

Engine powered counterbalanced truck 16 000 kg to 52 000 kg

Linde



H 160 HP
H 180
H 200
H 220
H 236
H 250
H 280
H 320
H 370
H 520

022/023

Introduction

The Linde H 160 HP, H 180, H 200, H 220, H 236, H 250, H 280, H 320, H 370 and H 520

range of counterbalanced forklift trucks have been developed to suit a wide range of different applications, and incorporate the latest technology in meeting the rigorous existing and anticipated environmental standards. The main design features result from a thorough analysis of materials handling requirements and will ensure maximum productivity.

Features

- Ergonomically designed operator's compartment.
- Powerful modern diesel engine giving high performance combined with low fuel consumption and exhaust emissions.
- Exceptional low speed torque providing responsive handling at low speed.
- Load sensing hydraulic system with two variable piston type pumps, providing delivery-on-demand hydraulic services.
- Heavy duty industrial powershift transmission for smooth acceleration and deceleration.

Operator's compartment

Access to the centrally positioned operator's compartment can be gained from either side of the truck via wide steps. The trucks are equipped with a full suspension seat which is hydraulically damped and fully adjustable to ensure a high degree of operator comfort. All controls are within ISO 6682 zone of comfort specifications. The steering column is fully

adjustable to the operator's preferred driving position.

Chassis

A modern fabricated chassis of dual longitudinal box sections with lateral stress bracing is provided to give high strength to weight ratio and full protection to components.

Engine H 160 HP to H 280

An 8.5 litre (6 cylinder) Scania turbo charged diesel engine is fitted, developing 167 kW at 2200 rpm (157 kW H 160 HP). Cubic capacity 8480 cc.

Engine H 320, H 370 and H 520

An 11 litre (6 cylinder) Scania turbo charged diesel engine is fitted developing 216 kW (250 kW H 520) at 2100 rpm. Cubic capacity 11020 cc.

Transmission and drive axle

A torque converter mounted directly to the engine drives a powershift transmission. The gear selector is operated electrically from a gear lever inside the cabin, and has three or four (H 320, H 370, H 520) forward and reverse gears. A forward reverse inhibitor is optional. Disengagement is actuated by a switch in the brake pedal. A heavy duty wide track double reduction type drive axle is fitted.

Steering

Full hydrostatic power steering is provided, resulting in excellent manoeuvrability with minimum operator fatigue and allowing lock to lock steering when stationary. A heavy duty, fabricated steer axle is mounted to the chassis via spherelastatic bushes to allow axle

articulation on uneven ground. A large through-rod, double acting cylinder is mounted direct to the steer axle, and fixed length track links with sealed spherical bearings connect to the stub axles. The steering geometry is factory set and requires no adjustment.

Hydraulic system

Both trucks and the environment benefit from the Load sensing hydraulic system. This system incorporates two (three for H 320, H 370, H 520) highly efficient variable piston type pumps, controlled by load sensing valves that provide equal quantities of hydraulic oil to all services on demand. Only the precise amount of oil required by the services selected is delivered, the result of this is to reduce sustained load on the engine, thereby saving fuel, and reduce wear on hydraulic parts by limiting unnecessary oil flow, which results in an extended oil life.

Brakes

All truck models feature the latest maintenance free, oil immersed disc brakes. Application is by foot brake pedal. The brakes can also be applied by the parking brake switch situated on the operator's instrument console.

Mast

A robust duplex free view fabricated mast of all roller construction affords immense strength, maximum load stability and mast rigidity to full lift height. Full width load rollers and side thrust rollers between inner and outer mast ensure complete alignment. Side-shift and forks spread are fitted as standard.

