit stop device. This emergency limit stop device may only be approached in exceptional cases, i.e. it must not be approached in normal operation. When the slipping clutch is tripped, high additional loads are exerted on the chain.

Therefore the function "Operating limit switch for lifting" must be checked every day..

If the operating limit switch is defective, the hoist motor is switched off by the triggering of the electronic speed monitoring device of the slipping clutch. The fact that the hoist unit is switched off in the highest hook position does not indicate that the operating limit switch functions correctly. When switching off by the operating limit switch fails, a warning is displayed, see ⇒ "Warning messages", Page 104.

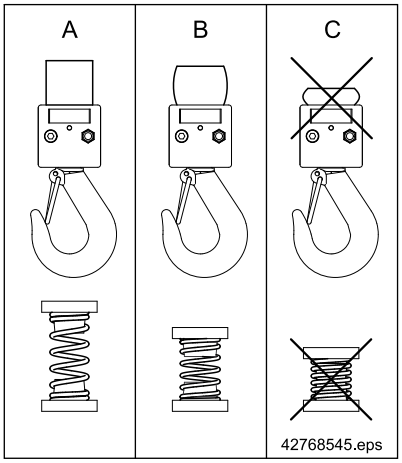

Fig. 44 Buffer with **limit switch not being actuated** (A), buffer with **limit switch being actuated** (B), **defective buffer** limit switch being actuated (C).

Checking the operating limit switch for lifting: Lift the hook assembly or bottom block up to approx. 10 cm below the highest hook position. Then lift at creep speed up to the highest hook position until the chain hoist is automatically switched off.

- **1/1 reeving:**

  After switching off the buffer or switch-off spring on the hook assembly may be compressed only to a small extent.

- **2/1 reeving:**

  When a bottom block with internal switch-off springs is used, the upper part may also be shifted onto the lower part only to a small extent so that approx. 20 mm of the black part of the bottom block remain visible.

  When a bottom block with external switch-off springs is used, the springs may also be compressed only to a small extent when switching off.

When the buffer or switch-off spring are excessively compressed, it may be assumed that the hoist motor is not switched off by the operating limit switch but by the speed monitoring device of the slipping clutch. This may result in broken chains when the end position is approached frequently.

Checking the operating limit switch for lowering

The function of the "Operating limit switch for lowering" must be checked at least once per year.

Proceed as follows:

- Remove chain collector box ⇒ "Dismantling the chain collector box", Page 77
- For further check procedure, proceed as described above under "Operating limit switch for lifting".

Optional geared limit switch

When the optional geared limit switch is used, the hoist unit must be switched off, before the bottom block or the hook assembly touch the guide plate of the chain hoist. For checking the highest hook position must be approached at high lifting speed (without load). After the hoist has been switched off, the minimum distance to the guide plate of the chain hoist must be 20 mm.

8.5.4.2 Checking the operating limit switch actuator

The operating limit switch actuator must be checked for external damage, e.g. bent actuator plate.

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8.5.5 Chain drive

8.5.5.1 Checking the sprocket wheel

Since the sprocket wheel is replaced together with the chain set, at normal conditions no further check is necessary.

However, if you find that the chain does not run smoothly over the sprocket wheel, this may indicate wear.

8.5.5.2 Checking the chain guide

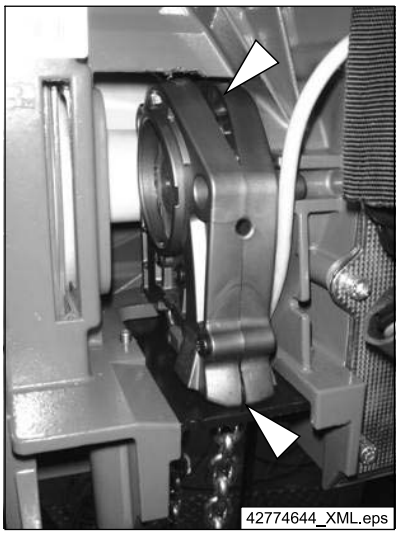

Fig. 45 Example for defective chain guide

The chain drive can move easily on the drive shaft, i.e. a lateral play of approx. ±2 mm is normal. A defective chain guide must be replaced immediately.

- Open the service cover.
- Check the chain guide for damage, e.g. halves burst open or loose fit of the screws.

8.5.5.3 Checking the guide plate

If a check or inspection reveals that the dimensions specified are exceeded due to wear or if cracks can be seen on the guide plate, it must be replaced at once.

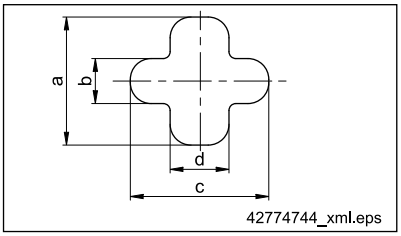

Fig. 46

Maximum dimensions of the guide plate	a [mm]	b [mm]	c [mm]	d [mm]
DC 1 / 2	16,0	5,5	16,8	6,8
DC 5	19,4	6,8	21,0	8,9
DC 10	26,7	9,4	28,8	12,0

Tab. 52

Multiple fitting and removal of the guide plate retaining bolts may damage the thread in the aluminium housing in such a way that a tight fit of the bolts can no longer be ensured. For this purpose a set "Guide plate accessories" is available (part no. 717 830 45), see also brochure Guide plate accessories DC 1 - 10 ⇒ Tab. 3, Page 7.

8.5.5.4 Checking the hoist chain

Checking the discarding status of the original Demag chain

In addition to selecting the correct hoist unit, owners of hoist units are obliged by DIN 685 part 5 regulations to constantly check the round section steel chain in order to ensure optimum operating safety and, therefore, to avoid serious accidents.

For single-shift operation, operation in accordance with FEM specification and for operating conditions of the chain hoist in accordance with ⇒ "Operating conditions", Page 28, the chain should be checked once a year (see inspection and maintenance schedule).

If routine maintenance reveals that the intervals are too long, they should be adapted to the specific operating conditions.

Measuring wear or deformation of the original Demag chain

A partial load must be suspended from the load hook when measuring the chain for wear or deformation. This measurement can be taken in two different ways.

1. Measuring with a calliper gauge
2. Measuring with a chain gauge

Wear of individual link

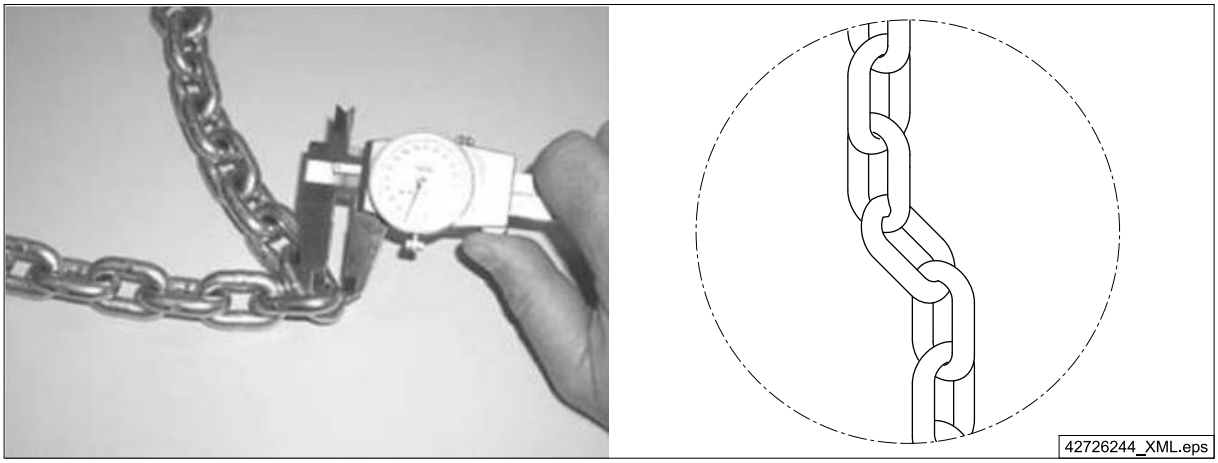

Fig. 47

The chain link contact areas must be visually checked for traces of wear. If the chain hangs at angle while it is unloaded, for example, this usually indicates wear of an individual chain link.

Measure the wire diameter of the chain in the chain link contact area by means of a calliper gauge, as required. Min. values of the wire diameter see⇒ "Tab. 53", Page 80.

Measuring with a calliper gauge

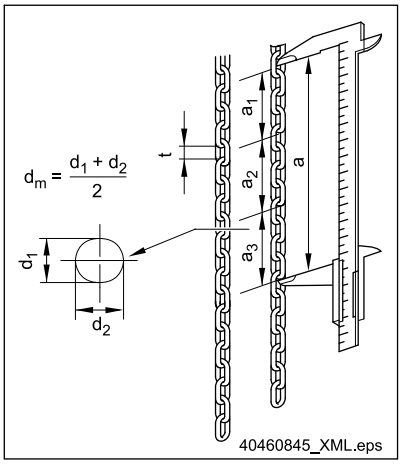

Fig. 48

Measurements on 11 chain links may be taken in steps of 2 x 3 and 1 x 5 chain links.

The sum total of the 3 readings taken, i.e. $a_1 + a_2 + a_3$ must not exceed limit a. Otherwise the chain must be replaced.

Demag is stamped on every 12th link of genuine Demag chains.

Do you find that, on fitting a new chain, it does not run smoothly over the sprocket? Please contact our after-sales service centre.

We urgently recommend you use genuine Demag parts. This will ensure that the safety and service life of the chain hoist is guaranteed.

Demag chain hoist	DC Com 1/2	DC-Com 5	DC-Com 10
Chain designation d x t	**4.2 x 12.2**	**5.3 x 15.2**	**7,4 x 21,2**
Limit dimensions according to DIN 685 part 5			
Measurement over 11 chain links outside, max. dimension = $a_1 + a_2 + a_3$	144.7 mm	180.3 mm	253 mm
Overall length of 1 chain link measured on the inside, max. dimension t	12.8 mm	15.9 mm	22.4 mm
Measurement of the chain link diameter, min. dimension d_m = 0,9 x d	3.8 mm	4.8 mm	6.7 mm

Tab. 53

Measuring with a chain gauge

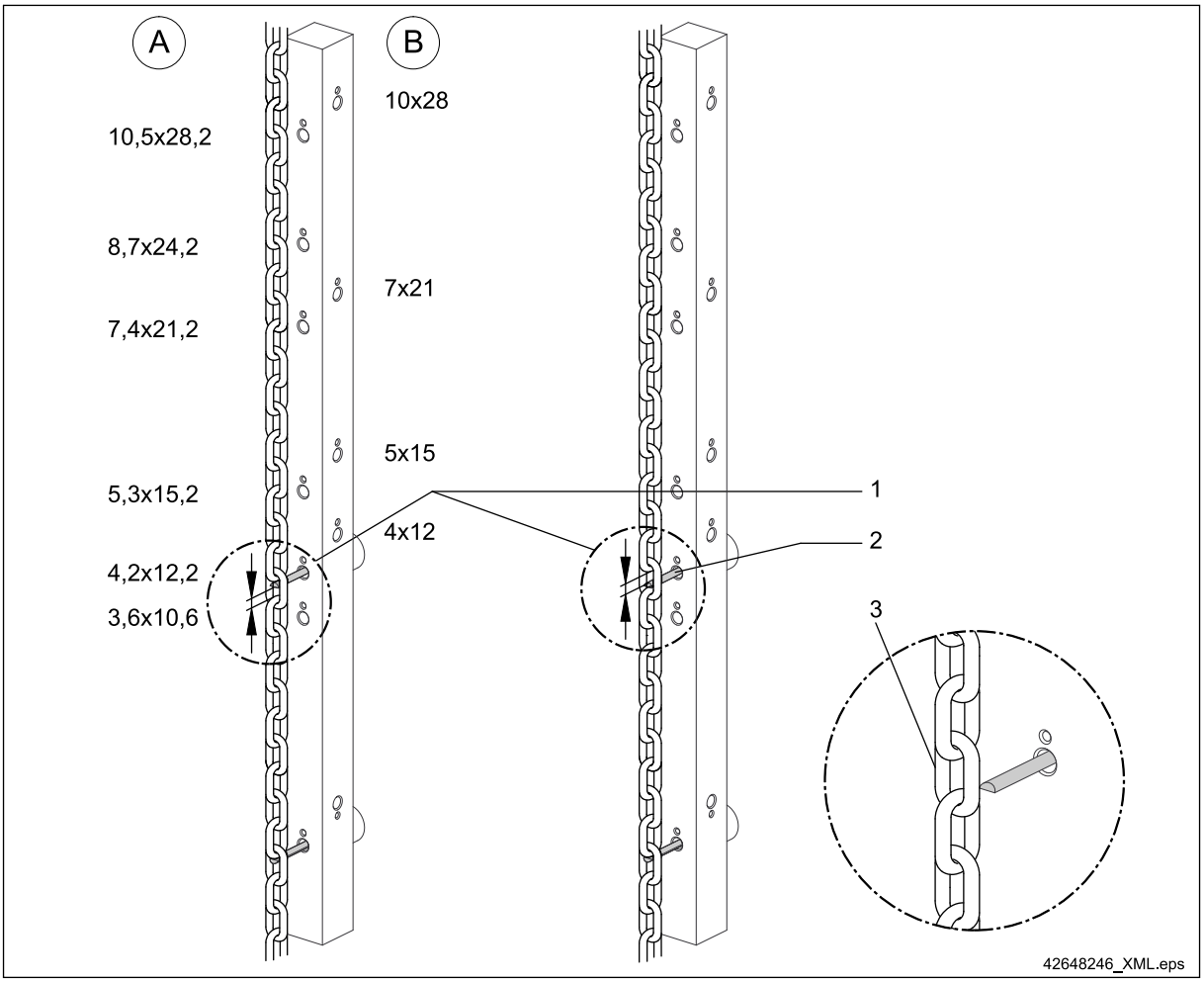

Fig. 49

A DC / DK / PK new chain

B PK old chain

1 The discarding status has not yet been reached. It is not yet necessary to replace the chain. It is necessary to replace the chain, when the measuring pin can no longer move into the 11th chain link.

2 Measuring pin

3 11. chain link; The discarding status has been reached.

Designation	Part no.:	Weight [kg]
Chain gauge	836 025 44	0,540

Tab. 54

8.5.5.5 Scope of supply chain set

On reaching the permissible limit of chain wear the chain set must be replaced (for determining the wear limit of the chain, ⇒ "Checking the hoist chain", Page 79.

When a new RDC standard chain is ordered, a chain set is always supplied.

The chain set includes the following parts:

- Chain,
- Sprocket wheel,
- Chain guide with plate and cap,
- Chain guide plate,
- Buffers for upper and lower hook position,
- Demag chain grease tube,
- Retaining ring.

The chain guide is pre-assembled, the chain is already fitted in the chain guide.

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8.5.5.6 Available hoist chains

The original Demag chain is a round section steel chain tested to EN 818-7 which is subject to the directives for round section steel chains in hoisting operation of the Main Association of Industrial Employers' Mutual Insurance Societies, Central Department for Accident Prevention and to the test criteria for round section steel chains in hoisting operation and to the inspection regulations according to DIN 685 part 5 Nov. 1981 as well as BGV D8 (VBG 8) and BGV D6 (VBG 9).

CAUTION

Pay attention to reduced capacity.

Deviating from the standard operating conditions for which RDC chains are used, the special chains listed in the following are available for special ambient conditions.

