



HNRS 450

Reach Stacker



## Advanced Technology Excellent Truck Quality

With multiple advantages, the truck has high safety / high efficiency / high precision and high stability performances. Integrated operating system ensure the truck highly productive .

### Hydraulic system of DM450 Reach Stacker

World class Linde hydraulic company is the famous hydraulic solution supplier which supplies the high-quality/high precision / high reliability hydraulic products.

DM450 is equipped with Linde pump and control valve, these parts are specially developed for reach stacker, with load sense control circuit saving energy, precise control, low resistance and long life time, this excellent hydraulic system fully support truck excellent performance.

Intelligent hydraulic oil cooler can ensure the stable oil temperature and avoid the tremendous changing of the oil, prolong the oil lifetime to save money.

### Full Can-bus Control System

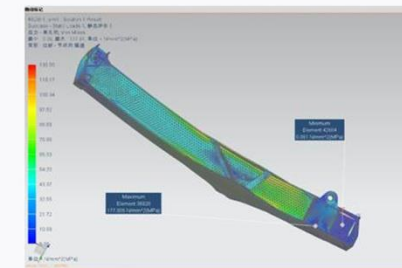
DM450 reach stacker is equipped with full Can-bus control system.

The engine/ transmission/ electric system/ hydraulic system/ loading safety system/ spreader system are all integrated in the Can-bus system, all devices are monitored at real time. Parker control units ensure the system reliable and flexible.

## Advanced Technology Excellent Truck Quality



### Rigorous design process



FEM analysis supported design provides high strength of chassis and boom, make whole truck stable and robust.

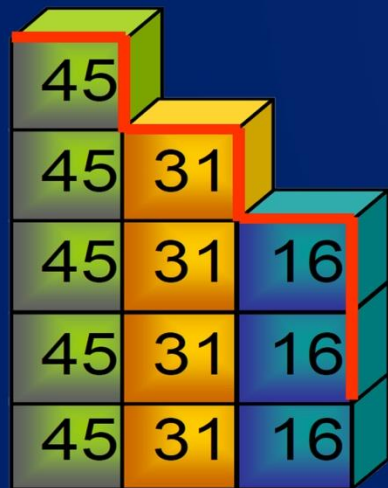
### Core technology



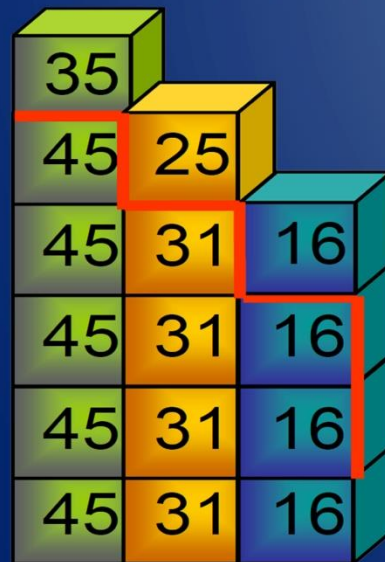
- Dynamic anti-tip over protection
- Load sense hydraulic system
- Vertical lifting function
- Errors automatic detection and real data showing technology
- Anti-collision protection for spreader and boom
- Full Can-bus communication
- Movable cabin
- Separate brake tank
- Pressurized hydraulic tank

## Stacking Experience Creating Excellence

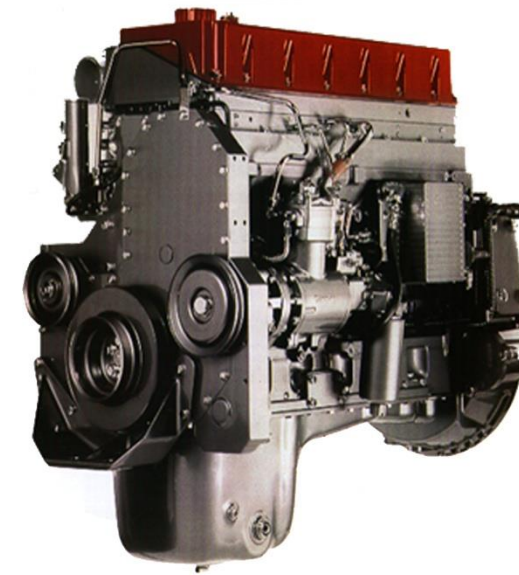
5high 9'6" containers



6high 8'6" containers



## High Quality Powerful Engine



Equipped with Cummins engine, with full electrical control system to ensure economic fuel consumption

