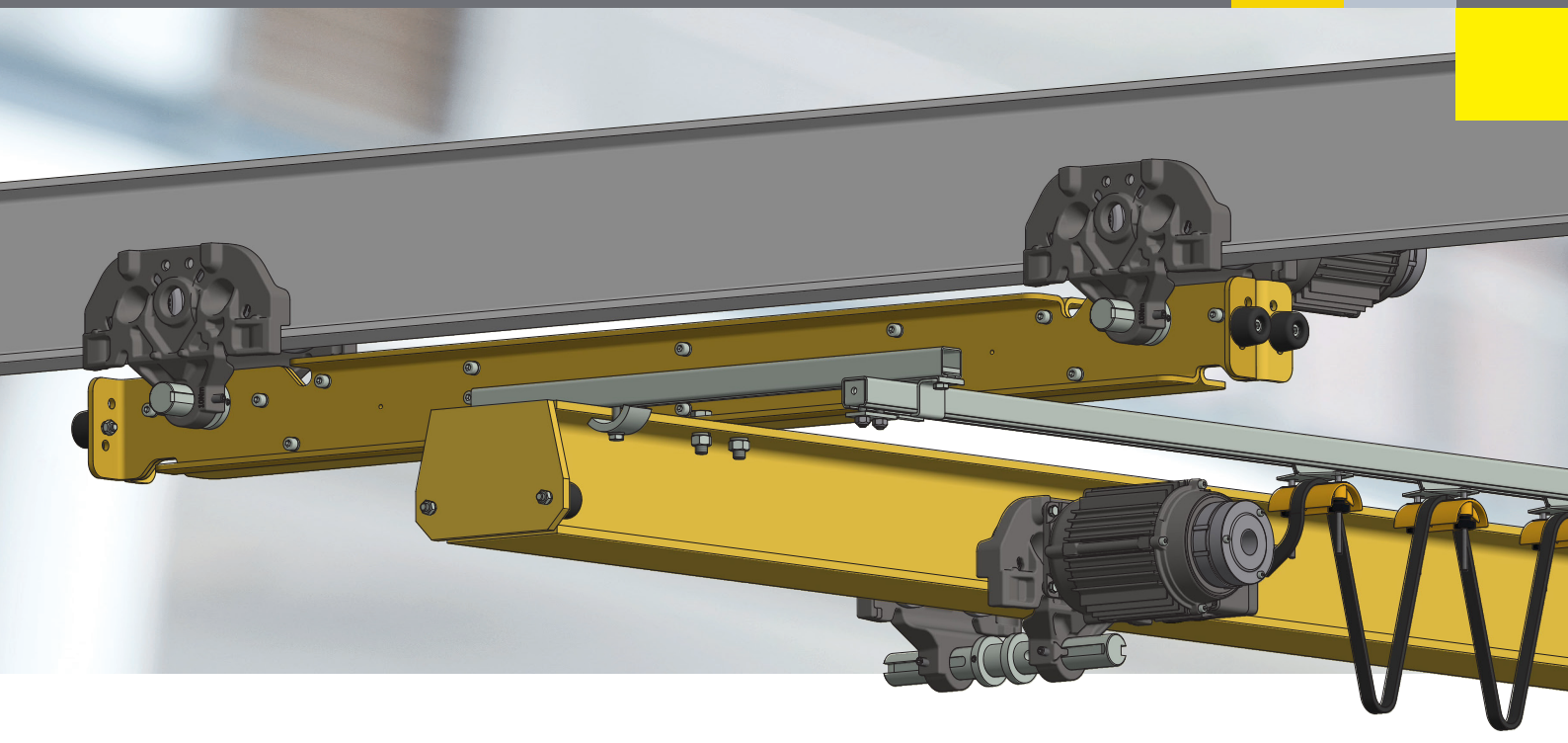
swiss lifting solutions

TRANSLATION OF THE
ORIGINAL INSTRUCTION MANUAL
CRANE COMPONENTS GKU



since 1957

www.gis-ag.ch

04.21 Translation 9500.9008.1

Table of contents

Spare parts / Ordering spare parts

The correct order numbers for original spare parts can be obtained from the relevant dimensioned drawing. Please ensure that you have the following data on your crane component type to hand. This will enable the correct spare parts to be supplied without delay.

Crane component type:

Wheel base:

Year of manufacture:

Load capacity:

Original spare parts for the crane components can be acquired from the following addresses:

Manufacturer

GIS AG
Swiss Lifting Solutions
Luzernerstrasse 50
CH-6247 Schötz

Tel. +41 (0)41 984 11 33
tel@gis-ag.ch
www.gis-ag.ch

Resellers / Agent

0 General information

0.1 General safety instructions

0.1.1 Safety and hazard information

The following symbols and terms are used in this instruction manual for safety and hazard instructions:

WARNING !
Non-compliance, either in part or full, with operating instructions with this symbol can result in serious personal injury or fatal accidents. Warning information must be **strictly** adhered to.

ATTENTION !
Non-compliance, either in part or full, with operating instructions with this symbol can result in major damage to machinery, property or material. Information in the "Caution" category is to be **exactly** adhered to.

NOTE
Following the instructions marked with this symbol will lead to more effective and straightforward operation. "Note" directions make work easier.

0.2 General safety regulations and organisational measures

The instruction manual for the crane system must always be available within the operating area of the crane system. The instruction manual must be strictly adhered to. Furthermore, supplementary to the instruction manual, the statutory regulations governing general accident prevention and environmental protection are to be enforced.
Operating and service personnel must have read and understood the instruction manual, in particular the safety instructions, before commencing work. Protective equipment must be made available for operating and service personnel and worn at all times. The operator or their representative is responsible for supervising operating personnel and ensuring they are aware of the hazards and safety implications of working with the crane system.
The manufacturer reserves the right to make technical changes to the product or changes to these instructions and assumes no liability for the completeness and up-to-dateness of these instructions. The original version of these instructions is in the German language. In case of doubt, the original German original version is exclusively valid as a reference document.

0.3 Particular safety instructions

Transport / Assembly:
- Single parts and large components should be carefully fixed to suitable and technically acceptable hoisting apparatus / load handling devices.

Start-up / operation:
- Before initial start-up, as well as daily start-up, carry out a visual check and carry out the stipulated user-checks routine.
- Damage to the crane components and changes in its operational characteristics must be reported immediately to the responsible person.
- Refrain from hazardous procedures.
- The maximum load of GKU crane components must not be exceeded.

