NERAK systems for unit loads
Vertical conveyors

NERAK FÖRDERTECHNIK

NERAK vertical conveyors for unit loads

|| **As experts in vertical conveying technology we offer the right solution for each individual application. And that means a cost-effective design as well as reliability and durability in operation.**

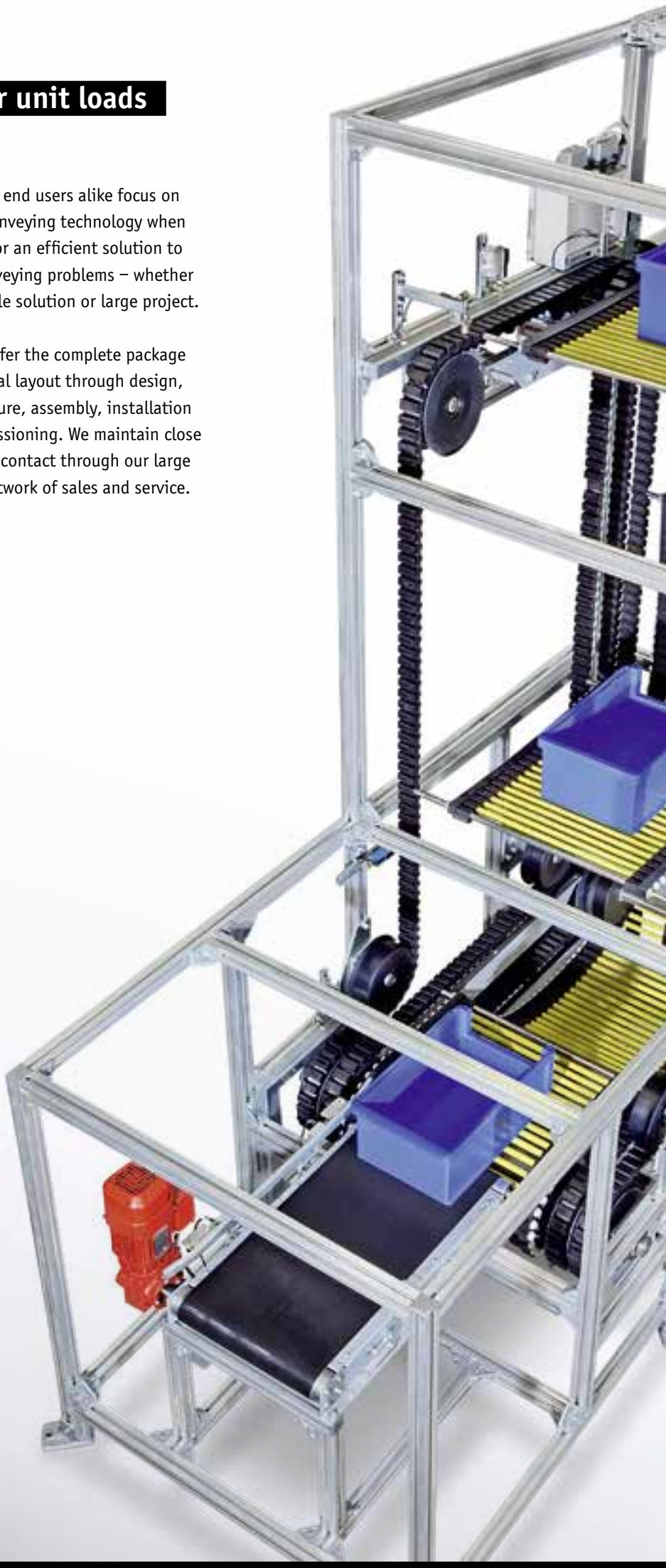
Whenever vertical conveying is the topic of conversation today, the name NERAK springs to mind. Innovation and reliability of our S-shaped conveyors in many fields of goods handling have made us the market and technology leader world-wide.

Where goods need to be conveyed on a 24/7 basis, then NERAK is on the scene – whether you need to transport tinned goods, parcels, sacks, barrels or loaded Euro pallets.