	Chain hoist size	Dimension [mm]	Stamp, chain quality	Weight per meter [kg]	Production test force [kN]	Minimum breaking force [kN]	Minimum breaking elongation [%]	Max. load capacity for reeving 1/1 [kg]	Max. load capacity for reeving 2/1 [kg]
Demag RDC standard chain									
	DC 1 / 2	4.2 x 12.2	DAT / RDC	0,38	13,8	22	10	250	-
	DC 5	5.3 x 15.2		0,62	22	35		500	-
	DC 10	7,4 x 21,2		1,20	43	70		1250	2500
Properties	High strength, ageing-resistant material with a high degree of surface hardening, galvanised with additional surface treatment, blue chromated, colour: silver								
Material	Ni-Mo special chain steel acc. to EN 818-7, part 5.3.1								
Lubrication	Grease GP00H-30REN.SO-GFB								
Demag Corrud special chain									
Application e.g. galvanizing, electroplating facilities	DC 1 / 2	4.2 x 12.2	DAT / RDC	0,38	13,8	22	10	250	-
	DC 5	5.3 x 15.2		0,62	22	35		500	-
	DC 10	7,4 x 21,2		1,20	43	70		1250	2500
Properties	Ageing-resistant, corrosion-free, micro-layer corrosion protection “Corrud DS” coated black, colour black, Stabylan 2001								
Material	Ni-Mo special chain steel acc. to EN 818-7, part 5.3.1								
Lubrication	Acid-resistant chain grease								
Demag HS7 special chain									
Application e.g. foundry, dust, emery, blasting	DC 1 / 2	4.2 x 12.2	RSX / DS	0,38	12,5	19,3	5	160	-
	DC 5	5.3 x 15.2		0,62	19,8	30,8		400	-
	DC 10	7,4 x 21,2		1,20	38,7	60		800	1600
Properties	Ageing-resistant, blue chromated, with deeper hardening surface								
Material	Ni-Mo special chain steel acc. to EN 818-7, part 5.3.1								
Lubrication	Dry or with dry lubricant, e.g. Klüber UNIMOLY C220								
Demag RS6 special chain									
Application e.g. foodstuffs sector	DC 1 / 2	4.2 x 12.2	RSA / S	0,38	10	16	15	125 - 160	-
	DC 5	5.3 x 15.2		0,62	16	25		200 - 250	-
	DC 10	7,4 x 21,2		1,20	32	50		400 - 500 [28]	800 - 1000 [29]
Properties	Non-rusting chain, not hardened, bright								
Material	Stainless steel AISI 316 (V4A) 1,4401								
Lubrication	Edible lubricant, e.g. Paraliq chain spray								

Tab. 55

[28] For max. 10 cycles per day = 500 kg For max. 25-50 cycles per day = 400 kg

[29] For max. 5 cycles per day = 1000 kg; for max. 12-25 cycles per day = 800 kg

8.5.5.7 Replacing the chain set

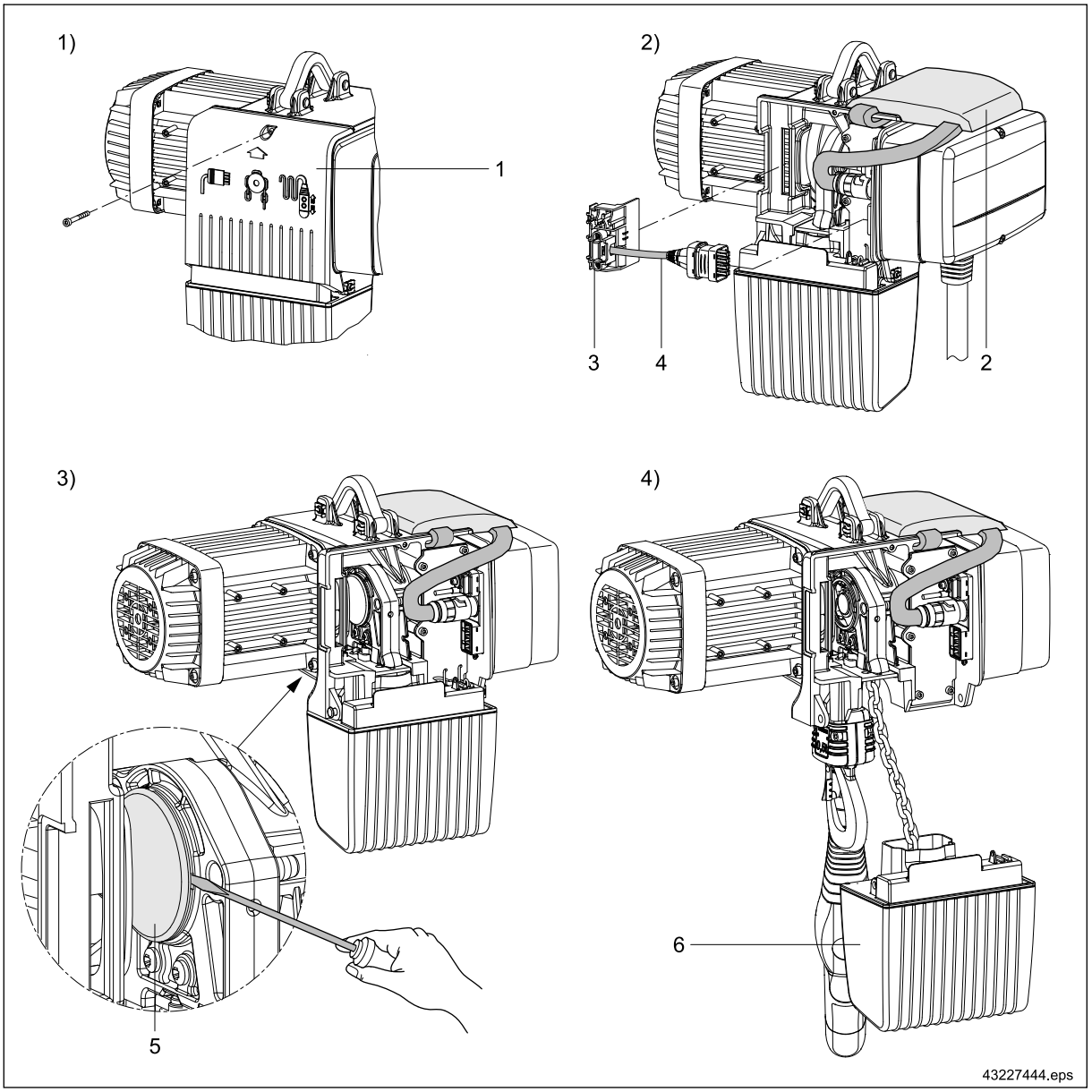

Fig. 50

Before starting maintenance work take the hoist out of service and secure against restarting. To replace the chain set, proceed as follows:

1. Open and disengage the service cover (1).
2. Place bag with control cable on chain hoist (2); pull out and deposit mains cable union (3) with fitted mains cable (4), if a travel drive is fitted, remove the connection cable from the strain relief;
3. Loosen cap (5) with a screw driver (lever off);
4. Remove and deposit the chain collector box (6) (⇒ "Dismantling the chain collector box", Page 77);

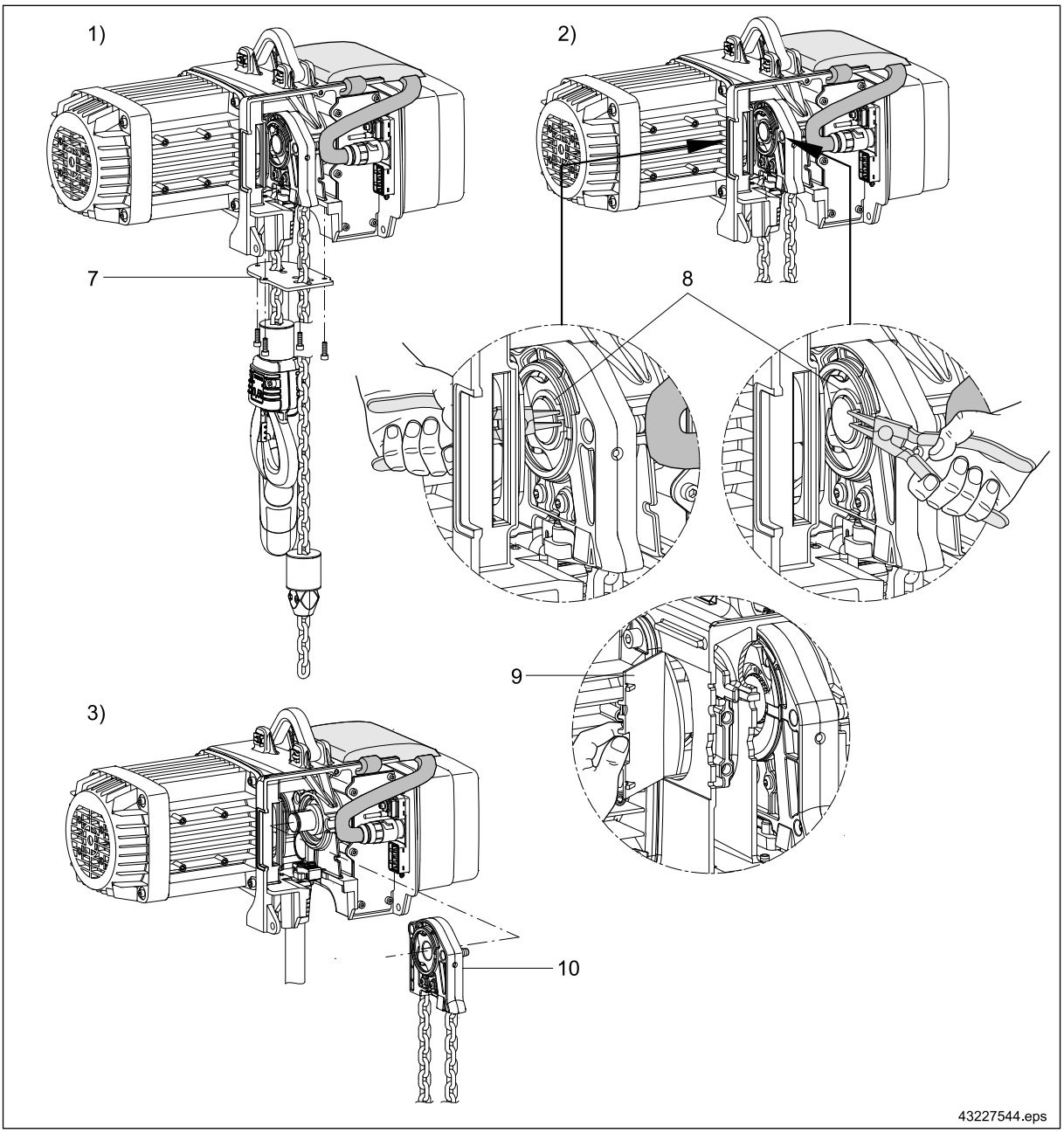

Fig. 51

1. Remove the guide plate (7);
2. Remove the retaining ring (8) using Seeger ring pliers, either use offset or straight pliers (access through the opening in the gearbox housing on the side of the motor or from the service enclosure);

   DC-Com 1 to 5: In the area of the power supply insert;

   DC Com 10: Fold the cover of the opening in the gearbox housing (9) to the side.
3. Remove the chain guide (10) with sprocket wheel from the output shaft; to do this, slide the complete assembly in the direction of the motor until the sprocket wheel is free; then remove the worn chain set from the service enclosure.

For fitting the new chain set, proceed accordingly in reverse order.

The following points must be noted:

Spacer rings for the output shaft

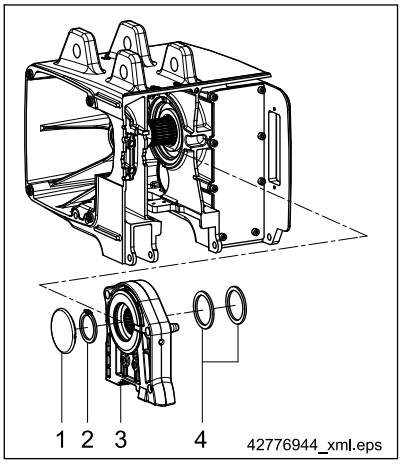

Fig. 52

- When fitting the chain guide, the complete number of spacer rings must be fitted on the output shaft.

Item	Designation		
1	Cap		
2	Retaining ring		
3	Chain guide		
4	Spacer ring	DC Com 1/2	3
		DC-Com 5	1
		DC-Com 10	2

Tab. 56

Before you slide on the chain sprocket, lubricate the splining of the output shaft with Molykote or similar.

Fitting the retaining ring

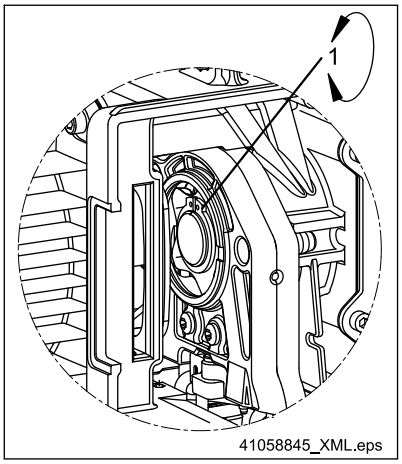

Fig. 53

- The stamped burr of the retaining ring (1) must face the motor. Correct fit of the retaining ring is ensured when it can be easily turned on the output shaft after assembly.

DANGER

Broken chains and load drop

An incorrectly fitted chain may lead to broken chains or load drops.

When fitting the chain, it must be ensured that the chain is introduced in the same position and orientation.

The chain must operate without any twist.

Fitting the chain anchorage

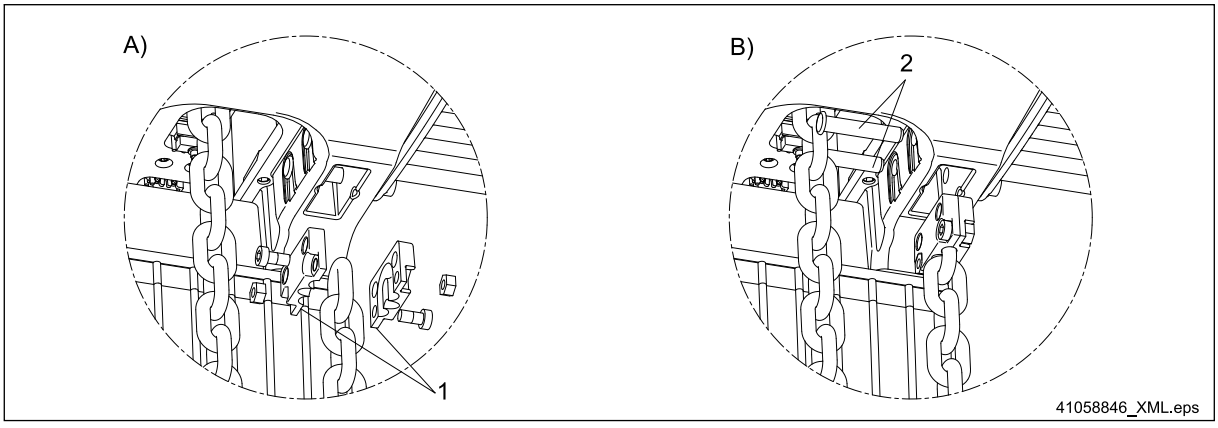

Fig. 54

- Fit the chain anchorage before bolting the guide plates into position for DC-Com 10 hoists with 2/1 reeving. Bolt the chain anchorage halves (1) together (Fig. A).
- Insert the bolted chain anchorage into the opening of the gearbox housing (Fig. B).
- Fit the pins (2) (the pins are secured by the fitted guide plates).

Fitting the limit stop

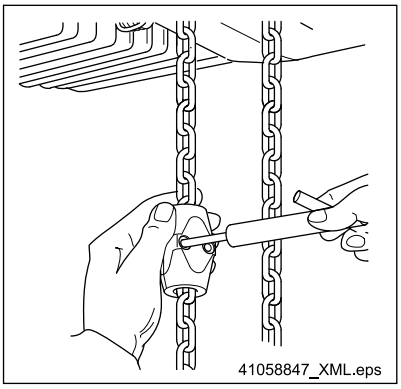

Fig. 55

- Fix limit stop to the 5th link at the dead (unloaded) end of the chain paying attention to the tightening torque.
- If the chain hoist is operated with a chain that is longer than suitable for the standard capacity of the chain collector box, an additional limit stop must be fitted to the chain between the hook assembly and the buffer plate. The limit stop must fitted so that the excess length of the chain lies between the hook assembly and the limit stop. In this case a geared limit switch is required for the DC-Com 10 with 2/1 reeving.

After having replaced the chain set:

- Fit the hook assembly/bottom block ⇒ "Load hook", Page 88
- Lubricate the chain ⇒ "Available hoist chains", Page 83, ⇒ "Lubricating the hoist chain", Page 87
- Adjust the lower hook position as required ⇒ "Setting the lower hook position", Page 58.
- If an optional geared limit switch is fitted to the chain hoist, it must be readjusted after having replaced the chain, see brochure DC geared limit switch ⇒ Tab. 3, Page 7.

Tightening torques [Nm]	DC Com 1/2	DC-Com 5	DC-Com 10	
Reeving	**1/1**		**1/1**	**2/1**
Service cover	5,5		7,5	
Limit stop	4,0	4,3	7,4	
Chain anchorage halves	-		-	10,5
Guide plate	5,5			

Tab. 57

8.5.5.8 Lubricating the hoist chain

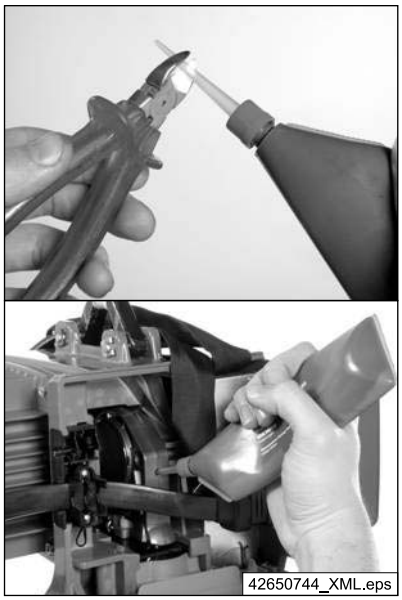

Fig. 56

After fitting, before lifting a test load and putting the hoist into operation as well as during normal operation, the chain link contact areas must be lubricated with a gear grease, part no. 665 009 44, along the entire length of the chain, which must be free of load.

The chain link contact areas must be relubricated appropriately – after being cleaned – at intervals depending on the service and load conditions. A dry film lubricant should be used in environments where abrasives occur (emery, sand, etc.). Deviating lubrication see ⇒ "Available hoist chains", Page 83!

Cut off the tip of the grease tube and insert the grease tube at the lubrication point. To ensure complete and even lubrication of the chain, move the chain into its end positions while you fill the grease into the chain guide by pressing on the tube.

8.5.6 Load hook

8.5.6.1 Checking the load hook

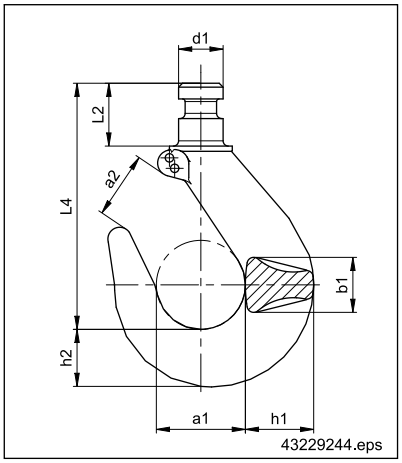

Fig. 57

SWL	[kg]		125	250	500	1250	2000
Chain hoist		DC-Com	1	2	5	10	
Reeving			1/1				2/1
Load hook	Type		T010		T020	T04	V 5
Dimensions	[mm]	a1	28		34	40	50
		$a2_{nom}$ [30]	22,8		25,4	33,7	39
		$a2_{max}$	25,08		27,94	37,07	42,9
		b1	16		21	27	29
		h1	20		26,1	34	44
		$h2_{nom}$ [31]	16,9		21,8	27,7	34
		$h2_{min}$	16,055		20,71	26,315	32,3
		L2	20		24	28	24
		L4	82		94	116	154
		d1	15		17	20	38
Max. test force	[kN]		6		13	25	50
Max. hook force	[kN]		13		25	50	100

Tab. 58

8.5.6.2 Checking the return sprocket

The return sprocket must be checked for smooth turnability every month. For this purpose it may be necessary to remove fixed crossbars from the bottom block.

