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LOGISTIC EQUIPMENT  
物流器具



HD-SHUTTLE STORAGE SYSTEM  
HD-穿梭车存储系统



RACKING SYSTEM  
货架系统

## ABOUT US

关于我们



天津市万事达仓储设施有限公司成立于 2001 年，经过十余年的发展，在业界的瞩目下公司已成长为国内著名的物流设备提供商及货架制造商，企业综合实力位居行业前列。公司的产品业已通过了 ISO9001 国际质量标准体系认证及欧洲 CE 认证。公司于 2011 年被评为天津市科技型企业。

公司制造基地新址位于天津市武清开发区曹子里拓展区，厂区占地 40000 平方米，建筑面积 24000 平方米。以两条 150 米全长，最长处理工件长度 16 米的存放式全自动喷涂生产线及庞大轧机群为代表的众多先进设备使公司年产能高达 40000 吨。

坚持科技创新历来作为公司发展的重要方向。在优化传统货架设计的基础上，公司竭力推动以高密度穿梭车存储系统为代表的新型仓储模式的研发和推广。目前公司已成功研制出具有完全自主知识产权的高性能的穿梭车，并已成功推向市场。另外定向研发的遥控电动托盘存储输送系统也已成功研发并交付国外客户。未来万事达公司将以更大的热情专注于物流设备方面的技术革新，全面提升公司产品的技术品质。

公司新组建的营销中心位于天津市南开区富力大厦。营销中心全面负责公司的销售及销售管理工作。下设中国销售区、国际部及技术支持部，并在武汉、上海、重庆、郑州、沈阳等地设立了直属销售分支机构。公司拥有进出口自营权，自国际部组建以来，先后参加了数十次广交会、CEMAT、国外专业物流展会，产品成功打入了欧洲、美国、南美、及中东等地区，并受到广泛的赞誉，也成为国外知名物流设备销售商的指定供应商。

■ **总 公 司：天津市万事达仓储设施有限公司**

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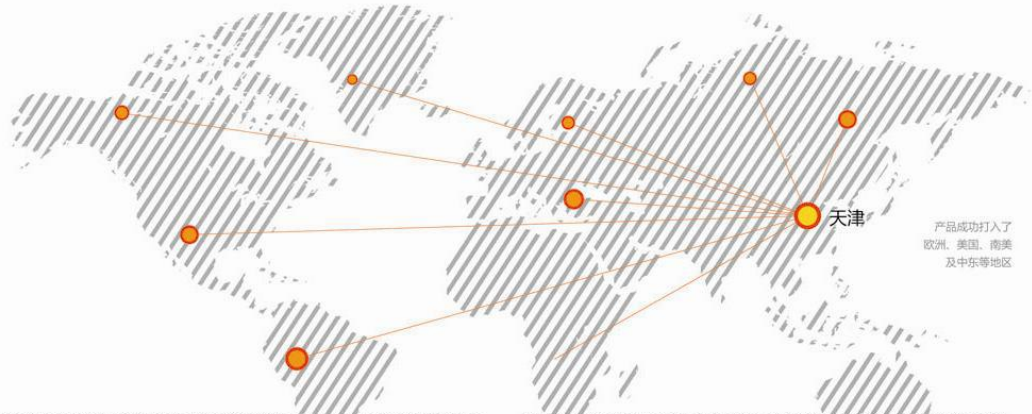
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■ **分支机构：武汉、重庆、郑州、上海、沈阳**



Tianjin Master Storage Facilities Co., Ltd. was established in 2001. Through more than ten years of development under attentions of the industry, it has become a well-known provider and manufacturer of logistics equipment in China with top comprehensive strength in the industry. Our Company's products have passed the ISO9001 international quality standard system certification and European CE certification. In 2011, it has been awarded with the tile of Science and Technology Enterprises in Tianjin.

Our new manufacturing base is located at Caozili Expanded Area, Wuqing Development Zone, Tianjin City, covering a floor area of 40,000 square meters and construction area of 24,000 square meters. With a number of advanced equipment presented by two automatic painting production lines with a length of 150m able to process workpiece at a length up to 16m and rolling mills, the Company has an annual production capacity of up to 40,000 tons.

