





Due to continuous technical updates, technical parameters are subject to change without notice.
The machine in the picture may include additional devices.
The pictures are for reference only, and the actual product shall prevail.



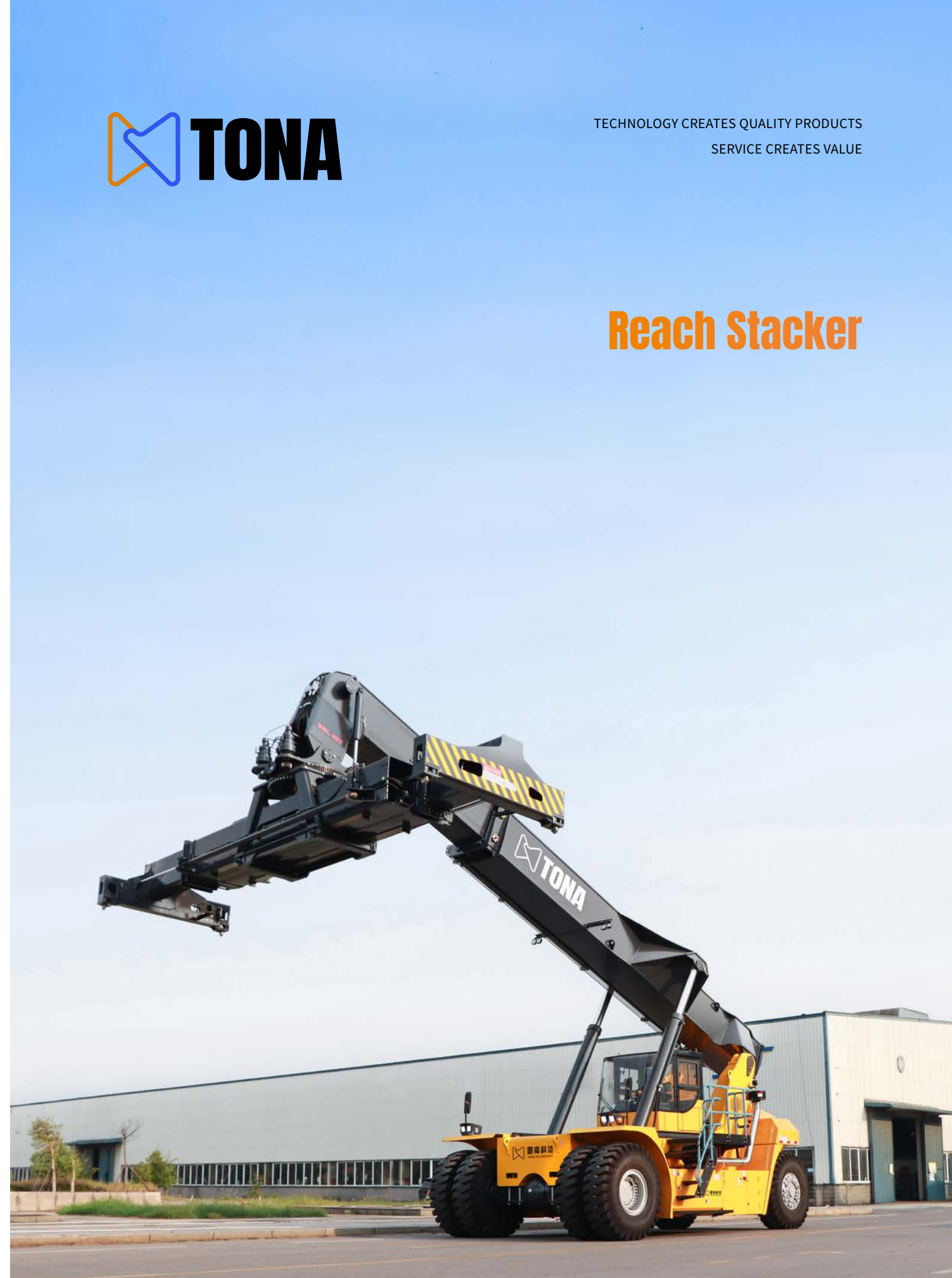
HUNAN TONA MACHINERY TECHNOLOGY CO.,LTD

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TECHNOLOGY CREATES QUALITY PRODUCTS
SERVICE CREATES VALUE

Reach Stacker



COMPANY PROFILE

Hunan Tona Machinery Technology Co., Ltd. was established in April 2019, and located in Changsha Economic and Technological Development Zone - a global high-end equipment intelligent manufacturing center. We are committed to providing customers with research and development, production, and technical services of complete container handling equipment, bulk cargo handling equipment, ship repair equipment, and customized equipment. We strive to become a leader in the customization of bulk container handling and high-end equipment.

Upholding the principle of innovation-driven development, the Company provides customers with excellent product and service value. Our R&D investment maintains a rapid growth of 30%. By virtue of strong R&D and innovation capabilities and long-term experience in construction machinery, while depending on the complete advantages of Changsha’s construction machinery industry chain, the Company currently enjoys a sound development in port equipment, bulk cargo handling, green ship repair, and product customization. The container rotating spreader, which is used for bulk cargo handling, stably ranks first in the domestic market share.



Company Vision

To be a leader in the customization of bulk container handling and high-end equipment



Service Concept

Success Lies in Quality
Service Determines the Future



Business Philosophy

Technology creates quality products
service creates value



Core Values

Innovation - Customer First
Specialty - Product First

As a high-tech enterprise, we always respond to national initiatives, actively promote the “intelligent, green and high-end” industrial transformation, and steadfastly pursue the technological innovation. We regard the transformation of independent research and development into scientific and technological achievements as the guiding beacon for the Company’s progress. The Company has been granted titles such as “National High-tech Enterprise” and “Provincial SRDI Small and Medium-sized Enterprise”, and has applied for and been authorized more than 30 patents.