Check whether the bottom block moves correctly when lifting and lowering. Jerky movements of the bottom block indicate wear.

We recommend replacing the return sprocket every second time the chain is replaced.

[30] Permissible deviation +10%
[31] Permissible deviation -5%

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8.5.6.3 Replacing the hook assembly, reeving 1/1

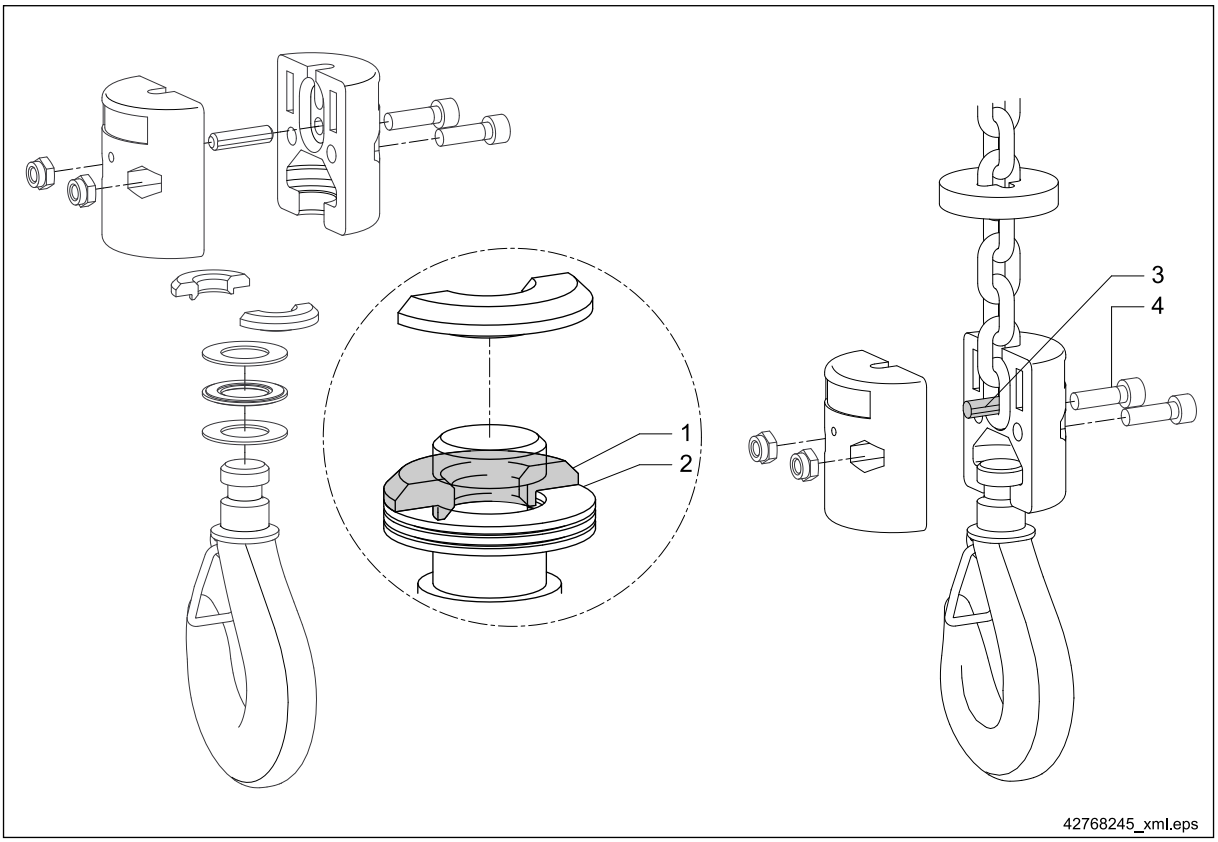

Fig. 58

– Remove the existing hook.
  Deposit the new hook and remove the two bolts (4).
  Remove the upper half of the hook assembly.

DANGER

Load drop

Incorrect assembly may result in load drops.

During assembly it must be ensured

– That the link sections (1) are positioned in bearing (2) with their collar. Grease the bearing and bearing seat.
– that the retaining pin (3) is correctly fitted when the hook assembly is assembled.

– Tighten the housing bolts (4) according to the tightening torque table.

Tightening torques [Nm]	DC-Com 1	DC-Com 2	DC-Com 5	DC-Com 10
Hook assembly	6,8		9,5	25,0

Tab. 59

8.5.6.4 Replacing the (standard) bottom block with internal switch-off springs, reeving 2/1

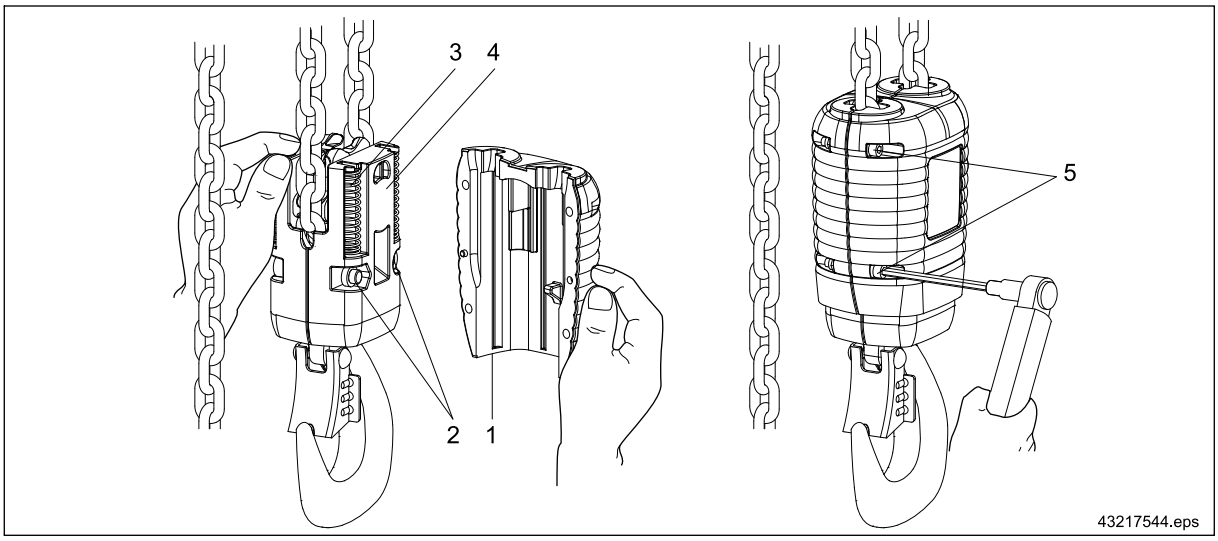

Fig. 59

1. Remove the guide halves (1) (four M 6 screws);
2. Loosen the clamping screws (2) of the bottom block and remove the bottom block;
3. Introduce the chain into the new bottom block in the same position and orientation (chain must operate without any twist);
4. Assemble the bottom block and tighten the screws (2) with 52 Nm;
5. Check the correct fit of the four switch-off springs (3) in the new bottom block halves (4);
6. Fit the new guide halves (1) and tighten the screws (5) with 5,5 Nm;
7. Apply load capacity plate;
8. Perform function check (run against operating limit switches and check 7-segment display).

Tightening torques [Nm]		DC-Com 1	DC-Com 2	DC-Com 5	DC-Com 10	
Reeving		1/1			1/1	2/1
Bottom block with internal switch-off springs	Bottom block halves	-			-	52,0
	Guide halves					5,5

Tab. 60

Bottom block from approx. 09/2009

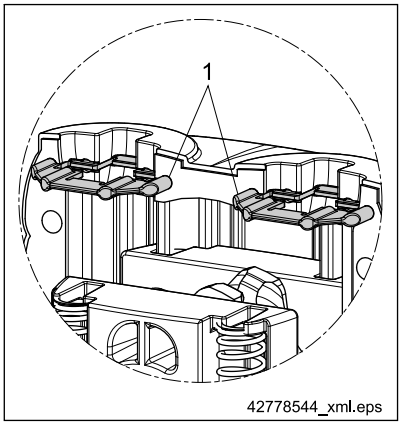

Fig. 60

From approx. 09/2009 the bottom block is provided with rubber lips (1) in the area of the chain entry. During the annual inspection the rubber lip must be checked for wear and correct fit.

8.5.6.5 Replacing the (optional) bottom block with external switch-off springs, reeving 2/1

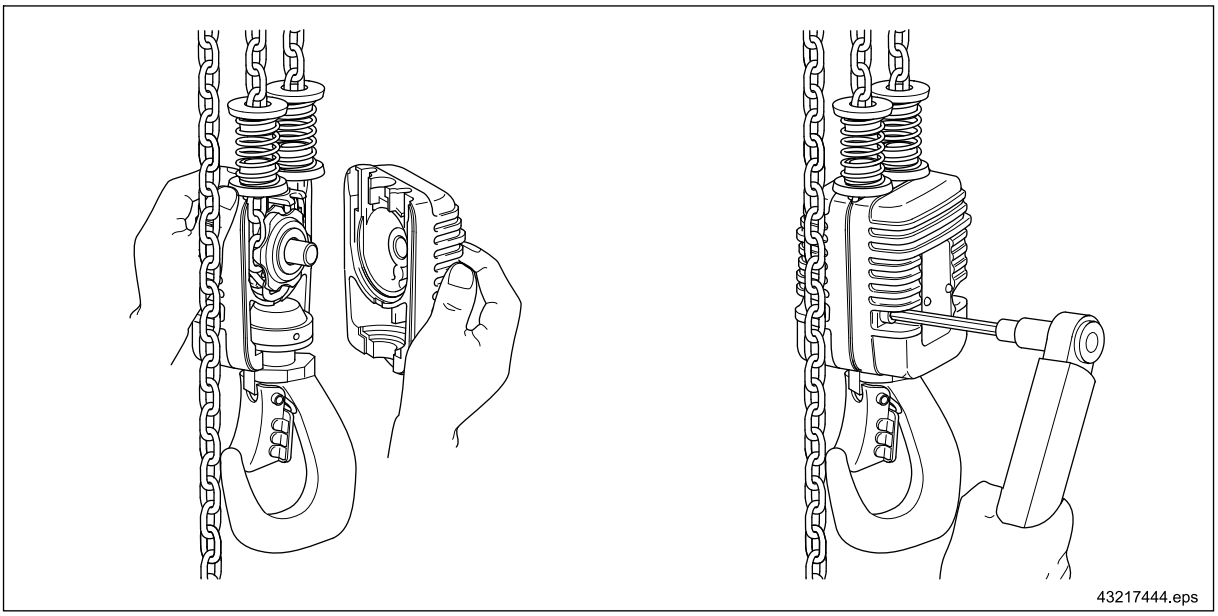

Fig. 61

Tightening torques [Nm]	DC-Com 1	DC-Com 2	DC-Com 5	DC-Com 10	
Reeving	**1/1**			**1/1**	**2/1**
Bottom block with external switch-off springs	-			-	55,0

Tab. 61

8.5.7 Buffer (only with optional operating limit switches for DC-Com 1-10 reeving 1/1)

8.5.7.1 Checking the swich-off buffer / switch-off spring

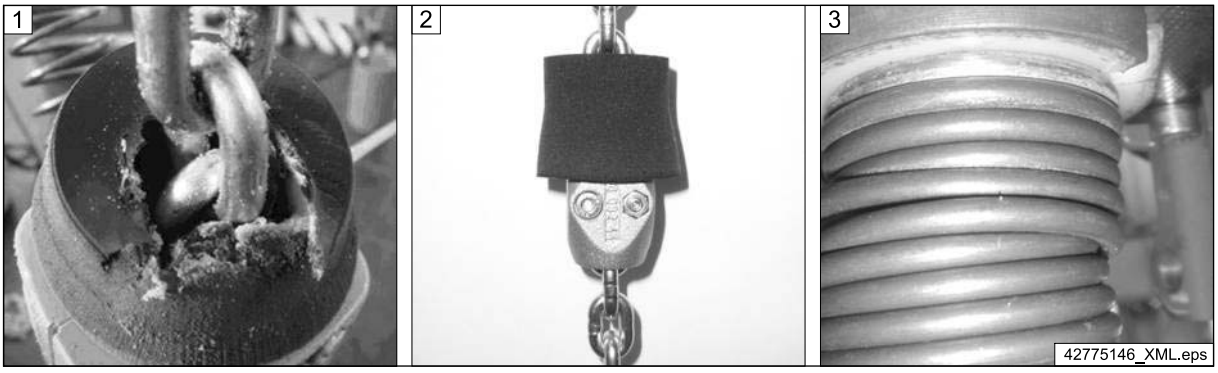

Fig. 62

1. **Buffer wear:**

   In the course of annual inspection visually check the buffers. Check for damage and cracks.

2. **Missing buffer plate:**

   When fitting new buffers, pay attention to the correct fitting sequence of the component parts (see also ⇒ "Buffer design", Page 92), e.g. a missing buffer plate leads to premature wear of the buffers.

3. **Wear of external switch-off spring:**

   In the course of annual inspection visually check the external switch-off springs. Check the sleeves of the springs for damage and cracks. The individual windings of the springs must not be shifted above each other.

8.5.7.2 Buffer design

Buffer variants

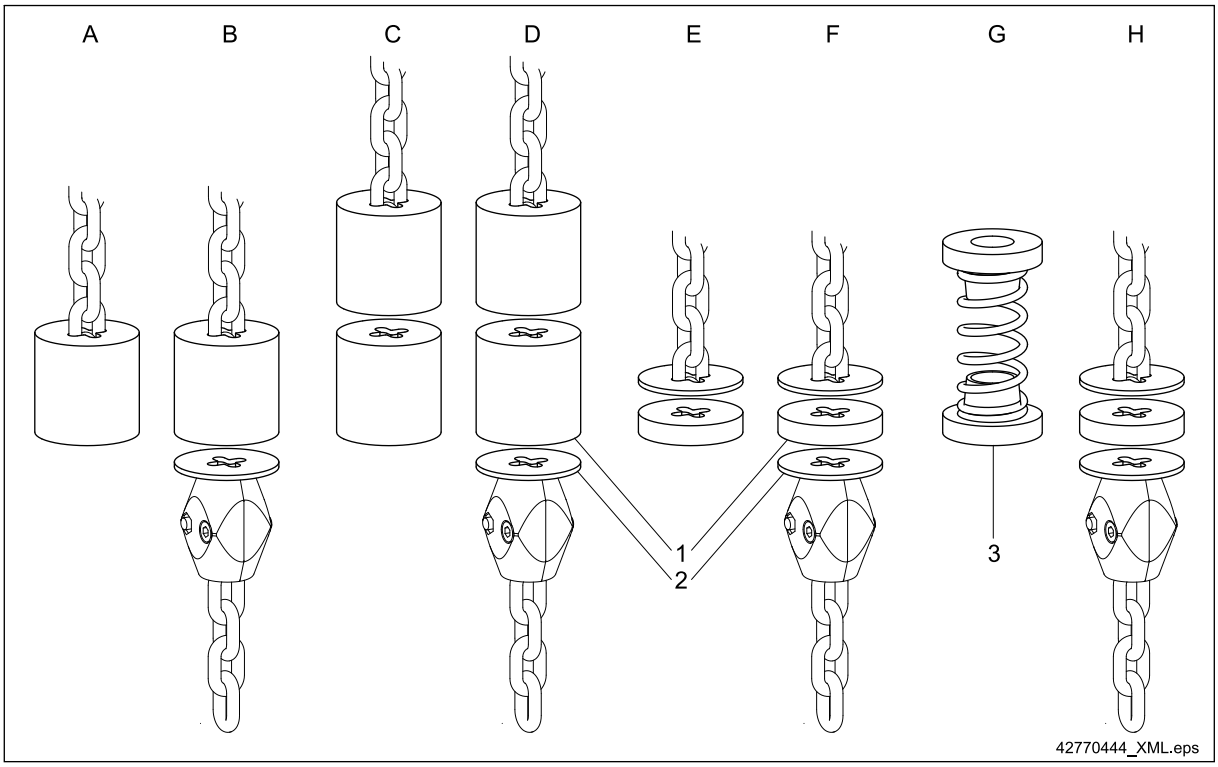

Fig. 63

1 Buffers

2 Buffer plate

3 Switch-off spring

DC-Pro		DC-Pro		-		DC-Pro	
DC-Com with operating limit switch [32)]		-		DC-Com without operating limit switch [32)]		-	
Load side	Chain collector box side	Load side	Chain collector box side	Load side	Chain collector box side	Load side	Chain collector box side
A	B	C	D	E	F	G	H

Tab. 62

[32)] Operating limit switch for lifting and lowering (DC-Com 1 - 10 reeving 1/1 optional, DC-Com 10 reeving 2/1 as standard);

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DC-Com buffer arrangement

SWL	Size	Reeving	Hoist speed		Standard hook path	Motor size	Buffer / switch-off springs see figure		Chain collector box size at hook path		
	Chain hoist		at 50 Hz	at 60 Hz	H		Load hook side	Chain collector box side			
[kg]	DC-Com		[m/min]	[m/min]	[m]				4 m	5 m	8 m
80											
100	1		8,0/2,0	9,6/2,4							
125						ZNK 71 B 8/2					
160											
200	2		6,0/1,5	7,2/1,8							
250		1/1					E	F			
315											
400	5		4,5/1,1	5,4/1,3	4, 5 and 8	ZNK 80 A 8/2			H5	H5	H8
500											
630											
800						ZNK 100 A 8/2					
1000											
1250	10		4,0/1,0	4,8/1,2							
1600		2/1				ZNK 100 B 8/2	- [33]	B			
2000											

Tab. 63

Buffer arrangement DC-Com, hoist speeds until 09/2008 (no longer available)

SWL	Size	Reeving	Hoist speed		Standard hook path	Motor size	Buffer / switch-off springs see figure		Chain collector box size at hook path		
	Chain hoist		at 50 Hz	at 60 Hz	H		Load hook side	Chain collector box side			
[kg]	DC-Com		[m/min]	[m/min]	[m]				4 m	5 m	8 m
160											
200	2					ZNK 71 B 8/4					
250		1/1	4,0/2,0	4,8/2,4	4, 5 and 8		E	F	H5	H5	H8
315											
400	5					ZNK 80 A 8/4					
500											

Tab. 64

[33] Integrated in the bottom block. Under certain ambient conditions DK bottom block with external switch-off springs.

