

OPERATING PRINCIPLE

The NERAK circulating vertical conveyors are designed for the continuous vertical handling of unit loads with loading and unloading at each levels (paternoster principle).

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

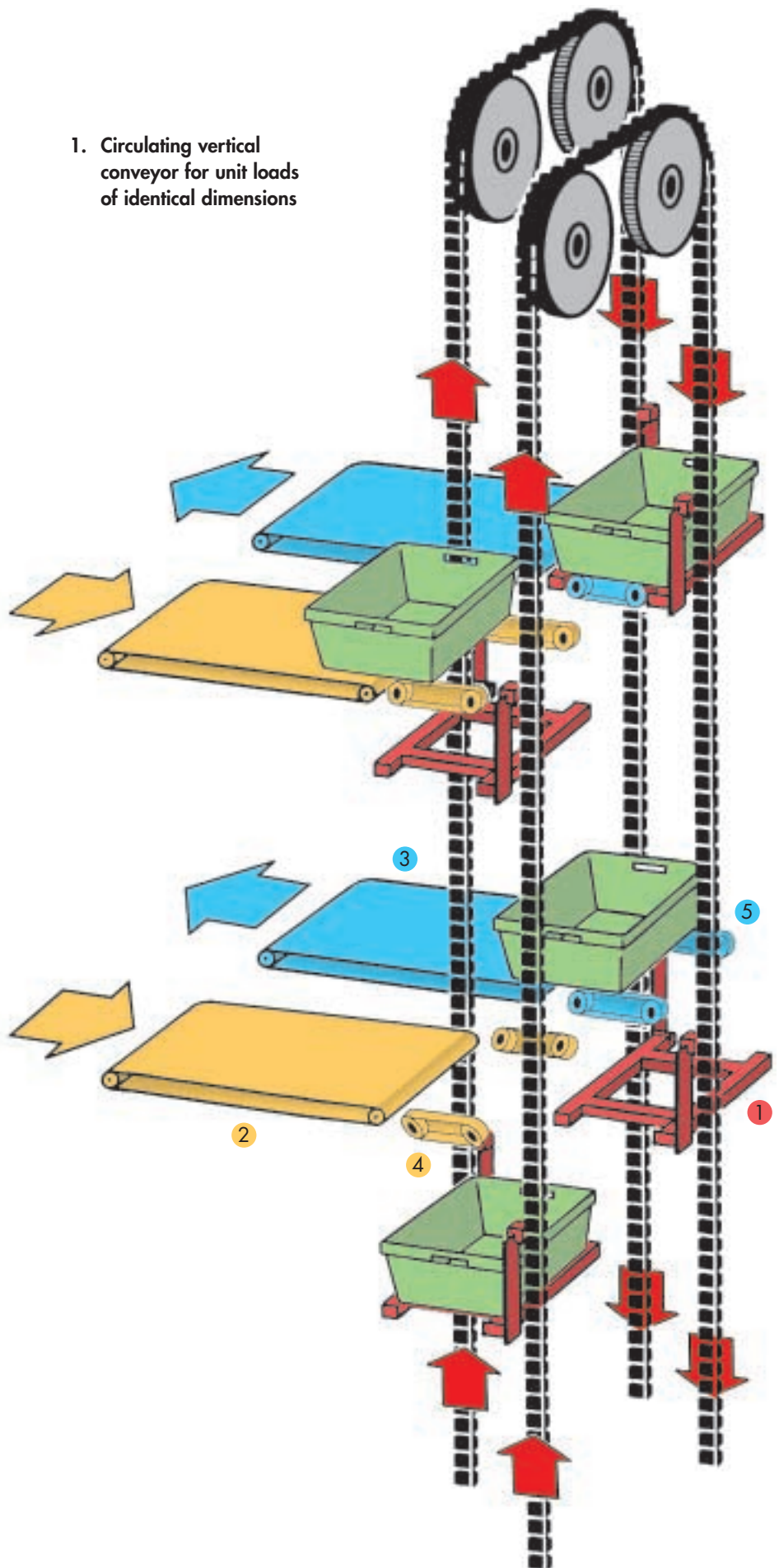
There are two distinct types of circulating vertical conveyors:

1. Circulating vertical conveyors where the unit loads are of identical size, e. g. plastic boxes of a size 600 x 400 x 400 mm
2. Circulating vertical conveyors for loads of varying dimensions, e. g. containers, trays, boxes and parcels.