With nothing save the clear sky above, and no obstacles
in the way, it starts upon its journey to the south



As a new generation of electric reach stacker, TR45E inherits the classic model TR45. It not only inherits the original core technology, but also integrates the new electric design, with remarkable features such as long battery life, excellent safety performance, high operating efficiency and low operating cost. It marks our continuous innovation and deeper development in the field of electrification.

Main Application: Loading, unloading and stacking operations of 20/40ft containers

Applicable Places: Ports, terminals, rail transit stations and road transit stations

01 HIGH ENERGY

- Lithium iron phosphate battery pack used as the power source for the whole machine, with industry-standard universal electric box and modular layout design, continuously operating for 10 hours (standard working conditions)
- Energy recovery technology

02 SAFETY

- Physic isolation between HV and LV wires, and isolation between hydraulic and high-voltage areas, ensuring safety
- Pipeline-based automatic fire extinguishing system, automatically powering off and extinguishing the fire upon triggering, without re-ignition

03 EFFICIENT

- Distributed motor direct driving system, having one motor directly to drive the machine to travel and two pump motors to control all actions of the machine; dual motors arranged in parallel, with good linkage, providing a good working experience for the operator
- National standard dual chargers provided to realize fast charging, with the maximum charging current up to 400A, fully the battery in about 2h

04 LOW CONSUMPTION

- Compared to fuel powered reach stacker, the electric reach stacker saves about RMB 250,000 (3,000 hours) per year
- The battery, motor, and electronic control system are durable and have low maintenance costs



TONA

ELECTRIC REACH STACKER

Inheritance of Classics Intelligent Manufacturing

TR45E Electric Reach Stacker

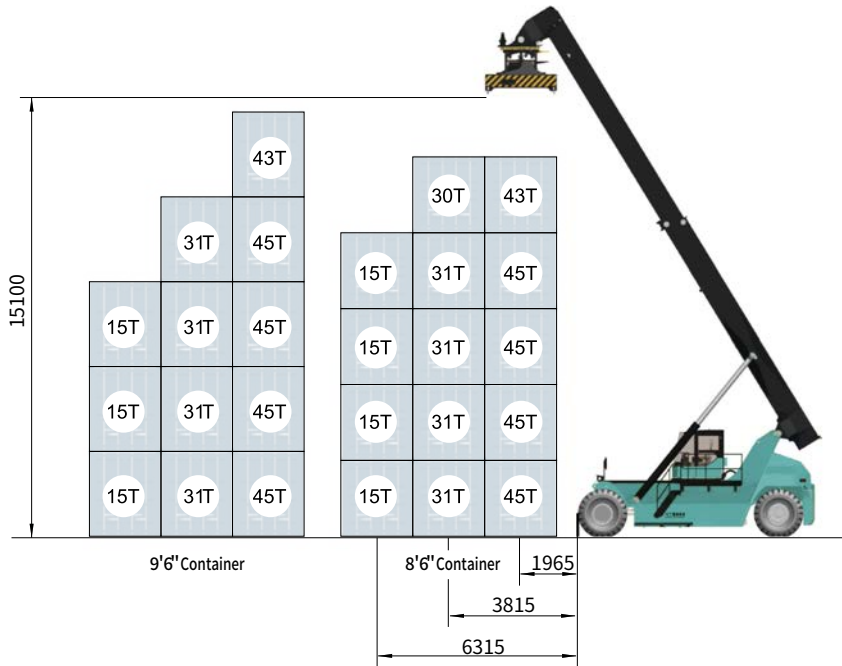
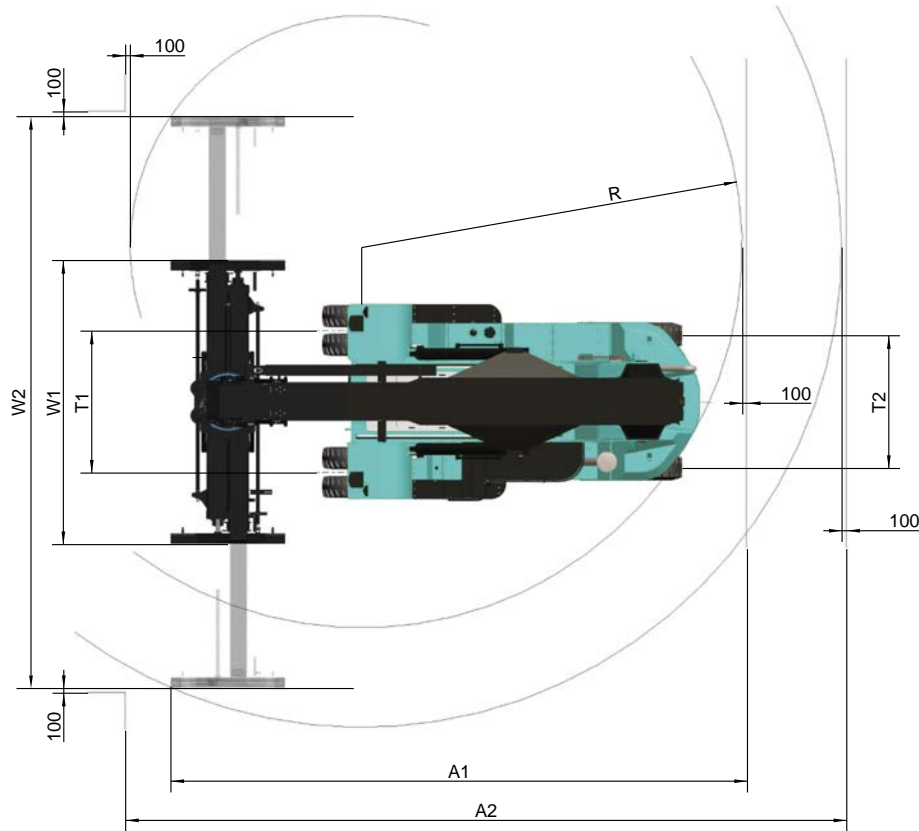
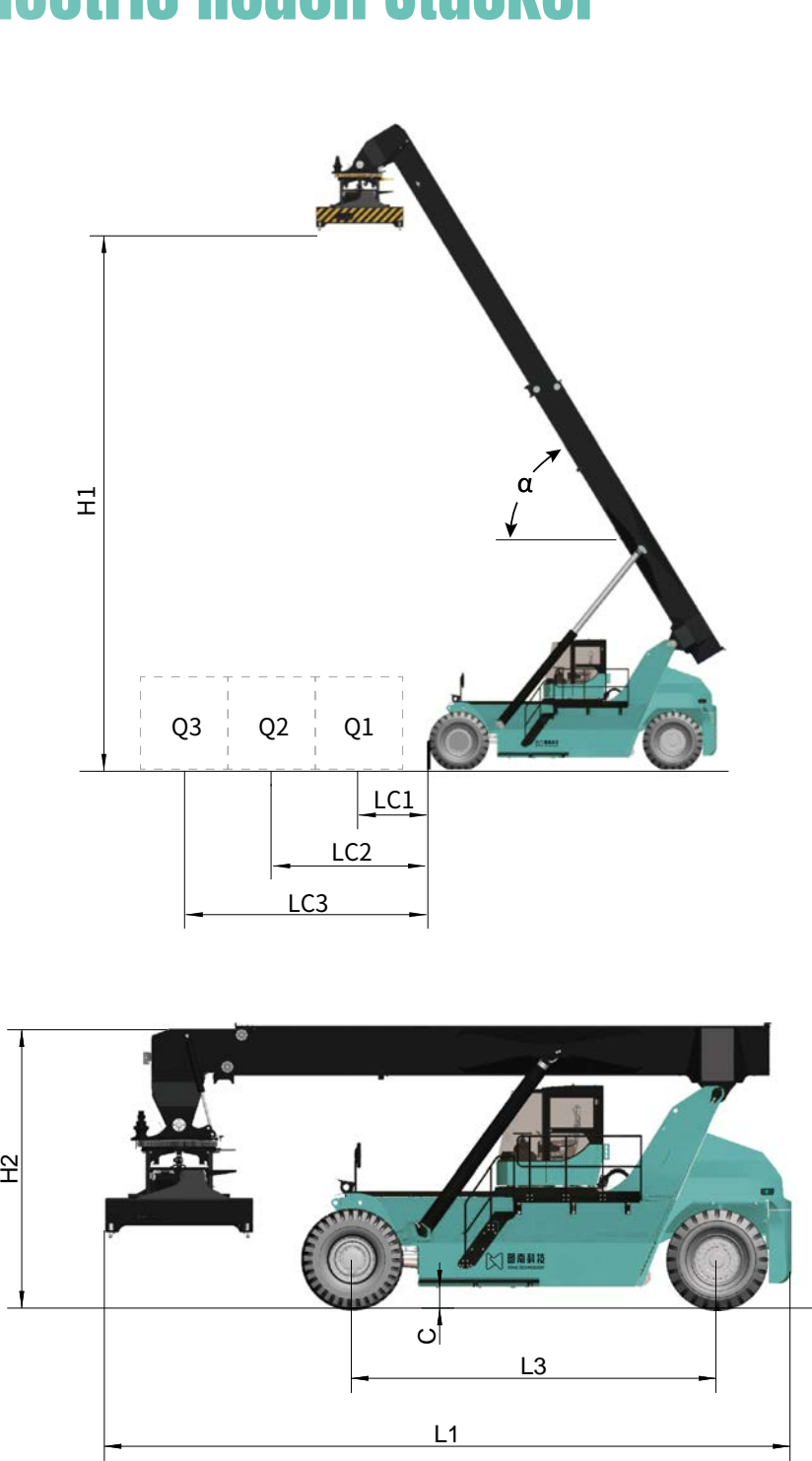
TECHNICAL PARAMETER