The Company always adheres to the scientific and technological innovation as an important development direction of the Company. On the basis of optimizing the design of traditional racks, the Company endeavors to promote the development and promotion of new storage model represented by high-density shuttle storage system. At present, the Company has

successfully developed a high-performance shuttle with completely independent intellectual property rights and successfully launched to the market. Furthermore, the directional remote-control electric pallet storage conveyor system has also been successfully developed and delivered to foreign customers. In the future, Master will continue to focus on the technological innovation of logistics equipment with greater enthusiasm in order to fully improve the technical quality of our products.

The Marketing Center newly set up by the Company is located in R & F Tower, Nankai District, Tianjin. It takes all responsibilities for sales and sales management of the Company, under which, there are Chinese Sales Area, International Department and Technical Support Department. It also sets up direct sales branches in Wuhan, Shanghai, Chongqing, Zhengzhou, Shenyang and other cities. The Company has the right to import and export. Since the establishment of the International Department, it has participated in Canton Fair, CEMAT and foreign professional logistics exhibition for dozens of times, our products have been successfully introduced into Europe, the United States, South America, the Middle East and other regions and have been highly recognized. The Company has also become the designated supplier of well-known international logistics equipment vendors.





**PART1**  
MASTER RACKING

# INTRODUCTION TO HD-HIGH DENSITY SHUTTLE STORAGE SYSTEM

HD- 高密度穿梭车存储系统介绍

HD(High-Density) 穿梭车存储系统是一种先进的仓库存储管理模式，具有存储密度大、出入库方便，出入库存取效率高，比传统的驶入式货架拥有对货品更多种类的管理能力，还可以实现先进先出及先进后出功能。整个系统由穿梭车专用货架及智能型穿梭小车组成。功能拓展后还可以和自动堆垛系统结合整合成集成度更高的全自动存储系统。

穿梭车货架系统的使用非常方便，首先用叉车将穿梭车放入轨道的前端，轨道的截面为倾斜状，方便将小车置入，然后将货物放在轨道上的初始位置，这时操作遥控器按下自动入库键即可将带有托盘的货物运入巷道深处完成存储的动作。取货时同时将小车置入轨道的初始位，操作遥控器按下自动出库键，穿梭车将货物搬运至轨道端头，叉车将其取下，完成出库动作，然后转向下一个通道作业。穿梭车还能够自动进行 A/B 面切换，实现穿梭小车在轨道的两端存取货。

穿梭车还可以根据需要按指定数量自动存入取出货物。在等待叉车期间或因整理仓库的需要，穿梭车可以将轨道深处的托盘自动移至两端的出货端，提高出入库的效率。

HD 高密度穿梭车存储系统标配的智能型穿梭车还具有统计功能。作业人员操作回馈式数显遥控器向穿梭车发出指令，可以统计出任一巷道内的实际存储托盘数，也可以根据需要统计出某一时间段的穿梭车出入库总量，为提高仓库管理水平提供准确的统计数据。

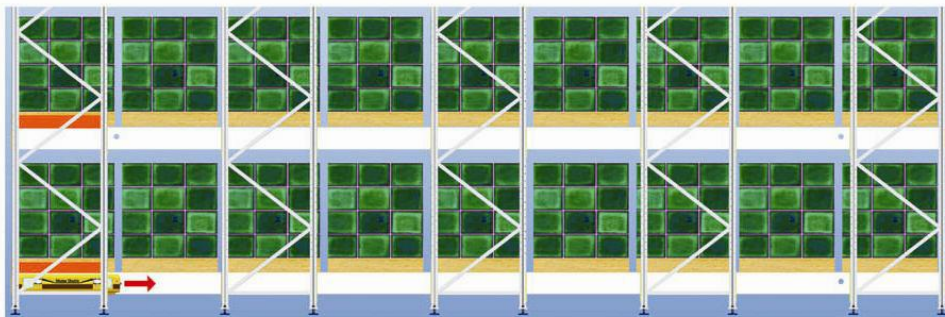
HD shuttle storage system is a kind of advanced warehouse storage management mode and has the characteristics of high storage density, convenient ex-warehouse and warehousing, high access efficiency during ex-warehouse and warehousing. It has more types of management abilities for goods compared with the traditional drive-in rack and achieves the function of first in first out and first in last out. The whole system is made up of dedicated shuttle rack and smart shuttle. It can also be combined with automatic stacking system to form the automatic storage system with higher integration level after function expansion.

