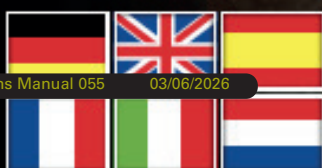


**BETRIEBSANLEITUNG
OPERATING INSTRUCTIONS**

**TRANSPORTFAHRWERKE
TRANSPORT TROLLEYS**



Notizen / Notes / Notas / Notes / Note / Aantekeningen

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1. Description

These operating instructions describe the models of the series „K“, „S“, „G“ and „H“ transport trolleys in general. They are not intended to address each model individually.

1.1 Proper use

The transport 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 surfaces on the trolleys must be suitable for the load. 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.

The staff 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, operation 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 persons may work under the transport load.
- The trolley must not be left unattended.
- The use of the trolley 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 persons who operate the device must wear safety equipment.

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

2. Technical data

JLB 3 K

Height	mm	110
Weight	kg	12
Load capacity	kg	3000

JFB 3 K

Height	inch	110
Weight	lbs	11
Load capacity	lbs	6 614

JLB 6 K / 7 K

Height	mm	110 / 110
Weight	kg	34 / 35
Load capacity	kg	6000 / 7000

JFB 6 K / 7 K

Height	mm	110 / 110
Weight	kg	25 / 27
Load capacity	kg	6000 / 7000

JL 9 K / 10 K

Height	mm	110 / 110
Weight	kg	49 / 56
Load capacity	kg	9000 / 10 000

JFB 9 K / 10 K

Height	mm	110 / 110
Weight	kg	31 / 35
Load capacity	kg	9000 / 10 000

JL 12 K / 14 K

Height	mm	110 / 110
Weight	kg	62 / 65
Load capacity	kg	12 000 / 14 000

JFB 12 K / 14 K

Height	mm	110 / 110
Weight	kg	34 / 38
Load capacity	kg	12 000 / 14 000

JLB 16 S

Height	mm	125
Weight	kg	82
Load capacity	kg	16 000

JFB 16 S

Height	mm	125
Weight	kg	74
Load capacity	kg	16 000

JLB 24 S

Height	mm	125
Weight	kg	124
Load capacity	kg	24 000

JFB 24 S

Height	mm	125
Weight	kg	78
Load capacity	kg	24 000

JLB 15 G

Height	mm	180
Weight	kg	92
Load capacity	kg	15 000

JFB 15 G

Height	mm	180
Weight	kg	63
Load capacity	kg	15 000

JLB 20 G

Height	mm	180
Weight	kg	96
Load capacity	kg	20 000

JFB 20 G

Height	mm	180
Weight	kg	80
Load capacity	kg	20 000

JLB 25 G

Height	mm	180
Weight	kg	128
Load capacity	kg	25 000

JFB 25 G

Height	mm	180
Weight	kg	86
Load capacity	kg	25 000

JLB 30 G

Height	mm	180
Weight	kg	140
Load capacity	kg	30 000

JFB 30 G

Height	mm	180
Weight	kg	98
Load capacity	kg	30 000

JLB 40 H

Height	mm	230
Weight	kg	314
Load capacity	kg	40 000

JFB 40 H

Height	mm	230
Weight	kg	310
Load capacity	kg	40 000

JLB 60 H

Height	mm	230
Weight	kg	425
Load capacity	kg	60 000

JFB 60 H

Height	mm	230
Weight	kg	412
Load capacity	kg	60 000

JL 80 H

Height	mm	240
Weight	kg	697
Load capacity	kg	80 000

JFB 80 H

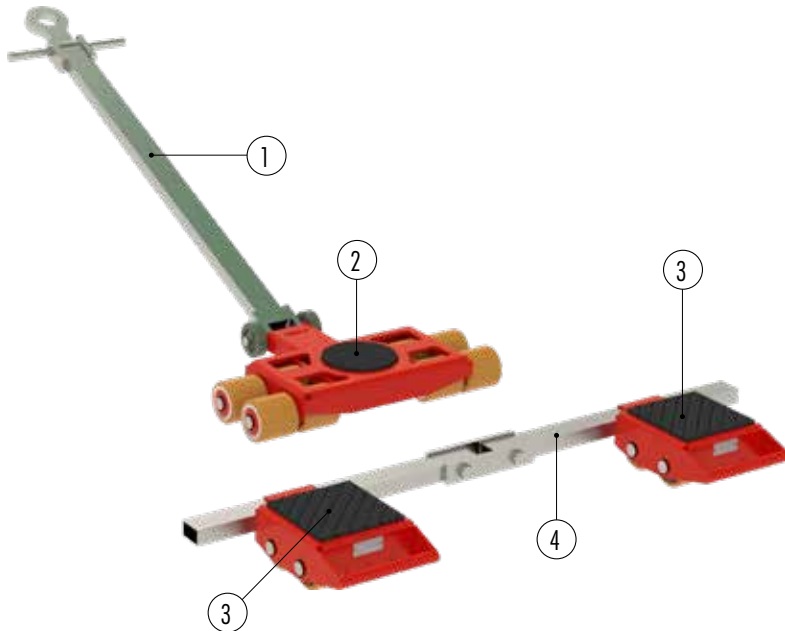
Height	mm	240
Weight	kg	538
Load capacity	kg	80 000