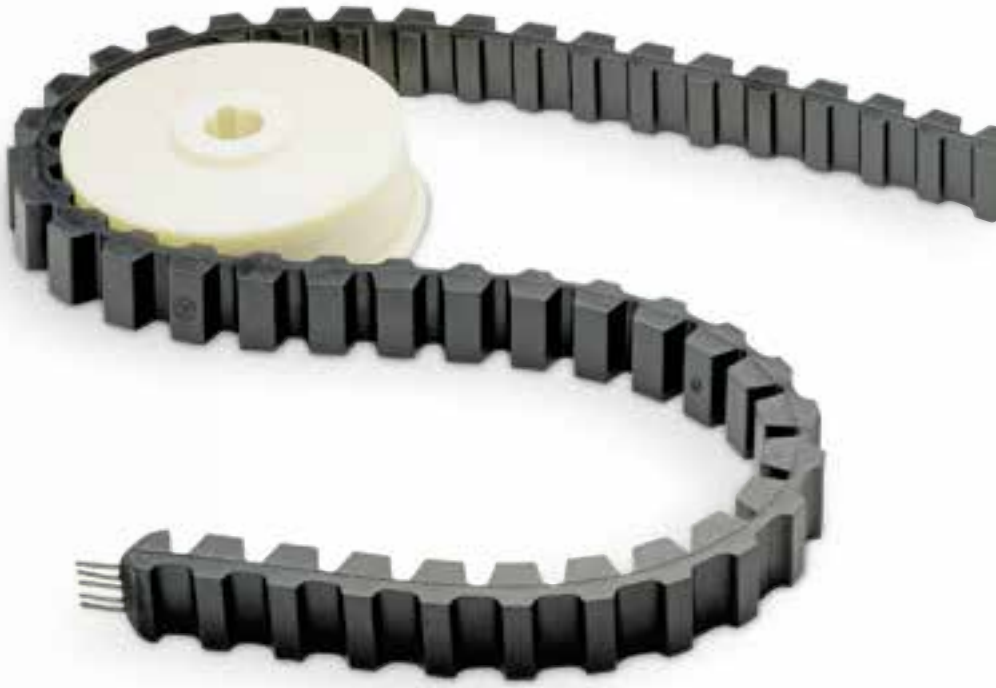
Careful design and material selection ensure low maintenance and long life for all components in the system. This, together with in-house production, ensures constant high quality as well as fast and flexible reaction times.

OEMs and end users alike focus on NERAK conveying technology when looking for an efficient solution to their conveying problems – whether for a single solution or large project.

We can offer the complete package from initial layout through design, manufacture, assembly, installation to commissioning. We maintain close customer contact through our large global network of sales and service.



NERAK
FÖRDERTECHNIK



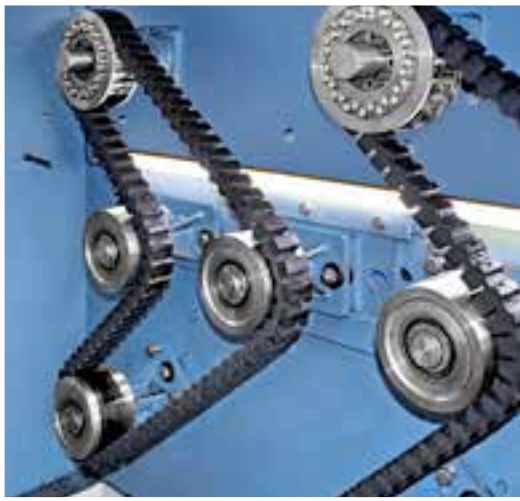
|| Our strengths lie in quality, flexibility and the rubber block chain.

At the heart of every NERAK conveyor drive system is the heavy-duty rubber block chain. The rubber block chain gets its high tensile strength from embedded vulcanized steel cables.

The outstanding features of this chain are that it has no links, is silent-running, wear-resistant and virtually maintenance free, all excellent qualities further enhanced by its corrosion-free design.

Thanks to the silent operation of the rubber block chain, there is no noise annoyance at the workstations in the immediate vicinity of the conveyor.

Moreover, operation with the rubber block chain is extremely cost-effective as there is no need for lubrication, regular adjustment and re-tensioning. Maintenance costs are thus reduced to a minimum.



The chain quality is subject to constant monitoring

NERAK S-shaped and C-shaped conveyors for continuous horizontal and vertical

|| **In the world of vertical conveying technology today, the term S-conveyor is synonymous with NERAK. By combining innovative technology with all-round reliability, NERAK has succeeded in developing a classic solution that has become well established on the market.**

In logistic systems, wherever differences in height have to be overcome with high throughputs, you can find a NERAK S-conveyor in operation, particularly in time-critical processes, e.g. in the car industry, distribution centres and international airport check-ins.

NERAK vertical conveyors are capable of transporting goods both carefully and with speed, handling products of different shape and size without having to pre-sort.

S-conveyor in a distribution warehouse

NERAK FÖRDERTECHNIK

Design

Depending on the weight and type of the item to be transported and the required throughput, NERAK combines platforms, rubber block chains, direction changes and frame structures in an optimum configuration to create the perfect solution, ranging from the light-weight design for food trays to the heavier design to cope with loaded Euro pallets with payloads up to 1.5 t. For the supporting frame, aluminium system profiles and steel or stainless steel profiles are used to suit the size and application.

