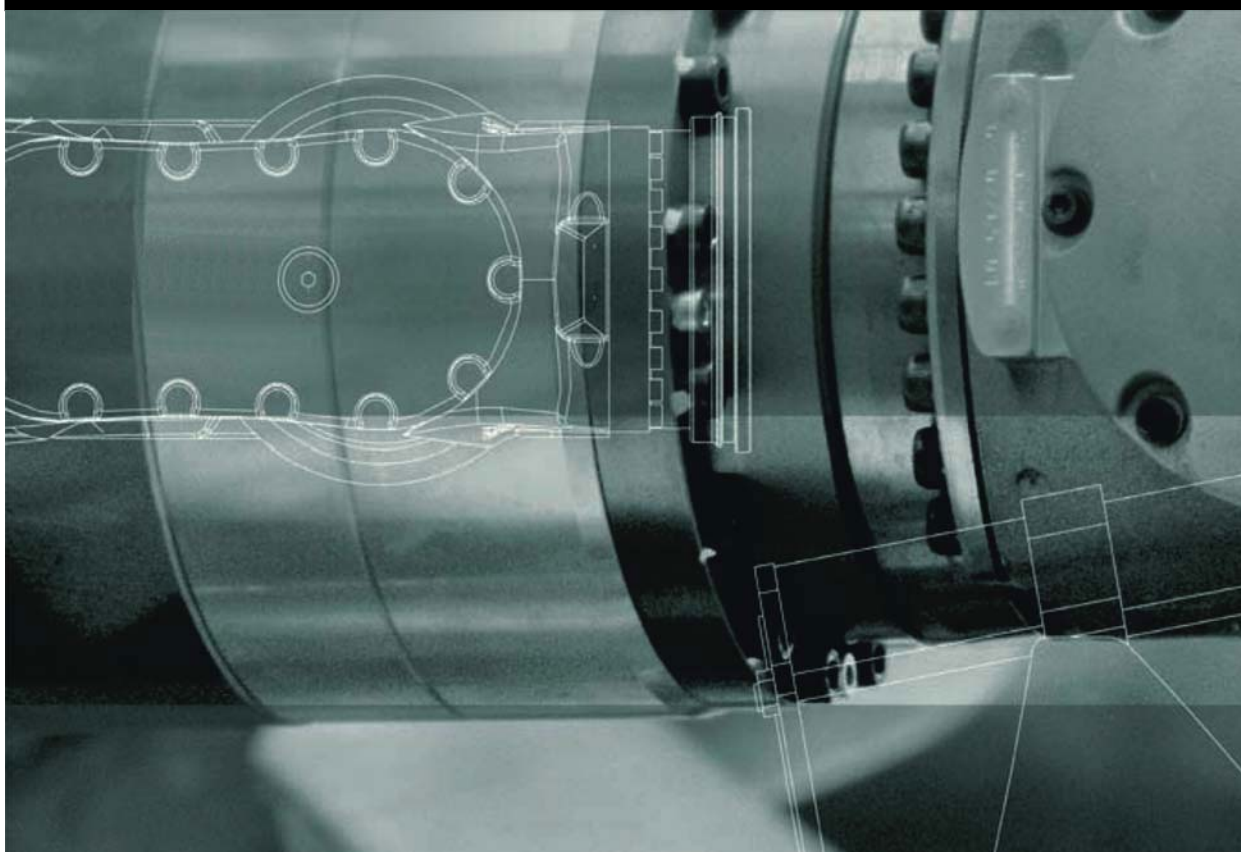


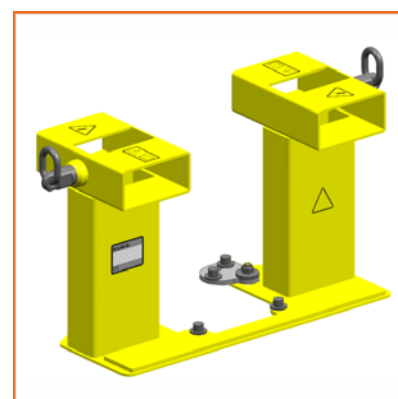
LLA Mounting Frame KR AGILUS five/sixx

Operating Instructions



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Version: BA LLA Mounting frame KR AGILUS five/sixx V2 en (PDF)



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Other functions not described in this documentation may be operable in the controller. The user has no claims to these functions, however, in the case of a replacement or service work.