JFB 120 H

Height	mm	240
Weight	kg	766
Load capacity	kg	120 000

3. Overview of transport trolleys

3.1 Transport trolleys series K



JLB 6 K / JFB 6 K

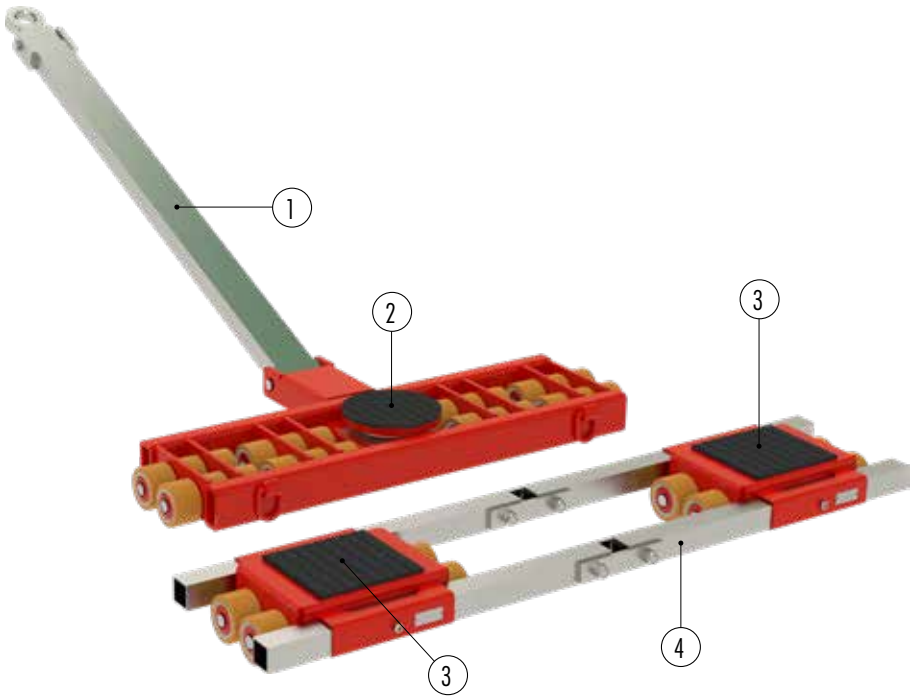
Item number

Designation

1	Drawbar
2	Support plate
3	Cassette with support rubber
4	Connecting rod, cassette

3.2 Transport trolleys series S

English



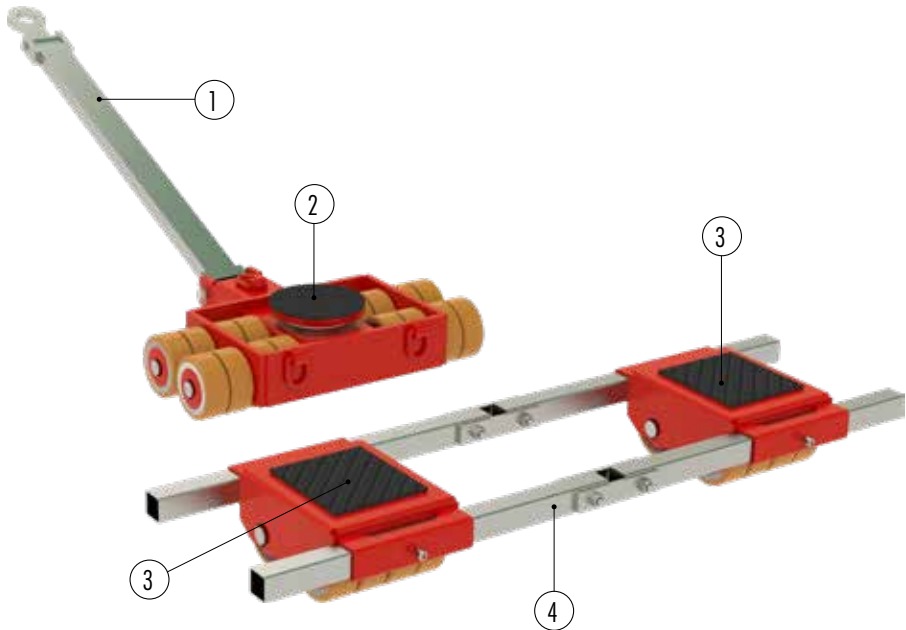
JLB 24 S / JFB 24 S

Item number **Designation**

1	Drawbar
2	Support plate
3	Cassette with support rubber
4	Connecting rod, cassette

3.3 Transport trolleys series G

English

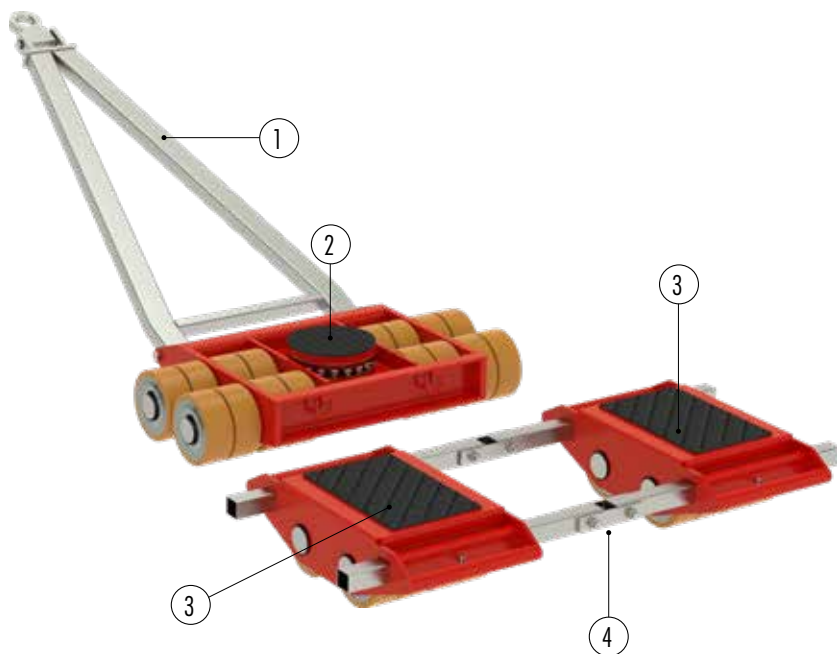


JLB 20 G / JFB 20 G

Item number	Designation
-------------	-------------

1	Drawbar
2	Support plate
3	Cassette with support rubber
4	Connecting rod, cassette

3.4 Transport trolleys series H



English

