



# ***Uni-SHUTTLE HP***

High Performance  
Automated Storage / Retrieval System



MURATA MACHINERY, LTD.

## High Performance Automated Storage / Retrieval System

# Uni-SHUTTLE HP

Uni-SHUTTLE HP is an automated storage / retrieval system designed to provide best-in-class capacity and performance through a combination of flexible storage functionality and high-capacity transport and sorting capabilities.

The requirements for handling loads of various sizes, the need for high-throughput operations, and the demand for small-lot production for just-in-time operations and same-day delivery drive the need for new technology. Retaining operators in this difficult era of recruiting workers also demands new ideas in automation. Uni-SHUTTLE HP is the solution to these challenges.

The rack system can store loads of various sizes and shapes to achieve high-capacity storage. A high-speed shuttle runs independently on each level to minimize transport times. These features, along with the ability to perform either sequential or group retrievals, combine to provide the optimum in high-performance and flexibility.





## Features

### Flexibility

#### Storage in various locations

The flat-rack type enables the storage of carton cases, folding containers, buckets and other cases in flexible locations inside the rack.

#### Handling of various size loads

From 4 to 7 loads are efficiently stored in each storage cell. The transfer equipment of the shuttle vehicle handles all these various load sizes.

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### High capacity, high quality and high reliability

#### High-speed group retrieval

The combination of the shuttle vehicle to independently travel at each level and the "Space Storage" can carry out group retrieval for each delivery destination and each customer.

#### High-speed group / sequential retrieval

The combination of the shuttle and "Vertical Conveyor" can carry out high-speed retrieval of a large quantity of goods. It can also easily carry out sequential retrieval as the situation requires.

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### Best-in-class storage and retrieval capacity

#### Max. 3,000 cases / hour

Where Space Storage is selected as the storage and retrieval equipment, it provides the best-in-class storage and retrieval capacity for a maximum of 3,000 cases per hour.

#### Flexible layout

Several Vertical Conveyors can be combined to make up the storage and retrieval equipment. These are effective for the simultaneous delivery to many areas.

## System configuration

### Flexible Rack Locations

The free-rack type enables flexible and efficient handling of various load sizes.



### Vertical Conveyor

With a hoisting speed of 120 m/min. (393 ft./min.) the Vertical Conveyor can store and retrieve up to 900 cases per hour. The Vertical Conveyor can be installed on any of the four sides of the rack for maximum flexibility.



### Space Storage

Continuously stores / retrieves a large quantity of loads at the same time. The high-speed storage / high-speed dispatch of a maximum of 1,500 cases per hour can be achieved.



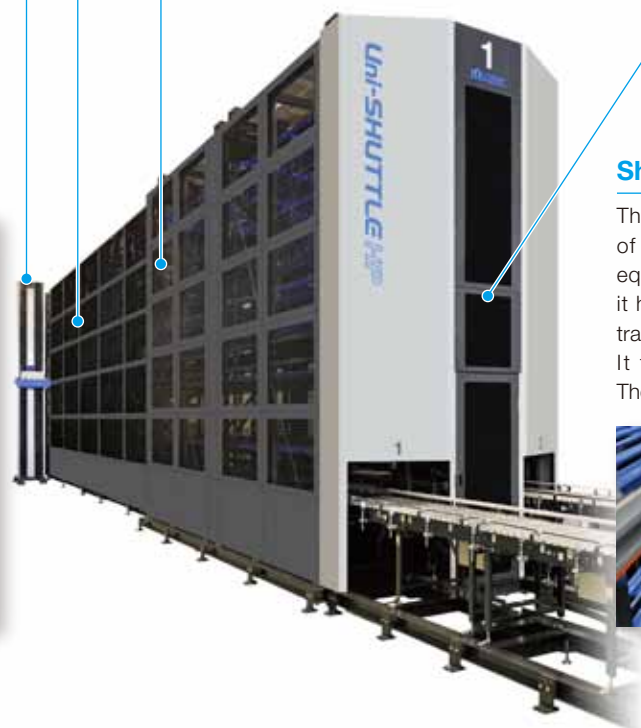
### Maintenance deck

The maintenance deck in the rack facilitates the maintenance and trouble shooting work.



### Shuttle vehicle

The shuttle vehicle travels at the high speed of 400 m/min. (1,312 ft./min.) The transfer equipment is of the rear hook type, therefore it handles various load sizes. The average transfer time is 3.5 seconds. It travels independently on each level. Therefore, trouble recovery is easy.



