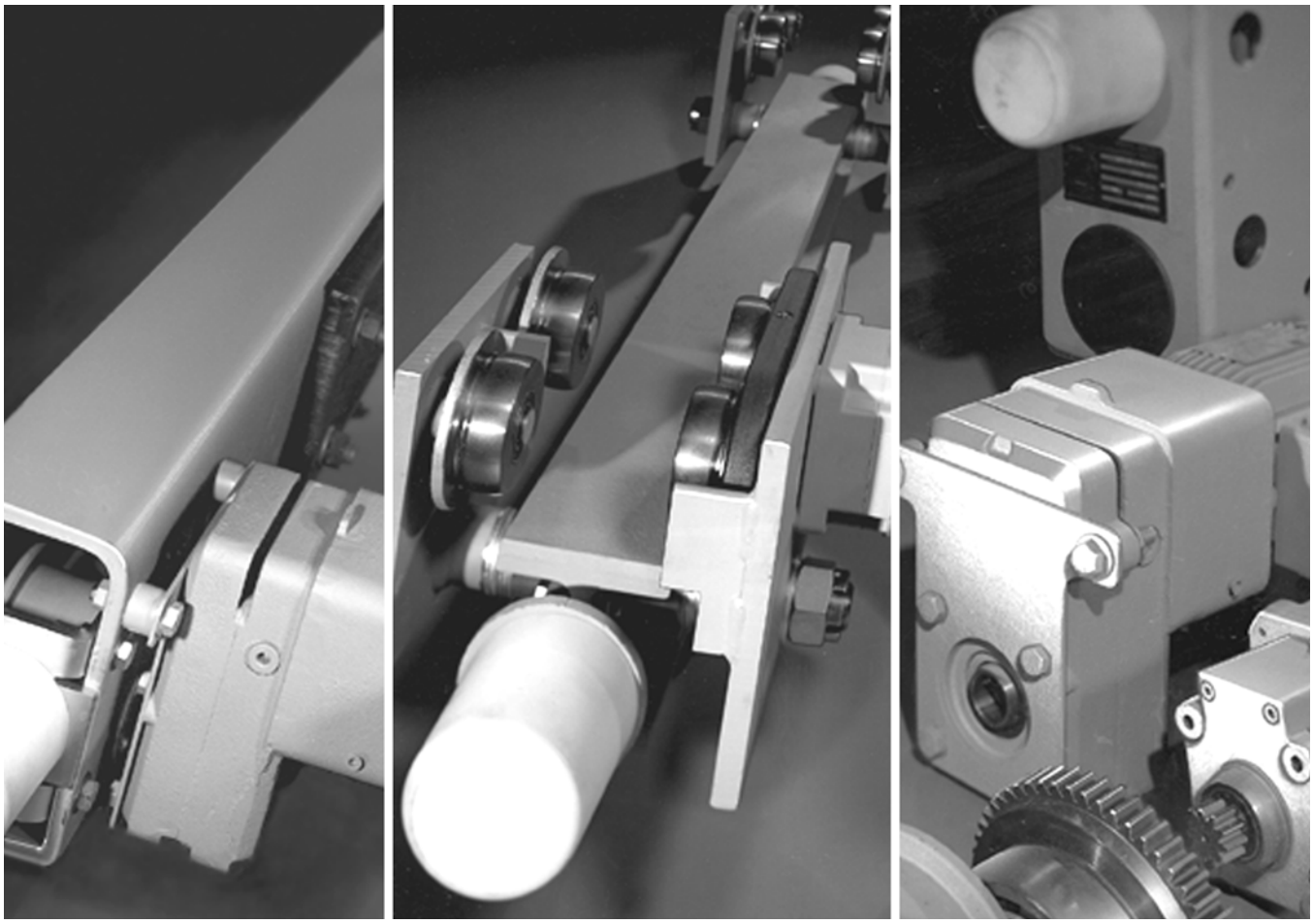


Crane Components_

Operating and Maintenance Instructions

↘ EN

STAHL CraneSystems

Fundamental information

You have purchased a product manufactured by STAHL CraneSystems GmbH.
These crane components have been constructed in compliance with the applicable standards and regulations.

Inspect components for damage caused in transit immediately upon delivery.

Report damage caused in transit and after consulting the manufacturer/supplier repair or have repaired before installation and commissioning.
Do not install or commission damaged components!

- **Assembly**
- **installation**
- **commissioning**
- **testing**
- **maintenance and fault clearance**

may only be carried out by a qualified person

Terms employed

User
Whoever uses and employs the crane components or has them operated by suitable trained personnel is considered to be the user (employer/company).

Trained personnel
Trained personnel are persons who have been instructed and trained in the duties with which they are entrusted and the risks which may arise from incorrect behaviour, have been advised on the necessary protective devices, precautions, applicable regulations, accident prevention regulations and prevailing conditions and have proven their ability.

Skilled electrician
A skilled electrician possesses knowledge and experience on electrical equipment arising from specialist training and, with knowledge of the applicable standards and regulations, is able to assess the work with which he is entrusted and detect and avoid possible risks.

Definition of a qualified person (specialist):
A qualified person is one with the necessary qualification, based on theoretical and practical knowledge of hoists, for the required activities as listed in the operating instructions.
The person must be in a position to assess the safety of the installation in conjunction with the application.
Persons with the authority to undertake certain maintenance work on our products include service engineers of manufacturer and trained fitters with the corresponding certification.

Seminars:
Comprehensive understanding of material handling products is a prerequisite for the correct use of equipment. Competent and practically oriented, we impart the specialist knowledge required for the correct use, monitoring and care of your installation.
Ask for our seminar programme → you will find information on it on the last page.

Content

Subject to alterations

Content

1 Safety instructions

1.1 Symbols

Safety at work
This symbol marks all information on safety at work where risks to life and limb are entailed.

Warning of electrical voltage
Covers such as hoods and caps which are marked with this symbol may only be opened by "qualified persons or suitably instructed personnel".

Warning of suspended load
It is forbidden for persons to stand under suspended loads. This entails risks to life and limb!

Safety in operation
Information marked with this symbol must be observed to avoid causing damage.

In these operating instructions, these symbols mark particularly important information on risks and safety in operation.

1.2 Operating instructions

Read carefully and observe the operating instructions.

1.3 Use for intended purpose

- Crane components are intended for the construction of cranes and similar installations. They may only be used in accordance with their design principles.
- Do not carry out any alterations or modifications. Additional fitments must be authorised by the manufacturer. Non-compliance will invalidate the declaration of conformity.

Not permitted:
- Exceeding the safe working load
- Pulling loads loose
- If the crane component forms "part of a machine," the person placing it on the market must ensure that the hoist meets the specific regulations of the application

1.4 Safety-conscious operation

The crane components are constructed according to the state of the art. In spite of this, dangers may arise from incorrect use or use for an unintended purpose.
- The operator is responsible for ensuring that work is carried out with safety in mind and avoiding risks. (EC Directive 99/92/EC, decree on safety in operation).
- Read the operating instructions before starting work.
- Before starting work, find out where the EMERGENCY STOP button is (usually in the control pendant).
- Report damage and defects to the crane component (abnormal noises, impaired braking function, deformations, ...) to the person responsible immediately. Do not use the component until the faults have been eliminated.

1.5 Organisational safety precautions

- Only direct persons to operate the system if they have been trained or instructed in its use. Observe the legal minimum age! You will find information on our seminar programme on the last page.
- At regular intervals, check that work is being caried out in a safety-conscious manner.
- Observe the intervals specified for periodic tests. File the test reports in the test log book.
- Store the operating instructions within easy reach where the crane is operated.

1.6 General regulations

- Safety regulations and accident prevention regulations.
- Statutory regulations relating to the EC Directive.
- National regulations
- See also operating instructions of AS, SH wire rope hoists or ST chain hoists.

1.7 Installation, commissioning, maintenance and repairs

- **Installation, commissioning, maintenance and repairs may be carried out by qualified persons only,** see page 2.
- We recommend having installation carried out by the manufacturer's personnel.
- Use only **original spare parts** for repairs, otherwise the warranty will become invalid.
- Additional fitments must not prejudice safety.
- Electrical connection and the electrical function test may only be performed by a trained electrician.
- Our after-sales service will advise you on correct use of the equipment. Repairs will be carried out professionally and quickly by our trained personnel.You will find information on this on the back cover.

1.8 Warranty

- The warranty will become invalid if these operating instructions are not observed for installation, operation, inspection and maintenance.
- Repairs and elimination of faults within the scope of the warranty may only be performed by qualified personnel (see page 2) after the manufacturer/supplier has been consulted and has given his approval.
  The warranty will become invalid if the crane component is modified or original spare parts not used

1.9 Periodic tests

Crane components must be inspected by a **qualified person,** see page 2 at least once a year, possibly more frequently if so required by national regulations. The results of the test must be recorded and filed in the test log book.
The periodic tests must be adapted to the use of the crane components. Intensive use entails shorter maintenance intervals.

All tests must be initiated by the user (see page 2).

1.10 After sales service

With the purchase of these crane components, you have decided on a high-quality product. Our after sales service will give you advice on its correct use. You will find information on our after-sales service on the back cover.

In order to maintain the safety and constant availability of your wire rope hoist, we recommend concluding a maintenance agreement on the basis of which we will undertake the "periodic tests" on your behalf.

Repairs will be carried out professionally and quickly by our trained personnel.

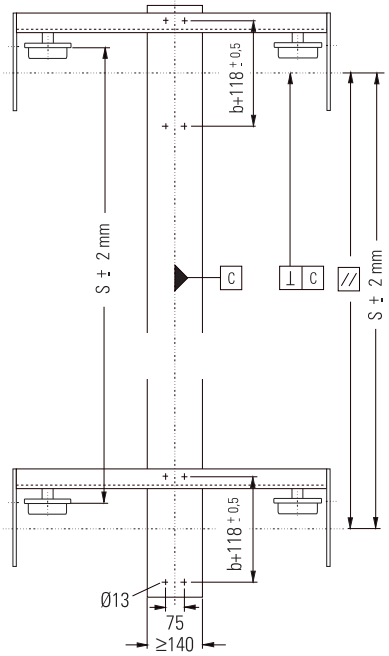
2.1 Assembly of endcarriage

2.1.1 Endcarriage type KEH-B

The endcarriages for suspension cranes KEH-B are supplied in pairs dismantled .

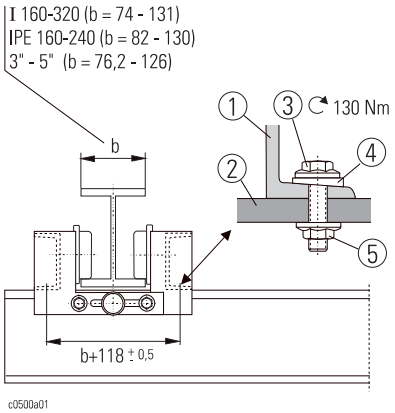
4 endcarriage side cheeks
1 set of bolt connection parts consisting of:
- connecting bolts for crane girder
- endcarriage connecting bolts
- rubber buffers with special fixing nut

Before assembly, please check that the capacity of the endcarriage is adequate for the intended application of the crane, see "Technical data".



2.1.2 Drilling crane girder connection

The distance between the holes along the length of the crane girder depends on the flange width of the crane runway and the span.
Mark and drill holes as per sketch.
We recommend using our special tools or assembly aids. See chapter 7, "Wearing parts".



2.1.3 Assembly of endcarriage and crane girder

- Lay an inside and outside side cheek (1) on each crane girder (2) and bolt on loosely with the crane girder connection parts (3) - (5).
- Check that the side cheeks are parallel and at right angles and that the span is correct.
- Tighten bolt connection (3) - (5) as per specification with 130 Nm.

(1) Endcarriage side cheek
(2) Crane girder
(3) Locking bolt M12x40vz
(4) Limpet washer DIN 6918-13 tZn
(5) Locknut M12 vz

2.1 Assembly of endcarriage

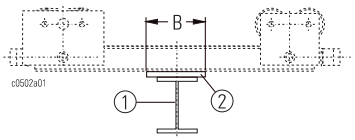
2.1.4 Endcarriage type KEH-A

The endcarriage for suspension cranes KEH-A is supplied as standard fitted with wheelsets, end buffers, travel drive and endcarriage connection parts.

- Check that the capacity of the endcarriage is adequate for the intended application of the crane, see "Technical data".

2.1.5 On assembly

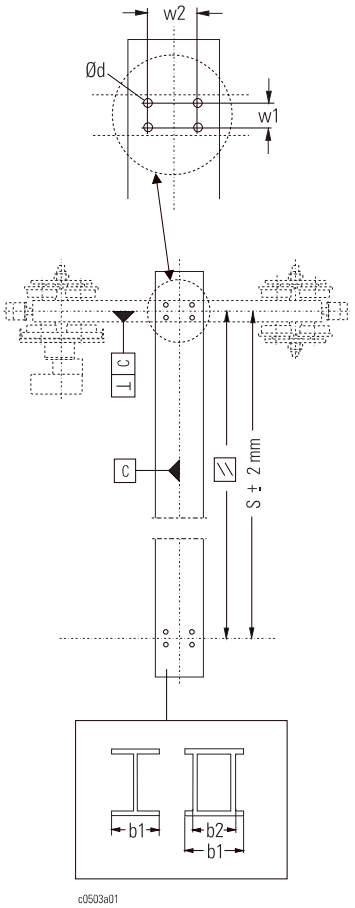
Perfect crane geometry is achieved by particularly careful assembly of endcarriage and crane girder. This guarantees smooth running of the crane causing little wear.



2.1.6 Preparation of crane girder

If the width of the crane girder (1) is narrower than the minimum width specified (B), the crane girder must be widened by means of suitable shims (2) to ensure the necessary clearance to the bolt connections.

The contact surfaces between endcarriage and crane girder must be completely free of rust, dust, oil, paint, etc.!



2.1.7 Drilling crane girder connection

The endcarriage is connected to the crane girder with a friction-locked non-slip connection. The precision essential for the connection holes can be ensured by:

1. using a drilling template made by yourself (advisable when building a large number of cranes) or
2. using the endcarriage itself as a template.

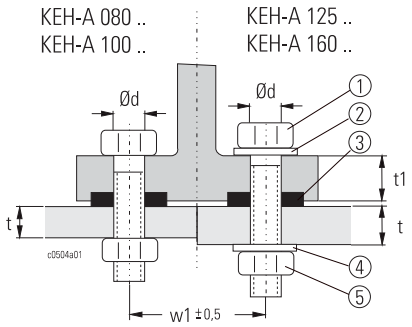
Procedure for 2:

- Lay both endcarriages onto the crane girder, align to ensure correct span and right angles
- Mark drilling pattern, remove endcarriages
- Drill connecting holes. **Pre-drilling a smaller hole increases accuracy!**

If the crane girder must be widened by means of shims, we recommend first drilling the shim and then welding it to the crane girder
(see "Preparing crane girder").

KEH-A ..					I b2 ≤ 196		Π b2 ≤ 296	
	Ød	w1	b1	w2	b1	w2	b1	w2
	[mm]							
080 10.1E	13	62	≥180	120	≥350	250	-	-
080 18.1E								
080 25.1E	17	70	≥300	150	≥350	250	-	-
100 18.1E							≥450	350
100 25.1E								
125 25.1E	21	95			≥400	260	≥500	360
160 25.1E	25							

2.1 Assembly of endcarriage

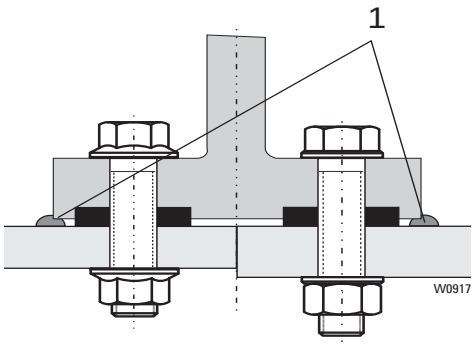


2.1.8 Endcarriage type KEH-A (continued)

Assembly of endcarriage and crane girder

- Hammer washers (3) into the recesses in the endcarriage
- Fix bolt connection parts (1) and (5) (KEH-A 080, 100) or (1), (2), (4), (5) and (6) (KEH-A 125, 160).
  Use only original connection parts!
- Remove rust, grease, paint, etc. from contact surfaces between endcarriage and crane girder
- Tighten bolt connections as specified
- Check span and that endcarriages are parallel and at right-angles.

KEH-A ..	t	t1	①	②	③	④	⑤	C *1
	[mm]							[Nm]
080 10.1E	10-23	20	M12x60 10.9 vz	-	25x13x8	-	M12-10 vz	130
080 18.1E								
080 25.1E	12-25	21	M16x70 10.9vz	-	36x17x8	-	M16-10 vz	330
100 18.1E								
100 25.1E		22						
125 25.1E	15-20	23	M20x80 DIN 6914vz	21 DIN 6916 vz	42x21x10	2x ②	M20 DIN 6915 vz	450
	21-25					1x ②		
160 25.1E	17-20	24	M24x85 DIN 6914vz	25 DIN 6916 vz	48x25x10	2x ②	M24 DIN 6915 vz	800
	21-25					1x ②		



2.1.9 Outdoor application

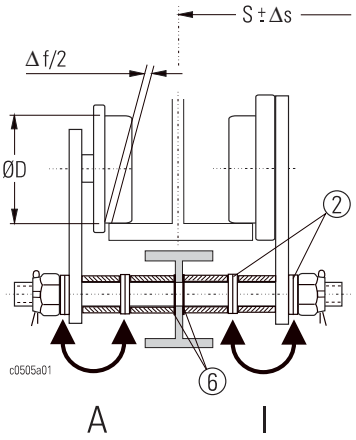
- Seal gap between endcarriage and crane girder with sealant, see sketch.

*1 Values apply for original parts from manufacturer, galvanised and greased with MoS2

2.2 Adjustment to crane runway

Endcarriage type KEH-A

Adjusting flange width and correcting span
The endcarriages are adjusted in the works to the flange width specified in the order. This can be corrected by shifting distance washers (2).
See tables page 12 - 15.



The eccentricity arising must not exceed max. 3 mm, the total washer thickness of a travel unit must not be altered.

The correction must be identical on both travel units of an endcarriage.

2.2.1 Increasing play

By shifting distance washers (2) from outside to inside:
- Shift at (A) and (I).

KEH-A ..	ØD	±Δf	±Δs
	[mm]		
080 ...	80	1,5/3	1,5/3/4,5/6
100 ...	100		
125 ...	125	3	3/6
160 ...	160		

If only one side of an endcarriage is altered, the opposite side of the other endcarriage must be altered correspondingly :
- Left-hand endcarriage: inside
- Right-hand endcarriage: outside

If the play is altered on only one endcarriage, the other is subject to increased wear.

2.2.2 Increasing span

By shifting distance washers (2) on one or both endcarriages from inside to outside on the inside of the crane runway, and from outside to inside on the inside of the crane runway.

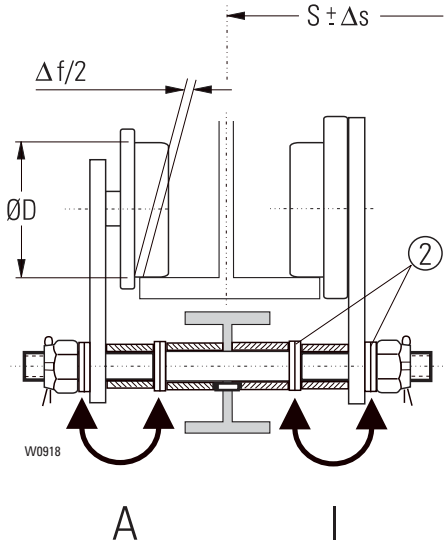
2.2.3 Reducing span

By shifting distance washers (2) on one or both endcarriages from outside to inside on the inside of the crane runway, and from inside to outside on the outside of the crane runway.

