STILL

# STILL Very Narrow Aisle Solutions.
## Space for ever increasing demands.



Li-Ion INSIDE

first in intralogistics

**STILL PartnerPlan – we will show you the way!**

The STILL PartnerPlan is a clear and transparently structured framework to help you find the perfect customised intralogistics solution. It includes our complete range of trucks, system solutions, services and financing options. The STILL PartnerPlan enables us to work together as partners and to create a bespoke package by producing a customised combination of individual components from our range. With the STILL PartnerPlan we will find a solution precisely tailored to your needs and requirements – from industrial trucks, automation and software solutions to services including genuine and original parts as well as the right financing solution for you. At the same time, you will benefit from a seamless integration of all STILL products. Optimum interaction is guaranteed and success can be planned.
We will show you the way!

**STILL PartnerPlan**

| | | | | | | |
|---|---|---|---|---|---|---|
| Transport | Electric trucks | Diesel and LPG trucks | Warehouse equipment | Platform trucks and tractors | Tugger trains | Used trucks |
| Systems | Intralogistics consulting | Rack systems | Warehouse software systems | Driver assistance systems | Automation systems | System integration |
| Service | Safety | Original parts | Diagnostics and repair | Maintenance and Full Service | Fleet Data Services | Training |
| Financing | Purchase | Hire-purchase | Leasing | Long-term rental | Short-term rental | Basic-Dynamic® |



# Warehouse Planning With a System.
## The building blocks for an efficient VNA system.

**The overall STILL concept** ..... page 6
STILL's particular strength lies in its configuration of comprehensive bespoke solutions for each application profile. That way you can achieve maximum cost-effectiveness and user advantages.

**VNA forklift trucks** ..... page 11
STILL offers you a comprehensive range of modular forklift trucks which combine efficiency, user friendliness and ergonomics.



| | | MX-X<br>VNA truck (man up) | NXV<br>VNA truck (man down) | PXV<br>Vertical order picker | PXV M<br>Vertical order picker | EK-X 10<br>Vertical order picker |
|---|---|---|---|---|---|---|
| Load capacity | kg | 1,500 | 1,500 | 1,200 | 1,000 | 1,000 |
| Reach height | mm | 17,710 | - | 14,500 | 7,833 | 6,350 |
| Max. lifting height* | mm | 18,110 | 13,950 | 13,460 | 6,865 | 5,415 |

*incl. auxiliary lift.

**Rack systems** ..... page 28
With STILL's diverse range of rack systems, you will enjoy optimum interaction with VNA trucks and order pickers. From classic pallet transport technology to particularly efficient mobile and shuttle rack systems, you will find the right solution.

**Safety and efficiency** ..... page 32
At STILL, safety and efficiency go hand in hand. Find out more about how to achieve a level of excellence which is as efficient as it is safe.

**Assistance Systems**
OptiSpeed 3.x
STILL iGo pilot navigation
STILL iGo pilot safety
Active Load Stabilisation (ALS)
Active Floor Compensation (AFC)

**Protection of Personnel**
Stationary and mobile personal protective equipment (PPE)

**Warehouse Management Software**
STILL material flow management system (MMS)

**Automation**
Automated STILL series-production trucks are designed for dual operation

## As individual as your warehouse –
Custom-made very narrow aisle trucks make room for success.

**Planning, implementation, service – your path to an efficient very narrow aisle system.**

STILL's very narrow aisle solutions combine expert advice and planning with custom-made rack systems, powerful VNA trucks and order pickers, innovative software solutions and years of automation expertise. As a strong partner, we offer you all the building blocks of an efficient very narrow aisle warehouse from a single source.

**Many advantages for your use.**

- Expert advice on networked system solutions.
- Custom-made rack systems and very narrow aisle (VNA) trucks.
- Modular system: Bespoke solutions for every use.
- Innovative assistance and safety systems.
- Professional implementation and system integration.

**Take advantage of a very narrow aisle warehouse.**

- More use out of your warehouse: combine narrow aisles with high lifting heights.
- High handling capacity: benefit from direct access to pallets and simultaneous driving and lifting.
- High levels of safety: you can depend on optimum process reliability with our guided trucks and their comprehensive safety features.
- STILL automation – maximum efficiency and transparency: unlock the full potential efficiency with assistance systems or full automation of your warehouse processes.



# Get more out of your warehouse –
With perfect VNA solutions from STILL.

**Our concept: Your success.**
With a VNA solution, you will make the most of the available floorspace in your warehouse and in many cases avoid having to build costly extensions. In comparison to conventional wide aisle warehouses, you will benefit from up to 45 percent more pallet spaces. STILL will be a strong partner at your side from the outset: together we will create the concept for a flow of goods and information which is tailored to you. We will help you to choose the right rack system, and configure forklift trucks tailored perfectly to your application profile, including innovative assistance systems and safety features.

Clever ergonomics and user-friendly ease of operation support your employees' efficiency as they work. Our expert service ensures that your fleet and the corresponding mobile personal protective equipment will be fully available at all times.

**Intelligent Extras.**
Intelligent assistance, control and safety systems make STILL VNA solutions extra safe and extra efficient: navigation aids, different systems to optimise the motion and operational safety of the equipment in defined areas are just a few examples of the many opportunities available to you.

Integrating STILL VNA trucks into your existing warehouse management software (WMS) or the software package provided by us will optimise the management of your fleet throughout the warehouse. Even better: you can choose the next level of efficiency, whereby we will automate your VNA warehouse. That way, you will achieve the greatest possible process reliability and transparency for your flow of goods.



