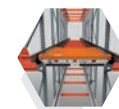


STILL Pallet Shuttle Rack System Channel Storage System with Pallet Shuttle



STILL Pallet Shuttle Rack System

Automatic storage made easy



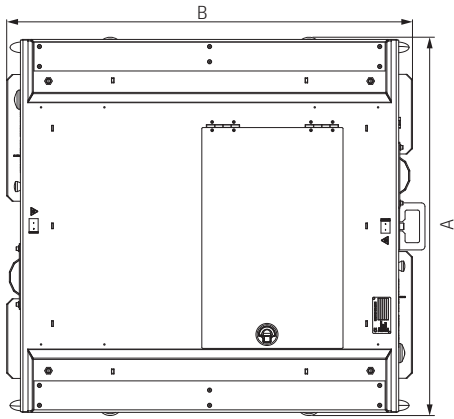
Features	Manufacturer			STILL
	Manufacturer's type designation			SA 3.1
	Drive			Electric
Dimensions	Operation			Remote control
	Channel width	C	mm	1300/1350/1400/1450/1500/1550
	Frame width	D	mm	85/100/120
	Height, first support	F	mm	309 (284) ¹
	Min. installation height	H	mm	350
	Distance, first pallet	Z1	mm	60
	Distance between loads	Z2	mm	30
	Distance, last pallet	Z3	mm	60
	Clear dimension up to 1 st beam	Z4	mm	1250
	Height, shuttle		mm	178
Pallet	Weight without batteries		kg	270
	Weight incl. batteries		kg	300
	Max. weight/load capacity		kg	1200/1500
	Max. height	G	mm	2500
Remote control	Max. load overhang (width/depth)	I/J	mm	200/400
	Pallet dimension (width x depth)		mm	1200 x 800
	Signal			RF
	Frequency		MHz	433
	Number of shuttles			99
	Battery			9 V NiMH 1300 mAh
	Spare batteries			No
	Charger			Yes
	Operating time		h	16
	Charging time		h	5
Driving	Range (depending on environment)		m	300
	Motor			Dunker BLDC/0.5 kW, brushless
	Regenerative braking			Yes
	Driving speed, laden		m/s	0.8
	Driving speed, unladen		m/s	1.0
	Acceleration/braking		m/s ²	0.5
	Number of tyres (driven)			4 (2)
	Tyre size		mm	100 x 50
Lifting	Horizontal guide wheels			Yes
	Motor			Dunker BLDC/0.5 kW, brushless
	Lift height		mm	30
	Lifting speed		s	3.5
	Maximum pallet deflection		mm	20
Battery	Lifting mechanism			Mechanical
	Full stroke of the lifting table			Yes, all four corners
	Battery type			Lithium Yttrium Phosphate, 14 cells
	Battery voltage/nominal capacity		V/Ah	48/40
	Number/weight			2 x 14 kg
	Battery management system			Yes
	Working time (normal temperature)		h	10-12; light-weight goods 14-16
	Working time (cold store version)		h	8-10
	Charging time		h	3
	Charger/battery station voltage		V	50-250/80-260
Battery	Charging power			230 V/50 Hz 9 A
	Charging in the shuttle			Yes
	Manual battery replacement			Yes
	Number of charging cycles when used correctly			>2000

¹ With a minimum of three levels, the bottom cross member is not required

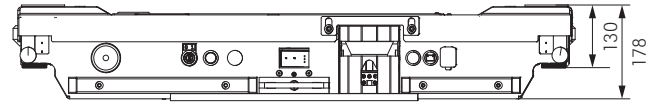
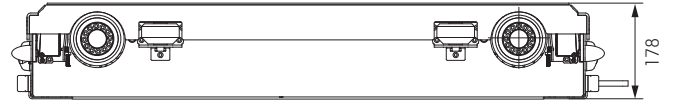
Pallet type	Model ¹	A in mm	B in mm	E in mm	Load capacity/load in kg
Euro-pallet (1200 x 800)	SA 128	1045	845	911	1200
Industrial pallet (1200 x 1000)	SA 1210	1045	1045	911	1500
Euro-pallet/industrial pallet	SA 1210	1045	1045	911	1200/1500
Chemical industry pallet (CP) 1 (1200 x 1000)/CP 2 (1200 x 800)	SA CP 1	995	1045	861	1500/1200
CP 3/9 (1140 x 1140)	SA 114	920	1185	785	1500
Special pallet (1200 x 1200)	SA 1212	1045	1245	911	1500

