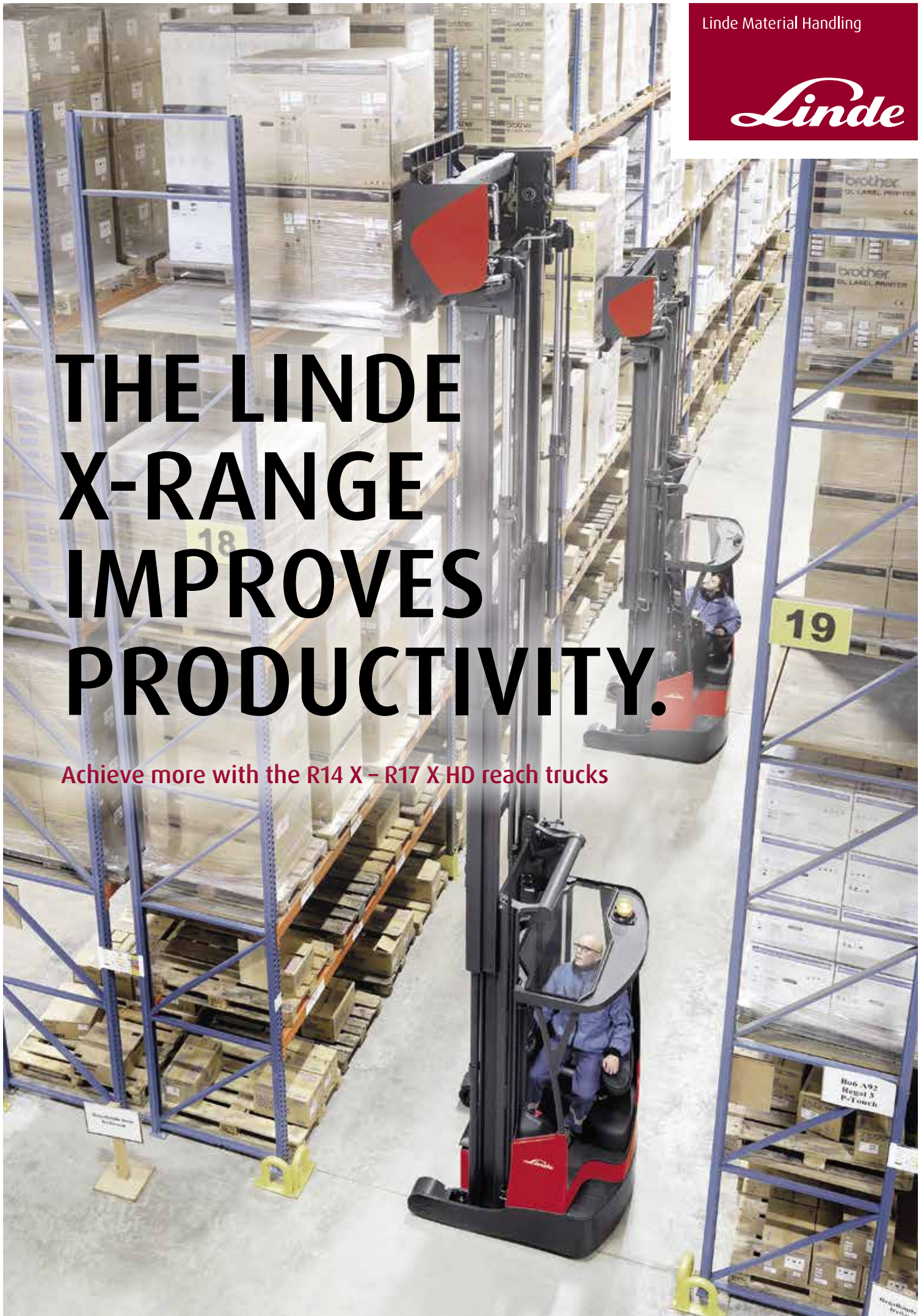


# THE LINDE X-RANGE IMPROVES PRODUCTIVITY.

Achieve more with the R14 X - R17 X HD reach trucks



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An ultra-wide mast rigidly connected to the chassis makes for greater productivity and stability.