customised truck

## Efficient trucks
Meeting every requirement with minimum energy consumption.

## Ergonomic workplace
Spacious, versatile and customisable cabs with optimum visibility.

## Safe environment
Equipment variants and personnel safety systems for maximum safety.

## Maximum efficiency
Innovative assistance systems give an additional power boost.

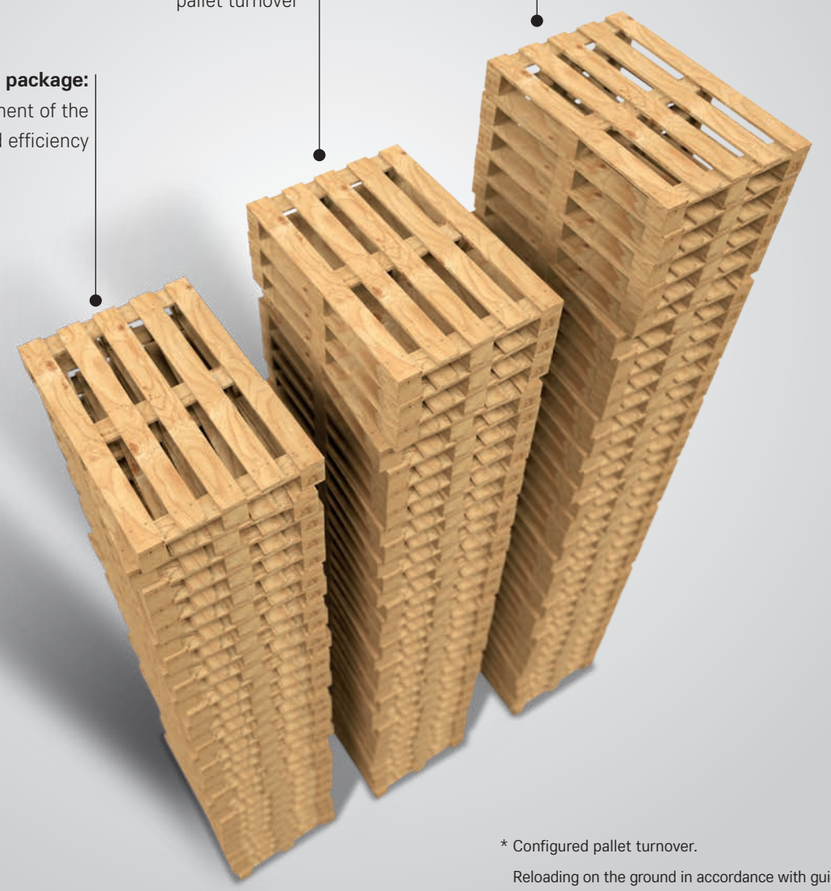



# Individual solutions with a system – The modular STILL VNA design.

**STILL iGo pilot navigation:**
Up to 25 % more
pallet turnover*

**OptiSpeed 3.3 Load measuring:**
Up to 15 % more
pallet turnover*

**Basic OptiSpeed package:**
Optimum movement of the equipment for enhanced efficiency



* Configured pallet turnover.
Reloading on the ground in accordance with guidelines.

We will work with you to configure the ideal VNA truck and adapt the efficiency, ergonomics, safety and power precisely to your needs.

**Efficient trucks.** We adjust the truck's efficiency parameters so that your work can be completed as quickly as possible, with the least possible energy consumption.

**Ergonomic workplace.** Spacious, versatile cabs with an optional tilting barrier, a customisable operating panel and various control options guarantee fast work processes, because a happy driver is an efficient driver.

**Safe environment.** With various features and equipment variants, you are always on the safe side. That includes load monitoring, optimised speed adjustment and overload and personnel protection systems.

**Maximised power.** Powerful by nature, the innovative assistance systems of STILL VNA trucks, such as the OptiSpeed package or Active Load Stabilisation (ALS) and Active Floor Compensation (AFC), offer you an additional power boost.

**Maximum handling capacity: STILL OptiSpeed and STILL iGo pilot navigation:**
Comprehensive hardware and software assistance systems which optimise the movements of the equipment regardless of the load. That increases your handling capacity considerably.
**OptiSpeed 3.0** uses software to determine optimum fork and travel movements depending on the lifting height.
**OptiSpeed 3.3** calculates ideal transport movements and optimises them based on the lifting height and load. That enables higher speeds on empty runs or when loading and picking.
**OptiSpeed 3.4** enables fast, safe transport movements, optimised on the basis of lifting height and load. The included **Active Load Stabilisation (ALS)** is new and unique; it adapts the extension speed, thereby preventing lateral mast movements. It makes work considerably more pleasant and increases the handling capacity by up to 5 percent.

**STILL iGo pilot navigation:**
- Easy to use: Manual input of the storage location or retrieval from the warehouse management system; operation at just a push of the drive lever.
- High productivity: The truck takes the optimal route to its destination – regardless of the operator's experience and knowledge.
- High precision: The truck moves to the exact position of the pallet – may exclude fork movements outside the destination, avoids incorrect picking and loading.

# MX-X VNA truck (man up) – Perfection in efficiency and comfort.

Wherever a particularly high storage density over a minimum surface area or direct access to the goods is important, the STILL MX-X excels. It sets standards for picking and loading and for order picking at heights of up to 18 metres.