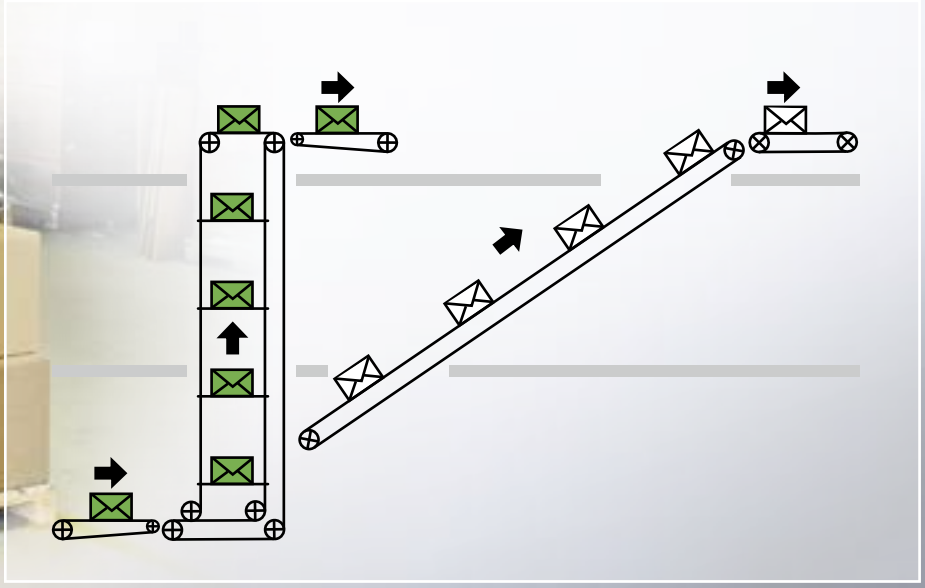
Where necessary, the conveyors can be enclosed with protective cladding. Generously sized doors allow access for maintenance and cleaning.

The continuously circulating rubber block chain system developed by NERAK ensures vibration-free and quiet operation with high throughputs, conveying up to 2800 items per hour with the S-conveyor, approx. 300 items/hour for the heavy-duty S-conveyor, and about 1300 items/hour in the case of the C-conveyor, depending on the nature of the product to be handled.

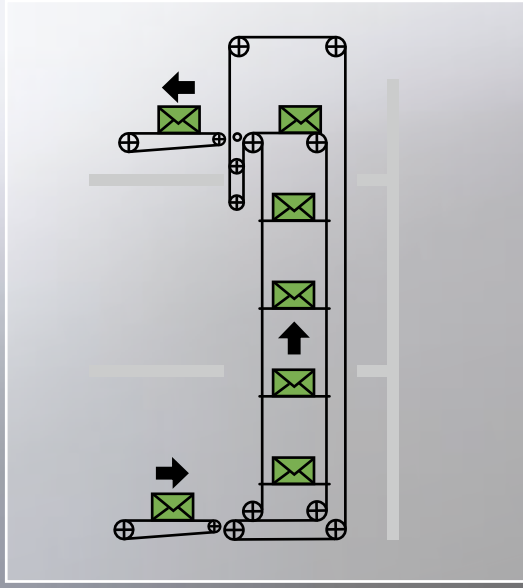
Typical applications

- Trays
- Cardboard boxes
- Euro pallets
- Shrink-wrap packages
- Soft packages
- Sacks
- Air luggage
- Work pieces
- Tyres
- Magazines
- Other unpackaged products

C-conveyor in mail distribution centre



S-conveyor: the compact design creates an optimum layout for upward and downward transport as compared with inclined belt conveyors.



With the C-type conveyor, the feed and discharge point are on the same side. At the feed station, the item is conveyed by the reversing platform strand.

NERAK S-conveyor and C-conveyor

Whatever the job NERAK has the right platform

Gearbox

Euro pallets

Barrels

Air luggage

Feed section

At the feed section, the segregated goods are transferred smoothly from the indexing horizontal conveyor onto the platform of the S-conveyor moving at synchronised speed. Waiting in horizontal position, the platforms form a solid surface to carry the items.

Photoelectric cells detect approaching goods and stop the infeed conveyor until the platforms are in the correct position. The infeed conveyor then restarts transferring the goods smoothly onto the platform.

Infeed of the items onto the platform can be determined by the customer. Appropriate synchronising equipment can be provided for this, depending on the requirements.

Platforms

The conveyor platforms are normally constructed of polyester rods. They are secured to the carrying chains by means of specially designed holders, thus making it possible to convey heavy loads safely.

To prevent slipping, the rods can be covered with PVC tubing. For special applications, the platforms are made from plates of steel, aluminium or synthetic material to form a solid surface.

Where heavy items need to be transported, the platforms are made from steel profile sections.