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Linde Material Handling develops customized solutions for customer-specific requirements, such as greater lifting heights or special deployment locations.



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All models in the X-Range have sophisticated safety functions that protect both man and machine.



# UNIQUE DESIGN FOR GREATER PRODUCTIVITY

Warehouse operators—be it in retail, third-party logistics or parts logistics—need to make optimum use of their spaces and increase the throughput of goods. Logistics spaces are expensive and customers and contractors expect ever shorter delivery times. It pays to maximize productivity and capacity in warehouse operations. At the same time, a high level of safety must be ensured in operational traffic and when storing and retrieving goods such that the operator is protected and damage to goods and infrastructure is prevented.

In order to meet these challenges, Linde Material Handling has developed a unique truck concept that offers substantial benefits compared with conventional reach trucks. It even allows for safe and fast storage of heavier goods on higher shelf levels. The trucks in the Linde X-Range are able to navigate narrow aisles, which means that the storage space can be utilized more efficiently. Thanks to a better view for the operator, a stable mast construction and optimal ergonomics, the productivity of man and machine is increased.

## Conventional vs. X-Range

# REACH TRUCKS REDEFINED

## CONVENTIONAL REACH TRUCK

The growing demand for storage capacity is making high rack warehouses ever more attractive. Existing truck solutions in this field normally come with a narrow operator's cab and restricted field of vision. In addition, the horizontal movement of the mast at greater lifting heights can cause the truck to oscillate.



## LINDE X-RANGE

The models in the X-Range are safer and more comfortable for the operator and increase productivity. The battery is installed below the operator's cab, which doubles the size of the operator's cab. The seat position is higher, which greatly improves all-round visibility. The unique mast design broadens the field of vision and provides exceptional stability.



You can find more information on your smartphone with the [Linde Augmented Reality App](#)



Efficiency-Increasing Design

# UNIQUE MAST CONCEPT



Working with heavy loads at great heights requires precision. When the mast is fully extended, even the slightest vibrations can have major effects. Furthermore, the view is often restricted. The unique mast concept of the Linde X-Range provides a solution to these problems as well as outstanding stability and an unrestricted view at all times.

Mast oscillations are reduced to a minimum, and the stability of the truck when lifting and lowering heavy loads is increased. This provides extra safety and energy efficiency, and goods can be stowed and retrieved more quickly, as well as increasing throughput.