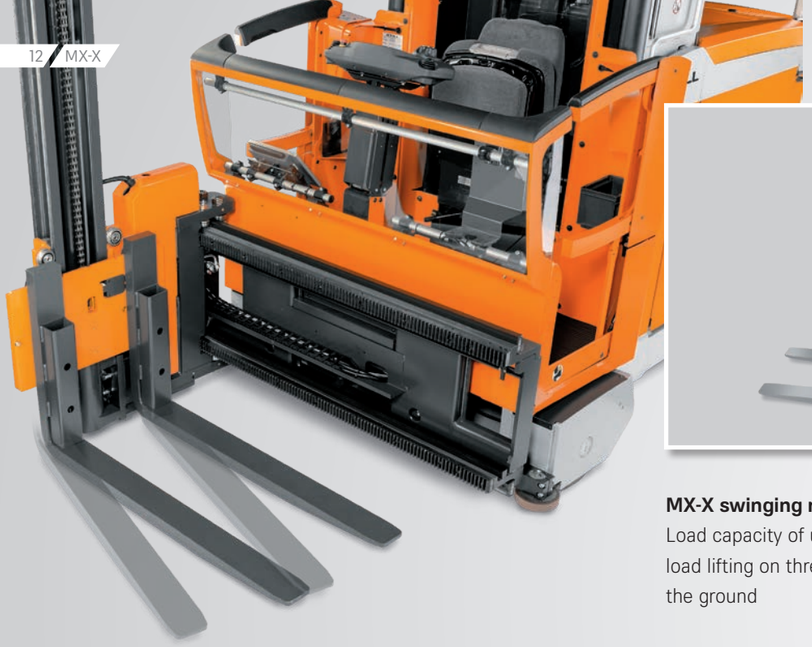
**Your benefits at a glance:**

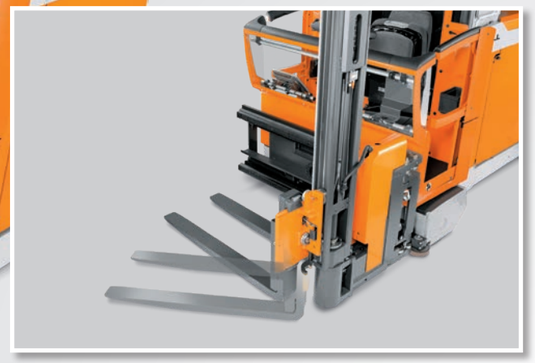
- Excellent ease of operation: Spacious driver's cabs which can be customised in a number of ways, intuitive control elements.
- Ergonomic order picking: 40 mm closer to the load on the fork in comparison to the previous model.
- Maximum storage density: Storage heights of up to 18 metres.
- High handling capacity: Driving speeds of up to 14 km/h.
- Fast picking and loading: Active Load Stabilisation (ALS) reduces mast vibrations and increases the handling capacity by up to 5 percent.
- Top speeds even with uneven floors: Active Floor Compensation (AFC) prevents mast fluctuations.

**Technology at a glance:**

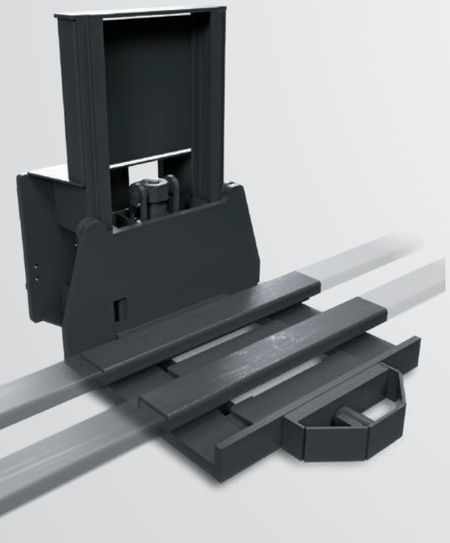
- Swinging retractable fork or telescopic fork.
- Lifting capacity of 500 to 1,500 kg.
- Storage heights up to 18 metres.
- 48 or 80-Volt basic technology.
- Always sufficient energy on board with lead-acid or lithium-ion batteries.







**MX-X swinging retractable fork:**
Load capacity of up to 1,500 kg, load lifting on three sides and from the ground



**MX-X telescopic fork:**
Load capacity of up to 1,250 kg, for particularly narrow aisles



## Modularity down to the smallest screw –
Machine configurations suitable for every warehouse and all goods.

**A number of mast variants**
For storage heights up to 18 metres





**Cab variants**
from comfort to deep-freeze cabs

**Millions of combination options.**
We determine which MX-X is suitable for you using the STILL configuration software. Based on the dimensions of your warehouse, the loads to be transported, the necessary movement of goods and potential growth in the future, we design the perfect forklift truck with you, for you.

**Lifting systems: the MX-X swinging retractable fork.**
The cantilevered prongs are sensitive and quiet, and enable load lifting from three sides. Additional lifting equipment enables loads to be lifted up to a height of 2400 mm. Accurate loading and picking is made even faster and even more comfortable in combination with Active Load Stabilisation. The swinging retractable fork is suitable for lifting almost all pallets, and also enables pallets to be deposited on to a material handling system. The technology is ideally suited to order picking, enabling readjustment of pallets even in different work steps with a high level of flexibility. Loads can be pushed out, lifted and retracted automatically and at the push of a button, making work noticeably easier.

**The MX-X telescopic fork.**
The exceptionally compact telescopic fork is ideal for particularly narrow aisles. The extra space can be used for more pallet spaces. Its fast extension from right to left and vice versa accelerates work and increases the movement of goods.

**Load-lifting equipment.** For safe and efficient load lifting, STILL offers the right solutions for every product type:

- Manually adjustable standard fork.
- Symmetrical fork arm adjustment.
- Individual arm adjustment.
- Fork clamp.
- Forks with parallel shifting.
- Drinks forks.

**Cab variants.** Benefit from different cab types, suitable for every application:

- Combi cab: Order picking and loading with maximum freedom of movement, extremely comfortable seating position and optimal visibility in the 50 mm bigger cab.
- Comfort cab: Deeper construction (+100 mm) for extra comfort.
- Deep-freeze cab: Unparalleled on the market, it offers you a warm and comfortable workplace even at -30 °C.

## Optimum visibility and maximum comfort –
Welcome to the perfect workplace.



Developed to meet the highest of demands, all of the driver cabs impress with their unique, ergonomic comfort. Low cab entry and generous space for your knees and feet make it easy for the operator to feel comfortable. All cab variations come with the option of knee pads, which enable health-friendly order picking. The (optional) tilting barriers which open out from the side increase the maximum depth of reach into the shelving and enable the operator to maintain a healthy posture. (Optional) energy-saving LED lights light up the cab and shelving evenly.

For safe access to the cab, barriers or glass doors are available to protect against draughts. Once inside the cab, the operator benefits from a clear view of the forks and travel paths.
The deeper Comfort Cab offers the driver greater room to manoeuvre, which is always welcome, for example if the driver order picks frequently and should not be hampered in his or her movement.

## Storage heights up to 18 metres:
For maximum storage density.



**Many storage options:**
From pen holders to adhesive roller holders to small parts containers



**Tilting barrier:**
For ergonomic order picking right to the end of the pallet



**Individual control options:**
Control elements integrated into the armrests



**Multi-functional fixing system.** The system enables effortless attachment of accessories (e.g. printers, data terminals) and storage compartments.

**Multi-functional operating panel and control elements.**
The STILL MX-X offers two options for operating units:

- Multi-functional operating panel: With this version, the operating panel with integrated display is fixed to the centre of the rail. Its height, inclination and distance from the driver can be adjusted steplessly.
- Control elements in the armrests: the control elements are integrated into the armrests on the driver's seat. That means the driver can always maintain an ergonomically perfect posture both when sitting and standing. The height and length of the armrests are adjustable and can be folded away upwards for easy side access to the cab. The large display to show all relevant driving information is fixed to the centre of the rail. This method of operation enables the driver to pick orders efficiently due to direct access to the pallets, and to work safely and comfortably due to optimum visibility of the travel path and forks.