¹ Also available in cold store version (max. -30 °C)

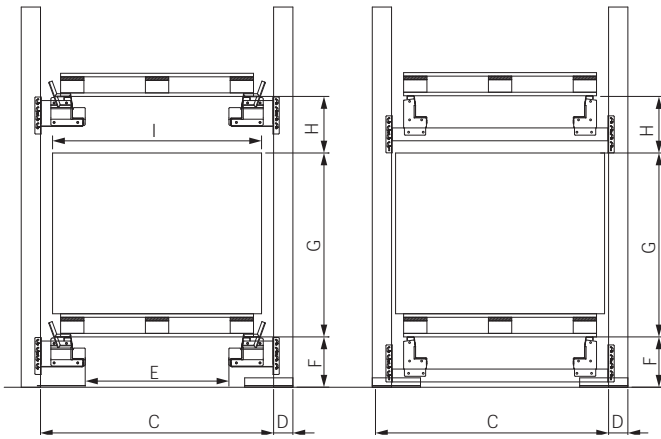
STILL Pallet Shuttle Rack System
Pallet Shuttle



Top view

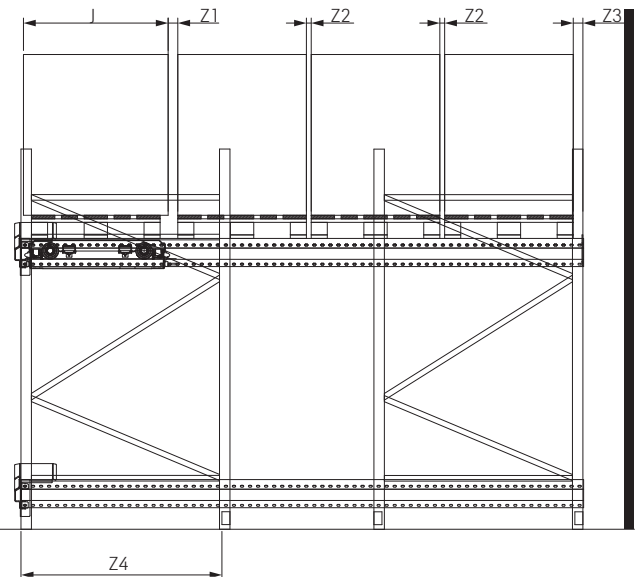


Side view



First frame (and last for FIFO)

Other frames

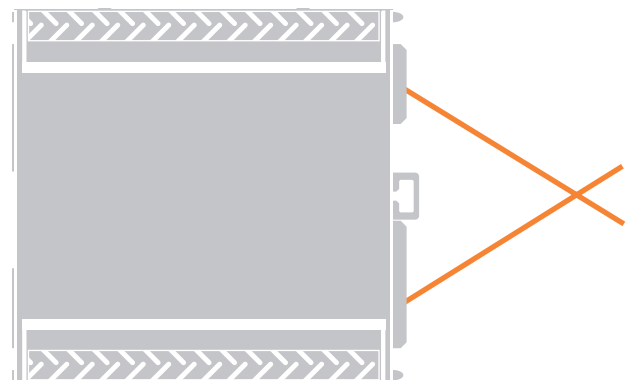


Side view, first frame

Side view, other frame



Safety scanner version: SICK scanner for person and object recognition



Safety scanner version: Cross-type sensor for object recognition

STILL Pallet Shuttle Rack System

How it works

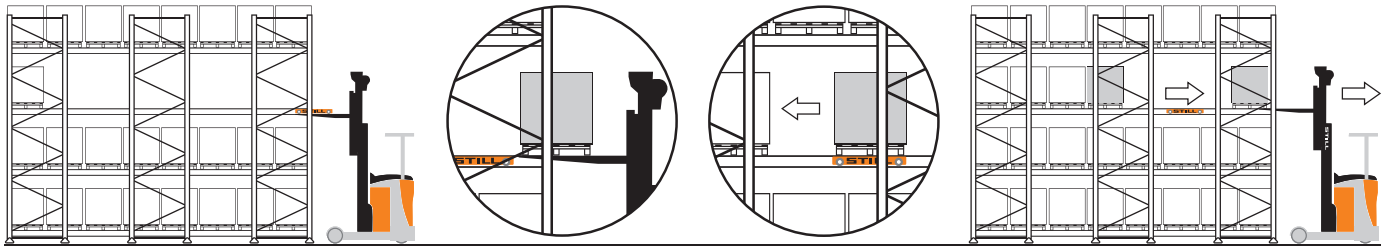
The system consists of one-way shelving with special rails and a channel carriage. The carriage has its own power supply and moves independently within the channel.

