

Standard.

Kalmar **DCU80-100ES4-8** (EU3 / Tier 3, EU4 / Tier 4F or EU5*)

Norms, standards and regulations according to:

- Machinery Directive 2006/42/EC
- Safety Industrial Trucks ISO 3691-1 & EN 16307-1
- Safety Low & High Lift Trucks ANSI/ITSDF B56.1
- Stability test Masted Container Handlers ISO 22915-9
- CE-marking for trucks within EU/EEA
- ANSI/ITSDF-marking for North America trucks

Chassis

- Strong, durable heavy-duty chassis for EC-Handlers
- High/rear mounted heavy-duty tilt cylinders
- Safe access stairway (multiple steps, hand rails & platform on left side)
- Low cabin mounted at the rear of the truck
- Good visibility over rear of truck
- Open chassis with full access to the driveline
- Easy-to-open driveline cover plates (low noise)
- Lifting eyes and anchor points (front & rear)
- Towing pin (rear - incasted)

Body

- Steps with anti-slip protection
- Rearview mirrors (2x) - mounted on front mudguards
- Strong and protective mudguards (front & rear)

Steer Axle (rear)

- Kalmar steer axle, dual pivot bearings
- El-servo power steering with double acting cylinder
- Steer axle with mechanical side stops (±3 deg)
- Steer axle with narrow turning radius

Drive Axle (front)

- Kessler planetary axle with hub reduction and differential
- D81-ND in normal duty for high stability (W=4,05-4,10 m)
- D91-HD in heavy duty for high stability (W=4,10 m)
- Strong and powerful oil-cooled Wet Disc Brakes (WDB)

Wheels (tyres and rims)

- DCU80 ES: Tyres 12.00x24" (4x + 2x)
- DCU90-100 ES: Tyres 14.00x24" (4x + 2x)
- Wheel nut protection on steer tyres

Driveline (CanBus)

- Volvo and Cummins diesel engines (4 or 6 cylinder)
- Durable and strong engines with pre-heater
- Emission approval EU3 / Tier 3, EU4 / Tier 4F or EU5
- Engine monitoring and protection system
- Fully automatic transmission DANA TE-14300 (3 + 3)
- Transmission monitoring and reverse protection
- Declutch function activated by the brake pressure
- Efficient radiators for engine, transmission & brakes
- Diesel tank (380 l), breather filter
- Noise efficient muffler and tail exhaust pipe

Efficient Hydraulics

- Load-sensing variable piston pumps
- Power-on-demand with high lift & lowering speeds
- Pumps for mast, spreader, brakes & steering
- Gear pumps for brake pressure
- Return filters for the work hydraulics (2x/10 my)
- Servo filter for the work hydraulics (1x/10 my)
- Pressure filter for hydraulics / brakes (2x/10 my)
- Power steering, power brakes & ORFS-couplings
- Hydraulic tank (320 l), cooling & breather filter

Lift Mast

- Mast design for up to 8-high single stacking
- Duplex 2-stage mast with high mounted tilt cylinder
- Strong, durable lift mast, 1 pair of cylinders & chains
- Durable lift chains (mast and carriage)
- Heavy-duty mast profiles and strong cross members
- Mast with strong mast wheels, bearings & guide pads
- Large diameter shafts / bearing for mast / tilt fixations
- 2 hydraulic hoses & 1 electric cable over the mast
- Mast tilt angles +3 / -3 deg (FW / BW)

Lift Carriage

- Carriage with strong wheels, bearings & guide pads
- Large sideshift of ±600 mm (total stroke 1200 mm)

Attachment

- Durable single main beam with strong design
- Side lift with hydraulic extension 20"-40"
- 2 lift heads with fixed twistlocks from the top
- Mechanical Pile Slope (MPS) by gravity (side tilt)
- MPS with spring loaded vertical lift heads (0-250 mm)
- Lowering interrupt sensors for safe handling
- Safety locking, alignment pins & sensors (2x)
- Twistlocks indication LED-lamp panel (green-yellow-red)

