

## CS Technical data.

Low level Order Picker.



# Low level Order Picker.

This specification sheet to VDI Guidelines 2198 or 3597 gives the technical figures for the standard truck only. Different tyres, other masts, additional equipment etc. could give different figures.

Category	Item No.	Description	Unit	Value
Characteristics	1.1	Manufacturer		STILL
	1.2	Manufacturer's model designation		CS 20
	1.3	Drive		Electric
	1.4	Controls		Order picker
	1.5	Capacity / load	Q	kg 2000
	1.6	Load centre	c	mm 1200
	1.8	Load distance	x	mm 1615
	1.9	Wheel base	y	mm 2843
	Weights	2.1	Truck weight (inc. battery)	
2.2		Axle load laden	drive end / load end	kg 1250 / 1895
2.3		Axle load unladen	drive end / load end	kg 880 / 265
Wheels   chassis	3.1	Tyres (rubber, Vulkollan, pneumatic, polyurethane)		Vulkollan
	3.2	Tyre size	drive end	mm Ø 250 x 100
	3.3	Tyre size	load end	mm Ø 85 x 80
	3.4	Support castors	drive end	mm Ø 150 x 50
	3.5	Number of wheels (x = driven)	drive end / load end	
	3.6	Track width	drive end	b <sub>10</sub> mm 475
	3.7	Track width	load end	b <sub>11</sub> mm 348
Dimensions	4.4	Lift		h <sub>3</sub> mm 130
	4.8	Seat height / standing height (Platform)		h <sub>7</sub> mm 135
	4.9	Height of tiller in driving position	min. / max.	h <sub>14</sub> mm 1165
	4.15	Lowered height		h <sub>13</sub> mm 85
	4.19	Overall length without load		l <sub>1</sub> mm 3805
	4.20	Length including fork backs		l <sub>2</sub> mm 1425
	4.21	Overall width		b <sub>1</sub> mm 800
	4.22	Fork dimensions		s / e / l mm 61 / 172 / 2390
	4.25	Overall fork width		b <sub>5</sub> mm 520
	4.32	Floor clearance, centre of wheel-base		m <sub>2</sub> mm 24
4.34	Working aisle width with 800 x 1200 pallet lengthways (b <sub>12</sub> x l <sub>6</sub> )		A <sub>st</sub> mm 4127	
4.35	Turning radius		W <sub>a</sub> mm 3046	
Performance	5.1	Travel speed	laden / unladen	km / h 9 / 12,5
	5.2	Hoist speed	laden / unladen	m / s / s 2,1 / 1,7
	5.3	Lowering speed	laden / unladen	m / s / s 1,7 / 3,2
	5.7	Gradeability	laden / unladen	% 6 / 61)
	5.9	Acceleration time (over 10m)	laden / unladen	s 6,4 / 5,4
	5.10	Service brake		Electro-magnetic
Electric motors	6.1	Drive motor, rating S2 = 60 min		kW 2,0
	6.2	Hoist motor, rating at S3 = 15%		kW 2,2
	6.3	Battery to DIN 43531 / 35/36 A, B, C, No		IEC 254 - 2; B
	6.4	Battery voltage, rated capacity K <sub>s</sub>		V / Ah 24 / 450
	6.5	Battery weight + / - 5% (depending on manufacturer)		kg 410
	6.6	Energy consumption to VDI cycle		kWh / h 1,14
Other	8.1	Drive control		Pulse controller
	8.4	Noise level, at driver's ear		dB (A) 66,5