Parameter		Symbol	Unit	TR45E Series
Max. Load		-	t	45
Lifting capacity	The first row (outreach/max.Load)	Lc1/Q1	mm/t	1965/45
	The second row (outreach/max.Load)	Lc2/Q2	mm/t	3815/31
	The third row (outreach/ max.Load)	Lc3/Q3	mm/t	6315/15
	Max.Layer of stack (1-2-3 row, 8'6"/9'6")			5/5-5/4-4/3
Max.Hoist height		H1	mm	15100
Boom tilt angle		α	°	0~60
Performance parameters	Max.Hoisting speed (unloaded/loaded)	-	mm/s	420/250
	Max.Descending speed (unloaded/ loaded)	-	mm/s	400/360
Dimensions	Overall length	L1	mm	11570
	Overall width	W1/W2	mm	6053/12185
	Overall height	H2	mm	4720
	Wheel base	L3	mm	6000
	Wheel distance (front/rear)	T1/T2	mm	3025/2845
	Aisle width (20ft/40ft)	A1/A2	mm	10797/13715
	Min.Outside turning radius	R	mm	8000
	Min.Ground clearance	C	mm	320
	Overall weight		t	72
Drive line	Max. Travel speed (non-load/load)	-	km/h	20/15
	Grade-ability (non-load/load)	-	%	28/18
Noise level	Cab noise	-	dB(A)	70
Note	-	-	-	Electric Reach Stacker

CONFIGURATION PARAMETER

Parameter		Unit	TR45E1	TR45E2
Power source/brand		-	Lithium battery 618V/CATL	Lithium battery 580V/CATL
Battery capacity		kW · h	423	525
Battery model		-	12 C228 standard cases (4C)	15 C302 standard cases (5C)
Battery life		h	Actually 6h/theoretically 8h	Actually 8h/theoretically 10h
Charging configuration		-	320kW DC dual chargers (400A)	360kW DC dual chargers (400A)
Charging time		h	2	3
Motor	Make	-	CYAN Power	
	Traveling motor	kW	Rated 200/ Peak 308	
	Oil pump motor	kW	Rated 90/ Peak 130	
Drive axle model		-	WF0432A0	
Spreader	Model	-	TS450	
	Side shift range	mm	±800	
	Rotary angle	deg	-195/+105	
	Self-weight	kg	7800	
	Application	-	ISO 20´/40´/45´ Container	
Wheel	Front wheel size / quantity	-	18.00-25 40PR/4	
	Rear wheel size / quantity	-	18.00-25 40PR/2	
	Tyre pressure	MPa	1.05	

TR45E Electric Reach Stacker



TONA Reach Stacker is a special engineering machine for loading, unloading and stacking 20/40ft containers, and advantaged by high safety, reliability and flexibility, easy operation and good maintainability. It is applicable to small and medium-sized ports, rail transit stations and road transit stations, and can also be used as auxiliary transfer equipment in large container terminals. With different attachments, the Stacker can also handle and dump bulk containers, as well as lifting wind turbine towers, steel pipes and other objects.