Electrical System 24V (G-Generation)

- Fully redundant 24V electrical system
- Battery box 2x12V & main power switch
- Electric service box on chassis
- 2 working LED-lights on front mudguards (head beam)
- 2 working LED-lights on mast (first cross member)
- 2 working LED-lights on spreader carriage (lift head)
- 2 working LED-lights rear below cabin (when reversing)
- 2 working LED-lights on spreader (bottom)
- 2 position LED-lights on each side of the truck
- 2 tail / brake LED-lights on counter weight (rear)
- 4 blinker LED-lights (front - rear / left - right)
- Flashing LED-brake lights (when reversing)
- 1 rotating warning LED-beacon

Essential Cabin

Structure

- Spacious, modern, ergonomically designed cabin
- Large windows, good visibility, in all directions
- In-step handles on left side
- Sliding window on both sides
- Tinted tempered windows

Comfort

- Comfortable seat, mechanical spring, high back
- Electrically adjustable operational console with levers, operational buttons & armrest (right side)
- Inside rear view convex-type mirror (right side)
- Interior lights with fade away function
- Fully adjustable steering wheel column incl tilt function

- 2-point safety belt
- Power steering wheel with steer knob
- Electric horn
- LED background light for buttons & switches

Controls

- Electronic lift levers for mast & spreader
- Auto rev-up accelerator at lifting / tilting / spreader
- Accelerator pedal (floor-mounted)
- Double brake pedals (L + R / floor-mounted)
- Gear lever with electronic hand brake (on/off)
- Automatic gear shifting (P1)
- Only first gear activated (P2)
- Only second gear activated (P3)
- Safety override for hydraulic functions (by code)
- Multi-function lever LHS (parking brake and gear/ direction switch)
- Combined horn and blinker lever
- Warning - hand brake (on/off) leaving seat
- Hour meter

Climate

- Electronically controlled heating/ventilation
- Fresh air and recirculation filter
- Single wiper/washer on front window
- Single wiper/washer on roof and rear windows
- Interval wiper functions on front, roof and rear windows

Information systems

- HMI based on TFT-display 70 x 52 mm (3.2" x 2.2")
- Colour display (DP-250) with automatic fault analysis
- Menu control with toggle wheel & push buttons

Operator menu

- System voltage
- Actual gear
- Engine rpm
- Travelling speed (km/h or m/h)
- Combined hydraulic and brake oil temperature
- Transmission oil temperature
- Engine oil pressure & oil level (Volvo)
- Engine oil pressure only (Cummins)
- Engine coolant temperature
- Clock and date
- Operating time (hours)
- Service time indicator (hours)
- Status of heating system & AC system
- Fuel level (diesel and optional AdBlue)
- Estimated operating time before empty tank (hour/min)
- Service indicator
- Electronic weight scale in main display

Various warning lights & signals

- Charging battery
- Low brake pressure
- Failure indicator
- High engine coolant temperature
- Low engine coolant level (not on Cummins)
- Low engine oil pressure
- Preheating engine
- Transmission oil temperature
- Low fuel level (incl AdBlue)
- Hydraulic and brake oil temperature
- Low washer fluid level

Indicator lamps

- Head beam
- Direction indication
- Parking brake

Fleet Management

- Equipped with telemetric hardware for Kalmar Insight

Colour

- Cabin: Light-Grey RAL 7035
- Chassis, tanks & mudguards: Red RAL 3000
- Mast, attachment & axles: Black RAL 7021
- Rims and wheel hubs: Light-Grey RAL 7035

Documentation and Decals

- Load chart diagram inside cabin
- Machine data sign on chassis incl. load chart
- Warning, tyre pressure & oil pressure stickers
- Information & levers/joystick stickers
- Fuse diagram
- Instruction manual
- Maintenance manual
- Spare parts catalogue

Options.