JLB 40 H / JFB 40 H

Item number

Designation

1	Drawbar
2	Support plate
3	Cassette with support rubber
4	Connecting rod, cassette

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 transport trolley is used, the centre of gravity of the load to be lifted must first be determined. Otherwise, tipping or slipping can lead to injuries or even to fatal accidents. Always determine the centre of gravity before using JUNG transport trolleys.

4.1.1 Determining the center 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 transport 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.

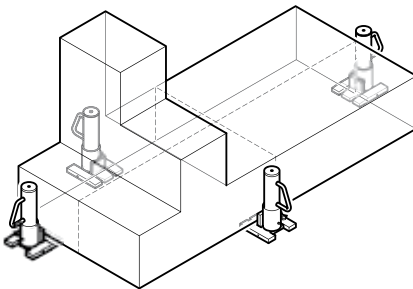
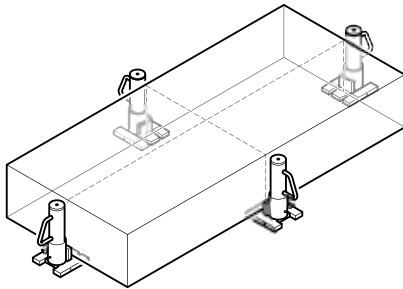


WARNING

The use of several jacks with different carrying capacities is not permitted for safety reasons.

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.