Equipped with turbocharger to improve the truck power and engine efficiency

Strong power to meet various working condition

Comply with EU stage III gas emission standard

Full lubrication performance to ensure the low noise level

The electric engine protection system shutdown the engine to avoid the damage when low lub-oil pressure / high temperature



## Spacious Driving Environment



- The cabin adopts the latest ergonomic design, simple & elegant, spacious & comfortable.
- Equipped with large-color display for easy reading the real status of the truck.
- Firm cabin design to ensure the safety and comfort of the operator. Good tightness, the doors & windows can be opened & closed easily and firmly.
- Equipped with multi-function joystick, All the control are at your fingertips.
- Equipped with multi-function joystick, All the control are at your fingertips.
- Equipped with Air-Conditioner with heating function to suit working in all climates.

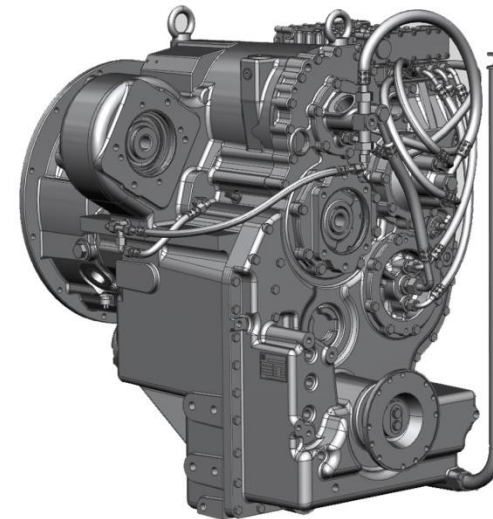
## Touch-sensitive / High resolution Color Display



A reliable color display shows the lifting weight/ boom angle/ lifting height/ main pressure/ engine status / oil level/ error codes etc. all important information.

The quick responding controller helps the operation high efficiency.

## The Automatic Transmission



- ◆ZF automatic transmission
- ◆Auto-gear transmission with 5 forwards / 3 reverse speed, makes the truck operation smooth and good economic performance
- ◆Minimum maintenance, long life time
- ◆Inching function ensure the accurate approaching performance
- ◆Reversing interlock, speed controlled downshift protection

