Ergonomic manual
material handling
Why use manual handling systems?

Back and musculoskeletal ailments do considerable damage to business and the economy. They are the most common reason for sick leave and reduced performance at the workplace. A large number of these illnesses can be attributed to handling loads incorrectly. Production processes and services are therefore delayed or cannot be completed.

Increasingly health and safety at work is becoming more and more important. Our systems provide a significant contribution. They help improve workplace design to ensure that workers can adopt the most favourable posture in line with ergonomic recommendations. Thus, absenteeism due to sickness, particularly due to backache, can be avoided.

At the same time you ensure that workplaces meet the requirements of statutory standards and industrial safety regulations. The EU Machinery Directive and national regulations require, for example, the use of handling equipment where loads over 10 kg are to be moved in unergonomic positions.

Consistently high-quality production

With Zasche handling systems, your personnel is able to carry out repetitive handling operations with high precision. Thus, consistently high-quality products are ensured, rejects are avoided and claims are prevented. The various elements of our modular handling system are perfectly matched and can be combined to create complete systems.

ZASCHE handling has been manufacturing and developing handling devices and marketing them worldwide across many industries for more than 80 years. Each device is individually adapted to customer-specific requirements. Top priority is given to optimising the working procedure and the associated relieving of the strain on employees. ZASCHE handling has been a reliable partner to customers in the automotive, mechanical engineering, food and chemical industries and many other areas for many years. The range of products includes manual solutions and also partially automated systems.
Tailor-made solutions

Our strength lies in individual engineering solutions and project management. In cooperation with our customers, we develop the perfect solution for the projects entrusted to us. ZASCHE handling equipment is tailored precisely to your needs and optimised for ergonomic workplace design. All grippers are individually designed for each application and for each load. The device geometry, such as the height of the pillar and working radius, are exactly matched to the requirements at the individual workplace.

The globally operating sales employees at ZASCHE handling are competent contacts, and will provide you with advice on site if required. They will work out the best and most economical handling solution for you in collaboration with the internal sales department. The close cooperation between sales, construction, development and manufacturing paves the way to customer-oriented solutions and top quality products. All of this, together with the support of internationally operating project management, is the guarantee of professional processing.

ZASCHE handling is DIN EN ISO 9001 certified. Consistent delivery quality at the highest level is guaranteed by means of sophisticated processes. Because of the high manufacturing depth, fast reaction times and a high degree of flexibility are possible for rapidly implementing customer requirements.

ZASCHE handling also has a welding certificate in accordance with DIN EN 1090 part II execution class EXC 3, and the quality of the company’s fusion welding is assured by DIN EN ISO 3834-2.

In-house specialist welding engineers and numerous certified welders ensure that the quality of the welding connections of the handling systems is of a high standard.

If you have any questions, please contact our in-house crane experts.
**Service modules**

Services such as consulting, project engineering, handling trial and simulation in project planning phase. After-sales service package with service hotline, inspection, maintenance and upkeep, express spare parts service, implementation of necessary regular inspections of new or already installed devices.

- **Safety inspections** to accident prevention regulations for your handling equipment, hoists and cranes by our trained and certified personnel.
- **Inspection** of your handling equipment, hoists and cranes to ensure faultless operation.
- **Maintenance** of your handling equipment, hoists and cranes to enable you to keep a grip on your continuous maintenance costs.
- **Training** of your operating and maintenance personnel to ensure optimal operation of your equipment.
- **Modification and conversion** of existing handling equipment to adapt to changed requirements.
- **Crane acceptance** test by our in-house crane experts.

We also offer our services for products of other manufacturers.

**Showroom**

Our services also include our continuously updated demonstration centre in Nördlingen.

Here, you can obtain a comprehensive impression of the numerous possibilities which we offer as solutions for your handling tasks.

**You have a particularly tricky application?**

As a special service, we offer – on request – to carry out tests with your workpieces or tools at our demonstration centre to develop a tailor-made solution together with you.

We would like to invite you to gain a first-hand impression of our handling devices.
Steel structure

In order to operate crane systems or handling devices, you normally required a steel structure to install them. We would be pleased to plan and implement this for you. The work is carried out by our in-house experts and certified welding personnel with the relevant equipment in our manufacturing department.