**Fast access with favourite buttons.** For the first time, the operator can set his or her own key assignment.
That way, common lifting heights can be stored directly in the menu and selected with one click.




## Active Floor Compensation (AFC):
To compensate uneven floors.

**Maximum efficiency only with a perfect floor.**
The floors in VNA warehouses need to be of a high quality. Should they be uneven or have any traces of wear, these will be transferred directly to the forklift truck in the form of vibrations. For maximum speeds and efficiency to be achieved, the floor needs to be absolutely level. Reconditioning the floor is not only costly, it also prevents full use of the warehouse while the work is being carried out.

**Active Floor Compensation (AFC):**
With the assistance system AFC for the MX-X very narrow aisle truck, STILL offers a genuine alternative to reconditioning the warehouse floor. The system identifies any uneven surfaces in the load wheels' path and compensates for them in real time. This ensures that the truck frame always remains horizontal and the mast vertical. The intelligent AFC system is fitted with ultra-fast processors which allow it to react instantaneously, even when travelling at top speeds. In contrast to passive systems that only have a dampening effect, this system actively prevents vibrations before they occur.

**Vibration-free speed ahead.**
Preventing mast vibrations protects the load, the warehouse and the driver and, last but not least, facilitates a significant increase in handling capacity with the help of AFC.



## The right equipment for a perfectly organised material flow.




**Recorded quickly – Scanner.**
Be it corded or cordless – with these tools, the scanning process is no trouble at all. Robust and flexible, they scan just as well at 10 metres away as they do at 10 centimetres.

**Smart helpers – Handhelds:**
Data recording made easy: The compact handhelds sit comfortably in your hand and scan and record your data in real time. The robust portable computers are equally suited to production and warehouses or loading areas.

**Black and white – Label printer.**
Fast and reliable in its production of labels (up to DIN A4) and barcodes. The flexible and portable industrial printers can be mounted directly onto the forklift truck.

**10.4" STILL touch terminal.**
The touch terminal connects your forklift truck via the internet to your Material Flow Management System – with IP65, the STILL touch terminal has been developed specifically for extreme loads in the industry and is operated via a touch technology designed for constant use. The touch technology enables safe and intuitive operation. Thanks to its different interfaces, scanners, printers or portable picking systems can be integrated effortlessly.





Special construction: picking with stake racks

**STILL MX-X for use at low temperatures.**

- Special truck configuration for excellence in deep-freeze areas.
- The unique deep-freeze cab enables a pleasantly warmed workspace at outdoor temperatures of down to –30 °C. The cab can be customised with thermostat heating, radio technology, an emergency exit and a ventilation system.
- Upon request, the deep-freeze configuration is also available without a cab.

**Customer example Schmidt Zeevis:**
**STILL MX-X for deep-freeze use.**

In the deep-freeze warehouse of this fish trade company, STILL MX-X VNA trucks ensure fast handling of the 133 types of fish stored in the 800 pallet spaces there. 20 refrigerated trucks transport the fresh goods to the company's commercial and private customers every day.

**Customer example Hellmann Worldwide Logistics:**
**Individual construction for 150,000 bicycles.**

Together with STILL, logistics provider Hellmann Worldwide Logistics created a modern delivery warehouse for its customer Derby Cycle, Germany's top-selling bicycle retailer. The highlight: induction-led MX-X VNA trucks in a custom design with mobile working platforms. "Thanks to the tailored logistics concept, we can centrally service the needs of almost 5,000 specialist retailers in more than 60 countries," says Hellmann's branch manager Andreas Brothe. The core element of the logistics centre is the high rack warehouse.
24 aisles with 48 rows of shelves provide space for up to 150,000 bicycles.

The high storage capacity is made possible by inductive guidance. This type of machine guidance means that no mechanical guide rails are needed on the ground, so the bottom shelf can be loaded. The custom design of the VNA truck enables the use of mobile working platforms, called stake racks, onto which the bicycles can be picked for orders. The stake racks are easy to push onto the forks by hand, where they are fixed with a locking mechanism.

# EK-X 10 and PXV vertical order pickers.

## The kings of order picking.

They are the stars of the VNA warehouse: STILL vertical order pickers set the benchmark in terms of efficiency, reach height, residual load capacity, functionality and ergonomics. Travel speeds of up to 13 km/h and lifting speeds of up to 0.4 m/s enable new dimensions in efficient goods handling.

**Your benefits at a glance:**

- Optimal use of storage: reach heights of up to 14.5 metres.
- Maximum freedom of movement: large and spacious cabs.
- Can be adapted to your needs: custom-made solution thanks to the modular system.

**Technology at a glance:**

- Lifting capacity: 1,000 to 1,200 kg.
- Reach height: 6.35 or 7.83 and 14.5 m respectively.
- Aisle widths: 1,000 mm to 2,000 mm.
- Standard cab widths from 800 mm to 1,800 mm (custom solutions possible).
- 24- or 48-Volt basic technology.
- Battery technology: lead-acid or Li-Ion.



PXV vertical order picker with telescopic mast up to 1,200 kg, reach height up to 14.5 metres



PXV M vertical order picker with telescopic mast up to 1,000 kg, reach height up to 7.83 metres



EK-X 10 vertical order picker with telescopic mast up to 1,000 kg, reach height up to 6.35 metres

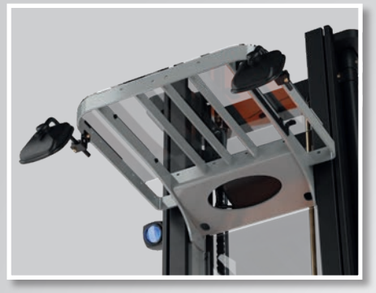
## The EK-X 10 and PXV vertical order pickers –
A model of maximum cost-effectiveness.



**PXV:** Triplex mast,
reach heights of up to 14.5 metres

**EK-X 10:** Telescopic mast and driver's cab,
reach heights of up to 6.35 metres

**EK-X 10:** Single mast,
reach heights of up to 2.8 metres



Overhead guard: Flexible configuration, e. g. with different mirrors or lighting options



Application in narrow aisles...