See also operational parameters (Chapter 0.6).

Cleaning / service / repair / maintenance / refitting:
- Use working platforms provided for assembly work at high level.
- Do not use machine parts for this purpose.
- Check electrical cables for damage or wear.
- Reassemble and check safety devices that have been disassembled for maintenance or repair of the hoist once service and repair work has been completed.
- Adhere to predefined testing and service intervals specified in the instruction manual.
- Follow the directions in the instruction manual regarding exchanging parts.
- Operating personnel should be informed before commencing special or repair work.
- Secure the repair working area.
- Attach warning plates.
- Retighten screw connections that have been loosened for repair or maintenance work.
- Replace non-reusable fixing elements (e.g. self-locking nuts, washers, cotter pins, O-rings and seals).

0.4 Instructions for hazard protection

Hazardous areas must be clearly marked by warning plates and cordoned off. It must be ensured that warnings regarding hazardous areas are given due attention.

Hazards can stem from:
- incorrect application
- not following safety directions properly
- not carrying out test and service work thoroughly

0.4.1 Hazards - Mechanical

Physical injury:
Unconsciousness and injury through:
- crushing, shearing, cutting and twisting
- drawing in, ramming, piercing and rubbing
- slipping, stumbling and falling

Causes:
- crushing, shearing and twisting
- parts rupturing or bursting

Safety options:
- keep floor, equipment and machinery clean
- observe the required safety distance

0.5 Technical status

This instruction manual was issued in 2021. It corresponds to directive 2006/42/EC of the European Parliament and council of 17 May 2006 (including its amendments).

0.5.1 Periodic checks

Each device/unit operator should adequately note all checks, maintenance and inspections performed in the inspection pass, and have these confirmed by the competent person in charge. Incorrect or missing entries will lead to forfeiture of the manufacturer's warranty.

Devices and cranes are to be checked periodically by a specialist. Primarily, visual and functional checks are to be carried out, whereby the state of components with respect to damage, wear, corrosion or any other changes is determined. In addition, safety equipment is assessed for completeness and efficiency. It may be necessary to dismantle the equipment to correctly assess wear parts.

Load-bearing parts must be inspected over their entire length, including covered or hidden parts.

All periodical inspections should be arranged by the operator.

0.5.2 Warranty

The warranty is void if the assembly, operation, testing and maintenance is not carried in accordance with this instruction manual. Repairs and troubleshooting under warranty may only be carried out by qualified persons after consultation and agreement with the manufacturer / supplier. Any modifications to the product or the use of non-original spare parts will void the warranty.

0.6 Appropriate use

The crane components of the GKU series are used as end carriages for underslung standard travelling cranes. The crane components are manufactured in accordance with the latest technical developments and recognised safety standards, and are tested for safe operation by the manufacturer. The GKU crane components may only be used together with standard GIS trolleys. Crane components of the above series may only be used when in an acceptable technical condition, in accordance with their intended use, by trained personnel in a safe and responsible manner. No modifications that would impair the strength values may be made to the crane components.

General operating conditions:
- Ambient temperature .....: -15 °C to +50 °C
- Humidity.....: max. 80 % relative humidity

We recommend equipping GIS crane components operating outdoors with a protective cover to protect against the effects of the weather. Special operating conditions can be agreed in individual cases with the manufacturer. After consultation, appropriate, optimised equipment, and important information for safe, low-wear use can be supplied. The intended use of the crane components likewise assumes adherence to the operating, maintenance and servicing prescribed by the manufacturer. The maximum permissible payload must take into account the weight of the crane bridge and the additional strain brought about by the overhang load.

Improper use comprises:
- exceeding the defined maximum permissible load capacity
- pulling loads at an angle
- heaving, pulling or dragging the load
- transporting persons
- moving loads over persons
- transporting excessive loads
- failing to observe the load constantly
- use in an explosive environment

Refer also to Chapter 0.3.

0.6.1 Use of the instruction manual

This instruction manual includes the following chapters:

0 General information	3 Care and maintenance
1 Description	4 Disposal
2 Start-up	5 Annex

Supplementary to the instruction manual, the following documentation from the operator must be noted:
- EC Declaration of incorporation
- Technical data sheets

Page and figure numbering:
The pages are consecutively numbered. Blank pages are not numbered, however are calculated together with the consecutive pages. Figures are numbered consecutively by chapter. Example: Figure 3-1 means: in Chapter 3, Figure 1.

1 Description

The series includes the following models: GKU.