## Best-in-class storage and retrieval capacity

### High-capacity storage / retrieval of 3,000 cases / hour

Space Storage is installed on both the storage side and retrieval side.

Through the combination of Space Storage to continuously store / retrieve a large quantity of loads at the same time and the high-speed shuttles that travel independently on each level, a wide variety of goods received at the same time can be efficiently stored and sorted, and group retrieval can be carried out at high speed.

Storage capacity of Space  
Storage: 1,500 cases / hour

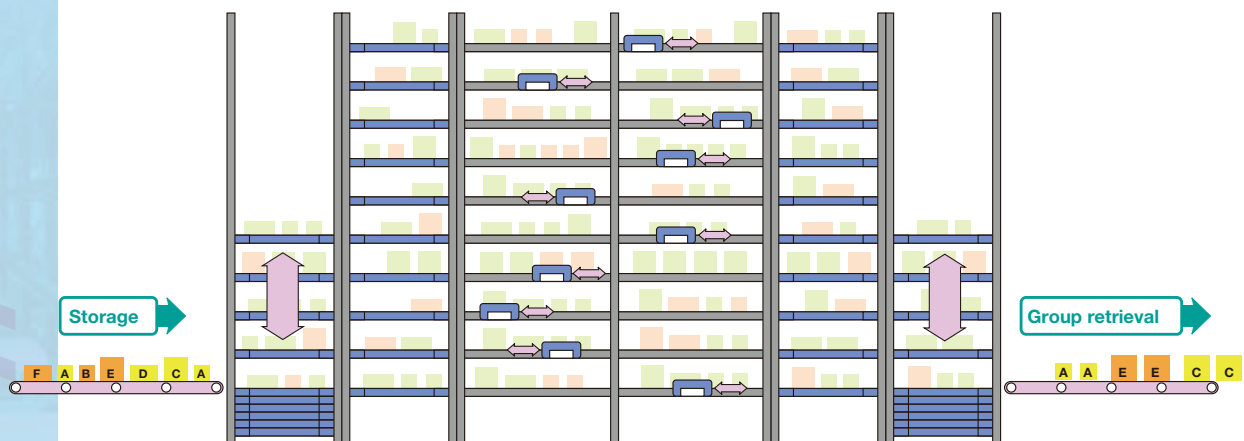
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Flexible rack locations /  
10 shuttles

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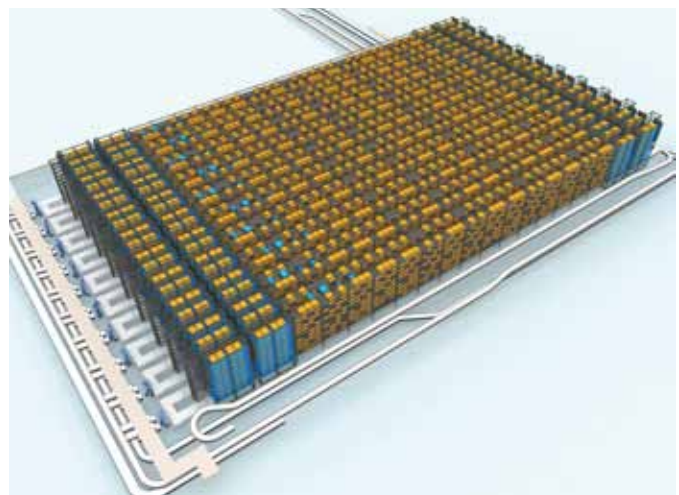
Retrieval capacity of Space  
Storage: 1,500 cases / hour

**Automated replenishment and sortation**  
**Optimized picking and sorting by fixed-position workers**



### For site where many mobile pickers are required:

A wide variety and large quantity of loads are automatically stored by Space Storage and replenished to various locations within the rack. Group retrieval can be performed at high-speed by Space Storage. This allows fixed-position workers to perform efficient picking operations, realizing space and labor-saving benefits.

