



**BETRIEBSANLEITUNG
OPERATING INSTRUCTIONS**

**KREISEL- UND SERVO-
FAHRWERKE
REVOLVING TRANSPORT AND
MULTI-PURPOSE TROLLEYS**



Notizen / Notes / Notas / Notes / Note / Aantekeningen

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1. Description

This operating manual generally describes the models of the JKB revolving transport trolleys and JLF multi-purpose trolleys.

Each model is not individually described in detail.

1.1 Proper use

The revolving transport and multi-purpose trolleys – hereinafter referred to as trolleys – are intended only for short transport of heavy loads in factory halls with sufficiently solid, even, horizontal, clean and non-skid floors. The load to be moved must be statically rigid and tilt-proof. The load surfaces must be suitable for the trolleys. Adequate size, pressure resistance, stability and slip resistance must be ensured.

The maximum transport speed of 2 km/h must not be exceeded. Country-specific regulations as well as operating and safety regulations must be observed.

The permissible load-bearing capacity of the trolley according to the type plate must not be exceeded.

Proper use also means that these instructions, particularly the safety notes, must be read and observed. The operating manual is part of the product and must therefore be kept and transferred along with the product if it is handed on.

1.2 Improper use

The trolley are not intended for transport on public roads or squares. They are not intended for use under special conditions (such as in a potentially explosive, easily flammable or corrosive environment). It is not allowed to transport people or animals with the trolleys. Any other use of these devices is regarded as improper use. The manufacturer / supplier shall not be liable for damage resulting from any other use. The risk is borne by the user in case of non-compliance with the proper use.

1.3 Safety and warning notes

This manual contains warnings of various severities as described below.



DANGER

Indicates an imminent danger that could result in serious personal injury or death.



WARNING

Indicates a potentially hazardous situation that could result in a serious health hazard.



CAUTION

Indicates a potentially hazardous situation that could result in a minor health hazard.



NOTE

Indicates a potentially hazardous situation that can lead to property damage.



Warning against risk of injury:
If the necessary safety precautions are not taken, injuries may result in the event that the drawbar falls down.

For safe operation, knowledge of the accident prevention regulation (UVV) (here: DGUV Vorschrift 68 Flurförderzeuge - DGUV Regulation 68 Hand-operated industrial trucks) as well as the valid principles of the professional associations are mandatory requirements. You can find more information at BGG 941 (test book for hand-operated industrial trucks) and BGI 582 (occupational safety for transport and storage).

Furthermore, the regulations applicable to the respective industrial sector or the respective place of use and the intended use must be observed. These also include the regulations related to hazardous materials.

Trolleys are designed for use under ordinary atmospheric conditions and temperatures between -5° to 45° C.

Employees who are in charge of transporting loads and who use these devices for this purpose must be regularly instructed by a qualified person at least once a year. It is not sufficient to merely hand out or hang up regulations, operating manuals or warning signs. Before using the trolleys, the operator must ensure there are no other persons near the transport load or that anyone is touching it.

If the trolleys are bearing a load:

- No one may work under the transport load.
- The trolley must not be left unattended.
- Their use by unauthorized persons must be prevented.
- There must not be any objects under the transport load.
- Communication must be ensured between all persons involved in the lifting and transport procedure, particularly if eye contact between these persons is interrupted.

1.4 Means of representation

> Operating instructions



Indicates important information and tips on handling the unit.

1.5 Protective equipment

All operating personnel must wear protective equipment.

This includes safety shoes, safety helmet, safety gloves, work wear and safety goggles.

2. Technical data

JKB 2 K

Height	mm	110*
Weight	kg	20
Load	kg	2 000

JKB 4 K

Height	mm	110*
Weight	kg	38
Load	kg	4 000

JKB 6 K

Height	mm	110*
Weight	kg	41
Load	kg	6 000

JKB 8 K

Height	mm	110*
Weight	kg	64
Load	kg	8 000

JKB 10 G

Height	mm	180
Weight	kg	127
Load	kg	10 000

JKB 14 G

Height	mm	180
Weight	kg	148
Load	kg	14 000

JLF 3,5

Height	mm	150
Weight	kg	25
Load	kg	3 500

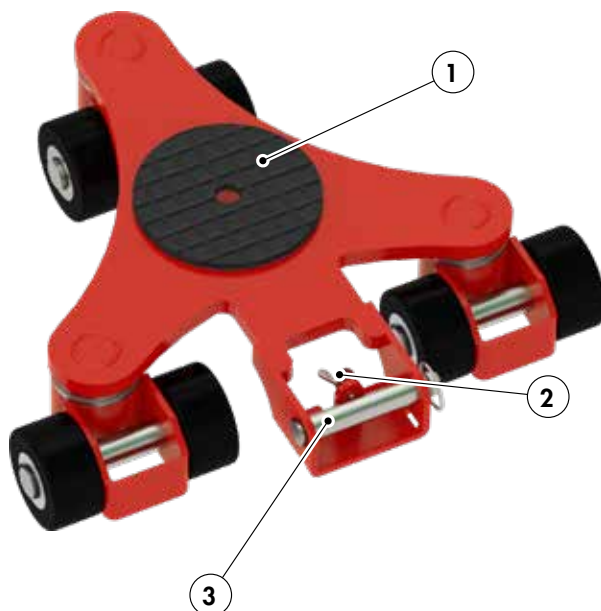
JLF 5

Height	mm	150
Weight	kg	28
Load	kg	5 000

*Due to technical changes, there may be tolerances of up to + 4.5 mm in the installation height since 2014.