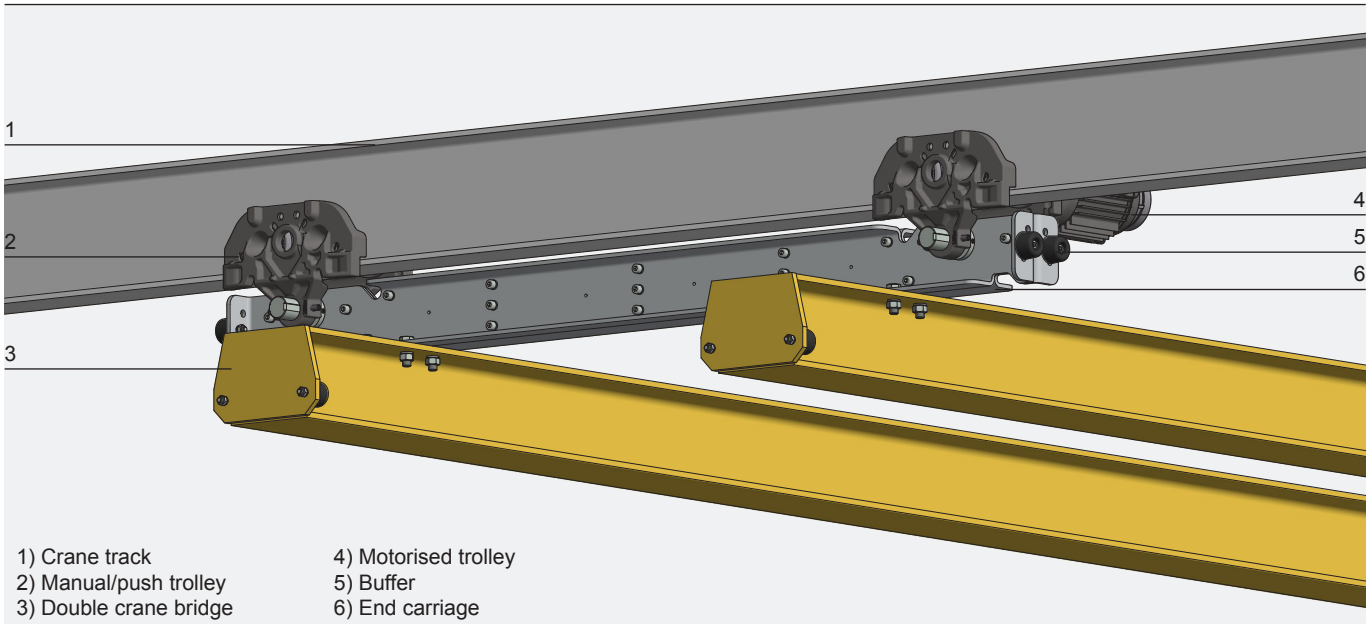
1.1 Operating conditions

The corresponding GIS standard trolleys are to be used as longitudinal trolleys:

GKU 1250.....: GHF 1250, GMF 1250
GKU 2500.....: GHF 2500, GMF 2500
GKU 5000.....: GHF 5000, GMF 4000/5000

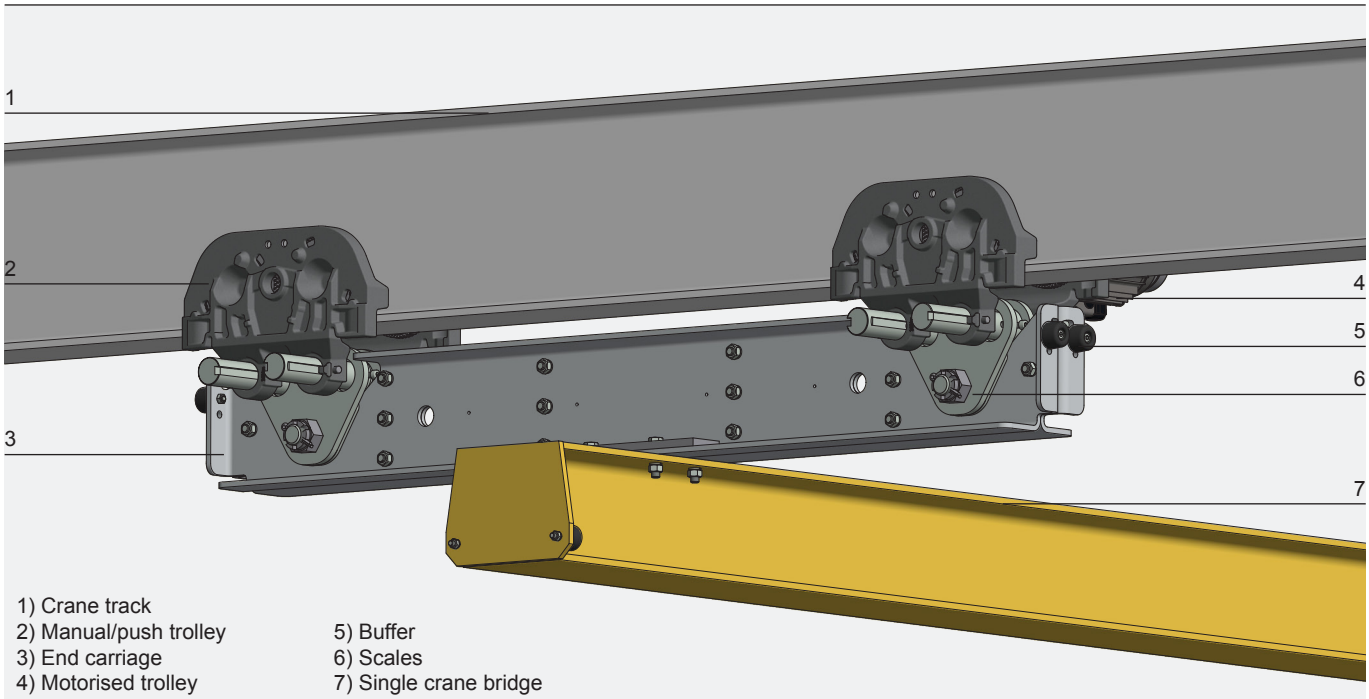
1.2 General description

Figure 1-1 GKU 1250/2500



1) Crane track
2) Manual/push trolley
3) Double crane bridge
4) Motorised trolley
5) Buffer
6) End carriage

Figure 1-2 GKU 5000



1) Crane track
2) Manual/push trolley
3) End carriage
4) Motorised trolley
5) Buffer
6) Scales
7) Single crane bridge

The GKU crane components are designed as a crane bridge kit. An end carriage consists of 2 primed sheet steel parts that are bolted together. A kit is required to construct an underslung travelling crane with a single or double crane bridge.
The scope of delivery and the hole pattern to be prepared on site can be found on the technical data sheets. The GKU type is determined by the maximum permissible payload of the crane and by the span width of the crane bridges. The layout is determined by a calculation program.

2 Start-up

Mechanical adjustments may be performed by authorised specialists. If no tightening torques are specified for screw connections, the general information in Chapter 3.2.3 applies.

Operating staff must carefully read the instruction manual of the crane components before initial start-up and carry out all the checks. The crane components shall be put back into operation only after operational safety has been established. Unauthorised persons must not fit the crane components or carry out work with them.

The operator must create an inspection pass during the start-up of the crane components. The inspection pass contains all the technical data and the date of start-up. It provides a record of all servicing and maintenance work.

2.1 Transport and assembly

The safety directions for handling loads should be followed (see Chapter 0.3) when transporting and assembling the crane components. Crane components must be assembled by qualified staff, always bearing in mind the accident prevention directions in Chapter 0.2. Before assembly, the crane components must be stored in an closed room or covered area. Should the crane components be destined for operation outdoors, then it is recommended that a protective cover is erected to shield it from the effects of the weather.
Wherever possible, the crane components should be transported in their original packaging. The goods delivered should be checked for completeness and the packaging disposed in an environmentally sound manner. It is advisable to have the crane components assembled on-site by trained skilled personnel.