2.2 Adjustment to crane runway

Endcarriage type KEH-A

2.2.4 Table for adjustment KEH-A 080



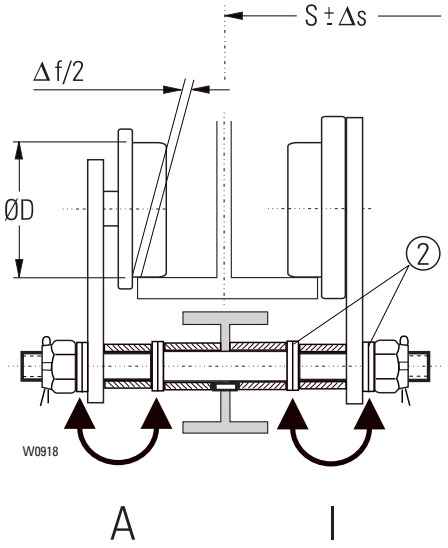
l	IPE	IPB IPBl	"	ØD	b	a	d	e1	e2	Δf	l	l1	c	*
				[mm]										
-	140	-	-	80	73	76	130	4,5	22,5	3	304	25,4	60,4	8 x 3 mm + 2 x 1,5 mm
160	-	-	-		74	76	130	4,5	22,5	3,2				
-	-	-	3		76,2	79	133	6	21	3,9				
180	-	-	-		82	85	139	9	18	4,3				
-	180	-	-		82					3				
-	-	-	3,5		88,9	94	148	13,5	13,5	6,2				
200	-	-	-		90					5,3				
-	180	-	-		91					3				
220	-	-	-		98	100	154	16,5	10,5	3,4				
-	200	-	-		100	103	157	18	9	3				
-	-	-	4		101,6-102,4	106	160	19,5	7,5	5,6-4,3				
240	-	-	-		106	109	163	21	6	4,5				
-	220	-	-		110	115	169	24	3	5				
260	-	-	-		113	115	169	0	27	3,5	352	49,4	108,4	
280	-	-	-		119	121	175	3	24	3,6				
-	240	-	-		120	124	178	4,5	22,5	4				
-	-	-	5		124-126	127	181	6	21	3,7-1,7				
300	-	-	-		125					3,7				
320	-	-	-		131	133	187	9	18	3,8				
-	-	-	5,25		133-134	136	190	10,5	16,5	3,7-2,7				
-	270	-	-		135	139	193	12	15	4				
340	-	-	-		137					3,8				
-	-	140	-		140	145	199	15	12	5				
-	-	-	5,5		141,8-142,4					3,9-3,3				
360	-	-	-		143					3,9				
-	-	-	5,75		146-147	151	205	18	9	5,7-4,7				
380	-	-	-		149					4				
-	300	-	-		150	154	208	19,5	7,5					
-	-	-	6		152-154	157	211	21	6	5,7-3,7				
400	-	-	-		155	157	211	0	27	4,1	394	70,4	150,4	
-	330	160	-		160	163	217	3	24	3				
425	-	-	-		163	166	220	4,5	22,5	4,2				
-	-	-	6,5		165-167	169	223	6	21	4,7-2,7				
450	-	-	-		170	172	226	7,5	19,5	4,3				
-	360	-	-			175	229	9	18	5				
-	-	-	6,75		171-173					4,7-2,7				
475	-	-	-		178	181	235	12	15	5,4				
-	-	-	7		178-180	184	238	13,5	13,5	6,7-4,7				
-	400	180	-		180					4				
500	-	-	-		185	187	241	15	12	4,4				
-	450	-	-		190	196	250	19,5	7,5	6				
-	-	-	7,5		190-193					6,7-3,7				
550	-	-	-		200	203	257	0	27	5,6	440	93,4	196,4	
-	500	200	-			206	260	1,5	25,5	6				
-	-	-	8,25		209-212	215	269	6	21	6,7-3,7				
-	550	-	-		210					5				
600	-	-	-		215	218	272	7,5	19,5	5,8				
-	600	-	-		220	224	278	10,5	16,8	4				
-	-	-	9		228-230	233	287	15	12	5,7-3,7				
-	-	240	-		240	245	299	21	6	5				
-	-	260	-		260	266	320	1,5	25,5	6	500	123,4	256,4	
-	-	280	-		280	284	338	10,5	16,5	4				
-	-	300	-		300	305	359	21	6	5				

* Washers per side A and I, number x thickness [mm]

2.2 Adjustment to crane runway

Endcarriage type KEH-A

2.2.5 Table for adjustment KEH-A 100



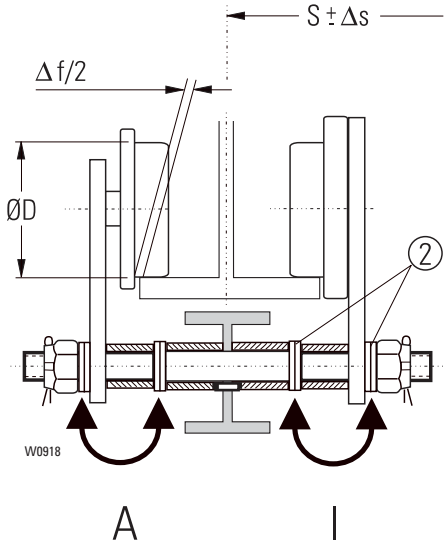
l	IPE	IPB IPBl	"	ØD	b	a	d	e1	e2	Δf	l	l1	c	*
				[mm]										
-	-	-	3,5	100	88,9*1	94	148	13,5	13,5	6,3	314	20,4	50,4	8 x 3 mm + 2 x 1,5 mm
200	-	-	-		90*1					5,4				
-	180	-	-		91*1					3				
220	-	-	-		98	100	154	16,5	10,5	3,5				
-	200	-	-		100	106	160	19,5	7,5	6				
-	-	-	4		101,6-102,4					5,7-4,4				
240	-	-	-		106	109	163	21	6	4,6				
-	220	-	-		110	115	169	24	3	5				
260	-	-	-		113	115	169	0	27	3,6	362	44,4	98,4	
280	-	-	-		119	121	175	3	24	3,7				
-	240	-	-		120	124	178	4,5	22,5	4				
-	-	-	5		124-126	127	181	6	21	3,8-1,8				
300	-	-	-		125					3,8				
320	-	-	-		131	133	187	9	18	3,9				
-	-	-	5,25		133-134	136	190	10,5	16,5	3,8-2,8				
-	270	-	-		135	139	196	12	15	4				
340	-	-	-		137					3,9				
-	-	140	-		140	145	199	15	12	5				
-	-	-	5,5		141,8-142,4					4,0-3,4				
360	-	-	-		143					4				
-	-	-	5,75		146-147	151	205	18	9	5,8-4,8				
380	-	-	-		149					4,1				
-	300	-	-		150	154	208	19,5	7,5	4				
-	-	-	6		152-154	157	211	21	6	5,8-3,8				
400	-	-	-		155	157	211	0	27	4,2	404	65,4	140,4	
-	330	160	-		160	166	220	4,5	22,5	6				
425	-	-	-		163					5,3				
-	-	-	6,5		165-167	169	223	6	21	4,8-2,8				
450	-	-	-		170	172	226	7,5	19,5	4,3				
-	360	-	-			175	229	9	18	5				
-	-	-	6,75		171-173					4,8-2,8				
475	-	-	-		178	181	235	12	15	5,4				
-	-	-	7		178-180	184	238	13,5	13,5	6,8-4,8				
-	400	180	-		180					4				
500	-	-	-		185	187	241	15	12	4,5				
-	450	-	-		190	196	250	19,5	7,5	6				
-	-	-	7,5		190-193					6,8-3,8				
550	-	-	-		200	203	257	0	27	5,7	450	88,4	186,4	
-	500	200	-			206	260	1,5	25,5	6				
-	-	-	8,25		209-212	215	269	6	21	6,8-3,8				
-	550	-	-		210					5				
600	-	-	-		215	218	272	7,5	19,5	5,9				
-	600	-	-		220	224	278	10,5	16,5	4				
-	-	-	9		228-230	233	287	15	12	5,8-3,8				
-	-	240	-		240	245	299	21	6	5				
-	-	260	-		260	266	320	1,5	25,5	6	510	118,4	246,4	
-	-	280	-		280	284	338	10,5	16,5	4				
-	-	300	-		300	305	359	21	6	5				

* Washers per side A and I, number x thickness [mm]
*1 only KEH-A 100 18

2.2 Adjustment to crane runway

Endcarriage type KEH-A

2.2.6Table for adjustment KEH-A 125



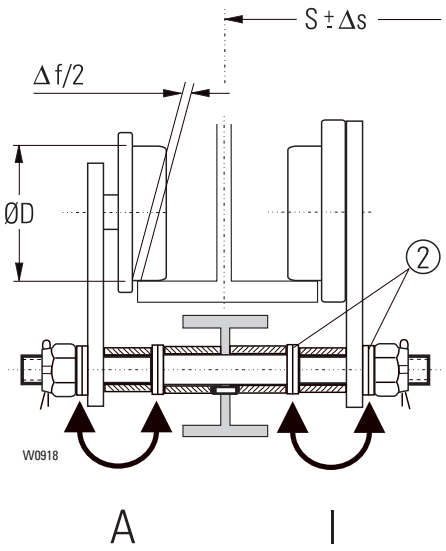
l	IPE	IPB IPBl	"	ØD	b	a	d	e1	e2	Δf	l	l1	c	*
				[mm]										
280	-	-	-	125	119	121	197	0	58,5	3,8	493	37,9	86,2	17 x 3 mm + 1 x 7,5 mm
-	-	-	5		124-126	127	203	3	55,5	3,9-1,9				
300	-	-	-		125					3,9				
320	-	-	-		131	133	209	6	52,5	4				
-	-	-	5,25		133-134	139	215	9	49,5	6,9-5,9				
-	270	-	-		135					4				
340	-	-	-		137									
-	-	-	5,5		141,8-142,4	145	221	12	46,5	4,1-3,5				
360	-	-	-		143					4,1				
-	-	-	5,75		146-147	151	227	15	43,5	5,9-4,9				
380	-	-	-		149					4,2				
-	300	-	-		150	154	230	16,5	42	4				
-	-	-	6		152-154	157	233	18	41,5	5,9-3,9				
400	-	-	-		155	157	233	18	41,5	4,2				
-	330	-	-		160	166	242	22,5	36	6				
425	-	-	-		163					5,4				
-	-	-	6,5		165-167	172	248	25,5	33	7,9-5,9				
450	-	-	-		170					4,4				
-	360	-	-			175	251	27	31,5	5				
-	-	-	6,75		171-173					4,9-2,9				
475	-	-	-		178	181	257	30	28,5	5,5				
-	-	-	7		178-180	184	260	31,5	27	6,9-4,9				
-	400	180	-		180					4				
500	-	-	-		185	187	262	33	25,5	4,6				
-	450	-	-		190	196	272	37,5	21	6				
-	-	-	7,5		190-193					6,9-3,9				
550	-	-	-		200	202	278	40,5	18	4,8				
-	500	200	-			205	281	42	16,5	5				
-	-	-	8,25		209-212	214	290	46,5	12	5,9-2,9				
-	550	-	-		210					4				
600	-	-	-		215	219	295	3	55,5	7	585	83,9	178,2	
-	600	-	-		220	225	301	6	52,5	5				
-	-	-	9		228-230	234	310	10,5	48	6,9-4,9				
-	-	240	-		240	246	322	16,5	42	6				
-	-	260	-		260	264	340	25,5	33	4				
-	-	280	-		280	285	361	36	22,5	5				
-	-	300	-		300	306	382	46,5	12	6				

* Washers per side A and I, number x thickness [mm]

2.2 Adjustment to crane runway

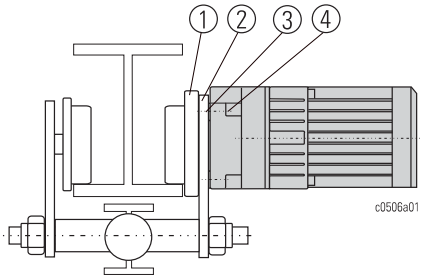
Endcarriage type KEH-A

2.2.7Table for adjustment KEH-A 160



l	IPE	IPB IPBl	"	ØD	b	a	d	e1	e2	Δf	l	l1	c	*
				[mm]										
280	-	-	-	160	119	121	197	0	52,5	4	493	37,9	86,2	15 x 3 mm + 1 x 7,5 mm
-	-	-	5		124-126	127	203	3	49,5	4,1-2,1				
300	-	-	-		125					4,1				
320	-	-	-		131	133	209	6	46,5	4				
-	-	-	5,25		133-134	139	215	9	43,5	7,1-6,1				
-	270	-	-		135					4				
340	-	-	-		137					4,1				
-	-	-	5,5		141,8-142,4	145	221	12	40,5	4,3-3,7				
360	-	-	-		143					4,3				
-	-	-	5,75		146-147	151	227	15	37,5	6,1-5,1				
380	-	-	-		149	151	227	15	37,5	4,4				
-	300	-	-		150	154	230	16,5	36	4				
-	-	-	6		152-154	157	233	18	34,5	6,1-4,1				
400	-	-	-		155	157	233	18	34,5	4,4				
-	330	-	-		160	166	242	22,5	30	6				
425	-	-	-		163					5,5				
-	-	-	6,5		165-167	172	248	25,5	27	8,1-6,1				
450	-	-	-		170					4,6				
-	360	-	-			175	251	27	25,5	5				
-	-	-	6,75		171-173					5,1-3,1				
475	-	-	-		178	181	257	30	22,5	5,7				
-	-	-	7		178-180	184	260	31,5	21	7,1-5,1				
-	400	180	-		180					4				
500	-	-	-		185	187	262	33	19,5	4,8				
-	450	-	-		190	196	272	37,5	15	6				
-	-	-	7,5		190-193					7,1-4,1				
550	-	-	-		300	202	278	40,5	12	5				
-	500	200	-			205	281	42	10,5					
-	-	-	8,25		209-212	214	290	46,5	6	6,1-3,1				
-	550	-	-		210					4				
600	-	-	-		215	219	295	3	49,5	7,2	585	83,9	178,2	
-	600	-	-		220	225	301	6	46,5	5				
-	-	-	9		228-230	234	310	10,5	42	6,9-4,9				
-	-	240	-		240	246	322	16,5	36	6				
-	-	260	-		260	264	340	25,5	27	4				
-	-	280	-		280	285	361	36	16,5	5				
-	-	300	-		300	306	382	46,5	6	6				

2.3 Assembly of travel drive



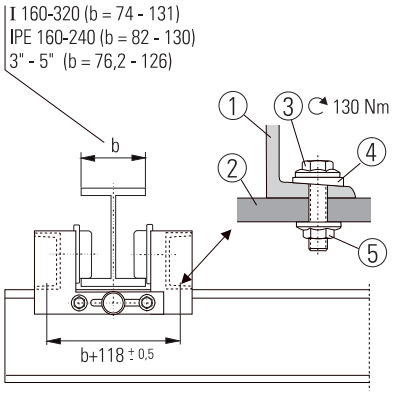
In standard version, the endcarriages are supplied with travel drives. If a different travel drive is to be fitted, the suitability of the motor output must be checked.
See Product Information "Crane components".

Assembly:
- Grease wheel gearing (1) (Grease GOOF-20, e.g. SHELL Special Gear Grease)
- Push travel drive into centering hole in travel unit side cheek (2)
- Fit distance rings (3) (25x11x5) (only on KEH-A 125 with SF 11..)
- Screw in fixing screws (4) and tighten as specified (M8 = 25 Nm, M10 = 51 Nm)
- Electrical connection,
  see "Travel drives" in these operating instructions.

* Washers per side A and I, number x thickness [mm]

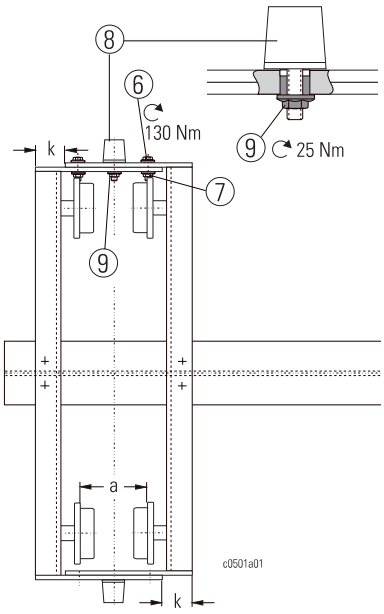
2.4 Assembly of crane

2.4.1 Crane with endcarriage type KEH-B 080



End of crane runway accessible

- On the preassembled crane, see page 8, bolt the two side cheeks (1) not yet assembled to the crane girder (2) with parts (3) - (5). Screw down loosely.
- Bolt opposing side cheeks together (6) - (7), screw down loosely.
- Align newly assembled side cheeks to flange spacing (dimension a or k).
- Screw down all screws (3) - (5) and (6) - (7) as per specification with 130 Nm.
- Attach rubber buffer (8) by means of special nut (9), tightening torque 25 Nm; it must be in the centre of the crane runway.
- Raise crane.
- Move crane onto crane runway from open end. Ensure the electrical connection is on the correct side.



End of crane runway not accessible

- Lay preassembled crane, see page 8, under the crane runway so that the side for electrical connection of the crane is on the same side as the main power supply along the crane runway.
- Raise crane.
- Set crane down on the crane runway with the two assembled endcarriage halves. Lash the endcarriage halves to the crane runway to prevent the crane slipping off.
- Bolt the endcarriage halves not yet assembled loosely to the crane girder and the endcarriage halves already assembled.
- Align the endcarriage halves just assembled to dimension "k" using a caliper gauge.
- Screw down all fixing screws (3) - (5) and (6) - (7) as per specification with 130 Nm.
- Set buffer (8) in the centre of the crane runway and attach it with special nut (9); tightening torque 25 Nm.

a = b + 4 [mm]
k = b - 72 [mm]

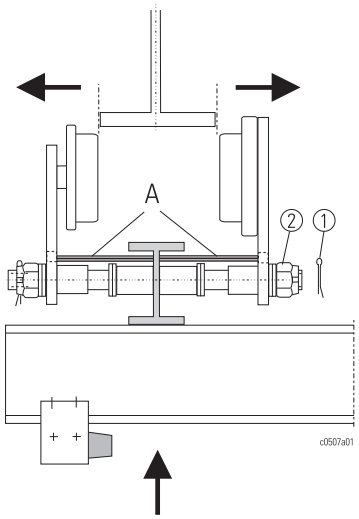
Check that the crane runs smoothly over the whole runway without jamming or increased friction at the wheel flanges. Increased friction at the flanges due to poor beam quality or incorrect adjustment of the endcarriage may lead to temperature rise or increased wear. This must be avoided at all costs.

2.4 Assembly of crane

2.4.2 Crane with endcarriage type KEH-A

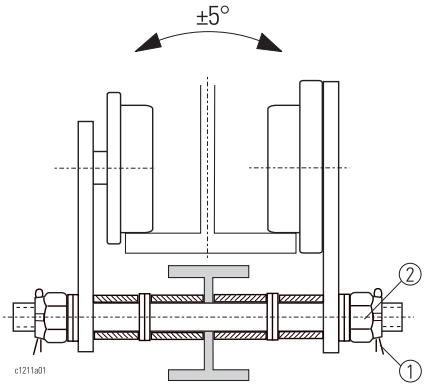
End of crane runway accessible

- Raise crane.
- Push crane onto runway from open end. Take care that the electrical connection is on the correct side.



End of crane runway not accessible

- Lay crane under crane runway so that the electrical connection of the crane is on the same side as the main power supply along the crane runway
- Remove split pins (1) from the castellated nuts on the inside of the crane (2) and unscrew the castellated nuts (2)
- Pull the endcarriage side cheeks apart
  N.B.: A special mounting tool (A) prevents the side cheeks from pivoting when they have been unscrewed and thus facilitates assembly.
  See Product Information "Ex hoists and crane components".
- Raise crane.
- Lift crane onto crane runway, push endcarriage side cheeks together, tighten castellated nuts and set crane down on crane runway
- Tighten castellated nuts and **then unscrew them by 2 holes for split pin (M30+M36) or 4 holes for split pin (M48).**
- Fit split pin (4).



Caution:
The drive unit of the endcarriage must be able to swivel approx. 5° to both sides!

heck that the crane runs smoothly over the whole runway without jamming or increased friction at the wheel flanges. Increased friction at the flanges due to poor beam quality or incorrect adjustment of the endcarriage may lead to temperature rise or increased wear. This must be avoided at all costs.

2.5 Inspection and maintenance table

This section deals with the operational reliability, availability, and maintaining the value of your crane endcarriages.
Although they are practically maintenance-free, the components subject to wear must be inspected regularly. This is required by the accident prevention regulations.

General information on inspection and maintenance

- Maintenance and repair work may only be carried out when the crane is not under load.
- Switch off and padlock main isolator.

Inspection and maintenance may only be performed by qualified personnel, see page 2.

Please also note the "Safety instructions" on page 5.
Wearing parts, see page 51.

No.	Inspection on commissioning*1	Daily inspection on starting work *2	Periodic inspections every 12 months *3	Periodic maintenance every 12 months *2	Maintenance after 10 years or general overhaul *4		**Inspection and maintenance table** (Classification: 1 Bm)	See page
1	●		●	●			Firm seating of bolt connections	44
2	●		●	●			Attachment of/damage to buffer	37
3	●		●	●			Check wheel for damage to circumference and flange Check runway and buffers	19
4			●				Travel drive: attachment	44
5	●	●	●				Check braking effect of travel drive	42
6	●			●	●		Wheel gearing: wear, **lubrication** (grease KP1K, e.g. Aralub PMD1)	43
7	●						Oil level	40
8					●		Change oil/grease in travel drive	43

*1 By a fitter engaged by the manufacturer
*2 By the operator
*3 Periodic maintenance every 12 months, possibly earlier if so prescribed by national regulations, to be performed by a fitter engaged by the manufacturer.
Similarly, heavy-duty applications and adverse conditions (dirt, solvents, multi-shift operation etc.) necessitate shortening this inspection and maintenance interval.
*4 In manufacturer's works.

2.6 Maintenance work

2.6.1 Wheels, wheel drive and runway

- Visual inspection of wheels for wear. See tables for limits for wear.
- Visual inspection of wheel flanges for wear.
  A high degree of wear on the flanges indicates that the crane cants or is running with its weight heavily on one side. The causes of this must be ascertained and eliminated.
- Check roller bearings in wheel for uneven running and abnormal noises. Move endcarriage and spin wheels if possible.
- Visual inspection of crane runway for wear.
  The rails must be laid parallel within the permissible tolerances (see page 34) to prevent the crane jamming. Rail joints must provide a smooth surface to avoid impact and deformation.
- Inspection of buffer and buffer stop.
  Ensure that the buffer impact is taken up by the centre of the stop elements provided and that the materials exhibit no detrimental characteristics (rusty parts etc.).

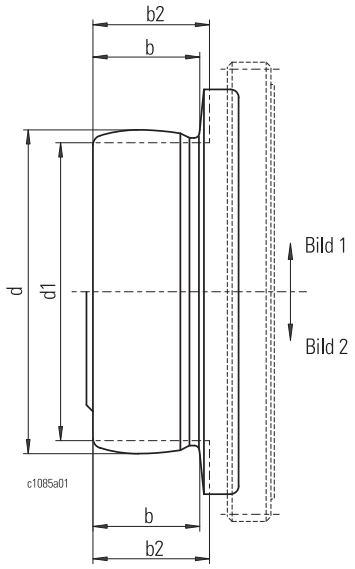
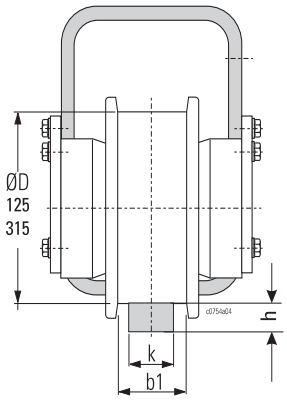


Fig.	Nominal value		Limit for wear	
	d [mm]	b [mm]	**d1** [mm]	**b2** [mm]
1	80	27.5	**76**	**29,5**
1	100	33	**95**	**35**
1	125	38	**119**	**40**
1	140	44.5	**133**	**47**
2		42.5		**45**
1	160	44.5	**152**	**47**
2	200	42.5	**190**	**45**

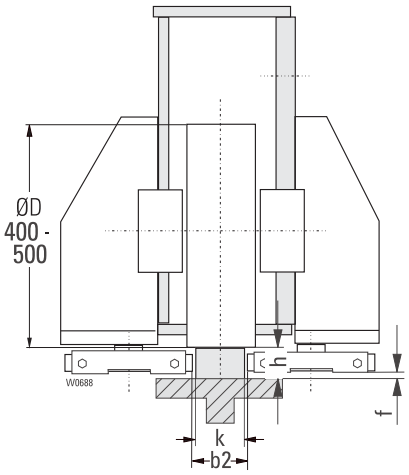
If <u>any one</u> of the limits for wear b2 or d1 is attained, the wheel must be replaced.

