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RAILTECO WEBSITE www.railteco.com

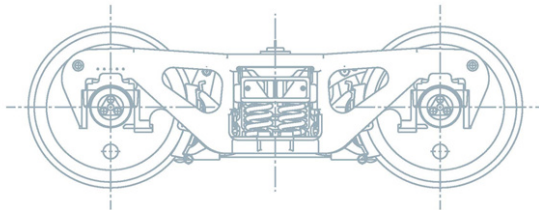
WHEELSWORLD WEBSITE www.wheels-world.com



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Railteco

DESIGN MANUFACTURE QUALITY SERVICE



RAILTECO ***EQUIPMENT***

ROLLING STOCK PARTS INTRODUCTION

ABOUT RAILTECO

Jiangsu Railteco Equipment Co., Ltd. was established in 2012, which is a professional manufacturer focus on rail transportation equipment products. Railteco is principally engaged in the design, production, maintenance, sales and service of railway equipment products, such as freight wagon, passenger car (coach), accessories of freight wagon and passenger car, coach interiors and locomotive accessories.

Headquarters of Railteco which locates in Economic and Technological Development Zone, Zhangjiagang City, Jiangsu Province, is responsible for group management and core equipment product design, processing, integration, quality control, project management and sales work. Railteco owns two subsidiaries: **Anhui Railteco** locates in Tongling city, Anhui province, which is mainly responsible for axle forging and rail transit maintenance equipment manufacturing; **Suzhou Railteco** is mainly responsible for the design, processing, integration and project management of railway automation system.

Railteco's top management team developed a strategy of "Overseas first & domestic later, and gradually to the city rail market; wheel & axle first and parts later, and gradually to the complete vehicle market," confirmed a business policy of "Technology is the core, market is the guider, quality is the assurance, production is the auxiliary", persist in the core competition concept of "Quick Response, Fast Delivery and Comprehensive Service", fully taking the management of excellent enterprises as reference, using the advanced management methods at home and abroad, playing the advantages of private enterprises mechanism, winning the opportunities for the company's rapid and steady development.

Railteco has been approved as a high-tech enterprise in 2015, and also got IRIS (international railway industry standard) quality management system certification, the scope of certification is axle and wheel sets production for the rail transit; Railteco has got AAR M-1003 certification in the scope of A15 axles manufacturing, B33-1 wheels press-fit workshop - freight vehicles and B33-5 wheels and axles processing - freight vehicles; Railteco has obtained TSI certification in the scope of BA002 axles, BA004 wheel sets, Y25 Lsd1-K bogie and Y25 Ls1-K bogie; Railteco has obtained EN15085 certificate in the scope of bogies, underframes, wagon body and brake equipment; Railteco has awarded ISO 9001: 2008, ISO 14001: 2004, OHSAS18001: 2007 certifications, etc. Railteco also passed the supplier qualification from German DB customer and Alstom France. During business operation process, Railteco always adhere to the implementation of the industry's highest management standards, continuous improvement of the work, continuous improvement of products and service, to reach the maximum pursuit of customer satisfaction.

We are committed to build Railteco into an excellent manufacturer of China's private rail equipment, to provide better products and service for rail transport equipment industry.

RAILTECO QUALIFICATION AND CERTIFICATION

- ① AAR M-1003
- ② TSI FOR AXLE
- ③ TSI FOR WHEEL SET
- ④ TSI FOR Y25Lsd1-K Bogie, Y25Ls1-K Bogie
- ⑤ OHSAS 18001, 2007 Standard
- ⑥ ISO 9001, 2015 Standard
- ⑦ ISO 14001, 2015 Standard
- ⑧ EN15085 Welding Certificate
- ⑨ IRIS
- ⑩ GOST



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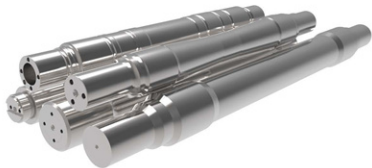
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AXLE

Railteco has a complete set of production equipment for forging, heat treatment and machining, and has formed a complete modern production line from raw materials to finished axles, which can be used to meet AAR, EN, UIC, GOST and other common standards by annual output of 30,000 pcs. Railteco's production control of axles starts from the re-inspection of the raw material axle steel, ensuring that the characteristics of the product meet the requirements of the user standard and the company's internal control (Pic.1). After qualified by the re-inspection process, the weight of each blank is accurately calculated by the software, and the automatic band saw is used to ensure the cutting accuracy (Pic.2).