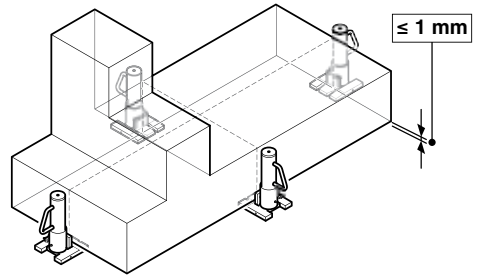
- > For the determination of the centre of gravity by means of JUNG jacks, the pressure gauge for jacks (order no. 94 001 024-B) is necessary as an additional accessory.
- > Connect the pressure gauge to the hydraulic connection.



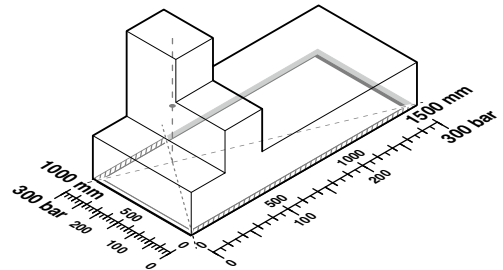
Above: Example 1 - Ideal case
Below: Example 2 - Complicated case

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)



Example of a complicated case

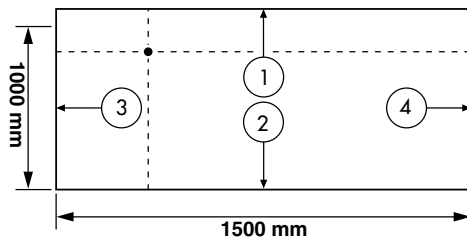


- > Determine and record the lengths.
- > Move the jack so that the load to be lifted is lifted horizontally over the opposite rotating edge. Use the jack to raise the load to be lifted to a maximum of 1 mm.
- > Determine and record the pressure on all four sides in the same way.