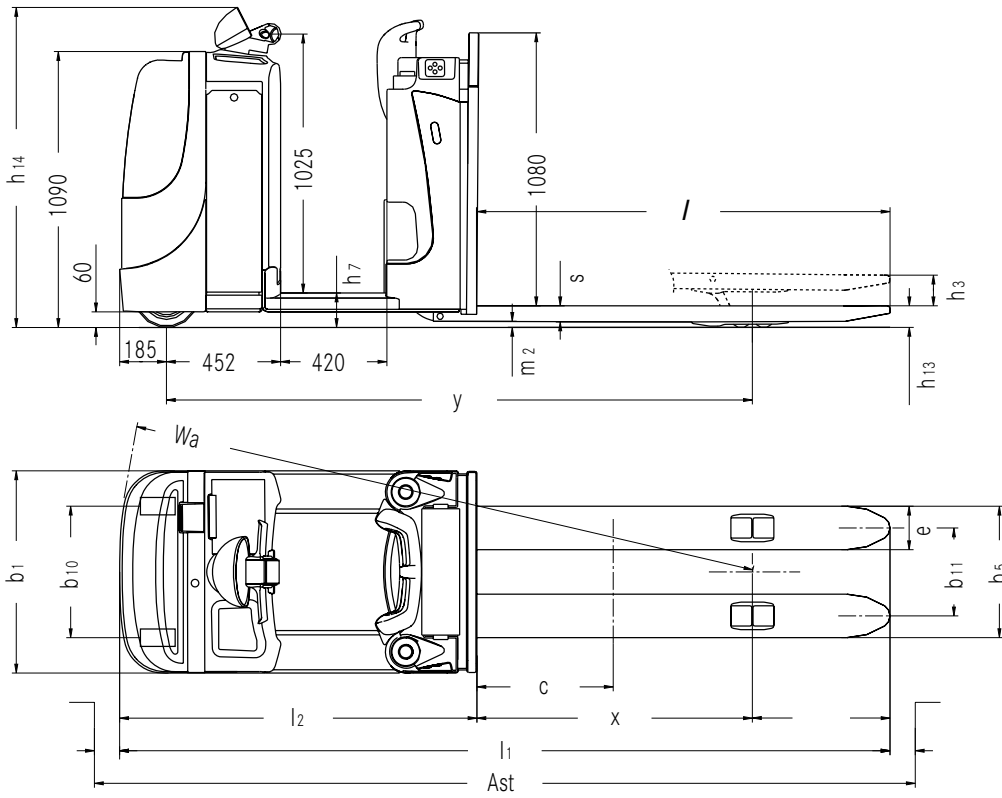
1) Gradeability is related to truck geometry

Available fork length / overall fork width combinations					
Fork length	Dimension over forks b <sub>5</sub>			Overhang Ü (l-x)	Load distance X
	520	560	670		
1190	X	X	X	185	1005
1450	X	X	X	185	1265
1650	X	X	X	545	1105
2150	X	X	X	545	1605
2390 <sup>1)</sup>	X	X	X	545	1845
2390 <sup>2)</sup>	X	X	X	775	1615
2900	X	X	X	775	2125
3100	X	X	X	975	2125