... or wide aisles

**The EK-X 10 and PXV – for tall orders.**
The EK-X 10 and PXV vertical order pickers rise to reach heights of up to 14.5 metres in narrow and wide aisle warehouses. Their high performance, ergonomics, residual load capacity and functionality set standards. With travel speeds of up to 13 km/h and lifting speeds of up to 0.4 m/s, they will boost your goods handling. For ultimate speed and safety, choose the optional iGo pilot navigation and iGo pilot safety assistance systems on the PXV.

**EK-X 10.**
The EK-X 10 is the perfect partner for vertical order picking in narrow or wide aisles, with loads of up to 1000 kg and working heights up to 6.35 metres.

**PXV.**
If you need to go even higher, there are the PXV M with a telescopic mast with a reach height of up to 7.83 metres and a load capacity of 1,000 kg or the variant with a triplex mast with a reach height of up to 14,5 metres and a load capacity of 1,200 kg.

**Optimised lifting equipment.**
Choose the fork variations ideally suited to your goods and processes. Upon request, the EK-X 10 and PXV can also be configured with an accessible pallet – so you can reach your goods even more quickly.

**Overhead guard/cab: modular and safe.**
From the free choice of height for ideal headroom, to versatile equipment variants: the modular bar system guarantees a safe workplace which leaves nothing to be desired.

**Assistance systems.**
All the trucks in the PXV range already come with OptiSpeed 3.0 ex works and can also be provided with further extensions and STILL iGo pilot. Benefit from even greater handling capacity and increased safety.
What is more, the optional STILL iGo pilot safety system supports you with configurable speed and function adjustments in storage areas which call for special safety regulations, e. g. in the event of obstacles, height restrictions or the ends of aisles.

# **Maximum freedom of movement.**
## The driver's workspace.



Optional: operating panel with control knobs



Particularly low entry





Optimal work thanks to flexible fixing options



Fast charging for optimum availability: direct charging access on the PXV is key and makes handling the charging connector a lot easier for all operators



Plenty of space for equipment and materials thanks to the intelligent storage concept

**Tilting barriers**
make access to goods
even easier



The driver's workplace can be designed entirely according to your wishes. It can be extended comfortably and flexibly.

- Spacious cab offers great freedom of movement.
- Shock-protected floor with integrated drive switch.
- Truck can be controlled from the drive end or optionally on the load end.

**Ergonomics and equipment variants.**
Thanks to a generous and particularly low entry space, the driver can get on and off particularly quickly and safely. That means that fast access to the goods is guaranteed every time. With its spacious design, the driver's cab offers great freedom of movement. The shock-absorbing floor with integrated drive switch also guarantees comfortable and relaxed work. Thanks to the low cab wall with its short distance to the carrier, work can be carried out effectively regardless of the operator's body size.

**Available with tilting barrier.** The optional tilting barrier enables even easier access to goods, even when the distance to the pallet should be slightly bigger.

**Flexible operating panel.** The optional, height-adjustable operating unit is extremely intuitive and makes for tireless work even on long shifts. You can choose between knob controls or a steering wheel.

**Versatile equipment options.** The driver's cab is just as modular as the vehicle itself: fixing systems for different terminals, various storage options, an adjustable leaning support, knee pads, ventilators or 12-V plug sockets are just a few examples from the extensive range of configurations which will enable you to create your ideal workplace.

**Lighting options.** Choose from a range of options to light the driver's workplace or work area. Available with durable and energy-saving LED headlights for optimum visibility.

# NXV VNA truck (man down) – Ground level work in very narrow aisles.

In all narrow-aisle warehouses where it makes sense for the operator to work at ground level, the NXV really shows its strengths. The mast lifts the pallets to a storage height of up to 13.8 metres while the operator remains on the ground. Thanks to the ergonomic and sensitive Joystick 4Plus, the operator can bring his goods safely to their destination.

**Your benefits at a glance:**

- Man down truck for work at ground level.
- STILL Easy Control display with driver instructions and user-definable favourite keys.
- Optional cross line laser between the forks for aligning the centre of the pallet.
- Optional camera systems for optimum visibility both when moving in the direction of the load and during storage and retrieval.

**Technology at a glance:**

- Lifting capacity up to 1,500 kg.
- Storage height: up to 13.8 m.
- Aisle widths: from 1,275 mm.
- 48-volt technology.



# **Storage space for every need –** STILL rack systems.

**STILL rack systems – everything from a single source.**
An efficiently planned warehouse is the guaranteed way to achieve high cost-effectiveness. You will benefit from the professional consultation services of our specialists in the warehouse planning stage. Our specialists check the warehouse conditions, item structure and required workflow, and transform the results into perfect solutions.

STILL helps you to choose the right rack system and is happy to advise on your choice of trucks.

The rack systems are expertly assembled by specially trained assembly teams. Coordination with other trades as well as the coordination and checking of material requirements are just as much a matter of course for STILL as the certified inspection of the rack system. Upon request, we will also carry out the mandatory annual rack inspections for you (in accordance with DIN EN 15635).

**Standard pallet rack.**
**(VNA warehouse/high rack warehouse)**
**Storage density:** Good use of the available storage space. For storage heights of up to 18 metres.
**Goods:** Ideal for a high number of articles of different types.
**Movement of goods:** Medium to high turnover, depending on the number of forklift trucks in use.

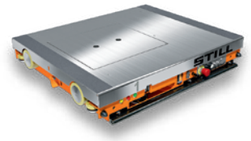


**Mobile racking.**
**Storage density:** Very good use of the available storage space. Up to 80 percent more storage capacity in comparison to conventional shelving (e.g. pallet shelving in wide-aisle warehouses). Minimum number of aisles, storage heights of up to 11 metres.
**Goods:** Ideal for high storage densities. Access to every article in the open aisle.
**Movement of goods:** Medium turnover, depending on the number of aisles planned and forklift trucks in use.



**Pallet shuttle shelving.**
**Storage density:** Maximum use of the available storage space, storage heights of up to 18 metres.
**Goods:** Ideal for high storage densities and less varied articles which are stored by channel.
**Movement of goods:** High turnover owing to simultaneous use of shuttle and VNA trucks with semi-automatic loading and picking at the rack levels by the shuttle.