It is very convenient to use the shuttle rack system. First, use forklift to put the shuttle at the front end of rail. The section of rail is oblique, which facilitates to place the shuttle. Then put the goods on the initial position of rail. Operate the controller at the moment and press the automatic warehousing button to transport the goods with pallet to the depth of rail to complete warehousing. When taking the goods out of the warehouse, place the goods on the initial position of rail and operate the controller and press the

automatic ex-warehouse button and the shuttle transports the goods to the end of rail and use forklifts to take off the goods to complete the ex-warehouse. Then turn to another channel for operation. The shuttle can realize switching of A/B sides to store and take goods at both ends of the rail.

The shuttle can store and take out goods according to need and specified quantity. During the period of waiting for forklifts or due to the need for arranging the warehouse, the shuttle can transport the pallets at the depth of rail to the delivery ends automatically to improve the efficiency of warehousing and ex-warehouse.

The smart shuttle equipped with HD high density shuttle storage system also has the statistics function. The operators send directives to shuttles through operating the feedback digital controller to make statistics for the quantity of actually-stored pallets of one lane. It can also obtain the total quantity of shuttle entering and leaves the warehouses during a time section and provide accurate statistics data for improving warehouse management level.



**PART2**  
MASTER RACKING



# MASTER SHUTTLE

智能型穿梭车介绍





### ❖ MASTER SHUTTLE 智能型穿梭车介绍

该智能型穿梭车为我公司自动化技术工程师独立研发并拥有完全自主知识产权的高科技产品。产品设计先进，配置高端，功能强大，装配精良。关键的电机、减速机、驱动器、控制器，回馈式数显遥控器、激光感应测距器等核心光电组件等均采欧美进口高品质组件，和国内普通穿梭车相比具有承载大、速度快、配置高、功能全的特点。穿梭车外型为重金委托专业工业设计公司设计，外观新颖，符合人机工程学原理要求。

### ❖ Introduction to smart master shuttle

The smart shuttle is a high-tech product developed by automatics engineers of our company independently with full proprietary intellectual property rights. The product features advanced design, high-end configuration, powerful function and excellent fitting. The core optoelectronic components such as key motor, reducer, driver, controller, feedback digital controller, and laser induced telemeter adopts quality components imported from Europe and U.S. Compared with domestic common shuttles, the product has characteristics of large bearing capacity, quick speed, high configuration and complete functions. The appearance of shuttle is designed by heavy metal entrusted professional Industrial design company. The novel appearance conforms to the principle and requirement of Man-Machine Engineering.



# 1 MASTER SHUTTLE 智能型穿梭车

## 外观及功能键介绍

### APPEARANCE AND FUNCTION OF MASTER INTELIGENT SHUTTLE



- |                                       |                              |
|---------------------------------------|------------------------------|
| 1、故障报警 Failure warning                | 9、激光测距 Photoelectric ranger  |
| 2、运行指示 Running                        | 10、注册商标 Registered trademark |
| 3、A / B面标识 Identification of A/B face | 11、激光测距 Photoelectric ranger |
| 4、减速制动感应器 Deceleration sensor         | 12、启动按钮 Start                |
| 5、行走轮 Road wheel                      | 13、停止按钮 Stop                 |
| 6、导向轮 Guide pulley                    | 14、蜂鸣器 Hummer                |
| 7、电池盖板 Battery cover                  | 15、显示窗口 Display window       |
| 8、举升台板 Lift table                     | 16、低电量报警 Low battery warming |