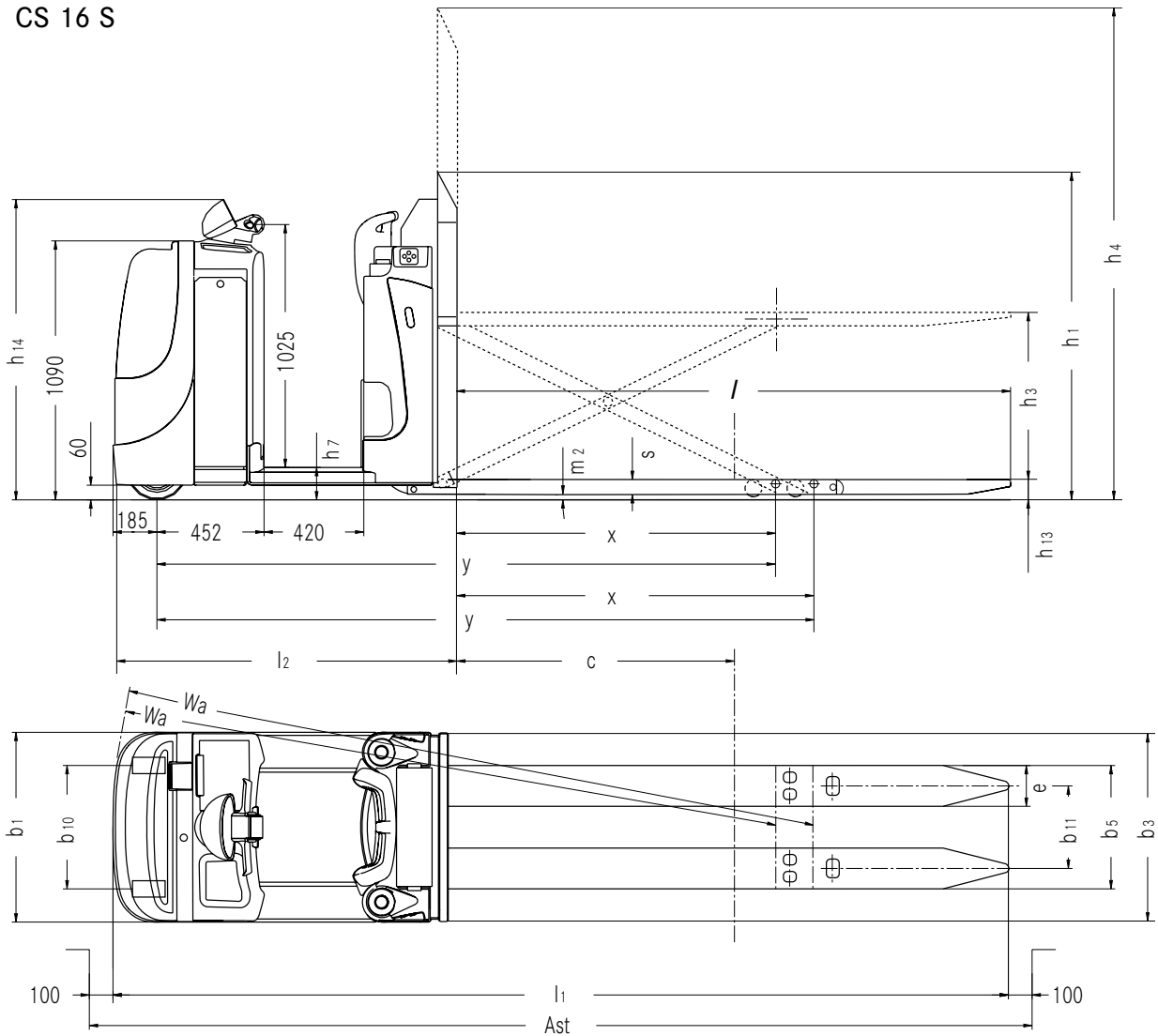
1) Wheelbase suitable for picking up 3 Euro pallets CROSSWAYS

2) Wheelbase suitable for picking up 2 Euro pallets LENGTHWAYS