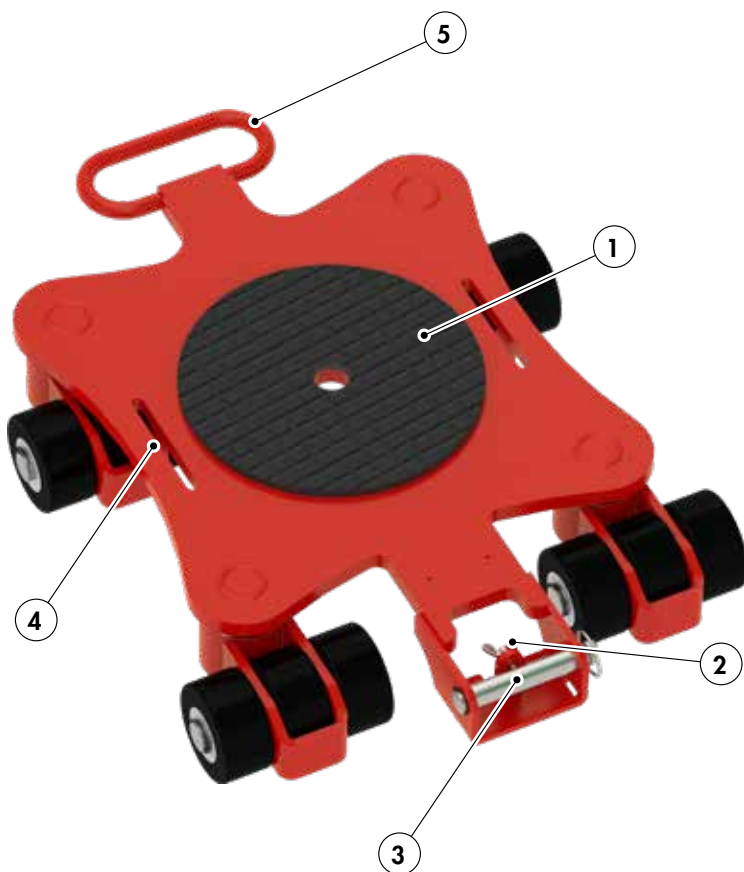
3. Overview

3.1 JKB revolving transport trolleys



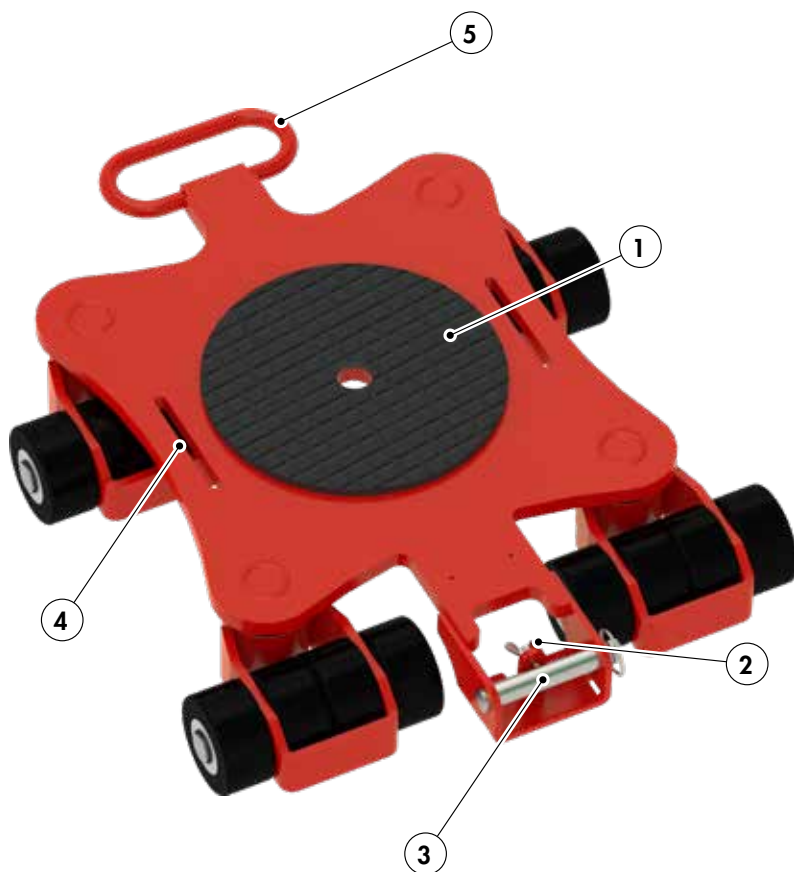
JKB 2 K

Item number	Designation
1	Support plate
2	Locking screw
3	Bolt



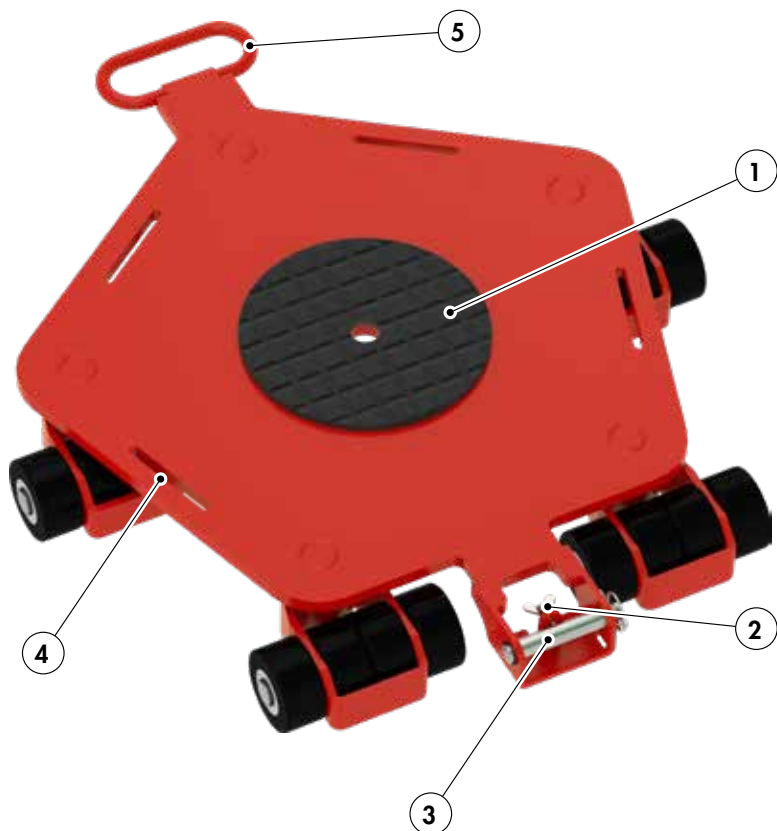
JKB 4 K