TONA Reach Stacker comes with a number of international advanced technologies, such as intelligent decision-making anti rollover protection technology, spreader vertical lifting and quick return technology, spreader anti-collision technology, accurate weighing technology, and on-board printing system, so as to create more value for customers from the aspects of safety, reliability, efficiency and intelligence, as well as satisfying your demand.

TONA

Fuel Powered Reach Stacker

Create more value for customers



01 INTELLIGENT AND EFFICIENT

- Millimeter micro-control technology
- Spreader vertical lifting and rapid horizontal attitude return technology
- Flow regeneration technology, improving light load operation speed by 10%



02 SAFE AND RELIABLE

- Intelligent decision-making anti rollover protection technology, making operation safer
- Pipeline-based automatic fire extinguishing system, automatically powering off and extinguishing the fire upon triggering, without re-ignition, environmentally friendly and non-toxic
- Automatic reversing brake system: laser scanning, image recognition, enabling automatic alarm and active braking
- Professional cooling system: Isolation of cold and hot air ducts, cooling efficiency increased by 10%
- Based on dynamic simulation and finite element analysis, the device is made of high-strength steel plate, and the parts with high stress are reinforced, enhancing the overall structural strength of the machine
- Emergency start/stop function in line with European and American standards
- Optimized design of air filter purification system, greatly improving the service life of air filter
- CAN bus control technology, anti-interference, fast response



03 ENERGY SAVING AND ENVIRONMENTALLY FRIENDLY

- Load-sensitive technology, on-demand distribution, no excess waste flow, energy saving and consumption reduction
- Adaptive matching technology of power system and hydraulic system under different working conditions
- Intelligent control technology of original imported gearbox, smooth shifting, energy-saving and efficient



TONA

Reach Stacker



High strength boom

- High-strength plates welded into a frame structure, safe and reliable
- Externally controlled balance valve, with high control accuracy and smoother retraction
- Linkage design of spreader and boom, easy to control

Operator-centered human-machine interaction design

- Panoramic cab with wide view
- Effective relief of operating fatigue

Reasonable layout of operation buttons, making it easy to operate

Suspension shock-absorbing safety seat

HD LCD display

Industrial high-power cooling and heating air conditioner

Reasonable details Visible carefulness

- The solenoid valve joint at the pitching cylinder is a cable injection-molded joint, which is secure, anti-falling, and highly waterproof. A power indicator is provided to show the circuit condition, making it convenient for maintenance



- The spreader solenoid valve wiring harness joint adopts silicone sheath, which can withstand low temperatures up to -60 degrees



- Standard pre-filter and heightened air intake are provided, extending the life of the air filter element and reducing maintenance costs



Basic Test Study on Fatigue of Key Parts and Welds

- A large number of tests conducted to work out the load spectrum for the full working conditions of the reach stacker
- Fatigue test study made on welds of high-strength steel plate to develop standard welding process

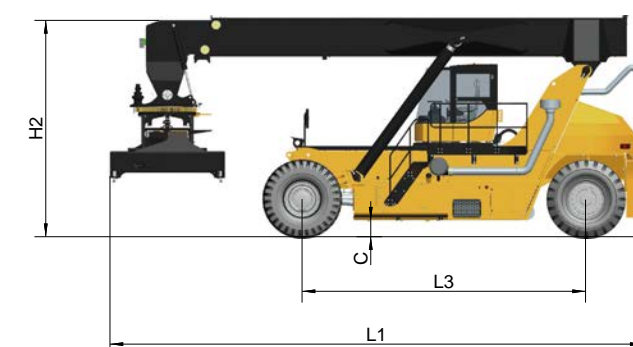
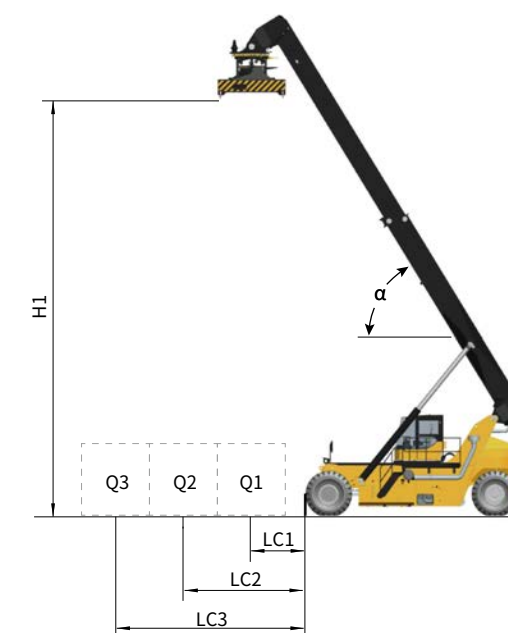
- The spreader telescopic cylinder is set at the side, so there is no need to disassemble the telescopic boom, and the spreader can be replaced directly
- When the spreader is extended to 40ft, the drag chain is fully extended, which is convenient for inspection and disassembly

- Separate hydraulic oil sources are used for the brake system and cooling system to avoid the risk of hydraulic oil cross-contamination

- The steering axle is made by cutting from a 200mm plate, reducing welding amount and bearing the stress better