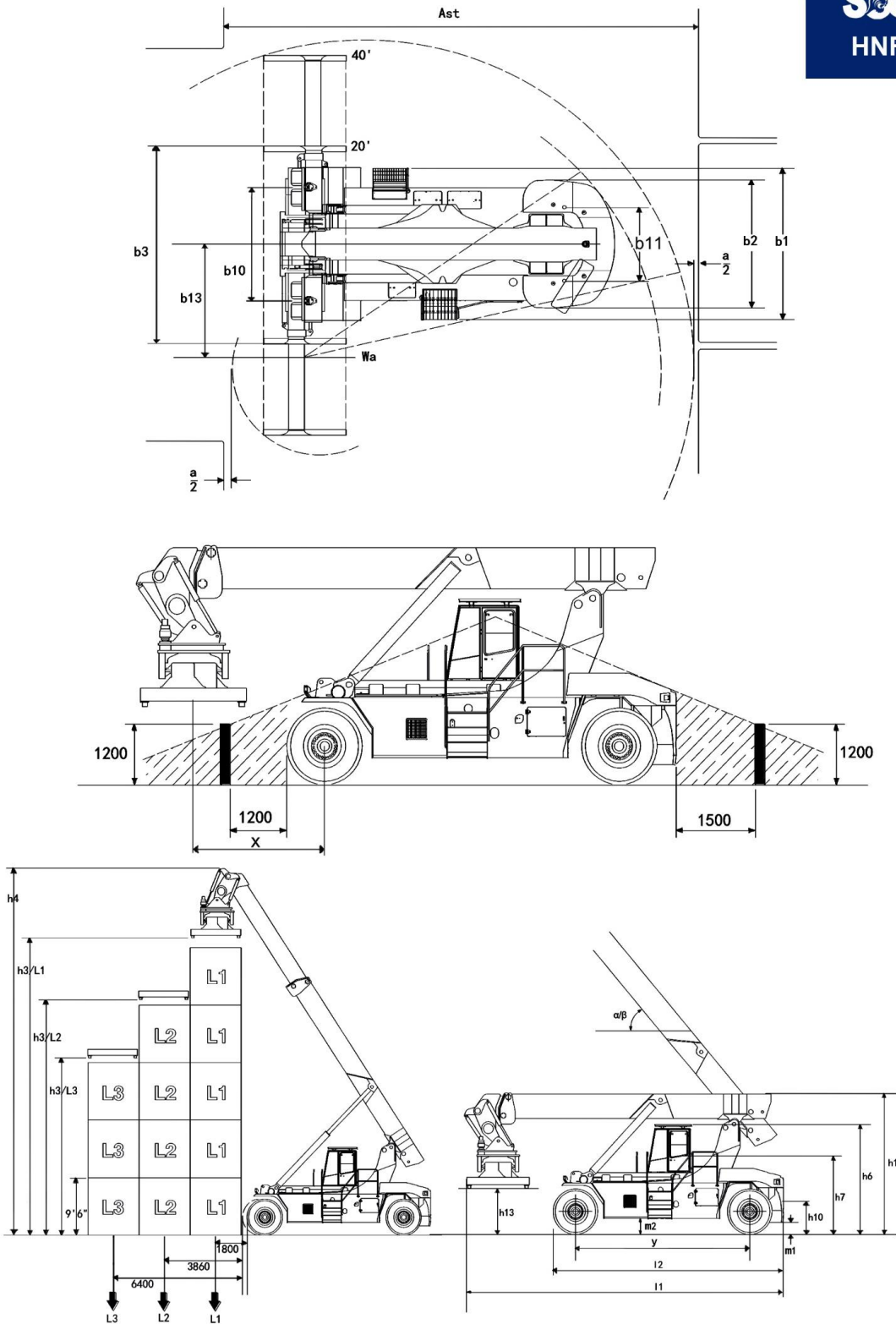
## Heavy Duty Drive Axle

Kessler drive axle, proven quality for heavy duty trucks, wide track, 2-stages reduction gear box, strong axle body optimized for heavy loading condition. wet disk driving brake is free of maintenance.

This drive axle performs under shock load condition ensuring high safety and long life time.



CHARACTERISTICS			TRANSMISSION	
Manufacturer		SOCMA	Transmission Manufacturer	ZF/5WG261 AUTO
Model designation		HNRS45	Transmission type	Auto-shift / Interlock
Power unit: battery, diesel, LP gas, mains power		Diesel	Clutch Type	Torque Converter
Operation: manual, pedestrian, stand-on, seated, order picker		Rider seated	Gear number	5 F / 3 R
Load capacity(L1, L2, L3)	Q (kg)	45000 / 31000 / 16000	TYRES	
Load centre, First row(L1)	c (mm)	1800	Drive wheels	18.00-25 40PR
Load centre, Second row(L2)	c (mm)	3860	Steering wheels	18.00-25 40PR
Load centre, Third row(L3)	c (mm)	6400	Type	Pneumatic
Axle centre to spreader center(L1-1/2 high)	x (mm)	2800 / 2600	Pressure	10 bar
Wheelbase	y (mm)	6400	Quantity, Front/Rear	4 / 2
DIMENSIONS			TANKS CAPACITY	
Boom lift angle, raised/lowered	$\alpha/\beta$ ( ° )	61/ 0	Hydraulic oil tank	800 liter
Height boom lowered	h1 (mm)	4945	Fuel tank	500 liter
Lift height(L1, L2, L3)	h3 (mm)	15900 / 14100 /11350	DRIVE AXLE	
Height, boom extended	h4 (mm)	19000	Driver axle manufacturer	KESSLER/Germany
Height of cabin	h6 (mm)	3900	Type	D102PL341
Height, operators seat	h7 (mm)	2840		
Towing coupling height	h10 (mm)	600		
Twistlock height lowered	h13 (mm)	1495	STEER AXLE	
Overall length with spreader	l1 (mm)	11618	Steering axle manufacturer	KESSLER/Germany
Overall length	l2 (mm)	8410	Type	L102
Overall width	b1/b2 (mm)	4180 / 3400	Steering	Double action cylinder
Width of sreader 20'/40'	b3 (mm)	6050 /12150	BRAKE SYSTEM	
Ground clearance minimum	m1 (mm)	345	Service brake: Hydraulic wet-disc	
Ground clearance, centre of wheelbase	m2 (mm)	300	Parking brake: Electric released disc brake, enabled when power off	
Stacking aisle 20' container	Ast (mm)	10225	HYDRAULIC SYSTEM	
Stacking aisle 40' container	Ast (mm)	13050	Twin piston pump	
Turning radius	Wa (mm)	8605	Maximum pressure: 310 bar	
Minimum pivoting point distance	b13 (mm)	3400	Load sensing system	
Wheelspan, Front wheels	b10 (mm)	3030	Hydraulic cooler with electric motor	
Wheelspan, Rear wheels	b11 (mm)	2786	separate brake oil tank	
WEIGHTS			BOOM	
	UnLaden	Laden	2 x Dual action lift cylinders	
Weight	kg	71400	1 x Dual action extension cylinder	
Load on drive axle	kg	36400	SPREADER	
Load on steering axle	kg	35000	Handling ISO 20"-40" containers	
PERFORMANCES			2 x damping cylinder	2 x gearbox & brake system
	UnLaden	Laden	Type	WLZSP45
Travelling speed	km/h	25	Rotate degrees	deg - 105° / + 195°
Climbing ability	%	30	Sideshift	mm - 800 / + 800
Tractive force	kN	325	TRUCK SAFETIES	
Lifting speed	m/s	0.39	Error display system	
Lowering speed	m/s	0.39	Counting system for containers	
CABIN			Weighing system (Low precision)	
Movable closed cabin			Electric anti-overload system	
Equiped with Air-conditioner, cooling/heating function			Full Can-bus control system	
Noise level at driver's ear	dBA	74	Direction gearshift interlock	
ENGINE			Parking brake enabled when power off	
Brand	Cummins		Seat switch	
Type	QSM 11			
Cylinder number/ Displacement	6 / 10820 cm <sup>3</sup>		SPREADER SAFETIES	
Rated power @ rated speed	250Kw @ 2100 rpm		Locking/unlocking only after correct landing	
Maximum torque	1674NM @ 1500 rpm		Lifting/lowering only when the 4 twistlocks on same position	
Rated current of alternator	150 A		Anticollision rotation limit switch	
Battery	24 V (2 x 12 /150)			