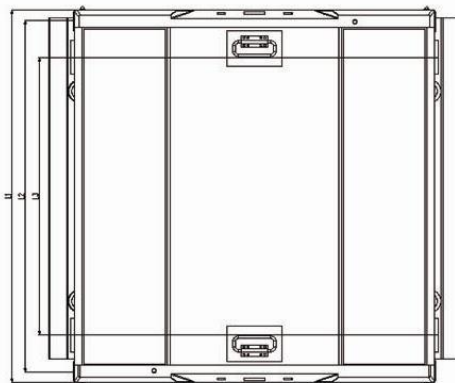
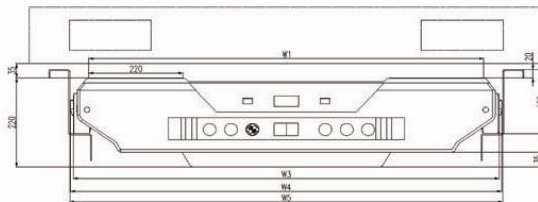


## 2 MASTER SHUTTLE 智能型穿梭车

### 尺寸介绍

#### SIZE INSTRUCTION

MASTER RACKING  
HD-高密度穿梭车存储系统



托盘尺寸 (W*D)	W1	W3	W4	W5	L1	L2
1100*1100	920	994	1005	1010	1100	1040
1200*1000	920	994	1005	1010	1000	940
1200*1100	920	994	1005	1010	1100	1040
1200*1200	920	994	1005	1010	1200	1140

注：根据客户实际情况，可定制特殊尺寸产品

# 3 MASTER SHUTTLE 智能型穿梭车

## 3 技术性能参数

### TECHNICAL PERFORMANCE AND PARAMETERS

#### 概述 Overview

● 商标MASTER Trademark MASTER SHUTTLE	MS1	MS2	MS3	MS4
● 驱动方式 (德国电机) Drive mode (German motor)	电动 motor-driven	电动 motor-driven	电动 motor-driven	电动 motor-driven
● 提升电动机功率 (W) Power of lifting motor (W)	540	540	540	540
● 行走电动机功率 (W) Power of traction motor (W)	370	370	370	370
● 驱动电源 Drive power supply	磷酸铁锂 lithium iron phosphate	磷酸铁锂 lithium iron phosphate	磷酸铁锂 lithium iron phosphate	磷酸铁锂 lithium iron phosphate
● 遥控器 (回馈式) Controller (feedback type)	瑞典 Sweden	瑞典 Sweden	瑞典 Sweden	瑞典 Sweden
● 额定承载 (KG) Rated load capacity (KG)	1500	1500	1500	1500
● 传动方式 (提升) Transmission model (lifting)	齿轮 Gear	齿轮 Gear	齿轮 Gear	齿轮 Gear
● 传动方式 (行走) 四驱 Transmission model (traction) Quattro	链条 Chain	链条 Chain	链条 Chain	链条 Chain
● 操作方式 Operation mode	手动 (自动) Manual (automatic)	手动 (自动) Manual (automatic)	手动 (自动) Manual (automatic)	手动 (自动) Manual (automatic)
● 轴距 (MM) Wheel base (MM)	820mm	920mm	1020mm	1020mm
● 车身自重 Weight of shuttle (including battery)	240kg	240kg	260kg	260kg

## 规格 Specification

● 适用托盘长度 Length of applicable pallet	1000mm	1100mm	1200mm	1400mm
● 适用托盘宽度 Width of applicable pallet	1100mm	1200mm	1300mm	1400mm
● 起升高度 Lift height	35mm	35mm	35mm	35mm
● 荷载面长度 Length of load surface	1000mm	1100mm	1200mm	1400mm
● 荷载面宽度 Width of load surface	220mm	220mm	260mm	300mm
● 行走轮规格 Specification of travel wheel	Φ100mm	Φ100mm	Φ100mm	Φ100mm
● 导向轮规格 Specification of guide wheel	Φ70mm	Φ70mm	Φ70mm	Φ70mm
● 轮胎材料 Materials of tyre	尼龙 Nylon	尼龙 Nylon	尼龙 Nylon	尼龙 Nylon
● 轨道间距 Width of rail	1010mm	1010mm	1110mm	1210mm