Suspension crane installations

A wide variety of customised crane installations can be built from various steel or aluminium profile sections based on a comprehensive modular system.

Profile sections

The basic elements are steel or aluminium profile sections available in various sizes:

- KBK 100 bearing load up to 125 kg
- KBK I bearing load up to 500 kg
- KBK II-L bearing load up to 1,000 kg
- KBK II bearing load up to 2,000 kg
- KBK A12/A16 bearing load up to 500 kg
- KBK A18/A22 bearing load up to 1,000 kg

On request, we can provide you suspension Cranes from other manufacturers.

Crab frames

Crab frames are specially designed for rigid load handling requirements. They are used to move parallelogram devices, lifting axes and telescopic devices in suspension crane installations.
Application examples in different industries

Besides being used in traditional industries such as the automotive industry and its suppliers, engineering and metal processing, you can find ergonomic handling solutions in almost all branches of industries.

Here are some examples:
Rope balancers are lifting devices with suspended load guidance. Thanks to the low manual force and their low deadweight, these units are the optimum solution for sensitive load balancing and positioning. Complicated positioning and assembly tasks can be performed with ease. They can be supplied with a wide variety of different control types.

**Rope hoists**

Pneumatically balancer

Rope balancers make it possible to move loads quickly in short cycles. Load capacities of up to 110 kg are available as standard. There is shown a pneumatically balancer with hand force control.

SpeedHoist

The SpeedHoist electric rope winch is used when it is not necessary to balance the load or where no compressed air is available. Benefit: Particularly quick picking-up and depositing of loads. Load capacities of up to 160 kg are available as standard.

The E-Balancer is electrically operated. Nevertheless, it has the balancing features of a pneumatic balancer. This means that even without compressed air a workpiece can be balanced easily and sensitively if the operator touches it directly with his hands. It is specially designed for applications where the use of compressed air is waived or pneumatics is not available. Load capacities of up to 160 kg are available as standard.

- **Load handling mode**: Lifting and pre-tensioning the load handling device: The load is taken from a chuck, for example, without falling or shooting upwards. This protects equipment and machinery at the same time, since the balancer lifts with a predefined force.

- **Joining mode**: A high degree of safety and precision is provided during joining procedures, since the load is prevented from swinging upwards.
Slewing jib cranes/Pivot arms

Pivot arms in light-duty design are combined with pneumatic rope balancers or electric rope winches. These units are fitted close to the pillar and thus offer the operator very easy handling, as only the low arm mass has to be moved.

Technical specifications:
- Loads up to 115 kg
- Outreach up to 3 800 mm

Pivot arms made of Carbon
For manually guided manipulators the so-called „dead masses“ (e.g. the pivot arms) must be accelerated and stopped at least twice for each completed work cycle - in addition to the weight of the transported workpiece. With components made of carbon fibres Zasche handling achieves reductions in weight up to a factor of four compared to other materials in common used today.

With pivot arms in heavy-duty design it is possible to fit pneumatic lifting axes or electric telescopic lifting devices with a load capacity of up to 500 kg. This combination is a highly efficient and cost-effective variant for rigid load handling.

Pillar and wall-mounted slewing jib cranes are used in combination with rope balancers or chain hoists for simple handling operations. Their jibs are made of aluminium crane profiles featuring low dead weight in relation to their outreach and loading capacity. The jib can therefore be easily moved by hand.
Parallelogram devices

Our parallelogram devices combine a pneumatic drive with a parallelogram. This design makes it possible to absorb torques and thus to pick up workpieces outside their centre of gravity.

All devices are designed and manufactured in accordance with the latest regulations and standards. They feature the highest safety standards in compliance with the current regulations. During development, endurance tests are carried out in the test bay (e.g. continuous vibration tests).

The parallelogram devices are supplied with an arm length of up to 3500 mm as standard. The arm length can be increased or shortened in line with requirements.

They can be supplied with strokes of up to 1800 mm in the lifting direction. All rotating swivels and the stroke can be fitted with brakes as an option.

An extremely compact version of our parallelogram is also available for lightweight applications. It features optimised overall sizes and a significantly reduced dead load. It is used for handling small loads in restricted spaces and for short cycles.