We have checked the content of this documentation for conformity with the hardware and software described. Nevertheless, discrepancies cannot be precluded, for which reason we are not able to guarantee total conformity. The information in this documentation is checked on a regular basis, however, and necessary corrections will be incorporated in the subsequent edition.

Subject to technical alterations without an effect on the function.

Translation of the original documentation

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1 Introduction

1.1 Documentation of the Load Lifting Attachment


The documentation of the Load Lifting Attachment consists of the following parts:


- Documentation for the Load Lifting Attachment
- Declaration of conformity


1.2 Representation of warnings and notes


Safety


These warnings are relevant to safety and **must** be observed.

 **DANGER** These warnings mean that it is certain or highly probable that death or severe injuries **will** occur, if no precautions are taken.


 **WARNING** These warnings mean that death or severe injuries **may** occur, if no precautions are taken.

 **CAUTION** These warnings mean that minor injuries **may** occur, if no precautions are taken.

 **NOTICE** These warnings mean that damage to property **may** occur, if no precautions are taken.


 These warnings contain references to safety-relevant information or general safety measures.
These warnings do not refer to individual hazards or individual precautionary measures.

This warning draws attention to procedures which serve to prevent or remedy emergencies or malfunctions:

 **SAFETY INSTRUCTIONS** Procedures marked with this warning **must** be followed exactly.

Notes

These hints serve to make your work easier or contain references to further information.

 Tip to make your work easier or reference to further information.

1.3 Terms used

| Term | Description |
|------------------|--|
| Qualified person | Qualified persons are persons whose occupational training, professional experience and recent work has provided them with the technical knowledge required for checking the equipment. |

2 Purpose

2.1 Target group

This documentation is aimed at assembly, service and repair personnel who are required to carry out production, start-up and maintenance work on a KUKA industrial robot. Its use presupposes the following prior knowledge:

- Safety instruction
- Advanced knowledge of mechanical systems



For optimal use of our products, we recommend that our customers take part in a course of training at KUKA College. Information about the training program can be found at www.kuka.com or can be obtained directly from our subsidiaries.

2.2 Intended use

The Load Lifting Attachment serves as a mounting frame for installing a KR AGILUS five robot on the ceiling with the aid of a fork lift truck.

The Load Lifting Attachment serves as a mounting frame for installing a KR AGILUS six robot on the wall or ceiling with the aid of a fork lift truck.

Misuse

Any use or application deviating from the intended use is deemed to be impermissible misuse. This includes e.g.:

- Operation outside the permissible operating parameters
- Use as a climbing aid
- Use as a means of transport for longer distances

The manufacturer cannot be held liable for any damage resulting from such use. The risk lies entirely with the user.

3 Product description

3.1 Overview of Load Lifting Attachment

Description

The Load Lifting Attachment consists of a base frame with 2 swivel eyebolts, 6 Allen screws with washers and 2 swivel holders with hexagon nuts. The Load Lifting Attachment is used for installing/removing a KR AGILUS five/six. The Load Lifting Attachment is screwed to the base frame of the robot and then lifted by the swivel eyebolts using lifting tackle (e.g. with a crane). Once it has been lifted, the Load Lifting Attachment can be rotated through 90° or 180° by means of the swivel eyebolts and taken up in these positions by a fork lift truck (wall/ceiling installation).

i Detailed information about installing/removing a KR AGILUS five/six using the Load Lifting Attachment can be found in the robot operating and assembly instructions.