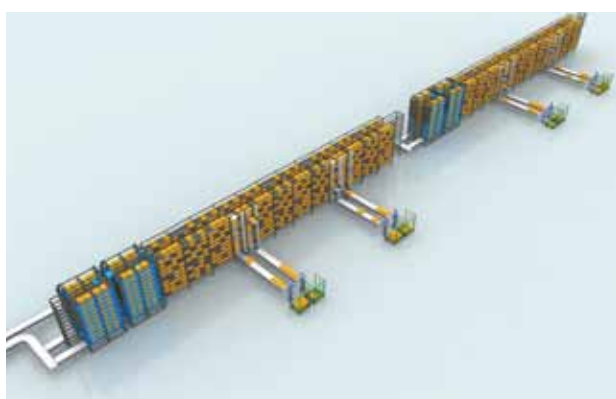
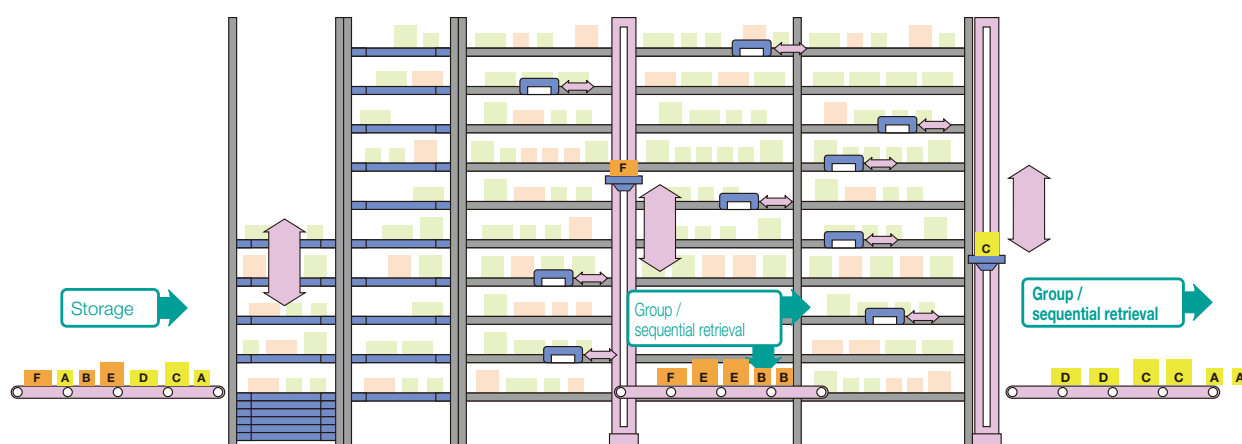
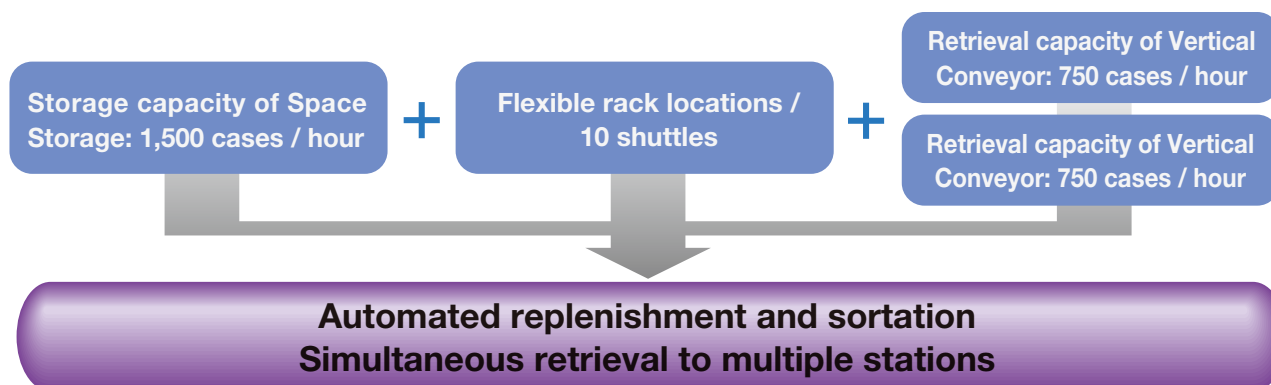


## Flexible system configuration

### The capacity of sorting for multiple areas is provided.

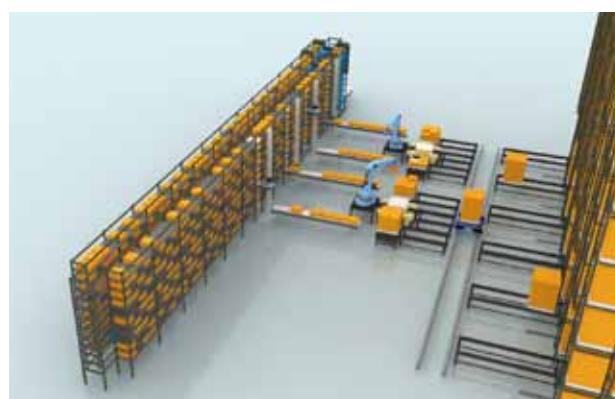
Space Storage is used for storage, and several Vertical Conveyors are used for retrieval.