CS 20 Standard version



CS 16 S



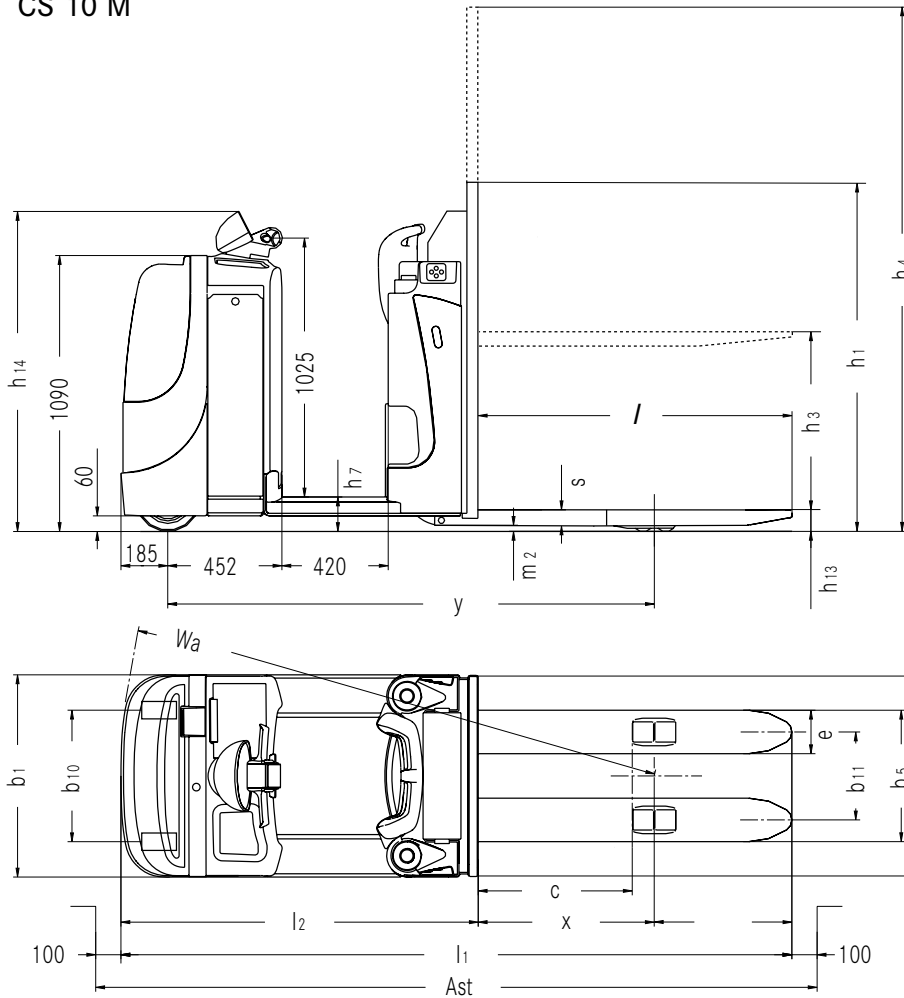
# CS 10 M/CS 16 S/CS 30 Z Low level Order Pickers.