2.2 Assembly

Before assembling the crane components, check whether the existing GKU type corresponds to the specifications on the technical data sheet and whether it is suitable for the crane system to be assembled.

The first step is to fit the end carriages onto the single or double crane bridge. The corresponding drill holes and screw fittings must be made by the crane builder in accordance with the specifications on the technical data sheet. For the GKU 5000 series, a lining plate must also be installed for the single crane girder.

Assembling the end carriages:

- 2 buffers are mounted on the end face of each end carriage.
- Only original GIS trolleys may be used as push trolleys (see Chapter 0.6).
- The GKU 1250/2500 series is mounted directly on the trolleys as shown in Figure 2-1.
- The GKU 5000 series is mounted with an additional suspension part as shown in Figure 2-2.
- One side of the single or double crane bridge must be designed as a fixed bearing (see Figure 2-3). The opposite side must be designed as a floating bearing to compensate for crane track inaccuracies (see Figure 2-4).
- Assembly of the supplied adjusting rings is carried out according to the illustration on the technical data sheet.

The trolleys must be assembled in accordance with the original instruction manual for GHF/GMF trolleys.

Figure 2-1 GKU 1250/2500

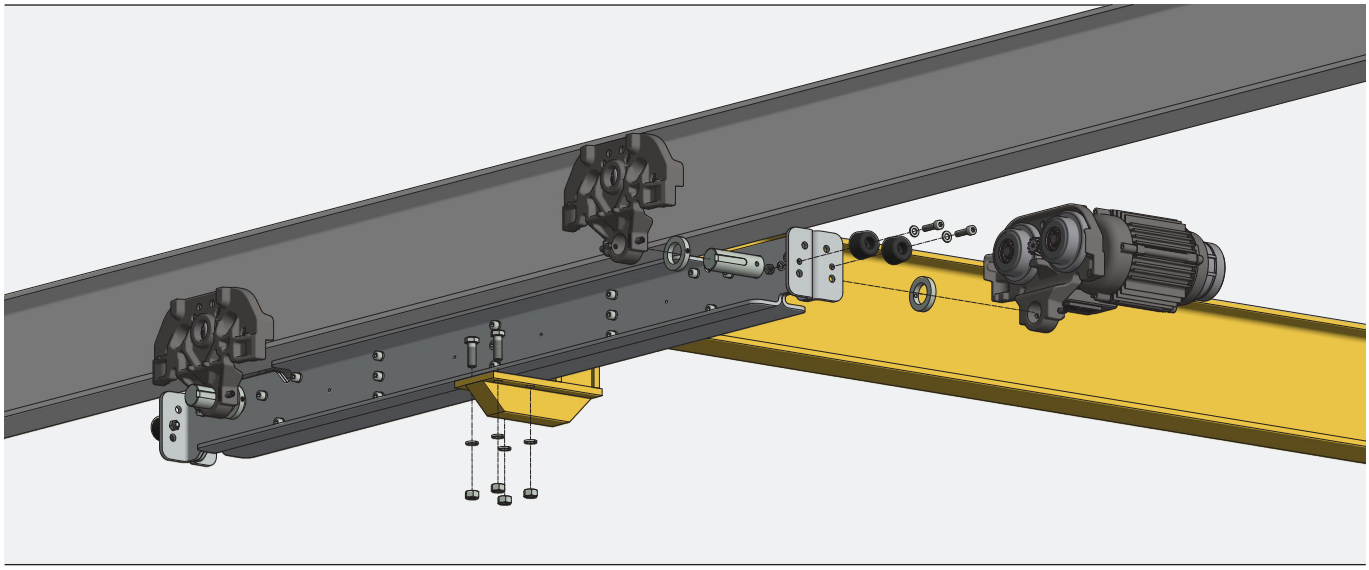


Figure 2-2 GKU 5000

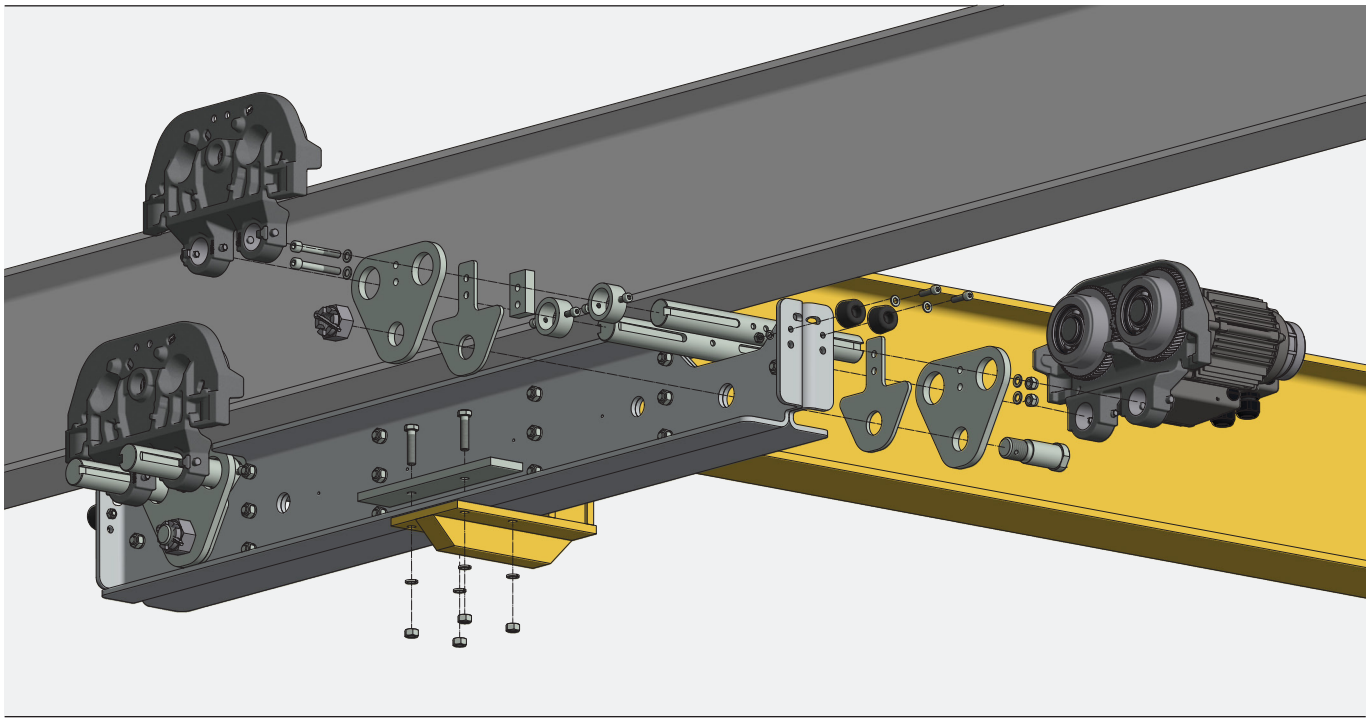


Figure 2-3 Fixed bearing

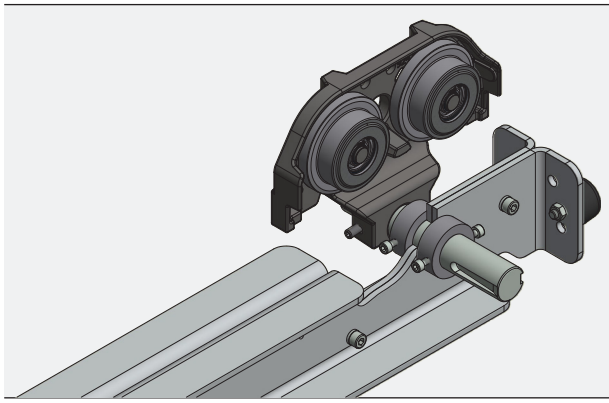
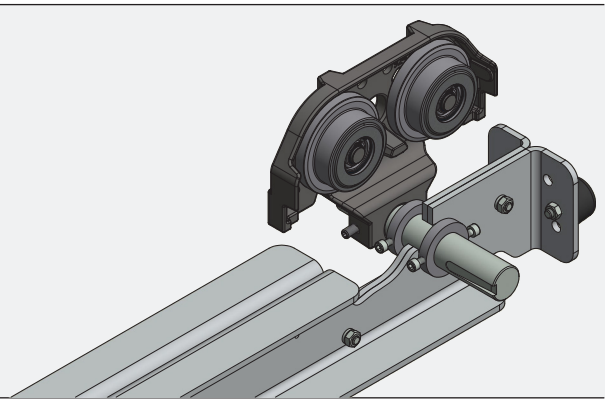


Figure 2-4 Floating bearing



3 Care and maintenance

3.1 General guidelines for maintenance and repair

Operating failures in crane components affecting the safe operation of the device should be remedied immediately.

Maintenance and repair work on the crane components may only be carried out by qualified and trained personnel.

If the operator performs maintenance work on the crane components on their own, the type of maintenance performed together with the date carried out must be entered in the inspection pass.