**Advantages of the X-Range:**

Mast with slim profiles

Cylinder with booster function

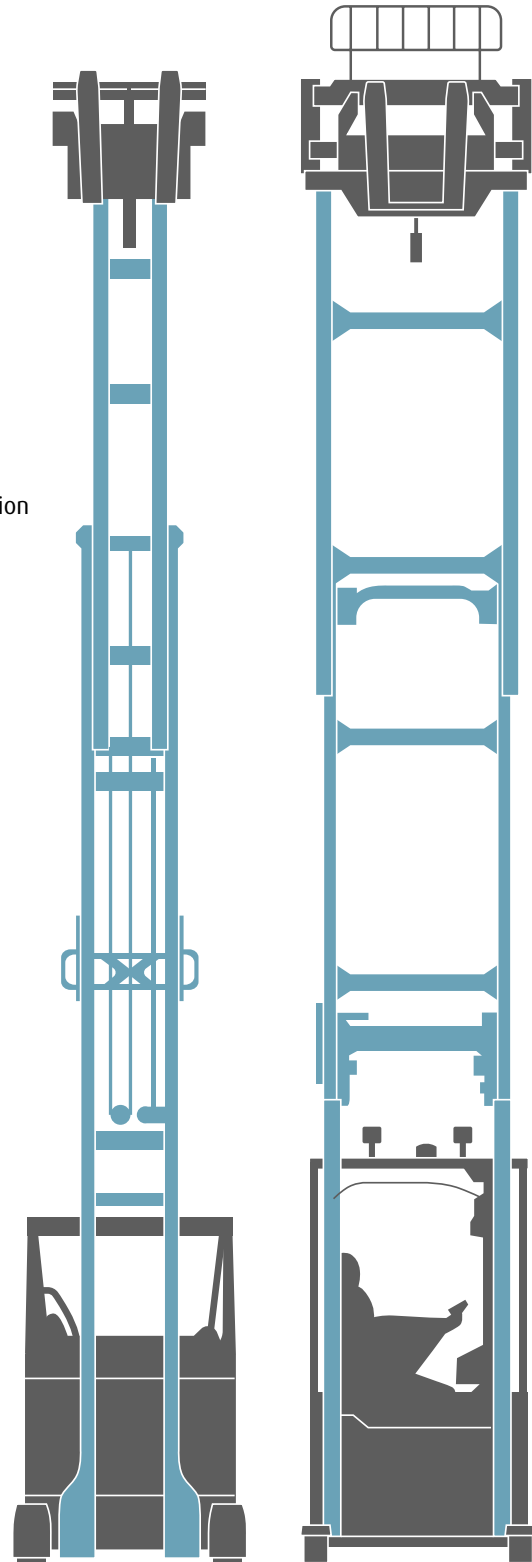
Shorter horizontal movement

**The result:**

→ Wider field of vision

→ Compensation of mast deflection

→ Greater productivity through time saving



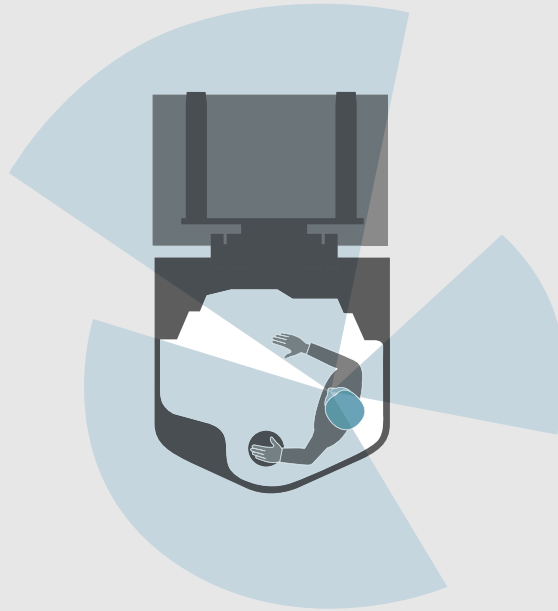
Conventional reach truck

Linde X-Range



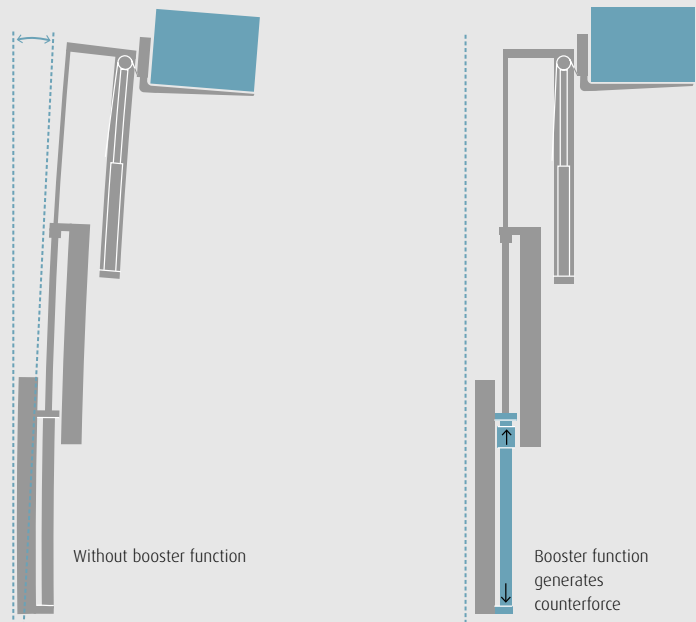
## WIDER FIELD OF VISION

The broad mast frame gives the operator outstanding all-round visibility. The slim mast profiles allow for a better view when lifting, lowering and avoiding obstacles when on the move, boosting safety and efficiency.