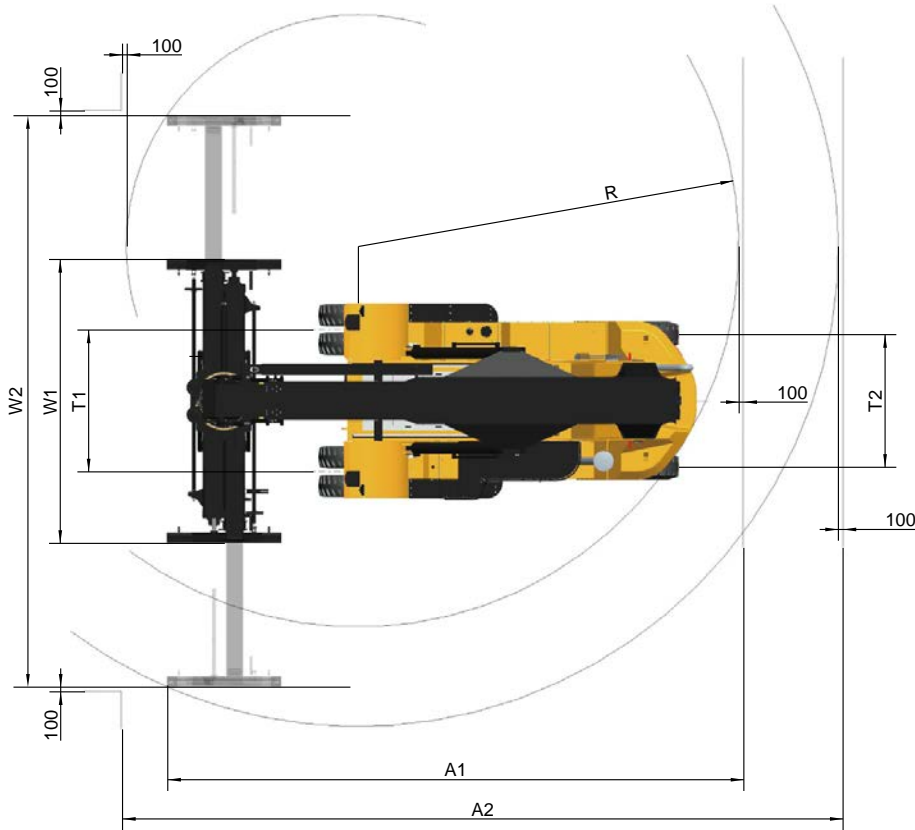
TECHNICAL PARAMETER

Parameter		Symbol	Unit	TR45	TR4535	TR4540	TR4545
Max. Load		-	t	45	45	45	45
Lifting capacity	The first row (outreach/max.Load)	Lc1/Q1	mm/t	1965/45	1965/45	1965/45	2100/45
	The second row (outreach/max.Load)	Lc2/Q2	mm/t	3815/31	3815/35	3815/40	3900/45
	The third row (outreach/ max.Load)	Lc3/Q3	mm/t	6315/15	6315/19	6315/31	6400/40
	Max.Layer of stack (1-2-3 row, 8'6"/9'6")	-	-	5/5-5/4-4/3	5/5-5/4-4/3	5/5-5/4-4/3	5/4-4/4-3/3
Max.Hoist height		H1	mm	15100	15100	15100	13600
Boom tilt angle		α	°	0~60	0~58	0~58	0~50
Performance parameters	Max.Hoisting speed (unloaded/loading)	-	mm/s	420/250	420/250	420/250	400/220
	Max.Descending speed (unloaded/loading)	-	mm/s	360/320	360/300	360/300	360/280
Dimensions	Overall length	L1	mm	10246	11845	12343	13270
	Overall width	W1/W2	mm	6053/12185	6053/12185	6053/12185	6053/12185
	Overall height	H2	mm	4578	4678	5230	5230
	Wheel base	L3	mm	6000	6500	7000	8000
	Wheel distance (front/rear)	T1/T2	mm	3048/2828	3048/2828	3060/2828	3060/3120
	Aisle width (20ft/40ft)	A1/A2	mm	10797/13600	12000/13600	12000/13600	14500/15200
	Min.Outside turning radius	R	mm	8000	8800	9500	10600
	Min.Ground clearance	C	mm	355	355	355	355
	Overall weight	-	t	72	76.5	89	96.5
Drive line	Max. Travel speed (non-load/load)	-	km/h	25/22	25/18	25/21	20/15
	Grade-ability (non-load/load)	-	%	40/32	38/24	27/18	26/17
Noise level	Cab noise	-	dB(A)	72	72	72	72
Note	-	-	-	Reach Stacker	Heavyweight Reach Stacker		



TECHNICAL PARAMETER

Parameter		Symbol	Unit	TR10	TRT40
Max. Load		-	t	10	40
Lifting capacity	The first row (outreach/max.Load)	Lc1/Q1	mm/t	1965/10	1965/40
	The second row (outreach/max.Load)	Lc2/Q2	mm/t	3815/9	3815/20
	The third row (outreach/ max.Load)	Lc3/Q3	mm/t	6315/5	/
	Max.Layer of stack (1-2-3 row, 8'6"/9'6")			6/5-5/5-4/4	3/3-2/2
Max.Hoist height		H1	mm	16200	9250
Boom tilt angle		α	°	0~64	0~46
Performance parameters	Max.Hoisting speed (unloaded/ loaded)	-	mm/s	450/400	420/250
	Max.Descending speed (unloaded/ loaded)	-	mm/s	400/400	360/300
Dimensions	Overall length	L1	mm	11000	10246
	Overall width	W1/W2	mm	6053/12185	6053/12185
	Overall height	H2	mm	4000	4578
	Wheel base	L3	mm	5000	6000
	Wheel distance (front/rear)	T1/T2	mm	3280/2450	3048/2828
	Aisle width (20ft/40ft)	A1/A2	mm	10000/13600	10797/13600
	Min.Outside turning radius	R	mm	6800	8000
	Min.Ground clearance	C	mm	355	355
	Overall weight		t	39	58
Drive line	Max. Travel speed (non-load/load)	-	km/h	28/25	25/22
	Grade-ability (non-load/load)	-	%	33/27	40/32
Noise level	Cab noise	-	dB(A)	72	72
Note	-	-	-	Empty Container Reach Stacker	Railway Reach Stacker