LINDE		Forklift Trucks		Data sheet for materi			
		Designation		- to V			
September 1996		Manufacturer's data and design characteristics					
Characteristics	1.1	Manufacturer		Linde	Linde	Linde	
	1.2	Model designation		H 160 HP	H 180	H 200	
	1.3	Power unit: Battery, Diesel, LP gas, Mains power		Diesel	Diesel	Diesel	
	1.4	Operator type: Pedestrian, rider stand-on, rider seated		Rider seated	Rider seated	Rider seated	
	1.5	Load capacity/load lifted	Q (kg)	16000	18000	20000	
	1.6	Load centre	c (mm)	1200	1200	1200	
	1.8	Load centre distance	x (mm)	915	1085	1085	
Weight	1.9	Wheelbase	y (mm)	3750	4000	4000	
	2.1	Service weight	kg	22400	30000	31500	
	2.2	Axle load, with load front / rear	kg	35900 / 2500	45000 / 3000	48100 / 3400	
Wheel and Tyre	2.3	Axle load, without load front / rear	kg	10900 / 11500	16700 / 13300	16700 / 14800	
	3.1	Tyres, Pneumatic, Super elastic, Cushion, Polyurethane		Pneumatic	Pneumatic	Pneumatic	
	3.2	Tyre size, front		1200 x 20 / 20pr	1400 x 24 / 24pr	1400 x 24 / 24pr	
	3.3	Tyre size, rear		1200 x 20 / 20pr	1400 x 24 / 24pr	1400 x 24 / 24pr	
	3.5	Wheels, number, front / rear (x = driven)		4x / 2	4x / 2	4x / 2	
	3.6	Track width, Front	b10 (mm)	1852	2199	2199	
	3.7	Track width, Rear	b11 (mm)	1920	2160	2160	
Dimensions	4.1	Mast / fork carriage / truck tilt, forward / backward	α/β (°)	5 / 10	5 / 10	5 / 10	
	4.2	Height of mast lowered	h1 (mm)	4150	4300	4300	
	4.3	Freelift	h2 (mm)	-	150	150	
	4.4	Lift	h3 (mm)	5000	5000	5000	
	4.5	Height of mast extended	h4 (mm)	6650	6800	6800	
	4.7	Height of overhead guard (cabin)	h6 (mm)	2920	3250	3250	
	4.8	Height, operator's seat / stand-on platform	h7 (mm)	1801	2174	2174	
	4.12	Towing coupling height	h10 (mm)	515	642	642	
	4.19	Overall length	l1 (mm)	7865	8365	8365	
	4.20	Length to fork face	l2 (mm)	5465	5965	5965	
	4.21	Overall width	b1/b2 (mm)	2530	3050	3050	
	4.22	Fork dimensions	s/e/l (mm)	85 / 250 / 2400	110 / 250 / 2400	110 / 250 / 2400	
	4.23	Fork carriage DIN 15173, class/type A, B		-	-	-	
	4.24	Width of fork carriage	b3 (mm)	2450	3000	3000	
	4.31	Ground clearance, mast	m1 (mm)	240	300	300	
	4.32	Ground clearance, centre of wheelbase	m2 (mm)	336	385	385	
	4.33	Stacking aisle, with 2400 mm load length	Ast (mm)	8325	9005	9005	
	4.34	Stacking aisle, with pallet 800x 1200	Ast (mm)	-	-	-	
	4.35	Turning radius	Wa (mm)	4810	5340	5340	
	Performance	4.36	Minimum pivoting point distance	b13 (mm)	1540	1845	1845
5.1		Travel speed, with / without load	km/h	30 / 30	26 / 27.5	26 / 27.5	
5.2		Lift speed, with / without load	m/s	0.35 / 0.40	0.25 / 0.30	0.25 / 0.30	
5.3		Lowering speed, with / without load	m/s	0.40 / 0.40	0.40 / 0.40	0.40 / 0.40	
5.5		Tractive force, with / without load	N	96.9	147.4	147.4	
5.7		Climbing ability, with / without load	%	24.4	31.1	28.7	
5.9		Acceleration, with / without load	s	-	-	-	
Drive	5.10	Service brake		-	-	-	
	7.1	Engine manufacturer / type		Scania DS 9 62 A	Scania DS 9 62 A	Scania DS 9 62 A	
	7.2	Engine performance according to ISO 1585	kW	157	167	167	
	7.3	Rated speed	min ⁻¹	2200	2200	2200	
	7.4	Number of cylinders / displacement	cm ³	6 / 8480	6 / 8480	6 / 8480	
Other	7.5	Fuel consumption	l/h	-	-	-	
	8.1	Type of Transmission		Torque Converter 3 / 3	Torque Converter 3 / 3	Torque Converter 3 / 3	
	8.2	Operating pressure, for attachment	bar	180	170	185	
	8.3	Oil flow, for attachment	l/min	-	-	-	
	8.4	Noise level, at operator's ear, Overhead guard / Cab	dB(A)	86 / 74	86 / 74	86 / 74	
	8.5	Trailer coupling, design / type, DIN, no		-	-	-	