Alterations, as well as modifications and additions to crane components, which may affect safety, must be authorised by the manufacturer in advance. Structural alterations to crane components not authorised by the manufacturer exempt the manufacturer from liability in the event of damage. Material warranty claims will only be recognised as valid if original manufacturer's spare parts are used exclusively. We explicitly advise that original parts and accessories not delivered by us are also not checked or approved by us.

General:
Care and maintenance tasks are preventive measures designed to preserve the full functionality of crane components. Non-compliance with care and maintenance routines can result in limited use and damage to crane components.
Care and maintenance should be carried out in accordance with the instruction manual at predefined time intervals (Table 3-1 and 3-2). During care and maintenance work, general accident prevention directions, special safety directions (Chapter 0.3) as well as hazard protection instructions (Chapter 0.4) should be followed.

STOP

Care and maintenance work should be performed only on crane components with no loads. The main switch of the crane must be off.

Care work encompasses visual checks and cleaning routines. Maintenance work includes additional functional checks. During the function checks, all fixing elements must be checked for tightness.

Care and maintenance intervals are defined as follows:
d (daily), 3 M (quarterly), 12 M (annually)

The predefined care and maintenance intervals should be reduced when the loading of the crane components is exceptionally large or when frequently operated in adverse conditions (e.g. dust, heat, humidity, steam, etc.).

3.2 Care and maintenance

The crane components are largely maintenance-free. Unusual noises during daily use must be reported to the competent authority immediately. A pending repair must be carried out immediately.

3.2.1 Care overview

Table 3-1 Care overview

Designation	d	3 M	12 M	Task	Remark
1. End carriage	x			Check for abnormal Noise / deformation	
2. Buffer	x			Visual check	

3.2.2 Maintenance overview

Table 3-2 Maintenance overview

Designation	d	3 M	12 M	Task	Remark
1. End carriage			x	Function check with load Check screw torques	Chapter 3.2.3
2. Buffer			x	Visual check for wear	

3.2.3 Tightening torques

Torque values for screws of strength class 10.9 per DIN ISO 898:

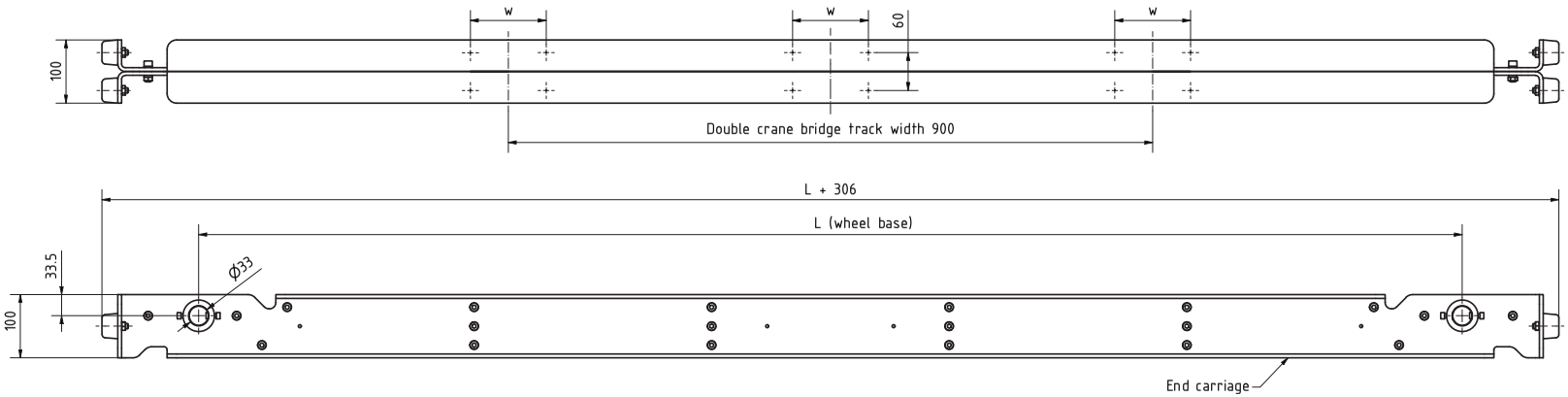
M 8	M 10	M 12
40 Nm	80 Nm	135 Nm

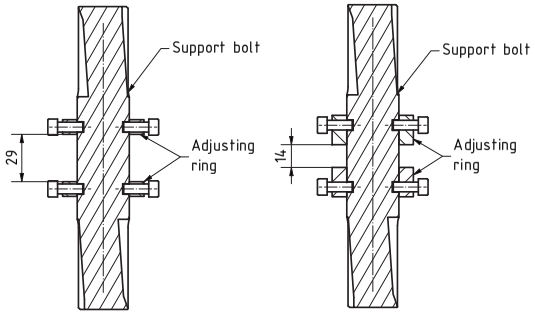
4 Disposal

If the crane components can no longer be used, they must be disposed of in an environmentally safe manner. Metals and plastics are to be recycled.

5 Annex

5.1 Technical data sheets





Hole pattern for single and double crane bridge	
Beam	w
IPE 180	50
IPE 200	56
IPE 220	60
IPE 240	68
IPE 270	72
IPE 300	80
IPE 330	86
IPE 360	90
IPE 400	86
IPE 450	106
IPE 500	110
IPE 550	120
IPE 600	120
Beam	w
HEA/HEB 140	76
HEA/HEB 160	86
HEA/HEB 180	100
HEA/HEB 200	110
HEA/HEB 220	120
HEA/HEB 240	130
HEA/HEB 260	145
HEA/HEB 280	155
HEA/HEB 300–	165

according to steel construction tables C5/18

Performance data for GKU 1250					
	EKT	EKT	DKT	EKT	DKT
Type	GKU/1200	GKU/1600		GKU/2000	
Order number GKU-KIT	9247.3700.3	9247.3701.3		9247.3702.3	
Wheel base	1200	1600		2000	
Max. lifting capacity [kg]*	1250	1250	1250	1250	1250
* Reference value only, must not be used for design.					
Max. span width [mm]	7500	10000		12500	
Permissible trolley combination	1xGMF1250 & 1xGHF1250 (per end carriage)				
EN 13001 load spectrum	Q5				
EN 13001 Voltage curve	S0-S2 (workshop operation)				
Drive designs	Admissibility				
NF 4/12 m/min	✓	✓	✓	✓	✓
N 12 m/min	✓	✓	✓	✓	✓
SF 6/20 m/min	✓	✓	✓	✓	✓
FU-N 20 m/min	✓	✓	✓	✓	✓
FU-S 30 m/min	✓	✓	✓	✓	✓
Frequency converter	FRD-740-SC-SE-050 2.2kW				
Ext. brake resistor	×				
High speed shutdown required	×	×	×	×	×
Stop circuit required	×	×	×	×	×

Screw connection data for cross beam/GKU 1250 - EKT/DKT	
Number of screw connections (EKT/DKT)	4/8
Screw diameter [mm]	12
Clearance hole [mm]	Ø13 or fine series
Strength class [-]	8.8
Screw locking	NL12sp
Tightening torque [Nm]	80
Screw lubrication	Molykote 1000

Additional remarks for DKT:

- Smallest perm. profile size: IPE 180, HEA 160, HEB 160
- Track width of 900mm must be adhered to.

(Use of smaller profile sizes, alternative screw connection dimensions or deviations from the track width only after consultation with the technical department.

Scope of supply for end carriage kit:

2 end carriage assy. incl. buffer
4 adjusting rings, fixed side
4 adjusting rings, loose side

Pos	Artikel-Nr	Bezeichnung	Werkstoff		
3	9247.3700.3	Kopfträgerkit GKU 1250/1200			
2	9247.3701.3	Kopfträgerkit GKU 1250/1600			
1	9247.3702.3	Kopfträgerkit GKU 1250/2000			

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Rev.	Datum	User
C	08.04.2021	P.ENGEL
Gezeichnet	10.05.2021	T.Keller

GKU 1250
Massbild; Schematic draw; Liste de dim.

Massstab 1 : 5 | 1 / A2

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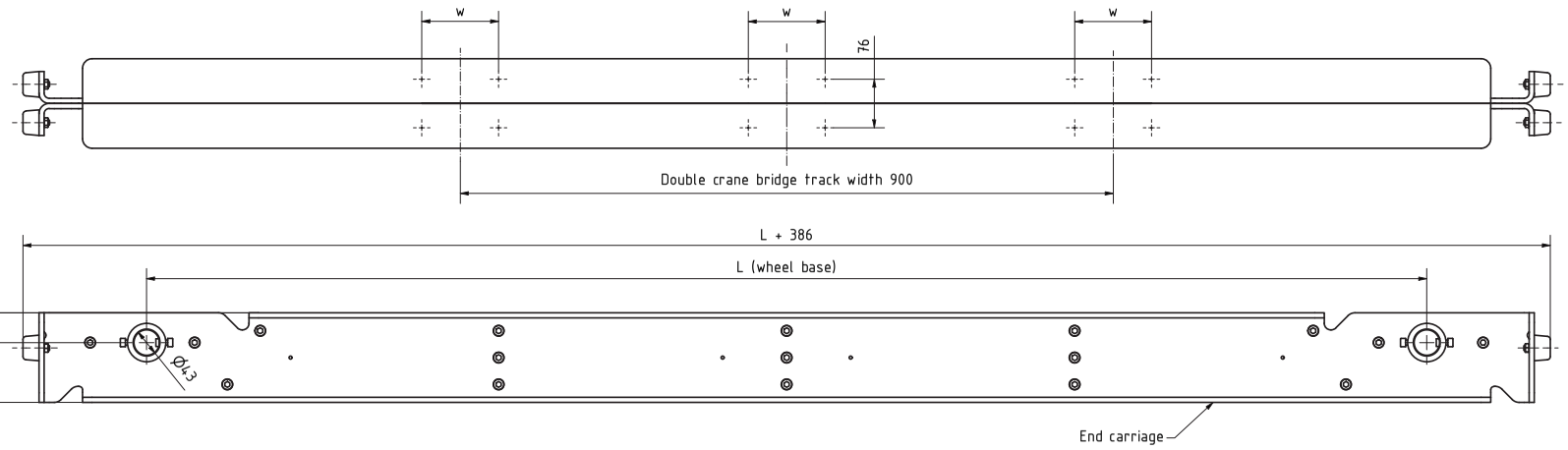