The type of conveyor determines the design of the loading and unloading stations and thus the maximum throughput.

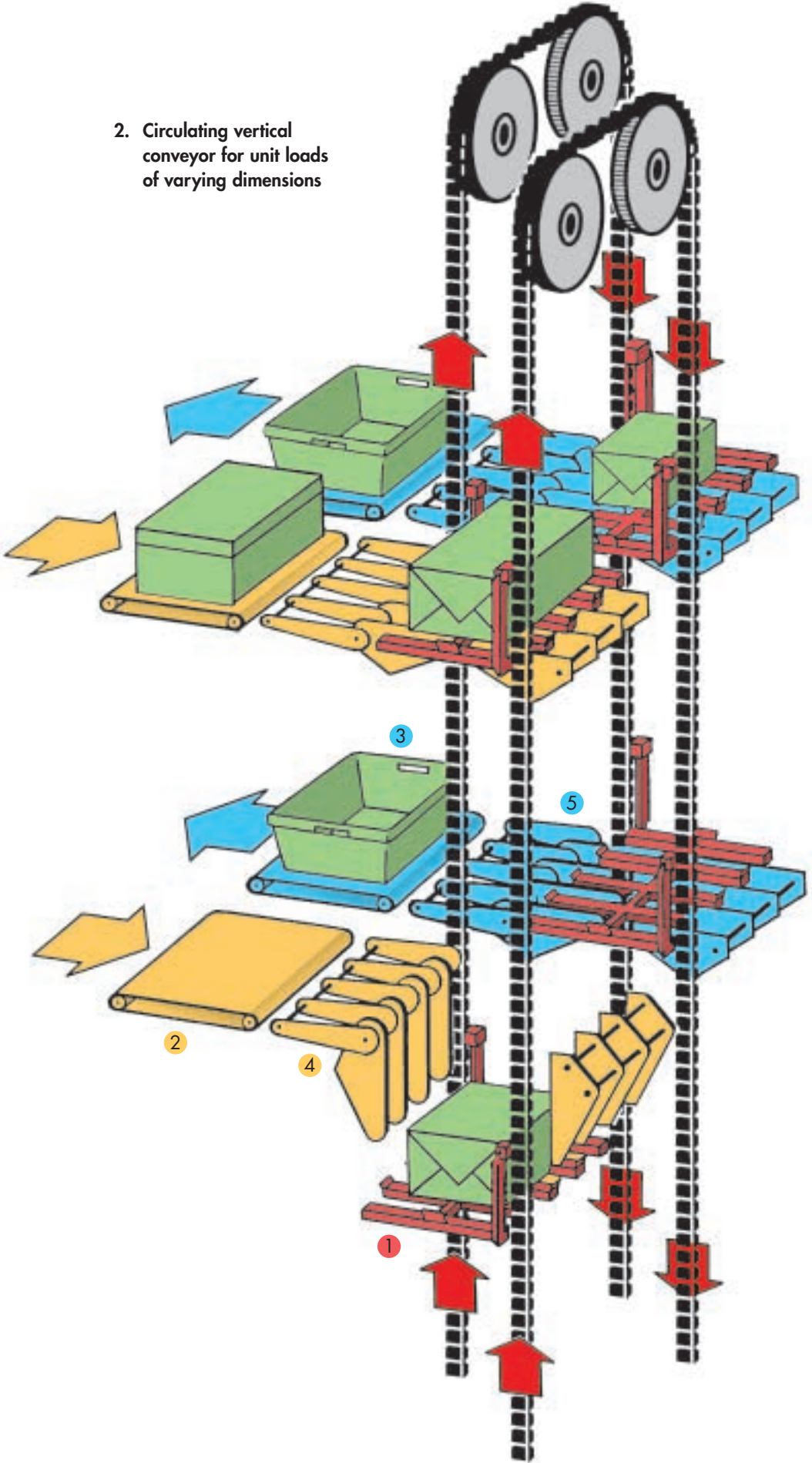
For example for loads of identical dimensions it is possible to achieve throughputs of up to 1200 units per hour.