Kalmar **DCU80-100ES4-8** (EU3 / Tier 3, EU4 / Tier 4F or EU5*)

Chassis

- DCU 80-45 ES (L3=4550 mm)
- DCU 90-45 ES (L3=4550 mm)
- DCU 100-45 ES (L3=4550 mm)

Body

- Anti-slip protection on fenders and tanks
- Mudguards in steel + rubber (front)
- Mudguards in rubber (rear)
- Noise insulation kit for the complete truck (+/- 3dB)

Drive Axle

- D91-HD in heavy duty for extra high stability (W=4,6 m)

Wheels (tyres and rims)

- Spare tyre, rim or complete wheel of various brands
- Tyre dimension 14.00x24" replace 12.00x24"
- Tubed tyre 12x24"
- Tubed tyre 14x24"
- Tubeless tyre 14x24"

Driveline

- Cummins QSB-6,7 (EU3 / Tier 3, 164 kW, 949 Nm, 6-cyl, 6.70 l)
- Volvo TAD-850-VE (EU3 / Tier 3, 160 kW, 1060 Nm, 6-cyl, 7.70 l)
- Volvo TAD-572-VE (EU4 / Tier 4F, 160 kW, 910 Nm, 4-cyl, 5.10 l)
- Volvo TAD-582-VE (EU5, 160 kW, 910 Nm, 4-cyl, 5.10 l)
- Auto engine & ignition stop after 5 min idle
- Pre-cleaner air intake incl. raised air intake

Hydraulics

- Hydraulic accumulator for lift mast (shock dampening)
- Hydraulic longlife fine filter with by-pass (3 my)
- Load lowering safety valve for mast / spreader

Lift Mast

- Duplex E4 (4-high 9'6" / 4-high 8'6")
- Duplex E5 (5-high 9'6" / 5-high 8'6")
- Duplex E6 (5-high 9'6" / 6-high 8'6")
- Duplex E7 (6-high 9'6" / 7-high 8'6")
- Duplex E8 (7-high 9'6" / 8-high 8'6")
- Mast tilt angles +2 /-3 deg (FW/BW)
- Mast tilt angles +3 /-6 deg (FW/BW)

Attachment

- Automatic extension 20-40ft incl 30ft stop
- Soft landing by inductive sensor (on twistlocks only)

Electrical System 24V (G-Generation)

- Extra sockets, 2 x 24V sockets and 2 x 12V sockets in cabin
- Extra sockets, 2 x 24V sockets and 2 x 5V / USB sockets in cabin
- Extra sockets, 1x12V + USB 1x5V + 2x24V
- Electric air pressure horn
- Buzzer when reversing (reverse alarm)
- Radio with CD, MP3, Bluetooth, USB & speakers (24V)
- 2 extra working LED-lights on mudguard (forward)
- 4 extra working LED-lights on mudguard (20-40 ft)
- 2 extra working LED-lights on cabin roof (forward)
- 4 extra working LED-lights on cabin roof (20-40 ft)
- 2 extra working LED-lights on mast (40 ft)
- 2 extra working LED-lights on carriage (20 ft)
- 2 extra reverse LED-lights on counter weight (rear)
- 1 extra warning LED-beacon on top of mast (front)

Electronic System

- OLS1 (Over Loading System) monitoring lift with warning and speed limit (warning pop-up and buzzer)
- OLS2; OLS1 + monitoring and cut-off lift / tilt
- VDI - Vehicle Data Interface

Speed and Lift Settings

- All settings can be changed and are programmable
- A standard default factory setting is supplied
- Lift height limit; standard incl override button (default: 7,5 m)
- Lift height limit; warning over defined height (default: 7,5 m)
- Speed limit; standard (default: 15 km/h)
- Speed limit; over defined height (10 km/h at 7,5 m)
- Speed warning at 15 km/h

Essential Cabin

Structure

- Low-mounted cabin with dual access stairways & upper platform
- High-mounted cabin (+600 mm), improved visibility, dual access stairways & upper platform
- Safety cage to protect cabin from falling cargo
- Front window in laminated glass (AS1)