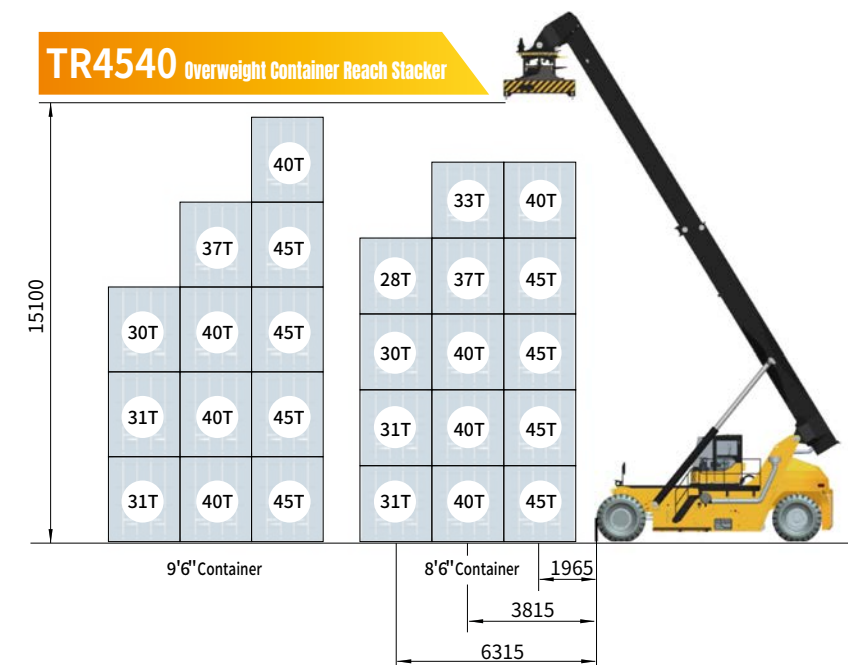
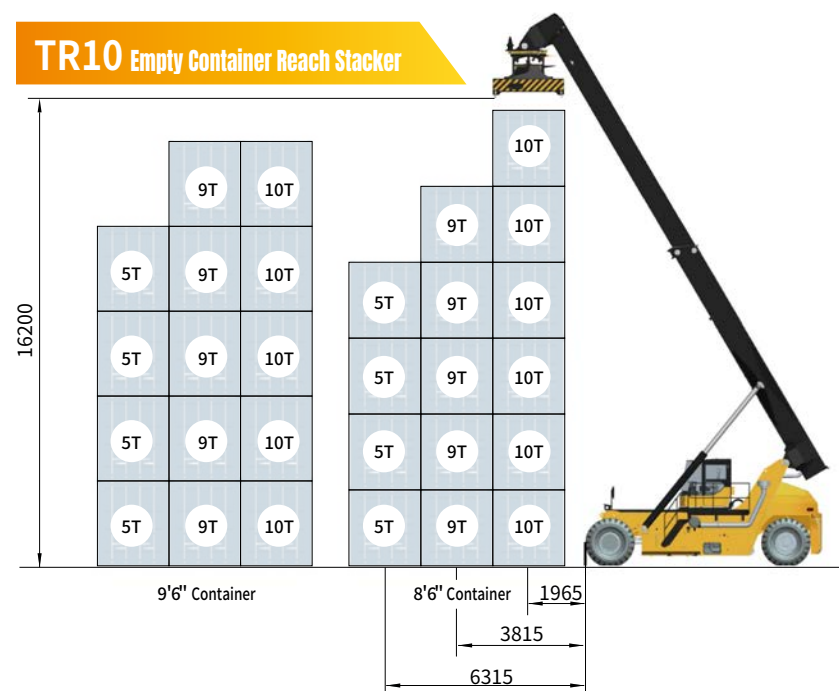
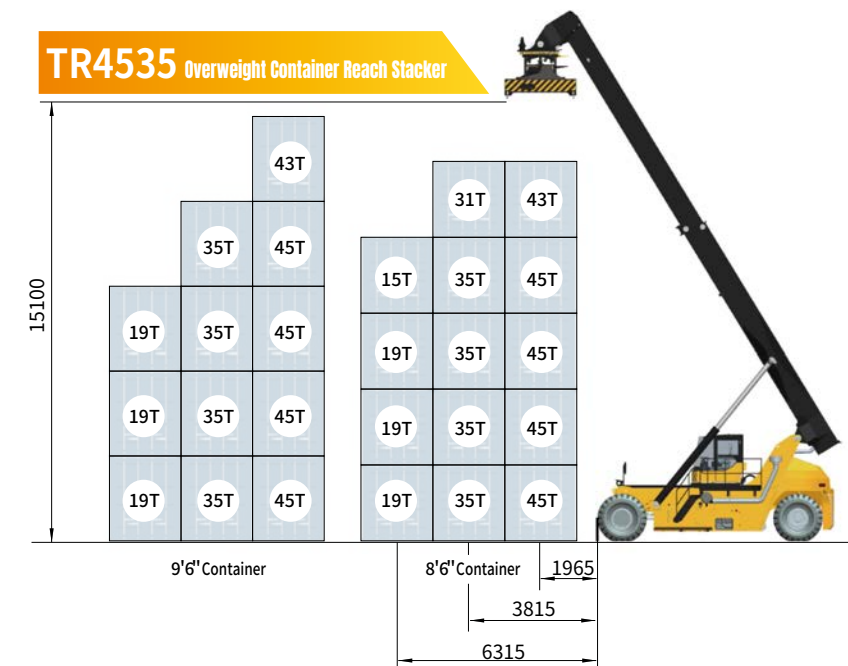
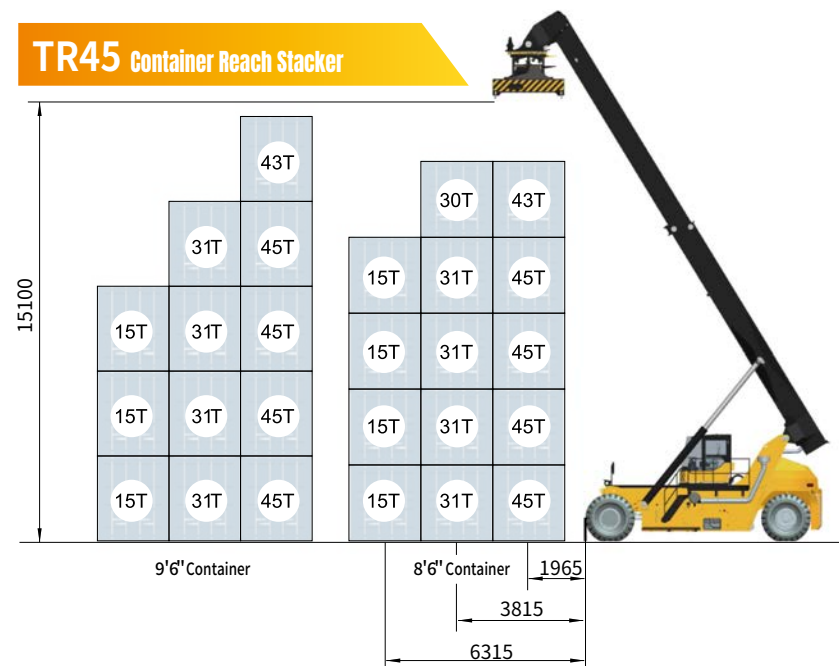