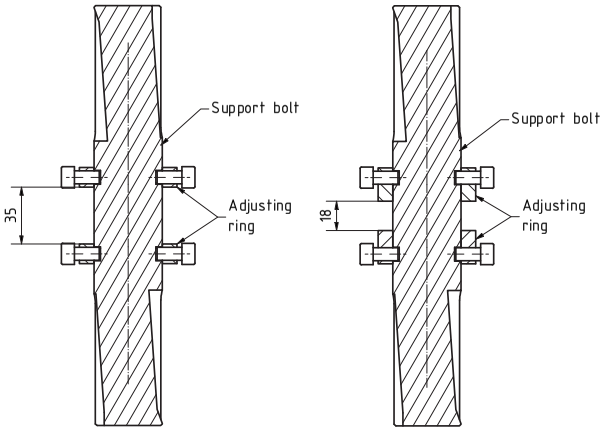

Loose side

Fixed side

Performance data for GKU 2500					
	EKT	EKT	DKT	EKT	DKT
Type	GKU/1200	GKU/2000		GKU/2800	
Order number GKU-KIT	9248.3700.3	9248.3701.3		9248.3702.3	
Wheel base L [mm]	1200	2000		2800	
Max. lifting capacity [kg]*	2500	2500	2500	2000	2500
* Reference value only, must not be used for design.					
Max. span width [mm]	7500	12500		17500	
Permissible trolley combination	1xGMF2500 & 1xGHF2500 (per end carriage)				
EN 13001 load spectrum	Q5				
EN 13001 Voltage curve	S0-S2 (workshop operation)				
Drive designs	Admissibility				
NF 4/12 m/min	✓	✓	✓	✓	✓
N 12 m/min	✓	✓	✓	✓	✓
SF 6/20 m/min	✓	✓	✓	✓	✓
FU-N 20 m/min	✓	✓	✓	✓	✓
FU-S 30 m/min	✓	✓	✓	✓	✓
Frequency converter	FRD-740-SC-SE-050 2.2kW				
Ext. brake resistor	x				
High speed shutdown required	x	x	x	x	x
Stop circuit required	x	x	x	x	x

Screw connection data for cross beam/GKU 2500 - EKT/DKT	
Number of screw connections	EKT:4/DKT:8
Screw diameter [mm]	16
Clearance hole [mm]	Ø17 or fine series
Strength class [-]	8.8
Screw locking	NL16sp
Tightening torque [Nm]	210
Screw lubrication	Molykote 1000

Additional remarks for DKT:

- Smallest perm. profile size: IPE 220, HEA 160, HEB 160
- Track width of 900mm must be adhered to.

(Use of smaller profile sizes, alternative screw connection dimensions or deviations from the track width only after consultation with the technical department.

Scope of supply for end carriage kit:

2 end carriage assy. incl. buffer
4 adjusting rings, fixed side
4 adjusting rings, loose side

Hole pattern for single and double crane bridge	
Beam	w
IPE 220	60
IPE 240	68
IPE 270	72
IPE 300	80
IPE 330	86
IPE 360	90
IPE 400	86
IPE 450	106
IPE 500	110
IPE 550	120
IPE 600	120
Beam	w
HEA/HEB 160	86
HEA/HEB 180	100
HEA/HEB 200	110
HEA/HEB 220	120
HEA/HEB 240	130
HEA/HEB 260	145
HEA/HEB 280	155
HEA/HEB 300-	165

according to steel construction tables C5/18

Pos	Menge	Bezeichnung	Werkstoff	Artikel-Nr
3	1	Kopfträgerkit GKU 2500/1200		9248.3700.3
2	1	Kopfträgerkit GKU 2500/2000		9248.3701.3
1	1	Kopfträgerkit GKU 2500/2800		9248.3702.3

In Bearbeitung | Klasse b | Ersetzt durch | Ersatz für

Rev.	Datum	User	Gezeichnet
C	08.04.2021	P.ENGEL	10.05.2021 T.Keller

GKU 2500
Massbild; Schematic draw; Liste de dim.

Massstab 1 : 5 | 1 / A2

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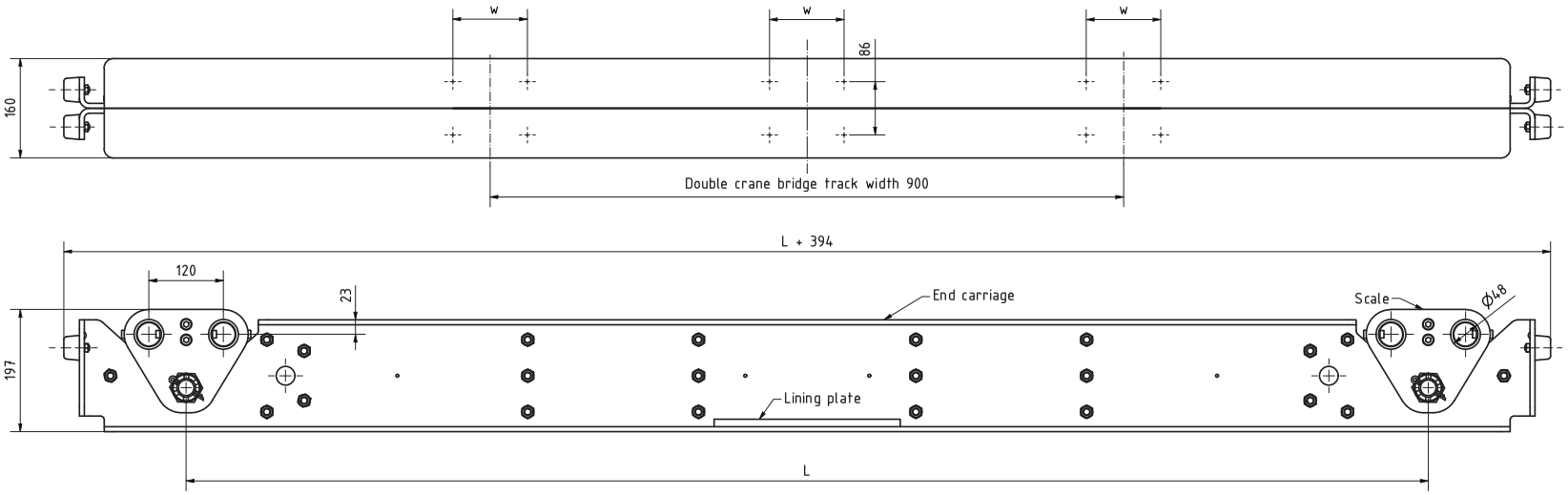