Comfort

- Seat alternatives (spring or air-cushion)
- Seat with headrest
- Adjustable armrest (LHS)
- Extra trainer seat incl 2-p safety belt (LHS)
- Bracket for terminal and monitor (RHS)
- Writing pad, A4 paper box and reading lamp (RHS)
- Extra rear view convex-type mirror (in cabin / left side)

Controls

- Electronic joystick for hydraulic functions (F-Generation)
- Electronic joystick for hydraulic functions (G-Generation)

Climate

- Electronic Climate Control (ECC) incl AC
- Sun visor front window (black net)
- Sun visor roof window (black net)
- Sun visor rear window (black net)
- Two extra electric fans in cabin ceiling

Information systems

Operator menu

- Container counter with reset function, trip computer and statistics

Head-Up display for twistlock indication

- LED indicators for alignment & container(s)

Fleet Management

- Kalmar Insight licence (only in certified countries)
- Kalmar Insight Driver Monitor (RFID reader + 10 unique driver tags)
- Kalmar Insight extra monitoring tags (10 unique driver tags)

Additional equipment

- Reverse camera (1x) including display 17 cm/7"
- Spreader cameras 2x (left and right) incl. display 17 cm/7"
- Reverse Warning System (camera, display & sensors)
- Tyre Pressure Monitoring System (Bluetooth)
- Diesel powered cabin heater 5 kW
- Alcolock in cabin
- Automatic Fire Suppression System
- Fire extinguisher 5-6 kg, powder
- Lockable fuel cap

- Cabin heater incl 220V outlet
- Engine heater incl cab heater
- Engine/hydraulic oil heater incl cab heater
- Central greasing base machine
- Central greasing spreader
- Tool kit
- Filter-kit 2000 hrs

Colour

- Other colour than standard - on chassis (specify RAL no)
- Other colour than standard - on cabin (specify RAL no)
- Reinforced anti-corrosion protection (extra primer)

Documentation and Decals

- Extra documentation set (SPB, MB, IB) - printed copy
- Extra documentation set (SPB, MB, IB) - digital
- Work shop manual - engine (printed or digital)
- Work shop manual - transmission (printed or digital)
- Work shop manual - drive axle (printed or digital)
- Work shop manual - all (printed or digital)

Training

- Contact Kalmar Training Center for training programs

* Available 2019/20.

Technical information.

Kalmar DCU90-ES Reach Stacker

www.wme.cn/kalmar-dcu90-es/

MANDATES	1	Truck Model	
	2	Stacking model and height	
	3	Type of handling	
	4	Lifting capacity, rated MPS (kg)	Q1 (kgs)
	5	Lifting capacity, number of containers, 8'6" – 9'6" (single mode)	
	6	Spreader locking type, standard	
	7	Spreader type, extension stops, sensors	
	8	Wheelbase	L3 (mm)
	9	Load centre, front of tyres, with MPS	L2 (mm)
WEIGHTS	10	Service weight	(kgs)
	11	Axle load front, unloaded – at rated load	(kgs)
	12	Axle load rear, unloaded – at rated load	(kgs)
WHEELS	13	Tyres, type - thread	
	14	Tyre dimensions, front & rear	(in)
	15	Rim dimensions, front & rear	(in)
	16	Number of wheels, front – rear (*driven)	
	17	Pressure	(MPa)
	18	Track (c-c), front – rear	S1 - S2 (mm)
DIMENSIONS	19	Lift mast, type, stage, cylinders and chains	
	20	Tilting of mast, forward - backward (*)	alfa-beta (deg)
	21	Lift mast height, min - max	H3 - H5 (mm)
	22	Lift height, min - max in twistlocks / lift hooks	H10 - H4 (mm)
	23	Truck height, low / *high cabin position, cabin roof	H6 (mm)
	24	Seat height, low / *high cabin position	H8 (mm)
	25	Length of truck MPS	L (mm)
	26	Sideshift	V1 (mm)
	27	Ground clearance, min.	G (mm/deg)
	28	Width of truck	B (mm)
	29	Width over attachment, min-max	B1 - B2 (mm)
	30	Min. aisle width for 90° stacking, 20ft container - 40ft container	A1 - A2 (mm)
	31	Turning radius, inner / outer 20ft / outer 40ft	R1-R2-R3
DRIVING DATA	32	Type of engine	
	33	Drive axle	
	34	Travelling speed forward, unloaded – at rated load	(km/h)
	35	Travelling speed backward, unloaded – at rated load	(km/h)
	36	Gradeability max., unloaded – at rated load	(%)
	37	Gradeability at 2 km/h, unloaded – at rated load	(%)
	38	Lifting speed, unloaded – at 70% of rated load	(m/s)
	39	Lowering speed, unloaded – at rated load	(m/s)
	40	Starting battery, voltage – capacity	(V - Ah)
	41	Steering system, type – maneuvering	
	42	Service brake system, type – affected wheels	
	43	Parking brake system, type – affected wheels	
OTHERS	44	Noise level EN12053 - equivalent inside cabin LpAZ	(dB(A))
	45	Noise level EN12053 - equivalent outside cabin LwAZ	(dB(A))
	46	Tank volumes, diesel - AdBlue - oil	(dm3)
	47	Overload protection system with warning OLS1 + OLS2	Optional