## ► Standard Equipment

- Air conditioner
- Movable closed cabin
- Hydraulic-three position adjusted seat with wide range of height adjustment
- Proportional hydraulic function lever enabling precise load positioning with automatic anti-stall function
- Adjustable angle and height steering wheel
- Effortless hydrostatic power steering with Flow amplification valve
- Engine intake air cleaner with integrated safety element
- High performance hydraulic filters preserving maximum purity of oil for long life of all hydraulic components
- Power on-demand working hydraulics , oil supply by twin-pump installation
- Overload safety device ; measures load weight and position
- Comprehensive head-up display ; monitors all key components including fuel gauge , clock , hour meter and control lamps , lamps for all important truck functions , and goods load weight display
- Central master warning light
- Modern diesel engine with electronically controlled single-rail fuel injection system complete EUR tired 3 emission regulations
- Heavy-duty automatic 5-speed electronic auto-shift transmission with integrated safety protection ; downshift , forward/reverse interlock
- Robust double hub reduction drive axle , incorporating oil bath type wet disc brake
- 5 high stacking boom(6 high 8'6"containers)
- Abundant storage space for writing , materials , beverage cans etc.
- Pneumatic tyres
- Rotation 105 degrees/195 degrees
- Sideshift 800mm+/-
- Road lighting with boom support mounted reverse lights and audible warning
- Front mudguard mounted working lights 2 pairs
- Boom support mounted rear working lights
- Boom mounted working lights 2 pairs
- Reverse driving mirrors-chassis mounted
- Interior rearview mirror
- Battery isolator switch

## ► Optional Equipment

- Hydraulically driven, forward moving cabin
- Cabin pre-heat system-fuel burning or electrical central greasing system-chassis , chassis & boom , chassis boom & spreader
- Additional seat
- Vertical lift
- Electrical socket in cab-12 volt
- Heated reverse driving mirrors
- Panoramic interior
- Radio with compact disc unit and speakers
- Spreader mounted working lights 2 or 4
- Rotating beacon or flashing beacon
- Sun blind - front and top
- Fire extinguisher(2kg)
- Engine coolant heater
- Hydraulic tank heater
- Brake tank heater
- Counterweight mounted camera with color monitor
- Handrails-on steps left & right, on chassis top right
- Customized paintwork
- Auto fire suppression system





# SECH 90

Empty Container Handler



# Advanced Technology

## Excellent Truck Quality

With multiple advantages, the truck has high safety / high efficiency / high precision and high stability performances. Integrated operating system ensure the truck highly productive.

### Smooth Power Steering



Hydrostatic power steering allows full steering lock to be attained even at standstill. Accurate maneuverability with minimum effort. Cab-mounted ati-kick valve. Heavy-duty steer axle mounted to the chassis via spherelastic bushes allowing axle articulation over uneven ground. Steering lock stops preventing cylinder over stroke.