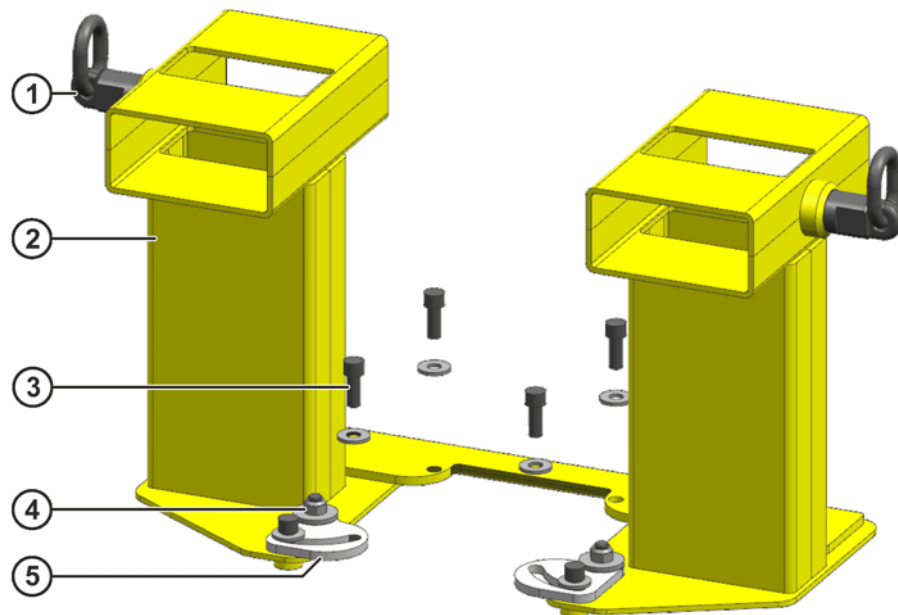


Fig. 3-1: Overview

- 1 M12 swivel eyebolt, rotatable through 360° (2x)
- 2 Base frame (weldment)
- 3 M12x30-8.8 Allen screw with washer 13x24x2.5 (6x)
- 4 M12 hexagon nut with washer (2x)
- 5 Swivel holder (2x)

4 Technical data

4.1 Basic data

| | |
|---------------------------------------|-------|
| Weight of the Load Lifting Attachment | 22 kg |
| Max. load-bearing capacity | 55 kg |

Ambient temperature

| | |
|----------------------------|-----------------------------------|
| Operation | -20 °C to +60 °C (253 K to 333 K) |
| Storage and transportation | -20 °C to +60 °C (253 K to 333 K) |
| Set-up | -20 °C to +60 °C (253 K to 333 K) |

4.2 Plates and labels

The following plates, labels and signs are attached to the Load Lifting Attachment. They must not be removed or rendered illegible. Illegible plates, labels and signs must be replaced.