The pallets and the STILL Pallet Shuttle are transported by a standard forklift truck, and the rack can be designed for both one- and two-sided operation. As soon as the shuttle is placed in the rack, the rest of the loading or unloading process is fully automated. The process

is triggered by the operator via remote control. Once the loading or unloading process is completed, the carriage moves automatically to the starting position at the start of the rack and is ready to be transferred by the forklift truck to another channel to undertake new tasks. The carriages feature lithium batteries with a long service life (up to 16 hours) and a fast charging time (max. 3 hours).

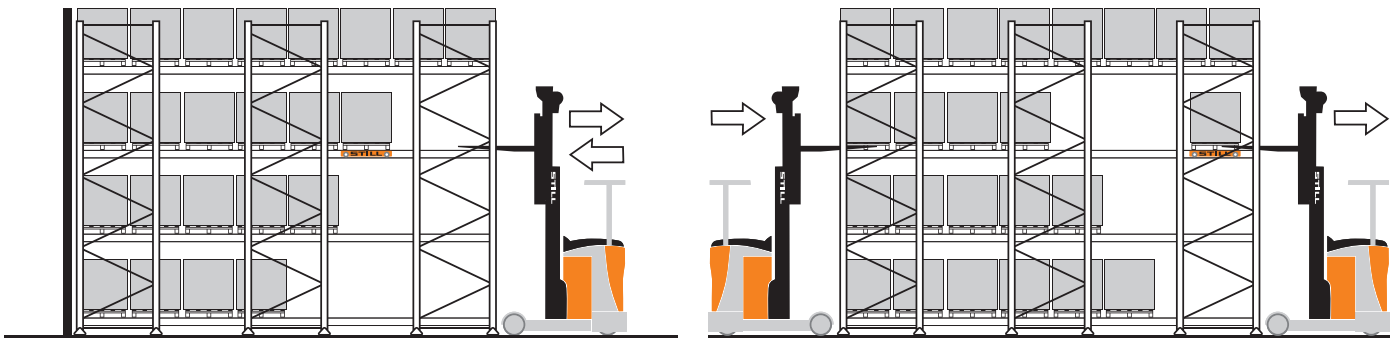
In high-density racking systems, the turnover speed can be increased considerably using the STILL Pallet Shuttle. This intelligent system enables semi-automatic storage and retrieval of load carriers. First, a

forklift truck delivers the pallet to the racking level. There, the radio-controlled shuttle automatically lifts the pallet, moves it into the depth of the rack and gently sets it down at the end of the channel.



- 1 The STILL Pallet Shuttle is put in position on the bottom rail of the level the load is to be stored on.
- 2 On the same level, a pallet is placed on the top rail.
- 3 After the storage command has been given via remote control, the STILL Pallet Shuttle lifts the pallet and travels to the first free storage space.
- 4 The STILL Pallet Shuttle returns to the starting position and repeats the process until the respective channel level is full. Before the last storage space is filled, the shuttle is removed by the forklift truck.

Warehouse strategies

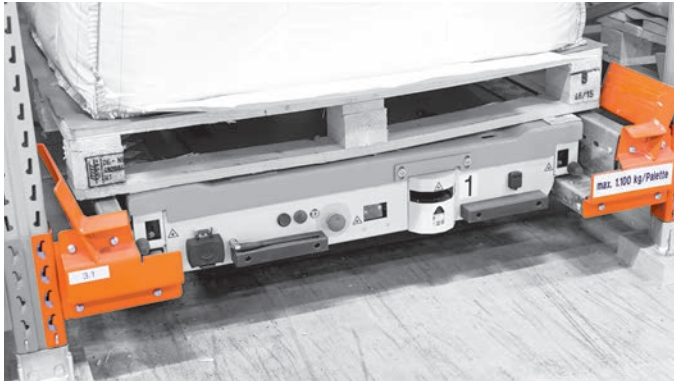


LIFO: Pallets are stored and removed on one side. Before new goods are stored, the channels are completely emptied. Use for products with long service life and/or for small rotations.