Pic. 1



Pic. 2

After forging, the alignment is completed on the 4MN hydraulic straightening machine (Pic.3). After straightening, the axle enters the fully automatic suspension continuous heat treatment production line (Pic.4), and the heat treatment is performed by electric heating. The whole heat treatment process is completed by the system control. This method creates a uniform temperature environment for the axle heat treatment, which effectively ensures the execution of the heat treatment process.



Pic. 3



Pic. 4



Pic. 5



Pic. 6



Pic. 7



Pic. 8

After the tested axle enters into the machining process, the two ends and center hole are machined by a double-sided sawing machine (Pic.5) and a double-sided milling machine (Pic.6). After machining, axial ultrasonic testing is performed to ensure that the internal structure of the axle meets the requirements. The total length of the axle and the center hole are refined to meet the requirements of the run-out. Then the turning is started, the radial ultrasonic flow detection is performed after finishing the axle surface machining which is to further check whether the axle has defects. After passing the inspection, the axle end hole is processed.

In order to facilitate product traceability, the axle will enter the marking process according to the relevant standards and customer requirements. The axle journals, transition arc and wheel seat will be processed by the CNC grinding machine. After the processing is completed, the surface flaw detection is performed by a fully automatic magnetic particle flaw detector to ensure that the surface is free from cracks. In addition, Railteco also has the processing equipment and process experience of axle products with special process requirements, such as molybdenum coating (Pic.7), Hawking surface modification (Pic.8) and other processes.



RAILWAY MONOBLOCK WHEEL & STEEL TYRE

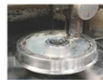
Railteco has been working with MA STEEL for many years and cooperatively complete the realization process of the wheels from raw materials to finished products. MA STEEL is a professional manufacturer of railway wheels and tires used in locomotives, coaches and wagons according to China's TB and other international standards such as AAR, ISO, EN, UIC, BS, JIS, IRS, GOST and KS.

MA STEEL undertakes the physical and chemical inspection of the wheels. Railteco is responsible for the continuous machining and inspection by a mature processing and testing production line (Pic.1).



Pic. 1

The rough machining process of the blank wheels is carried out by the CNC vertical lathe (Pic.2) to remove the surface forged oxidized black leather. After rough machining, the wheels shall be tested by the full immersion ultrasonic flaw detector (Pic.3) and then enter into the finishing process to the dimensional state required by the drawing.



Pic. 2



Pic. 3



Pic. 4

According to the standard demands, the surface hardness of the wheels is tested by a fully automatic digital display door hardness tester, and the wheels are statically balance detected by a centrifugal force vertical single-sided positioning static balance machine (Pic.4). Based on customer requirements, the automatic marking machine is used to mark the qualified wheels to ensure the traceability of the products. Finally, the surface of the finished wheels is tested by the automatic fluorescent magnetic particle flaw detector (Pic.5) to ensure no cracks on the surface. With the mature professional MES system, the full-size inspection data transmission of the wheels is completed, and then the wheels are packaged for delivery.



Pic. 5



Pic. 6



Pic. 7



Pic. 8

In addition, Railteco has equipment and capabilities for special wheels processing requirements such as oil hole machining (Pic.6), web plate hole machining (Pic.7), and bore grinding (Pic.8).



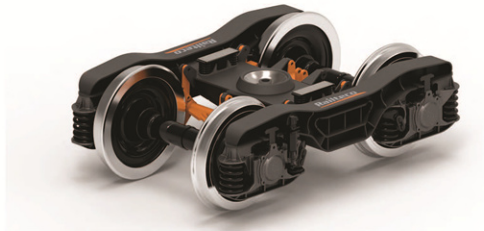
WHEEL SET

RAILTECO's annual wheelset output is over 10000 pcs which are used for railway wagon, passenger coach and locomotive in different gauges.

With professional quality control team, RAILTECO provides high quality wheel sets for worldwide clients.

Standards: TB/T 1463, AAR GII, UIC 813, EN 13260, BS 5892-6, AS 7517, JIS E4504 and Customer's Requirement.



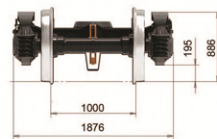
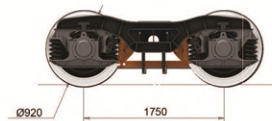


RTHZ22 Bogie (wagon)

Brief Description:

This kind of bogie is available to be used on the railway gauge of 1000mm. It is applied for new-making and servicing wagons. The axle load is 20t and the operating speed is 100km/h. The bogie consists of wheelset, axle box, suspension device, bogie frame, basic brake rigging, load-proportional device and etc.