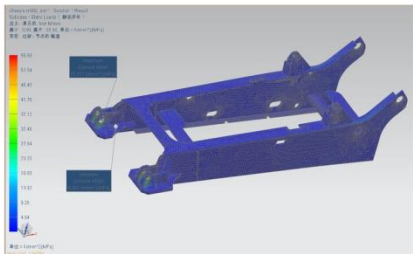
### Full Can-bus control system

DG90 empty container handler is equipped with full Can-bus control system. The engine/ transmission/ electric system/ hydraulic system/ loading safety system/ spreader system are all integrated in the Can-bus system, all devices are monitored at real time. Parker control units ensure the system is reliable and flexible.

# Advanced Technology

## Excellent Truck Quality

### Rigorous design process



FEM analysis supported design provides high strength of chassis and mast, making whole truck stable and robust.

### Innovative lift mast

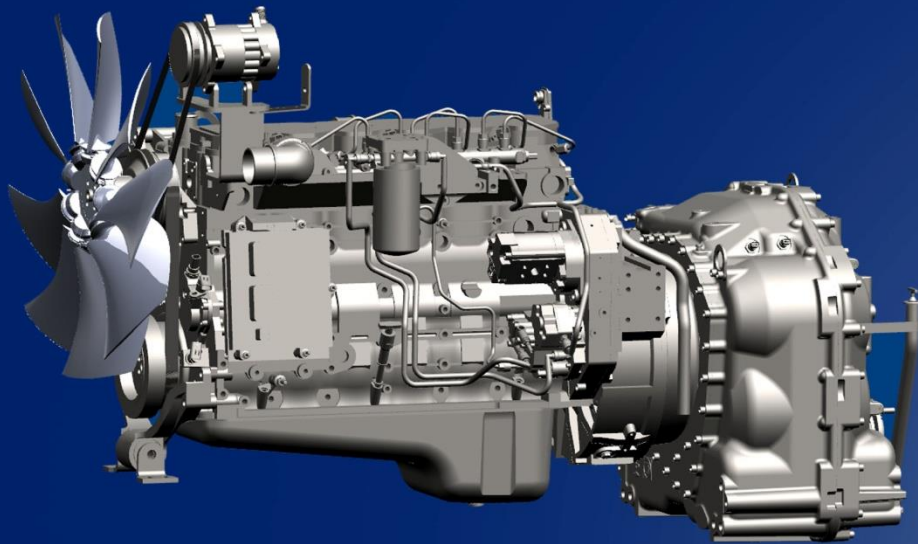


The design of the ultra-wide clear view lift mast qualifies as revolutionary : in contrast to established fork truck design principles, the inner mast is pivoted on the chassis whereas it is the outer mast that telescopes. Increased forward visibility. Mast construction extremely stiff in torsion, guaranteeing perfect load elevation up to maximum lift.





## Market Leader Powerful Engine



Equipped with Cummins Engine, with full electronic control system to ensure economic fuel consumption

Equipped with turbocharger to improve the truck power and engine efficiency

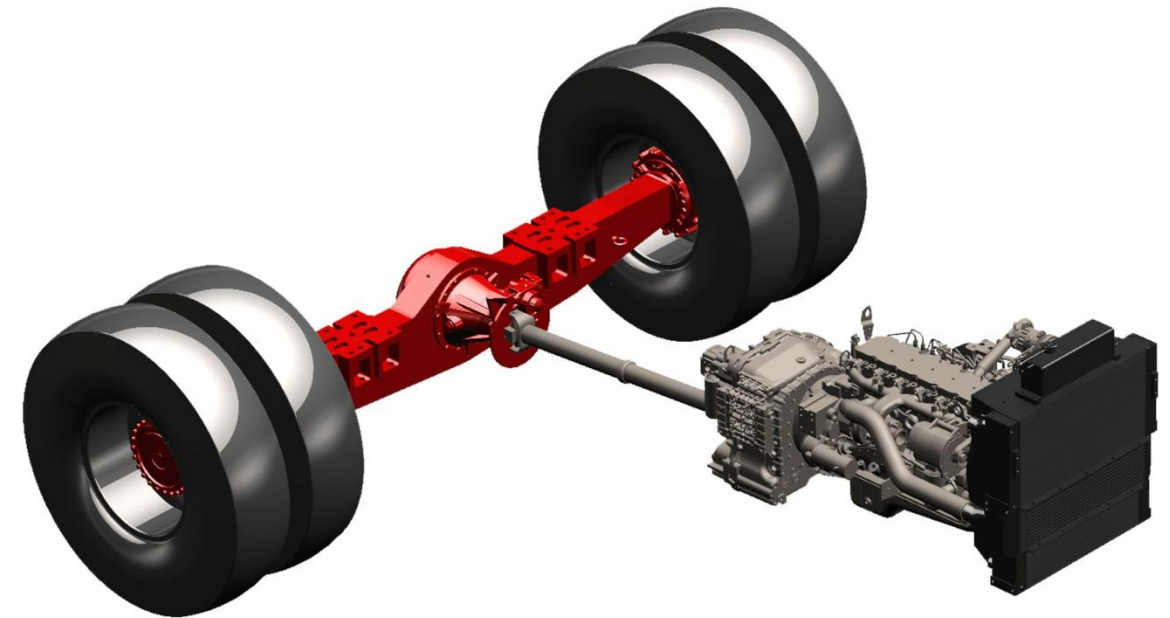
Strong power to meet various working condition