## 性能 Performance (一)

● 空车速度 (米/秒) Speed of empty vehicle (m/s)	1.1	1.1	1.1	1.1
● 满载速度(米/秒) Full-load speed (m/s)	0.8~1.0	0.8	0.8	0.8
● 举升速度(秒) Lifting speed (s)	3.5	3.5	3.5	3.5
● 下降速度(秒) Descent speed (s)	3.5	3.5	3.5	3.5
● 空载加速度 No-load acceleration	0.8m/s <sup>2</sup>	0.8m/s <sup>2</sup>	0.8m/s <sup>2</sup>	0.8m/s <sup>2</sup>
● 满载加速度 Full load acceleration	0.6m/s <sup>2</sup>	0.6m/s <sup>2</sup>	0.6m/s <sup>2</sup>	0.6m/s <sup>2</sup>
● 加速距离 Acceleration distance	1m	1m	1m	1m
● 感应开关(德国) Inductive switch (German)	激光 Laser	激光 Laser	激光 Laser	激光 Laser
● 感应开关个数 Quantity of inductive switch	14	14	14	14



## 性能 Performance (二)

● 减速制动探测模式 Detection mode of retarding brake	激光探测 Laser detection	激光探测 Laser detection	激光探测 Laser detection	激光探测 Laser detection
● 前后托盘间距探测模式 Detection mode for distance of front and back pallets	激光探测 Laser detection	激光探测 Laser detection	激光探测 Laser detection	激光探测 Laser detection
● 前后托盘间距调整 Space adjustment of front and back pallets	根据货物调整 Adjust according to goods	根据货物调整 Adjust according to goods	根据货物调整 Adjust according to goods	根据货物调整 Adjust according to goods
● 单列托盘位最大进深 (米) Maximum depth of single row of pallets (m)	60	60	60	60
● 适用环境温度 Applicable environmental temperature	-30—50°C	-30—50°C	-30—50°C	-30—50°C
● 电池容量(AH) Battery capacity (AH)	80	80	80	80
● 电池个数(锂) Quantity of battery (lithium)	1	1	1	1
● 常温续航能力 Runtime at the normal temperature	>8H	>8H	>8H	>8H
● 低温续航能力 Runtime at low temperature	>6H	>6H	>6H	>6H
● 充电时间 Charge time	6H	6H	6H	6H
● 充电次数 Charge times	>1200	>1200	>1200	>1200