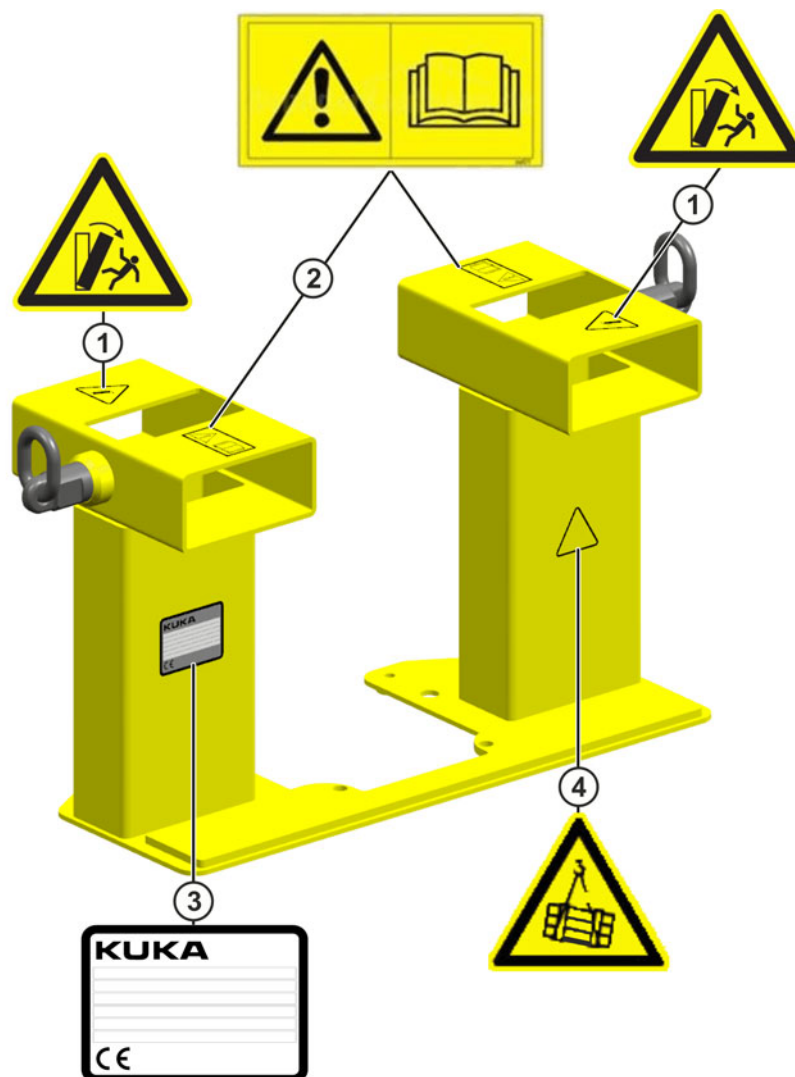


Fig. 4-1: Plates and labels

- 1 Warning signs: Risk of toppling
- 2 Warning signs: Read operating instructions before start-up


- 3 Identification plate with CE mark
- 4 Warning sign: Warning – suspended load

5 Safety

5.1 Hazards and risk avoidance

Hazards Possible hazards and risks involved in using the Load Lifting Attachment:

- Persons in the danger zone when the robot topples over.
- Load Lifting Attachment not fastened correctly.

 **WARNING** Insufficient fastening of the load can cause the mounting frame to topple over, resulting in injury to persons or material damage:

- Check that the Load Lifting Attachment is correctly fastened.
- The user and other persons present must not stand beneath the suspended load.

Risk avoidance Risk avoidance measures:

- Only qualified persons may use the Load Lifting Attachment.
- Wear personal protective equipment.

5.2 Applied norms and regulations

| Name | Definition | Edition |
|-------------------------|---|---------|
| 2006/42/EC | Machinery Directive: Directive of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast) | 2006 |
| DIN EN ISO 12100 | Safety of machinery: Basic concepts, general principles for design - basic terminology, methodology | 2010 |
| DIN EN 13155 | Cranes – Non-fixed load lifting attachments | 2003 |
| DIN EN 13135-2 | Cranes – Equipment – Non-electrotechnical equipment | 2010 |

6 Installation and removal

6.1 Installing the Load Lifting Attachment

First-time use



Before using the Load Lifting Attachment for the first time, it must be checked for the completeness of all parts, for damage, and for the correct attachment of all plates and labels.

Transport position

The robot must be in the transport position before it can be transported (>>> Fig. 6-1). The robot is in the transport position when the axes are in the following positions:

| Axis | A1 | A2 | A3 | A4 | A5 | A6 |
|-------|----|-------|-------|----|-------|----|
| Angle | 0° | -105° | +156° | 0° | +120° | 0° |

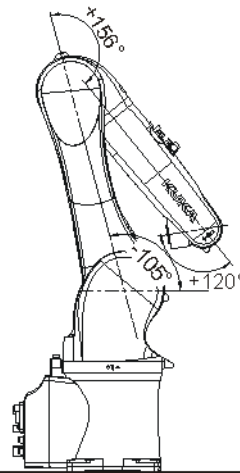


Fig. 6-1: Transport position

Procedure



WARNING If a defective Load Lifting Attachment is used, the load may fall off or start to swing. Severe injuries or damage to property may result.