Item number	Designation
1	Support plate
2	Locking screw
3	Bolt
4	Recess for lashing belts
5	Handle



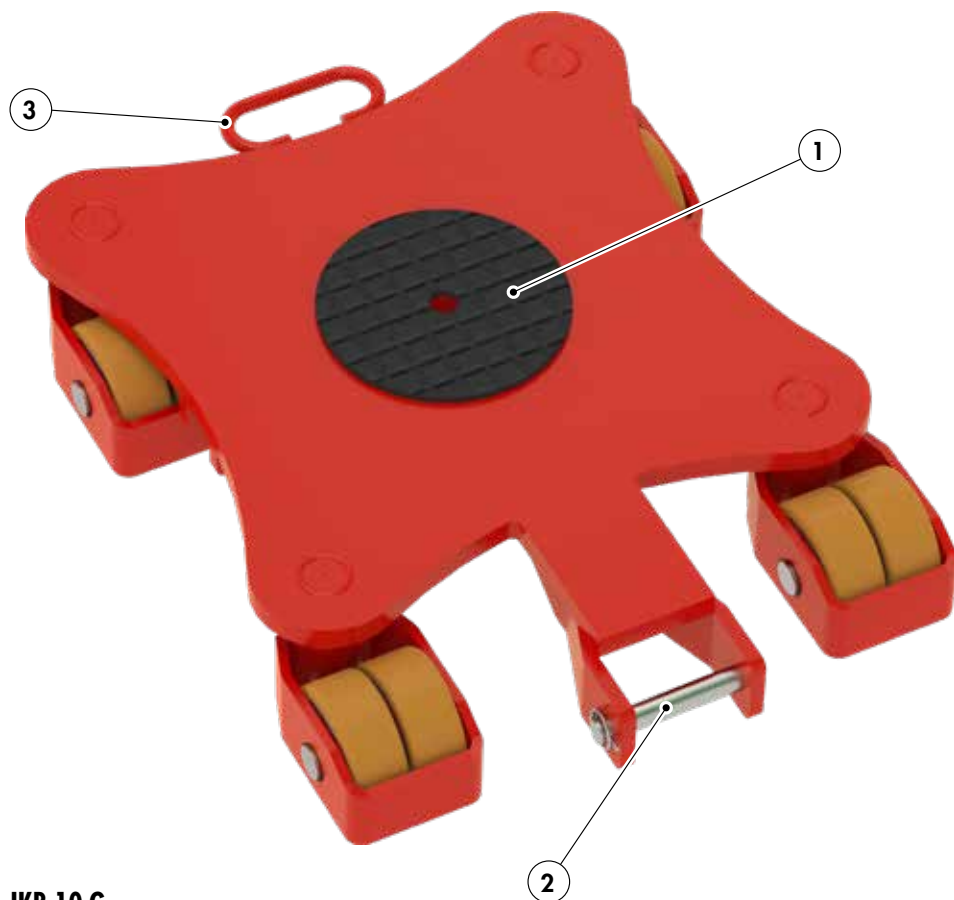
JKB 6 K

Item number	Designation
1	Support plate
2	Locking screw
3	Bolt
4	Recess for lashing belts
5	Handle