3.1 Assembly of endcarriage

The endcarriage is supplied as standard fitted with wheelsets, end buffers, travel drive and endcarriage connection plates.



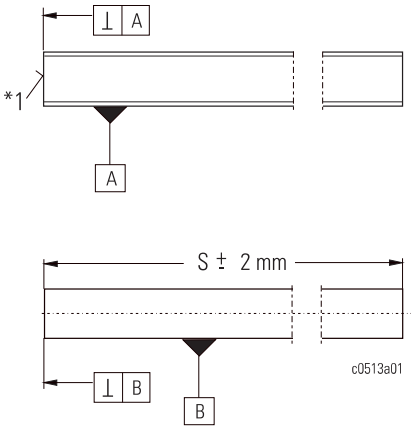
- Check that the capacity of the endcarriage is adequate for the intended application of the crane.
- Check that the wheel tread corresponds to the crane rail, ↑ sketch and table.
- The rail joints must be even on both running and guide surfaces; grind down if necessary.
- Check that the crane runs smoothly over the whole runway without jamming or increased friction at the wheel flanges. Increased friction at the flanges due to poor beam quality or incorrect crab adjustment may lead to temperature rise or increased wear. This must be avoided at all costs.
- Check whether clearance (h) between top of rail and top of crane runway or, in the case of guide rollers, rail attachment corresponds to the value given in the table, see sketch and table.



ØD	k	b1	b2*2	h
		[mm]		
125	40 50	50 60	50 60	≥ 30
160	40 50	52 62	52 62	≥ 30
200 315	40 50 60	54 64 74	54 64 74	≥ 30
400	50 60	65 75	53 63	≥ 40*3 ≥ 45
500	50 60 70 100	53 63 73 103	53 63 73 100	≥ 40*3 ≥ 45

3.1.1 On assembly

Perfect crane geometry is achieved by particularly careful assembly of endcarriage and crane girder. This guarantees smooth running of the crane causing little wear.



3.1.2 Preparation of crane girder

- The ends of the crane girder must be cut off at right angles in both vertical and horizontal plane
- Length of crane girder S ± 2 mm
- Remove rust, dust, oil, paint and other impurities from the area to be welded
- Prepare welds as necessary.

*1 Free of rust, dust, oil, paint and other impurities!
*2 With guide rollers (option for D125 - D400)
*3 Without guard plate (guard plate not required if clearance between bottom of guide roller and obstruction beneath is <15 mm over the whole crane path.

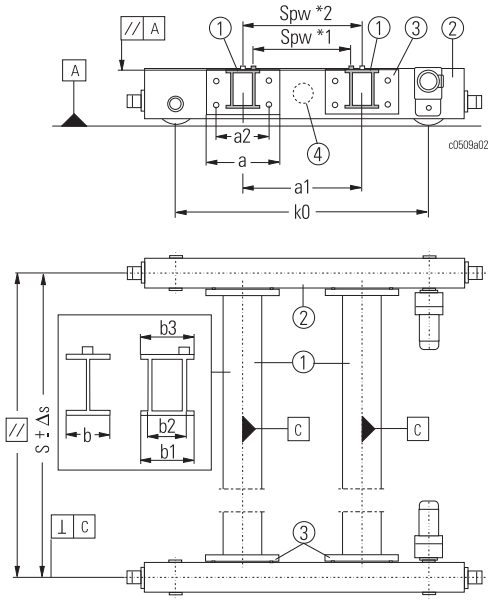
3.1 Assembly of endcarriage

3.1.3 Connection "at side" - Ø 125 - 315

Welding connection plate

- Align crane girder (1) to endcarriage (2)
- Tack weld end of crane girder (1) to connection plate (3) bolted to endcarriage
- Remover covers (4) from handholes
- Remove connection plate(s) from endcarriage and weld to crane girder as specified.

KZL-. ..



Type				I		∏			
	k 0	Spw	a	b <= 300 mm		b1 = 300 mm b 2 ≥ 250 ≤ 266 mm b 3 <= 340 mm		b1 = 500 mm b 2 ≥ 450 ≤ 466 mm b 3 <= 540 mm	
				a 1	a 2	a 1	a 2	a 1	a 2
KZL-. ..	[mm]								
KZL-S 160.2.20.04.140	2000	1250	490	1250	400	1250	400	-	-
KZL-S 160.2.25.04.140	2500	1250	490	1250	400	1250	400	-	-
KZL-S 160.2.25.04.540				-	-	1506			
KZL-S 160.2.31.05.140	3150	1400	490	1400	400	1400	400	-	-
KZL-S 160.2.31.05.540				-	-	1656			
KZL-S 200.2.20.04.136	2000	1250	460	1250	360	-	-	-	-
KZL-S 200.2.25.05.136	2500	1400	460	1400	360	1400	360	-	-
KZL-S 200.2.25.05.156			660	-	-	-	-	1400	560
KZL-S 200.2.25.05.536			460	-	-	1656	360	-	-
KZL-S 200.2.31.05.136	3150	1400	460	1400	360	1400	360	-	-
KZL-S 200.2.31.05.156			660	-	-	-	-	1400	560
KZL-S 200.2.31.05.536			460	-	-	1656	360	-	-
KZL-S 200.2.31.05.556			660	-	-	-	-	1856	560
KZL-S 200.2.40.10.136	4000	2240	460	2240	360	2240	360	-	-
KZL-S 200.2.40.10.156		2240	660	-	-	-	-	2240	560
KZL-S 200.2.40.10.536		2240	460	-	-	2496	360	-	-
KZL-S 200.2.40.10.556		2240	660	-	-	-	-	2696	560
KZL-S 200.2.40.12.136		2500	460	2500	360	2500	360	-	-
KZL-S 200.2.40.12.156		2500	660	-	-	-	-	2500	560
KZL-S 200.2.40.14.136		2800	460	2800	360	2800	360	-	-
KZL-S 200.2.40.14.156		2800	660	-	-	-	-	2800	560
KZL-S 315.3.25.05.136	2500	1400	460	1400	360	1400	360	-	-
KZL-S 315.3.25.05.156			660	-	-	-	-	1400	560
KZL-S 315.3.25.05.536			460	-	-	1656	360	-	-
KZL-S 315.3.31.05.136	3150	1400	460	1400	360	1400	360	-	-
KZL-S 315.3.31.05.156			660	-	-	-	-	1400	560
KZL-S 315.3.31.05.536			460	-	-	1656	360	-	-
KZL-S 315.3.31.05.556			660	-	-	-	-	1856	560
KZL-S 315.3.40.10.136	4000	2240	460	2240	360	2240	360	-	-
KZL-S 315.3.40.10.156		2240	660	-	-	-	-	2240	560
KZL-S 315.3.40.10.536		2240	460	-	-	2496	360	-	-
KZL-S 315.3.40.10.556		2240	660	-	-	-	-	2696	560
KZL-S 315.3.40.12.136		2500	460	2500	360	2500	360	-	-
KZL-S 315.3.40.12.156		2500	660	-	-	-	-	2500	560
KZL-S 315.3.40.14.136		2800	460	2800	360	2800	360	-	-
KZL-S 315.3.40.14.156		2800	660	-	-	-	-	2800	560
KZL-E 315.5.31.05.136	3150	1400	460	1400	360	-	-	-	-
KZL-E 315.5.31.05.556			660	-	-	-	-	1856	560
KZL-E 315.5.31.07.136		1800	460	1800	360	-	-	-	-
KZL-E 315.5.31.07.156			660	-	-	1800	560	-	-
KZL-E 315.5.40.10.156	4000	2240	660	-	-	2240	560	-	-
KZL-E 315.5.40.10.556				-	-	-	-	2696	560
KZL-E 315.5.40.12.556		2500	660	-	-	-	-	2956	560
KZL-E 315.5.40.14.156		2800		-	-	2800	560	-	-
KZL-E 315.5.42.14.556	4260	2800		-	-	-	-	3256	560
KZL-E 315.5.42.14.156		2800		-	-	2800	560	-	-
KZL-E 315.5.42.16.156		3150		-	-	3150	560	-	-
KZL-E 315.5.45.14.556	4560	2800		-	-	-	-	3256	560

S ≤ 15 m: Δs = ±5 mm
S ≤ 20 m: Δs = ±6 mm
S ≤ 25 m: Δs = ±8 mm
S ≤ 30 m: Δs = ±9 mm
S ≤ 32,5 m: Δs = ±9,5 mm

*1 Track gauge on KZL-S 160...540, KZL-S 200...536, KZL-S 200...556, KZL-. 315...536, KZL-. 315...5..
*2 Track gauge on KZL-S 160...140, KZL-S 200...136, KZL-S 200...156, KZL-. 315...136, KZL-. 315...1..

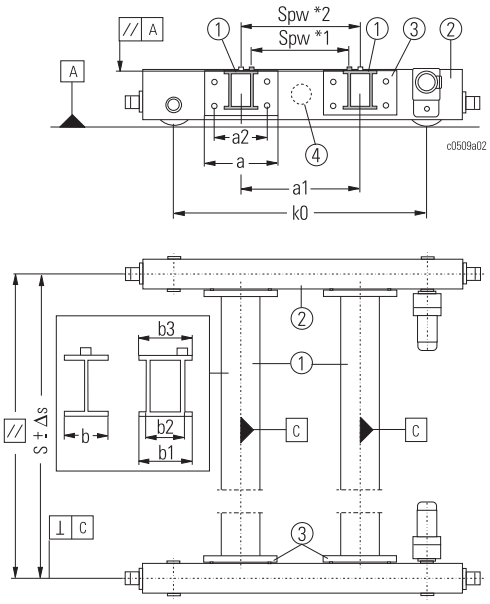
3.1 Assembly of endcarriage

3.1.3 Connection "at side"- Ø 400 - 500

Welding connection plate
You will find further dimensions and information in our Product Information "Crane components".

- Align crane girder (1) to endcarriage (2)
- Tack weld end of crane girder (1) to connection plate (3) bolted to endcarriage
- Remover covers (4) from handholes
- Remove connection plate(s) from endcarriage and weld to crane girder as specified.

KZL-. ..



Type				I		□			
	k 0	Spw	a	b <= 300 mm		b1 = 500 mm b 2 ≥ 450 ≤ 466 mm b 3 <= 540 mm		b1 = 700 mm b 2 ≥ 650 ≤ 666 mm b 3 <= 740 mm	
				a 1	a 2	a 1	a 2	a 1	a 2
KZL-. ..	[mm]								
KZL-C 400.x.31.140	3150	1400	550	1400	400	-	-		
KZL-C 400.x.31.158	3150	1400	730	-	-	1400	580		
KZL-C 400.x.31.558	3150	1400	730	-	-	1856	580		
KZL-C 400.x.40.158	4000	2240	730	-	-	2240	580		
KZL-C 400.x.40.558	4000	2240	730	-	-	2696	580		
KZL-C 400.x.42.558	4260	2500	730	-	-	2956	580		
KZL-C 400.x.45.558	4560	2800	730	-	-	3256	580		
KZL-F 500.6.31.140	3150	1400	550	1400	400	-	-	-	-
KZL-F 500.6.31.158	3150	1400	730	-	-	1400	580	-	-
KZL-F 500.6.31.558	3150	1400	730	-	-	1856	580	-	-
KZL-F 500.6.40.158	4000	2240	730	-	-	2240	580	-	-
KZL-F 500.6.40.558	4000	2240	730	-	-	2696	580	-	-
KZL-F 500.6.42.158	4260	2500	730	-	-	2500	580	-	-
KZL-F 500.6.42.558	4260	2500	730	-	-	2956	580	-	-
KZL-F 500.6.44.578	4400	2240	930	-	-	-	-	2896	-780
KZL-F 500.6.45.158	4560	2800	730	-	-	2800	580	-	-
KZL-F 500.6.45.558	4560	2800	730	-	-	3256	580	-	-
KZL-F 500.6.46.578	4660	2500	930	-	-	-	-	3156	780
KZL-F 500.6.49.578	4960	2800	930	-	-	-	-	3156	780

S ≤ 15 m: Δs = ±5 mm
S ≤ 20 m: Δs = ±6 mm
S ≤ 25 m: Δs = ±8 mm
S ≤ 30 m: Δs = ±9 mm
S ≤ 32,5 m: Δs = ±9,5 mm

3.1 Assembly of endcarriage

3.1.3 Connection "at side"

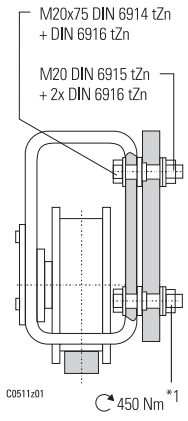
Assembly of endcarriage and crane girder
The contact surfaces between endcarriage and connection plates must be free of rust, dust, oil, grease, paint and other impurities. Remove surface rust with a wire brush.

Caution!
Impurities on the contact surfaces may cause the bolt connections to loosen. **This could cause a fatal accident!**

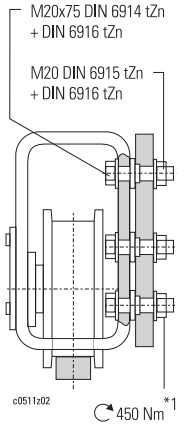
Use only original bolt connection parts!

- Bolt crane girder with connection plate welded to it to endcarriage, ↑ sketches
- Grease thread and space between hexagonal nut and washer with molybdenum disulphide (e.g. Molycote)
- Screw down bolt connection as specified
- Check that wheel camber is right-angled
- Check span
- Close handholes with covers.

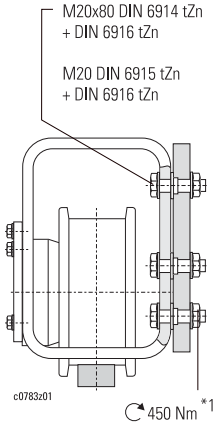
KEL-S 125



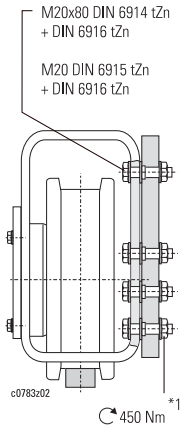
KEL-S 160



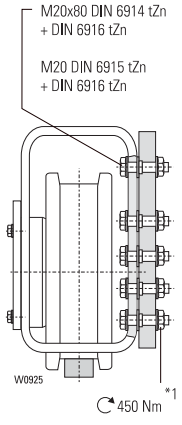
KEL-S 200



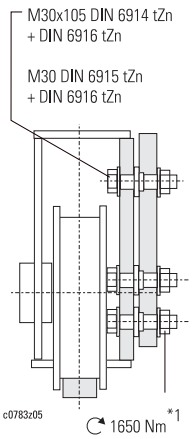
KEL-S 315



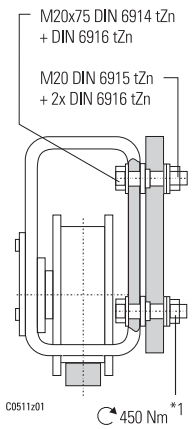
KEL-E 315



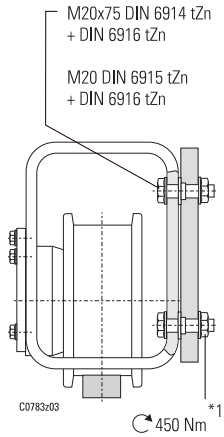
KEL-C 400



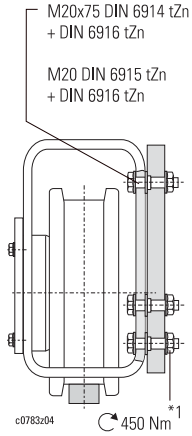
KZL-S 160



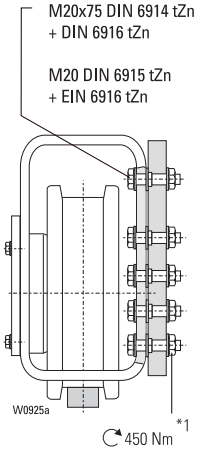
KZL-S 200



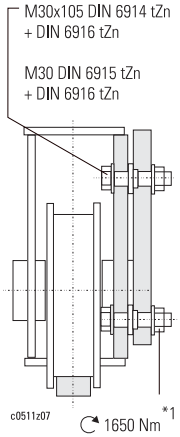
KZL-S 315



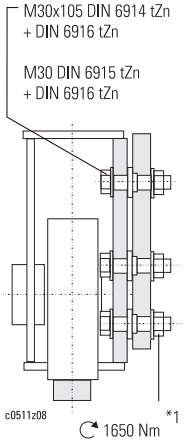
KZL-E 315



KZL-C 400



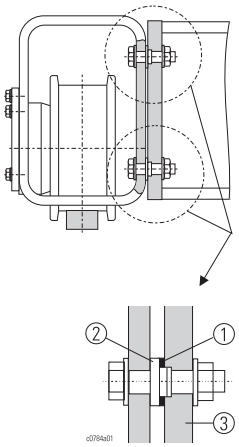
KZL-F 500



*1 Values apply for original parts from manufacturer, galvanised and greased with MoS2. (Use only original bolt connection parts).

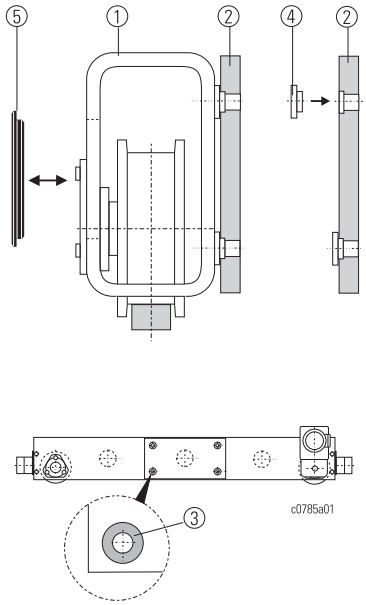
3.1 Assembly of endcarriage

3.1.3 Connection "at side" (continued)



Correcting span
The span can be increased by up to 4 mm:

- Insert adjusting washers (1) between connection plate (3) and flanged bushing (2). (Max. 2 mm on each endcarriage, minimum thickness 0.5 mm).



Off-standard designs
If undrilled endcarriages with connection plates, flanged bushings and bolt connection parts supplied loose are used, the endcarriages must first be drilled and the connection plates then bolted to them.

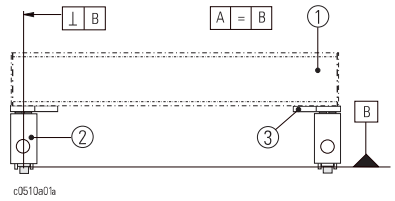
- Position the connection plate as shown in the Product Information "Crane components"
- Drill endcarriage (1). (The ready-drilled connection plates can be used as a template. Countersinks on the endcarriage are not necessary.)
- Remove paint, rust and other impurities from contact surfaces (3) on endcarriage for flanged bushings (4)
- Hammer flanged bushings (4) into countersinks of connection plate
- Remove covers (5) of handholes
- Bolt connection plate (2) to endcarriage (1) with bolt connection parts see page 23.

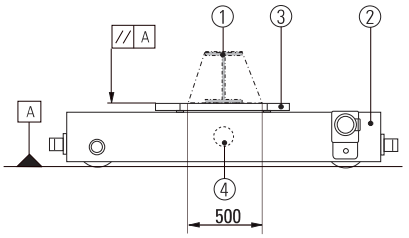
3.1 Assembly of endcarriage

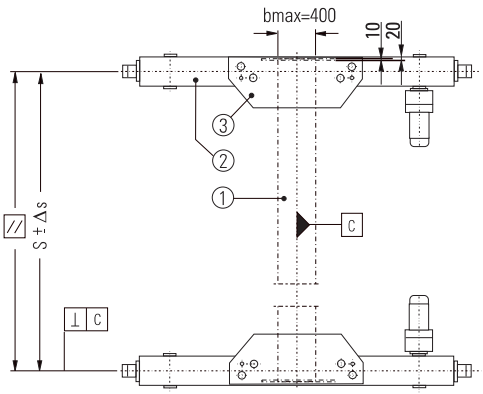
3.1.4 Connection "at top"

Welding connection plate
Please observe also dimensions and information given in our Product Information "Ex hoists and crane components".

- Align crane girder (1) with endcarriage (2)
- Tack-weld crane girder (1) to connection plate (3) bolted on endcarriage
- Remove covers (4) from handholes
- Remove connection plate(s) from endcarriage and weld to crane girder as specified.

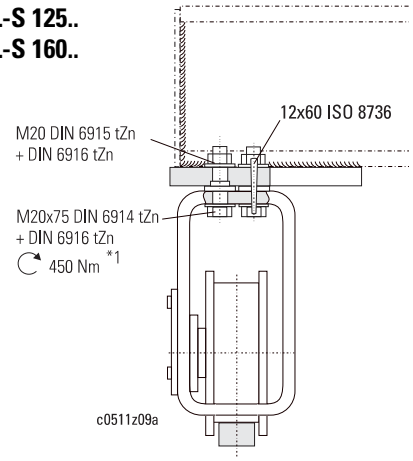




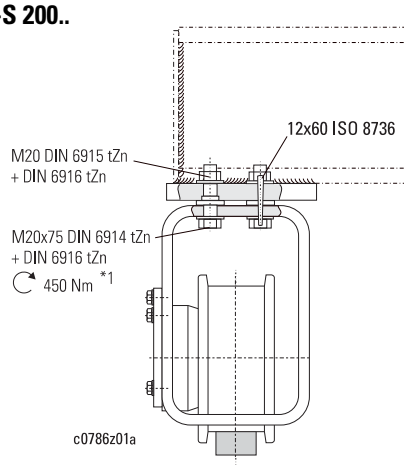


S ≤ 15 m: Δs = ±5 mm
S ≤ 20 m: Δs = ±6 mm

KEL-S 125..
KEL-S 160..