The bogie frame is a welded fabrication with the character of high construction speed and low unsprung weight. By adopting spherical surface pivot bearing, the contact area between the pivot bearing of bogie and car body is enlarged. The load is equably distributed, and the ability of delivering longitudinal and transversal force is strengthened. By adopting suspension system of two level stiffness springs, the vertical stationarity of tare wagon is improved, so both of the tare wagon and laden wagon are with excellent dynamic performance. By adopting Lenoir devices, the requirement of different damping force of tare and laden wagon is satisfied preferably. By adopting elastic side bearing, the hunting motion stability of bogie is improved. By adopting block brake, acts on both sides of each wheel, the brake efficiency is improved and the block wear is reduced. By adopting weighing device, the automatic adjustment of brake force of tare and laden wagon situation is achieved.



Parameters:

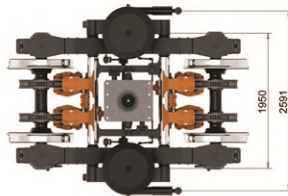
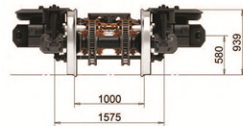
Gauge	1000mm
Axle load	16t 18t 20t
Tare weight	≤4.1t
Wheel base	1750mm
Running speed (Max)	100km/h
Diameter of wheels	Ø920mm



RTKZ00 Bogie (passenger car)

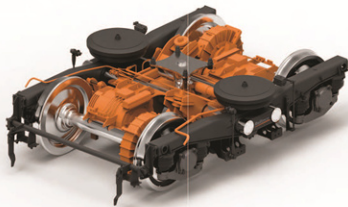
Brief Description:

This kind of bogie is mainly suitable for 1000mm gauge, maximum axle load is 14t, max-operation speed is 160km/h for passenger coach. The bogie is mainly composed of frame, wheelset, primary suspension system, secondary suspension system, hand braking system, braking system, traction device and auxiliary device, etc. The bogie frame adopts H type welding structure, the side beam is of U type structure. The wheelset adopts a diameter of $\varnothing 838$ mm wrought steel wheel. The wheel tread is of wear type according to UIC standard; The manufacture of axles and wheelset meets the requirements of EN13260 and EN13261 standards. The bearings on the bogie adopt SKF centripetal short cylindrical roller bearings; Each bogie is equipped with a grounding device at one end of the axle. The vertical suspension and the inside and outside double coil springs are adopted in the primary suspension, the axle box positioning adopts elastic joint rotary arm positioning device. Bolster spring device for a group of the single coil spring locating in the spring seat of the frame, the primary suspension system adopts pneumatic spring, there are two vertical hydraulic vibration damper and a transverse vibration damper between the bolster and the frame. The braking system adopts disc unit braking type. The traction force is transmitted by "Z" type anchor bar.



Parameters:

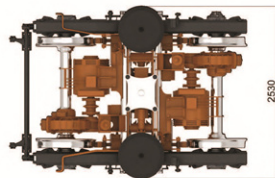
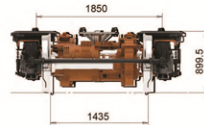
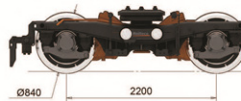
Gauge	1000mm
Axle load	$\leq 15t$
Tare weight	$\leq 6.4t$
Wheel base	2500mm
Running speed (Max)	160km/h
Diameter of wheels	$\varnothing 838$ mm



RTDZ16 Bogie (metro)

Brief Description:

This kind of bogie is two-axle bogie which is mainly designed for metro vehicle operating on the standard railway gauge of 1435mm. It has two categories of bogies, motor bogie and trailer bogie, both of which have a compact structure and good dynamic performance. The frame adopts a welding structure using the box type side beam and seamless steel tube crossbeam, showing "H" shape; The suspension system adopts rubber stack type spring and air spring. The two-stage spring for reducing vibration can offer a comfortable condition for the passenger; The motor bogie adopts three-phase traction motor and gear box for energy transmission; The center pivot and "Z" type draw-bar transmits traction and braking force from the bogie to the car body, and the braking system has four block brake units on each bogie, two of which are equipped with spring brake actuators for parking brake. Some trailer bogie is additionally equipped with an antenna for ATP system.



Parameters:

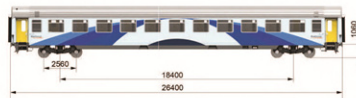
Gauge	1435mm
Axle load	≤14t
Tare weight	≤7t
Wheel base	2200mm
Running speed (Max)	80km/h
Diameter of wheels	840/770mm



Passenger Car

Brief Description:

It is a type of air-conditioned passenger car by speed of 160km/h, including both seat and sleeper cars, which is suitable for transporting passengers. The passenger car is mainly composed of car body (all-steel welded structure), bogies (Y32 MS type), coupler cushion device (UIC-compliant chain hooks and buffers), brake device (KNORR), rubber windshield, electric device, air conditioning system (UIC standard), doors&windows (UIC standard) and interiors.