# 4 MASTER SHUTTLE 智能型穿梭车

## 功能介绍

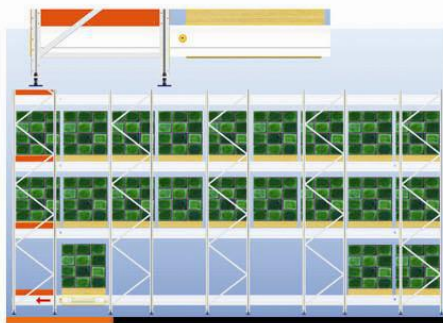
### FUNCTION INTRODUCTION

MASTER RACKING  
HD-高密度穿梭车存储系统

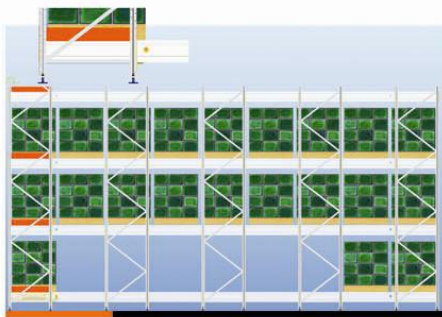
● 手动出入库 Manual warehousing and ex-warehouse	手动按遥控器实现单次出入库 Press the controller manually to achieve single warehousing and ex-warehouse
● 自动出入库 Automatic warehousing and ex-warehouse	手动按遥控器实现多次自动出入库 Press the controller manually to achieve automatic warehousing and ex-warehouse for many times
● 先进先出/后出 First in, first out/first in, last out	在单通道内实现单车两端出入货 Achieve warehousing and ex-warehouse at two ends of single lane.
● A/B面自动切换 Automatic switch between A/B sides	自动切换后不需双车交汇取货入货 After automatic switch, delivery and entry of double shuttles in turn is not in need.
● 蜂鸣寻车功能 Function to find shuttle with buzz	在目测视线外用蜂鸣器呼叫寻找穿梭车 Use buzz to search shuttles out of the reach of vision.
● 电量显示功能 Electricity amount display function	光电信号显示剩余电量，方便作业人员及时充电 The photoelectric sign displays the remaining electricity amount to facilitate the operator to charge in time.
● 移库功能 Function to move the warehouse	利用非出库时间整理通道内货物，提高效率 Arrange the goods in the lane using the non ex-warehouse time to improve efficiency.
● 指定数量出入库功能 Function to specify the quantity for ex-warehouse and warehousing	减少人为失误，减少人工操作遥控器次数 Reduce the human error and reduce the times of manual use of the controller
● 单通道托盘统计功能 Function to make statistics for the pallets of single lane	统计目测范围外的实际托盘位，方便仓库管理 Make statistics for the position of actual pallets out of the scope of visual range to facilitate the warehouse management.
● 工作日工作量统计功能 Function to make statistics for work amount on working days.	降低人工盘点工作量 Reduce the work amount of manual check
● 遇障碍物自动回原点功能 Function to come back to the original place when meeting obstacle.	安全，提醒作业人员检查处理障碍物情况 Safety and remind the operators to check and dispose the obstacle.
● 救援车救援功能 Rescue function of rescue car	特制的安全笼式救援车 Specially-made safety cage rescue car
● 和上位机系统无线通讯功能 Function to communicate with upper computer system	控制器和上位机系统联网，实现更多自动化功能 The controller is connected with the upper computer system to achieve more automatic function.

\* 本公司保留调整部分参数、数据的权利。

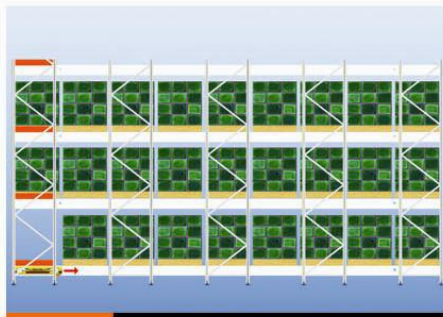
**5** MASTER SHUTTLE 智能型穿梭车  
**功能介绍示意图**  
**FUNCTION INTRODUCTION**