All parallelogram devices operate particularly smoothly and require only low manual forces. They cover a load capacity range from 10 to 500 kg.
Lifting axes

Our lifting axes are pneumatically powered units and carry out a linear movement. They are used for ergonomically rigid load guiding. They are used to guide loads easily and safely since hand movements are transferred direct to the load. They feature particularly low masses and offer smooth operation.

The guide systems are hardened and ground ball bearing linear guides of machine-tool quality. Matching low-maintenance ball bearing runners are used which require only low manual forces for the lifting motion.

Load capacities up to 300 kg and torques up to 2500 Nm are possible as standard.

Lifting axes are supplied with strokes of up to 2000 mm. The stroke can be increased or shortened according to requirements. The required stroke can be infinitely and precisely adjusted via stops.
Telescopic devices

Telescopic devices are lifted and lowered by inside or outside running chains of electrically driven chain hoists. We offer these units as single or double telescopic sections with round guides (TR) or square guides (TV).

They are particularly suitable for handling heavy workpieces (up to 1500 kg) and large torques (up to 5000 Nm) in long cycles.

They can also be used in low buildings with double telescopic sections.

Stacking crane

Off-centre lifting points and high lifts. These are the core applications of a stacking crane. The operating bracket remains at an ergonomically optimum operating height, regardless of the respective lift.

The working loads and torques can be specially coordinated with your application.
A handling device does not just have to guarantee a high degree of process reliability nowadays. Flexibility and transformation ability, shorter cycle times and repeat accuracy are becoming increasingly important. Manually controlled applications reach the limits of their capability when difficult and sensitive handling tasks are involved. Lack of room is another argument in favour of semi-automation.

The applicable standards for fully automated systems do not apply in manually guided automatic operation, meaning that the relevant space requirement caused by protective equipment such as fences or light curtains disappears altogether. However, the worker can still use his perception to actively intervene in the handling process and introduce manual process steps.

Be it small loads with a large quantity of cycles, or heavy loads weighing more than a ton. Because of our in-house expertise, we can offer you semi-automatic systems for any load range.

**Positioning accuracy**

Depending on requirements, linear or rotative drives with internal measuring systems or laser measurement are used for positioning the system.
Special tasks require special solutions!
Highly complex tasks often have to be carried out with a handling device, particularly in the field of special machine construction and the automotive area. When doing this, we coordinate with you in order to be able to work out which load handling device will meet your needs from an ergonomic and financial point of view. The trick is to design the gripper so that it is as slim as possible. When there is nothing left to dispense with, perfection has been achieved. In accordance to the motto: less is more!

Load handling attachments

Special load handling devices are developed and built in a product-specific way, e.g. for vehicle doors, gear components, wheels, wooden panels etc. We would be pleased to advise you on the basis of the task that needs to be performed, in order to design load handling devices that are tailored to your requirements and your products.
Standard mechanical load handling attachments are, for example, load forks, load hooks, pantograph-type tongs or mechanical parallel grippers. In most cases, they are combined with flexible load lifting equipment, e.g. rope balancers, SpeedHoist or Manulift units. Their main applications are simple handling operations.

Pneumatic expanding mandrels are available in 3" and 6" standard sizes. Special sizes are also possible. They can be supplied with a fixed head or a quick coupling for products with different inside diameters.

Vacuum load handling attachments can be operated by compressed air via ejectors and electric vacuum pumps or blowers. Vacuum blowers work with comparatively low under-pressure but with high volume flows and are particularly suitable for handling air-permeable workpieces such as cartons, plywood, sacks, etc.

Magnetic load handling attachments The range of magnetic load handling attachments includes, for example, round and rectangular magnets as single magnets or mounted on spreader beams. The magnets may be operated manually, electrically or pneumatically.
Control systems

**Ergo-Grip-System**
The Ergo-Grip-System developed by Ergo designers and patented by Zasche handling forms the interface between the operator and the handling device. Many different variants of the ergonomically designed operating frame can be created by using the standard elements.

The Ergo-Grip-System is supplied with a width of 400 mm and with lengths of 500 and 800 mm as standard. If load lifting requires particularly large strokes, the operating controls are of redundant design so that the control buttons can be reached in any height position. Other sizes, of course, are also possible.