FIFO: Storage and removal are carried out on different sides. This serves as a buffer between two zones. If not all goods have been removed, the shuttle can move the pallets to the exit to create space for new goods.

STILL Pallet Shuttle Rack System

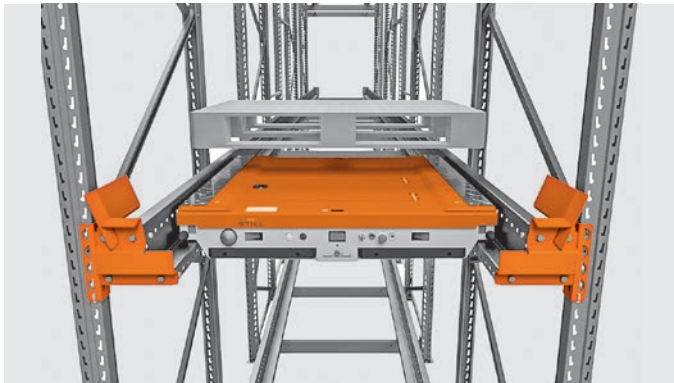
Automatic storage made easy



The support rails bear both the shuttle itself and the loaded pallets. The rails provide maximum flexibility as they can be installed at different heights in a 50-mm grid and attached to the columns with brackets. The height can be set variably for each channel.



Side reach guard for accident prevention: the guard stops people from reaching into the channel during operation. The scanners also aid accident prevention, as shown on page 3.



System can be used for various load carrier combinations. For information on the pallet types, see the bottom table on page 2.



The lengthwise cross members ensure high stability of the racking system. These are not mounted at the input and removal side to ensure smooth transfer of the pallets transferred into the channel.



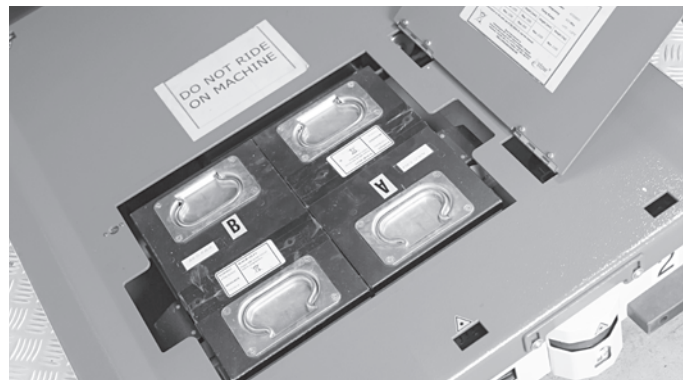
Precision landing! Pallet centring enables the carrier to be placed precisely on the rails – easily and reliably.



The wheel stop rail in front of the rack ensures the optimal safety distance between the industrial truck and the rack.



The Pallet Shuttle comes with a remote control as standard. For further information, see 'How it works' on page 4.



Depending on the load and the environmental conditions, the operating time of the shuttle with a lithium battery set is 10 to 16 hours at normal temperature and 8 to 10 hours under cold store conditions.

STILL Pallet Shuttle Rack System

Automatic storage made easy

Maximum volume utilisation

Time savings thanks to simultaneous use of shuttle and industrial truck and semi-automated storage and retrieval in the rack

Greater flexibility in comparison to conventional compact storage systems such as one-way shelving: channel levels are loaded with goods independently of each other

Exceptional handling performance: semi-automated storage and retrieval: LIFO (Last In First Out) and FIFO (First In First Out) principles can be used

Gentle load transportation



Do you expect maximum storage and space utilisation combined with a high handling rate from your storage system? To help you make optimal use of the storage space available, we have combined a high-density STILL pallet channel storage rack with our intelligent Pallet Shuttle.

This enables semi-automatic storage and retrieval of load units.

A Pallet Shuttle moves the load unit deep into the rack and stores it there. All channels can be loaded with load units independently of each other.

Time and storage space cost money. With a shuttle storage system, you can make optimal use of the space available, even if there is a wide variety of products.

Forklift truck and Pallet Shuttle work hand in hand. The principle is as simple as it is efficient. At the start of a rack level, the forklift truck deposits the load unit, which is then picked up by the shuttle and automatically moved to the end of the channel or the next possible free space. The pallet is carefully set down on the support rails and the shuttle returns to the start to collect the next pallet. Extremely practical – the shuttle automatically detects the end of an aisle, saving you a lot of time and increasing safety when handling pallets. Travel within the rack is reduced and the transport goods are handled much more carefully than with block storage.