Discharge section

At the point of discharge the platforms travel around the idler wheels, transferring the goods smoothly onto the downstream conveyor.

Sensoring and control

The switching functions are restricted to a few pulses, performed generally by the central control unit.

On request, the switchgear and motors can be supplied pre-wired and connected as a module to terminal boxes. Where the conveyor and the synchronising equipment form an independent unit, however, a switchgear cubicle with a control and power section is available as an option.

Feed section

Discharge section

Shrink-wrapped packages

Books and catalogues

Bags with infusion sets

Domestic appliances (white goods)

NERAK circulating conveyors for continuous vertical transport

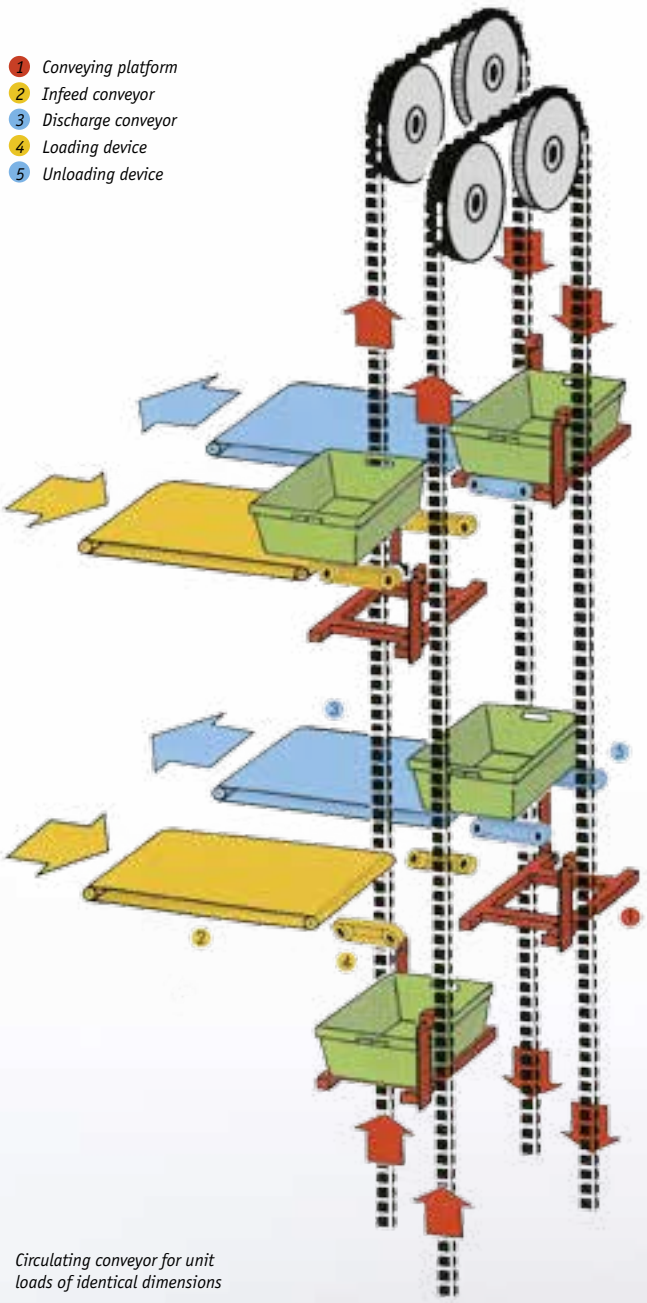
|| NERAK circulating conveyors are designed for the continuous vertical handling of unit loads with loading and unloading points at various levels (paternoster principle). These systems are used mainly in large dispatch centres with many infeed and discharge levels.

The continuously circulating system uses the NERAK rubber block chain from which platforms are suspended. The load is fed in on the way up and discharged on the way down.