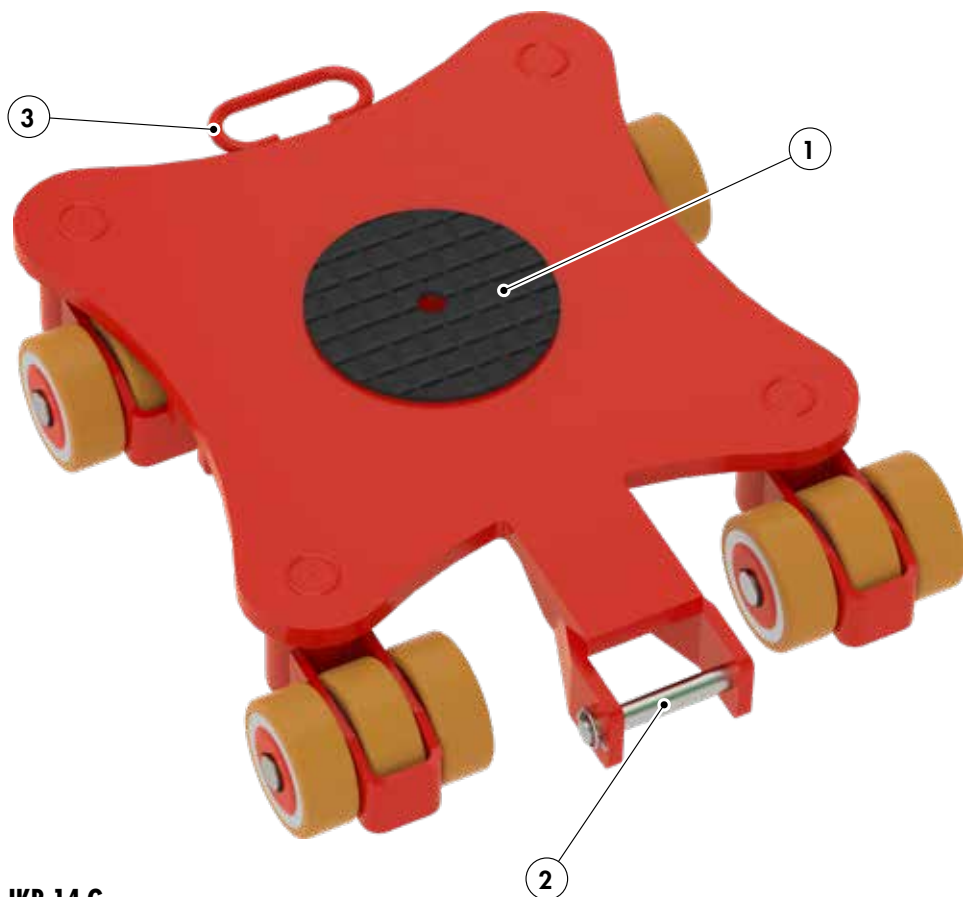
JKB 8 K

Item number	Designation
1	Support plate
2	Locking screw
3	Bolt
4	Recess for lashing belts
5	Handle



JKB 10 G

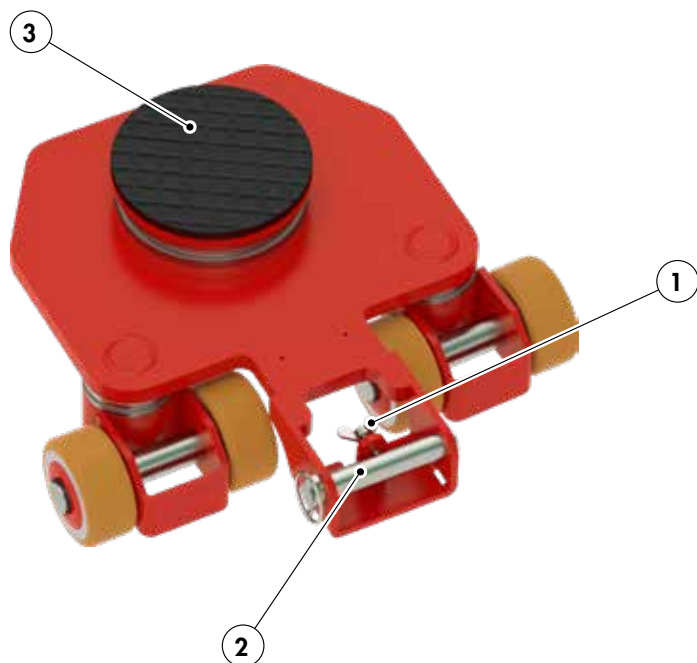
Item number	Designation
1	Support plate
2	Bolt
3	Handle



JKB 14 G

Item number	Designation
1	Support plate
2	Bolt
3	Handle

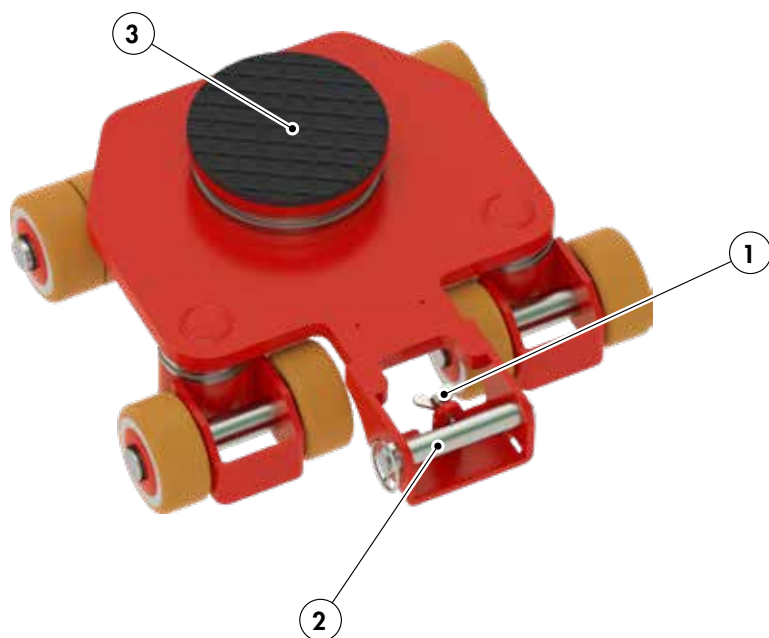
3.2 JLF multi-purpose trolleys



English

JLF 3,5

Item number	Designation
1	Locking screw
2	Bolt
3	Turntable



JLF 5

Item number	Designation
1	Locking screw
2	Bolt
3	Turntable

4. Operation

Before operating the trolleys, the operating staff (that is, all persons who are responsible for performing lifting and transport work) must read this entire manual. All instructions related to lifting also apply analogously to lowering of a load.

4.1 Requirements for the placement area

The trolley must be placed on a flat, clean, horizontal, sufficiently load-bearing and non-slip surface. The trolley must stand securely when the goods to be transported are loaded.

The transport load must be statically rigid and tilt-resistant. The surface that is placed on the trolley must be suitable for this purpose. In particular, ensure sufficient size, compressive strength, stability and slip safety.

The total weight of the transport load and the position of the centre of gravity must be determined before lifting and moving. Therefore the centre of gravity must first be determined (see next chapter).