8.5.8 Brake

8.5.8.1 Brake assignment

SWL [kg]	Chain hoist DC-Com	Reeving	Motor size	Brake	Max. brake displacement [mm]
80 - 125	1	1/1	ZNK 71 B 8/2	BK03	0,6
160 - 250	2				
315 - 500	5		ZNK 80 A 8/2		
630 - 1000	10		ZNK 100 A 8/2	BK07	
1250 - 2000		2/1	ZNK 100 B 8/2		

Tab. 65

8.5.8.2 Check brake wear

Since 04/2009, depending on the size, the brakes have gradually been equipped with plugs in the brake housing, so that the brake does not have to be dismantled for checking brake wear. Brake wear is checked via the air gap.

- When the max. brake displacement is reached (see ⇒ Tab. 65, Page 94), the brake must be immediately replaced.
- For brake displacements up to 0,5 mm, the brake can still be used until the next maintenance is due.

Until year of manufacture 03/2009

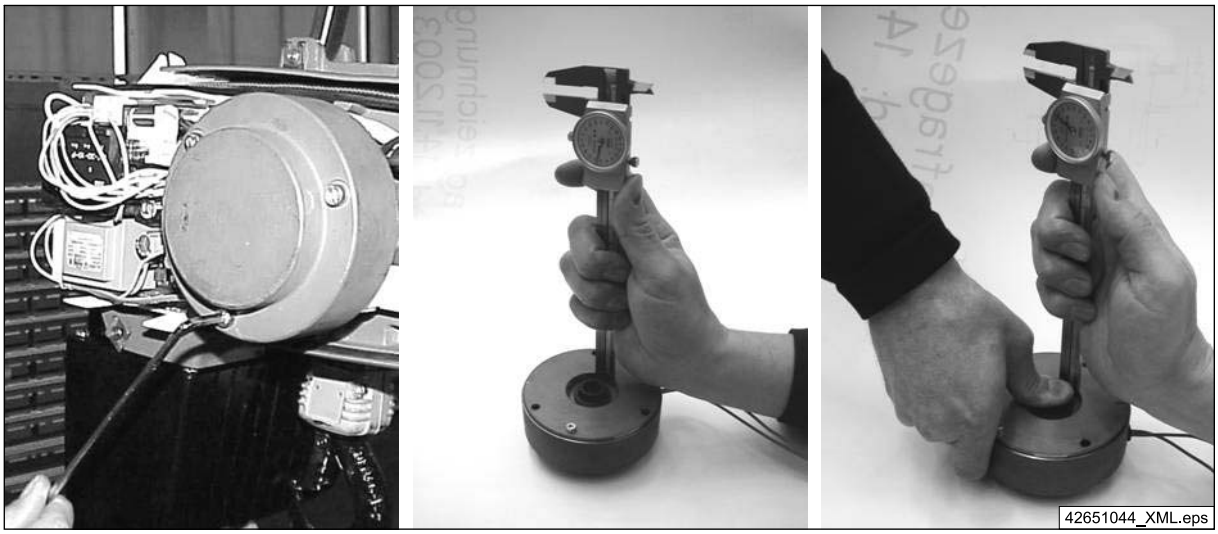

Fig. 64

Disconnect chain hoist from power supply (mains connection switch) and secure against restarting.

- Open the electrical equipment cover.
- Disconnect brake connector.
- Dismantle brake.

Measure brake wear with calliper gauge as follows:

- Measure the distance from brake rear side to brake disk with depth gauge or calliper gauge when the brake is not actuated.
- Measure the distance from brake rear side to brake disk with depth gauge or calliper gauge when the brake is actuated, to do this, press the brake disk against the springs until it stops;
- Use both measured values to calculate the difference; this difference is the brake displacement.

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From year of manufacture 04/2009

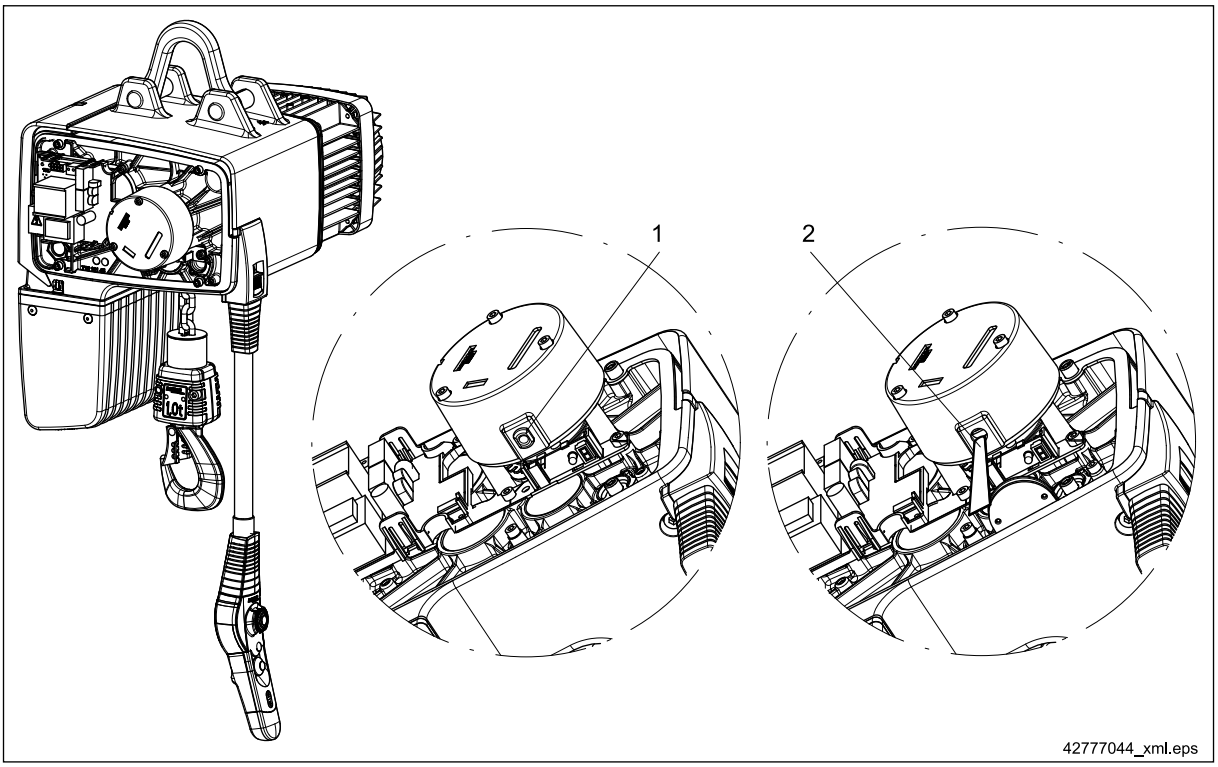

Fig. 65

Disconnect chain hoist from power supply (mains connection switch) and secure against restarting.

- Open the electrical equipment cover.
- Unscrew screw plug (1) from the brake.
- Check brake wear using a feeler gauge (2) (see ⇒ Tab. 65, Page 94).

Assembly

During assembly, make sure that the area of the V ring on the brake base is slightly greased. Ensure that no grease penetrates into the inside of the brake. The continuous sealing lip must be in full contact on the brake rear side.

Tightening torques [Nm]	DC-Com 1 / 2 / 5 / 10
Brake	5,5
Electrical equipment cover	9,5

Tab. 66

8.5.9 Slipping clutch

8.5.9.1 Checking the slipping clutch

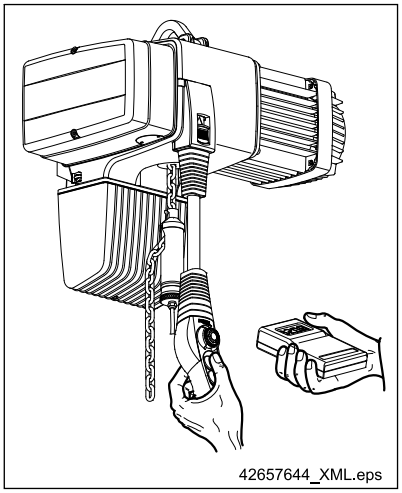

Fig. 66

The slipping clutch performs the function of an emergency limit stop device and protects the chain hoist against overloads.

The slipping clutch is initially set in the factory. Under normal operating conditions, the slipping clutch does not need to be adjusted. In the course of the annual inspection, the slipping clutch must be checked.

Adjustment of the slipping clutch may only be carried out by authorized specialists. An increase of the tripping torque which exceeds the factory setting is not permitted.

Check the slipping clutch function as follows:

- In order to remove the limit stop, the chain collector box must be disconnected, ⇒ "Dismantling the chain collector box", Page 77. Remove the limit stop ⇒ Fig. 55, Page 87 from the chain fall which is not under load and fit it above the hook assembly. Run the limit stop against the guide plate at creep speed. The operating limit switches, if existing, must not be actuated while this is being done.

  If the slipping clutch is functioning correctly, the following will be observed:

  - the hoist motor fan is still turning while there is no lifting motion;
  - The 7-segment display shows the SLIP LIFTING V1 warning, ⇒ "Warning messages", Page 104.

When the slipping clutch function has been checked, the limit stop must be fitted again to the section of chain which is not under load.

8.5.9.2 Adjusting the slipping clutch

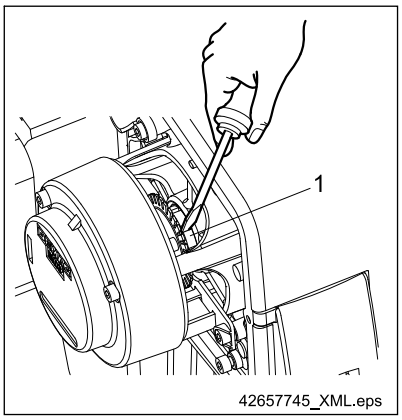

Fig. 67

During the final inspection in the factory, the slipping clutch is set to the load capacity of the chain hoist. An increase of the tripping torque which exceeds the factory setting is not permitted, see also ⇒ "Suspending the chain hoist", Page 43.

For DC-Com chain hoists ≥ 1000 kg the setting complies with the requirements of EN 14492-2 for slipping clutches as overload protection. Overload protections are prescribed for load capacities ≥ 1000 kg.

During the acceptance test of the hoist or crane installation, a load of 110% of the load capacity must be lifted within the dynamic overload test (without any change in the setting of the slipping clutch). A load > 160% must not be lifted, (EN 14492-2 "Directly acting overload protections").

The slipping clutch is protected against overload by slip monitoring so that re-setting is only necessary during the general overhaul. If owing to the operating conditions or malfunctions, the setting needs to be checked, the friction force checking device, ⇒ part no. 836 708 44, must be used. Inspection and adjustment may only be carried out by an experienced technician in compliance with the instructions for the friction force checking device ⇒ Tab. 3, Page 7.

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8.5.10 Gearbox / oil change

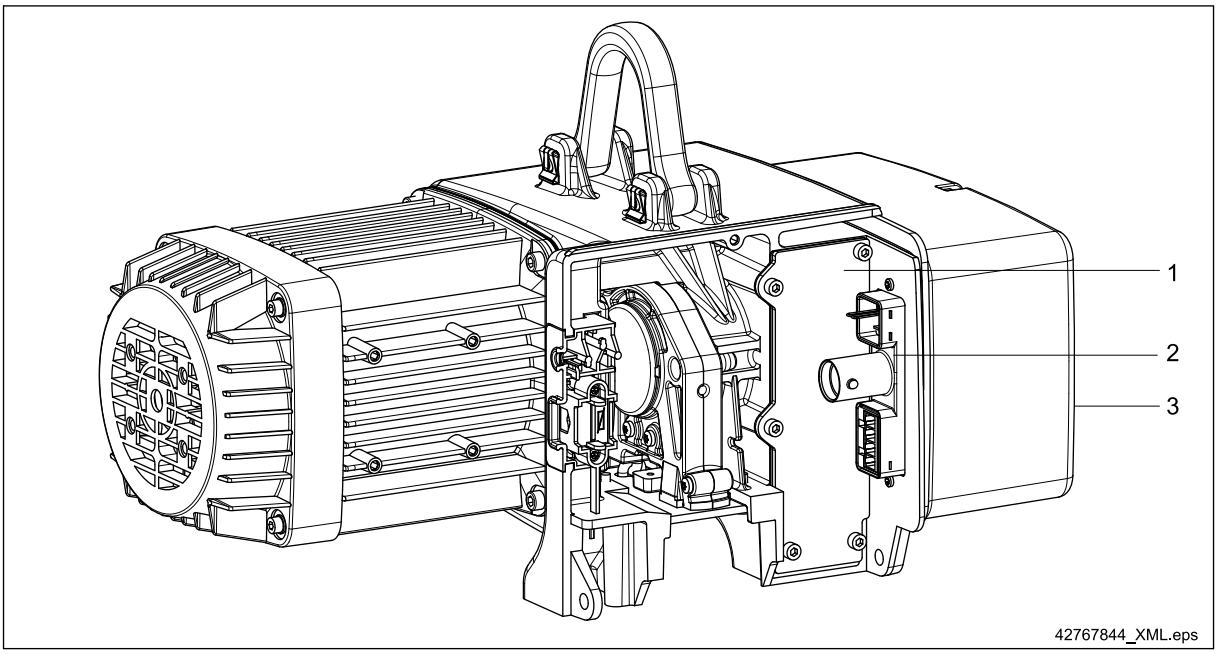

Fig. 68

Dispose of waste oil in accordance with environmental protection requirements.

Oil lubrication

Under normal operating conditions, the lubricant must be changed at least every 10 years. Under exceptional conditions, e.g. increased ambient temperatures, we recommend that oil changes be adapted to suit these conditions.

Oil quality

Universal gear oil Shell Donax TD 10W-30 with wear-minimising additives, range of viscosity 10W-30. If oils are used that are not approved, malfunctions of the slipping clutch may occur. For higher or lower ambient temperatures than -20 °C to + 40 °C, contact the manufacturer.

Oil change

Drain the old oil at operating temperature. First remove the control unit with the plug-and-socket connections (2) under the electrical equipment cover set (3). Now remove the screws of the gearbox cover (1). Turn the gearbox in such a way that the oil is drained. The flushing oil should have a viscosity of 46 – 68 mm^2/s at 40° C.

The quantity of flushing oil used should be approximately twice that specified for lubrication. Then flush the gears by switching the hoist on and allowing the hook to run several times over the entire length of its path. Then drain the flushing oil and refill the gearbox with new oil. For the required oil quantities please refer to the table below. Part no. see Spare parts.

Chain hoist		DC Com 1/2	DC-Com 5	DC-Com 10
Oil quantities	[l]	0,35	0,50	0,90

Tightening torques		DC Com 1/2	DC-Com 5	DC-Com 10
Gearbox sealing	[Nm]	5,5		
Service cover	[Nm]	5,5		7,5

Tab. 67

8.5.11 Replacing the contactor on the control card

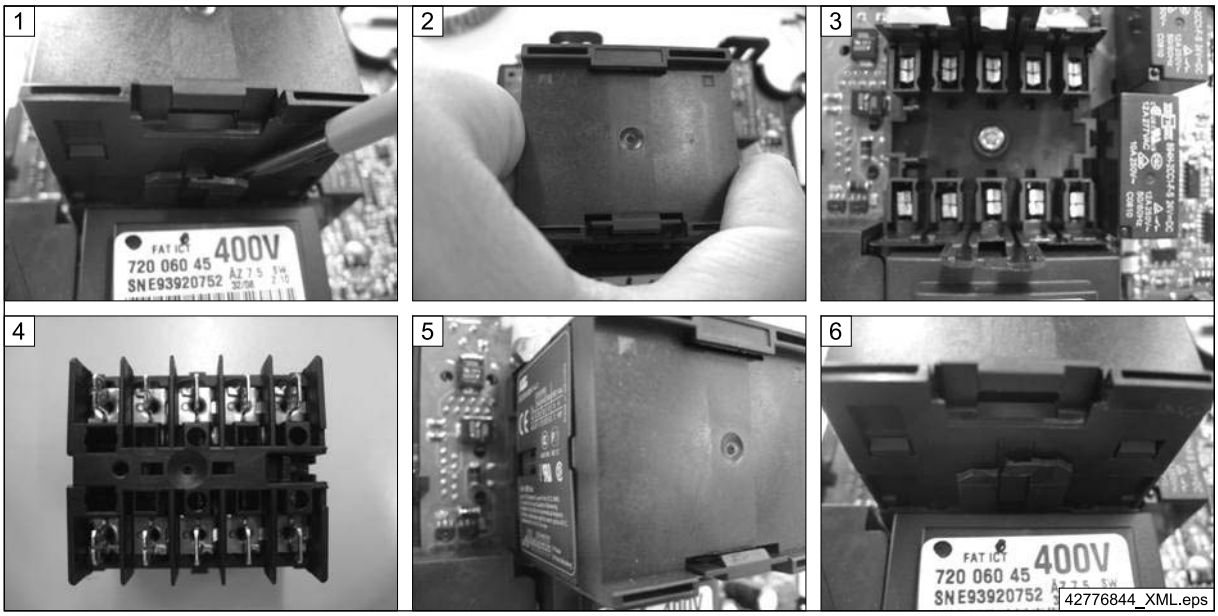

Fig. 69

1. Carefully unlock the locking arms on both sides of the contactor using a screwdriver.
2. Pull off the contactor.
3. Contactor socket without contactor
4. Lower side of the contactor
5. The spare contactor can only be inserted in the socket in one position.
6. Press contactor onto the contactor socket until both locking arms latch into place.