**STILL Pallet Shuttle:**
The shuttle takes the pallet at the start of a rack level, moves it automatically to the next free space, then goes back to get the next pallet.

**Planning information for VNA warehouses.**

+**Important parameters:** Weight and dimensions of the loads, height of the top shelf, type of forklift truck (man up/man down), degree of automation and assistance systems.
+**Dimensioning the high shelving:** Single or double shelf, accessible from one side or both.
+**Warehouse layout:** Usable floor space, load weight, necessary safety clearances, aisle widths, structural factors (e. g. any pillars and support grids).
+**Safety clearances and clearances on the shelving:** Observe local standards and shelf planning guidelines.
+**Passage through the shelving:** Identify and put in place any necessary protection.
+**Dimensioning the aisles:** Take into account the dimensions between the shelves and the loads stored.
+**Guide systems:** Choose them with a view to safe operation and high handling capacity.
+**Transfer aisles:** Plan for seamless truck changeover between the aisles (truck length + largest load lifted + extra guide system).
+**Transfer points:** Take these into account when planning the shelving.
+**Protective measures:** Take into account fire protection measures, escape routes (in accordance with local standards and guidelines) and coordinate them with insurance companies and authorities.
+**Floor:** Observe the technical standards of the forklift truck and shelving for safe operation.
+**Installation:** Get specially trained assembly teams to install the rack systems professionally, and service technicians to put the VNA trucks into operation.

**STILL supports you throughout the process – from the initial concept through to final installation of your new warehouse.**

## **Where product diversity comes into effect.**
Custom choice of type.

## Safe and efficient to the destination –
Power and safety
are a priority at STILL.

**Assistance systems: Work quickly, safely and easily.**
STILL iGo pilot navigation and STILL iGo pilot safety enable you to unlock your VNA warehouse's full handling potential.

**Exceptional: STILL Active Load Stabilisation (ALS).**
Active Load Stabilisation is a special feature in narrow aisle operations. It not only increases comfort, but also optimises the pushing movement when loading and picking. The hydraulic control inhibits mast vibrations and increases handling capacity by up to 5 percent.

**Safety features: always on the safe side.**
The combination of suitable guide systems, personal protective equipment and safety features is fundamental for a safe and smooth flow of goods. It prevents injuries, breakage of goods and damage to machine, and ensures that your intralogistics system is available at all times. STILL offers you expert advice and a comprehensive range of equipment within our product portfolio which will always keep you on the safe side and even increase your handling capacity.

Easy to use: destinations can be entered via scanner, terminal or online from the warehouse management system, and the process is started with just one movement of the drive lever

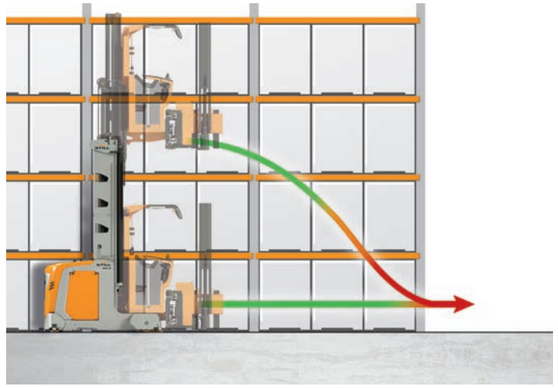
Supreme productivity: the truck automatically navigates to its destination along the ideal route, regardless of the experience and knowledge of the operator

Smart precision: the truck moves to exactly the right pallet position, with the possibility of preventing fork movements when not required in order to prevent storage and retrieval errors

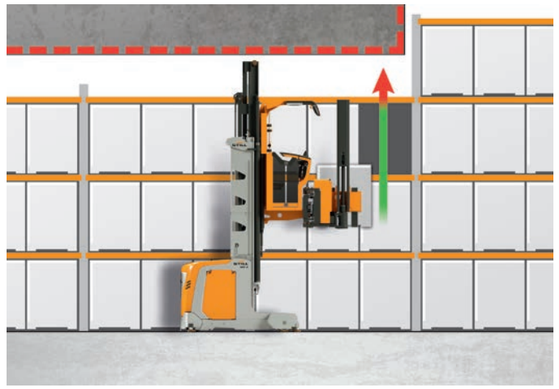
# iGo pilot navigation

iGo pilot navigation leads the operator in their very narrow aisle truck along the ideal route to the desired pallet position. This is possible thanks to a three-dimensional shelving plan that maps the specific topography of the warehouse. By comparing against this map stored in the system, the truck detects its current location in the aisle as well as its position. iGo pilot navigation adjusts to the activities of storage, retrieval and order-picking. As soon as an order comes in, the system determines the optimal horizontal and vertical route to the desired shelf location. By means of an optical display, the operator can see his current position in relation to the destination. He can only move his truck in the direction indicated. If he is in the wrong aisle, the display will flag this up to them.

## STILL iGo pilot –
The intelligent pilot for your warehouse.



**Dynamic brake assistant –** the truck brakes at the right time at the end of the aisle based on an individual calculation. During the process, the system takes into account not only the distance to the end of the aisle – as in other systems – but also the actual travel speed. Advantage: greater handling capacity thanks to enhanced efficiency when working at the end of aisles, because the truck can drive faster for longer.



**Local height limitation –** the maximum possible lift height can be restricted for specific areas in a shelving aisle. Shelving aisles in spaces with differing ceiling heights can therefore be provided for. Advantage: increased safety in areas with different heights.



Thanks to the variety of safety functions, the driver assistant protects goods, shelves, building equipment and the truck from damage

Always ready for action: reduced downtime by avoiding impact damage and the resulting repairs

Through a simplified workflow, the driver can fully concentrate on his core activity storage and retrieval or order-picking

# iGo pilot safety

If iGo pilot safety is installed, the operational safety and handling capacity of STILL very narrow aisle trucks are both significantly improved. Moreover, areas in the very narrow aisle warehouse where special safety regulations apply are defined in advance. A three-dimensional map of these areas is stored in the truck. This mapping is provided by STILL. This allows to masterfully handle obstacles in the shelving aisle, required braking distances at the end of aisles and height restrictions during everyday operations. In addition, the truck constantly identifies its current position using the map. During its journey, the truck detects every warehouse aisle and their specific conditions and adapts to these without the operator having to intervene. The system always follows the predefined safety rules.