als handling equipment

DI 3586 –

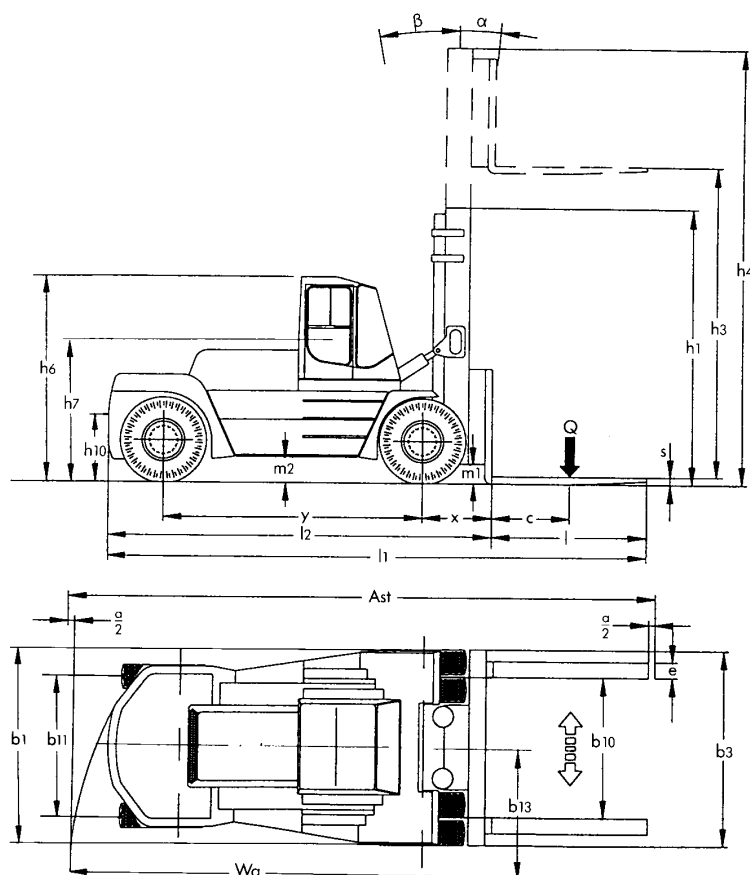
Series number

VDI 2198

Registration note

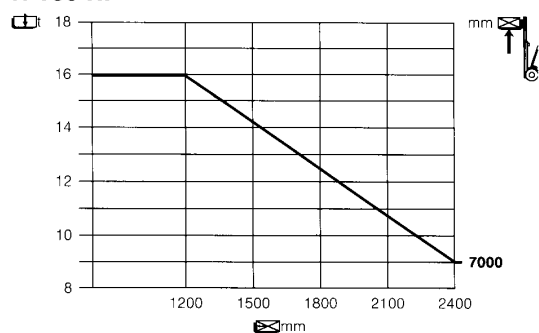
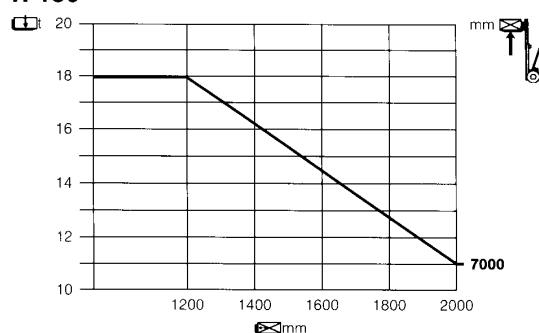
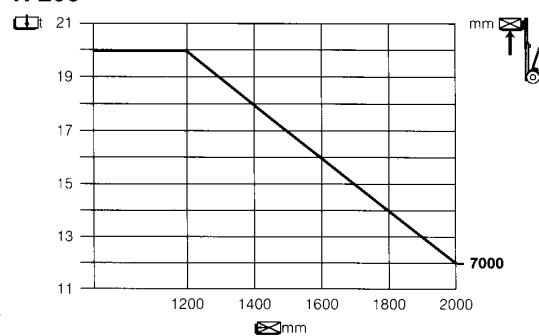
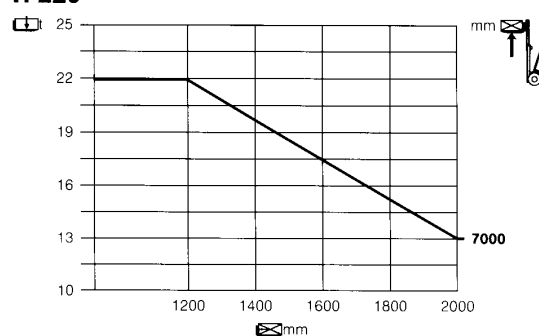