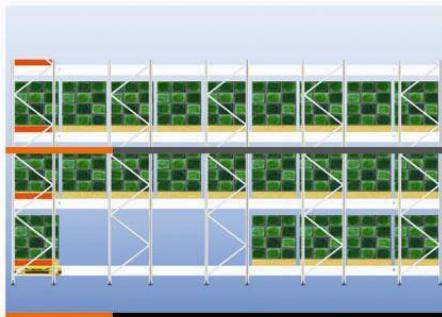
■ 减速位置



■ 停止位置

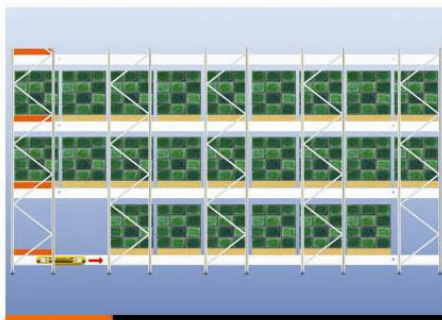


■ 批量连续出库

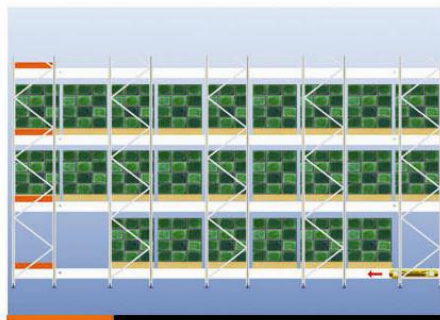


■ 批量连续出库

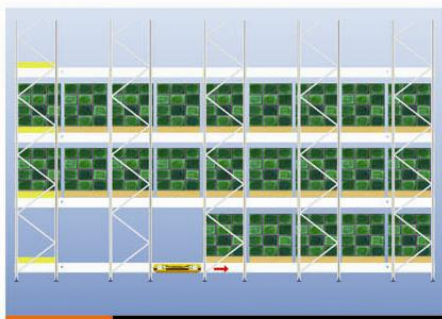




■ 托盘数盘点



■ 托盘数盘点



■ 移库



■ 移库

## PART3 MASTER RACKING

# HD - DEDICATED RACK SYSTEM

HD 专用货架系统

专门设计的货架系统可以和穿梭车进行良好的匹配。该货架系统由立柱片、连接件、专用牛腿式连接梁、专用镀锌轨道及立柱下端的可调节式底脚组成。为更好地方便叉车作业人员作业，在轨道初始端又设计了托盘限位梁，及叉车限位器，在轨道的两端轨道面上又安装了用于机械限位的安全挡片，确保小车的作业安全。

一体冲压焊接的牛腿连接梁将柱片及轨道连接起来，使货架连接成一个单元整体，根据层数不同设计了水平斜拉，不仅保证了货架各方向的精度，也大大提高了其整体稳定性及抗震设防强度。

穿梭车轨道为一次成型轧制的专用轨道，下层为穿梭车行走层，上层为托盘放置层，穿梭车轨道上部采用宽口设计，方便叉车将穿梭车放入轨道。

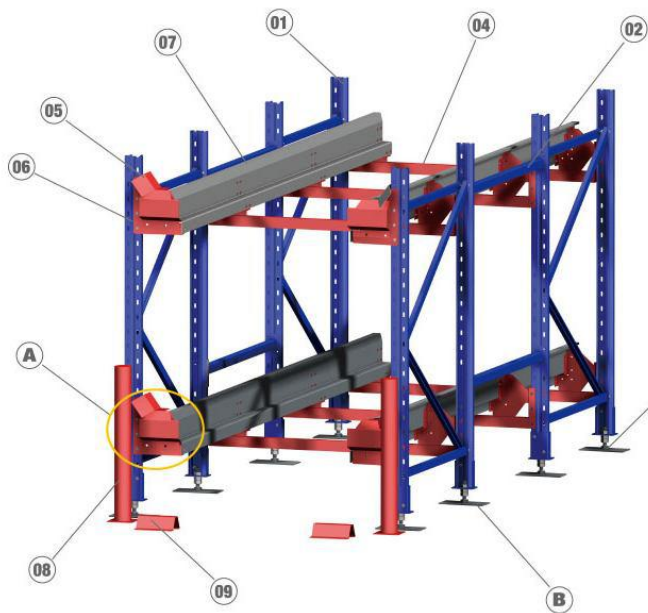
柱片底部的可调节式底脚设计为高强度螺栓，可以调节高度，不仅可以确保高度方向上的安装精度，还可以有效降低地面的不均匀沉降带来的影响。

The specially designed rack system can match with the shuttle perfectly. The rack system consists of pillar slice, connecting fitting, dedicated bracket-type connecting beam, dedicated zinc plated rail and the adjustable bottom studs at the bottom end of pillar. In order to facilitate the operation of forklift operators, the pallet limiting beam and forklift limiting stopper are designed at the beginning end of rail and the safety stopper is also installed on the orbit plane of rails for mechanical limiting to ensure the safe operation of shuttles.

The bracket-type connecting beam that is punched and welded wholly connects the pillar slices and rail, making the rack become one unit whole set. Horizontal diagonal pulling is designed according to different layer number, which not only ensures the precision of rack in all directions but also improves its overall stability and seismic fortification intensity.

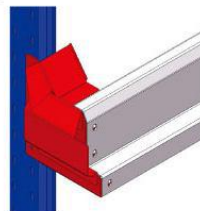
The rail of shuttle is the dedicated rail that is made by one-step molding. The bottom layer is the travel layer of shuttle and the top layer is the layer to place the pallets. The top of shuttle rail adopts wide mouth design, which facilitates to place the shuttle onto the rail.

The adjustable bottom studs at the bottom of pillar slice are designed with high strength bolts with height adjusted. It not only ensures the installation precision in the height direction but also reduces the influence brought by differential settlement of ground effectively.