- Before using the Load Lifting Attachment, check for damage (e.g. corrosion, deformation, cracks) and exchange parts if necessary.
 - Only use lifting tackle with a sufficient load-bearing capacity and a minimum length of 1.5 m per rope.
1. Slightly loosen the 2 M12x30 Allen screws for locking the swivel holders and pivot the swivel holders outwards. Slightly retighten the 2 screws to hold the swivel position.
 2. Carefully push the base frame of the Load Lifting Attachment onto the base frame of the robot from the front (>>> Fig. 6-2).
 3. Fasten the robot to the front of the base frame of the Load Lifting Attachment with 2 M12x30 Allen screws and washers; $M_A = 40 \text{ Nm}$.

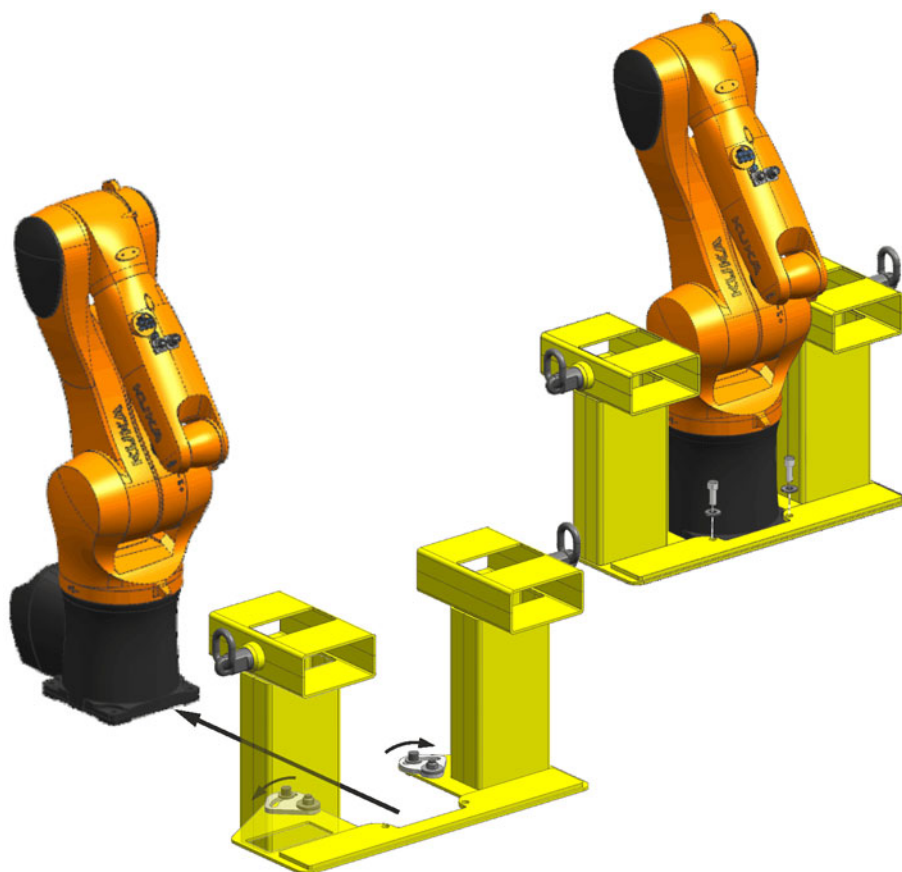


Fig. 6-2: Fastening the base frame of the Load Lifting Attachment (front of robot)

4. Slightly loosen the 2 M12x30 Allen screws for locking the swivel holders and pivot the swivel holders inwards (>>> Fig. 6-3).
5. Fasten the swivel holders to the base frame of the robot with 2 M12x30 Allen screws and washers; $M_A = 40 \text{ Nm}$.
6. Fasten the swivel holders to the base frame of the Load Lifting Attachment again with 2 M12x30 Allen screws; $M_A = 40 \text{ Nm}$.