1. Circulating vertical conveyor for unit loads of identical dimensions



2. Circulating vertical conveyor for unit loads of varying dimensions

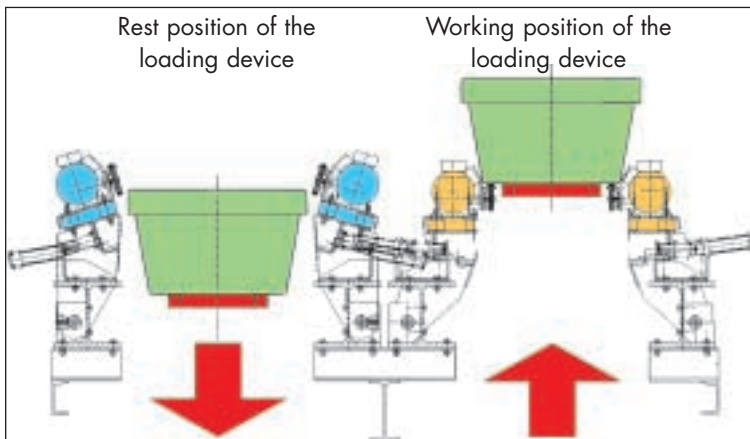
- 1 Conveying Platform
- 2 Infeed conveyor
- 3 Discharge conveyor
- 4 Loading device
- 5 Unloading device



CIRCULATING VERTICAL CONVEYOR FOR UNIT LOADS WITH IDENTICAL DIMENSIONS

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

The platforms, which are 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.

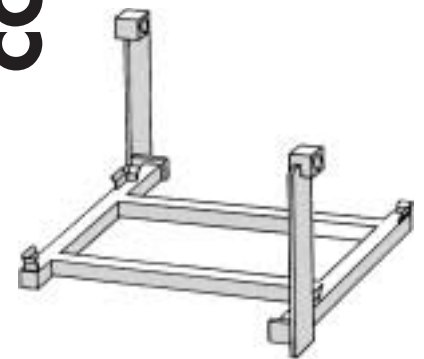


CONVEYING PLATFORM

The platforms are suspended from the rubber block chain and run in plastic guide rails for the entire circuit (see photograph on page 5).

This ensures smooth running and that the platforms remain parallel at all times.

The design of the platforms is determined by the size and shape of the items being conveyed. Again there is a difference in platform design for items of the same size and where the dimensions vary.



Platforms for unit loads of identical dimensions

The platforms form a rigid frame and support the base of the items. The items are located in the platforms to prevent them tilting or slipping during conveying.

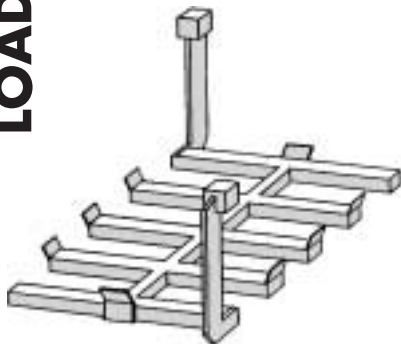
The sides of the platforms are open to allow the items to be loaded and unloaded by the transfer conveyors.

CIRCULATING VERTICAL CONVEYOR FOR UNIT LOADS OF VARYING DIMENSIONS

With this type of conveyor the items are loaded and unloaded by hinged chain conveyors.

The 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.

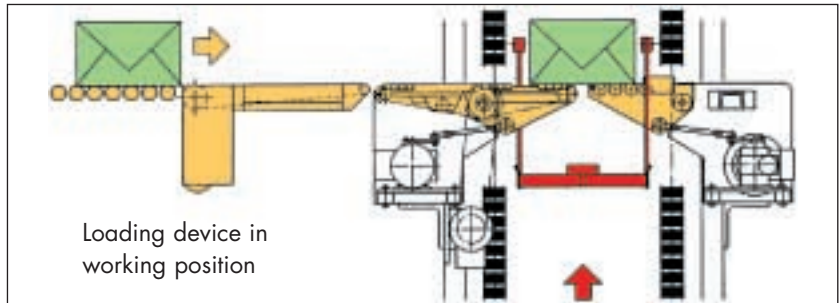


Platforms for items of varying dimensions

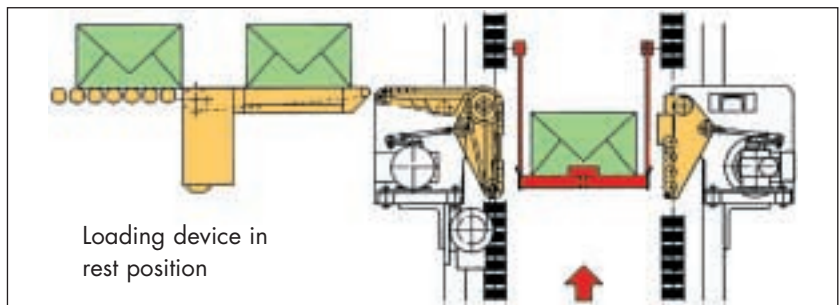
The platforms consist of a series of open fingers from a central rib in order to allow items of varying dimensions to be loaded and unloaded.