Space Storage continuously stores a large quantity of loads at the same time, the high-speed shuttle travels independently on each level, and several Vertical Conveyors carry out group / sequential retrieval.



### For a Distribution Center where sorting and delivery of many goods for many customers is required:

Space Storage continuously stores a large quantity of loads at the same time. The combination of the high-speed shuttles that travel independently on each level and several Vertical Conveyors enables group / sequential retrieval at high speed at each station. Space-saving sorting can also be carried out.



### For sorting and dispatch in a factory where simultaneous production of a wide variety of goods is required:

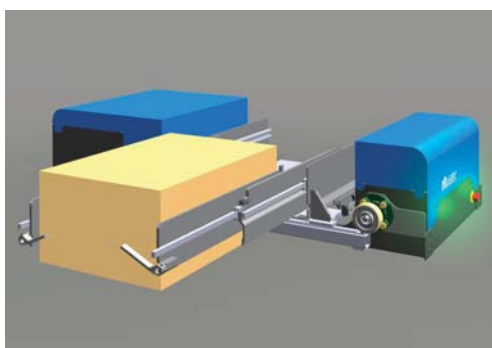
Utilizing the combination of simultaneous and continuous storage by Space Storage, the rack for storage in various locations, and several Vertical Conveyors, the system can carry out sorting and dispatch of goods prior to palletization.



## Transport equipment

### Shuttle vehicle

The Shuttle vehicle travels at the high speed of 400 m/min. (1,312 ft./min.) The transfer equipment is of the rear hook type, therefore it handles various load sizes and gently transfers loads. The average transfer time is 3.5 seconds. The energy-saving design uses regenerative power to reduce power consumption by a up to of 30%. Maintenance can be carried out on the maintenance deck, and the vehicle can be lowered down by using the chain block set on the position opposite the home side of the rack.



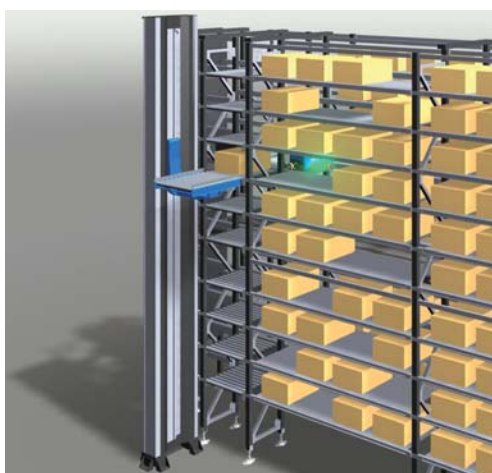
Traveling speed			Max. 400 m/min. (1,312 ft./min.)
Transfer equipment			Rear hook type
Load transfer speed			Max. 60 m/min. (196 ft./min.)
Clamping speed			Max. 7.5 m/min. (24 ft./min.)
Load transfer time (sec)			Average 3.5 sec.
Load size	Maximum	W	450 mm (17.7 in.)
		D	600 mm (23.6 in.)
		H	600 mm (23.6 in.)
	Minimum	W	175 mm (6.8 in.)
		D	225 mm (8.8 in.)
		H	90 mm (3.5 in.)
Load weight	Maximum		25 kg (55.1 lb.)
	Minimum		1 kg (2.2 lb.)



### Space Storage

Space Storage continuously stores / retrieves a large quantity of loads at the same time. It can hold 40 cases as a buffer and can carry out high-speed storage / high-speed dispatch of up to 1,500 cases per hour.

Hoisting spec.			Max. 20 m/min. (65 ft./min.) (Chain drive)
Conveyor spec.			Max. 40 m/min. (131 ft./min.) (Belt conveyor)
Storage quantity (cases)			40 cases (4 cases / level x 10 levels)
Load size	Maximum	W	450 mm (17.7 in.)
		D	600 mm (23.6 in.)
		H	600 mm (23.6 in.)
	Minimum	W	175 mm (6.8 in.)
		D	225 mm (8.8 in.)
		H	90 mm (3.5 in.)
Load weight	Maximum		25 kg (55.1 lb.)
	Minimum		1 kg (2.2 lb.)