Fig. 6-3: Fastening the base frame of the Load Lifting Attachment (rear of robot)


7. Attach lifting tackle to the 2 rotating swivel eyebolts on the Load Lifting Attachment and to the crane.
8. Person 1:
Slowly and carefully lift the robot with the crane.

Person 2:

Secure the robot against toppling during the lifting operation.

 **WARNING** Ensure that the robot does not topple during the lifting operation. Serious injuries and damage to property may otherwise result.


9. Move the Load Lifting Attachment with robot into the required pick-up position for the fork lift truck.

 Additional information about handling the KR AGILUS five/sixx using the Load Lifting Attachment can be found in the robot operating and assembly instructions.

6.2 Removing the Load Lifting Attachment

Procedure

1. Remove the 4 M12x30 Allen screws with washers for fastening to the base frame of the Load Lifting Attachment.
2. Slightly loosen the 2 M12x30 Allen screws for locking the swivel holders and pivot the swivel holders outwards.
3. Pull off the mounting frame parallel to the mounting surface of the robot.

 Additional information about handling the KR AGILUS five/sixx using the Load Lifting Attachment can be found in the robot operating and assembly instructions.

7 Maintenance

7.1 Cleaning the Load Lifting Attachment

Description The following must be taken into consideration when using cleaning agents and carrying out cleaning work:

- Only use solvent-free, water-soluble cleaning agents.
- Do not use flammable cleaning agents.
- Do not use aggressive cleaning agents.
- Do not use steam or refrigerants for cleaning.
- Do not use high-pressure cleaners.
- Personnel protection measures must be taken.

Procedure

1. Clean the Load Lifting Attachment.
2. Fully remove all cleaning agents from the Load Lifting Attachment.
3. Clean any areas of corrosion and reapply corrosion protection.
4. Replace damaged and illegible plates and labels.
5. Return the Load Lifting Attachment to use only if it is undamaged.

7.2 Maintenance table

Description The following table provides an overview of the maintenance work to be carried out on the Load Lifting Attachment (maintenance intervals, activities) by a qualified person.

| Interval | Activity |
|--|---|
| 5000 load reversals or 1 year at the latest | Check fixture for corrosion, deformation and cracks. Exchange screws and nuts. |
| 20000 load reversals | Exchange the Load Lifting Attachment. |

An unscheduled inspection of the Load Lifting Attachment is required in the case of damage or some other incident that could reduce the load-bearing capacity.

8 Storage and disposal

8.1 Disposal

When the Load Lifting Attachment reaches the end of its useful life, it can be disposed of properly.

The following table provides an overview of the materials used.

| Material, designation | Subassembly, component | Note |
|-----------------------|--|------|
| Steel | Lifting device, screws, nuts and washers | - |

8.2 Storage

Description

If the Load Lifting Attachment is to be put into long-term storage, the following points must be observed:

- The place of storage must be as dry as possible (avoid condensation).
- Observe and comply with the permissible temperature ranges for storage.
- Covers must be able to withstand the expected environmental conditions.

Procedure

1. Remove any corrosion.
2. Cover the Load Lifting Attachment at the place of storage.

9 KUKA Service

9.1 Requesting support

Introduction The KUKA Roboter GmbH documentation offers information on operation and provides assistance with troubleshooting. For further assistance, please contact your local KUKA subsidiary.

Information The following information is required for processing a support request:

- Model and serial number of the robot
- Model and serial number of the controller
- Model and serial number of the linear unit (if applicable)
- Model and serial number of the energy supply system (if applicable)
- Version of the KUKA System Software
- Optional software or modifications
- Archive of the software

For KUKA System Software V8: instead of a conventional archive, generate the special data package for fault analysis (via **KrcDiag**).
- Application used
- Any external axes used
- Description of the problem, duration and frequency of the fault

9.2 KUKA Customer Support

Availability KUKA Customer Support is available in many countries. Please do not hesitate to contact us if you have any questions.

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