Comply with EU Stage III gas emission standard

Full lubrication performance to ensure the low noise level

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## Stacking Experience Creating Excellence



## Kessler Drive Axle

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## Spacious Driving Environment



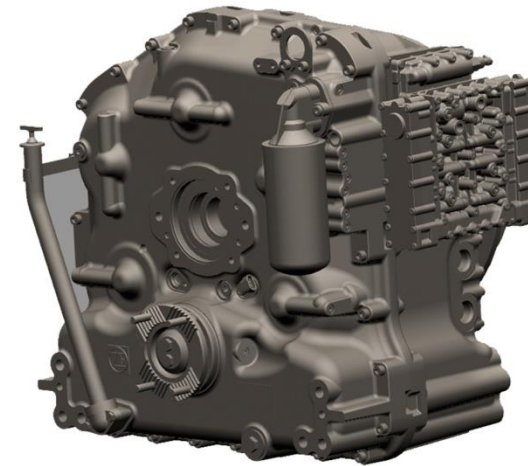
- The cabin adopts the latest ergonomic design, simple & elegant, spacious & comfortable.
- Equipped with large-color display for easy reading the real status of the truck.
- Firm cabin design to ensure the safety and comfort of the operator. Good tightness, the doors & windows can be opened & closed easily and firmly.
- Equipped with multi-function joystick, All the control are at your fingertips.
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- Equipped with Air-Conditioner with heating function to suit working in all climates.

## Touch-sensitive / High resolution Color Display



A reliable color display shows the lifting weight / lifting height / main pressure / engine status / oil level / error codes etc. all important information.  
The quick responding controller helps the operation and high efficiency.

## The Automatic Transmission



- ◆ZF automatic transmission
- ◆Auto-gear transmission with 3 forwards / 3 reverse speed, makes the truck operation smooth and good economic performance
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### Safety Device:

With seat safety switch

- In the case of the driver is not seated, cut off all the hydraulic, driving function

Spreader status indicator

- Red yellow green indicator lights;
- The light signal indicating the spreader, unlock state;
- Restrict Abnormal lifting, lowering operation.

Weighing display and overload limiting system

- Load rating of 90%, sound alarm;
- Exceeding the rated load, will cut off the lifting function.

Can-bus diagnosis

- Display engine, gearbox and other fault code;
- Display oil, pressure, temperature and other alarm information.