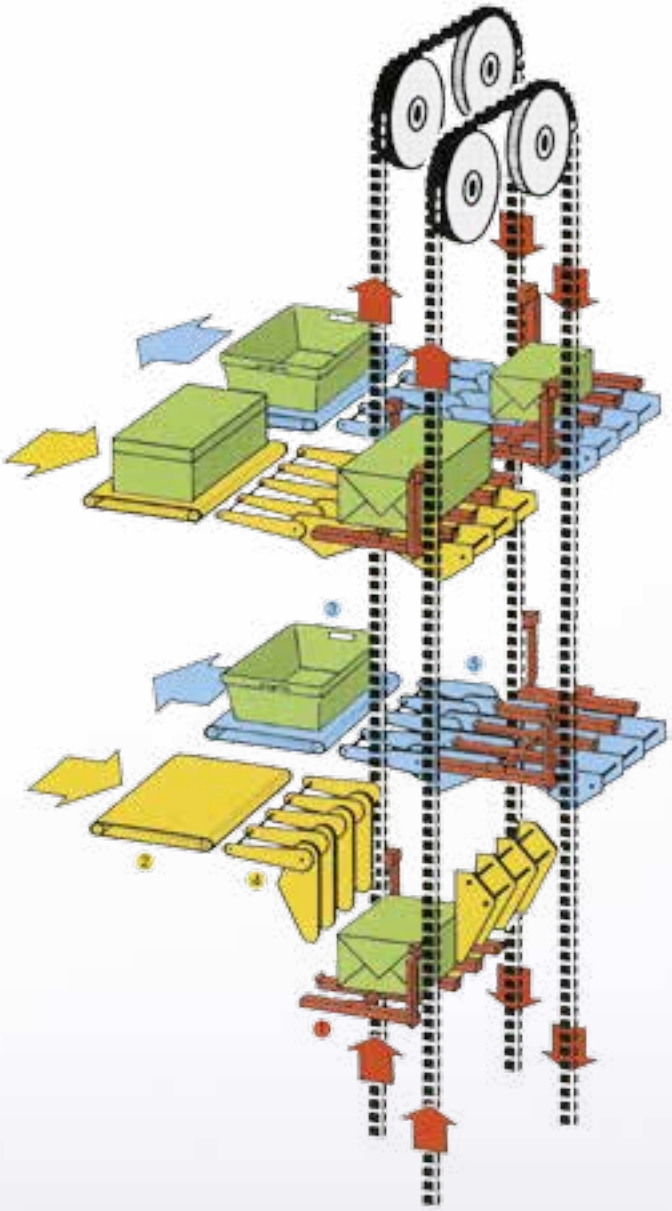
There are two distinct types of system, depending on whether the unit loads have identical or varying dimensions.

The type of conveyor determines the design of the loading and unloading stations and thus the throughput. For example, for loads of identical dimensions it is possible to achieve throughputs of up to 1200 units per hour.

1 *Conveying platform*
2 *Infeed conveyor*
3 *Discharge conveyor*
4 *Loading device*
5 *Unloading device*



Circulating conveyor for unit loads of identical dimensions



Circulating conveyor for unit loads of varying dimensions

|| Design

The circulating vertical conveyors are fabricated in welded sections to facilitate ease of transport and erection on site.

The structure is designed to be self-supporting, including the drive and all feed and discharge stations.

As a rule, the conveyor is completely enclosed with perforated sheet cladding, with maintenance doors at the feed and discharge stations.

|| Circulating conveyor for unit loads of identical dimensions, such as plastic boxes 600 x 400 x 400 mm

These conveyors are designed for unit loads of identical dimensions. The items are loaded and unloaded by pivoting belt conveyors which transfer the items to and from the loading position.

The platforms, tailored to each individual system, take the items from the transfer conveyors on the way up, and deposit them onto the transfer conveyors on the way down.

|| Circulating vertical conveyors for unit loads of varying dimensions, such as containers, trays, cardboard boxes and parcels

With this type of conveyor the items are loaded and unloaded by hinged chain conveyors which pick up and support items of varying size.

These loading and unloading stations consist of:

- A hinged, motor-driven multi-strand chain conveyor which reaches between the fingers of the platform.
- A hinged, non-driven set of rollers which are swivelled into the working position from the opposite side to support the loads.

The platforms are designed in the form of a rake, consisting of a series of open fingers from a central rib in order to allow items of varying dimensions to be loaded and unloaded.

Head segment

Driven wheel, plastic guide rail and platform of a circulating vertical conveyor for unit loads of varying dimensions.

For unit loads of identical dimensions, the platforms are suspended from the rubber block chain and run in plastic guide rails for the entire circuit. This ensures smooth vibration-free running.

For unit loads of varying dimensions the platforms are designed in the form of a rake.

NERAK portal lifter for individual loads up to 200 kg

|| The NERAK portal lifter has been designed to transport individual loads up to 200 kg. A lifting bracket suspended on two rubber block chains is moved up and down guide rails by a frequency-controlled geared brake motor, stopping at any number of feed stations required.

The electrical components mounted on the lifting carriage are supplied with power by means of a flexible power cable.