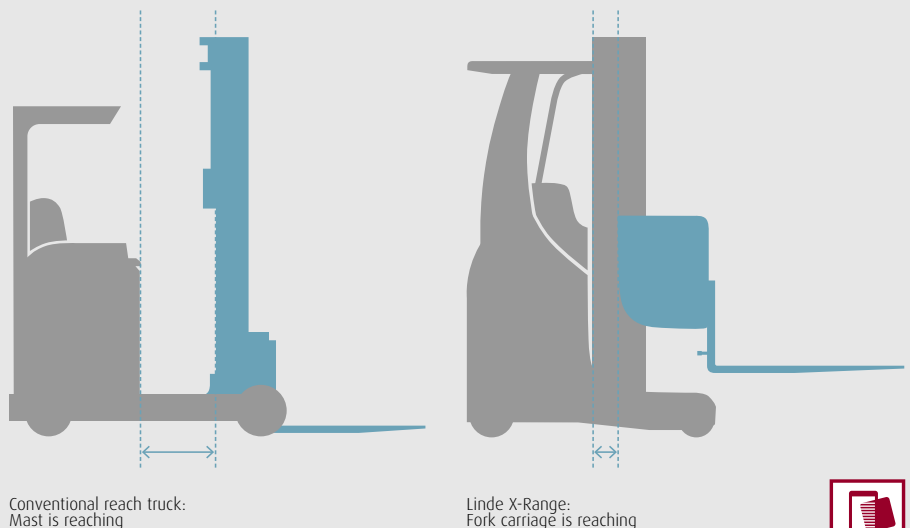
## COMPENSATION OF MAST DEFLECTION

The booster cylinders reduce mast deflection by roughly 40 percent. This provides stability and allows for a faster turnaround of goods thanks to perpendicular loading and unloading. At greater lifting heights with heavier loads, the booster cylinders exert even more power, reducing mast deflection.



## SHORTER HORIZONTAL MOVEMENT

In the X-Range models, the fork carriage moves in and out, not the mast. The horizontal displacement is just 170 mm and therefore approx. 70% shorter than in conventional masts. The shorter horizontal displacement and the static mast significantly increase productivity.



You can find more information on your smartphone with the [Linde Augmented Reality App](#)



Experience the panoramic view by scanning the QR Code or visit: <http://www.linde-mh.com/xrange/fieldofview>

Spacious Cab, Better View

# ENHANCED ERGONOMICS



Reach truck operators working long shifts need to feel good from start to finish. An ergonomic working environment is therefore essential. The workstation of the X-Range is conceived such that the physical burden on the operator is kept to a minimum. This reduces downtime and increases productivity.