8.5.12 Replacing cables

8.5.12.1 Replacing the control cable

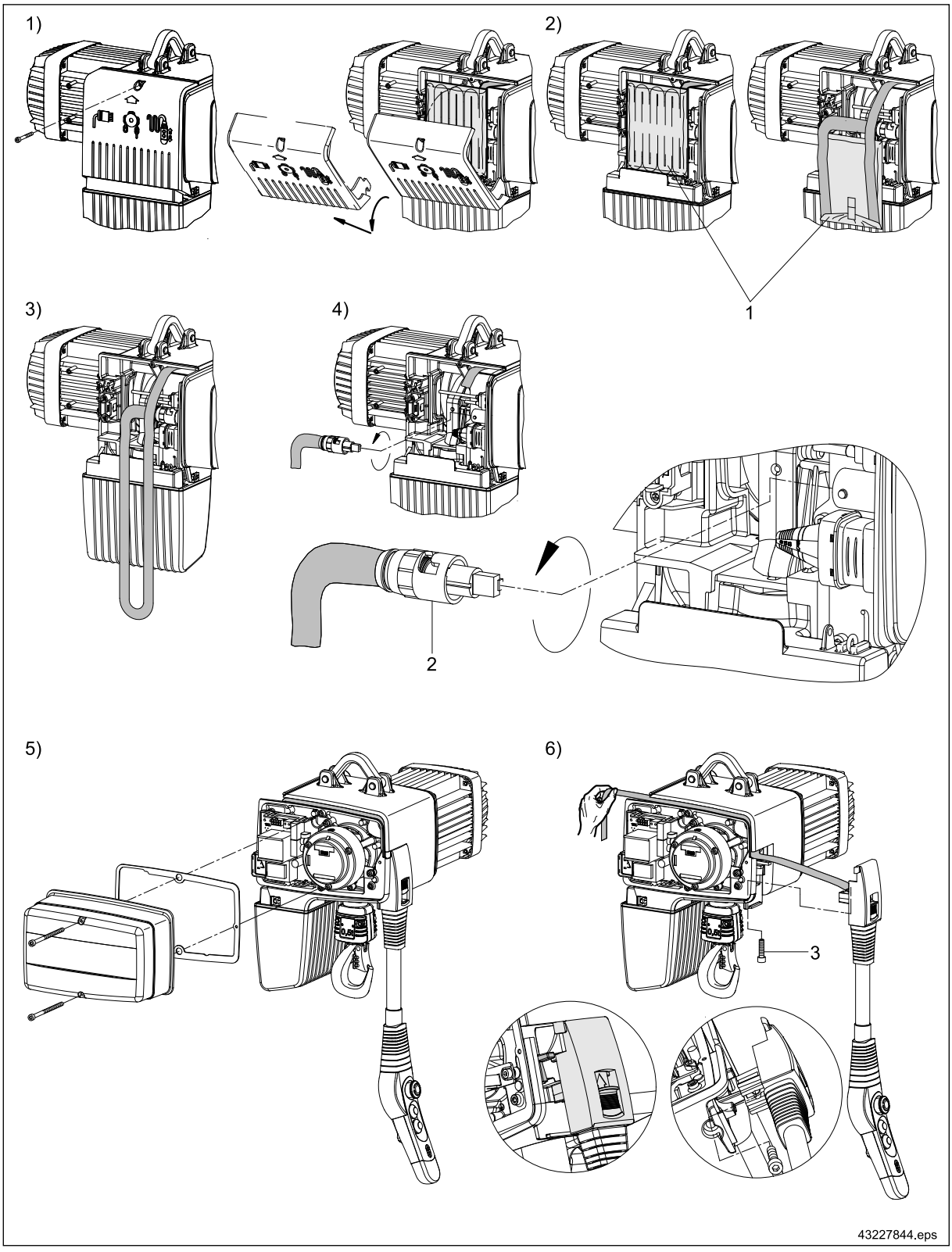

Fig. 70

DANGER

Live components

Danger to life and limb.

Work on the electrical equipment may only be carried out by a qualified electrician or by trained personnel.

1. Disconnect chain hoist from power supply (mains connection switch) and secure against restarting. Open and disengage the service cover.
2. Remove and open the bag (1) with the control cable.
3. Take the control cable out of the bag.
4. Loosen bayonet lock (2) by turning and remove control cable plug connection.
5. Unscrew electrical equipment cover.
6. Loosen the screw (3) on the control cable lock and remove the lock. Remove the control cable.

Fit the new control cable in reverse order.

It must be ensured that

- the groove of the connector holder matches the swivel lock in the enclosure and
- that the two pins on the enclosure match the bayonet lock.

Fitting the control pendant ⇒ "Connecting the control pendant", Page 42.

Height adjustment of the control pendant ⇒ "Height adjustment of the control pendant", Page 46.

Tightening torques [Nm]	DC-Com 1	DC-Com 2	DC-Com 5	DC-Com 10
Electrical equipment cover	9,5			
Service cover	5,5			7,5
Control cable lock	11,0			

Tab. 68

9 Faults / Warnings

9.1 Safety instructions for faults / warnings

WARNING

Inappropriate fault elimination

Danger to life and limb. Danger of machine damage.

Faults may only be eliminated by qualified instructed personnel(⇒ "Definition of personnel", Page 9) in compliance with the safety instructions.

DANGER

Live components

Danger to life and limb.

Work on electrical equipment may only be carried out by qualified specialist personnel(⇒ "Definition of personnel", Page 9) in compliance with the safety instructions.

Before starting work, the electrical supply must be switched off. The mains connection or isolator switch must be secured against unauthorized or accidental reconnection by means of a padlock.

WARNING

Risk of burning

There is a risk of burning when touching the chain hoist after operation.

Do not touch the hot motor housing. Let motor cool down, before eliminating the fault.

What to do in case of faults

1. In the case of faults which constitute an immediate danger for persons and property and/or operating safety, the machine must immediately be shut down by means of the emergency stop device.
2. Switch off the chain hoist on the mains connection switch or isolator switch and secure it against restarting.
3. Inform the responsible person on site about the fault.
4. Have the fault and the cause of the fault determined and eleminated by authorized specialist personnel.

What to do after the fault has been eliminated

WARNING

Check appropriate assembly.

Before restarting make sure that

– the fault and the cause of the fault have been eliminated.
– all safety device have been fitted properly and are in perfect working order.
– no persons are in the danger zone of the unit.

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9.2 7-segment display

The 7-segment display is located on the bottom side of the chain hoist behind a window.

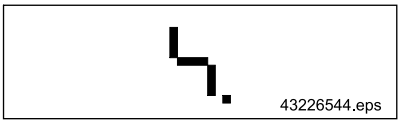

Fig. 71

Warning messages

Warning messages start with the lightning symbol.

Movement in the opposite direction is possible, the warning message does not have to be acknowledged by means of the emergency stop.

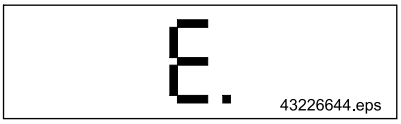

Fig. 72

Error messages

Error messages start with an Error.

Before a new movement can be started, the error message must be acknowledged by means of the emergency stop.

Failed safety functions

If a safety function has failed, operation may only be continued after repair.

Malfunctions

The chain hoist can only function when it is correctly connected to the power supply. In the event of a malfunction, therefore first check cables, strain relief and power supply connections. Malfunctions may also be caused by incorrect transmission of commands from the control pendant. Therefore, check the control pendant and the control cable for damage and the plug-in connector on the pendant and in the service enclosure for correct fit.

The symbols are shown one after the other.

- Please contact our after-sales service if the cause of the fault cannot be eliminated with the given measures.

9.3 General messages

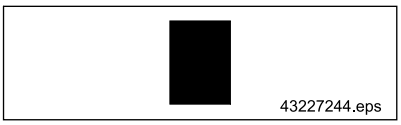

Fig. 73 No lifting, no lowering

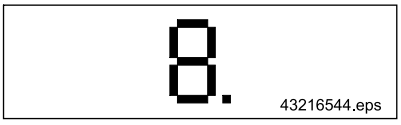

Fig. 74 No lifting, no lowering

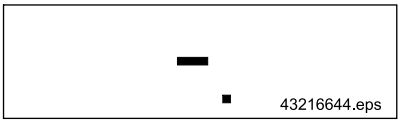

Fig. 75 Upper or lower end position is reached. No lifting, no lowering

Possible cause	Remarks
No power supply **(display dark)**	Check mains connection and fuse link; check connection cable for interruption; check mains connector in the service enclosure. Check PE phase for correct connection.

Tab. 69

Possible cause	Remarks
Emergency stop actuated. Emergency-stop cable interrupted.	Unlock emergency-stop switch by turning it. Check dummy plug for trolley connection. Check connections of the control cable on the pendant and in the service enclosure.

Tab. 70

Possible cause	Remarks
Incorrect direction of motor rotation.	Two phases of the mains connection cable must be changed. First disconnect unit from the power supply.
Bimetal contact open.	Check motor connector X8 for continuity between terminal 4 and 8.
When the voltage is switched on or the emergency-stop is unlocked, a button is already actuated.	Release button and actuate it again!
Control cable interrupted.	Check connections of the control cable on the pendant and in the service enclosure. Check control cable for continuity.

Tab. 71

9.4 Warning messages

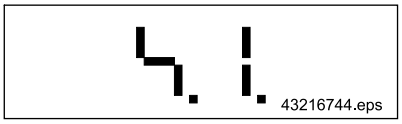

Fig. 76 SLIP LIFTING start-up: No lifting. No lifting with load.

Possible cause	Remarks
A mains phase is missing or the motor is blocked.	Check mains connection and fuse link; check connection cable for interruption; check mains connector in the service enclosure.
Chain hoist overloaded or undervoltage.	Reduce load to the permissible load capacity. Ensure appropriate mains voltage.

Tab. 72

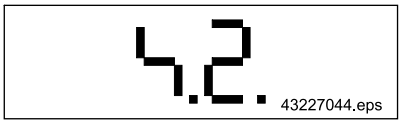

Fig. 77 SLIP LIFTING V1: Switch-off in the upper end position.

Possible cause	Remarks
Operating limit switch contact is no longer actuated.	(-.) is displayed when the limit switches function correctly. In the case of an error, the slipping clutch acts as an emergency-stop device: Connection and functioning of the operating limit switch contact must be inspected by an experienced technician.

Tab. 73

Fig. 78 SLIP LIFTING V2: Switch-off in the upper end position. Fast lifting with load is switched off.

Possible cause	Remarks
Operating limit switch contact is no longer actuated.	(-.) is displayed when the limit switches function correctly. In the case of an error, the slipping clutch acts as an emergency-stop device: Connection and functioning of the operating limit switch contact must be inspected by an experienced technician.
Chain hoist overloaded.	Reduce load to the permissible load capacity.

Tab. 74

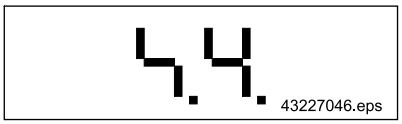

Fig. 79 Internal data memory defective.

Possible cause	Remarks
Control system defective.	Replace control system.

Tab. 75

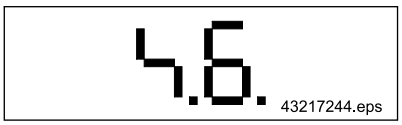

Fig. 80 No speed information.

Possible cause	Remarks
Hardware monitoring faulted.	Repeat lifting process, if load does not move, have the brake and control system checked by an experienced technician.

Tab. 76

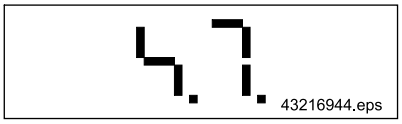

Fig. 81 SLIP LOWERING start-up: No lowering

Possible cause	Remarks
A mains phase is missing or the motor is blocked.	Check mains connection and fuse link; check connection cable for interruption; check mains connector in the service enclosure.

Tab. 77

Fig. 82 SLIP LOWERING V1: Lowering is switched off, lower end position is not reached. Switch-off in the lower end position

Possible cause	Remarks
Chain blocked.	Check chain running in, replace chain, if required.
Operating limit switch contact is no longer actuated.	(-.) is displayed when the limit switches function correctly. In the case of an error, the slipping clutch acts as an emergency-stop device: Connection and functioning of the operating limit switch contact must be inspected by an experienced technician.

Tab. 78

Fig. 83 SLIP LOWERING V2: Lowering is switched off, lower end position is not reached. Switch-off in the lower end position

Possible cause	Remarks
Chain blocked.	Check chain running in, replace chain, if required.
Operating limit switch contact is no longer actuated.	(-.) is displayed when the limit switches function correctly. In the case of an error, the slipping clutch acts as an emergency-stop device: Connection and functioning of the operating limit switch contact must be inspected by an experienced technician.

Tab. 79

9.5 Error messages

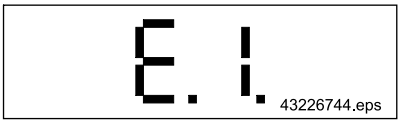

Fig. 84 Chain hoist is blocked.

Possible cause	Remarks
Hardware error of control system.	Check error message by actuating and unlocking the emergency stop. Then actuate Lowering. If necessary, remove suspended load.
Monitoring electronics defective.	Replace hoist control system.

Tab. 80

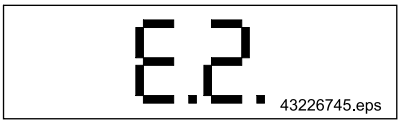

Fig. 85 Chain hoist is blocked.

Possible cause	Remarks
Drive blocked.	Check error message by actuating and unlocking the emergency stop. Then actuate Lowering. If necessary, remove suspended load.
Speed measurement failed.	Replace hoist control system.

Tab. 81

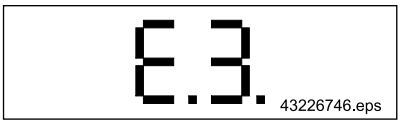

Fig. 86 Hoist unit: Overspeed or load cannot be held. Lowering with load is switched off.

Possible cause	Remarks
Lowering speed too high.	Reduce load to the permissible load capacity. Check mains connection and fuse link; check connection cable for interruption; check mains connector in the service enclosure.

Tab. 82

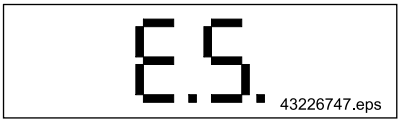

Fig. 87 Chain hoist is blocked.

Possible cause	Remarks
Hardware error of control system.	Check error message by actuating and unlocking the emergency stop. Then actuate Lowering. If necessary, remove suspended load.
Monitoring electronics defective.	Replace hoist control system.

Tab. 83

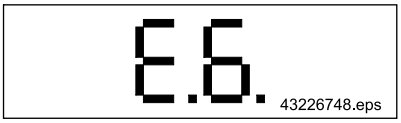

Fig. 88 Chain hoist is blocked.

Possible cause	Remarks
Hardware error of control system.	Check error message by actuating and unlocking the emergency stop. Then actuate Lowering. If necessary, remove suspended load.
Monitoring electronics defective.	Replace hoist control system.

Tab. 84

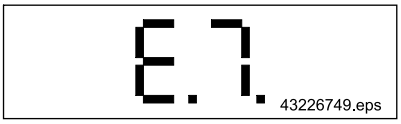

Fig. 89 Hoist unit: Motor runs in wrong direction. Chain hoist is blocked.

Possible cause	Remarks
Direction cannot be switched.	Check error message by actuating and unlocking the emergency stop. Then actuate Lowering. If necessary, remove suspended load.
	Replace hoist control system.

Tab. 85

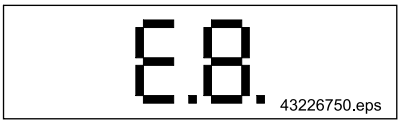

Fig. 90 Lowering is switched off.

Possible cause	Remarks
Brake defective or slipping clutch set incorrectly.	Check brake and slipping clutch.
	If there is no fault, replace electronics.

Tab. 86

Fig. 91 Chain hoist is blocked.

Possible cause	Remarks
Emergency-stop circuit of control system defective	Check error message by actuating and unlocking the emergency stop. Then actuate Lowering. If necessary, remove suspended load.
	Replace hoist control system.

Tab. 87

10 Disassembly / Disposal

10.1 General

WARNING

Before disassembly, follow the safety instructions in ⇒ "Maintenance/repair", Page 68 of these operating instructions.

For information on removing track sections, trolleys and current collector trolleys refer to chapter ⇒ "Fitting", Page 39 of these operating instructions. Other parts are removed in reverse order to assembly.

Unless a return or disposal agreement has been concluded, separated components must be recycled after proper removal:

- Scrap any remaining metallic material,
- Dispose of plastic elements for recycling,
- Separate and dispose of any other components by material type.

Electric scrap, electronic components, lubricants and other auxiliary materials are subject to special disposal regulations and may only be disposed of by certified companies.

National disposal regulations must be considered regarding environmentally friendly disposal. Further information can be obtained from corresponding local authorities.