CONFIGURATION PARAMETER

Parameter		Unit	TR45				TR4535	TR4540	TR4545	TR10	TRT40
Engine	Model	-	VOLVO TAD1151VE	Cummins QSM11	Cummins X12CSIV	Cummins X12	Cummins QSM11			Cummins QSB6.7	Cummins QSL8.9
	Rated power	kW@rpm	265@2100	250@2100	261@2100	261@1900	250@2100			164@2100	264@2100
	Rated torque	Nm@rpm	1785@1260	1674@1400	1830@1350	1800@1300	1674@1400			949@1100	1500@1100
	Emission standard	-	Stage III /Tier3	Stage III /Tier3	China Stage IV	StageV	Stage III /Tier3			Stage III /Tier3	Stage III /Tier3
Gearbox	Model	-	DANA 15.5HR36432	DANA 15.7TE30510			DANA 15.7TE30510			DANA13.7HR32334	DANA 15.7TE30510
	Gear number (forward/backward)	-	4/4	5/3			5/3			3/3	5/3
	Type	-	Electric control, Hydraulic torque converter, Power shift				Electric control, Hydraulic torque converter, Power shift			Electric control, Hydraulic torque converter, Power shift	
	Operating method	-	The electro-hydraulic control				The electro-hydraulic control			The electro-hydraulic control	
Drive Axle		-	WF0432A0				Kessler D102	Kessler D106		Kessler D81	WF0432A0
Spreader	Model	-	TS450							TS10E	TS400
	Side shift range	mm	±800							±600	±800
	Rotary angle	deg	-195/+105							-195/+105	-195/+105
	Self-weight	kg	7800							4700	7800
	Application	-	ISO 20´/40´/45´ Container							ISO 20´/40´/45´ Container	ISO 20´/40´/45´ Container
Wheel	Front wheel size / quantity	-	18.00-25 40PR/4				18.00-33 36PR/4	21.00-35 36PR/4		14.00-24 28PR/4	16.00-25 32PR/4
	Rear wheel size / quantity	-	18.00-25 40PR/2				18.00-33 36PR/2	21.00-35 36PR/2		14.00-24 28PR/2	16.00-25 32PR/2
	Tyre pressure	MPa	1.05				1.05	1.05		1.05	1.05

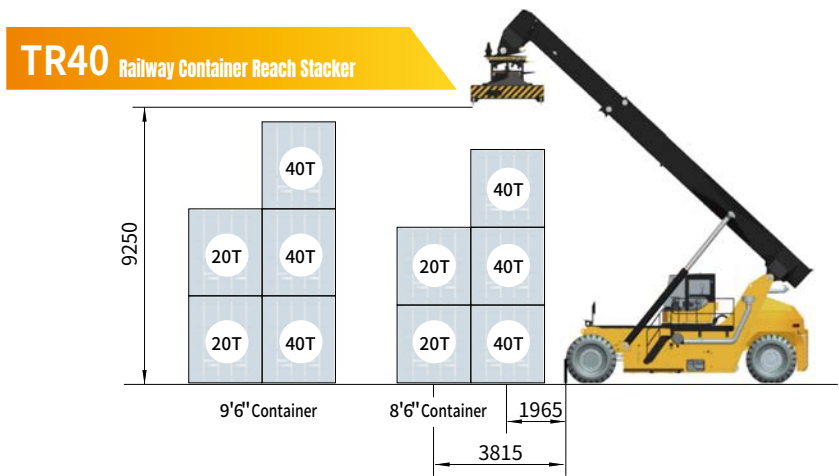
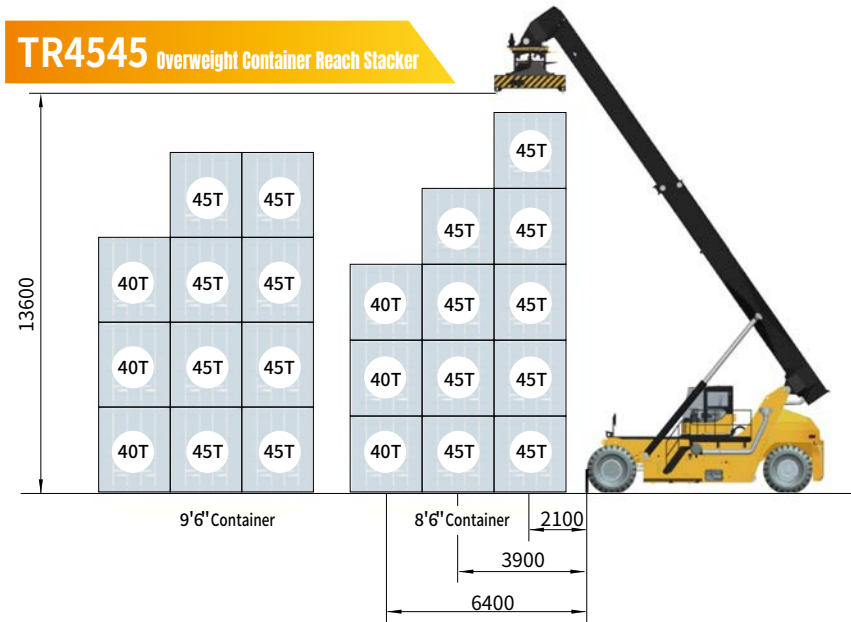
LOAD CAPACITY DIAGRAM