The design of the platforms is determined by the size of the smallest and largest items.

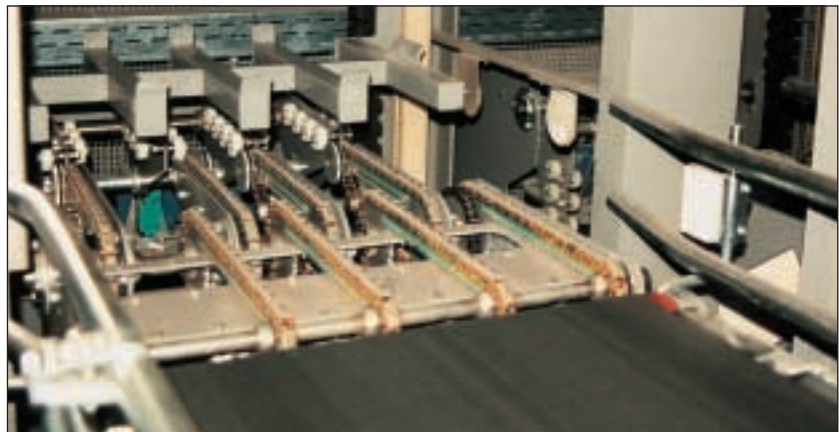
The dimensions of the items will also determine the maximum throughput of the conveyor.



Loading device in working position



Loading device in rest position



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

DRIVING AND CARRYING SYSTEM

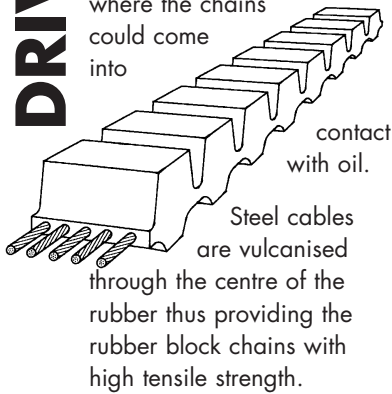
The highly resilient rubber block chain forms the central element of the driving and carrying system of NERAK conveying lines. This high-quality system is free from joints and produce very low running noise. It is maintenance free and is highly resistance to wear and corrosion.

It is the use of rubber block chains in particular which gives rise to the very low running noise of the circulating vertical conveyor. People working in the vicinity are thus not disturbed by noise when the conveyor is in operation.

The rubber block chains require no lubrication, regular adjustment or re-tensioning, which leads to minimum maintenance and low operating costs.

The type of rubber used for the chains is determined by each application.

Either SBR for abrasion, resistance, or neoprene where the chains could come into



TIMED LOADING AND UNLOADING

The primary advantage of the circulating vertical conveyor is the ability to convey a high number of items at precisely timed intervals.

Depending on the size, shape, and the way in which they are presented, the NERAK circulating vertical conveyor can transfer up to 1200 items/hr.

Loading and unloading are controlled by photoelectric cells and proximity switches.

Items can only be loaded if the platform is empty and the photoelectric cells have sensed that the item is in the correct position on the infeed conveyor.

CONSTRUCTION

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 infeed and discharge stations. Standard guarding includes perforated mild steel sheets bolted to the structure with maintenance access doors at the feed and discharge stations.

DIMENSIONS

Technical Data (approximate)		
Weight per item		max. 50 kg
Conveying speed		max. 0.5 m/s
A	Conveyor width	$2 \times FB + 1000$
B	Conveyor depth	$FL + 400$
C	Terminal section width	$2 \times FB + 1100$
D	Terminal section depth	$FL + 850$
E	Head section width	$2 \times FB + 1100$
F	Head section depth	$FL + 950$
G	Loading/unloading height	$FH + 1200$
H	Head section height	$FH + 1100$
J	Motor height	500
K	Platform pitch	$FB + FH + 300$
L	Distance between the middle of the conveying platforms	$FB + 500$
AA	= Centre distance	FL = Length of transported items
FB	= Width of transported items	FH = Height of transported items