DANGER

Before a revolving transport / multi-purpose trolley is used on the load to be lifted, the centre of gravity of the load to be lifted must be determined. Otherwise, tipping or slipping can lead to injuries or even to fatal accidents. Always determine the centre of gravity before using JUNG revolving transport / multi-purpose trolleys.

4.1.1 Determining the centre of gravity and positioning the transport trolley and lifter



DANGER

Before a jack is used on the load to be lifted, the centre of gravity of the load to be lifted must be determined. Otherwise, tipping or slipping can lead to injuries or even to fatal accidents. Always determine the centre of gravity before using JUNG jacks.

The centre of gravity must always be determined before using a JUNG revolving transport / multi-purpose trolley for the transport load. For this purpose, the entire weight of the transport load must be determined before the start of the lifting process.

The following formula can be used for the selection of the appropriate jack with a sufficient load-bearing capacity:

Minimum load of the jack = (the load to be lifted in kg) x (safety factor of 1.25)

Example:

Weight of load 4000 kg x 1.25 = 5000 kg.

The jack must have a lifting capacity of 5000 kg.



WARNING

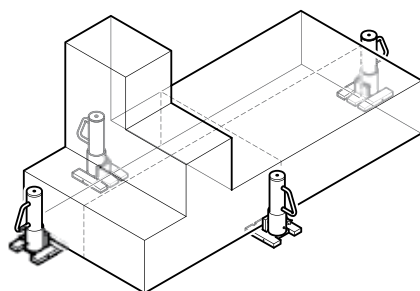
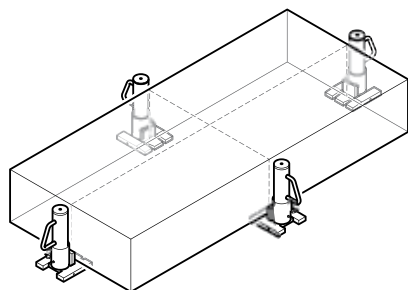
For safety reasons, using multiple jacks with different load-bearing capacities is not permissible

If several jacks are used, all of which have the same carrying capacity, they must be placed under the load such that each jack is subjected to the same share of the load to be lifted. For this purpose, the centre of gravity must be determined in advance.

- > For the determination of the centre of gravity by means of JUNG jacks, the pressure gauge for jacks (order no. 94 001 024-B) is necessary as an additional accessory.

> Connect the pressure gauge to the hydraulic connection.

Example of a complicated case



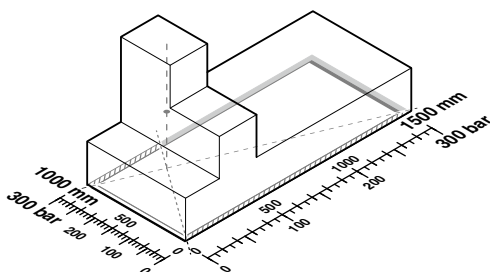
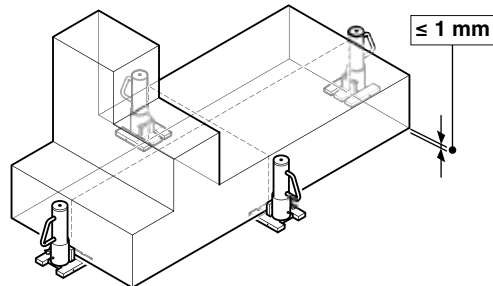
Above: Example 1 - Ideal case

Below: Example 2 - Complicated case

The two examples in the diagram

illustrate that the centre of gravity can vary depending on the weight and shape of the load to be lifted.

Calculation of the centre of gravity on the complicated case (example 2)



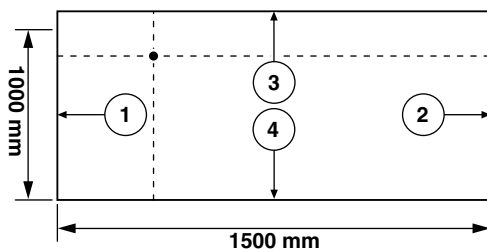
- > Determine and record the lengths.
- > Move the jack so that the load to be lifted is lifted horizontally over the opposite rotating edge. Use the jack to raise the load to be lifted to a maximum of 1 mm.
- > Determine and record the pressure on all four sides in the same way.



NOTE

To avoid overloads in the event the centre of gravity is unknown, a single jack must be able to lift the entire transport load by itself.

The total weight can exceed the specified total weight of the original machine (weight on the nameplate) due to later attachments.



Example:

Side (1) Pressure = 230 bar

Side (2) Pressure = 70 bar

230 bar + 70 bar = 300 bar
Length of sides (1) and (2) = 1000 mm

Side (3) pressure = 200 bar
Side (4) pressure = 100 bar
200 bar + 100 bar = 300 bar

Length of sides (3) and (4) = 1500 mm

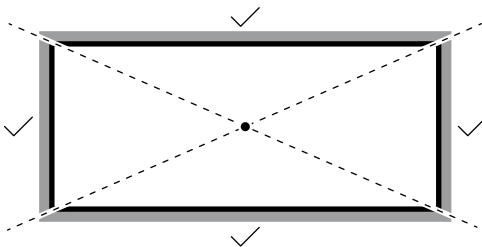
- > Set the result of the pressures (bar) of side (1) and side (2) relative to the measured length (mm) of the parallel sides.
- > Also set the result of the pressures (bar) of side (3) and side (4) in relation to the measured length (mm) of the parallel sides.
- > Using the rule of three, calculate where the centre of gravity is located: for this purpose, use the higher of the two pressure values of the parallel sides as the reference value.