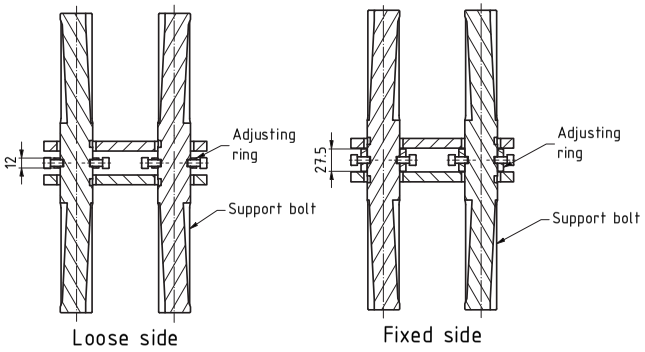

Performance data for GKU 5000					
	EKT	EKT	DKT	EKT	DKT
Type	GKU/1200	GKU/2000		GKU/2800	
Order number GKU-KIT	9249.3700.3	9249.3701.3		9249.3702.3	
Wheel base L [mm]	1200	2000		2800	
Max. lifting capacity [kg]*	5000	5000	5000	5000	5000
* Reference value only, must not be used for design.					
Max. span width [mm]	7500	12500		17500	
Permissible trolley combination	1xGMF5000 & 1xGHF5000 or 2xGMF4000/-5000 (per end carriage)				
Permissible interface GMF/GKU	Scales 9249.3720.4				
EN 13001 load spectrum	Q5				
EN 13001 Voltage curve	S0-S2 (workshop operation)				
Drive designs	Admissibility				
NF 4/12 m/min	✓	✓	✓	✓	✓
N 12 m/min	✓	✓	✓	✓	✓
SF 6/20 m/min	✓	✓	✓	✓	✓
FU-N 20 m/min	✓	✓	✓	✓	✓
FU-S 30 m/min	✓	✓	✓	✓	✓
Frequency converter	FRD-740-SC-SE-095 3.7kW				
Ext. brake resistor	✓				
High speed shutdown required	×	×	×	×	×
Stop circuit required	×	×	×	×	×

Screw connection data for cross beam/GKU 5000 - EKT/DKT	
Number of screw connections	EKT:4/DKT:8
Screw diameter [mm]	20
Clearance hole [mm]	Ø21 or fine series
Strength class [-]	8.8
Screw locking	NL20sp
Tightening torque [Nm]	400
Screw lubrication	Molykote 1000
Use of lining plate	EKT:9249.3724.4/DKT:-

Additional remarks for DKT:

- Smallest perm. profile size: IPE 270, HEA 160, HEB 160
- Track width of 900mm must be adhered to.

(Use of smaller profile sizes, alternative screw connection dimensions or deviations from the track width only after consultation with the technical department.

Scope of supply:

2 end carriage assy. incl. buffer
4 adjusting rings, fixed side
4 adjusting rings, loose side
4 scales
4 lining plates (single bridge)

Hole pattern for single and double crane bridge	
Beam	w
IPE 270	72
IPE 300	80
IPE 330	86
IPE 360	90
IPE 400	86
IPE 450	106
IPE 500	110
IPE 550	120
IPE 600	120
Beam	w
HEA/HEB 160	86
HEA/HEB 180	100
HEA/HEB 200	110
HEA/HEB 220	120
HEA/HEB 240	130
HEA/HEB 260	145
HEA/HEB 280	155
HEA/HEB 300-	165

according to steel construction tables C5/18

Pos	Artikel-Nr	Bezeichnung	Werkstoff
3	9249.3700.3	Kopfträgerkit GKU 5000/1200	
2	9249.3701.3	Kopfträgerkit GKU 5000/2000	
1	9249.3702.3	Kopfträgerkit GKU 5000/2800	

In Bearbeitung | Klasse b | Ersetzt durch | Ersatz für

Rev.	Datum	User
-		
Gezeichnet	10.05.2021	T.Keller

GKU 5000
Massbild; Schematic draw; Liste de dim.

Massstab 1 : 5 | 1 / A2 | Revision -

swiss lifting solutions

9249.9220.1

5.2 EC Declaration of incorporation

Declaration for the incorporation of an incomplete machine in accordance with the EU directive 2006/42/EC, Annex II B

CE

We,

GIS AG, Swiss Lifting Solutions, Luzernerstrasse 50, CH-6247 Schötz

hereby declare that the partly completed machinery

GIS crane components, model series	**GKU**
with a load capacity of	**up to 5000 kg**

developed for transporting loads and intended to be integrated into a machine, meets the essential requirements of the following EC directive, insofar as applicable to the scope of the delivery:

EC Machinery Directive	2006/42/EC

We also declare that the technical documentation has been compiled in accordance with Annex VII, Part B of Directive 2006/42/EC. We undertake to submit the specific documents relating to the crane components to national authorities on receipt of a reasonable request. The information will be supplied by electronic means.

Harmonised standards applied:
EN ISO 12100 Safety of machines; General design guidelines; risk assessment and risk reduction

Standards and technical specifications applied:
EN 13001-1 Cranes; General design; Part 1: General principles and requirements

Accident prevention regulations

This declaration refers only to the crane components. Start-up is prohibited until it has been proven that the crane into which the components are integrated corresponds with the above EC Directive.

Authorised to compile relevant technical documentation:
GIS AG, Luzernerstrasse 50, CH-6247 Schötz

Schötz, 20.01.2021 **GIS AG**

I. Muri
Director

E. Widmer
Sales Manager