**Advantages of the X-Range:**

**The result:**

Innovative battery position

→ Spacious operator's cab, higher seat position, better view

Adjustable seat and armrests

→ Ergonomic work environment

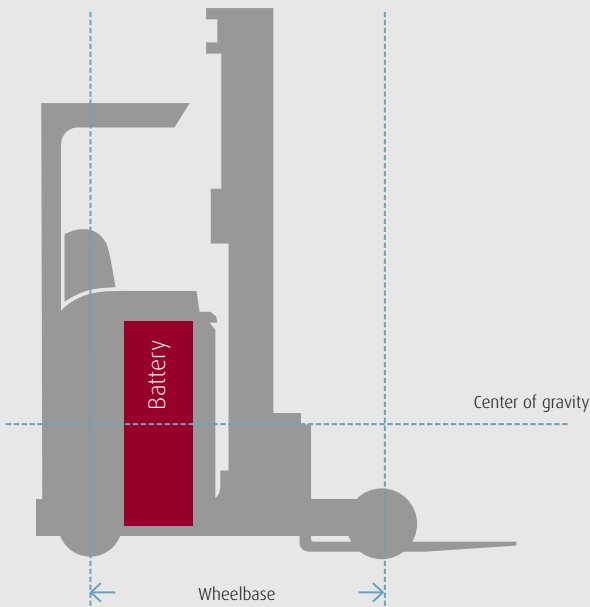
Comfortable workstation

→ Higher productivity

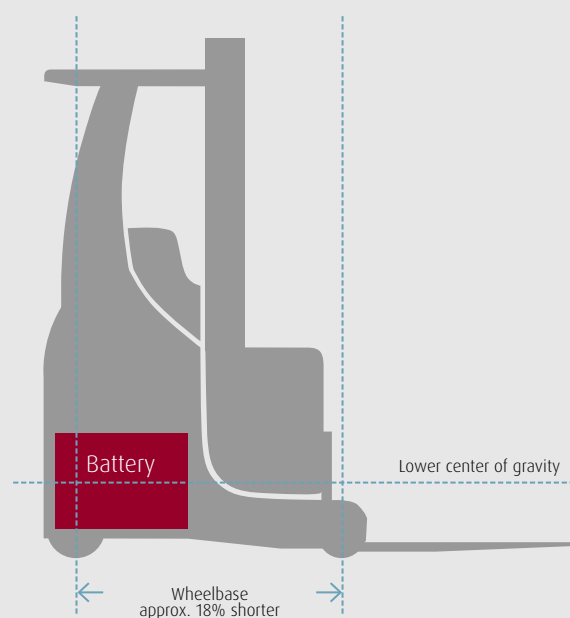
## INNOVATIVE BATTERY POSITION

The relocation of the battery under the operator's workstation is the basis for the spacious cab of the X-Range, the better view and intelligent mast design. The wheelbase is shorter and the center of gravity is lower. This increases stability, the truck is more agile, and work in narrow aisles is made easier.

Conventional reach truck



Linde X-Range







### More Space and More Oversight

The cab of the X-Range provides the operator with approximately twice as much space and great all-round visibility. This makes work easier and safer.

### Intuitive Work Environment

A compact electrical steering wheel integrated in the left-hand armrest and joysticks for controlling the hydraulics in the right-hand armrest make for an uncluttered cab. The digital display provides a quick overview of all important truck functions.

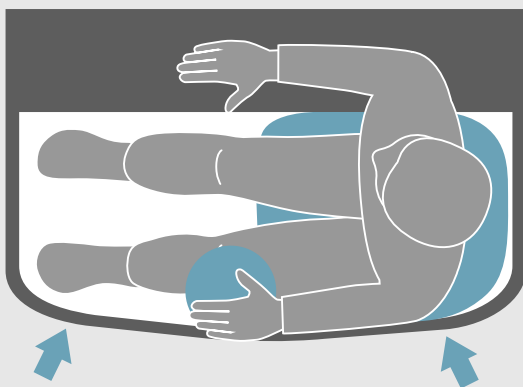
### Smoothly Adjustable Workstation

The seat height, lumbar support and seat angle can be changed as required. The armrests can be raised, lowered, moved forward and moved backward. The height of the display can also be adjusted.

### Options for Even Greater Comfort

For enhanced ergonomics and superior comfort, the X-Range can be retrofitted with additional equipment and upgraded in line with customer-specific requirements.

Operator's cab of a conventional reach truck



Compared with other reach trucks, the X-Range gives the operator twice as much space. At the same time, the operator remains safely within the confines of the truck with plenty of space for the arms and legs.

Operator's cab of the Linde X-Range



You can find more information on your smartphone with the [Linde Augmented Reality App](#)





# Wide Selection of Battery Types EQUIPPED FOR EVERY REQUIREMENT

With the battery under the operator's workstation, batteries with a higher capacity and longer service life can be used. The selection ranges from 480 Ah to heavy 1000 Ah batteries. The customer can therefore choose the right chassis/battery combination for their specific needs—either a highly compact and efficient solution or one with more power and weight for lifting heavy loads.