KEL-S 200..



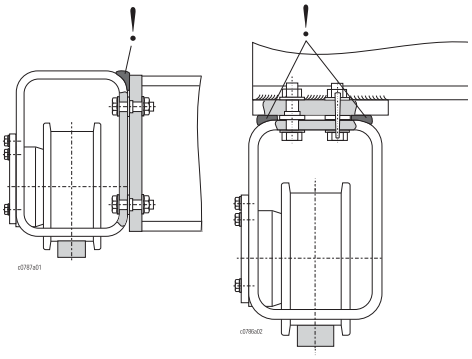
Assembly of endcarriage and crane girder
The contact surfaces between endcarriage and connection plates must be free of rust, dust, oil, grease, paint and other impurities. Remove surface rust with a wire brush.

Caution! Impurities on the contact surfaces may cause the bolt connections to loosen. **This can cause a fatal accident!**

Use only original bolt connection parts!
- Bolt crane girder with connection plate welded to it to endcarriage,↑ sketches.
- Grease thread and space between hexagonal nut and washer with molybdenum disulphide (e.g. Molycote)
- Screw down bolt connection as specified
- Check that wheel camber is right-angled
- Check span
- Use the holes (Ø12) in the connection plate as a template for the holes in the endcarriage profile (see sketch). Ream them with a taper reamer.
  - If the crane is to be transported fully assembled, insert the tapered pins (12x60) now.
  - If the crane is to be transported dismantled, insert the tapered pins (12x60) during final assembly on site.
- Tighten bolt connection as specified
- Close handholes with covers.

*1 Values apply for original parts from manufacturer, galvanised and greased with MoS2.
• Use only original bolt connection parts!

3.1 Assembly of endcarriage



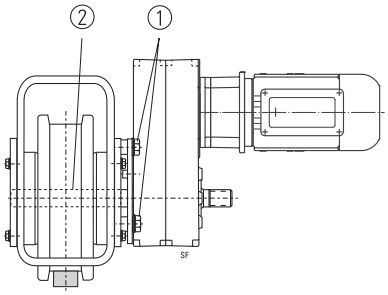
3.1.5 Outdoor application

- For outdoor applications, seal gap between connection plate and endcarriage with sealant at top and sides, see sketch.

3.2 Assembly of travel drive

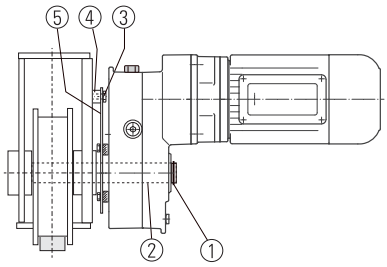
The SF, SU-A and SA-C travel drives are high-quality drives with smooth starting and braking characteristics as are particularly required for material handling.

The endcarriages are supplied as standard with travel drives. If a different travel drive is to be fitted, the suitability of the motor output must be checked.



3.2.1 Fitting travel drive SF...:

- Take note of installation position.
- Push travel drive into the greased hub of wheel (2)
- Bolt travel drive with torque support to endcarriage with bolts (1) (M8 = 25 Nm, M12 = 87 Nm, M16 = 215 Nm)
- The contact surfaces of the torque support must be free of paint.
- Complete electrical connection as per circuit diagram (see page 38).



3.2.2 Fitting travel drive SA-C..:

- Remove circlip (1)
- Grease gear profile (2) of wheel shaft. (Grease KP1K, e.g. Aralub PMD1)
- Push travel drive onto wheel shaft
- Bolt torque support (5) to endcarriage with bolts (3) and spacer part (4) (M12 = 87 Nm, M16 = 215 Nm)
- The contact surfaces of the torque support must be free of paint.
- Replace circlip (1)
- Complete electrical connection as per circuit diagram (see page 38).

3.3 Inspection and maintenance table

This section deals with the operational reliability, availability, and maintaining the value of your endcarriages.
Although they are practically maintenance-free, the components subject to wear must be inspected regularly. This is required by the accident prevention regulations.

General information on inspection and maintenance

- Maintenance and repair work may only be carried out when the crane is not under load.
- Switch off and padlock main isolator.

Please also note the "Safety instructions" on page 5.
Wearing parts, see page 51.

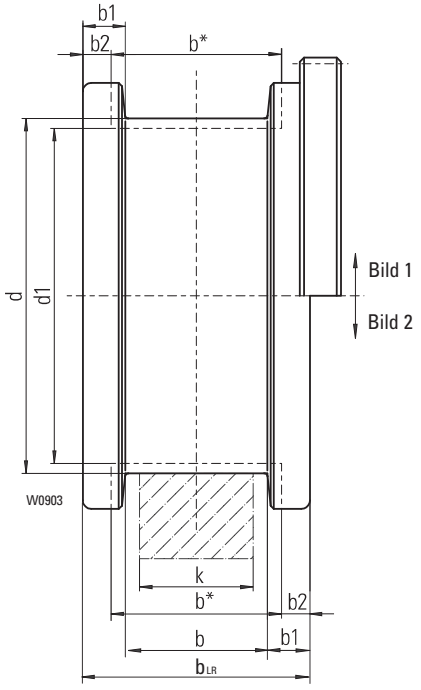
No.	Inspection on commissioning*1	Daily inspection on starting work *2	Periodic inspections every 12 months *3	Periodic maintenance every 12 months *2	Periodic maintenance after 4000 operating hours or 48 months *1, *4	Maintenance after 10 years or general overhaul *5	**Inspection and maintenance table** (Classification: 1 Bm)	See page
1	●		●	●			Firm seating of bolt connections	44
2	●		●	●			Attachment of/damage to buffer	37
3	●		●	●			Check wheel for damage to circumference and flange Check runway and buffers Replace wheel if clearance (f) between bottom of guide roller and top of crane runway or rail attachment is <2 mm.	28 20
4			●				Travel drive: attachment, torque support	44
5	●	●	●				Check braking effect of travel drive	42
6			●	●			Measure brake displacement	40
7	●			●		●	Wheel gearing: wear, **lubrication** (grease KP1K, e.g. Aralub PMD1)	43
8	●						Oil level	40
9					●		Lubricate self-aligning roller bearings (K.L-E 315)	
10						●	Change gear oil/gear grease of travel drive	43

*1 By a fitter engaged by the manufacturer
*2 By the operator
*3 Periodic maintenance every 12 months, possibly earlier if so prescribed by national regulations, to be performed by a fitter engaged by the manufacturer.
Similarly, heavy-duty applications and adverse conditions (dirt, solvents, multi-shift operation etc.) necessitate shortening this inspection and maintenance interval.
*4 In the case of high ambient temperatures or danger of dirt accumulation the lubrication intervals must be reduced accordingly
*5 In manufacturer's works.

3.4 Maintenance work

3.4.1 Wheels, wheel drive and runway

- Visual inspection of wheels for wear. See table for limits for wear.
- Visual inspection of wheel flanges for wear.
  A high degree of wear on the flanges indicates that the crane cants or is running with its weight heavily on one side. The causes of this must be ascertained and eliminated. The running characteristics can be improved by using a guide system. This avoids abrasion and the play of the track gauge can be reduced.
- Check roller bearings in wheel for uneven running and abnormal noises. Move endcarriage and spin wheels if possible.
  Visual inspection of crane runway for wear.
  The rails must be laid parallel within the permissible tolerances (see page 34) to prevent the crane jamming. Rail joints must provide a smooth surface to avoid impact and deformation.
- Inspection of buffer and buffer stop.
  Ensure that the buffer impact is taken up by the centre of the stop elements provided and that the materials exhibit no detrimental characteristics (rusty parts etc.).

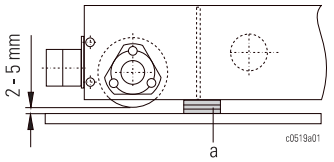


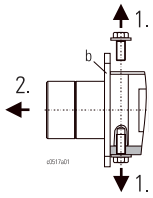
			Nominal value				Limit for wear			
Bild	d	bLR	b	k		b1	d1	b2	max play=b*-k	
									kmin	kmax
[mm]										
1	100	80	50	40	45	15	95	5,5	13	13
		80	60	50	55	10		5,5	13	13
2	125	80	50	40	45	15	118,75	7	13	13
		80	60	50	55	10		7	13	11
2	160	85	52	40	45	16,5	152	8	16	16
		85	62	50	55	11,5)		13,5	18	18
2	200	100	54	40	45	23	190	10,5	18	18
		100	64	50	55	18		10,5	18	18
		100	74	60	65	13		10,5	18	14
2	315	115	54	40	45	30,5 (29)	300	13,5	18	18
		115	64	50	55	25,5 (24)		13,5	18	18
		115	74	60	65	20,5 (19)		13,5	18	18
		130	64	50	55	33	305	13,5	18	18
		130	74	60	65	28		13,5	18	18
		130	84	70	75	23		13,5	18	18
		130	94	80	85	18		13,5	18	18
2	400	118,5	65	50	55	27,5 (26)	385	16	20	20
		118,5	75	60	65	22,5 (21)		16	20	20
		118,5	85	70	75	17,5 (16)		16	16,5	11,5
	500	120					485	-	-	-

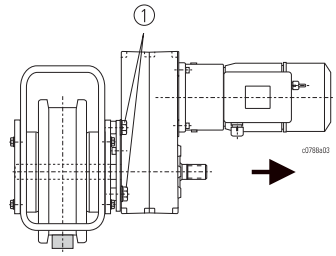
If <u>any one</u> of the limits for wear d1, b2, (b*-k) is attained, the wheel must be replaced.

( ) on machined surfaces

3.4 Maintenance work (continued)







3.4.2 Dismantling wheel

Before dismantling:

- Jack endcarriage up until the flanges are free. Then secure endcarriage with shims (a).
- Unscrew and pull out buffer plate (b).
- Removing SF .., SA-C ... travel drive: Remove bolts (1) on torque support. Pull travel drive off wheel shaft.

3.4.2 Dismantling wheel

KEL-S 125.. and K.L-S 160..

- Unscrew bolts of bearing covers, Fig. 1
- Move wheel and bearing with puller until wheel rests against recess in endcarriage section (x1), Fig. 2
- Screw bolt of bearing cover (c) into threaded hole of endcarriage section until it rests against wheel (x2), Fig. 2
- Pull off wheel shaft, rescue spacer ring, Fig. 3
- Roll wheel forwards out of endcarriage.

Fig. 1

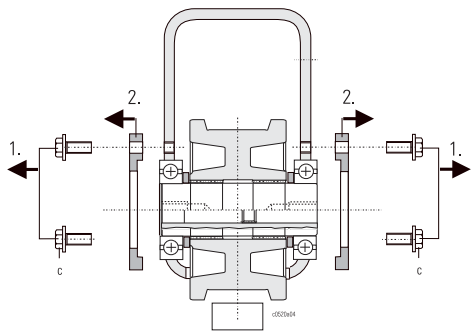


Fig. 2

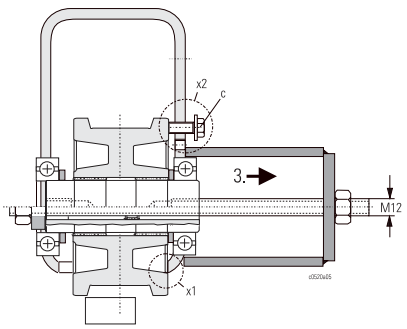
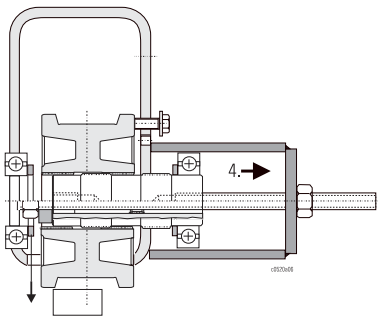


Fig. 3



3.4 Maintenance work (continued)

3.4.2 Dismantling wheel
K. L-S 200 and K. L-S 315

- Unscrew bolts of bearing covers, Fig. 4
- Press bearing covers off with 2 bolts, Fig. 5
- Roll wheel forwards out of endcarriage.

Fig. 4

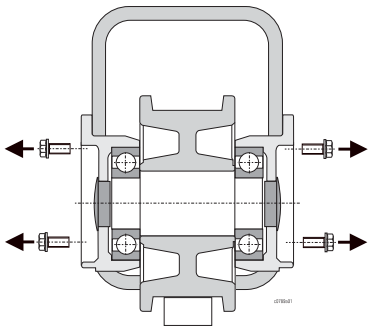
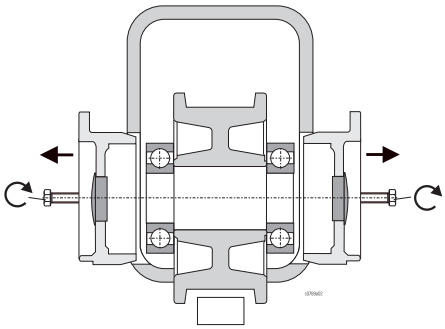


Fig. 5



3.4.2 Dismantling wheel
K.L-E 315

- Remove plastic cap and circlip from wheel shaft, Fig. 8 and 9.
- Pull wheel shaft out of wheel on drive side, Fig. 8 and 9.
- Remove bolts of bearing flanges, except the top centre bolt on the endcarriage side (to secure bolt), Fig. 6-9.
- Press bearing flanges off with 2 bolts, Fig. 7 und 9.
- Roll wheel forwards out of endcarriage.

Fig. 6

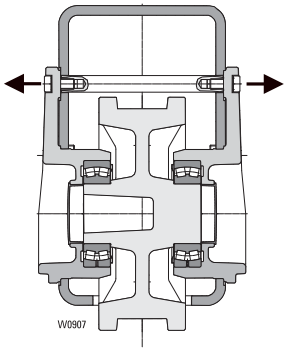


Fig. 7

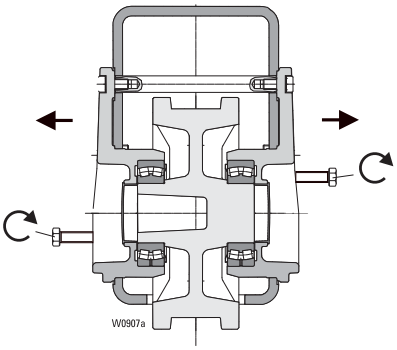


Fig. 8

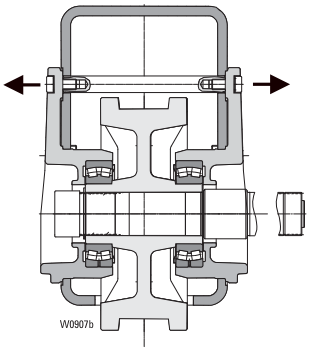
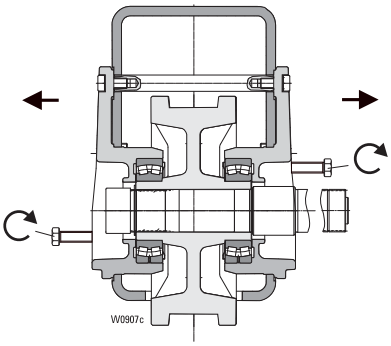


Fig. 9



3.4.2 Dismantling wheel

K. L-C 400 and KZL-F 500

- Remove bearing covers and circlips, Fig. 6
- Remove wheel shaft off with puller, Fig. 7. **Caution:** The wheel axle can only be removed towards the side with the visible marking groove and the wheel shaft only towards the travel drive side.
- Roll wheel forwards out of endcarriage.

Fig. 10

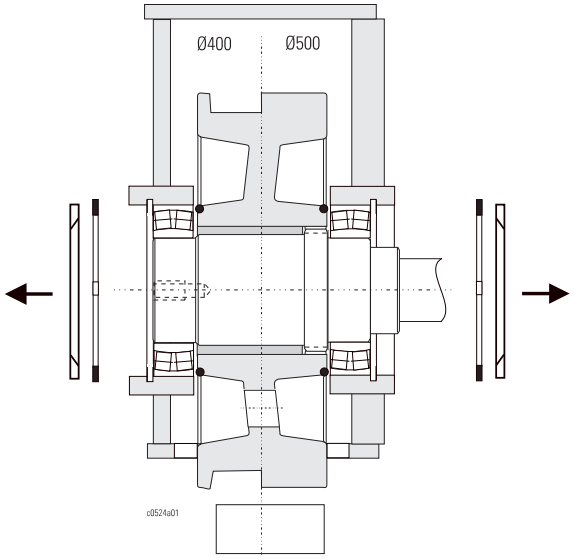
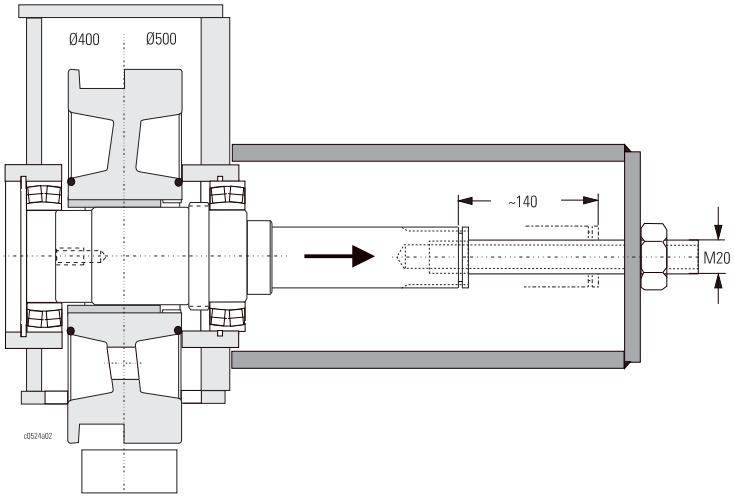


Fig. 11



3.4 Maintenance work (continued)

3.4.3 Refitting wheel KEL-S 125.. and K.L-S 160..

after replacing bearing

- Grease bearing seats and gearing of wheel axle/shaft. (Grease KPF 1K, e.g. Aralub PMD1)
- Press spacer ring and bearing onto wheel axle/shaft as far as collar, Fig. 1
- Roll wheel into endcarriage from front
- Insert wheel axle/shaft with bearing and spacer ring into wheel until the gearing touches (!), Fig. 1
- Insert wheel axle/shaft into hole in wheel, Fig. 2
- Fit spacer ring and bearing to shaft, Fig. 3
- Fit bearing covers, Fig. 4
- Lower endcarriage onto crane runway

Fig. 1

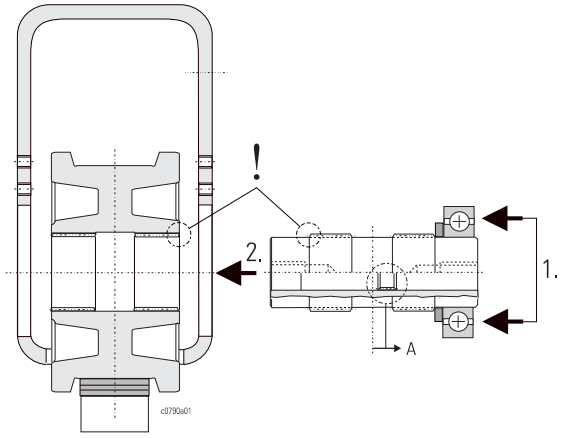


Fig. 2

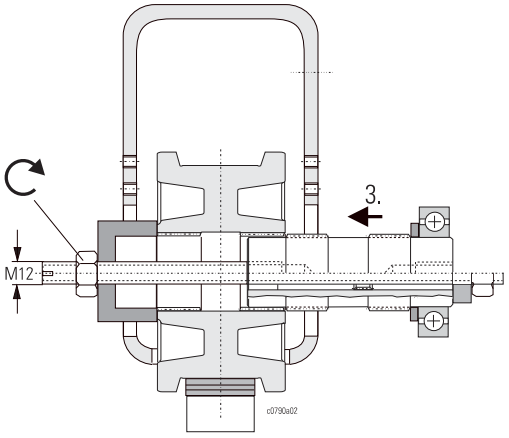


Fig. 3

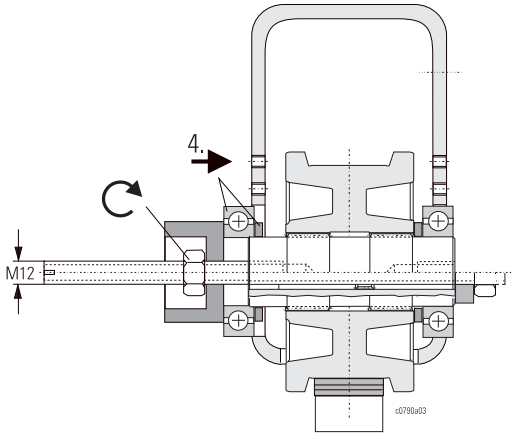
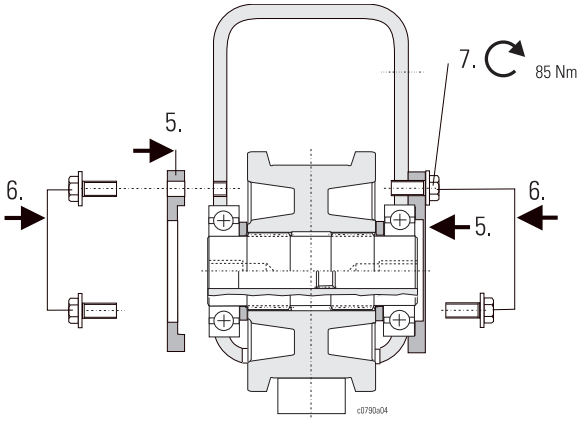


Fig. 4



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3.4 Maintenance work (continued)

3.4.3 Refitting wheel
K. L-S 200.. and K. L-S 315..
after replacing bearing

- Press bearing onto wheel axle/shaft as far as collar
- Roll wheel into endcarriage from the front
- Fit flange beearings, Fig. 5
- Bolt on flange bearings. The collars of the flange bearings must lie flat on the endcarriage, Fig. 6

Fig. 5

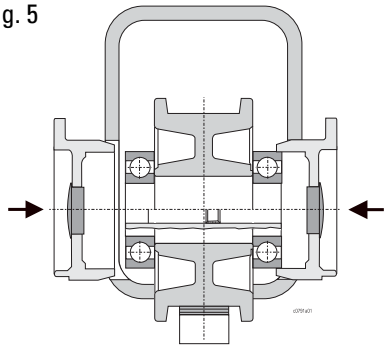
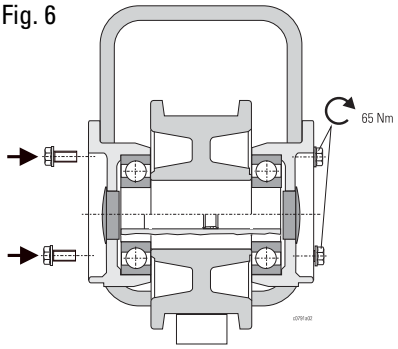


Fig. 6



3.4.3 Refitting wheel
K. L-E 315.. (non-driven)
after replacing bearing

- Grease seat of bearing on shaft, Fig. 7.
  (Grease KFP 1K, e.g. Aralub PMD 1).
- Slip Nilos rings onto wheel and press self-aligning roller bearing over inside ring onto the wheel as far as collar. **Caution!** Do not tilt bearing to avoid damaging the Nilos rings.
- Roll wheel into endcarriage from the front.
- Fit bearing flanges, Fig. 7.
- Secure bearing flanges with screws. The eyes of the bearing flanges must lie flush in the countersinks on the endcarriage, Fig. 8.