This specification sheet to VDI Guidelines 2198 or 3597 gives the technical figures for the standard truck only. Different tyres, other masts, additional equipment etc. could give different figures.

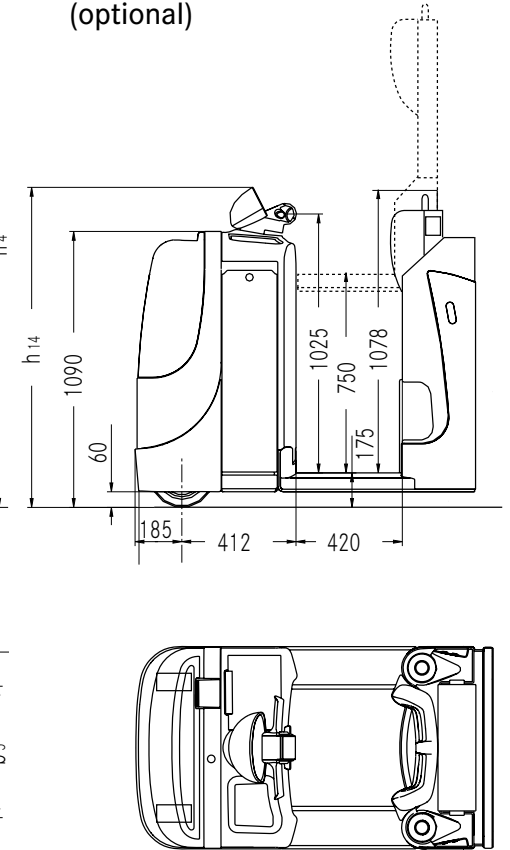
				STILL	STILL	STILL		
Characteristics	1.1	Manufacturer		CS 10 M	CS 16 S	CS 30 Z		
	1.2	Manufacturer's model designation		Electric	Electric	Electric		
	1.3	Drive		Order picker	Order picker	Order picker		
	1.4	Controls						
	1.5	Capacity / load	Q	kg	1000	1600	3000	
	1.6	Load centre	c	mm	600	1200	-	
	1.7	Drawbar pull	F		-	-	600	
	1.8	Load distance	x	mm	675	1381 <sup>1)</sup> / 1542	-	
	1.9	Wheel base	y	mm	1906	2661 <sup>1)</sup> / 2822	1190	
Weights	2.1	Truck weight (inc. battery)		kg	1218	1476	1530	
	2.2	Axle load laden	drive end / load end	kg	868 / 1350	1202 / 1874	-	
	2.3	Axle load unladen	drive end / load end	kg	842 / 376	1016 / 460	875 / 655	
Wheels   chassis	3.1	Tyres (rubber, Vulkollan, pneumatic, polyurethane)		Vulkollan	Vulkollan	Vulkollan		
	3.2	Tyre size	drive end	mm	Ø 250 x 100	Ø 250 x 100	Ø 250 x 100	
	3.3	Tyre size	load end	mm	Ø 85 x 80	Ø 82 x 34	Ø 250 x 80	
	3.4	Support castors		mm	Ø 150 x 50	Ø 150 x 50	Ø 140 x 50	
	3.5	Number of wheels (x = driven)	drive end / load end		1 x 1 / 4	1 x 1 / 8	1 x 1 / 2	
	3.6	Track width	drive end	b <sub>10</sub>	mm	475	475	475
	3.7	Track width	load end	b <sub>11</sub>	mm	380	356	424
Dimensions	4.2	Height, mast retracted	h <sub>1</sub>	mm	1375	1371	-	
	4.4	Lift	h <sub>3</sub>	mm	700	700	-	
	4.5	Height, mast extended	h <sub>4</sub>	mm	2075	2071	-	
	4.8	Seat height / Platform height	h <sub>7</sub>	mm	136	136	136	
	4.9	Height of tiller in driving position	min. / max.	h <sub>14</sub>	mm	1165	1165	1165
	4.12	Coupling height		h <sub>10</sub>	mm	-	-	290 / 345 / 400
	4.15	Lowered height		h <sub>13</sub>	mm	86	85	293
	4.17	Coupling length		l <sub>5</sub>	mm	-	-	-
	4.19	Overall length without load		l <sub>1</sub>	mm	2601	3852	1667
	4.20	Length including fork backs		l <sub>2</sub>	mm	1416	1465	-
	4.21	Overall width		b <sub>1</sub>	mm	800	800	800
	4.22	Fork dimensions	s / e / l		mm	56 / 184 / 1190	75 / 184 / 2390	-
	4.24	Fork carriage width		b <sub>3</sub>	mm	774	784	-
	4.25	Overall fork width		b <sub>5</sub>	mm	564	540	-
	4.32	Floor clearance, centre of wheel-base		m <sub>2</sub>	mm	29	10	60
4.33	Working aisle width with 1000 x 1200 pallet crossways		Ast	mm	2951	4141 <sup>1)</sup> / 4154	-	
4.35	Turning radius		Wa	mm	2091	2846 <sup>1)</sup> / 3007	1382	
Performance	5.1	Travel speed	laden / unladen	km / h	8 / 10,5	8,0 / 11,0	7,5 / 9,0	
	5.2	Hoist speed	laden / unladen	m / s / s	5,35 / 3,45	8,0 / 4,1	-	
	5.3	Lowering speed	laden / unladen	m / s / s	6,0 / 7,5	5,6 / 6,3	-	
	5.5	Drawbar pull		N	-	-	600	
	5.6	Max. drawbar pull		N	-	-	300	
	5.7	Gradeability	laden / unladen	%	-	-	See diagram	
5.9	Acceleration time (over 10m)	laden / unladen	s	5,5 / 4,8	6,4 / 5,5	-		
5.10	Service brake				Electro-magnetic	Electro-magnetic	Electro-magnetic	
Electric motors	6.1	Drive motor, rating S2 = 60 min		kW	2,0	2,0	2,0	
	6.2	Hoist motor, rating at S3 = 15%		kW	2,0	2,0	-	
	6.3	Battery to DIN 43531 / 35 / 36 A, B, C, No			IEC 254 - 2; B	IEC 254 - 2; B	IEC 254 - 2; B	
	6.4	Battery voltage, rated capacity C5		V / Ah	24 / 450	24 / 450	24 / 310	
	6.5	Battery weight + / - 5% (depending on manufacturer)		kg	410	410	560	
	6.6	Energy consumption to VDI cycle		kWh / h	-	-	1,4	
Other	8.1	Drive control			MOSFET controller	MOSFET controller	MOSFET controller	
	8.4	Noise level, at driver's ear		dB (A)	73,3	71,2	<70	