### Advantages of the X-Range:

More space for larger batteries

Easy access to battery

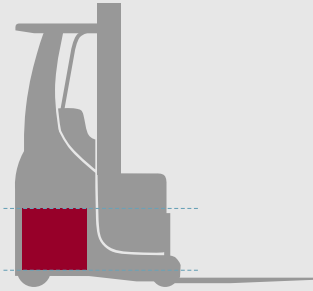
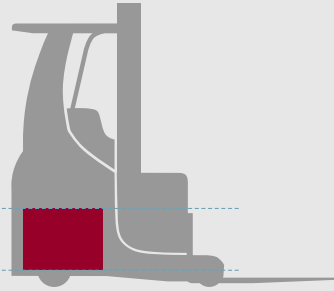
Models from 480 Ah to 1000 Ah

### The result:

→ Higher residual load capacity, greater range

→ Fast, ergonomic battery change

→ Suitable for individual customer needs, depending on application

Model	R14 X	R17 X
Design	Low chassis with short wheelbase 	Low chassis with long wheelbase 
Capacity	1400 kg	1700 kg
Mast	Max. lifting height: 9.5 m	Max. lifting height: 11.5 m
Battery	6 PzS 480 Ah	8 PzS 640 Ah

**The Compact:**

The R14 can lift loads of up to 1400 kg to moderate heights. The short wheelbase is ideal for use in narrow aisles. R14 X has a low chassis, which makes it easier to get on and off. In the R14 X HIGH version, the battery capacity is up to 44 percent higher and the seat position is raised, which gives the operator a better field of vision.

**The Nimble:**

The R16 X has a compact battery which delivers 690 Ah, making it nimble and capable of moving up to 1600 kg. The higher battery raises the seat position and gives the operator a better view. Furthermore, the high batteries from the R16 X and R14 X HIGH are compatible with the Linde E16 L to E20 L counterbalanced trucks.

**The Powerful:**

The R17 X and R17 X HD models have batteries ranging from 640 Ah to 1000 Ah. The chassis of the R17 X with its long wheelbase is designed for moving particularly heavy loads in high rack warehouses. The robust HD version may be fitted with an even larger battery providing a combination of maximum power and maximum lifting height for the most demanding tasks.

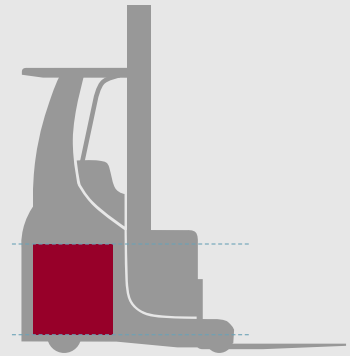
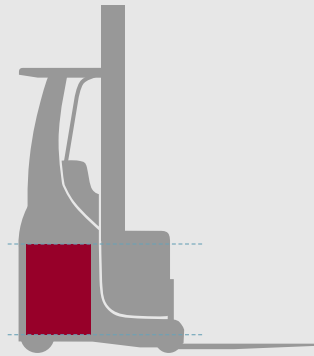
**R14 X HIGH**

**R16 X**

**R17 X HD**

High chassis with short wheelbase

High chassis with long wheelbase



1400 kg

1600 kg

1700 kg

Max. lifting height: 10.0 m

Max. lifting height: 11.5 m

6 PzS 540, 690, 750 Ah

8 PzS 720, 920, 1000 Ah

## Quick and Easy Battery Change

# ALWAYS READY TO GO

The X-Range makes battery access easy, making battery changes fast and uncomplicated. The X-Range can also use batteries with a higher capacity, which means that they do not need to be changed as frequently. The operator can remove the battery themselves without having to use any special tools—a standard pallet truck would suffice.



### SECURING THE FORK CARRIAGE

A lifting carriage locking plate is placed to secure the fork carriage and to ensure a safe battery change.



### QUICK AND EASY BATTERY CHANGE

All batteries of the X-Range can be removed quickly and easily—no special tools are required. A battery stand is an optional extra.