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11 Accessories

11.1 Assemblies

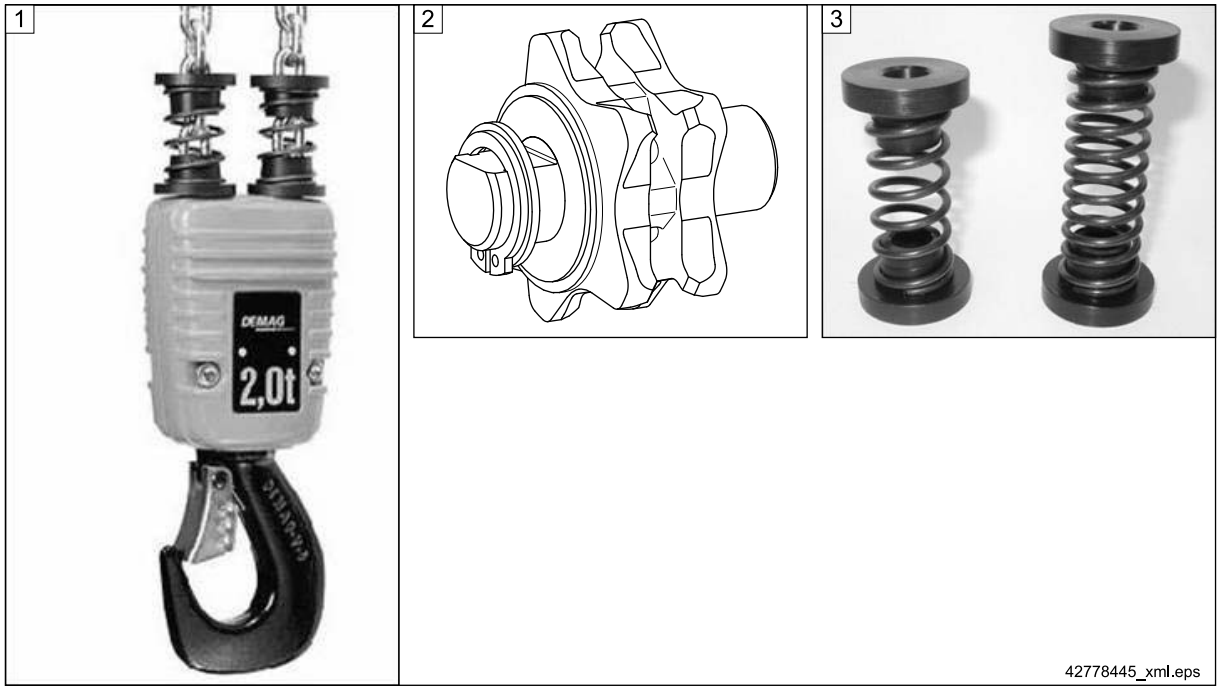


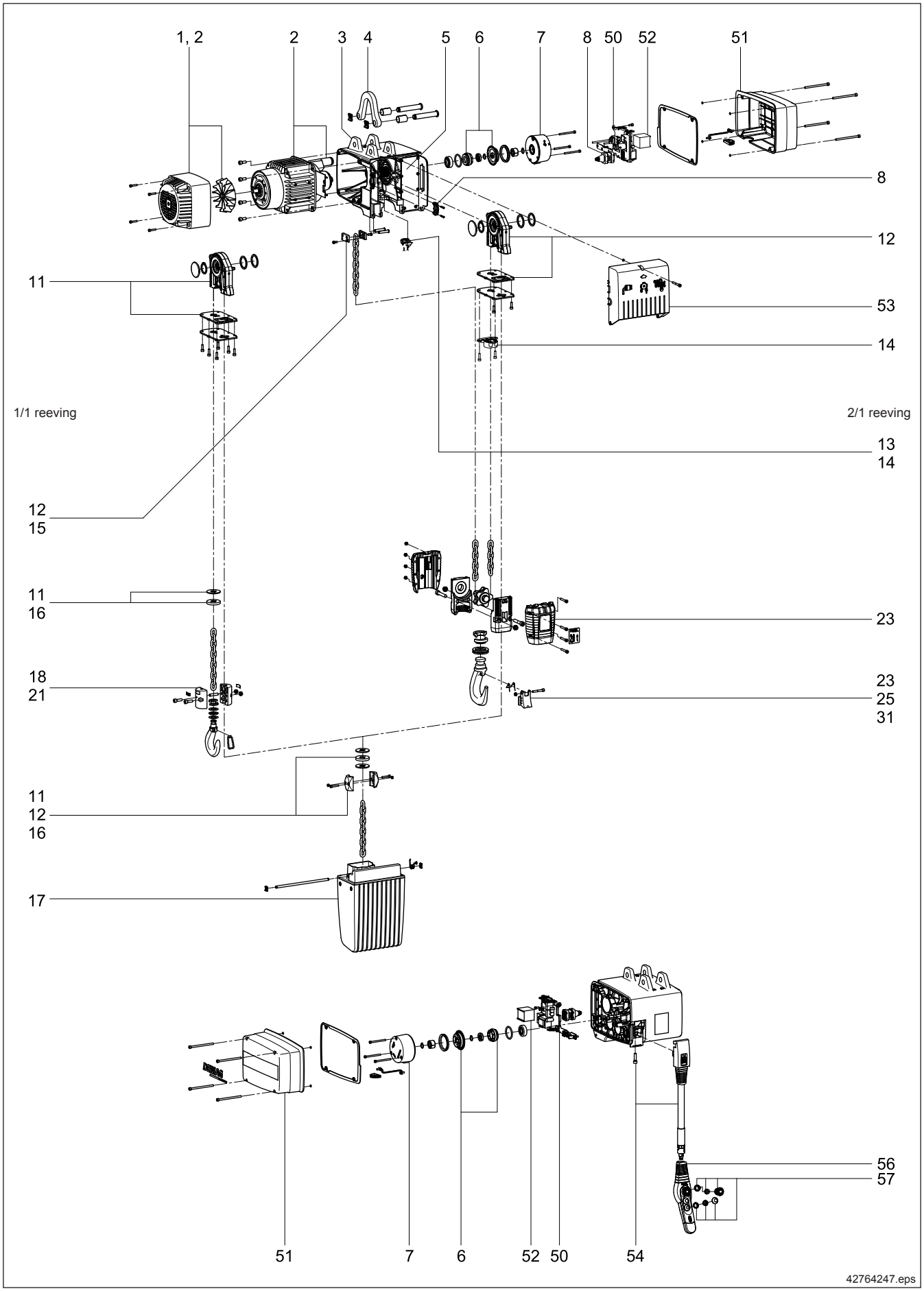
Fig. 92

Item	Description	Size	Part no.:
1	Bottom block with switch-off springs (e.g. for hot applications) consisting of: bottom block, switch-off springs, grooved pins with round head, capacity plates	DC-Com 10 2/1	715 431 45
2	Return sprocket assembly: 1 return sprocket, 1 pin, 1 retaining ring, 1 supporting washer, 2 thrust washers, 2 needle-roller assemblies	DC Com 1/2	717 808 45
		DC-Com 5	718 808 45
		DC-Com 10	715 808 45
3	Switch-off spring (e.g. for hot applications) consisting of: 2 switch-off sleeves, 1 pressure spring each for V1 und V2 (for DC 10, 2/1 reeving: 2x part no.)	DC Com 1/2	717 250 45
		DC-Com 5	718 250 45
		DC-Com 10	715 250 45

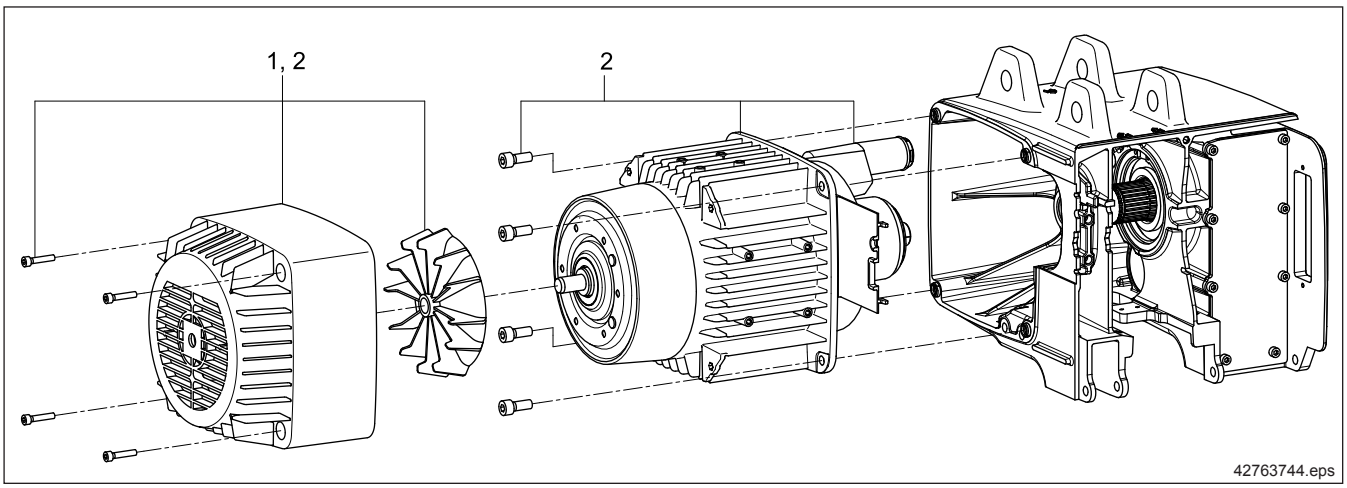
Tab. 88

12 Spare parts

12.1 Overview



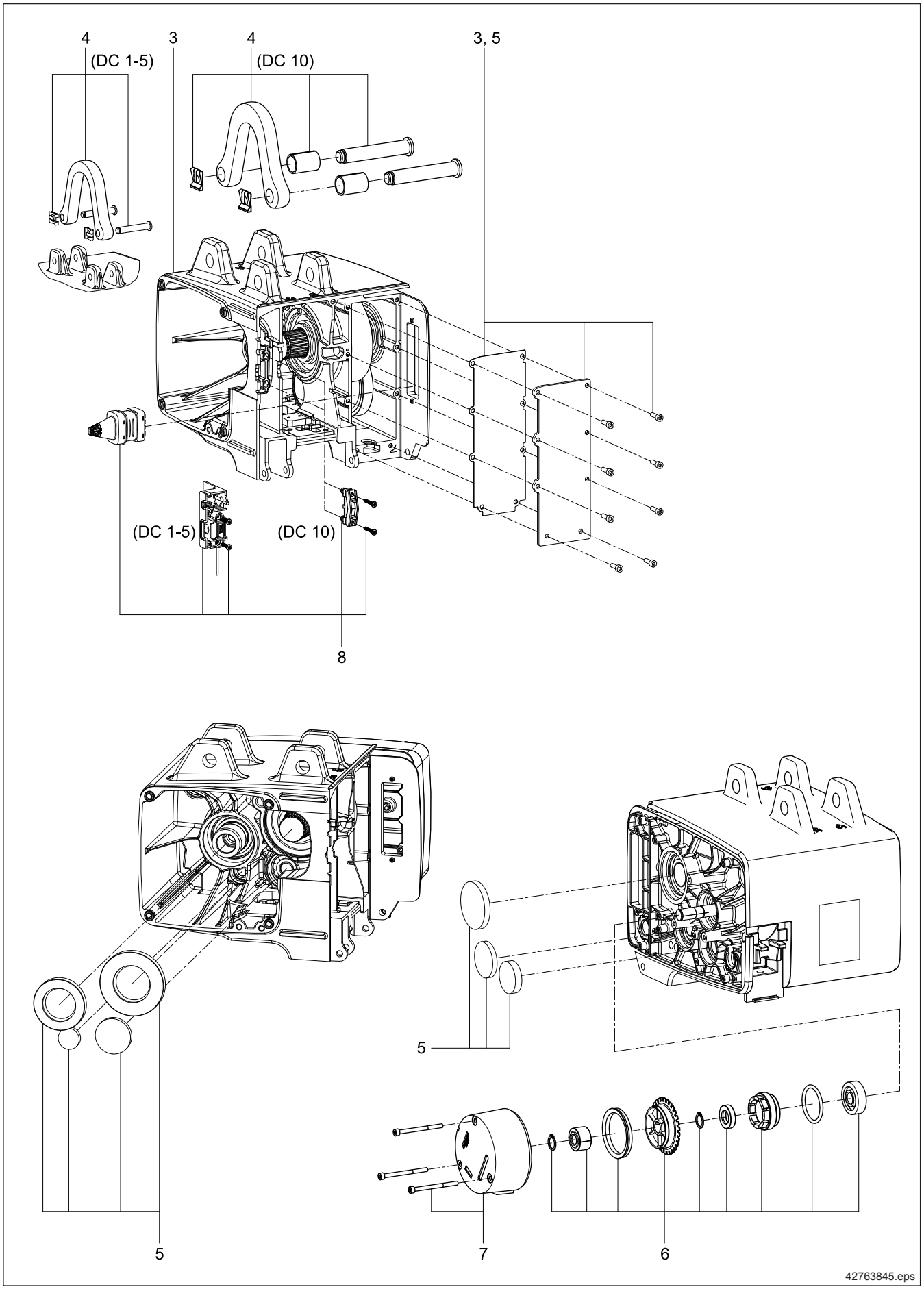
12.2 Motor



Item	Part no.	Qty.	Designation	Material	Standard
1	71785033	1	Fan set DC 2	4 Nm, ZNK 71	
1	71885033	1	Fan set DC 5	4 Nm, ZNK 80	
1	71585033	1	Fan set ZNK 100A	4 Nm	
1	71585133	1	Fan set ZNK 100B	4 Nm	
			DC-Com 1		
2	71784133	1	Motor set 240V50Hz	220 V - 240 V, 50 Hz, 9.5 Nm	
2	71784233	1	Motor set 415V50Hz	380 V - 415 V, 50 Hz, 9.5 Nm	
2	71784433	1	Motor set 525V50Hz	500 V - 525 V, 50 Hz / 575 V, 60 Hz, 9.5 Nm	
2	71784533	1	Motor set 460V60Hz	440 V - 480 V, 60 Hz, 9.5 Nm	
2	71784633	1	Motor set 240V60Hz	220 V - 240 V, 60 Hz, 9.5 Nm	
2	71784733	1	Motor set 380V60Hz	380 V - 400 V, 60 Hz, 9.5 Nm	
			DC-Com 2 until 09/2008		
2	71774133	1	Motor set 240V50Hz	220 V - 240 V, 50 Hz, 9.5 Nm	
2	71774233	1	Motor set 415V50Hz	380 V - 415 V, 50 Hz, 9.5 Nm	
2	71774433	1	Motor set 575V60Hz	500 V - 525 V, 50 Hz / 575 V, 60 Hz, 9.5 Nm	
2	71774533	1	Motor set 460V60Hz	440 V - 480 V, 60 Hz, 9.5 Nm	
2	71774633	1	Motor set 240V60Hz	220 V - 240 V, 60 Hz, 9.5 Nm	
2	71774733	1	Motor set 380V60Hz	380 V - 400 V, 60 Hz, 9.5 Nm	
			DC-Com 2 from 10/2008		
2	71794133	1	Motor set DC2 240V50Hz 8/2	220 V - 240 V, 50 Hz, 9.5 Nm	
2	71794233	1	Motor set DC2 415V50Hz 8/2	380 V - 415 V, 50 Hz, 9.5 Nm	
2	71794433	1	Motor set DC2 575V60Hz 8/2	500 V - 525 V, 50 Hz / 575 V, 60 Hz, 9.5 Nm	
2	71794533	1	Motor set DC2 480V60Hz 8/2	440 V - 480 V, 60 Hz, 9.5 Nm	
2	71794633	1	Motor set DC2 240V60Hz 8/2	220 V - 240 V, 60 Hz, 9.5 Nm	
2	71794733	1	Motor set DC2 380V60Hz 8/2	380 V - 400 V, 60 Hz, 9.5 Nm	
			DC-Com 5 until 09/2008		
2	71874133	1	Motor set 240V50Hz	220 V - 240 V, 50 Hz, 9.5 Nm	
2	71874233	1	Motor set 415V50Hz	380 V - 415 V, 50 Hz, 9.5 Nm	
2	71874433	1	Motor set 575V60Hz	500 V - 525 V, 50 Hz / 575 V, 60 Hz, 9.5 Nm	
2	71874533	1	Motor set 460V60Hz	440 V - 480 V, 60 Hz, 9.5 Nm	
2	71874633	1	Motor set 240V60Hz	220 V - 240 V, 60 Hz, 9.5 Nm	
2	71874733	1	Motor set 380V60Hz	380 V - 400 V, 60 Hz, 9.5 Nm	
			DC-Com 5 from 10/2008		
2	71867133	1	Motor set DC5 240V50Hz 8/2	220 V - 240 V, 50 Hz, 9.5 Nm	
2	71867233	1	Motor set DC5 415V50Hz 8/2	380 V - 415 V, 50 Hz, 9.5 Nm	
2	71867333	1	Motor set DC5 575V60Hz 8/2	500 V - 525 V, 50 Hz / 575 V, 60 Hz, 9.5 Nm	
2	71867433	1	Motor set DC5 480V60Hz 8/2	440 V - 480 V, 60 Hz, 9.5 Nm	
2	71867533	1	Motor set DC5 240V60Hz 8/2	220 V - 240 V, 60 Hz, 9.5 Nm	
2	71867633	1	Motor set DC5 380V60Hz 8/2	380 V - 400 V, 60 Hz, 9.5 Nm	
			DC-Com 10		
2	71584133	1	Motor set 240V50Hz A	220 V - 240 V, 50 Hz, 25 Nm	
2	71584233	1	Motor set 415V50Hz A	380 V - 415 V, 50 Hz, 25 Nm	
2	71584433	1	Motor set 575V60Hz A	500 V - 525 V, 50 Hz / 575 V, 60 Hz, 25 Nm	
2	71584533	1	Motor set 460V60Hz A	440 V - 480 V, 60 Hz, 25 Nm	
2	71584633	1	Motor set 240V60Hz A	220 V - 240 V, 60 Hz, 25 Nm	
2	71584733	1	Motor set 380V60Hz A	380 V - 400 V, 60 Hz, 25 Nm	
2	71583233	1	Motor set DC10/16 B 50Hz	380 V - 415 V, 50 Hz, 25 Nm	
2	71583433	1	Motor set DC10/16 B 60Hz	500 V - 525 V, 50 Hz / 575 V, 60 Hz, 25 Nm	
2	71583533	1	Motor set DC10/16 B 60Hz	440 V - 480 V, 60 Hz, 25 Nm	
2	71583733	1	Motor set DC10/16 B 60Hz	380 V - 400 V, 60 Hz, 25 Nm	