DCU80-ES				
ES4/4	ES5/5	ES6/5	ES7/6	ES8/7
Single stacking				
8000				
4/4	5/5	6/5	7/6	8/7
Twistlocks				
Sidelift, 20 - 40ft with 30ft stop, alignment & interrupt sensors				
4550				
1210 or 1260				
33300	34700	35300	36800	38300
20900 - 33100	22400 - 34700	23100 - 35300	24700 - 37000	26400 - 38600
12400 - 8100	12300 - 8000	12200 - 7900	12100 - 7800	11900 - 7600
Pneumatic / Diagonal				
12.00 x 24"				
8.50 x 24"				
4* - 2				
1.0				
3270 - 2250				
Duplex / 2-stage / 2 cylinders / 2 lift chains				
3-3 (opt. 3-6 or 2-3)				
7050 - 12050	8540 - 15040	9040 - 16040	10290 - 18540	11540 - 21040
2240 - 12250	2240 - 15200	2240 - 16200	2240 - 18740	2240 - 21240
3940 / *4540				
2800 / *3400				
6900				
± 600 (1200)				
250				
4050				
6085 - 12220				
10600 - 14200				
1150 / 6750 / 9350				
Diesel / 4-stroke / Turbo				
Axle, differential & hub reduction				
24 - 24				
22 - 22				
29 - 22				
24 - 19				
0,55 - 0,50				
0,50 - 0,60				
2x12 - 135-145				
Servo assisted - Steering wheel				
Wet disc brakes - Drive wheel				
Spring brake - Drive wheel				
71 - 73				
109 - 111				
380 / 15 / 320				
OLS 1: Lift Monitor, OLS 2: Lift cut-off + Tilt Monitor				

DCU90-ES				
ES4/4	ES5/5	ES6/5	ES7/6	ES8/7
Single stacking				
9000				
4/4	5/5	6/5	7/6	8/7
Twistlocks				
Sidelift, 20 - 40ft with 30ft stop, alignment & interrupt sensors				
4550				
1210				
35300	36700	37300	38800	40300
21400 - 35200	22900 - 36700	23800 - 37400	25200 - 39000	26900 - 40700
13900 - 9100	13800 - 9000	13700 - 8600	13600 - 8800	12400 - 8600
Pneumatic / Diagonal				
14.00 x 24"				
10.00 x 24"				
4* - 2				
1.0				
3270 - 2200				
Duplex / 2-stage / 2 cylinders / 2 lift chains				
3-3 (opt. 3-6 or 2-3)				
7100 - 12100	8600 - 15100	9100 - 16100	10350 - 18600	11600 - 21100
2300 - 12300	2300 - 15300	2300 - 16300	2300 - 18800	2300 - 21300
4000 / *4600				
2860 / *3460				
6900				
± 600 (1200)				
250				
4100				
6085 - 12220				
10850 - 14350				
1250 / 7000 / 9700				
Diesel / 4-stroke / Turbo				
Axle, differential & hub reduction				
24 - 24				
22 - 22				
29 - 22				
24 - 19				
0,55 - 0,50				
0,50 - 0,60				
2x12 - 135-145				
Servo assisted - Steering wheel				
Wet disc brakes - Drive wheel				
Spring brake - Drive wheel				
71 - 73				
109 - 111				
380 / 15 / 320				
OLS 1: Lift Monitor, OLS 2: Lift cut-off + Tilt Monitor				