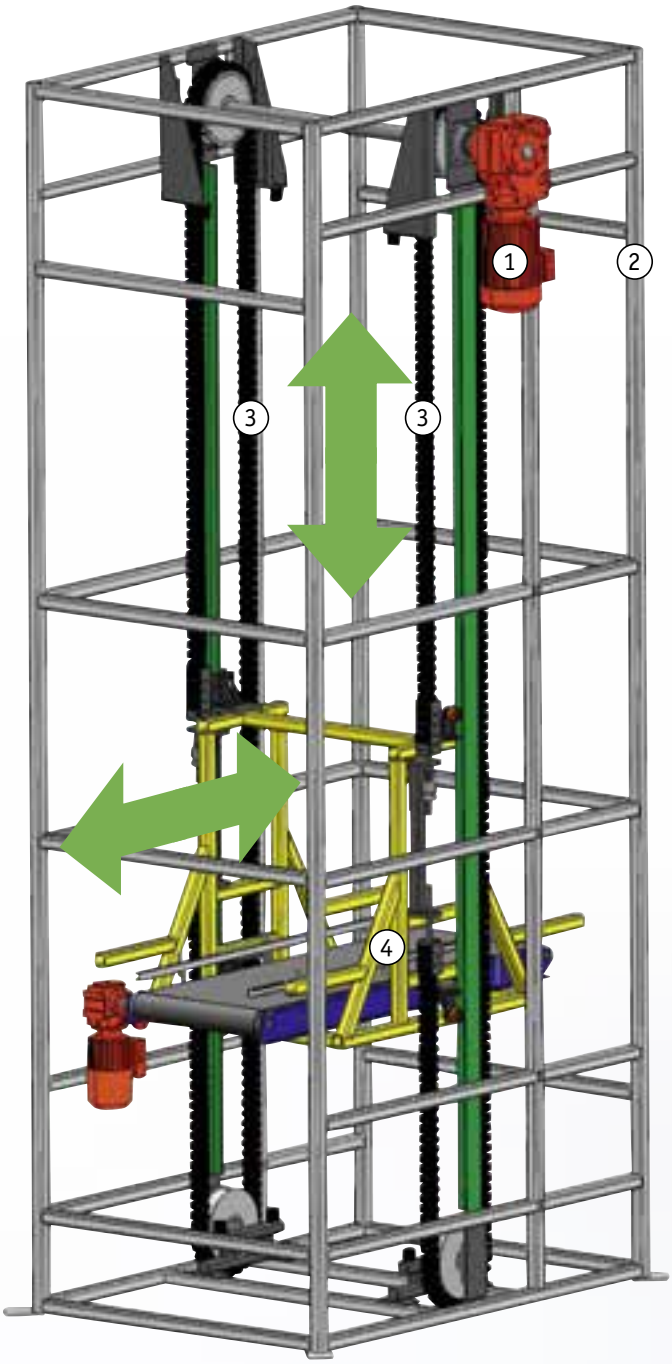
The hoist system operates with or without a counterweight, depending on the required cycle times. The lifting carriage can be fitted with different types of horizontal conveyors.

As a standard, the frame of the portal lifter is made from aluminium profiles, although mild steel or stainless steel can be used as an alternative. The frame supports the guiding elements, the protective cladding and the idler units.

Perforated aluminium sheet is used for cladding, but painted perforated steel or transparent polycarbonate can also be supplied.

Up to a height of 3 m, the portal lifter is only dowelled to the floor. For greater heights, a vertical stabilizer needs to be fixed on suitable ceilings or walls.

Feed station of a portal lifter with transfer onto the pivoting infeed conveyor, separating out the items.



1 Direct drive with shaft-mounted geared motor and toothed drive wheels. The lifting speed can be up to 2.0 m/s. Depending on the lifting height, as many as 200 cycles per hour can be achieved.

2 The frame supporting functional elements and cladding

3 NERAK rubber block chain with embedded steel cable as the drive system

4 Lifting carriage with horizontal conveyor

Transfer from belt conveyor on lifting carriage to the subsequent roller conveyor

Transfer station

Double belt conveyors can be supplied as an option

NERAK reciprocating lifts

While the S-shaped conveyor is suitable for high throughputs, the reciprocating lift is the classic choice for smaller throughputs. This type of lift is available in a number of designs and is used to transport material between two or more levels.

With the reciprocating lift, a horizontal conveyor such as a belt conveyor or roller conveyor is fitted to a lifting carriage. This lifting carriage guided on rollers can serve any number of levels.

Lifting is performed by a geared brake motor which may be pole-changing or frequency controlled, depending on the particular application.

Light-weight series (for payloads up to 80 kg)

These light-weight reciprocating lifts complete the NERAK range of conveyors at the bottom end of the scale. The following features make this series particularly cost-effective:

- Modular design
- Lifting is achieved by an individual rubber block chain
- No counterweight
- The aluminium profile frame accommodates not only the drive, idler and guide units but also the protective cladding of aluminium perforated sheeting.
- The guide units perform the simultaneous function of fastening the end stops.
- Up to a lifting height of 3 m, the lift is only dowelled to the floor.