1) with forks raised

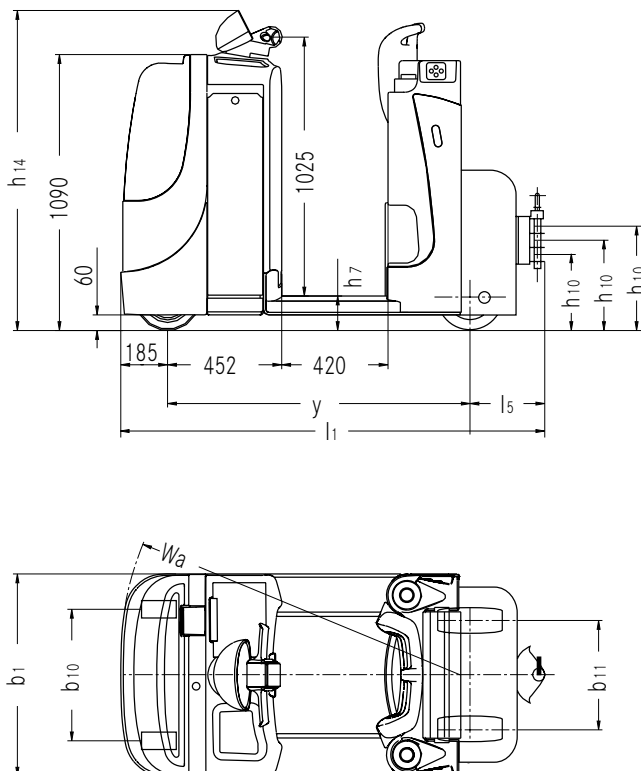
### CS 10 M



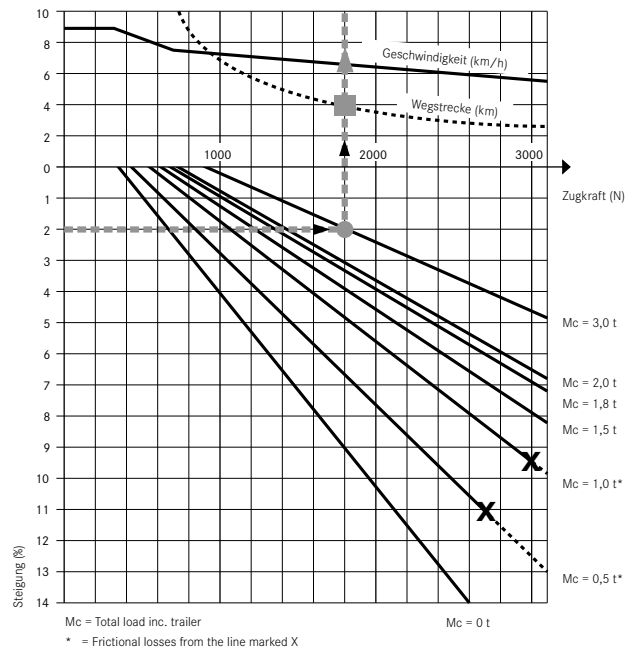
### CS 20 with platform lift (optional)



### CS 30 Z



### CS 30 Z drawbar pull diagram



#### Example:

On a ramp with a gradient of 2%, the CS 30 Z can pull a total load of 3 t [●] at 6.5 km/h [▲] während 4 km [■] without a pause.

## Modular principle.

- The modular principle of the new CS provides the opportunity to find the right variant for every type of order picking. For this only the load section alters: all other features are common to all CS variants.

## Truck frame.

- Reinforced at the front to act as a collision guard. The working parts of the truck are all easily accessible behind the removable front cover.

## Steering.

- Fully electric steering with automatic return to the neutral position.
- In the centre steering range any unintentional steering movements are electronically damped, to guarantee precise straight-ahead driving without oscillations.
- Automatic speed reduction when driving around curves and side mounted idler support castors give high lateral stability and reduce the effects of centrifugal force.

## Multi-function controls.

The new multi-function control "COCKPIT" contains all the functions for control, operation and monitoring on the CS. Thanks to the ergonomic layout of the buttons, all functions can be reached without changing the grip. The following functions are integrated in the COCKPIT:

- Driving
- Steering
- Lifting and lowering
- Work hour meter
- Discharge battery indicator
- Adjustable driving profiles
- Access control (provided as standard through coded ignition switch)
- Diagnosis (by means of service code)

In addition, the COCKPIT provides secure support whilst driving.

## Driver's stand-on platform.

- A fixed but floating (vibration-damping) stand-on platform provides optimal conditions when climbing in and out, due to the low, chamfered entry steps fitted with an anti-slip covering.
- The entire stand-on platform on the CS acts as a deadman switch.
- The back panel of the driver's platform is made of RIM, and has been ergonomically matched to the driver's needs. The padded backrest with shaped side supports offers the greatest comfort and security when driving.
- There are various storage facilities and holders for rolls of film integrated within the driver's compartment.
- A writing surface is available as standard on the CS.