### AUTOMATIC BATTERY SECURING MECHANISM

When the battery is lifted up, the lock is released and the battery can be removed. When the charged battery is inserted, the lock automatically engages and secures the battery firmly in the correct position.



## Optional Extras

# TAILORED TO EVERY WAREHOUSE ENVIRONMENT

A large selection of equipment options and individual customer solutions makes it possible to adapt and optimize the truck for all operating conditions—the more customized the truck, the more productive and safer it will be.



### REINFORCED GLASS ROOF

An extremely tough reinforced glass roof protects the operator from falling objects, provides an excellent view of the load and makes storage and retrieval quicker.

### RAISED OVERHEAD GUARD

A raised overhead guard with an extra 175 mm in height is ideal for taller forklift operators. It makes getting in and out of the cab easier and increases the field of vision of the operator.



### 10° ROTATING SEAT

The R17 X and R17 X HD models can be fitted with a seat that rotates by up to 10°. The rotating seat increases the field of vision and reduces stress on the back and neck.

### EXTENDABLE BACKREST

With an extendable backrest, the seat can be tailored to the needs of taller operators, making the cab even more comfortable and flexible.





## SINGLE PEDAL AND 360° STEERING

The standard two-pedal system can be replaced by a single gas pedal, which allows for 360° steering.



## MAST AND CHASSIS CAMERAS

This system consists of two cameras—one on the chassis and one on the mast. Above free lift, the system automatically switches the view to the mast camera. This ensures an optimal view of the load at all times. Both cameras can also be ordered individually.

## FORK CENTERING AND LEVELING

With the fork centering function, the side shifter is brought into the center position automatically with a touch of a button. Furthermore, trucks with manual fork tilt may be equipped with an automatic fork leveling function. This ensures that the forks are always parallel to the ground.



## FLEET MANAGEMENT SOLUTION

With the fleet management system from Linde connect, important information such as data on truck usage and applications, planned servicing intervals, and upcoming operator training can be called up at any time. It can be used for a variety of sites, fleet sizes and manufacturers, and integrated in new trucks or retrofitted in existing trucks. Aside from greater safety in internal traffic, greater capacity utilization of the trucks is ensured, which translates into greater cost-effectiveness.



## Cold-Store Cabin

# DIFFICULT OPERATING CONDITIONS

An uninterrupted cooling chain is vital in many sectors, such as the food and pharmaceuticals industry. Temperatures as low as  $-30^{\circ}\text{C}$  make working conditions difficult. The special cold-store cabin of the R17 X HD makes the operator's work pleasant, comfortable and productive throughout the entire shift.



## EFFICIENT HEATING SYSTEM

The temperature in the cabin can be adjusted manually or automatically. Two thermostats—one on the fresh air inlet and another on the hot air outlet—provide precise temperature regulation. The heating system is located under the steering. The hot air rises and is continuously and uniformly recirculated, so that the entire cabin is warm and condensation-free.

## SCANNING DESPITE HEATED WINDOWS

Even in cold storage warehouses, goods need to be scanned, and at the same time, the windows of the truck need to be heated. The R17 X HD's special window has a section without heating wires that allows for scanning.

## SHATTERPROOF POLYCARBONATE WINDOWS

The double-glazed polycarbonate windows provide effective insulation. The inner and outer surfaces of each layer are toughened for greater scratch resistance. In emergencies, it is possible to exit the truck via a side window. In addition, the windows are heated with almost invisible fine wire elements.

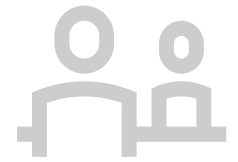
## INTERCOM SYSTEM

The cabin has an intercom system which prioritizes incoming sounds. This ensures that the operator is not cut off from the outside world and can hear and react to voices and warnings from outside the cabin without having to open the door.