Fig. 7

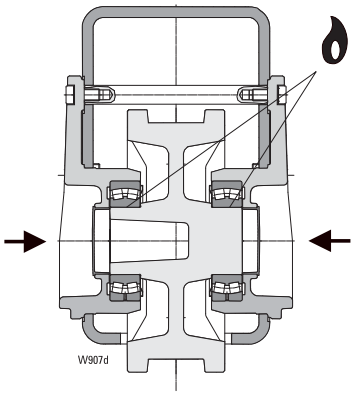
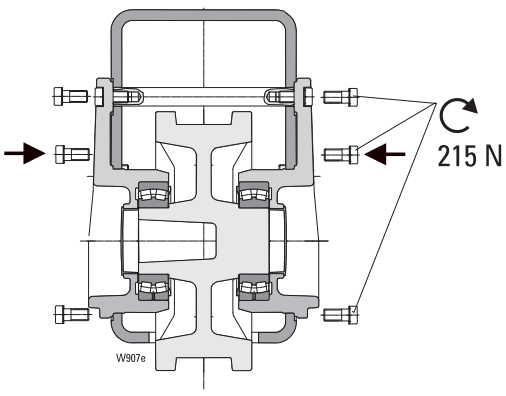


Fig. 8



3.4 Maintenance work (continued)

3.4.3 Refitting wheel K. L-E 315.. (driven)

after replacing bearing

- Grease seats of bearings and teeth of wheel and wheel shaft, Fig. 9. (Grease KFP 1K, e.g. Aralub PMD 1).
- Slip Nilos rings onto wheel and press self-aligning roller bearing over the inside ring onto wheel as far as collar. **Caution!** Do not tilt bearing to avoid damaging the Nilos rings.
- Completely fill bearing and half-fill space with grease (See lubrication table for type)
- Roll wheel into endcarriage with the spline profile towards the outside of the endcarriage.
- Fit bearing flanges, Fig. 9.
- Secure bearing flanges with screws. The eyes of the bearing flanges must lie flush in the countersinks on the endcarriage, Fig. 10.
- Push shorter end of wheel shaft into wheel from the connection plate side as far as collar.
- On outside of endcarriage, fit circlip into groove on wheel shaft near bearing and fit plastic cap onto wheel shaft.

Fig. 9

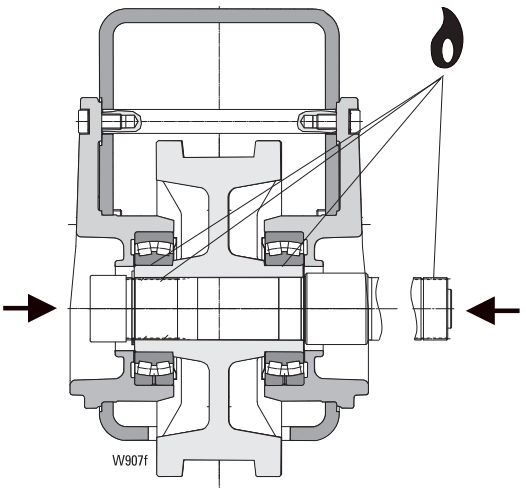
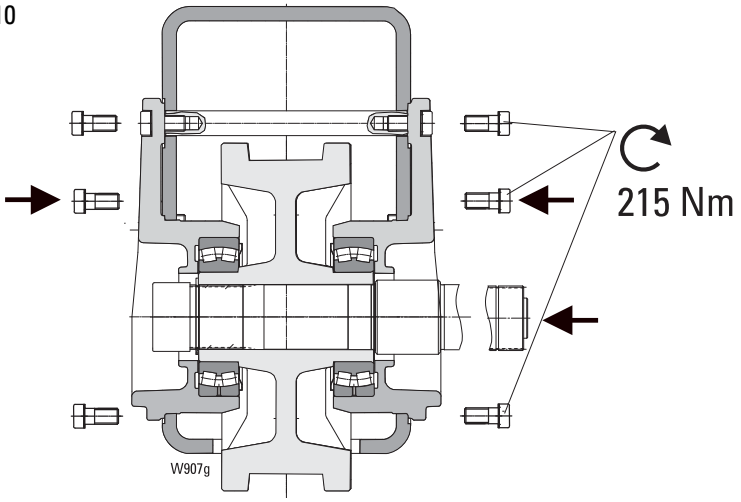


Fig. 10



3.4 Maintenance work (continued)

3.4.3 Refitting wheel
KZL-C 400.. and KZL-F 500.. (FE-A 400-..)
after replacing bearing

Caution! When fitting, do not tilt the outer ring of the self-aligning roller bearing against the inside ring!

- If necessary, replace the two gaskets (d) on the wheel.

- Grease bearing seats and gearing of wheel axle/shaft (Grease KPF 1K, e.g. Aralub PMD1).
- Push bearing onto wheel axle/shaft up to collar (wheel axle - marking groove, wheel shaft on drive side), Fig. 11
- Insert bearing into bearing bushing of endcarriage, Fig. 11
- Roll wheel into endcarriage from the front
- Insert wheel axle/shaft into wheel until the gear profile touches (!), Fig. 11
- Insert wheel axle/shaft until the end is flush with the bearing (!), Fig. 12
- Fit circlips, Fig. 13
- Completely fill bearing and half-fill space with grease (See lubrication table for type)
- Replace bearing covers, Figs. 13 and 14
- Lower endcarriage onto crane runway.

Fig. 11

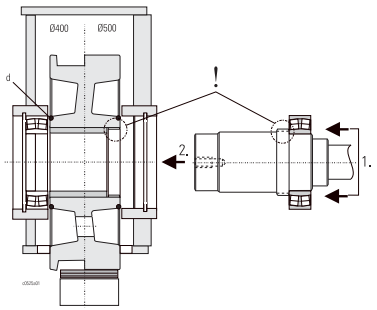


Fig. 12

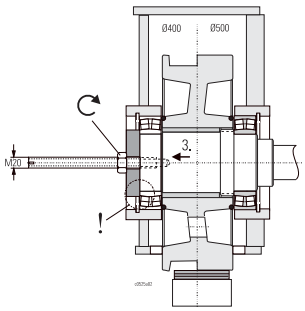


Fig. 13

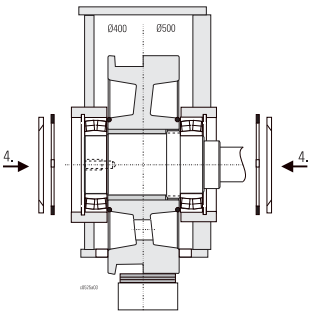
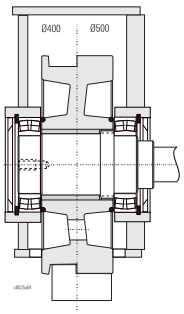
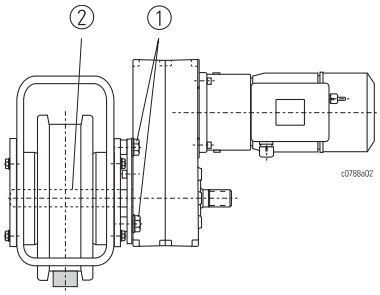
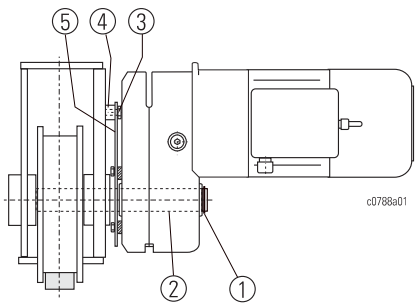


Fig. 14





3.4.4 Fitting travel drive SF ..
- Push travel drive into greased hub of wheel (2)
- Bolt travel drive with torque support to endcarriage with bolts (1), tightening torques: M8 = 25 Nm (SF 15...), M12 =70 Nm (SF 25... + SF 35...)
- The contact surfaces of the torque support must be free of paint.



3.4.5 Fitting travel drive SA-C ..
- Remove circlip (1)
- Grease gearing (2) of wheel shaft. (Grease KPF 1K, e.g. Aralub PMD1)
- Push travel drive onto wheel shaft.
- Bolt torque support (5) to endcarriage with bolts (3) and spacer part (4). (M12=87 Nm, M16=215 Nm
- The contact surfaces of the torque support must be free of paint.
- Fit circlip (1) on wheel shaft

3.4 Maintenance work (continued)

3.4.6 Fitting buffer plate

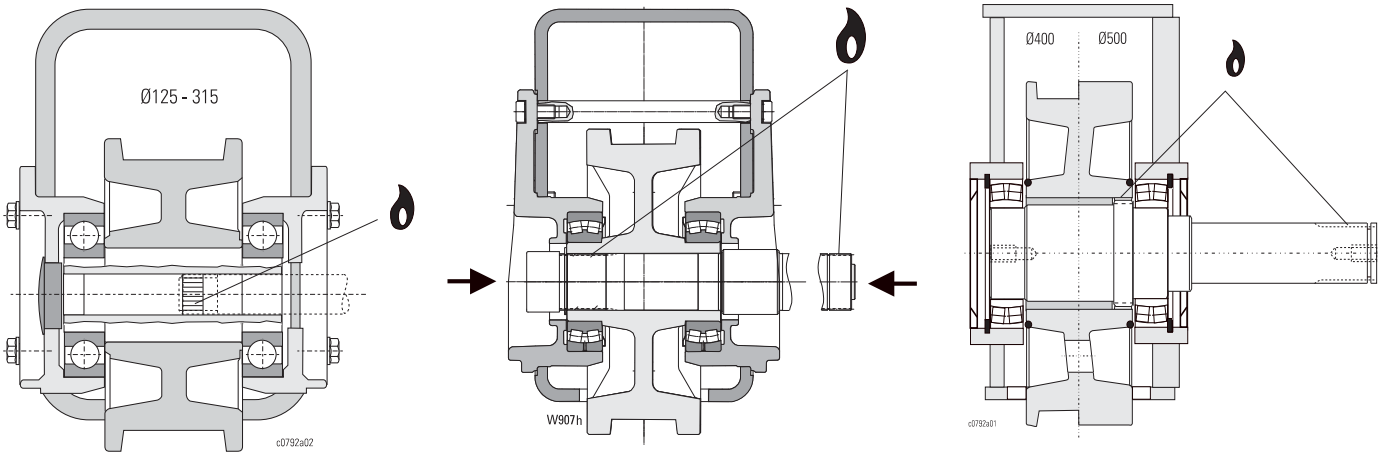
- Push buffer plate (b) into endcarriage section and bolt on, tightening torque 32 Nm (M12) or 740 Nm (M24).

3.4.7 Lubrication

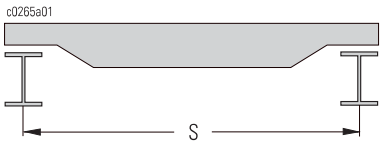
When replacing wheels and during a general overhaul, the gearing between wheel shaft, wheel and travel drive must be lubricated.

Lubricant: KPF 1K Aralub PMD1.

See "Travel drive" for lubrication of travel drive.

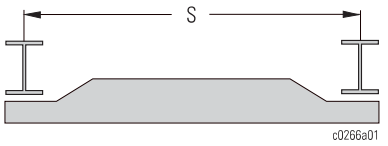


4.1 Checking crane runway

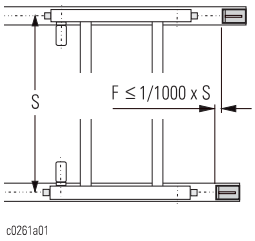


S ≤ 15 m: ΔS = ±5 mm
S ≤ 20 m: ΔS = ±6 mm
S ≤ 25 m: ΔS = ±8 mm
S ≤ 30 m: ΔS = ±9 mm

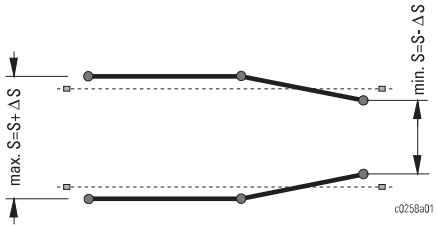
- Check the dimensions and clearance of the runway, see sketches.
- Compare the crane rail or flange width of the crane runway with the wheel width/ guide roller setting or flange width set on the endcarriages. ↑ tables for adjustment.
- Fit stable end stops to the ends of the crane runway.
  The front edges of the crane runway end stops must be flush with each other and be at right-angles to the crane runway, see sketch.
- Ensure that the running surfaces are free of oil, grease, paint or other dirt.
- Ensure that the junctions in the crane rails are even, if necessary grind down.
- The crane runway must comply with the requirements of DIN 4132.

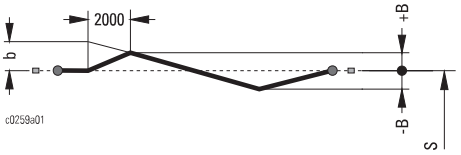


ΔS = ±3 mm

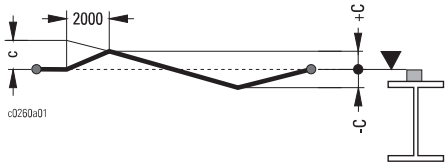


max F = 20 mm





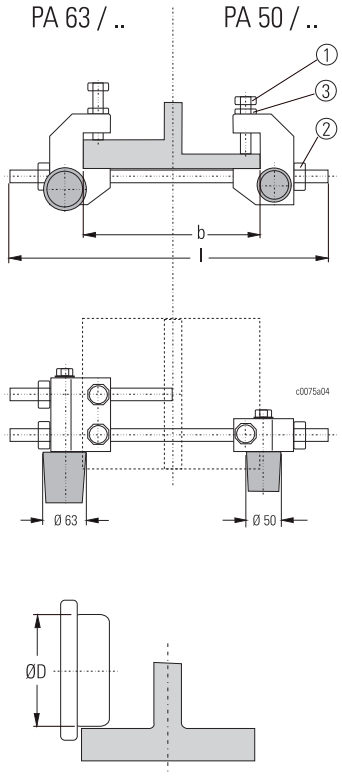
B = ±10 mm
b = ±1 mm



C = ±10 mm
c = ±1 mm

4.4 Runway end stops

PA .. runway end stops are flanged onto the lower flange of a single girder crane and can be adjusted to different girder profiles:



- Position buffer stop on crane girder at right-angles and according to plan.
- Screw (1) down loosely.
- Screw (2) down loosely.
- Screw (1) down with MA = 215 Nm.
- Screw (2) down with MA = 215 Nm.
- Lock (1) with nuts (3).

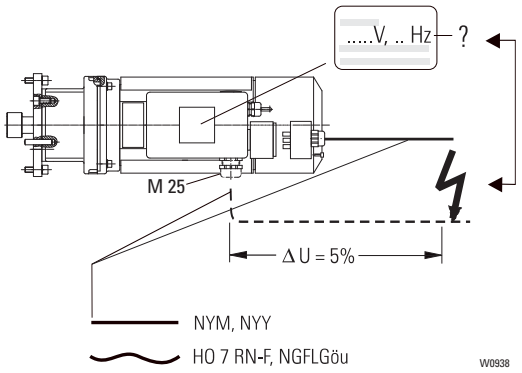
Type	b max.	l	kg max.	E max. *3	mka endcarriage *1	Ø D
	[mm]	[mm]	[kg]	[Nm]	[kg]	[mm]
PA 50/200	200	350	3200	200	700	100 125
PA 50/300	300	450				
PA 50/500	500	650				
PA 63/200	200	350	10000 (16000) *2	440	3200 (3600) *2	125 160 200
PA 63/300	300	450				
PA 63/500	500	650				

*1 incl. counterweight
*2 V max.: 20 m/min
*3 E = 0.1415 • mka • v2 • x (Nm) mka (t), v (m/min)
x = with travel limit switch: 0.72
x = without travel limit switch: 1.0

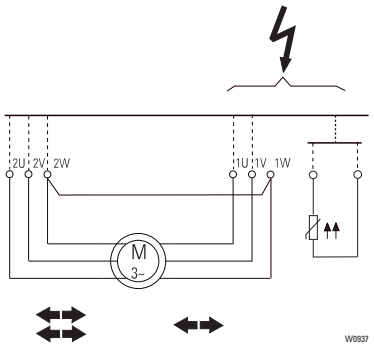
5.1 Assembly

The travel drives are high-quality drives with smooth starting and braking characteristics as is required in particular for material handling.

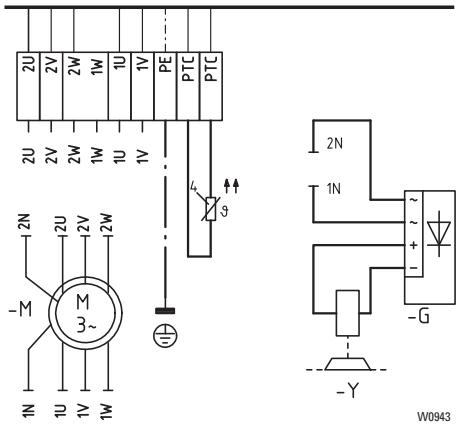
- Ensure correct assembly position. The gear vent plug must always be at the highest point of the gear
- Remove sticker from vent plug.
- Tighten fixing bolts with specified torque
- Check oil level before commissioning
- Complete electrical connection according to circuit diagram (see sketches).



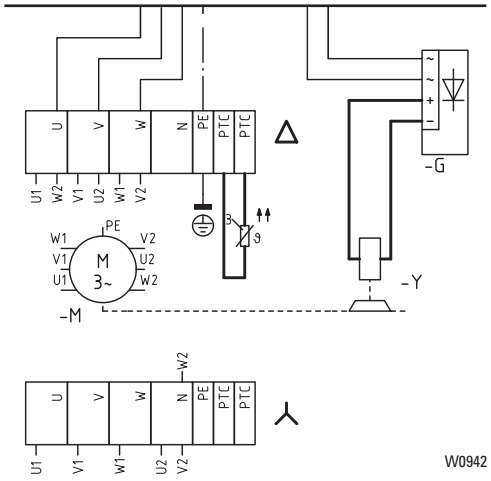
A 04

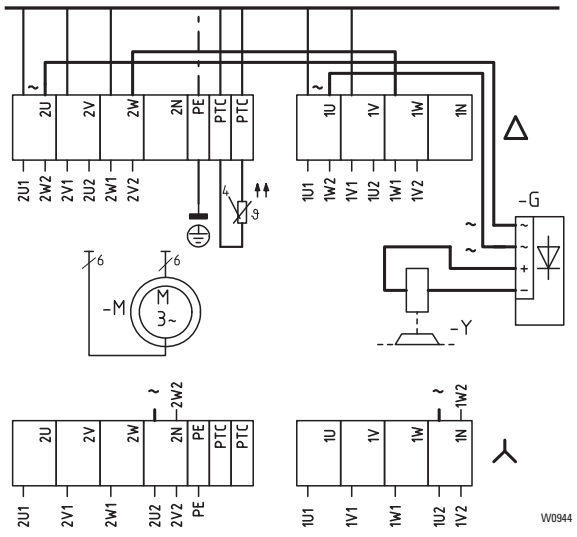


8/2 F..



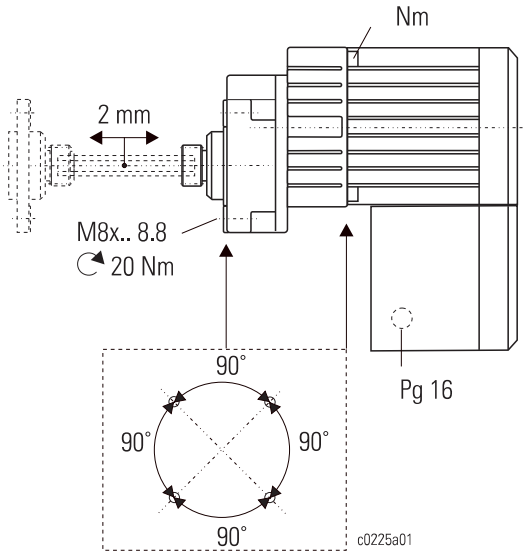
4 F..