Example sides (1) and (2):
300 bar $\triangleq$ 1000 mm
230 bar $\triangleq$ 767 mm

Example sides (3) and (4):
300 bar $\triangleq$ 1500 mm
200 bar $\triangleq$ 1000 mm

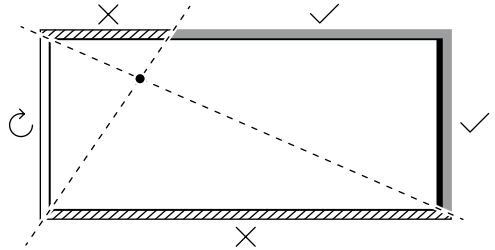
- > Enter the results.
The determined centre of gravity is at the intersection of the two lines.

Before lifting the load, the lifting side, the axis of rotation and the exact lifting position must be determined.



Top view, example 1 ideal case

In example 1 ideal case, the jack is centred on each of the four sides since the centre of gravity is exactly in the centre.



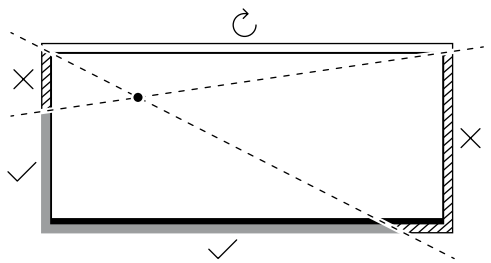
Top view, example 2 complicated case

Symbol	Description
•	Centre of gravity
█	Selected lifting side
✓	Also allowed lifting side
✗	Prohibited lifting side
↻	Axis of rotation

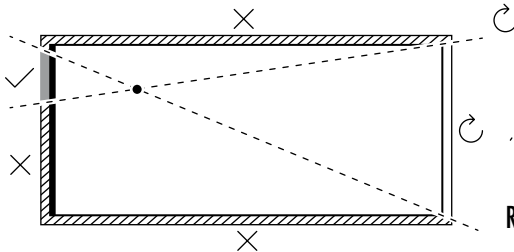
In the case of the complicated example 2, the jack may not be just anywhere, since the calculation of the centre of gravity has shown that it is not in the centre.

Depending on the lifting side, different lifting points for the jack are obtained. Two diagonals are drawn into the opposite corners of the desired lifting side through the centre of gravity. As a result, the opposite side is the axis of rotation. The other two opposite sides are prohibited as lifting points within the triangle, since here the load to be lifted would tilt.

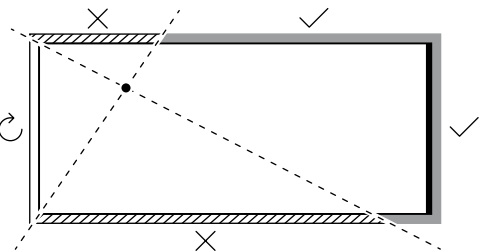
The following examples show the graphic determination of the lifting side on all four sides of the load to be lifted.



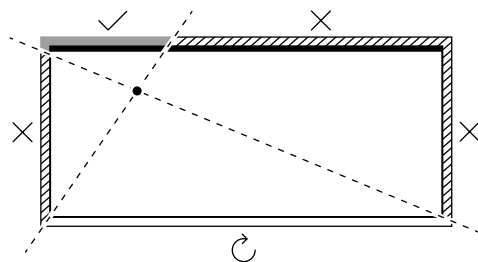
Bottom lifting side



Left lifting side



Right lifting side



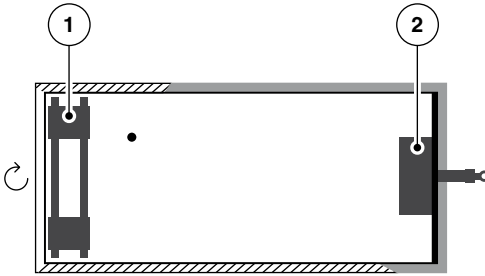
Top lifting side

For an unstable transport load, the centre of gravity moves in the direction of the axis of rotation (the edge opposite the jack).



Unstable transport loads include "loosely" connected objects (such as screw or rivet constructions), as well as loads containing liquids.

Positioning of driving and steering gear



Item number	Description
1	Trolley
2	Steering system

It is determined where the driving and steering gear are positioned.

Here, the following rule applies:

The centre of gravity must be closer to the trolley. In addition, it must lie within the triangle determined between the support points of the transport trolley; otherwise the transport load will tilt.

When lifting the transport load, it should be observed that the edge which is opposite the jack acts like an axis of rotation. The transport load rotates about this during lifting.

The point for applying the jack had been determined graphically as described above.

- > Position trolley (1) under the transport load.
- > Position steering system (2) under the transport load.

WARNING

If positioned incorrectly, e.g. on or near the located line, there is a danger of tipping, since the fulcrum can move. The transported load will tip over uncontrollably. There is a danger of injury.

4.2 Optional accessories



Risk of injury: Load must not be applied to the drawbar. Dropping of the drawbar can cause injury. Pay attention to the correct load distribution and wear protective clothing.

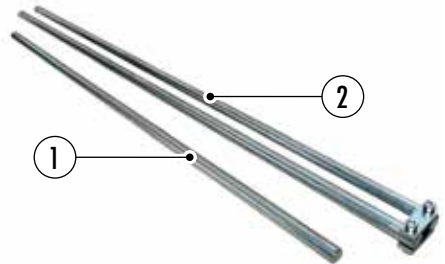
Transport trolleys can be joined with a connecting rod. There is also the option of attaching a towing bar to the trolley.

When using a towing bar, the dead weight of the trolley increases.



WARNING

Attaching the optional accessory may result in bruises and injuries. Always wear safety clothing.