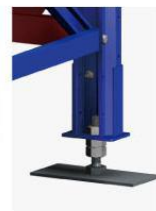


1. 立柱 upright
  2. 连接杆 link pole
  3. 可调底脚 adjust foot
  4. 横梁 beam
  5. 托盘导向板 guide board
  6. 牛腿 arm
  7. 导轨 rail
  8. 防撞杆 frame protector
  9. 叉车定位板 guide plate of forklift
- A. 牛腿部件放大图 enlarge view of arm  
 B. 底脚部件放大图 enlarge view of upright foot

03



A视图



B视图

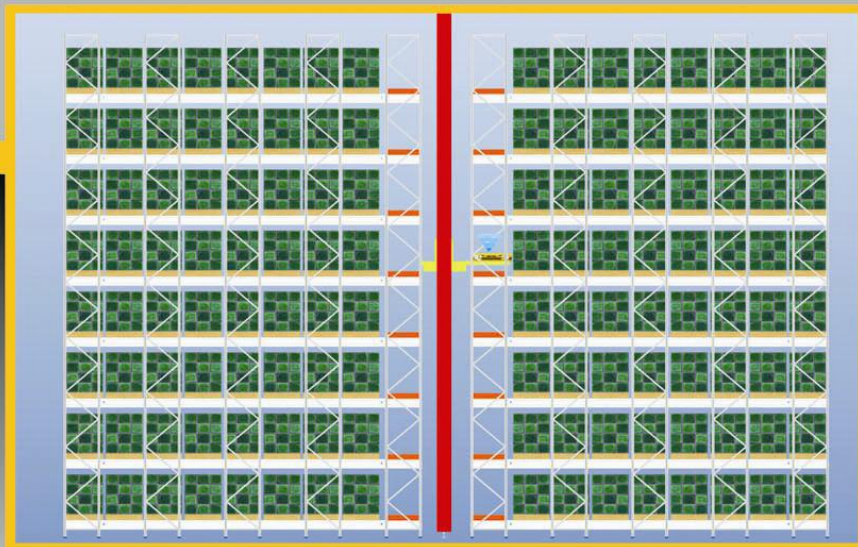


**PART4**  
MASTER RACKING



# HD-PALLET SHUTTLE STORAGE SYSTEM

HD- 穿梭车高密度自动化存储系统



WMS 系统



无线网络通讯



WCS 系统



输送系统

HD- 高密度穿梭车存储系统运行示意图

### ❖ HD- 穿梭车高密度自动化存储系统

因叉车的举升高度的限制，在 10 米多以上的货架系统在选择叉车时面临选车难的情况，而且叉车的作业效率、举升重量也大打折扣，为解决此问题，以便更大程度地发挥穿梭车系统的优势，特引入了传统的 AS/RS 自动化存储系统，该系统的堆垛机、输送以及自动控制（WCS）单元和带有通讯功能的穿梭车结合在一起，在实现全自动化存取的同时，最大限度地发挥穿梭车存储密度大的特点，达到存储量大，出库效率高，减少操作人员的好处，同时还可以优化 WMS 管理系统的管理功能，实现精益科学管理。

### ❖ HD-Pallet Shuttle Storage System

Due to the forklift lifting height limited, for the racking system higher than 10 meters it faced to a difficult in choosing forklift. Especially the forklift operation efficiency and loading capacity also had limited. In order to solve this problem and give greater scope to the advantages of pallet shuttle system, our company introduced the AS/RS automatic racking system. In this system the stacker, conveyor, WCS together with the pallet shuttle which has communication function can realize of automatic access. At the same time it can maximize the storage density to achieve large storage capacity, high efficiency, reduce labor but also can optimize the WMS management function and realize scientific management.

# PART 5

MASTER RACKING



# THE CHARGING PROCESS SKETCH MAP

充电过程示意图



**1**  
电池放入充电柜中

Master Shuttle

**2**  
充电进行中.....

Master Shuttle

**3**  
充电完毕，取出电池

Master Shuttle



**PART6**  
MASTER RACKING

**CASE PRESENTATION**

案例介绍





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