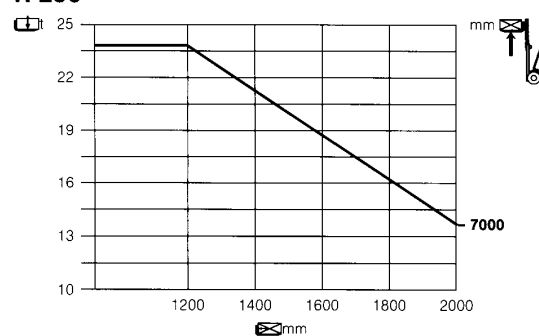
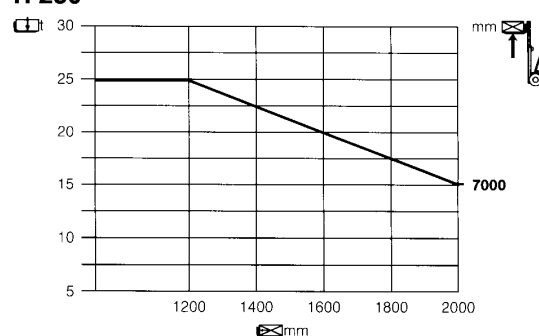
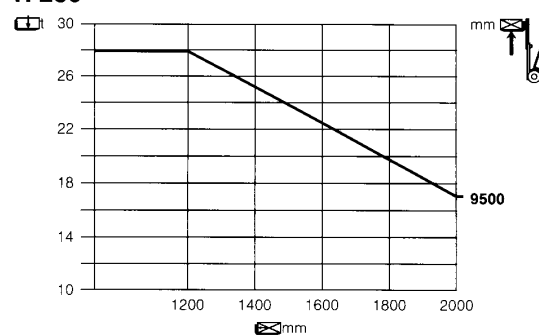
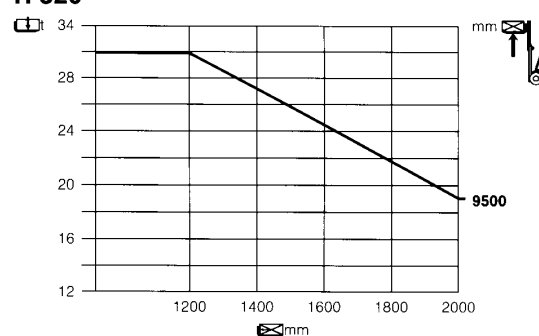
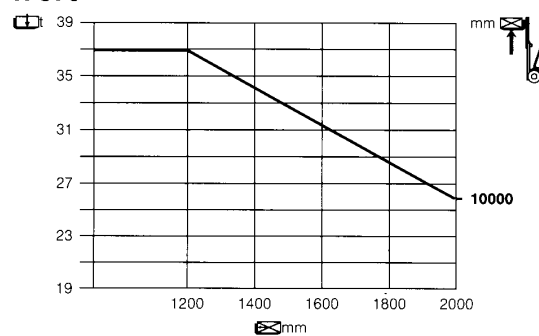
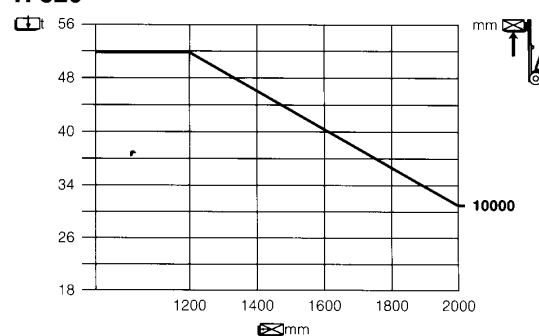
Model types