Parameters:

Gauge	1435mm
Axle Load	20t
Tare Weight	35.4
Fixed number of seat car	88
Fixed number of sleeper car	20
Load capacity	63 t
Buffer height (new and empty)	1060±5 mm
Max. Operation speed	160km/h
Min. Curve radius	150 m
Length	26400 mm
Max. Width	2868 mm
Height (empty car)	4050 mm
Fixed distance	18400 mm
Bogie fixed wheelbase	2560mm
Water tank capacity	2×400L
Power supply	Power car (AC380+DC72V)
Heating and cooling equipment	Cool and warm air conditioner
Brake system	C3WI-P Distribution valve + hand brake

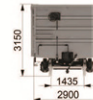


Open Top Wagon

Brief Description:

The wagon is mainly used for the transportation of coal, ore, building materials, machinery and equipment, steel and timber. In addition to the manual unloading it can also adapt to the mechanical unloading operations of a tipper.

- 1) The wagon adopts high-strength steel with a yield strength of 450 MPa, and has the characteristics of light weight and heavy load.
- 2) The wagon can meet the transportation requirements of 10000-ton Heavy-haul Train.



Parameters:

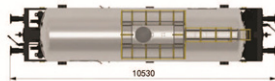
Tare weight	23t
Gauge	1435mm
Load Capacity	61t
Axle load	21t
Volume Capacity	73.3m³
Height from track surface to floor (unloaded condition)	1082mm
Height from track surface to coupler center line (unloaded condition)	880mm



Phosphoric Acid Tank Wagon

Brief Description:

Phosphoric acid tank wagon is specially designed and manufactured to transport phosphoric acid. Loading hatches is covered with manhole cover, unloading hatches is equipped with one 5 inches internal valve, T branch pipe and two ball valves. The wagon is loaded from the top after the top cover is opened. Top cover is manually operated from wagon top platform. The wagon is unloaded from the bottom hatches. Internal valve and ball valve manually operated from both wagon sides, each ball valve separately. The goods are unloaded from two sides of wagon. The tank and tank fittings adopt 316L stainless steel. The wagon design meets the requirements of EN, UIC standard.



Parameters:

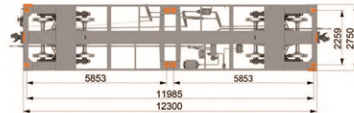
Tare weight	≤17.4t
Payload	43.6t
Capacity	27.5m³
Axle load(bogie)	18t
Track gauge	As per client
Maximum operating speed	80km/h
Length over coupler	10530mm
Rmin(single wagon)	70m
Break type	UIC
Coupler type	Screw coupler
Bogie type	Cast type
Hydro test pressure	0.459MPa
Safety valve working pressure	0.15MPa
Type of load	Top
Type of unload	Bottom(both sides)



2-TEU Container Wagon(1435 Gauge)

Brief Description:

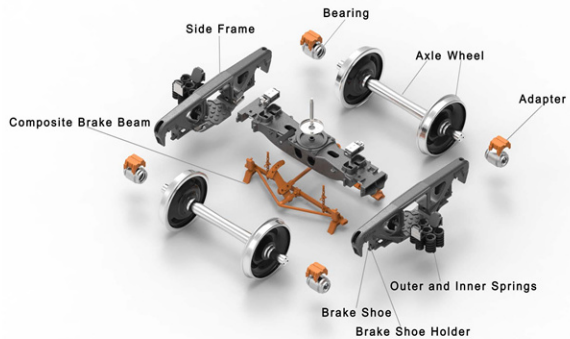
The container wagon is suitable for carrying 20' or 40' ISO containers.
The wagon design meets the requirements of AAR or TB standard.
The max. operating speed is 120km/h.
The container lock can prevent the container from flipping and jumping.
Carrying 2x20' ISO container or 1x40' ISO container.
The range of axle-load is from 16t to 23t according to client's requirement.



Parameters:

Tare weight	≤18t
Payload	61t(2 TEU)
Axle load(bogie)	≤23t
Track gauge	As per client
Maximum operating speed	120km/h
Length over coupler	13230mm (approximately)
Break type	As per client
Coupler type	As per client
Bogie type	Cast type or weld type

BOGIE PARTS



INTERIOR

Railteco has the design and supply ability from individual interior part to the whole vehicle interior, and is equipped with a professional installation team of 20 people to provide long-term support to Shanghai Alstom.

Interior parts: seat, floor, side wall, roof, window, door, toilet, air conditioning, smoke and other electrical systems.