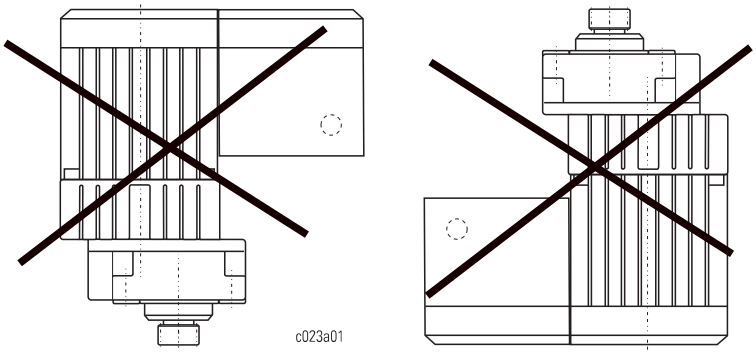




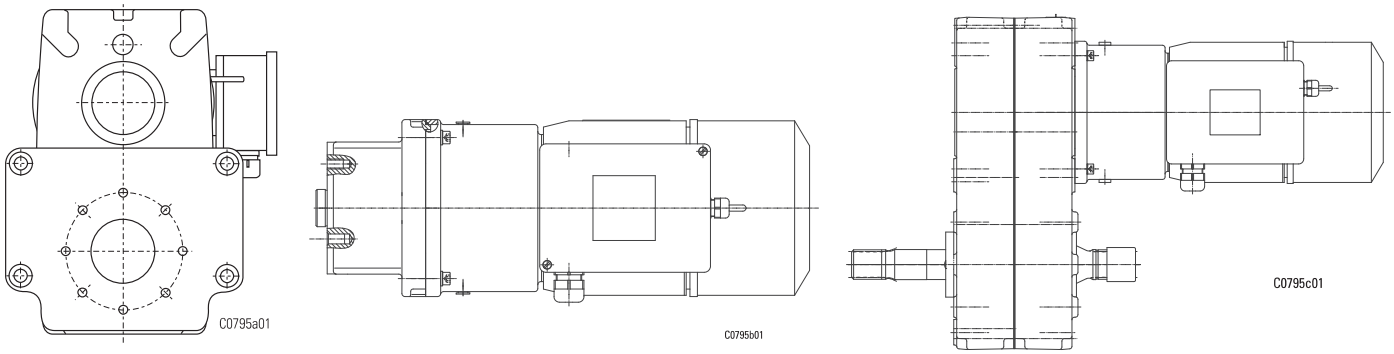
5.1 Assembly (continued)

SU-A 1..



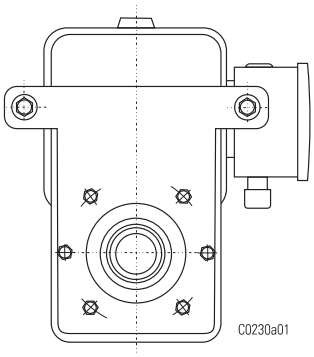


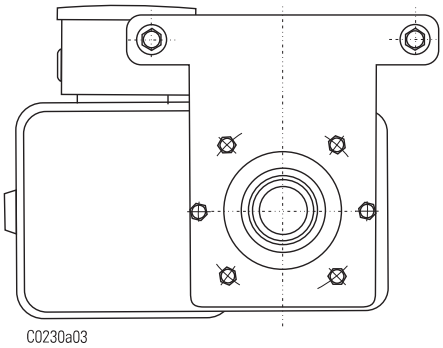
SF ..

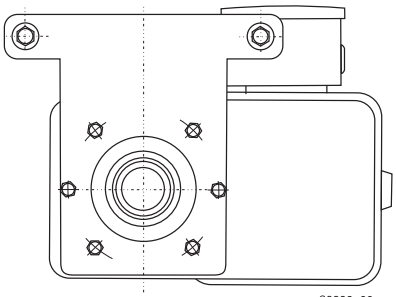


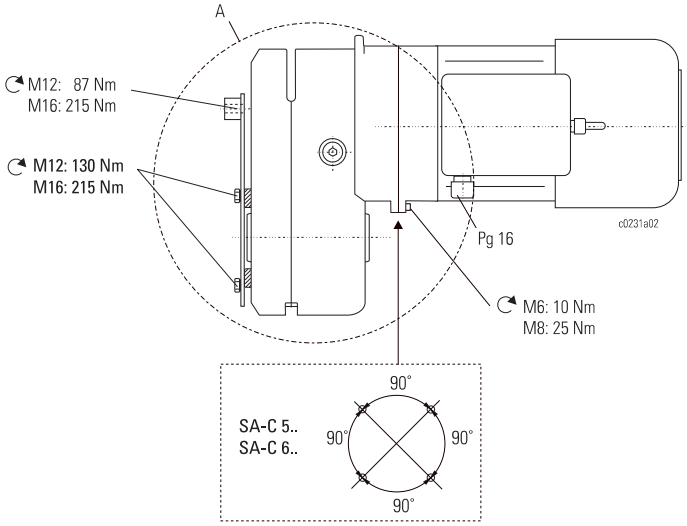
5.1 Assembly (continued)

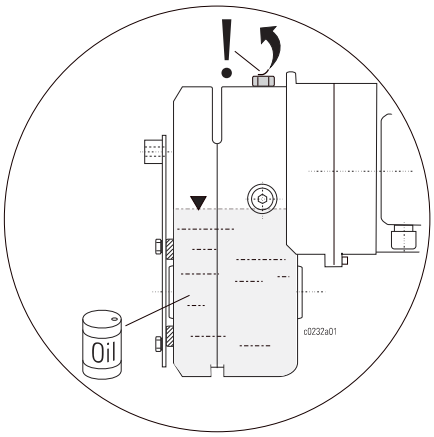
SA-C ..

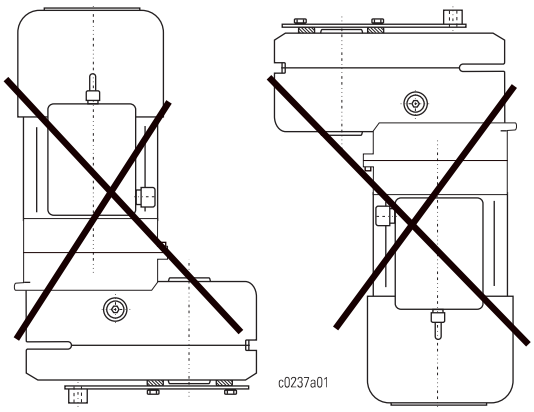












5.2 Inspection and maintenance table

This section deals with the operational reliability, availability, and maintaining the value of your travel drives.
Although they are practically maintenance-free, the components subject to wear must be inspected regularly. This is required by the accident prevention regulations. The inspections must be performed by **qualified personnel**, see page 2.

General information on inspection and maintenance

- Maintenance and repair work may only be carried out when the crane is not under load.
- Switch off and padlock main isolator.

Please also note the "Safety instructions" on page 5.
Wearing parts, see page 51.

No.	Inspection on commissioning*1	Daily inspection on starting work *2	Periodic inspections every 12 months *3	Periodic maintenance every 12 months *2	Maintenance after 10 years or general overhaul *4		**Inspection and maintenance table** (Classification: 1 Bm)	See page
1	●		●	●			Firm seating of bolt connections	44
2			●				Travel drive: attachment, torque support	44
3	●	●	●				Check braking effect of travel drive	42
4	●						Oil level	40
5					●		Change gear oil/gear grease of travel drive	43

*1 By a fitter engaged by the manufacturer
*2 By the operator
*3 Periodic maintenance every 12 months, possibly earlier if so prescribed by national regulations, to be performed by a fitter engaged by the manufacturer.
Similarly, heavy-duty applications and adverse conditions (dirt, solvents, multi-shift operation etc.) necessitate shortening this inspection and maintenance interval.
*4 In manufacturer's works.

5.3 Maintenance work

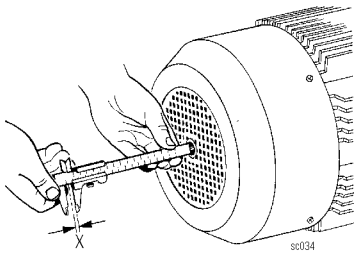
5.3.1 Travel motor brake

Check brake at regular intervals. The intervals must be adapted in accordance with the application.

- Move endcarriage into a safe position

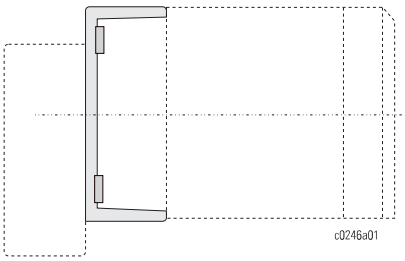
SU-A
- Measure displacement of motor shaft. To do so, switch motor on briefly, see sketch.
- The travel motor brake need not be adjusted.
- If X ≥ 2,5 mm, replace brake disc.

SU-A ..



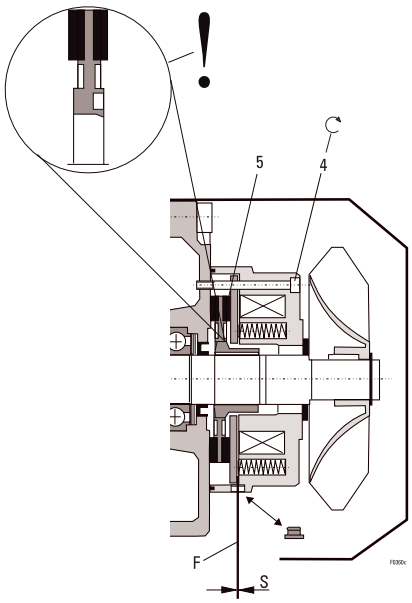
X = 0.5 - 2.5 mm (SU-A ..)

SU-A 1.4..



SA-C.. / SF ..
- The travel motor brake need not be adjusted.
- If the max. value of S is reached, replace brake rotor.

S.-C .. / SF ..

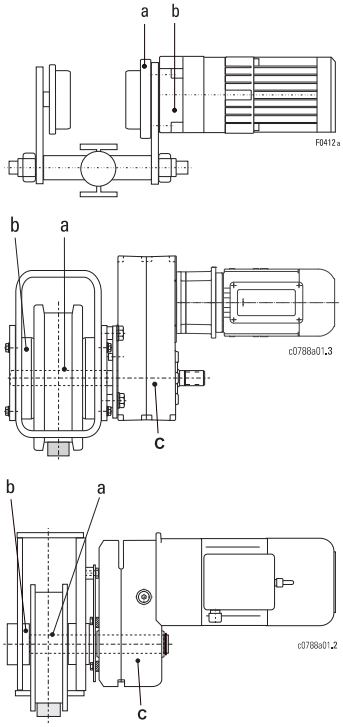


	Motor	Braking torque [Nm]	Type of travel brake	S max. [mm]	4	[Nm]
SA-C ... 133 SA-C ... 184	8/2F13/2xx.233 4F18/2xx.233	2,5	FDW 08	0,2...1,2	3xM4	3
SA-C ... 313	8/2F31/2xx.423	5	FDW 13	0,3...2,0	3xM6	10
SA-C ... 384 SA-C ... 423 SA-C ... 484	4F38/2xx.423 8/2F42/2xx.433 4F48/2xx.443	8	FDW 13	0,3...2,0	3xM6	10
SA-C ... 523	8/2F52/2xx.523	13	FDW 15	0,3...2,0	3xM6	10

	Motor	Braking torque [Nm]	Type of travel brake	S max. [mm]	4	[Nm]
SF xx xxx 123	8/2F12/2xx.223	1,3	FDW 08	0,2...2,0	3xM4	3
SF xx xxx 133	8/2F13/2xx.233	2,5	FDW 08	0,2...1,2	3xM4	3
SF xx xxx 184	4F18/2xx.233	2,5	FDW 08	0,2...1,2	3xM4	
SF xx xxx 313	8/2F31/2xx.423	5	FDW 13	0,3...2,0	3xM6	10
SF xx xxx 384	4F38/2xx.423	8	FDW 13	0,3...2,0	3xM6	10
SF xx xxx 423	8/2F42/2xx.433	8	FDW 13	0,3...2,0	3xM6	10
SF xx xxx 484	4F48/2xx.523	13	FDW 15	0,3...2,0	3xM6	10
SF xx xxx 523	8/2F52/2xx.523	13	FDW 15	0,3...2,0	3xM6	10

Replacement and repairs only by qualified personnel!

5.3 Maintenance work (continued)



5.3.2 Gear

The gear has a long service life. All bearing points have roller bearings. The gearing is hardened, hard-machined and has high safety factors.

- During annual maintenance, check whether any oil has leaked (puddle of oil underneath the gear, drops of oil on the gearbox). If any loss of oil is ascertained, the oil must be changed and repairs scheduled if necessary.
- Note any gear noises from the crane when under load and without load. Rough, noisy running, knocking sounds indicate possible faults.
- If any faults are detected, repairs must be scheduled.
- If there is any uncertainty, a fresh diagnosis can be made after consulting experts, e.g. from the manufacturer (see back cover).

Changing oil/grease of travel drive
Lubricating toothed boss of wheel

The SU-A and SF 1. .. travel drives have a gear with grease lubrication, the SF 25.., SF 35.. and SA-C... have gears with oil lubrication (b).
The toothed boss (a) is lubricated with grease (see table).

The type and quantity of oil or grease can be seen from the table.

Position of lubrication point		Type of lubricant	Designation	Quantity	Charakteristics, makes	Order. No.
a	Toothed boss of wheel	Grease	KPF 1K	50 gr	Soap base: Lithium + MoS2 Dripping point: approx. 185°C (180°C) Penetration: 310-340 (310-340) Operating temperature: -20°to +120°C, (-50° to +150°C), e.g.: Aral Fett P 64037*, Aralub PMD1, BP Multi-purpose Grease L21M, Esso Multi-purpose Grease M, Mobil Grease Special, Shell Retimax AM *1, Texaco Molytex Grease EP2, Fuchs Renolit FLM2, (Fuchs Renolit FLM2)	
b	Wheel bearingl	Grease	KP 2 N-20 (KP 1 G-30)		Soap base: Lithium Dripping point: approx. +260°C (+170°C) Penetration: 265-295 (310-340) Operating temperature: -20° to +140°C (-30° to +140°C) e.g.: Klüberlub BE 41-542* (LGWM1)	
c	SU-A 1.4.1. SU-A 1.4.2.	Grease	KPOK	130 gr 200 gr	Soap base: Lithium + MoS2 Dripping point: approx. +180°C Penetration: 355-385 Operating temperature: -30° to +130°C e.g.: Aral Fett P64037*, Aralub PMD0, Tribol Molub-Aloy Mehrzweckfett	32 250 09 65 0 (0.75 kg)
	SF 1. 1.. SF 1. 2..	Grease	KPF 0K-20	100 gr 200 gr	Soap base: Lithium + MoS2 Dripping point: ca. +180°C Penetration: 355-385 Operating temperature: -30°to +130°C e.g.: Aral Grease P64037*, Aralub PMD0, Tribol Molub-Aloy Multi-purpose grease	32 250 09 65 0 (0.75 kg)
	Gear SF 25.. Gear SF 35.. Gear SA-. 5.. Gear SA-. 6..	Oil	CLP 460	1000 ml 1500 ml 1000 ml 3000 ml	Viscosity: 460 cSt/40°C (240 cSt/40°C) Pourpoint: -20°C (-40°) Flash point: +265°C (+270°C) e.g.: Fuchs Renep Compound 110*, Aral Degol BG 460, BP Energol GR-XP 460, Esso Spartan EP 460, Mobil Gear 634, Shell Omala Oel 460, Texaco Meropa 460, (Shell Tivela Oil 82)	32 250 07 65 0 (1 kg)

( ) = Lubricants for low operating temperatures,max. -30°C
* Factory filling
*1 Only down to -20°C

6.1 Tightening torques for bolt connections

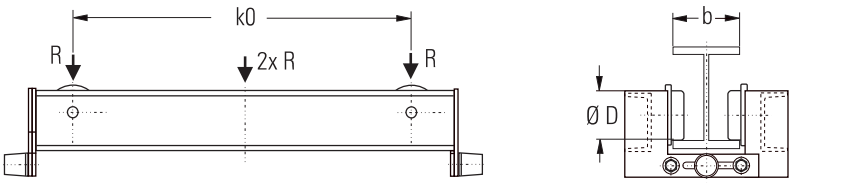
The following table comprises the most important bolt connections and the tightening torques necessary for safe connection.

No.	Position of bolt connection		Type	Bolt connection		
	Part 1 1	Part 2		Thread	Grade	Tightening torque [Nm]
1	Endcarriage	Bearing cover	KEL-S 125 K.L-S 160 K.L-S 200	M10	100	85
			K.L-S 315 K-L-E 315	M12 M16	100 8.8	85 215
2	Endcarriage	Buffer plate	K.L-S ... K-L-E 315 KZL-C 400 KZL-F 500	M12 M16 M24 M24	8.8	32 215 740 740
3	Endcarriage	Guide roller holder/ antiderail device	K.L-S ... K-L-E 315 KZL-C 400 KZL-F 500	M12 M24 M24	8.8 8.8 8.8	87 740 740
4	Endcarriage	Bearing plate	K.L-S ... K-L-E 315 KZL-C 400 KZL-F 500	M20 M20 M30 M30	10.9	450 450 1650 1650
5	Endcarriage	Buffer plate Guide roller holder-buffer bracket/ antiderail device	K.L-S ... K-L-E 315 KZL-C 400 KZL-F 500	M12 M16 M24 M24	8.8 8.8 8.8 8.8	32 215 740 740
6	Guide roller holder/antiderail device	Holder	KEL-S 125 K.L-S 160	M12	100	130
			K.L-S 200 K-L-S 315	M16	100	330
7	Guide roller holder	Guide roller/wheel	KEL-S 125 K.L-S 160	M8	8.8	25
			K.L-S 200 K-L-S 315	M10	8.8	51
8	Travel drive torque support	Endcarriage	SF 15..	M8	8.8	25
			SF 25.. SF 35.. SA-C .. SA-C ..	M12 M12 M12 M16	8.8	70 70 87 215
9	Travel drive torque support	Travel drive gear housing	SF 15..	M8	8.8	25
			SF 25.. SF 35.. SA-C .. SA-C ..	M10 M10 M12 M16	8.8	51 51 87 215
10	All other bolt connections			M6 M8 M10 M12 M16	8.8	10 25 51 87 215
				M20 M24 M30 M36	8.8	430 740 1500 2600

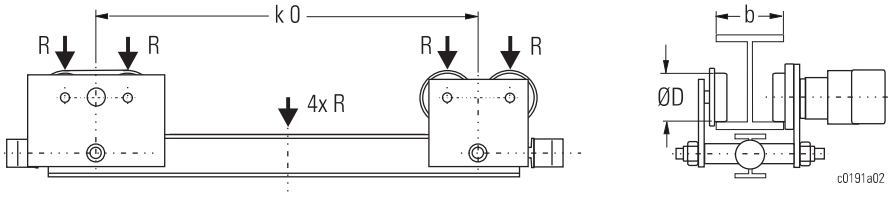
6.2 Endcarriages for suspension cranes

Endcarriage (pair)							Travel drive *5						
Ø d1	R zul. *	L 1	k 0	b *3	Typ Type	kg *4 *5	50 Hz / 100 Hz *7	60 Hz / 100 Hz *7	50 Hz	60 Hz	mF zul. 50 Hz 100 Hz *2, *5, *6	Type	kg *5
[mm]	[kg]	[m]	[mm]	[mm]		[kg]	[m/min]		[kW] *1	[kW] *1	[kg]		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
80	750	8	500	74-131	KEH-B 080.05.0	50	-	-	-	-	-	-	-
80	1000	8	1000	74-300	KEH-A 080.10.1	200	10/40	12.5/50	2x 0.07/0.32	2x 0.09/0.38	5000	2x SU-A 1243104	19
		14	1800		KEH-A 080.18.1	268	5/20	6.3/25	2x 0.07/0.32	2x 0.09/0.38	9700	2x SU-A 1243110	19
		20	2500		KEH-A 080.25.1	380	4...40		2x 0.4		5200	2x SU-A 1244104(F2)	19
							2.5...25		2x 0.4		8900	2x SU-A 1244108(F2) *8	19
		20	2500		KEH-A 080.25.2	394	10/40	12.5/50	4x 0.07/0.32	4x 0.09/0.38	10000	4x SU-A 1243104	38
							4...40		4x 0.4		10400	4x SU-A 1244104(K4) *8	38
100	1600	14	1800	98-300	KEH-A 100.18.1	370	10/40	12.5/50	2x 0.07/0.32	2x 0.09/0.38	6100	2x SU-A 1243104	19
		20	2500		KEH-A 100.25.1	500	5/20	6.3/25	2x 0.07/0.32	2x 0.09/0.38	10800	2x SU-A 1243110	19
							4...40		2x 0.4		5600	2x SU-A 1244104(F2)	19
							2.5...25		2x 0.4		9900	2x SU-A 1244108(F2) *8	19
		14	1800		KEH-A 100.18.2	370	10/40	12.5/50	4x 0.07/0.32	4x 0.09/0.38	12200	4x SU-A 1243104	38
		20	2500		KEH-A 100.25.2	500	4...40		4x 0.4		11200	4x SU-A 1244104(K4) *8	38
125	2500	20	2500	119-300	KEH-A 125.25.1	780	10/40	12.5/50	2x 0.13/0.55	2x 0.16/0.66	11500	2x SF 11211133	54
									2x 0.32/1.25	2x 0.36/1.50	22300	2x SF 11211313	78
							5/20	6.3/25	2x 0.09/0.37	2x 0.11/0.44	13300	2x SF 11217123	46
									2x 0.13/0.55	2x 0.16/0.66	20400	2x SF 11217133	54
							4...40		2x 0.75		12200	2x SF 11211184	46
									2x 2.20		36700	2x SF 11211384	78
							2.5...25		2x 0.75		22400	2x SF 11215184	46
160	3625	20	2500	119-300	KEH-A 160.25.1	1060	10/40	12.5/50	2x 0.13/0.55	2x 0.16/0.66	12800	2x SF 11211133	54
									2x 0.32/1.25	2x 0.36/1.50	24900	2x SF 11211313	78
							5/20	6.3/25	2x 0.09/0.37	2x 0.11/0.44	14800	2x SF 11217123	46
									2x 0.13/0.55	2x 0.16/0.66	22800	2x SF 11217133	54
							4...40		2x 0.75		13500	2x SF 11211184	46
									2x 2.20		40400	2x SF 11211384	78
							2.5...25		2x 0.75		25000	2x SF 11215184	46

KEH-B 080



KEH-A ...