21480101.tbl

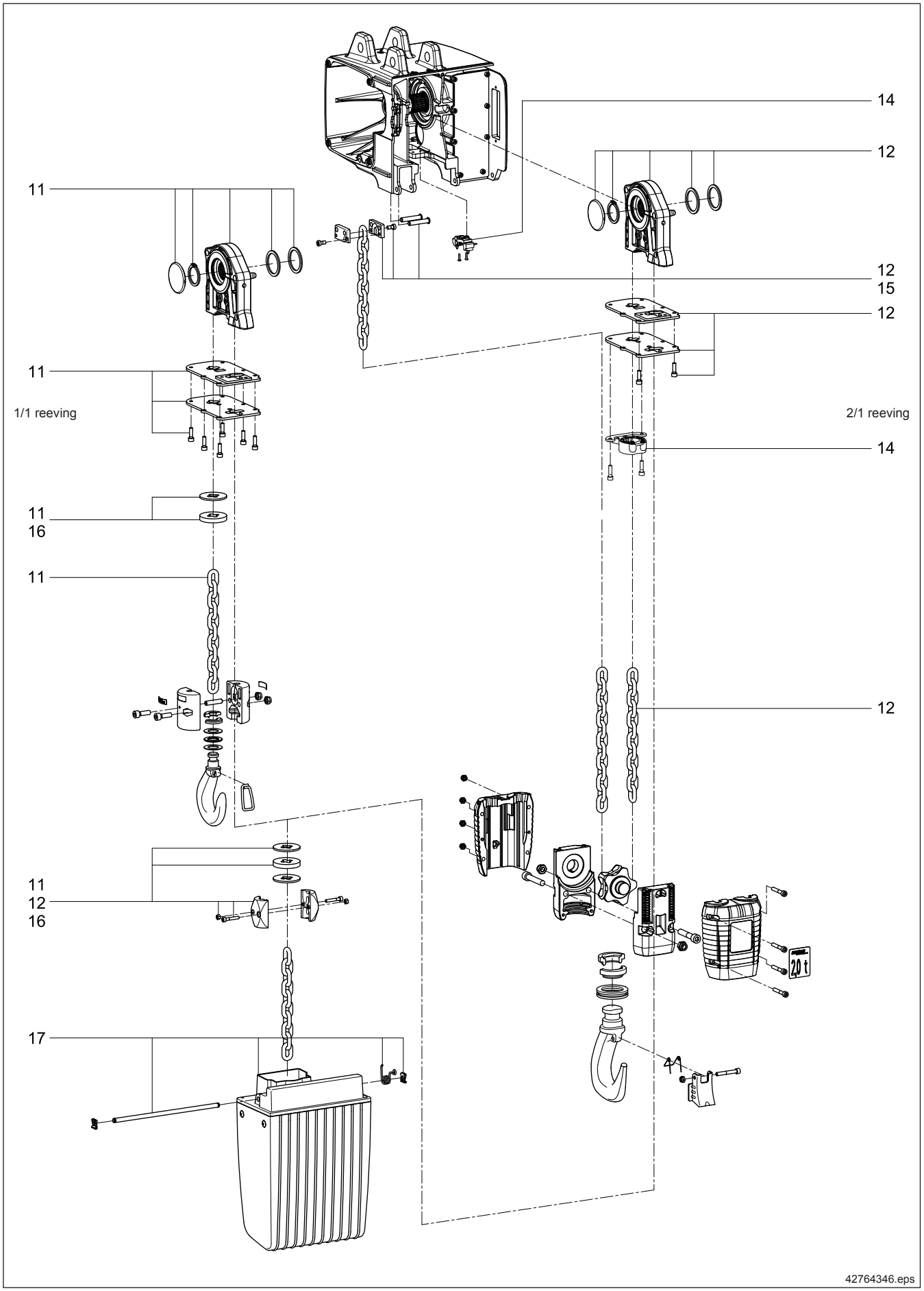
12.3 Parts on gearbox



	Item	Part no.	Qty.	Designation	Material	Standard
				Year of manufacture 2004 until 2006		
	3	71773633	1	Gearbox set DC-COM 1 V8/2	380 V - 415 V, 50 Hz / 380 V - 400 V, 60 Hz	
	3	71773733	1	Gearbox set DC-COM 1 V8/2	440 V - 480 V, 60 Hz	
	3	71773833	1	Gearbox set DC-COM 1 V8/2	220 V - 240 V, 50/60 Hz	
	3	71773933	1	Gearbox set DC-COM 1 V8/2	500 V - 525 V, 50 Hz / 575 V, 60 Hz	
	3	71770533	1	Gearbox set DC-COM 2 V4/2	380 V - 415 V, 50 Hz / 380 V - 400 V, 60 Hz	
	3	71771133	1	Gearbox set DC-COM 2 V4/2	440 V - 480 V, 60 Hz	
	3	71771233	1	Gearbox set DC-COM 2 V4/2	220 V - 240 V, 50/60 Hz	
	3	71771333	1	Gearbox set DC-COM 2 V4/2	500 V - 525 V, 50 Hz / 575 V, 60 Hz	
	3	71870533	1	Gearbox set DC-COM 5 V4/2	380 V - 415 V, 50 Hz / 380 V - 400 V, 60 Hz	
	3	71870633	1	Gearbox set DC-COM 5 V4/2	440 V - 480 V, 60 Hz	
	3	71870733	1	Gearbox set DC-COM 5 V4/2	220 V - 240 V, 50/60 Hz	
	3	71870833	1	Gearbox set DC-COM 5 V4/2	500 V - 525 V, 50 Hz / 575 V, 60 Hz	
	3	71570533	1	Gearbox set DC-COM 10 V4/1	1/1 reeving	
	3	71570733	1	Gearbox set DC-COM 10 V4/1	2/1 reeving	
				Year of manufacture 2007 until 07/2008		
	3	71773433	1	Gearbox set DC Com 1	V8/2	
	3	71773533	1	Gearbox set DC Com 2	V4/2	
	3	71870933	1	Gearbox set DC Com 5	V4/2	
	3	71570533	1	Gearbox set DC-COM 10 V4/1	1/1 reeving	
	3	71570733	1	Gearbox set DC-COM 10 V4/1	2/1 reeving	
				From year of manufacture 08/2008		
	3	71773433	1	Gearbox set DC Com 1	V8/2	
	3	71774033	1	Gearbox set DC Com 2	V6/1,5	
	3	71890433	1	Gearbox set DC Com 5	V4,5/1,1	
	3	71570533	1	Gearbox set DC-COM 10 V4/1	1/1 reeving	
	3	71570733	1	Gearbox set DC-COM 10 V4/1	2/1 reeving	
	4	71897433	1	Suspension set DC 1- 5		
	4	71597433	1	Suspension set DC10		
	5			Year of manufacture 2004 until 2006		
	5	71773133	1	Gear oil/seal DC-Com 1,2	DC-Com 1/2; 5,5 Nm; 0,35 litres	
	5	71873133	1	Gear oil/seal DC-Com5	DC-Com 5; 5,5 Nm; 0,5 litres	
	5	71591933	1	Gear oil/seal DC10	DC-Com 10; 5,5 Nm; 0.9 litres	
				From year of manufacture 2007		
#	5	47997646	1	Gear oil/seal DC-Com 1,2	DC-Com 1/2; 5,5 Nm; 0,35 litres	
#	5	47997746	1	Gear oil/seal DC-Com5	DC-Com 5; 5,5 Nm; 0,5 litres	
	5	71591933	1	Gear oil/seal DC10	DC-Com 10; 5,5 Nm; 0.9 litres	
	6	71894733	1	Adjusting nut/pulse wheel	DC 1/ 2 / 5	
	6	71594733	1	Adjusting nut/pulse wheel	DC10	
	7			DC-Com 1 / 2 / 5		
	7	71887133	1	Brake set 180V	380 V - 415 V, 50 Hz, 5,5 Nm	
	7	71887233	1	Brake set 216V	440 V - 480 V, 60 Hz, 5,5 Nm	
	7	71887333	1	Brake set DCS 1-5 104V	220 V - 240 V, 50/60 Hz, 5,5 Nm	
	7	71887433	1	Brake set 258V	500 V - 525 V, 50 Hz / 575 V, 60 Hz, 5,5 Nm	
				DC-Com 10		
	7	71587133	1	Brake set DC10 180V	380 V - 415 V, 50 Hz, 5,5 Nm	
	7	71587233	1	Brake set DC 10 216V	440 V - 480 V, 60 Hz, 5,5 Nm	
	7	71587333	1	Brake set DC/DCS10	220 V - 240 V, 50/60 Hz, 5,5 Nm	
	7	71587433	1	Brake set DC10 258V	500 V - 525 V, 50 Hz / 575 V, 60 Hz, 5,5 Nm	
	8	71885633	1	Insert/plug		

21480102.tbl

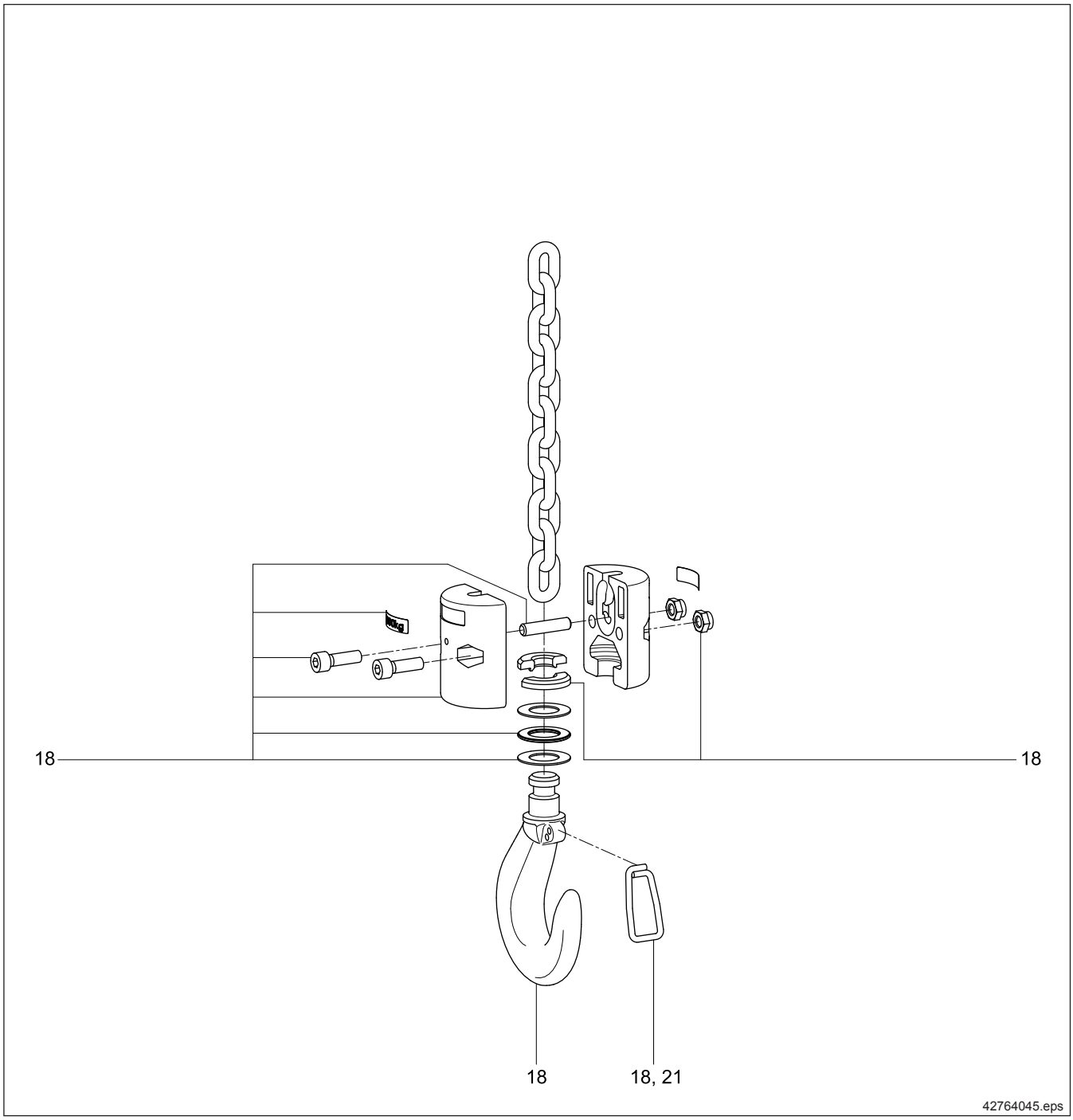
12.4 Chain drive



	Item	Part no.	Qty.	Designation		Material	Standard
	11	71795033	1	Chain set DC 1/ 2 5m	4.0 Nm		
	11	71795133	1	Chain set DC 1/ 2 8m	4.0 Nm		
	11	71895033	1	Chain set DC 5 5m	4.3 Nm		
	11	71895133	1	Chain set DC 5 8m	4.3 Nm		
	11	71595033	1	Chain set DC 10 5m 1/1	7.4 Nm		
	11	71595133	1	Chain set DC 10 8m 1/1	7.4 Nm		
	12	71596033	1	Chain set DC10 5m 2/1	DC 10 2/1, 7,4 Nm		
	12	71596133	1	Chain set DC10 8m 2/1	DC 10 2/1, 7,4 Nm		
	14	71588033	1	Limit switch set	DC 10, 3 Nm		
	15	71527933	1	Chain anchorage 2/1 set	DC 10 2/1		
	16	71795333	1	Buffer set DC 1/2			
	16	71895333	1	Buffer set DC5			
	16	71595333	1	Buffer set DC10			
	17	71798633	1	Chain collector set DC1/2 5m			
	17	71798733	1	Chain collector set DC1/2 8m			
	17	71898633	1	Chain collector set DC5 5m			
	17	71898733	1	Chain collector set DC5 8m			
	17	71598633	1	Chain collector DC10 1/1 5m			
	17	71598733	1	Chain collector DC10 1/1 8m	DC 10 2/1 H5		
#	17	71535045	1	Chain collector flexible 20 m	DC 10 2/1 H8		

21480105.tbl

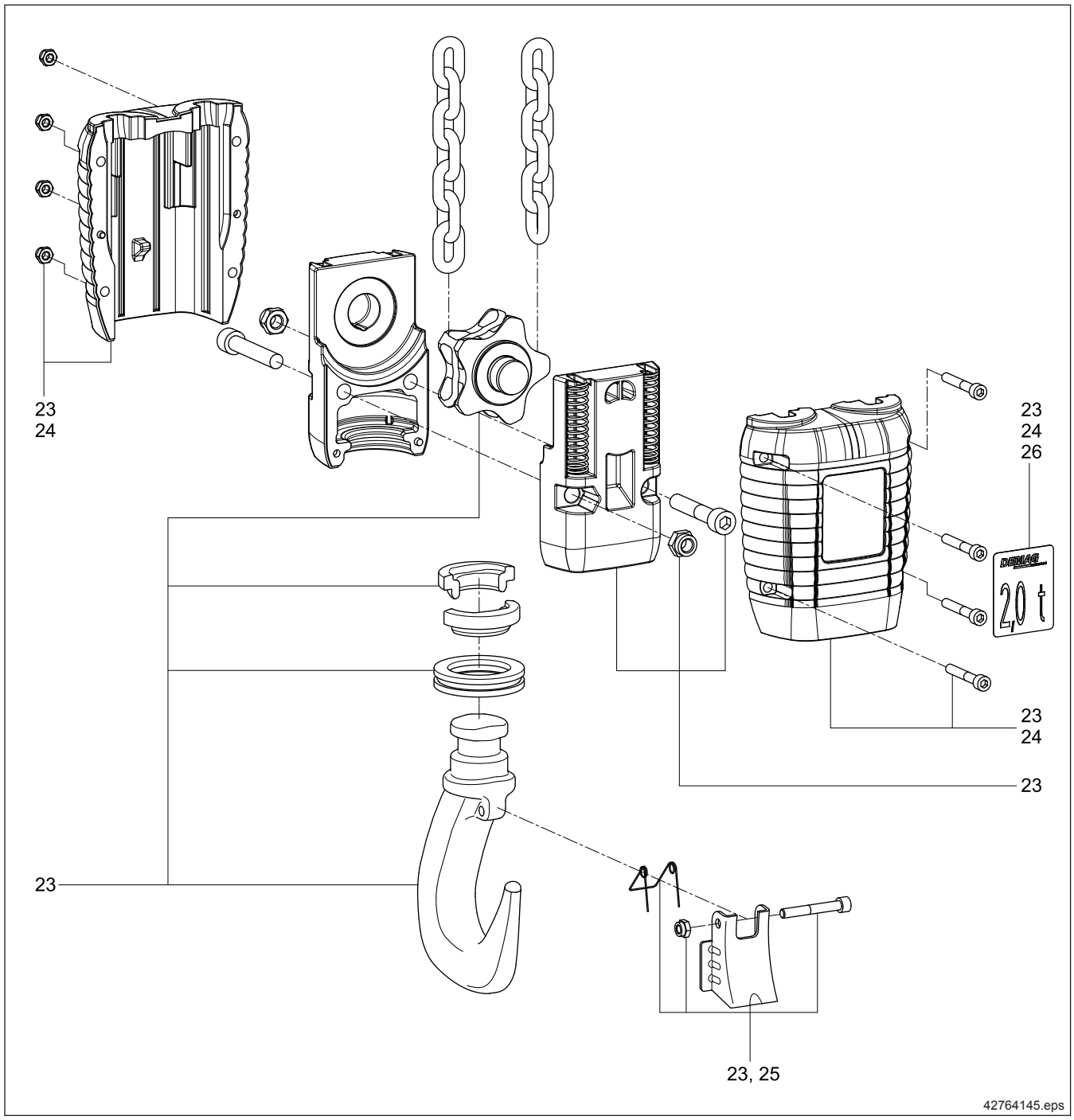
12.5 Hook assembly



Item	Part no.	Qty.	Designation		Material	Standard
18	71778033	1	Hook fittings set DC-Com 2	6.8 Nm		
18	71878033	1	Hook fittings set DC-Com 5	9.5 Nm		
18	71578033	1	Hook fittings set DC-Com10	25 Nm		
21	71851633	1	Hook safety catch set DC1-5			
21	71551633	1	Hook safety catch set DC10 T04			