## Drive.

- Comfortable, economical and hence cost saving work thanks to the electronic controller with MOSFET technology, which is fitted as standard.
- The latest control technology features 2 redundant processors, which are linked together with a CAN bus.
- Sensitive driving thanks to the externally excited 2 kW shunt wound motor.
- The truck will start smoothly and accelerate evenly up to maximum travel speed.

- The truck is braked when driving by releasing the COCKPIT drive switch or by plugging. The externally excited motor acts as a generator and is used to recover energy when braking.
- When starting on a gradient, or if the drive switch is released or put into neutral, the controller and the drive respectively come immediately into effect to prevent any uncontrolled rolling back.

## Hydraulic system.

- A compact pump and motor unit with a built in oil tank, solenoid valve and maximum pressure valve operates on the lift cylinder with lift cut-out.

## Brake system.

The brake system uses two independent systems. These are

- "Soft" braking with energy recovery, activated by releasing the drive switch.
- Emergency braking takes place when the push-button in the COCKPIT is actuated.
- Driving is only possible when the driver is on the stand-on platform.

## Battery.

- The battery is easily accessible, and for two or three shift operation can be changed with a hoist or from the side with integral roller tracks.
- Batteries with a capacity up to 450 Ah or 600 Ah respectively can be accommodated in two different battery trays.

## Platform lift.

If products have to be picked at the second level several times an hour.

- With a lifting range of 750 mm it is possible to achieve a platform height of 930 mm (i.e. a picking height of 2,530 mm) above the floor.
- Lifting and lowering by means of two foot-operated buttons integrated in the platform.
- The floating platform mounting absorbs vibrations, reducing the physical stress on the driver.

## Options.

- Unique modular accessory system thanks to multi-functional frame bar (front and rear).
- Adjustable A4 writing surface.
- Prepared for data terminal.
- Additional mounting system for accessories of all types (on request).
- Pedestrian operation through butterfly switch on the COCKPIT and / or through buttons on the backrest.
- Various speed regulators.
- High load backrest.
- Cold store version.
- Battery tray for 600 Ah battery.
- If required, the second order picking level can be reached using the folding step.

## Safety.

- Trucks are built to the EC Guidelines 98 / 37 and carry the CE symbol.
- Still is certified to ISO 9001.



### CS 10 M (Mast lift).

- Additional mast lift of 700 mm lift height, with a resulting back-saving picking height of 786 mm above the floor.
- Fork length for 1 Euro pallet lengthways.
- Residual capacity of 1000 kilograms (at 600 mm load centre) with mast fully extended.
- Hoisting / lowering as standard using additional buttons on the backrest and in the COCKPIT.
- Automatic speed limitation when the load is raised, to ensure stability when driving laden around bends.
- Automatic lowering stop at 400 mm in order to protect the feet.



### CS 16 S (Scissor-lift).

- Additional mast lift of 700 mm lift height, with a resulting back-saving picking height of 786 mm above the floor.
- Fork length for 2 Euro pallets lengthways.
- The fork dimensions (lowered height, width, the sweep of the tips) have been developed to facilitate the pick-up of all pallet types (Euro, half Euro, Dusseldorf, etc.)
- Residual capacity of 1600 kilograms (at 1200 mm load centre) with mast fully extended.
- Hoisting / lowering as standard using additional buttons on the backrest and in the COCKPIT.
- Automatic speed limitation when the load is raised, to ensure stability when driving laden around bends.
- Automatic lowering stop at 400 mm in order to protect the feet.



### CS 30 Z (Tractor).

- Drawbar pull 3000 kilograms.
- N.B.: drawbar pull and speed are conditional on the braking, so please take note of the diagram on page 5.
- Pin coupler with 3 popular heights (290 / 345 / 400 mm), other trailer couplings can be engineered on request (e.g. Rockinger or hydraulically raised ball coupler).
- In order to ensure stability, CS 30 Z is fitted with an articulating axle and wide Vulkollan load wheels.



For further information on the CS  
please visit: [www.still.de/cs](http://www.still.de/cs)

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