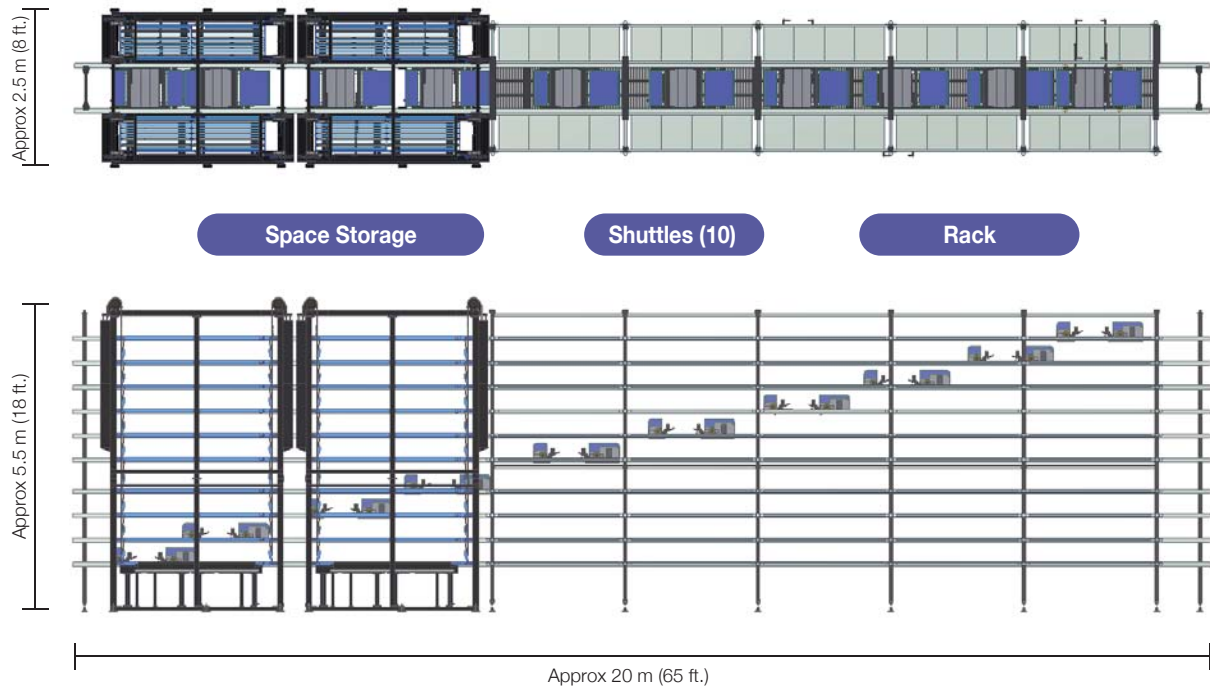
### Vertical Conveyor

The hoisting speed is 120 m/min. (393 ft./min.) and it can store / retrieve up to 900 cases per hour. It can be flexibly installed in the front, rear, right or left side of the rack, and can carry out fixed-point picking for delivery to many areas and to other operations.

Hoisting spec.			Max. 120 m/min. (393 ft./min.)
Conveyor spec.			Max. 40 m/min. (131 ft./min.) (Roller conveyor)
Load size	Maximum	W	450 mm (17.7 in.)
		D	600 mm (23.6 in.)
		H	600 mm (23.6 in.)
	Minimum	W	175 mm (6.8 in.)
		D	225 mm (8.8 in.)
		H	90 mm (3.5 in.)
Load weight	Maximum		25 kg (55.1 lb.)
	Minimum		1 kg (2.2 lb.)

## Reference system configuration

4 Space Storage units configured together can handle storage / retrieval of up to 1,500 cases per hour.  
The rack contains 10 levels x 5 bays and stores a maximum of 700 cases.  
This capacity can be achieved through a space-saving 50-square-meter floor area.



Rack	Number of cells	2 rows x 5 bays x 10 levels
	Storage quantity	2 rows x 5 bays (x 7 cases) x 10 levels = 700 cases *1*2
Shuttle vehicle		10
Space Storage	Spec.	10 levels, 2 units for storage, 2 units for retrieval
	Storage capacity (cases/ hr)	1,500
	Retrieval capacity (cases/ hr)	1,500
Installation space	L	Approx 20 m (65 ft.)
	W	Approx 2.5 m (8 ft.)
	H	Approx 5.5 m (18 ft.)

\*1. When 7 loads are stored, load width is between 250 mm (9.8 in.) and 175 mm (6.8 in.)

\*2. Not including the Space Storage capacity

\* Capacities of storage / retrieval / transport are depended on system configuration and operation.

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