21480106.tbl

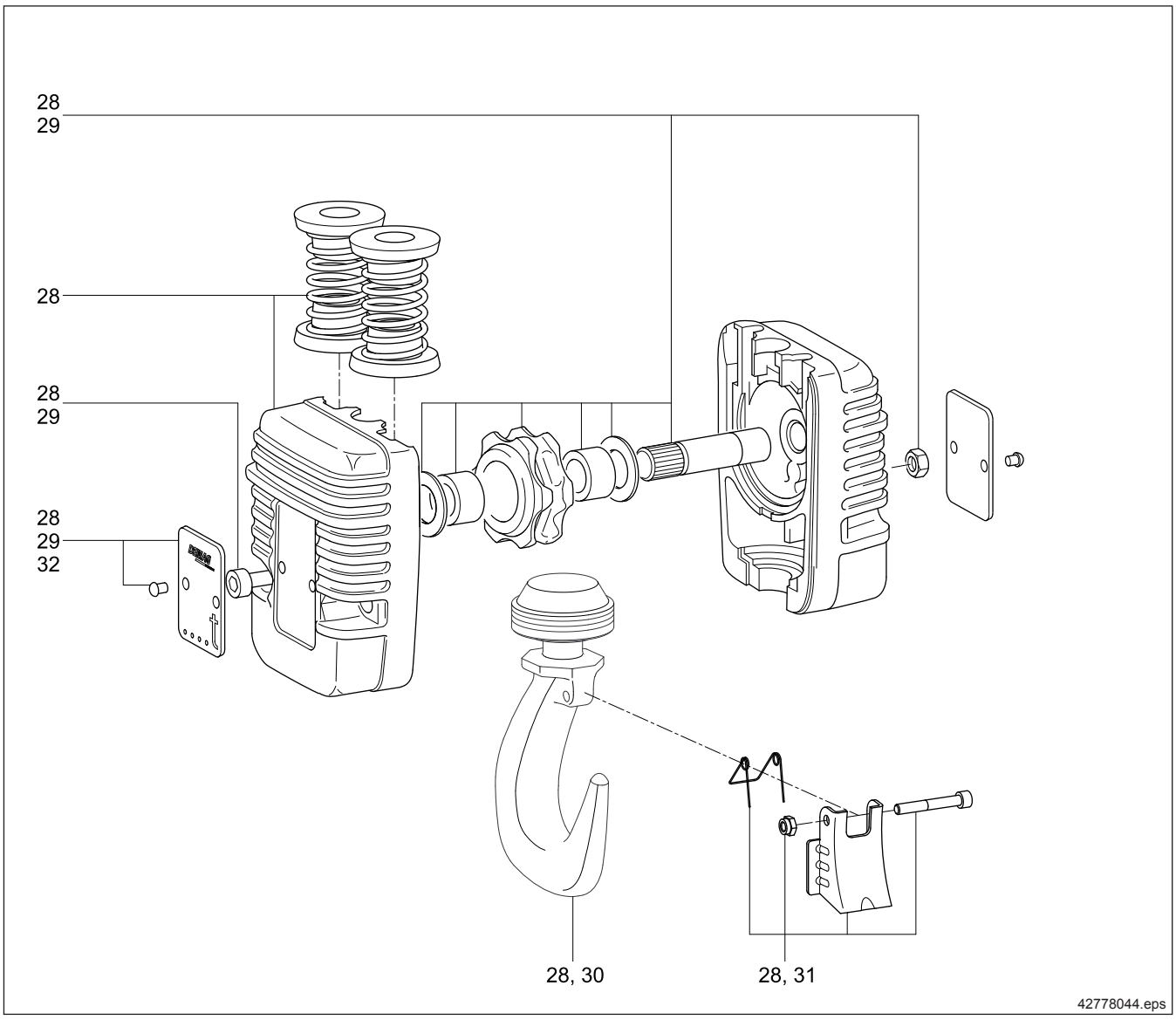
12.6 Bottom block with internal switch-off springs (standard)



Item	Part no.	Qty.	Designation	Material	Standard
23	71598533	1	Bottom block set DC 2/1		
24	71544233	1	Bottom block half set DC10 2/1		
25	83865633	1	Hook safety catch set S. 5 x5		
26	75262033	1	Load capacity plate set DC10 2/1		

21480107.tbl

12.7 Bottom block with external switch-off springs (option)



Item	Part no.	Qty.	Designation		Material	Standard
28			Bottom block with switch-off spring	1)		
29	83785233	1	Bottom block half set DK10	6.8 Nm		
30	83865033	1	Load hook DC16/25 DK10/20			
31	83865633	1	Hook safety catch set S. 5 x5			
32	83592833	1	Capacity plate DK10			

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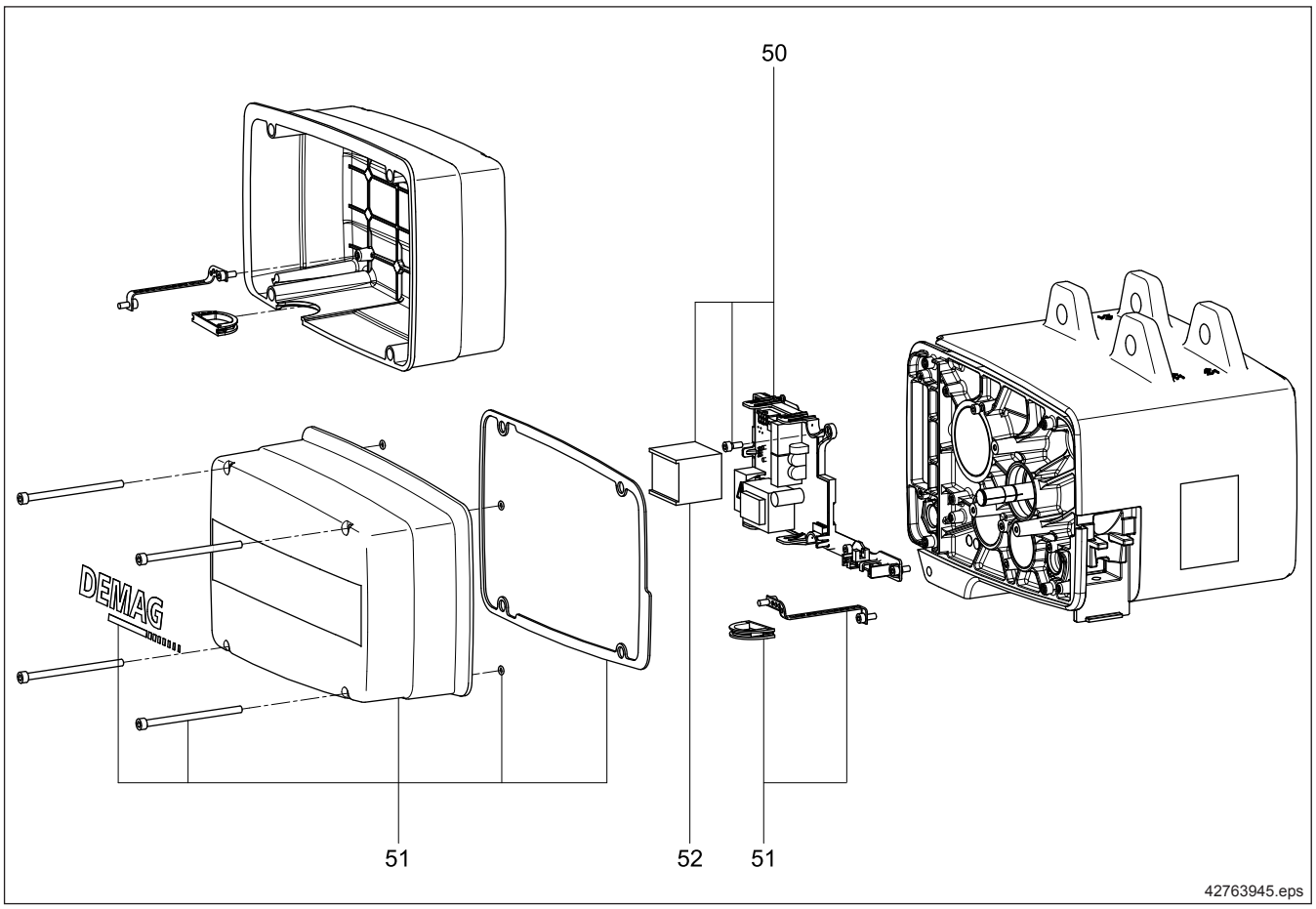
 1) See chapter 11

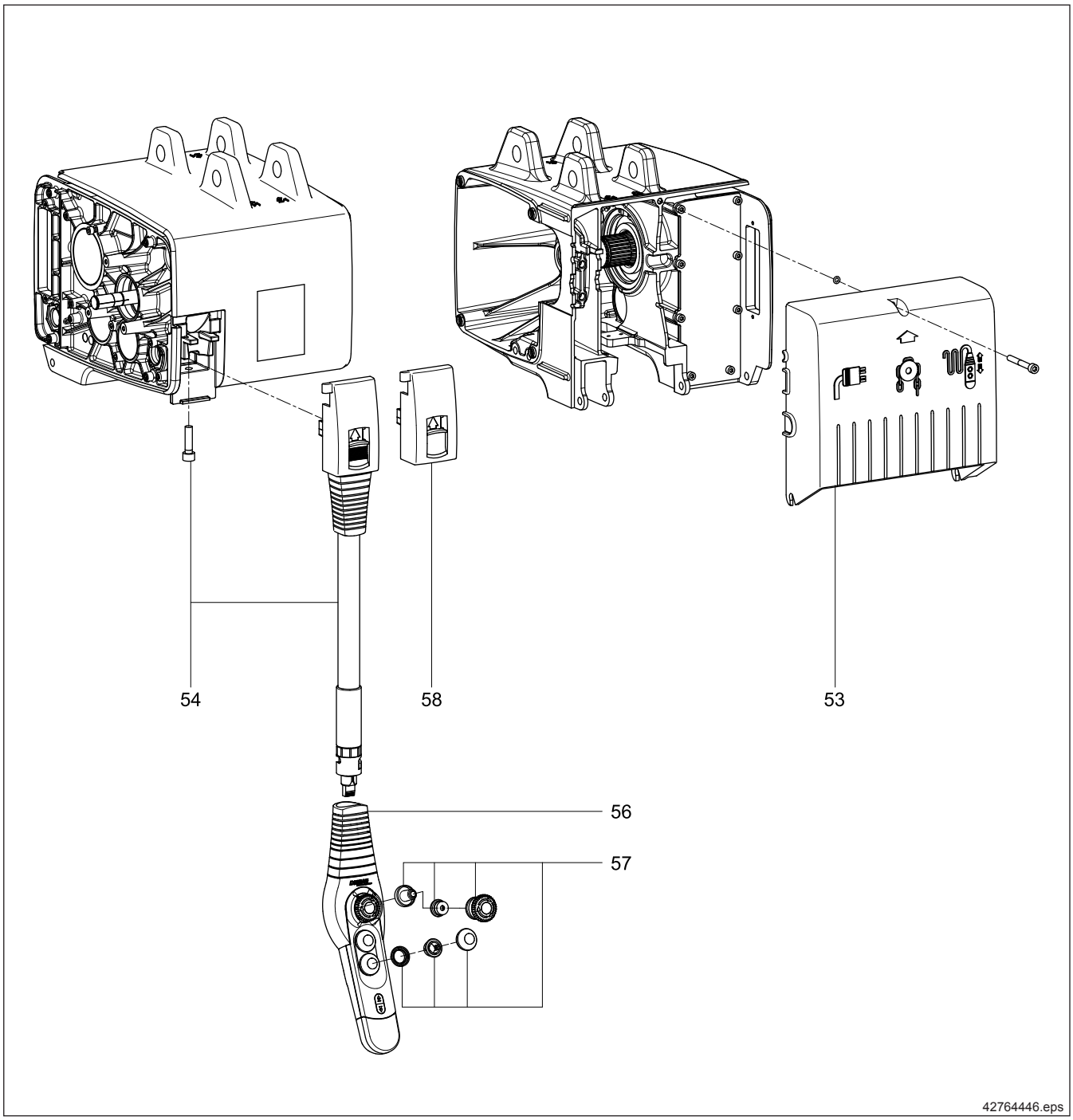
12.8 Electrical equipment cover



	Item	Part no.	Qty.	Designation	Material	Standard
				DC-Com 1 - 5		
#	50	77222033	1	Control set DC1-5, 230V	220 V - 240 V, 50/60 Hz; 3 Nm	
#	50	77202033	1	Control set DC1-5, 400V	380 V - 415 V, 50 Hz / 380 V - 400 V, 60 Hz; 3 Nm	
#	50	77232033	1	Control set DC1-5, 575V	500 V - 525 V, 50 Hz / 575 V, 60 Hz; 3 Nm	
#	50	77212033	1	Control set DC1-5, 460V	440 V - 480 V, 60 Hz; 3 Nm	
				DC-Com 10		
#	50	77226033	1	Control set DC10, 230V	220 V - 240 V, 50/60 Hz; 3 Nm	
#	50	77206133	1	Control set DC10, 400V	380 V - 415 V, 50 Hz / 380 V - 400 V, 60 Hz; 3 Nm	
#	50	77236033	1	Control set DC10, 575V	500 V - 525 V, 50 Hz / 575 V, 60 Hz; 3 Nm	
#	50	77216033	1	Control set DC10, 460V	440 V - 480 V, 60 Hz; 3 Nm	
	51	71792133	1	Electrical cover set DC 2	9.5 Nm	
	51	71892133	1	Electrical cover set DC 5	9.5 Nm	
	51	71592133	1	Electrical cover set DC10	9.5 Nm	
	52	71582533	1	Contactor set	DC-Com 10	

21480103.tbl

12.9 Control pendant, control cable, service cover



Item	Part no.	Qty.	Designation		Material	Standard
53	71792033	1	Service cover set DC 2	5.5 Nm		
53	71892033	1	Service cover set DC 5	5.5 Nm		
53	71592033	1	Servicehaubenset DC10	7.5 Nm		
54	71881033	1	Control cable set 5m	11 Nm		
54	71880933	1	Control cable set 8m	11 Nm		
54	72003745	1	DC control cable 11m	11 Nm		
56	77330033	1	DSC control pendant			
57	71880433	1	Emergency stop set / rubber cap DSC-S			
58	72004145	1	Bag, hose			

21480104.tbl

Index

DEMAG Cranes & Components	**Original** **EC conformity declaration for a machine** **in accordance with Directive 2006/42/EC, Annex IIA**	1 page(s) / Page 1 Ident. no. **199 610 44** Issue 1209 / EN

Hereby we,

Demag Cranes & Components GmbH

Ruhrstraße 28, D-58300 Wetter

declare that the electrically driven hoist unit for lifting loads

Demag DC chain hoist

Type: ***Bauformschlüssel***

Serial no.: ***Fabriknummer***

ready for service – as a series product or produced to order - with cable-connected control pendants / wireless controls complies with all relevant requirements of the

EC Machinery Directive 2006/42/EC.

The safety objectives of the **Low Voltage Directive 2006/95/EC** are achieved.

The product additionally complies with the following relevant directives/provisions:

2004/108/EC **EC EMC Directive**

Applied harmonised standards, in particular

EN 14492-2	**Cranes - Power-driven winches and hoists - Part 2: Power-driven hoists**
EN 60204-32	**Safety of Machinery – Electrical equipment for machinery, Part 32: Requirements for hoists**

The relevant technical documentation according to Annex VII Part A of Directive 2006/42/EC has been compiled and shall be made available to authorised national authorities by the designated authorised representative in response to a justified request.

Authorised representative for technical documentation

Hans-Jörg Böttcher, Demag Cranes & Components GmbH

Ruhrstraße 28, D-58300 Wetter

Wetter, 29.12.09

Place and date of issue

ppa. Dr. Harkort	**ppa. Schulte**
Wetter Factory Manager	**HT/AT Engineering/Development**

Hereby we,

Demag Cranes & Components GmbH

Ruhrstraße 28, D-58300 Wetter

declare that the electrically driven hoist unit / hoist unit with trolley for lifting / lifting and moving loads

Demag DC chain hoist / Demag DC chain hoist with trolley

Type: ***Bauformschlüssel***

Serial no.: ***Fabriknummer***

as **partly completed machinery** is intended to be incorporated into machinery and that it must not be put into service until the machinery* into which this partly completed machinery is to be incorporated has been declared in conformity with all relevant provisions of the

EC Machinery Directive 2006/42/EC.

(* provided this machinery is within the application range)

Basic requirements of the EC Machinery Directive insofar as relevant for the scope of delivery are met by application of the following harmonised standards or C standard drafts:

EN 14492-2	**Cranes - Power-driven winches and hoists - Part 2: Power-driven hoists**
EN 60204-32	**Safety of Machinery – Electrical equipment for machinery, Part 32: Requirements for hoists**

The safety objectives of the **Low Voltage Directive 2006/95/EC** are achieved.

The product additionally complies with the following relevant directives/provisions:

2004/108/EC **EC EMC Directive**

The relevant technical documentation according to Annex VII Part B of Directive 2006/42/EC has been compiled and shall be made available to authorised national authorities by the designated authorised representative in response to a justified request.

Authorised representative for technical documentation

Hans-Jörg Böttcher, Demag Cranes & Components GmbH

Ruhrstraße 28, D-58300 Wetter

Wetter, 29.12.09

ppa. Dr. Harkort
Wetter Factory Manager

ppa. Schulte
HT/AT Engineering/Development

The current addresses of the sales offices in Germany and the subsidiaries and agencies worldwide can be found on the Demag Cranes & Components homepage at

www.demagcranes.com/Contact and Demag worldwide