Lifting carriage with belt conveyor

Rubber block chain fastened securely to the lifting carriage

|| Medium-range (payloads up to 300 kg) and heavy-duty series (max. payload 2.5 t)

A lifting carriage suspended on two parallel rubber block chains (medium-range) or steel reinforced belts (heavy-duty range) is moved up and down guide profiles by means of polyurethane or steel rollers. The hoist system operates with a counterweight in the lifting frame to reduce the driving power required.

The conveyor stand comprises two square tubes, the stand base and a number of welded-on components. The head plates at the top support the frame of the drive unit. The base of the stand is concreted and secured to the floor with anchor bolts. For greater stability, the conveyor must also be fastened to suitable walls or mezzanines.

The drive unit comprises a helical geared motor, coupling, shaft bearings and drum. Two flat belts transmit the driving torque, causing the lifting carriage and counter-weight to move up and down. The load is evenly distributed between the two belts by means of a see-saw lever. Each belt has been dimensioned to bear the whole load on its own if the other belt should break. In this event, a limit switch signals a malfunction.

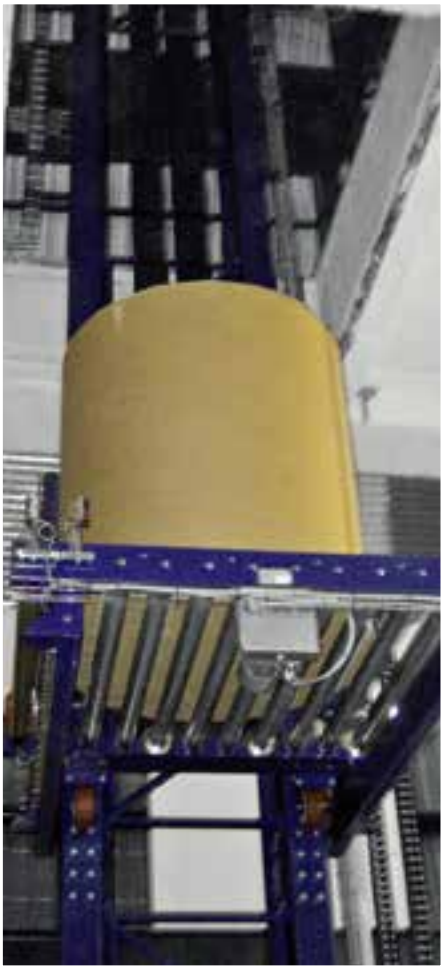
The safety lock used during maintenance and repairs mechanically locks the conveyor, making it impossible for the lifting carriage to move even if it has been electrically actuated. This mechanical lock consists of bolts that are manually slotted into a perforated disc on the main driving shaft. This bolt is then electrically secured.

|| Sensoring

The proximity switches provided are adjustably mounted on C-shaped profiles.

Wiring to the terminal strip is available as an option. The electrical components on the lifting carriage are supplied with power by means of a flexible power cable.

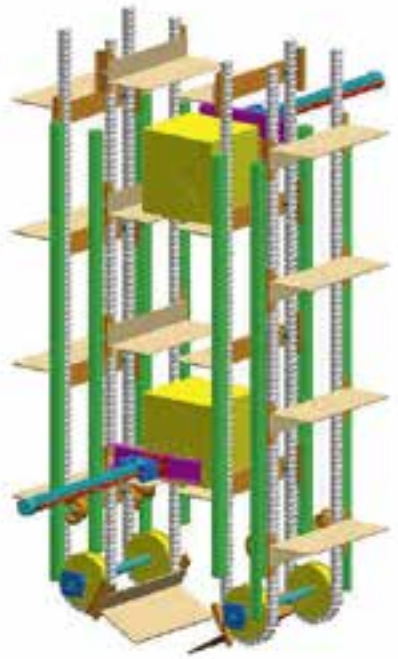
Vulkollan rollers guide the carriage



Lifting carriage with paper drums

Drive station of heavy-duty reciprocating lift with geared motor, coupling, drive drum and locking mechanism

NERAK vertical lifts / indexing conveyors (accumulators)



In response to customer demand for intermittent indexing conveyors with an integrated storage function, NERAK has developed the vertical lift and the indexing conveyor.

These have been specially designed to convey packages of identical size with individual loads of up to approx. 50 kg.

Lifting heights of up to 20 m are possible with conveying capacities of up to 750 cycles/hour.

Vertical lift

Angled ledges are attached to two pairs of rubber block chains circulating synchronously. The material is fed onto these ledges from a roller conveyor running between the ledges, or by a pneumatic pusher that pushes the segregated material from a roller conveyor or belt conveyor. The material is discharged by a pneumatic pusher on the way up, and by a discharge roller conveyor or belt conveyor on the way down. Feeding and discharging can be at any number of levels, as required.