The truck uses the precise coordinates of storage locations when storing and retrieving items. Depending on the level of sophistication of the EDP system (alternatively: ERP system) and the desired level of convenience, the following communication options are available for iGo pilot navigation:




**1. Manual input:**
The operator enters the individual storage location data as coordinates on the terminal in his driver's cab. The iGo pilot navigation interface converts these coordinates for the truck and sets the ideal route at a push of a button. No connection to an ERP system is required for this.



**2. Input via handheld barcode scanner:**
If the destination coordinates of the stored goods are in the form of a barcode (e. g. on the accompanying document or on the good itself), they can be read by a handheld barcode scanner. These coordinates are then converted for the truck by the iGo pilot navigation interface and used as the basis for the route at a push of a button. In this case, no connection to the ERP system is required.



**3. Transfer of target data by warehouse management system (WMS):**
Depending on the level of sophistication and design of the EDP system and on the desired level of convenience, the system provides various solutions. For example, the driver can select the next order from a pool of orders themselves, but a more advanced solution makes it possible to transmit the optimum order sequence in consideration of the corresponding warehouse strategy and in conjunction with a forklift guidance system.
The following communication channels are available as standard:
**a. Web service –** using a RESTful web service, status information and order data is exchanged between the warehouse management system and the truck.
**b. File transfer –** text files are exchanged between the warehouse management system and the iGo pilot navigation interface. SMB, WebDAV and SFTP are available as file transfer protocols.
**c. Telnet –** the iGo pilot navigation interface can be linked up to the warehouse management system as a Telnet client.
In all cases the data is exchanged between the relevant warehouse management system and the truck via a WiFi connection.



**4. The customer-specific solution:**
Tailored solutions and ideas can be implemented based on the individual requirements of a warehouse and the transport operations needed.

**Use of guide systems.**
If there is a safety clearance of less than 500 mm between the forklift truck and the shelving/pallets in an aisle, forced guidance is prescribed by law. It guarantees safe handling, avoids damage to goods and increases the turnover rate.

**Mechanical guidance.**
- A robust solution which takes up little space.
- Rail height 100 mm with the use of standard forks.
- Rail height 50 mm with the use of blade forks (fork thickness 35 mm); it is possible to place goods directly onto the ground.
- Faster driving and smaller transfer aisles.

**Inductive guidance (guide wire).**
- Particularly easy to clean.
- Flexible without the need to adjust the layout of the hall.
- Unobstructed and direct placement onto the hall floor.
- Forklift trucks can be “tracked” even in aisle feed areas, which also increases handling capacity.

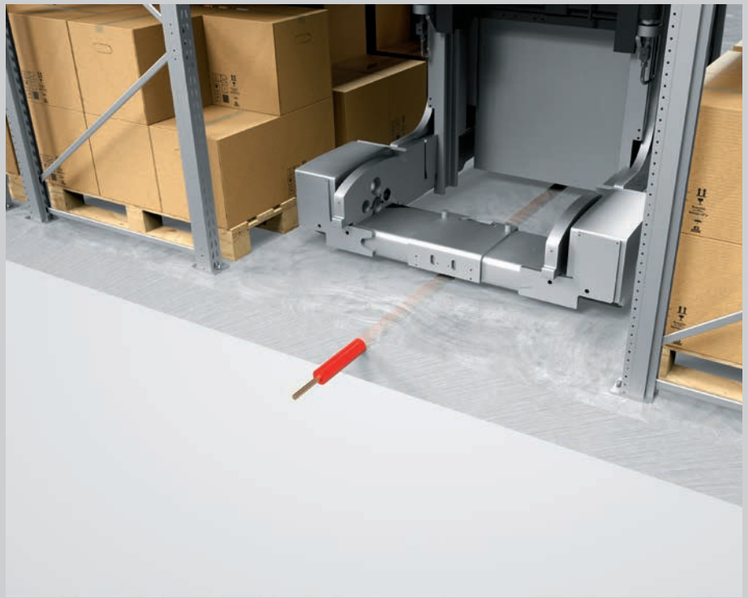
## Guidance and safety systems:
For fast and safe movement of goods.



Mechanical forced guidance, height 50 mm (blade fork)



Mechanical forced guidance, height 100 mm (blade fork)

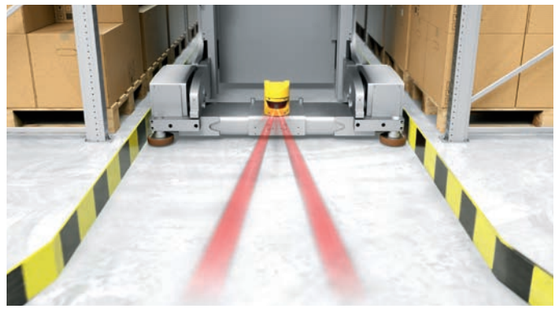


Inductive guidance (guide wire on the ground)

**Personal protective equipment (PPE) for very narrow aisles.**
Personal protective equipment can either be mobile, directly on the forklift truck, or stationary, in defined shelf aisles or access areas. STILL will be happy to advise you on the right arrangements for your warehouse.

**Mobile personal protective equipment.**
A laser scanner fixed to the drive or load end of your forklift truck monitors the route and detects if there is anybody in the warning or alarm field. If there is anybody in the warning field, the speed is reduced to creep speed (max. 2.5 km/h). If there is anybody in the alarm field, an alarm is triggered and the forklift truck stops. If the forklift truck exits the narrow aisle, the system will be inactive.

**Stationary personal protective equipment.**
Stationary personal protective equipment comes into use when little foot traffic is to be expected. Light beam systems scan the shelf aisle and identify forklift trucks and people there, which they are able to distinguish from one another. It is important that the aisles are used either only by people or only by forklift trucks. If a person enters an aisle intended only for machines, an alarm is triggered. It can only be deactivated by means of a key switch after visually inspecting the aisle.