![Image of Ergo-Grip-System](image)

**Rope solutions**
For flexible load guidance we have also developed a wide range of standard controllers like the ones developed for our rigid devices in order to meet your specific requirements.

![Image of Rope solutions](image)

**The right standard control system for every use case**
Our controls are designed according to the handling system’s equipment and purpose. Comprehensive quality controls and functional checks during production ensure a maximum of operational safety and reliability. The assemblies used comply with the latest DIN and VDE regulations. Our control systems can be customised to our pneumatic load lifting modules.
Control systems

Our range of control systems has been largely standardised. We have developed and standardised a modular system of more than 20 basic control types with approx. 40 options in order to avoid the need to respond to the many different applications with one-off solutions. Thus we can ensure that for each task the ideally suited and tested control system is used.

In developing of the modular control system, we have paid great attention to safety of operation. All control systems comply with the latest DIN and VDE regulations.

The following is a small selection from our modular control system range:

Up/down control
This is suitable for simple handling operations in which loads have to be moved up and down at the push of a button.

Single-load control
Single-load control is characterised by the ability to balance a load which is permanently connected to the handling device. This type of control is particularly suitable for moving tools, e.g. welding tongs and screwdrivers, etc. Operating controls are not needed for the single-load control system.

Double-load control
Double-load control makes it possible to handle a constant workpiece weight. Load 1 (no load) balances the weight of the load handling attachment. Load 2 (full load) additionally balances the weight of the workpiece to be handled. The control system switches over automatically (together with the pneumatically or electrically operated load handling modules) and needs no other operating controls.

As an option the double-load control system can be provided with the manual load selector function. This option makes it possible to manually adjust different workpiece weights without a complex control system being necessary.

Balance control with hand force detection
Balance control with manual force detection is the most convenient balance control system. When the handle is gripped a photocell activates the unit. A hand force sensor in the handle detects whether the operator wants to move the load up or down. Loads with different weights can be moved easily with this type of control without the need to actuate any switch.

Balance control with hand force detection is a patented system.

Options:
Owing to the load guide mode, the worker can directly hold the workpiece and then guide and position it precisely. The gripper release circuit constantly monitors the unit to ensure that the gripper can only open when the load has been set down. The lifting motion release circuit ensures that the load can only be raised when it is securely held. The automatic lowering feature is lowering with defined adjustable speed in case of a drop in power.
Vacuum tube lifters are particularly suitable for lifting and moving airtight or porous loads such as cartons, sacks, barrels, glass panes, wooden and metal sheets and many other applications. They have a load capacity of up to 300 kg. The load is exclusively gripped and lifted using one medium, i.e. vacuum. This vacuum is generated by means of an external vacuum blower.

Vacuum tube lifters are integrated in crane installations optimised for the individual applications. However, they can also be integrated in existing crane installations.

With vacuum tube lifters, workpieces can be laid down in pick-up position or also slewed through 90°.

Floor-running equipment

Floor-running equipment is a special type of manual handling equipment. These devices are used in particular for applications for which it is not wanted or possible to attach a manipulator to the ground or the ceiling.

A further benefit of this type of equipment is that a floor-running solution can be operated independently of a specific mounting location.

Operation is possible in purely mechanical, electrical (e.g. rechargeable battery), hydraulic or pneumatic mode.
Accessories/Options

Travel drives
Electric or pneumatic travel drives for the long and cross travel motions are an advantage when handling larger loads. They have been specifically developed for the requirements of handling systems. Travel drives are used to gain acceleration when starting up, as well as to slow down the accelerated mass.

Power supply systems
Our standard power supply system consists of a protective hose in which the power lines are laid with appropriate protection. This protective hose is guided in the crane rail system by means of special guide trolleys. This ensures particularly smooth movement and that no pulling forces occur.

Optional power supply system with energy chain.

Brakes
Brakes are used to fix arms and crab frames in position. Brakes lock an arm in a certain position when it is not being used and thus prevent the load from drifting away.

Mobile units
Pillar-mounted devices can also be fitted to mobile units as an alternative. For this purpose, they are fitted with a heavy steel floor plate, the height and level of which can be adjusted by means of spindles and swivel nuts. This enables handling devices to be moved by forklifts or overhead travelling cranes and they may thus occasionally be used at different places.
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