DCU100-ES				
ES4/4	ES5/5	ES6/5	ES7/6	ES8/7
Single stacking				
10000				
4/4	5/5	6/5	7/6	8/7
Twistlocks				
Sidelift, 20 - 40ft with 30ft stop, alignment & interrupt sensors				
4550				
1210				
38000	39400	40000	41500	43000
22300 - 37700	23800 - 39200	24500 - 39900	26200 - 41500	27800 - 43200
15700 - 10400	15600 - 10200	15500 - 10200	15400 - 10000	15200 - 9900
Pneumatic / Diagonal				
14.00 x 24"				
10.00 x 24"				
4* - 2				
1.0				
3270 - 2200				
Duplex / 2-stage / 2 cylinders / 2 lift chains				
3-3 (opt. 3-6 or 2-3)				
7100 - 12100	8600 - 15100	9100 - 16100	10350 - 18600	11600 - 21100
2300 - 12300	2300 - 15300	2300 - 16300	2300 - 18800	2300 - 21300
4000 / *4600				
2860 / *3460				
6900				
± 600 (1200)				
250				
4100				
6085 - 12220				
10850 - 14350				
1250 / 7000 / 9700				
Diesel / 4-stroke / Turbo				
Axle, differential & hub reduction				
24 - 24				
22 - 22				
29 - 22				
24 - 19				
0,55 - 0,50				
0,50 - 0,60				
2x12 - 135-145				
Servo assisted - Steering wheel				
Wet disc brakes - Drive wheel				
Spring brake - Drive wheel				
71 - 73				
109 - 111				
380 / 15 / 320				
OLS 1: Lift Monitor, OLS 2: Lift cut-off + Tilt Monitor				

Truck Model	
Engine emission approvals	
Engine emission brand/series	
Engine model	
Engine after treatment type	
Engine design / cylinders	
Engine displacement	(dm3)
Max power @ engine speed	(kW)
Max torque @ engine speed	(Nm)
Max engine speed	(rpm)
Fuel consumption - average diesel	(l/h)
Fuel consumption - average AdBlue	%
Transmission model (gears FWD + RVS)	
Transmission gear shift type	
Transmission clutch type	
Drive axle brand / series	
Service brake / cooling	
Steer axle brand / series	
Alternator, power	(V/A)

EU3 / Tier 3	EU3 / Tier 3	EU 4 / Tier 4F	EU5
Cummins / QSB	Volvo / D-8	Volvo / D-5	Volvo / D-5
QSB-6.7-C220	TAD-850-VE	TAD-572-VE	TAD-582-VE
No SCR / no AdBlue	No SCR / no AdBlue	SCR / AdBlue	SCR / AdBlue
No particle filter	No particle filter	No particle filter	With particle filter
6-inline / common rail	6-inline / common rail	4-inline / common rail	4-inline / common rail
6.700	7.700	5.100	5.100
164 @ 2.000	160 @ 1.500-2.100	160 @ 1.700-2.100	160 @ 1.700-2.100
949	1060	910	910
2.100	2.100	2.100	2.100
5 - 15	5 - 15	5 - 15	5 - 15
-	-	1 - 5	1 - 5
Dana TE-14300 (3+3)			
Automatic powershift			
Torque converter			
Kessler / D81 - D91 (WDB)			
Wet Disc Brakes with oil cooling			
Kalmar / single cylinder / extra wide			
AC, 1680 (28 x 60)	AC, 3640 (28 x 130)	AC, 3080 (28 x 110)	AC, 3080 (28 x 110)

Lifting capacity.