Indexing conveyor in a distribution warehouse

Feed station of an indexing conveyor for plastic boxes

Sturdy guide units ensure reliable operation

Indexing conveyor

The design of the indexing conveyor is similar to that of the vertical lift, using only one pair of chains instead of two, however. The lifting carriages fastened to the rubber block chains can be loaded and unloaded by means of pushers when moving upwards or downwards.

Design

The supporting frame of this conveyor is a robust construction made from aluminium profile sections that are bolted together. To comply with local requirements, it is covered with protective cladding made from perforated aluminium sheets.

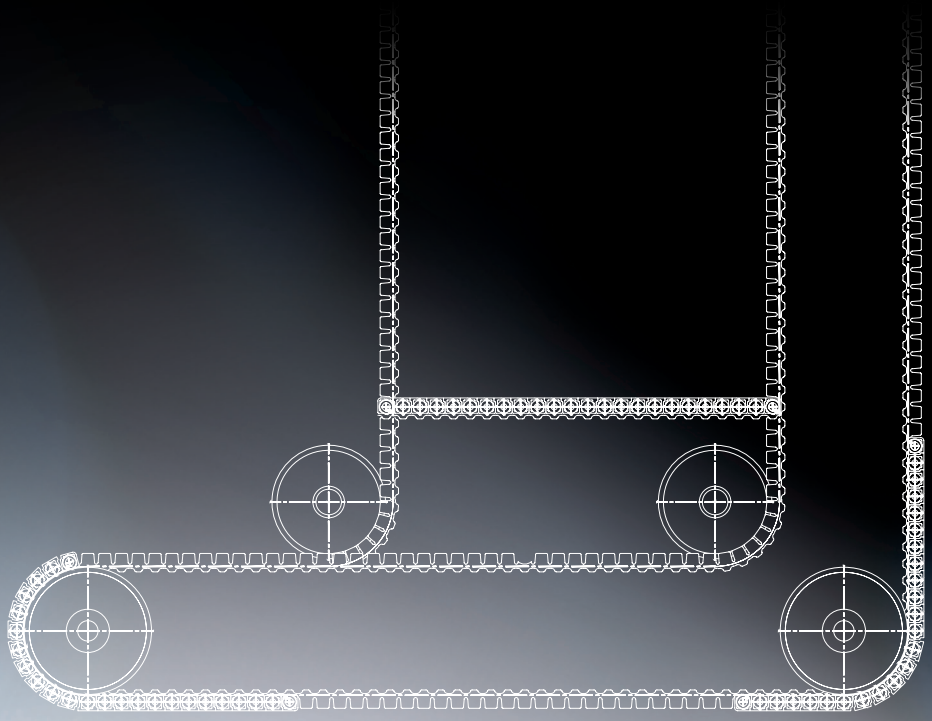
As an option, the frame and cladding are also available in standard steel or stainless steel. Generously sized doors allow easy access for maintenance and cleaning.

Up to a height of 3 m, vertical lifts only have to be dowelled to the floor. At greater heights, they must be secured to the building or structural steelwork.

The angled ledges or lifting carriages are securely mounted on the rubber block chain. The loaded columns are guided. A geared motor provides the drive.

The switchgear can be wired up to terminal boxes. A PLC control system as well as the infeed and discharging conveyors are available as optional equipment.

Vertical lift for cheese blocks in a dairy



For current data sheets and sample CAD drawings please visit our websites:
www.nerak.de
www.nerak.com

NERAK
FÖRDERTECHNIK

NERAK GmbH Fördertechnik | Brigitta 5 | D-29313 Hambühren
Phone +49(0)5084-944-0 | Fax +49(0)5084-944-222 | info@nerak.de | www.nerak.de

|| Sales and service centres

- Australia
- Belgium
- Brazil
- China
- Finland
- France
- Greece
- India
- Indonesia
- Israel
- Italy
- Japan
- Korea
- Malaysia
- Netherlands
- Norway
- Austria
- Poland
- Russia
- Sweden
- Switzerland
- Spain
- Czech Republic
- Turkey
- United Arab Emirates

|| Branches

Denmark
NERAK A/S
Chr. 8 Vej 32
8600 Silkeborg
Phone +45 70 26 50 04
Fax +45 70 23 50 04
info@nerak.dk
www.nerak.dk

Great Britain
NERAK UK
32 Ffrwdgrech Ind. Estate
Brecon
Powys LD3 8LA
Phone +44 18 74-612-900
Fax +44 18 74-612-915
info@nerak-uk.com
www.nerak-uk.com

USA
NERAK Systems Inc.
4 Stagedoor Road
Fishkill, NY 12524
Phone +1 914-763-8259
Fax +1 845-896-1925
info@nerak-systems.com
www.nerak-systems.com