**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

$230 \text{ bar} + 70 \text{ bar} = 300 \text{ bar}$

Length of side (1) and (2) = 1000 mm

Side (3) Pressure = 200 bar

Side (4) Pressure = 100 bar

$200 \text{ bar} + 100 \text{ bar} = 300 \text{ bar}$

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

- > Set the result of the pressures (bar) of side (1) and side (2) in relation 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):

$300 \text{ bar} \triangleq 1000 \text{ mm}$

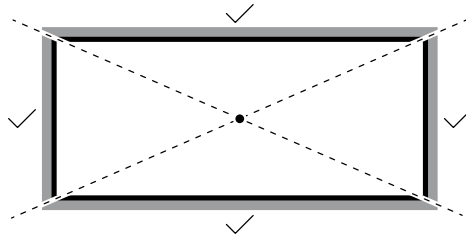
$230 \text{ bar} \triangleq 767 \text{ mm}$

Example sides (3) and (4):

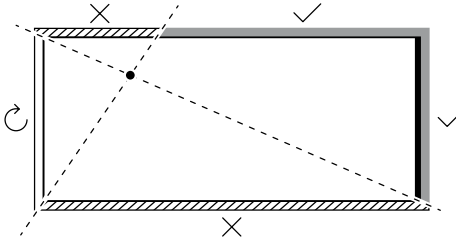
$300 \text{ bar} \triangleq 1500 \text{ mm}$

$200 \text{ bar} \triangleq 1000 \text{ mm}$

- > 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.



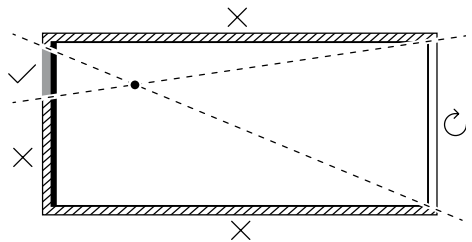
In the case of the complicated example 2, the jack may not be just anywhere, since the calculation of the centre of gravity has shown that it is not in the centre.

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.

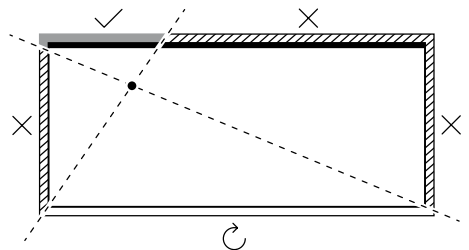
The following examples show the graphic determination of the lifting side on all four sides of the load to be lifted.

Top view, example 2 complicated case

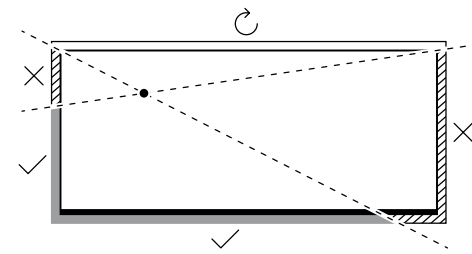
Symbol	Description
•	Centre of gravity
█	Selected lifting side
✓	Also permitted lifting side
×	Prohibited lifting side
↻	Axis of rotation



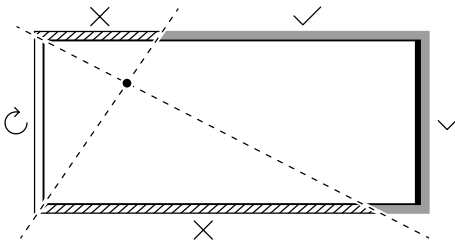
Left lifting side



Top lifting side



Bottom lifting side



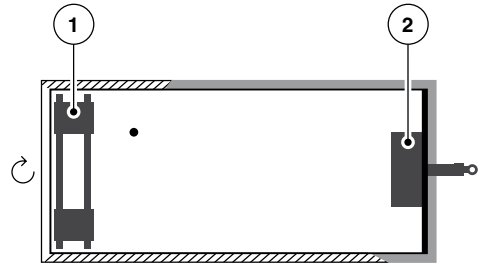
Right lifting side

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 gear

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 driving gear (1) under the transport load.
- > Position steering gear (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 transport load will tip over uncontrollably. There is a danger of injury.

4.2 Optional accessories: Removable handle



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.