## Customer-Specific Individualization

# TAILORED SOLUTIONS



Every customer has their own specific requirements. These can include reinforced masts for heavier loads or trucks that can withstand extreme temperatures. Additional requirements may include specific lifting heights, additional safety devices, different load types and shapes, visibility requirements, and many more.



Linde Material Handling offers tailored solutions. There is a broad range of additional equipment, modified chassis and mast dimensions, and extra functions to choose from.

A practical example of this is the current model for a cold store in the UK. The customer was looking for a truck that could lift extremely heavy pallets with beverages and foodstuffs to extraordinary heights. Linde Material Handling provided the answer: the R14 X HL. An R14 X was used as the base model and was adapted to the precise needs of the customer. The truck has a wider chassis and reinforced mast and in this variant, the truck can even lift 1050 kg to a height of 12.8 m.

Compared with the R14 X and R17 X HD, the customized R14 X HL has a longer, broader chassis. It even surpasses heavier models when it comes to lifting loads to great heights.



## Solutions for a Wide Range of Application Scenarios

# PUTTING THE X-RANGE INTO PRACTICE



### COLD STORES

In a warehouse for refrigerated foodstuffs and beverages in the UK, the X-Range is being used for storing, retrieving, and transporting full pallets. These loads must be lifted to heights of over 10 meters safely and efficiently. Reliability with minimal downtime is also crucial. The X-Range proved to be ideal, in particular due to its agility, stability when lifting loads, and good visibility through the mast.



### WHEELS AND TIRES

The Linde X-Range is being used in two 10,000 m<sup>2</sup> warehouses for car wheels and tires in Germany and operates a mobile shelving system consisting of 22,000 pallet spaces. The customer was looking for a compact, nimble solution that provides a good view, particularly overhead. The X-Range was equipped with an optional camera system that allows the pallet space to be scanned using the camera monitor.



### WAREHOUSE LOGISTICS

The models in the X-Range are ideal for use in warehouse commissioning. Thanks to their design, the trucks are particularly nimble and individually configurable. The design of the mast increases the operator's field of vision and increases safety during storage and retrieval.



### BLOCK STORAGE

Goods packed onto pallets can be put into interim storage quickly and in a space-saving manner with the X-Range. The short wheel arms and minimal horizontal displacement increase performance, capacity, and efficiency compared with conventional reach trucks.





## Complete Protection for Man and Machine

# GREATER SAFETY IN THE WORKPLACE

As ever, safety is top priority for Linde Material Handling. In high rack warehouses in which heavy loads are lifted to great heights, it is easy to understand why. There are many dangers, and because of this, the Linde X-Range is equipped with a variety of functions for preventing accidents. These guarantee a safe working environment for the forklift operator at all times.

### Wide mast with slim profiles

creates a wider field of vision.

### Linde BlueSpot™/Linde Truck Spot\*

projects a clearly visible warning light onto the ground behind or in front of the truck to warn pedestrians and other operators of the approaching truck.

### Linde Safety Guard\*

warns operators and people in the vicinity of the truck in specific danger scenarios. Optionally, the travel speed can be reduced.

### Automatic emergency brake

is automatically activated when the operator takes their foot off the gas pedal.

### Glass roof

protects the operator without obstructing their view.

### Anti-reflective coated glass window

provides extra protection for the operator while preventing glare.

### Raised seat position

provides a great view of the load and of the surroundings.

### Hill hold control

prevents the truck from rolling away when setting off from a parked position on uneven terrain.



\*Please discuss availability with your Linde Material Handling Sales Representative.

## LINDE MATERIAL HANDLING GMBH

Linde Material Handling GmbH, a KION Group company, is a leading global manufacturer of forklift trucks and warehouse trucks, and a solutions and service provider for intralogistics. With a sales and service network that spans more than 100 countries, the company is represented in all major regions around the world. In the 2017 financial year, the Linde MH EMEA Operating Unit (Europe, Middle East, Africa) recorded a total revenue of roughly EUR 3.1 billion, with approximately 11,000 employees worldwide. Global sales of Linde branded trucks in 2017 amounted to over 124,000.



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