Item number

Description

- | | |
|---|---|
| 1 | Connecting rod
JKB 2 |
| 2 | Connecting rod JKB
JKB 4-8, M series |

- > Pull out the bolt from both trolleys.
- > Push the connecting rod in between and secure this to the trolleys.

4.3 Selection of the suitable trolley



WARNING

When using the trolley with a transport load, there is a danger of crushing. Always wear safety clothing. Otherwise, accidents and injuries could occur.

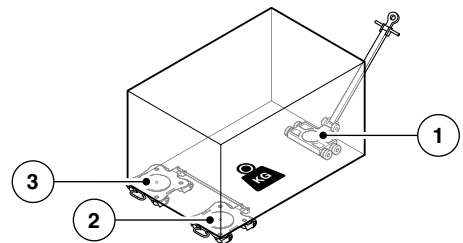


WARNING

The total weight of the load to be lifted and transported and the location of the centre of gravity must be known before beginning with the lifting and transporting operation.

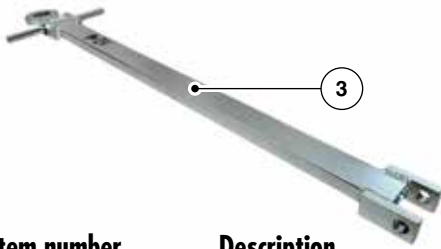
The centre of gravity and the overall weight of the transport load must be determined for the selection of the appropriate transport trolley. Ideally, the centre of gravity is symmetrical and in the middle of the transport load. In this case, the selection can be done using the following formula:

Minimum load capacity of the trolley = (load to be moved in kg) x (safety factor 1.25)



Example - Ideal case

A transport load of 12 000 kg with a central centre of gravity results in 3 000 kg (2) (3) at each of the support points of the trolley (rear) and 6 000 kg (1) at the steering gear. The used transport trolley is at full capacity with 6 000 kg each (safety factor 1.5).

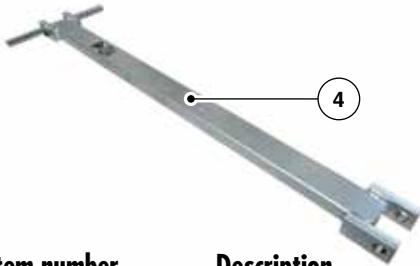


Item number

3

Description

Towing bar, M series

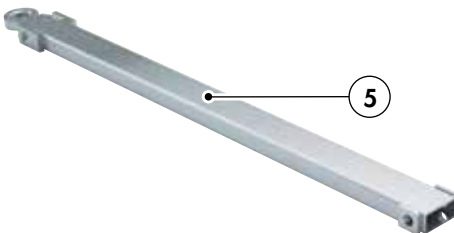


Item number

4

Description

Towing bar, JKB 2-8



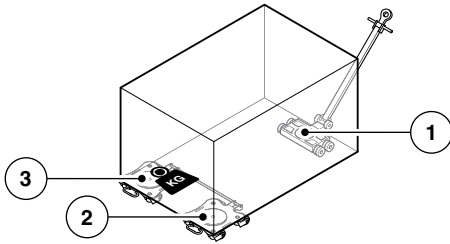
Item number

5

Description

Towing bar, JKB 10-14

- > Pull the bolt out of the trolley.
- > Connect the towing bar (3), (4) or (5) to the bolt on the trolley.



Example of a complicated case

The weight distribution on the support points changes as a result of a non-centred centre of gravity. A larger trolley is required.

The centre of gravity of the same transport load is shifted by about 500 mm towards the rear left trolley cassette. This increases the effective load to 4800 kg (3). The steering system bears a load of 900 kg (1) while the right trolley cassette bears a weight of 300 kg (2). The permissible load on the trolley cassette in the ideal case is exceeded by more than 3 times.

Solution:

As a suitable trolley, 2 JKB 6es with a permissible load capacity of 6000 kg for each trolley cassette is used.

4.4 Commissioning



DANGER

The total weight of the transport load and the position of the centre of gravity must be known before the lifting and moving operation. The weight of the transport load must not be greater than the permitted carrying capacity of the trolleys. Otherwise, tipping or slipping can lead to injuries or even to fatal accidents. Always determine the centre of gravity before using JUNG trolleys.

For the determination of the centre of gravity, see "Centre of gravity determination and positioning of transport trolley and jack", page 39.



DANGER

Operating personnel has to ensure that other uninvolved persons keep a safety distance of at least 1.5 times the height of the transport load on all sides of the transport load. If there is a risk that uninvolved persons could suddenly enter the danger area, the danger area must be closed off appropriately. Failure to do so can result in injury or even fatal accidents.



NOTE

For safe lifting, the use of hydraulic JUNG jacks is recommended.



WARNING

Always place the trolleys on a flat, firm, non-slip surface. Observe the point load and make sure the ground is sufficiently stable.



NOTE

Observe the operating instructions of the JUNG jacks.



WARNING

When using the trolley with a transport load, there is a danger of crushing. Always wear safety clothing. Otherwise, accidents and injuries could occur.



DANGER

The trolleys must be secured against pulling out. Otherwise, tipping or slipping can lead to injuries or even to fatal accidents. Secure the transport load.



WARNING

If the height of the load exceeds the length of the side to be lifted, appropriate safety precautions must be taken in order to prevent the load from toppling over. This applies in particular to machines in which the centre of gravity is located in the upper half of the load. Inform yourself about the dimensions of the transport load and determine the centre of gravity in order to avoid injuries.