WARNING

Attaching the detachable handle may result in bruises and injuries. Always wear safety clothing.

Retrofitting the existing handle



- > Remove the locking ring from the existing handle, then remove the handle.
- > Secure the eyelet with a short bolt (2).
- > Secure the locking ring.
- > Attach the detachable handle (1) anywhere on the drawbar.
- > Secure with the clamping screw.

4.3 Selection of the suitable trolley



WARNING

There is a risk of crushing when using transport vehicles carrying loads. Always wear protective clothing and pay attention to proper handling of the equipment.

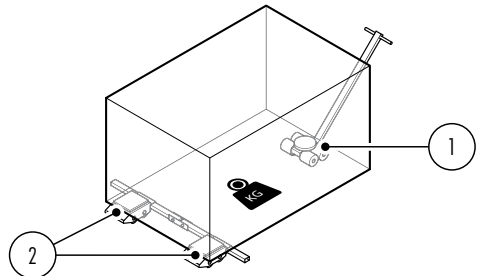


WARNING

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.

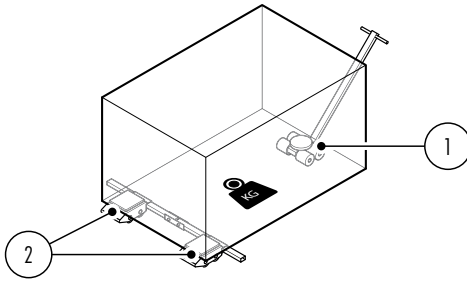
The centre of gravity and the overall weight of the transport load must be determined for the selection of the appropriate transport trolley. Ideally, the centre of gravity is symmetrical and in the middle of the transport load. In this case, the selection can be done using the following formula:

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



Example - Ideal case

A transport load of 6000 kg with a central centre of gravity results in 1500 kg (2) at each of the support points of the trolley (rear) and 3000 kg (1) at the steering gear. The JFB 3 transport trolley used is fully utilized (without a safety margin) with 1500 kg each, and the JLB 3 steering gear with 3000 kg as well.



Example of a complicated case

The weight distribution on the support points (complicated case) 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 (4). The steering system bears a load of 900 kg (1) while the right trolley cassette bears a weight of 300 kg (3). The permissible load on the trolley cassette in the ideal case is exceeded by more than 3 times.

Solution:

As a suitable trolley, the JFB 12 K with a permissible carrying capacity of 6000 kg per trolley cassette is used (safety factor 1.25).

Unevenness of the floor



NOTE

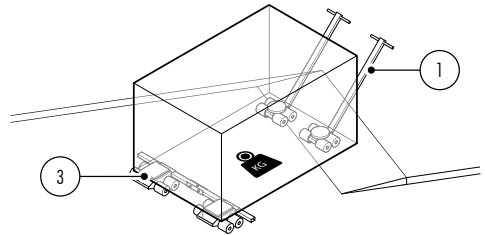
The following example is not recommended!

If there are four support points, some aspects have to be considered. Due to the unevenness of the floor, it can happen that the entire load rests on only two trolleys. It is therefore important to select the correct trolleys.



WARNING

It must be possible for the entire load to be supported by two trolleys (and/or individual cassettes). Pay attention to the use of suitable trolleys. Otherwise injuries may occur. Always wear protective clothing.



Example of an uneven floor

The centre of gravity of the transport load is in the centre. The transport load has a total weight of 6000 kg. This results in a load of 1500 kg each for the support points of the four trolleys.

Due to the uneven floor, however, up to two trolleys (1), (3) may not carry any load, resulting in a load of 3000 kg per trolley.



CAUTION

In the case of an uneven floor, the danger of a trolley being free-wheeling is significantly higher if there are four points of support. This results in the risk that a trolley can be pulled from under the load; thus, the load may fall and injuries may occur. Attach the load to the trolleys in a suitable way, e.g. by means of lashing straps. Always wear protective clothing.