Double brake pedal design

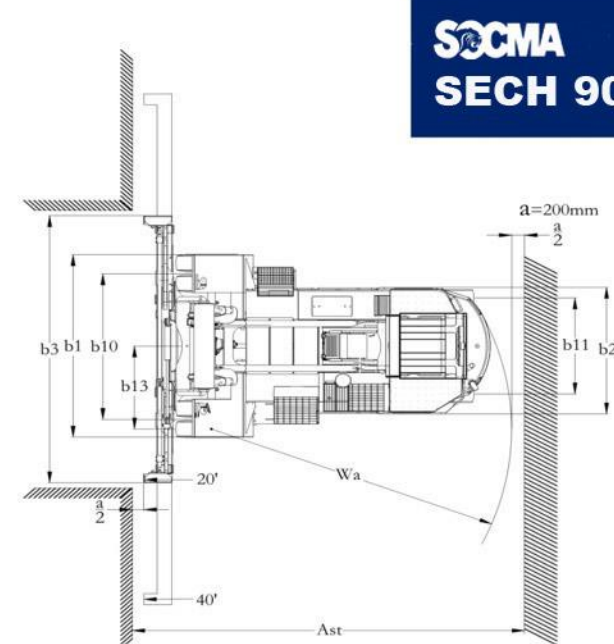
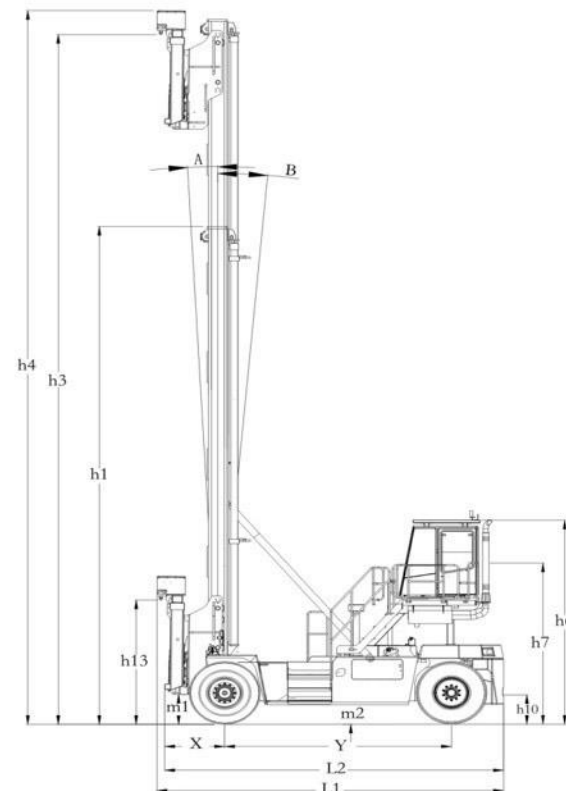
- Adapt to the driver's operating habits.

Safety of spreader and mast

- Limited speed valve for mast lower, chain anti loose;
- High strength structure design of mast and spreader.



PERFORMANCES					
Model		SECH90/8	SECH90/7	SECH80/7	SECH80/6
Load capacity	Kg	9000	9000	8000	8000
Maximum stacking layer		8	7	7	6
Lift speed, laden/unladen	m/s	0.55 / 0.60	0.55 / 0.60	0.55 / 0.60	0.55 / 0.60
Lowering speed, laden/unladen	m/s	0.60 / 0.60	0.60 / 0.60	0.60 / 0.60	0.60 / 0.60
Travel speed, laden/unladen	km/h	26 / 28	26 / 28	25 / 27	25 / 27
Climbing ability, laden/unladen	%	38 / —	38 / —	30 / —	30 / —
Tractive force	kN	157.5	157.5	107.5	107.5
DIMENSIONS					
Wheelbase	y(mm)	4520	4520	4020	4020
Height of mast, lowered	h <sub>1</sub> (mm)	12399	11111	11091	9600
Tilt angle (forward / backward)	α/β( / °)	3 / 4	3 / 4	3 / 4	3 / 4
Height of mast, extended	h <sub>4</sub> (mm)	21818	19244	19204	16660
Height of cabin	h <sub>6</sub> (mm)	4326	4326	4326	4326
Height, operator's seat	h <sub>7</sub> (mm)	3226	3226	3206	3206
Twistlock height, lowered	h <sub>13</sub> (mm)	2290	2290	2290	2290
Maximum twistlock height	h <sub>3</sub> (mm)	21216	18642	18600	16290
Overall length	l <sub>1</sub> (mm)	6850	6850	6450	6450
Length to spreader face	l <sub>2</sub> (mm)	6682	6682	6277	6277
Overall width	b <sub>1</sub> /b <sub>2</sub> (mm)	4120 / 2570	4120 / 2570	3627 / 2398	3627 / 2398
Width of spreader 20°/40°	b <sub>3</sub> (mm)	6050 / 12150	6050 / 12150	6050 / 12150	6050 / 12150
Turning radius	Wa(mm)	6300	6300	5700	5700
Wheelspan, Front wheels	b10(mm)	3280	3280	2880	2880
Wheelspan, Rear wheels	b11(mm)	2171	2171	2068	2068
WEIGHTS					
Service weight	kg	38680	38280	33800	32800
Axle load with load,front/rear	kg	37220 / 10460	36610 / 10670	29050 / 10750	28650 / 10150
Axle load without load,front/rear	kg	22660 / 16020	22480 / 15800	20100 / 13700	19700 / 13100
ENGINE					
Model		SECH90		SECH80	
Engine manufacturer / type		Cummins / QSB6.7		Cummins / QSB6.7	
Cylinder number / displacement		6 / 6700 cm <sup>3</sup>		6 / 6700 cm <sup>3</sup>	
Rated power		164Kw @ 2200 rpm		129Kw @ 2200 rpm	
Maximum torque		949NM @ 1500 rpm		800NM @ 1500 rpm	
Rated current of alternator		100 A		70 A	
Battery		24 V (2 x 12 / 110)		24 V (2 x 12 / 110)	
TRANSMISSION					
Model		SECH90		SECH80	
Manufacturer / type		ZF/3WG211 AUTO		ZF/3WG211 AUTO	
Clutch - type		Torque Converter		Torque Converter	
Transmission		Auto-shift/ Interlock		Auto-shift / Interlock	
Gear number		3 F / 3 R		3 F / 3 R	
BRAKE SYSTEM					
Service brake: Wet-disc					
Parking brake: Brake enabled when power of					
DRIVE AXLE					
Model		SECH90		SECH80	
Driver axle manufacturer		KESSLER / Germany		KESSLER / Germany	
Type		D81PL488 - NLB		D81PL478 - NLB	
STEER AXLE					
Model		SECH90		SECH80	
Steering axle Manufacturer		OMCI / Italy		SOCMA	
Type		ASF		Z16A1	
Steering type-Single cylinder		Double action cylinder		Double action cylinder	
TYRES					
Drive wheels		14.00—24 28PR		12.00—24 24PR	
Steering wheels		14.00—24 28PR		12.00—24 24PR	
Type		Pneumatic tyre		Pneumatic tyre	
Pressure		10 bar		10 bar	
Quantity, Front / Rear		4 / 2		4 / 2	