The 'Simply Efficient' factors: Performance attributes as a measure of economic efficiency



Simply easy

- Easy and flexible operation and control via remote control
- Precision made easy: rails and entry funnel make it easy to position the shuttle in the rack
- The multifunction display shows the battery charge status and operating hours at all times



Simply powerful

- Maximum volume utilisation thanks to optimal load capacity: loads of up to 1500 kg can be stored quickly and easily
- Ready for any application: thanks to the robust chassis made of solid steel, the shuttle is equipped for any application profile – even cold stores.
- High efficiency thanks to the battery range of up to 16 hours
- Absolute availability: batteries are fully charged in just three hours and, thanks to the additional spare battery, the shuttle is ready for use at all times



Simply safe

- Maximum working safety and accident prevention thanks to precise laser scanner for object detection or SICK scanner for person detection
- Process-optimised and low-error transfer between two channels thanks to the hooks on the fork carriage and anti-slip strips underneath the shuttle



Simply flexible

- No travel in the rack due to automated shuttle operation during loading and unloading
- Optimal transport safety: even sensitive goods are optimally protected by the safety distance between the items (min. 30 mm)
- High storage density thanks to maximum flexibility: rack channels are loaded independently of one another and different types of pallets can be stored
- Flexible and accurate detection of the load size, even if it is larger than the pallet itself
- Variety of application options for pallet heights up to 2500 mm



Simply connected

- Guaranteed availability and reliable service with the help of software-assisted maintenance and update cycles via the optional Smart Connect Box
- Interface for connecting to warehouse management system available
- Process optimisation thanks to intelligent system networking, compact overview of all relevant data on the warehouse management interface
- Perfect synchronisation between battery management system of the lithium battery and the truck

STILL Pallet Shuttle Rack System

Function/mode



Function/mode	Description
FIFO	Pallet is stored and removed again from the opposite side
LIFO	Pallet is stored and removed again from the same side
Load 1/Pick 1	Storing and removing individual pallets; when removing loads, the shuttle moves back a little in the channel to prevent damage being caused by the forks of the forklift truck
Load N/Pick N	Continuous storage and removal from one channel
Shuffle (for FIFO)	Transports the pallets to the removal side to free up space on the input side
Side (for FIFO)	Shuttle independently switches to the opposite side in the channel in FIFO application (change of input/removal side)
Count	Pallet counter feature; shuttle travels along the entire channel and counts the stored pallets
Beep	Audio signal for searching for/detecting the shuttle in the channel
Low battery level <10%	Shuttle does not perform any further automatic storage movements and sends a message to the remote control
Emergency mode	Manual process via remote control

Equipment Variants

		STILL Pallet Shuttle
Operating modes	Manual operation via remote control	●
	Integration of STILL Pallet Shuttle into an automation solution*	○
	Different pallet depths in the same channel	●
	Slip control	○
	Pick D / Load D (removal of 2 pallets with long forks)	○
	Load defined number of pallets and position at defined depth	○
Specification	Non-slip areas for pallets on the lifting table	●
	Non-slip base	●
	Emergency stop	●
	Acoustic warning signal	●
	Flashing warning signal	○
	Safety hook for transport on a forklift truck	○
	Retrieval with retrieval carriage	●
	Retrieval with second shuttle and clip-in retrieval aid	○
	Plastic film detection (does not stop but travels at low speed)	○
	Cold store variant up to max -30 °C	○
	Ex-protection version	—
	Recovery platform	●
	Recovery hook	○
	External charging station	●
On-board charger	○	
Rack structure	Pallet centring for safely setting down the pallet on the rails	●
	End stop for orienting the shuttle in the channel and for safe stopping at the end of the channel	●
	Variable centre stop (for using a LIFO block in FIFO operation)	○
	No cross members on the lowest level if there are at least three levels	○
	Earthquake-resistant	○
	Protective grille on the open sides	●
Misc.	Collision protection on the open sides	○
	Suitable for grid boxes and containers	—
	1 year guarantee	●
Warranty extension	○	

* Can be connected to WMS and thus integrated into an automation solution via radio or WLAN

● Standard ○ Option — Not available



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



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