CAUTION

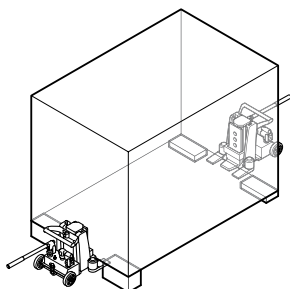
Be sure to observe the order of the work steps.

4.4.1 Loading the trolleys

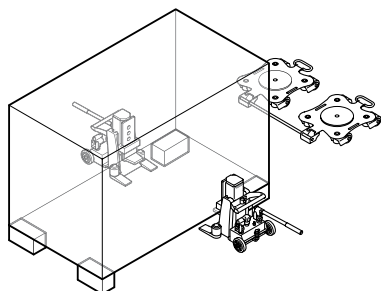


DANGER

Before the start of the lifting procedure, the centre of gravity must first be determined. The trolley always must be positioned closer to the centre of gravity than the steering system, since a stable three-point bearing can only be achieved in this way. Otherwise, tipping or slipping can lead to injuries or even to fatal accidents.

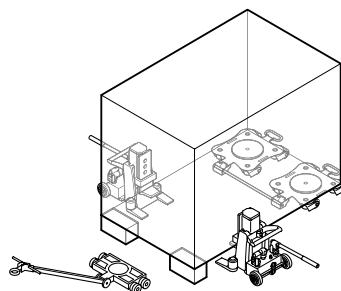


- > Gradually raise the transport load with the jacks in parallel and prop up with stable base supports until it is 5 mm above the specified height. Due to the danger of tipping, avoid large inclinations that can shift the centre of gravity. This is particularly a danger for unstable transport loads.



- > Connect two identical trolleys with the connecting rod and move the transport trolleys under the load to be transported.
- > Adjust and lock the connecting rod.

- > Slowly and carefully lower the transport load onto the trolleys.
- > Use wedges to secure the trolley against rolling.



- > Position the steerable transport trolley to the determined location.
- > Slowly and carefully lower the transport load onto the steering gear turntable.



NOTE

Load the turntable only centrally in the area of the ball bearing.

4.4.2 Transport



NOTE

Transport may only be carried out on a level, clean and load-bearing surface. If you use a towing vehicle, do not exceed the permissible trailing load and observe the maximum braking force of the towing vehicle. Do not exceed the transport speed of 2 km/h.



WARNING

Do not move on a pitch or descent and only use a suitable towing vehicle.



WARNING

Do not exceed the permissible unbraked trailer load.

- > Clean the transport path before transporting and clear away any loose objects.
- > Move the transport trolley by hand or by means of a towing vehicle to the desired location.



DANGER

Never lift the load to be lifted on one side up to the ground clearance since there is a big risk of tilting and slipping if this is done.



WARNING

Slowly and carefully lower the transport load onto the trolley. There is risk of tipping and sliding



WARNING

It is imperative that the revolving transport trolleys also be steered at the rear side of the load, since the transported load can break out as a result of uneven floors.

4.4.3 Unloading

- > Secure the rear trolley with wedges.
- > Raise the front edge of the transport load and remove the steering gear.
- > Place supports under the front edge and carefully lower.
- > Raise the rear edge of the transport load and remove both trolleys.
- > Slowly and carefully lower the rear and front edges alternately.



To lower a load, perform the steps in the "Loading the trolleys" chapter, page 47, in reverse order.

5. Care and maintenance



NOTE

According to DGUV regulation 68, you, as the owner of this trolley, are responsible for the annual maintenance and inspection.



WARNING

There is a risk of crushing when servicing a trolley. Always wear protective clothing, otherwise injuries may occur.

5.1 Greasing the bearings



NOTE

Regularly grease the bearings since they are subjected to strong friction forces. Use commercially available high-performance bearing grease.

- > Use a brush to grease all bearings.
- > Grease the bearings of the trolley at least once a year.

5.2 Repair

Necessary repairs are carried out by JUNG according to a cost estimate, at short notice and at a reasonable price. Contact details can be found on the back of the operating instructions.

6. Warranty

You will receive a five-year warranty for the trolleys, under the observance of the respective conditions. Making changes to the device during the warranty will void the warranty, unless the manufacturer has given you written permission to do so.

7. Declaration of incorporation

Declaration of incorporation

Name of the manufacturer: JUNG Hebe- und Transporttechnik GmbH
 Manufacturer address: Biegelwiesenstrasse 5-7, D - 71334 Waiblingen
 Tel.: +49 (0) 7151/30393-0
 Fax: +49 (0) 7151/30393-19
 Internet: www.jung-hebetechnik.de

Equipment types:

Type: JKB 2 K; JKB 4 K; JKB 6 K; JKB 8 K; JKB 10 G; JKB 14 G; JLF 3,5; JLF 5

Applying the directives of the EC Council: 2006/42/EC

We herewith declare that the design of the revolving transport and multi-purpose trolleys, as named above, made by JUNG, is intended to be connected with other machines to form one machine.

Commissioning is prohibited until it has been determined that the machine which is to be connected to one of the above-named steering and transport/multi-purpose trolleys, has met the following relevant provisions:

Applied harmonized standards EN ISO 12100:2010.

Waiblingen 12.03.2018

Location Date

Hart-Heinz Jung

JUNG Hebe- und Transporttechnik GmbH

Person responsible for documentation: Matthias Eichel, Quality Management representative

Notizen / Notes / Notas / Notes / Note / Aantekeningen

**Beratung, Service und Verkauf:
Consulting, sales and service:**

Unser Logo und der Name JUNG sind in der EU, in den USA und in China unter folgenden Nummern geschützt:

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Technische Änderungen, die der Verbesserung von Funktion und Qualität dienen, behalten wir uns vor.

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We reserve the right to make technical modifications which serve to improve function and quality.

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