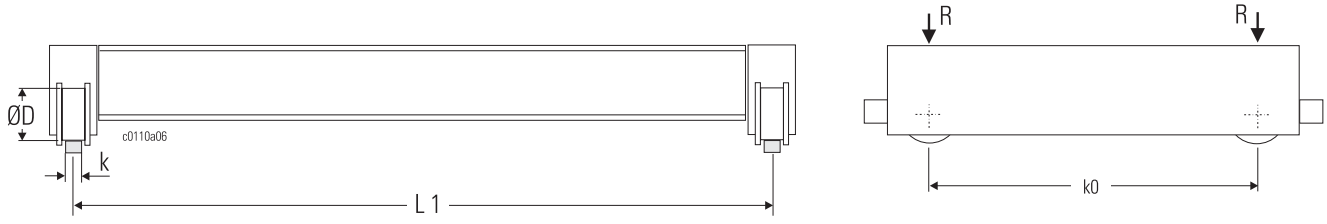
* Per wheel pair. Rough estimation: Centre load on endcarriage for KEH-B..= 2 x R perm.
for KEH-A..= 4 x R perm.

*1 20/40 % DC
*2 mF perm. for aH = 0.1 m/s2 acc. to FEM 9.681 for 1 pair of endcarriages
*3 Please state "b" when ordering
*4 Without travel drive
*5 For 1 pair of end carriages
*6 60 Hz x 0.9
*7 With 4-pole travel motor and frequency inverter
*8 ...(F2) and ...(K4) type of mounting of frequency inverter

6 Technical data

6.3 Endcarriages for single girder overhead travelling cranes

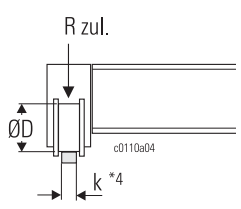
Endcarriage (pair)											Travel drives (pair))						
Ø D	R zul. * (H2/B3)	k 0	L 1 zul.	Type *3 *6	kg * 5	R id zul. at travel speeds					50 Hz 100 Hz *8	60 Hz	50 Hz 100 Hz *8	60 Hz	$mF_{zul.}$ 50 Hz 100 Hz *2, *5, *7	Type 2x	kg * 5
						◀▶	k=40 *4	k=50 *4	k=60 *4	k=70 *4	◀▶						
mm	kg	mm	m		kg	m/min	kg				m/min		kW *1		kg		kg
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
125	3640	1250	9,5	KEL-S 125.1.12. xxx	224						10/40	12.5/50	2x0.09/0.37	2x0.11/0.44	7200	SF 15220123	50
	3640	1600	12 15	KEL-S 125.1.16. xxx	256	...50	2880	3220					2x0.13/0.55	2x0.16/0.66	11000	SF 15220133	54
	3640	2000	18,5	KEL-S 125.1.20. xxx	296	...40	3060	3470	-	-	5/20	6.3/25	2x0.09/0.37	2x0.11/0.44	13100	SF 15226123	50
	3640	2500		KEL-S 125.1.25. xxx	344	...25	3370	3640			4...40		2x0.75		11600	SF 15220184	50
						...20	3520	3640			2.5...25		2x0.75		20900	SF 15224184	50
160	5510	1600	12 15	KEL-S 160.2.16. xxx	366						10/40	12.5/50	2x0.13/0.55	2x0.16/0.66	11900	SF 25222133	78
	5510	2000	18,5	KEL-S 160.2.20. xxx	416	...50	3940	4930					2x0.32/1.25	2x0.36/1.50	23100	SF 25222313	102
	5510	2500	23,5	KEL-S 160.2.25. xxx	482	...40	4180	5230	-	-	5/20	6.3/25	2x0.09/0.37	2x0.11/0.44	13900	SF 25228123	74
	4370	3150		KEL-S 160.2.31. xxx	570	...25	4520	5510			4...40		2x0.75		12400	SF 25222184	78
						...20	4660	5510					2x2.20		37300	SF 25222384	102
											2.5...25		2x0.75		22400	SF 25226184	78
200	8520	2000	15 18,5	KEL-S 200.2.20. xxx	447						10/40	12.5/50	2x0.13/0.55	2x0.16/0.66	13200	SF 25224133	78
	7740	2500	23,5	KEL-S 200.2.25. xxx	746								2x0.32/1.25	2x0.36/1.50	25700	SF 25224313	102
	6320	3150	23,5	KEL-S 200.2.31. 140	875	...50	5230	6540	7770		5/20	6.3/25	2x0.09/0.37	2x0.11/0.44	15400	SF 25230123	74
	6320	3150	30	KEL-S 200.2.31. 259	875	...40	5450	6820	8100	-			2x0.13/0.55	2x0.16/0.66	18800	SF 25830133	96
	4300	4000		KEL-S 200.2.40. 140	939	...25	5830	7290	8540		4...40		2x0.75		13700	SF 25224184	78
						...20	6000	7500	8540				2x2.20		41200	SF 25224384	102
											2.5...25		2x0.75		25000	SF 25228184	78
													2x2.20		66100	SF 25228384	102
315	12610	2000	15 18,5	KEL-S 315.3.20. 140	934						10/40	12.5/50	2x0.32/1.25	2x0.36/1.50	28900	SF 35228313	154
	11040	2500	23,5 30	KEL-S 315.3.25. 140	1047								2x0.50/2.00	2x0.60/2.40	43500	SF 35228423	166
	9120	3150		KEL-S 315.3.31. 140	1221	...50	8870	11090	13270		5/20	6.3/25	2x0.13/0.55	2x0.16/0.66	21200	SF 35834133	150
	6700	4000		KEL-S 315.3.40. 140	1410	...40	9160	11450	13710	-			2x0.32/1.25	2x0.36/1.50	43900	SF 35834313	174
						...25	9730	12160	13710		4...40		2x2.20		45300	SF 35228384	154
						...20	10010	12540	13710		2.5...25		2x0.75		24400	SF 35832184	150
													2x2.20		78000	SF 35832384	154
	13500	2500	18,5	KEL-E 315.5.25. 140	1352						10/40	12.5/50	2x0.32/1.25	2x0.36/1.50	30200	SA-C 5728313	146
	12000	3150	23,5 30	KEL-E 315.5.31. 140	1544								2x0.50/2.00	2x0.60/2.40	45500	SA-C 5728423	166
	10500	4000		KEL-E 315.5.40. 140	1796								2x0.80/3.20	2x0.90/3.80	74600	SA-C 5728523	185
						...50	-	13820	16580	19350	5/20	6.3/25	2x0.13/0.55	2x0.16/0.66	26500	SA-C 5734133	126
						...40	-	14320	17190	20050			2x0.32/1.25	2x0.36/1.50	51600	SA-C 5734313	146
						...25	-	15290	18350	21410			2x0.50/2.00	2x0.60/2.40	76800	SA-C 6734423	288
						...20	-	15690	18830	21960	4...40		2x2.20		47700	SA-C 5728384	134
													2x3.20		94300	SA-C 5728484	146
											2.5...25		2x0.75		30200	SA-C 5732184	114
													2x2.20		90300	SA-C 5732384	134
400	11000	4000	30	KEL-C 400.9.40. 140	2170		-	15000	17990	2170	10/40	2.5/50	2x0.32/1.25	2x0.36/1.50	29600	SA-C 5730313	90
						...50	-	14570	17490				2x0.50/2.00	2x0.60/2.40	51800	SA-C 5730423	90
						...40	-	16370	19600				2x0.80/3.20	2x1.00/3.80	86600	SA-C 6730523	160
						...25	-	15920	19100		5/20	6.3/25		2x0.16/0.66	28200	SA-C 5736133	90
						...20								2x0.36/1.50	52000	SA-C 5736313	90
														2x0.60/2.40	94800	SA-C 6736423	160

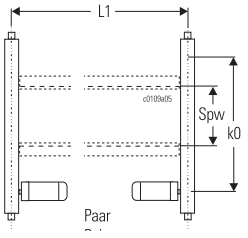


* Rough estimation:
Centre load on endcarriage = 2 x R perm.
*1 20/40 % DC
*2 mF perm. for aH = 0.1 m/s2 acc. to FEM 9.681 for 1 pair
*3 KEL-S .. with flanged wheels
*4 Please state "k" when ordering
*5 For 1 pair
*6 xxx = 140: connection "at side"
xxx = 259: connection "at top"
*7 60 Hz: x 0.9

6.4 Endcarriages for double girder overhead travelling cranes

Endcarriage (pair)													Travel drives (pair))						
Ø D	R zul. * (H2/ B3)	k 0	Spw	L 1 zul.	Type *3 *7	kg *6	R id zul. at travel speeds n						50 Hz 100 Hz *8	60 Hz	50 Hz 100 Hz *8	60 Hz	$mF_{zul.}$ 50 Hz 100 Hz *2, *5, *6	Type 2x	kg *6
							◀▮▶	k=40 *4	k=50 *4	k=60 *4	k=70 *4	k=80 k=100	◀▮▶						
mm	kg	mm	mm	m		kg	m/ min	kg					m/min		kW *1		kg		kg
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
160	5510	2000	1250	15	KZL-S 160.2.20.04.140	458							10/40	12.5/50	2x0.13/0.55	2x0.16/0.66	11900	SF 25222133	78
		2500	1250	18,5	KZL-S 160.2.25.04.140	524	...50	3940	4930	-	-	-			2x0.32/1.25	2x0.36/1.50	23100	SF 25222313	102
		2500	1250	18,5	KZL-S 160.2.25.04.540	524	...40	4180	5230	-	-	-	5/20	6.3/25	2x0.09/0.37	2x0.11/0.44	13900	SF 25228123	74
		3150	1400	23,5	KZL-S 160.2.31.05.140	612	...25	4520	5510	-	-	-	4...40		2x0.75		12400	SF 25222184	78
		3150	1400	23,5	KZL-S 160.2.31.05.540	612	...20	4660	5510	-	-	-			2x2.20		37300	SF 25222384	102
													2.5..25		2x0.75		22400	SF 25226184	78
200	8520	2000	1250	15	KZL-S 200.2.20.04.136	652							10/40	12.5/50	2x0.13/0.55	2x0.16/0.66	13200	SF 25224133	78
		2500	1400	18,5	KZL-S 200.2.25.05.136	731									2x0.32/1.25	2x0.36/1.50	25700	SF 25224313	102
		2500	1400	18,5	KZL-S 200.2.25.05.156	731													
		2500	1400	18,5	KZL-S 200.2.25.05.536	731	...50	5230	6540	6910	-	-	5/20	6.3/25	2x0.09/0.37	2x0.11/0.44	15400	SF 25230123	74 98
		3150	1400	23,5	KZL-S 200.2.31.05.xxx	907	...40	5450	6820	7450	-	-			2x0.13/0.55	2x0.16/0.66	18800	SF 25830133	
		4000	2240	30	KZL-S 200.2.40.10.xxx	1000	...25	5830	7290	8710	-	-	4...40		2x0.75		13700	SF 25224184	78
		4000	2500	30	KZL-S 200.2.40.12.136	1000	...20	6000	7500	9000	-	-			2x2.20		41200	SF 25224384	102
		4000	2500	30	KZL-S 200.2.40.12.156	1000							2.5..25		2x0.75		25000	SF 25228184	78
		4000	2800	30	KZL-S 200.2.40.14.136	1000									2x2.20		66100	SF 25228384	102
		4000	2800	30	KZL-S 200.2.40.14.156	1000													
315	13680	2500	1400	18,5	KZL-S 315.3.25.05.136	1043							10/40	12.5/50	2x0.32/1.25	2x0.36/1.50	28900	SF 35228313	154
		2500	1400	18,5	KZL-S 315.3.25.05.156	1043									2x0.50/2.00	2x0.60/2.40	43500	SF 35228423	166
		2500	1400	18,5	KZL-S 315.3.25.05.536	1043													
		3150	1400	23,5	KZL-S 315.3.31.05.xxx	1249	...50	8870	10480	10480	-	-	5/20	6.3/25	2x0.13/0.55	2x0.16/0.66	21200	SF 35834133	150
		4000	2240	30	KZL-S 315.3.40.10.xxx	1434	...40	9160	11290	11290	-	-			2x0.32/1.25	2x0.36/1.50	43900	SF 35834313	174
		4000	2500	30	KZL-S 315.3.40.12.136	1434	...25	9730	12160	13200	-	-	4...40		2x2.20		45300	SF 35228384	154
		4000	2500	30	KZL-S 315.3.40.12.156	1434	...20	10010	12510	14220	-	-							
		4000	2800	30	KZL-S 315.3.40.14.136	1434							2.5..25		2x0.75		24400	SF 35832184	150
		4000	2800	30	KZL-S 315.3.40.14.156	1434									2x2.20		78000	SF 35832384	174
	22000	3150	1400	23,5	KZL-E 315.5.31.05.136	1606						k=80	10/40	12.5/50	2x0.32/1.25	2x0.36/1.50	30200	SA-C 5728313	146
		3150	1400	23,5	KZL-E 315.5.31.05.556	1675						*4			2x0.50/2.00	2x0.60/2.40	45500	SA-C 5728423	166
		3150	1800	23,5	KZL-E 315.5.31.07.136	1606									2x0.80/3.20	2x0.90/3.80	74600	SA-C 5728523	185
		3150	1800	23,5	KZL-E 315.5.31.07.156	1675													
		4000	2240	30	KZL-E 315.5.40.10.156	1926	...50	-	13820	16580	19350	22000	5/20	6.3/25	2x0.13/0.55	2x0.16/0.66	26500	SA-C 5734133	126
		4000	2240	30	KZL-E 315.5.40.10.556	1926	...40	-	14320	17190	20050	22000			2x0.32/1.25	2x0.36/1.50	51600	SA-C 5734313	146
		4000	2500	30	KZL-E 315.5.40.12.556	1926	...25	-	15290	18350	21410	22000			2x0.50/2.00	2x0.60/2.40	76800	SA-C 6734423	288
		4000	2800	30	KZL-E 315.5.40.14.156	1926	...20	-	15690	18830	21960	22000	4...40		2x2.20		47700	SA-C 5728384	134
		4260	2800	32	KZL-E 315.5.42.14.556	2003									2x3.20		94300	SA-C 5728484	146
		4260	2800	32	KZL-E 315.5.42.14.156	2003													
		4260	3150	32	KZL-E 315.5.42.16.156	2003							2.5..25		2x0.75		30200	SA-C 5732184	114
		4560	2800	34	KZL-E 315.5.45.14.556	2092									2x2.20		90300	SA-C 5732384	134
400	23,5	3150	1400	3150	KZL-C 400.9.31.140	1952			15000	17990			10/40	12.5/50	2x0.32/1.25	2x0.36/1.50	29600	SA-C5730313	90
	23,5	3150	1400	3150	KZL-C 400.9.31.158	1952		-							2x0.50/2.00	2x0.60/2.40	51800	SA-C5730423	90
	23,5	3150	1400	3150	KZL-C 400.9.31.558	1952		-	14570	17490					2x0.80/3.20	2x1.00/3.80	86600	SA-C6730523	160
	30	4000	2240	4000	KZL-C 400.9.40.158	2210													
	30	4000	2240	4000	KZL-C 400.9.40.558	2210		-	16370	19600									
	32	4260	2500	4260	KZL-C 400.9.42.558	2288		-	15920	19100			5/20	6.3/25	2x0.13/0.55	2x0.16/0.66	28200	SA-C5736133	90
	34	4560	2800	4560	KZL-C 400.9.45.558	2378									2x0.32/1.25	2x0.36/1.50	52000	SA-C5736313	90
															2x0.50/2.00	2x0.60/2.40	94800	SA-C6736423	160
500	29600	3150	1400	26	KZL-F 500.6.31.140	2490						k=100	10/40	12.5/50	2x0.50/2.00	2x0.60/2.40	47900	SA-C 6732423	288
		3150	1400	26	KZL-F 500.6.31.yyy	2490						*4			2x0.80/3.20	2x0.90/3.80	77900	SA-C 6732523	306
		4000	2240	32	KZL-F 500.6.40.yyy	2822	...50	-	18740	22490	26240	29600	5/20	6.3/25	2x0.32/1.25	2x0.36/1.50	58300	SA-C 6738313	268
		4260	2500	34	KZL-F 500.6.42.yyy	2858	...40	-	19290	23150	27010	29600			2x0.50/2.00	2x0.60/2.40	85800	SA-C 6738423	288
		4400	2240	35	KZL-F 500.6.44.578	2958	...25	-	20460	24550	28640	29600	4...40		2x2.20		49000	SA-C 6732384	256
		4560	2800	36	KZL-F 500.6.45.yyy	3248	...20	-	20790	24950	29110	29600			2x3.20		114300	SA-C 6732484	268
		4660	2500	37	KZL-F 500.6.46.578	3336							2.5..25		2x2.20		94500	SA-C 6736384	256
		4960	2800	39	KZL-F 500.6.49.578	3436													





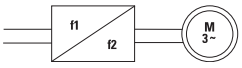
*1 20/40 % DC
*2 mF perm. for aH = 0.1 m/s2 acc. to FEM 9.681 for 1 pair
*3 KZL-S .. with flanged wheels
*4 Please state "k" when ordering
*6 For 1 pair
*7 Connection plate:
xxx = 136; 156; 536; 556
*8 60 Hz: x 0.9

BAKRAKO_EINSP_EN.FM

6.5 Travel drives

SF ..	400 V, 50 Hz

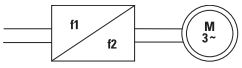
Index No.	Type	P	n1	TN	TA	TH	TB	Jrot	Jschw	IN	IK	cos φ N	cos φ K	DC	Ac T3	Wmax	PB
		kW	1/min	Nm	Nm	Nm	Nm	kgm^2	kgm^2	A	A			%		J/br	W
123	8/2F12/220.223	0.09 0.36	590 2420	1.46	3.9 3.6	2.3 2.3	1.3	0.0005	0.0053	1.0 1.3	1.4 3.2	0.55 0.83	0.78 0.93	20 40	800	3000	30
133	8/2F13/220.233	0.13 0.55	600 2540	2.07	5.1 5.1	3.5 3.5	2.5	0.0007	0.0078	1.2 1.6	1.6 4.5	0.55 0.82	0.72 0.92	20 40	500	3000	54
313	8/2F31/210.423	0.32 1.25	630 2550	4.68	7.6 10.5	6.4 6.8	5.0	0.0032	0.0133	1.4 3.0	2.9 9.2	0.69 0.88	0.89 0.90	20 40	600	12000	84
423	8/2F42/210.433	0.50 2.00	665 2680	7.13	12.0 17.4	9.2 10.4	8.0	0.0057	0.0230	1.8 4.0	4.4 16.0	0.74 0.95	0.87 0.90	20 40	360	12000	84
523	8/2F52/210.523	0.80 3.20	660 2650	11.53	24.0 30.5	23.0 17.0	15			3.3 6.5	8.6 25.0	0.56 0.92	0.80 0.73	20 40	300	25000	100

SF ..	400 V, 50 Hz		400 V, 100 Hz

Index No.	Type	P	n1	TN	TA	TH	TB	Jges	IN	IK	cos φ N	cos φ K	DC	Ac T3	Wmax	PB
		kW	1/min	Nm	Nm	Nm	Nm	kgm^2	A	A			%		J/br	W
184	4F18/220.233	0.63	2550	2.4	5.1	3.8	2.5	0.0005	2.0	5.4	0.72	0.82	40	500	6000	54
384	4F38/210.423	1.50	2840	5.0	17.0	13.0	8.0	0.0032	4.0	19	0.69	0.85	40	320	12000	84
484	4F48/210.443	3.20	2850	10.7	36.0	34.0	13.0	0.0057	8.6	48	0.71	0.83	40	300	12000	84

SF ..	400 V, 60 Hz

Index No.	Type	P	n1	TN	TA	TH	TB	Jrot	Jschw	IN	IK	cos φ N	cos φ K	DC	Ac T3	Wmax	PB
		kW	1/min	Nm	Nm	Nm	Nm	kgm^2	kgm^2	A	A			%		J/br	W
123	8/2F12/220.223	0.11 0.44	710 2900	1.46	3.9 3.6	2.3 2.3	1.3	0.0005	0.0053	1.2 1.5	1.6 3.7	0.55 0.83	0.78 0.93	20 40	800	3000	30
133	8/2F13/220.233	0.16 0.66	720 3050	2.07	5.1 5.1	3.5 3.5	2.5	0.0007	0.0078	1.4 1.8	1.8 5.2	0.55 0.82	0.72 0.92	20 40	500	3000	54
313	8/2F31/210.423	0.36 1.50	790 3060	4.68	7.6 10.5	6.4 6.8	5.0	0.0032	0.0133	1.6 3.5	3.3 10.6	0.69 0.88	0.89 0.90	20 40	600	12000	84
423	8/2F42/210.433	0.60 2.40	800 3220	7.13	12.0 17.4	9.2 10.4	8.0	0.0057	0.0230	2.1 4.6	5.1 19.0	0.74 0.95	0.87 0.90	20 40	360	12000	84
523	8/2F52/210.523	0.95 3.80	790 3180	11.53	24.0 30.5	23.0 17.0	15			3.3 6.5	8.6 25.0	0.56 0.92	0.80 0.73	20 40	300	25000	100

SF ..	400 V, 60 Hz		400 V, 120 Hz

Index No.	Type	P	n1	TN	TA	TH	TB	Jges	IN	IK	cos φ N	cos φ K	DC	Ac T3	Wmax	PB
		kW	1/min	Nm	Nm	Nm	Nm	kgm^2	A	A			%		J/br	W
184	4F18/220.233	0.75	3060	2.4	5.1	3.8	2.5	0.0005	2.3	6.2	0.72	0.82	40	500	6000	54
384	4F38/210.423	1.80	3410	5.0	17.0	13.0	8.0	0.0032	4.6	22	0.69	0.85	40	320	12000	84
484	4F48/210.443	3.80	3420	10.7	36.0	34.0	13.0	0.0057	9.9	58	0.71	0.83	40	300	12000	84

6 Technical data

SU-A..; SA-C..