4.4 Commissioning



DANGER

The total weight of the transport load and the position of the centre of gravity must be known before lifting and transporting. 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 38.



WARNING

Always place the trolleys on a flat, firm, non-slip surface. Observe the point load and ensure adequately safe grounding.



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.



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

WARNING

There is a risk of crushing when using transport vehicles carrying loads. Always wear protective clothing and pay attention to proper handling of the equipment.

NOTE

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

NOTE

Observe the operating instructions of the JUNG jacks.

DANGER

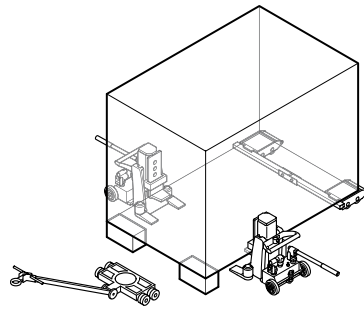
Be sure to use the connecting rod for the individual trolleys. As a result, the trolleys are guided parallel to the load if the floor is even, clean and without steps. Otherwise, tipping or slipping can lead to injuries or even to fatal accidents. Secure the transport load.

CAUTION

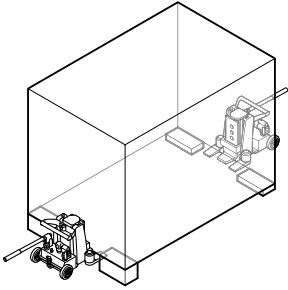
Be sure to observe the order of the work steps.

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.



- > Using the jacks, lift the transport load step by step in parallel and stabilize it with supports up to 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.
- > Move the adjustable trolley (both cassettes) underneath the transport load.
- > 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 must 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 path 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.

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 alternatingly.



To lower a load, perform the steps in the „Loading the trolleys“ chapter, page 46, 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. For lubrication, use commercially available high-performance grease for bearings.

- > 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. Any interference with the device within the warranty period will void the warranty, except in case of written consent from the manufacturer.

7. Declaration of incorporation**Declaration of incorporation**

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

Transport Trolley Types:

K- Series: JLB/JFB 3 K; JLB/JFB 6 K; JLB/JFB 7 K; JL/JFB 9 K; JL/JFB 10 K; JL/JFB 12 K;
 JL/JFB 14 K; JTLB 6 K; JTLB 14 K; JTLB/JFB 14 K WOC;
 S- Series: JLB/JFB 16 S; JLB/JFB 24 S
 G- Series: JLB/JFB 15 G; JLB/JFB 20 G; JLB/JFB 25 G; JLB/JFB 30 G; JTL 15 G; JTLB 30 G;
 JTLB/JFB 30 G TL
 H- Series: JLB/JFB 40 H; JLB/JFB 60 H; JL/JFB 80 H; JFB 120 H

Applying the directives by the Supply of Machinery (Safety) Regulations 2008.

We hereby declare that the design of the above devices (execution type), make JUNG, is intended for connection of a machine to other machines, and that their startup is prohibited until it has been ensured that the machine to be connected with the above-mentioned device (execution type) complies with the following provisions:

Applied harmonized standards, particularly „BS“ (British Standards).

In the event of a modification of the equipment that is not coordinated with us, this declaration shall cease to be valid.

Waiblingen 26.10.2020

Place Date



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:

EU: Logo Nr. 005878897, Name Nr. 005878806

USA: Logo Reg. Nr. 3,713,850,
 Name Reg. Nr. 3,697,526

China: Logo Nr. 14081450A, Name Nr. 14081449A

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

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Our logo and brand name „JUNG“ are registered as trademarks in the EU, US and China with register numbers:

EU: logo no. 005878897, name no. 005878806,

USA: logo reg. no. 3,713,850,
 name reg. no. 3,697,526

China: logo no. 14081450A, name no. 14081449A

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

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