**SOCMA**  
**SECH 90**

DG80/6			
8'6" container		9'6" container	
Q	Height (mm)	Q	Height (mm)
8 t	15546	8 t	14480
8 t	12955	8 t	11584
8 t	10364	8 t	8688
8 t	7773	8 t	5792
8 t	5182	8 t	2896
8 t	2591	8 t	2896
to C= 1295 mm			

DG80/7			
8'6" container		9'6" container	
Q	Height (mm)	Q	Height (mm)
7 t	18137	7 t	17376
8 t	15546	8 t	14480
8 t	12955	8 t	11584
8 t	10364	8 t	8688
8 t	7773	8 t	5792
8 t	5182	8 t	2896
8 t	2591	8 t	2896
to C= 1295 mm			

DG90/7			
8'6" container		9'6" container	
Q	Height (mm)	Q	Height (mm)
9 t	18137	9 t	17376
9 t	15546	9 t	14480
9 t	12955	9 t	11584
9 t	10364	9 t	8688
9 t	7773	9 t	5792
9 t	5182	9 t	2896
9 t	2591	9 t	2896
to C= 1295 mm			

DG90/8			
8'6" container		9'6" container	
Q	Height (mm)	Q	Height (mm)
7 t	20720	7 t	20265
9 t	18137	9 t	17370
9 t	15546	9 t	14480
9 t	12955	9 t	11584
9 t	10364	9 t	8688
9 t	7773	9 t	5792
9 t	5182	9 t	2896
9 t	2591	9 t	2896
to C= 1295 mm			



## ► Standard Equipment

- Air conditioner
- Fixed closed cabin
- Hydraulic-three position adjusted seat with wide range of height adjustment
- LCD screen data display, show parameters of engine / transmission; Display fault codes into text descriptions
- Safety monitors for engine and transmission oil pressure
- Cummins diesel engine with turbocharger
- ZF 3-speed auto-shift transmission with integrated forward / reverse safety interlock
- Robust double hub reduction drive axle, incorporating oil bath type multi-wet disc brake, free of maintenance
- Hydraulic power steering
- Twin drive wheels
- Pneumatic tyres
- Standard ultra-wide clear view lift mast
- Container telescopic 20'-40' side lift spreader, side shift +/- 600mm
- Road lighting
- Working lights
- Spreader-mounted lights
- Rear view mirrors
- Load indicator and load limiting system
- Standard color scheme-RAL3000 / RAL 7021

## ► Optional Equipment

- CD
- Mast lights
- Travel speed limiter, when load positioned above standard travel height
- Reverse radar and camera monitor system
- Remote diagnostic system
- Alternative color schemes
- Auto fire suppression system
- Single spreader or double spreader(DG90)

other options available on request