400 V, 50 Hz

Index No.	Type	P	n1	TN	TA	TH	TB	Jrot	Jschw	IN	IK	cos φ N	cos φ K	DC	Ac T3	Wmax	PB
		kW	1/min	Nm	Nm	Nm	Nm	kgm^2	kgm^2	A	A			%		J/br	W
43	2/8 A04/507	0.05 0.20	630 2655	0.72	1.90 1.75	1.7 1.8	0.8	0.0004	0.0019	0.9 0.9	1.1 2.4	0.62 0.82	0.80 0.89	20 40	500	-	-
123	8/2F12/210.223	0.09 0.37	580 2510	1.41	3.0 3.3	2.3 2.3	1.3	0.0005	0.0053	0.9 0.7	1.4 3.4	0.55 0.85	0.76 0.89	20 40	800	3000	54
133	8/2F13/210.233	0.12 0.55	560 2550	2.38	4.3 6.1	2.8 3.5	2.5	0.0007	0.0079	1.0 1.9	1.3 4.1	0.53 0.71	0.73 0.90	20 40	500	3000	54
313	8/2F31/200.423	0.31 1.25	655 2650	4.5	8.3 12.6	6.4 6.5	5	0.0032	0.0133	1.4 2.7	3.2 10.2	0.64 0.84	0.84 0.89	20 40	600	12000	84
423	8/2F42/200.433	0.49 2.00	670 2740	6.97	11.9 18.3	10.2 10.9	8	0.0057	0.0133	1.7 4.2	4.7 4.2	0.80 0.91	0.83 0.89	20 40	360	12000	84
523	8/2F52/210.523	0.80 3.20	610 2660	12	21.0 24.0	16.0 18.0	13	0.0104	0.0353	2.7 7.3	6.1 26.0	0.74 0.96	0.83 0.82	20 40	300	25000	100

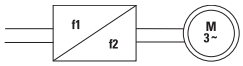
SU-A..; SA-C..

400 V, 60 Hz

Index No.	Type	P	n1	TN	TA	TH	TB	Jrot	Jschw	IN	IK	cos φ N	cos φ K	DC	Ac T3	Wmax	PB
		kW	1/min	Nm	Nm	Nm	Nm	kgm^2	kgm^2	A	A			%		J/br	W
43	2/8 A04/507	0.06 0.24	780 3255	0.72	1.90 1.75	2.1 2.1	0.8	0.0004	0.0019	1.1 1.1	1.3 2.9	0.62 0.82	0.80 0.89	20 40	385	-	-
123	8/2F12/210.223	0.10 0.44	700 3010	1.41	3.0 3.3	2.3 2.3	1.3	0.0005	0.0053	1.0 0.8	1.6 3.9	0.55 0.85	0.76 0.89	20 40	800	3000	54
133	8/2F13/210.233	0.14 0.66	670 3060	2.06	4.3 6.1	2.8 3.5	2.5	0.0007	0.0079	1.3 1.8	1.8 5.9	0.53 0.71	0.73 0.90	20 40	500	3000	54
313	8/2F31/200.423	0.36 1.50	800 3180	4.5	8.3 12.6	6.4 6.5	5	0.0032	0.0133	1.5 2.2	3.7 11.7	0.64 0.84	0.84 0.89	20 40	600	12000	84
423	8/2F42/200.433	0.58 2.40	780 3360	6.97	11.9 18.3	10.2 10.9	8	0.0057	0.0133	2.0 4.5	5.4 20.7^	0.80 0.91	0.83 0.89	20 40	360	12000	84
523	8/2F52/210.523	1.00 3.80	730 3030	12	21.0 24.0	16.0 18.0	13	0.0104	0.0353	3.1 8.3	7.0 29.0	0.74 0.96	0.83 0.82	20 40	300	25000	100

SU-A..; SA-C..

400 V, 50 / 60 Hz

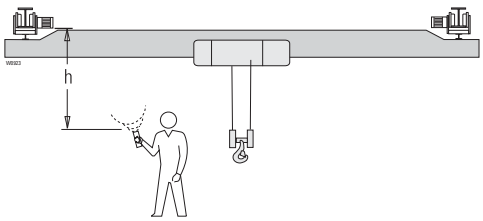


400 V, 100 / 120 Hz

Index No.	Type	fN	fN	P	P	n1	n1	TN	TA	TH	TB	Jrot	IN	IN	IK	cos φ N	cos φ K	DC	Ac	*1 x
		*Y	*Δ	*Y	*Δ	*Δ	*Δ						*Y	*Δ						Ω
		Hz	Hz	kw	kw	1/min	1/min	Nm	Nm	Nm	Nm	kgm^2	A	A	A			%		W
44	4 A04/507	50	100	0.2	0.4	1220	2440	1.57	3.1	2.5	1.3	0.0012	0.8	1.6		0.67		40	500	-
184	4F18/220.233			0.38	0.75	1220	2440	2.94	5.1	3.8	3.5	0.0005	1.1	2.2	2.7	0.73	0.82	40	500	18.8
384	4F38/220.433			1.1	2.2	1370	2740	7.7	17	13	8	0.0032	2.6	5.2	9.5	0.8	0.87	40	320	5.6
484	4F48/210.443			1.6	3.2	1425	2850	10.7	31	34	13	0.0057	4.3	8.6	23	0.71	0.83	40	300	2.6

Ac	[(c:h) x s]	Switching frequency factor	n1	[1/min]	Motor r.p.m.
cos φ K		Power factor (short circuit)	PB	[W]	Coil output (brake)
cos φ N		Power factor (nominal)	P	[kW]	Motor output
DC	[%]	Duty cycle	TA	[Nm]	Motor starting torque
IK	[A]	Short circuit current	TB	[Nm]	Braking torque (motor shaft)
IN	[A]	Rated current	TH	[Nm]	Run-up torque (motor shaft)
Jrot	[kgm2]	Moment of inertia, rotor	TN	[Nm]	Rated motor torque
Jschw	[kgm2]	Moment of inertia, centrifugal mass	Wmax	[J/Br]	Max. permissible friction energy (brake)
Jges	[kgm2]	Moment of inertia of motor as a whole	*1 x =		Terminal resistance

6.6 Sound pressure level



- Travel drives
Measured at a distance of 1 m from the crane contour.
The mean sound pressure level calculated for one operating cycle (50% with nominal load, 50% without load) can be seen in the tables.

Instead of stating an emission value based on a workplace, the values from the tables at measuring distance "h" can be used.

Indoors

Type of travel drive	[db (A)] + / - 3				
	h [m]				
	1 m	2 m	4 m	8 m	16 m
SU-A ..	78	75	72	69	66
SF .. 2.. ...	72	69	66	66	63
SF .. 8.. ...	78	75	72	69	66
SA-C ..	72	69	66	66	63

Outdoors

Type of travel drive	[db (A)] + / - 3				
	h [m]				
	1 m	2 m	4 m	8 m	16 m
SU-A ..	78	72	66	60	54
SF .. 2.. ...	72	66	60	54	48
SF .. 8.. ...	78	72	66	60	54
SA-C ..	72	66	60	54	48

6.7 Conditions of use

The components are designed for use in industry and for the ambient conditions usual in industry.

Special measures must be taken for particular applications such as e.g. high degree of chemical pollution, outdoor use, offshore application, etc.

The manufacturer will be pleased to advise you.

Protection against dust and humidity in acc. with EN 60 529 / IEC
Standard: IP 55
Option: IP66

Permissible ambient temperatures
Standard: -20°C ... +40°C
Option: +60°
Frequency inverters can be used from -20°C to +50°C (non-dewing).

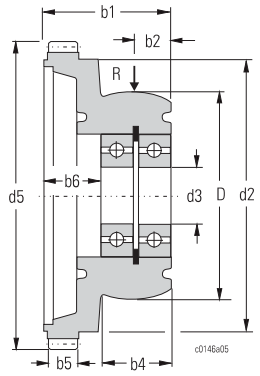
7 Wearing parts

7.1 Wheels

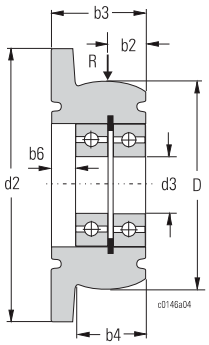
Wheels with 1 flange

(Fig. A3)

Ø80

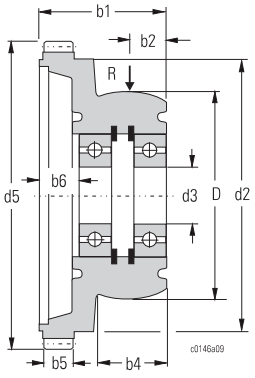


(Fig. B3)

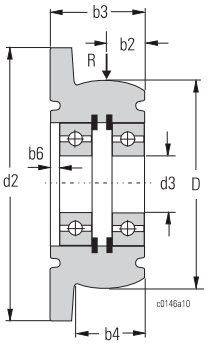


(Fig. A4)

Ø100 - 160

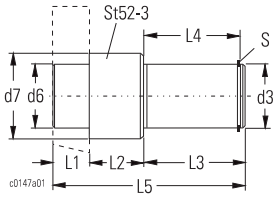


(Fig. B4)



ØD	Fig.	Order No.	Ød2	Ød3	Ød5	b1	b2	b3	b4	b5	b6	m *1	z *2	kg	R max.	*3	Bearing
mm			mm	mm	mm	mm	mm	mm	mm	mm	mm			kg	kg		
80	A3	03 250 02 40 0	99,5	20	115	52	11	-	27,5	13,5	26,4	2,5	44	1,5	800	GGG70	2x 6004-2RS
	B3	03 250 02 41 0	100		-	-		36		-	10,4	-	-	1,1			
100	A4	04 250 03 40 0	125	30	140	58	14	-	33	13,5	12,5	2,5	54	2,5	1250	GGG70	2x 6006-2Z
	B4	04 250 02 41 0			-	-		45		-	0	-	-	2,1			
125	A4	05 250 03 40 0	154	35	174	70	16,5	-	38	20	22	3	56	4,4	2000	GGG70	2x 6007-2Z
	B4	05 250 02 41 0			-	-		50		-	2	-	-	3,4			
160	A4	06 250 03 40 0	200	40	222	76,5	18	-	44,5	22	26	3	72	8,0	3200	GGG70	2x 6208-2Z
	B4	06 250 03 41 0			-	-		56,5		-	6	-	-	6,5			

Wheel axle



ØD	Order No.	L1	L2	L3	L4	L5	Ød3	Ød6	Ød7	kg	S
mm		mm	mm	mm	mm	mm	mm	mm	mm	kg	
80	03 254 10 10 0	8	29	29	26,95	66	20	20	28	0,3	20 x 1,2 DIN 471
100	04 254 06 10 0	11	15	49	46,5	75	30	30	36	1,0	30 x 1,5 DIN 471
125	05 254 07 10 0	19	28	53	49,5	100	35	35	48	2,0	35 x 1,5 DIN 471
160	06 254 06 10 0	25	32	55	52,25	112	40	40	68	3,5	40 x 1,75 DIN 471

7.2 Wheels / guide roller

Fig. 1

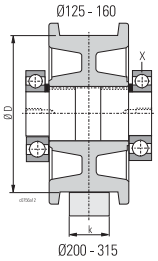
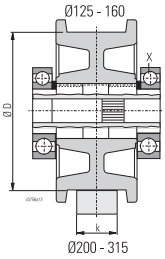


Fig. 2



Wheels for K.L-.. endcarriages for overhead travelling cranes

ØD [mm]	Fig.	Order No.	Endcarriage	k *1 [mm]
125	1 + 2	24 254 10 01 0	KEL-S125	40
	1 + 2	24 254 11 01 0		50
160	1 + 2	24 254 20 01 0	K.L-S160	40
	1 + 2	24 254 21 01 0		50
200	1	07 257 00 05 0	K.L-S200	40
	1	07 257 01 05 0		50
	1	07 257 02 05 0		60
	2	07 257 04 01 0		40
	2	07 257 05 01 0		50
	2	07 257 06 01 0		60
	5	07 257 03 05 0		-
	6	07 257 08 01 0		-
315	1	09 257 00 05 0	-	40
	1	09 257 01 05 0	K.L-S315	50
	1	09 257 02 05 0		60
	2	09 257 06 01 0		40
	2	09 257 07 01 0		50
	2	09 257 08 01 0		60
315	5	09 257 03 05 0		-
	6	09 257 09 01 0		-
315	1	09 257 15 05 0	K.L-E315	50
	1	09 257 16 05 0		60
	1	09 257 17 05 0		70
	1	09 257 18 05 0		80
	2	09 257 15 01 0		50
	2	09 257 16 01 0		60
	2	09 257 17 01 0		70
	2	09 257 18 01 0		80
315	5	09 257 19 05 0		-
	6	09 257 19 01 0		-
400	3	24 254 62 01 0	KZL-C400	50
	4	24 254 63 01 0		60
		24 254 64 01 0		70
	5 + 6	24 254 60 01 0		-
500	5 + 6	24 254 70 01 0	KZL-F500	50 ..100

Fig. 3

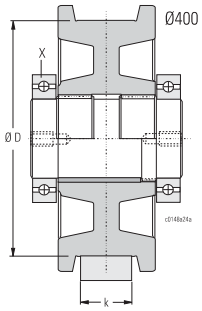


Fig. 4

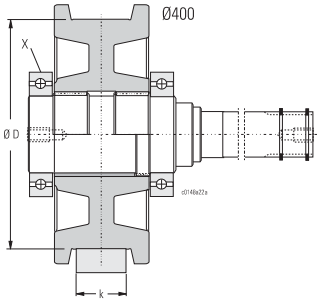


Fig. 5

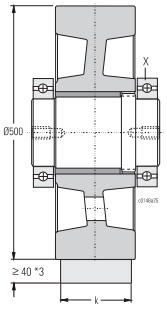
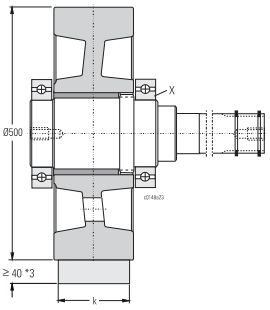
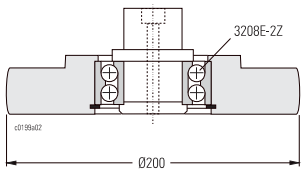


Fig. 6



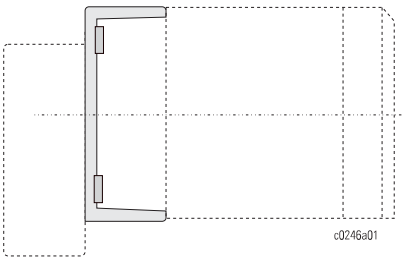
7.3 Guide rollers



ØD [mm]	Order No.	Endcarriage
62	573 000 0	KEL-S125
62	573 000 0	K.L-S160
125	27 710 00 58 0	K.L-S200
125	27 710 00 58 0	K.L-S315
200	39 710 00 58 0	K.L-E315
200	30 712 00 93 0	KZL-C400
200	30 712 00 93 0	KZL-F500

7.4 Brake discs / brake rotors for travel drives

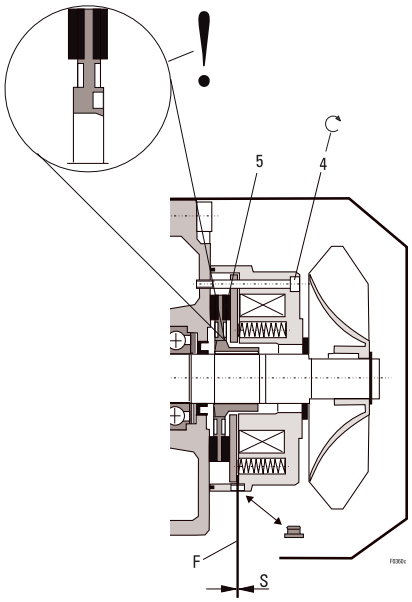
SU-A 1.4..



Order No.

51 250 79 37 0 (SU-A 1.4.1)
51 250 78 37 0 (SU-A 1.4.2)

S.-C .. / SF ..

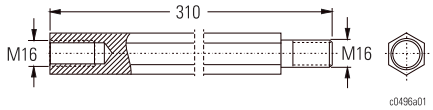
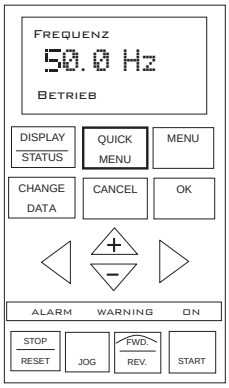


	Motor	Braking torque [Nm]	Type of brake	S max. [mm]	4	[Nm]	Order No. for brake disc
SA-C ... 133 SA-C ... 184	8/2F13/2xx.233 4F18/2xx.233	2.5	FDW 08	0.2...1.2	3xM4	3	567 100 0
SA-C ... 313	8/2F31/2xx.423	5	FDW 13	0.3...2.0	3xM6	10	21 270 00 64 0
SA-C ... 384 SA-C ... 423 SA-C ... 484	4F38/2xx.423 8/2F42/2xx.433 4F48/2xx.443	8	FDW 13	0.3...2.0	3xM6	10	21 270 00 64 0
SA-C ... 523	8/2F52/2xx.523	13	FDW 15	0.3...2.0	3xM6	10	567 151 0

	Motor	Braking torque [Nm]	Type of brake	S max. [mm]	4	[Nm]	Order No. for brake disc
SF xx xxx 123	8/2F12/2xx.223	1.3	FDW 08	0.2...2.0	3xM4	3	567 100 0
SF xx xxx 133	8/2F13/2xx.233	2.5	FDW 08	0.2...1.2	3xM4	3	567 100 0
SF xx xxx 184	4F18/2xx.233	2.5	FDW 08	0.2...1.2	3xM4		567 100 0
SF xx xxx 313	8/2F31/2xx.423	5	FDW 13	0.3...2.0	3xM6	10	21 270 00 64 0
SF xx xxx 384	4F38/2xx.423	8	FDW 13	0.3...2.0	3xM6	10	21 270 00 64 0
SF xx xxx 423	8/2F42/2xx.433	8	FDW 13	0.3...2.0	3xM6	10	21 270 00 64 0
SF xx xxx 484	4F48/2xx.523	13	FDW 15	0.3...2.0	3xM6	10	567 151 0
SF xx xxx 523	8/2F52/2xx.523	13	FDW 15	0.3...2.0	3xM6	10	567 151 0

Replacement and repairs may only be carried out by qualified personnel.

8 Assembly aids and special tools

Fig.	Designation		Order No.
Crane components			
	Assembly aid for suspension crane endcarriages (8 pcs required)	KEH-A ...	23 722 05 92 0
	Off-standard Allen key with pin	SU-A ..	51 253 00 66 0
	LCP2 operating unit 1.5 m connection cable	SFD	579 942 0 579 943 0

9 General information

9.1 Seminars

We offer seminars covering all main product groups, such as seminars for crane operators, wire rope hoist seminar, chain hoist seminar, seminar on load suspension equipment and seminar for material conveying equipment.
However we would be please to offer a special programme orientated on your individual specifications and requirements.
The seminars are individual modules or can form part of a long-term training course; they are held in German or English.
Each seminar is concluded with a certificate.

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STAHL CraneSystems GmbH
Daimlerstraße 6 | D-74653 Künzelsau | Tel. +49 7940 128-0
marketing@stahlcranes.com

Or you can find information at →www.stahlcranes.com

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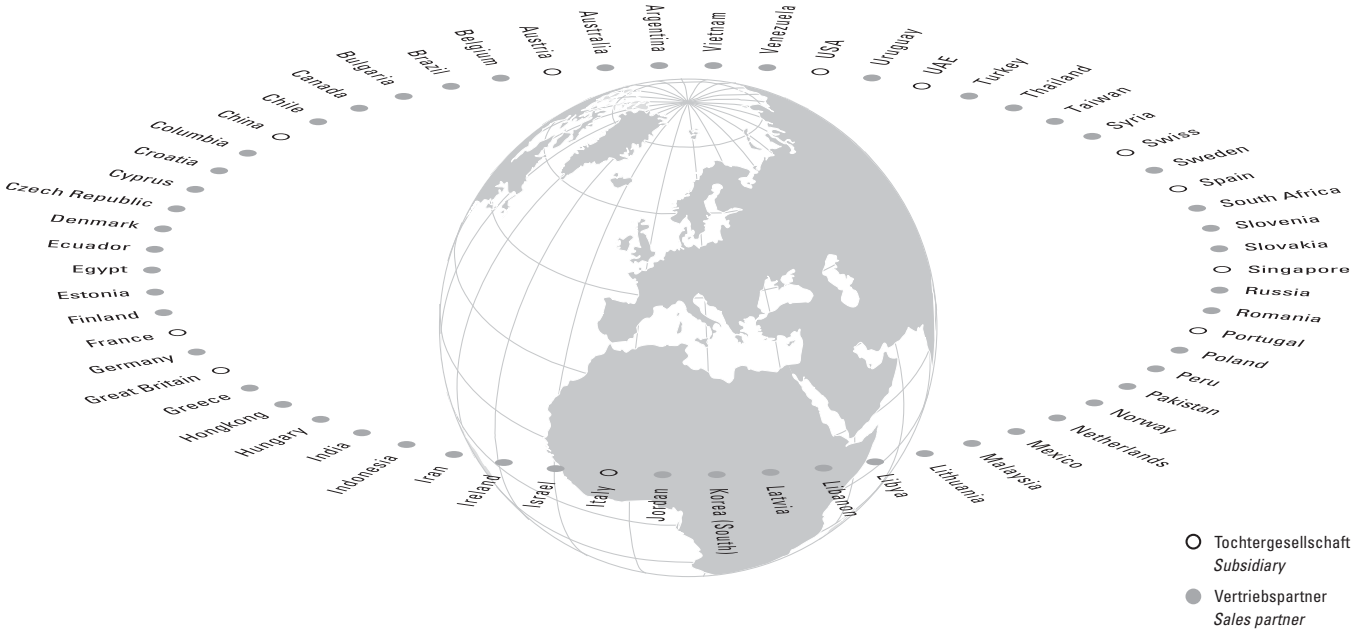

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