Mobile personal protective equipment with laser scanner



Stationary personal protective equipment with light barriers in selected rack aisles



Stationary personal protective equipment with complete area protection

**Further safety systems.**

+**Curve Speed Control:**
The safety system monitors the steering angle and speed when not driving in the shelf aisle.

+**Impeller brake:**
The impeller brake reduces the necessary braking distance and allows for higher driving speeds.

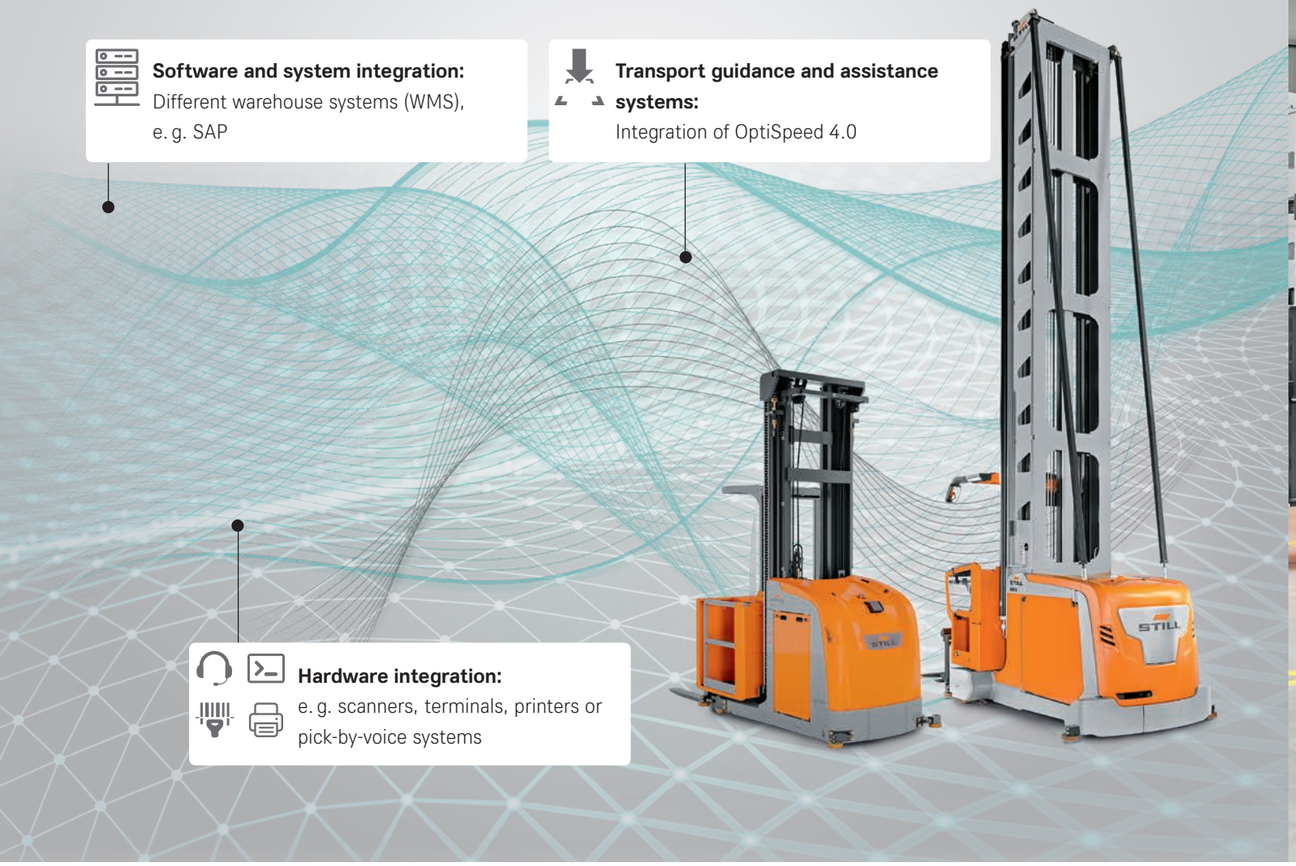
+**Descender:**
If the worst comes to the worst, the descender can be used immediately and intuitively.

+**Safety Light:**
Visual warning system with a bright spot on the ground which warns of approaching trucks.

+**Battery lock monitoring:**
The driver is warned if the battery is not locked in properly.

+**Rescue Alert:**
The system informs visually and/or acoustically of atypical driver behaviour and thereby increases the driver's safety.

# **Everything in flow:**
# Material flow management system (MMS).







**Perfect warehouse organisation:**
**Suitable software and hardware with a system.**
Handing control over to software systems is indispensable in larger, more complex warehouses to guarantee efficient processes for the loading and unloading of goods and in the picking areas. With the right solution, you will optimise your entire flow of goods and information. Particularly in VNA systems with many articles and fast access times, the integration of the forklift trucks into the warehouse management software significantly increases efficiency. This omits, for example, the time-consuming manual creation of paper picking lists. The result: easier, faster and more streamlined warehouse processes.

In addition to the integration of our VNA equipment into your warehouse management software (e.g. SAP), STILL offers you all the software and hardware components needed for an efficient VNA warehouse from one source. The STILL Material flow management system (MMS) manages all flows of goods and information in the intralogistics chain, and enables the integration of assistance systems such as the warehouse navigation aid OptiSpeed 4.0. The range of evaluation options and comprehensive reports makes all the warehouse processes transparent and is a firm foundation for optimisation.
We offer you comprehensive advice and, of course, stay by your side as a competent partner for installation, interface connection, training and the commissioning of the system.

**Automation – precision in very narrow aisles.**
Automating logistics processes guarantees maximum process reliability with maximum transparency. All STILL VNA trucks are therefore available in a configuration designed for driverless operation. Thanks to our tried and tested dual-use principle, automated equipment can also be operated manually at any time.

Automated machines navigate either by means of magnet points on the floor, which are identified by a sensor, or a 360-degree laser scanner in combination with fitted reflectors. The positions of the magnet points or laser reflectors are logged on the truck's computer, which constantly synchronises the route.

Mobile personal protective equipment integrated onto the trucks guarantee safe interaction with people and manually operated equipment.

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**For further information please visit**

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STILL is certified in the following areas: Quality management, occupational safety, environmental protection and energy management.

VNA EN 02/24 Subject to technical modifications.

first in intralogistics