Unit: mm



LOAD CAPACITY DIAGRAM

Unit: mm



ADD-ON OPTIONS

S/N	Functions	NOTE
1	Hydraulic oil heat-ing system	Mainly used in extreme cold areas, recommended to be used in the areas with ambient temperature below -15 °C , and must be equipped in areas with ambient temperature below -30 °C
2	Assistant driver seat in the cab	Assistant driver seat equipped
3	Spreader guide mechanism	Guide plate makes it more convenient to align the spreader with the container
4	Twistlock counting system	Spreader twistlock timer
5	Accurate weighing and unbalance loading protection system	Add an accurate weighing system and provide unbalance loading protection based on the weighing results
6	Automatic centralized lubrication system	Use a lube oil pump for multi-point simultaneous lubrication
7	Engine hourmeter	Engine operating timer
8	Rear counterweight warning light	Add a warning light on the rear counterweight
9	Reading light in cab	Install a LED light on the cab top
10	Container alignment detection system	Before loading, visually recognize and calculate the position deviation between the container and the train carriage, and guide the operator to center the container and place it in the train carriage
11	Radios	Installed in the cab
12	Spreader anti-collision system	Add protection between the spreader, boom and crane, and install an encoder on the spreader
13	Automatic power cut-off system in case of fire	A device to cut off the power supply in case of fire
14	Power-assisted cab movement system	Add the power-assisted function of cab movement

ATTACHMENT OPTIONS

More attachments can be customized to satisfy the diverse needs of customers



TS450

Standard Container Spreader

Rated load: 45t

Applicable container type: ISO standard 20'/40'/45' containers

It has comprehensive safety protection and high cost performance, suitable for stacking and loading/unloading operations of ISO standard 20'/40'/45' containers, meeting the diverse needs of customers.



TG450

20' Container Spreader

Rated load: 45t

Applicable container type: ISO standard 20' container

- 20' container operation, cost-effective
- Provide both mechanical and electronic protection
- Compact structure, safe and reliable



TG200

Steel Pipe Spreader

Rated load: 4.2 × 3t

Applicable object: Steel pipe

- The left and right beams of the spreader can be extended and retracted so as to lift the steel pipes of different lengths
- Two hooks on the outside of the spreader can be power-assisted to move and adapt to different pipe diameters



TGJ350

Steel coil spreader

Rated load: 35t

Applicable object: Steel coil

Compact structure, safe and reliable



TST350

Tilt Spreader

Rated load: 35t

Applicable object: ISO standard 20' container

Tilting angle: 0° to 55°

- Suitable for side dumping of bulk cargo
- No bulk cargo falls or scatters to the ground in the handling process.
- Provide both mechanical and electronic protection



TRQ380

Rotating Spreader

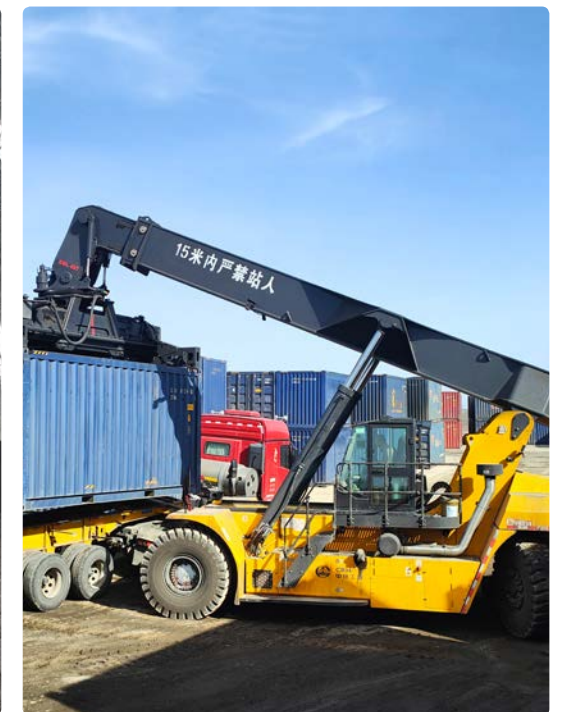
Rated load: 38t

Applicable container type: Open top container

Rotating angle: -10° to 220°

- Suitable for top dumping of bulk cargo
- No bulk cargo falls or scatters to the ground in the handling process
- One-click shaking function can be configured to solve the problem of incomplete loading and unloading of bulk cargo
- Provide both mechanical and electronic protection

CONSTRUCTION CASES



AFTER-SALE SERVICE

Service Concept: Success lies in quality, service determines the future

Performance Pledges and Specific Measures:

- Provide standardized customer operation training and equipment maintenance training.
- Offer 24h phone and video-based guidance for free to improve the troubleshooting speed and repair efficiency of customers.
- Actively inspect equipment at fixed periods and provide standard inspection forms for record keeping.
- Set up an exclusive accessories warehouse based on customer needs.