	Linde	Linde	Linde	Linde	Linde	Linde	Linde
	H 220	H 236	H 250	H 280	H 320	H 370	H 520
	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel
	Rider seated	Rider seated	Rider seated	Rider seated	Rider seated	Rider seated	Rider seated
	22000	23600	25000	28000	32000	37000	52000
	1200	1200	1200	1200	1200	1200	1200
	1085	1085	1085	1185	1185	1285	1380
	4250	4250	4250	4500	4750	5000	6500
	32000	33200	34100	39600	41300	48600	58800
	50500 / 3500	53000 / 3800	55100 / 4000	63100 / 4500	68600 / 4700	80100 / 5500	104600 / 6200
	16700 / 15300	16700 / 16500	16700 / 17400	20300 / 19300	20500 / 20800	24700 / 23900	32000 / 26800
	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic
	1400 x 24 / 24pr	1400 x 24 / 24pr	1400 x 24 / 24pr	16.00 x 25 / 28pr	16.00 x 25 / 28pr	18.00 x 25 / 36pr	23.50 x 25 / 36pr
	1400 x 24 / 24pr	1400 x 24 / 24pr	1400 x 24 / 24pr	16.00 x 25 / 28pr	16.00 x 25 / 28pr	18.00 x 25 / 36pr	18.00 x 25 / 36pr
	4x / 2	4x / 2	4x / 2	4x / 2	4x / 2	4x / 2	4x / 2
	2199	2199	2199	2438	2438	3030	3030
	2160	2160	2160	2600	2600	2600	2600
	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10
	4300	4300	4300	4500	4500	5050	5600
	150	150	150	150	150	150	150
	5000	5000	5000	5000	5000	5000	5000
	6800	6800	6800	7000	7000	7550	8100
	3250	3250	3250	3375	3375	3670	3670
	2174	2174	2174	2285	2285	2580	2600
	642	642	642	676	676	747	790
	8635	8635	8635	9125	9375	9725	11320
	6235	6235	6235	6725	6975	7325	8920
	3050	3050	3050	3410	3410	4150	4450
	110 / 250 / 2400	110 / 250 / 2400	110 / 250 / 2400	110 / 300 / 2400	110 / 300 / 2400	135 / 300 / 2400	145 / 300 / 2400
	-	-	-	-	-	-	-
	3000	3000	3000	3000	3400	3400	3400
	300	300	300	300	300	300	300
	385	385	385	430	430	492	492
	9055	9255	9255	10135	10335	10535	12140
	-	-	-	-	-	-	-
	5540	5540	5540	6300	6500	6700	8250
	1845	1845	1845	2480	2570	2640	3235
	25.5 / 27.5	25 / 27	25 / 27	22.5 / 24.5	21.6 / 22.4	23.5 / 25	22.3 / 24
	0.25 / 0.30	0.25 / 0.30	0.25 / 0.30	0.27 / 0.32	0.27 / 0.32	0.21 / 0.26	0.16 / 0.21
	0.40 / 0.40	0.40 / 0.40	0.40 / 0.40	0.40 / 0.40	0.40 / 0.40	0.40 / 0.40	0.40 / 0.40
	147.4	147.4	147.4	156.2	225.9	222.4	288.1
	27.1	25.6	24.5	22.7	31.9	25.6	25.1
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	Scania DS 9 62A	Scania DS 9 62A	Scania DS 9 62A	Scania DS 9 62A	Scania DS 11 66A	Scania DS 11 66A	Scania DSI 11 59A
	167	167	167	167	216	216	250
	2200	2200	2200	2200	2100	2100	2100
	6 / 8480	6 / 8480	6 / 8480	6 / 8480	6 / 11020	6 / 11020	6 / 11020
	-	-	-	-	-	-	-
	Torque Converter 3 / 3	Torque Converter 3 / 3	Torque Converter 3 / 3	Torque Converter 3 / 3	Torque Converter 4 / 4	Torque Converter 4 / 4	Torque Converter 4 / 4
	200	215	225	165	180	200	190
	-	-	-	-	-	-	-
	86 / 74	86 / 74	86 / 74	86 / 74	86 / 74	86 / 74	86 / 74
	-	-	-	-	-	-	-

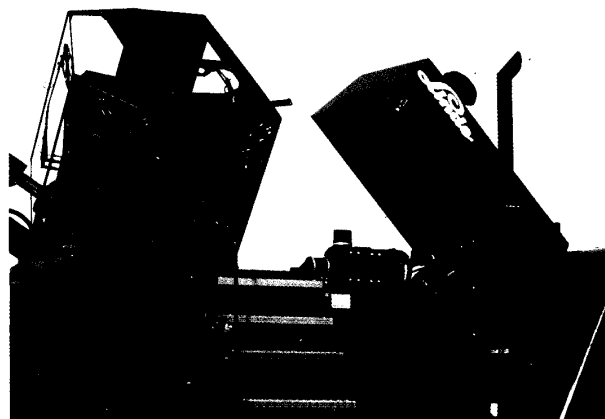
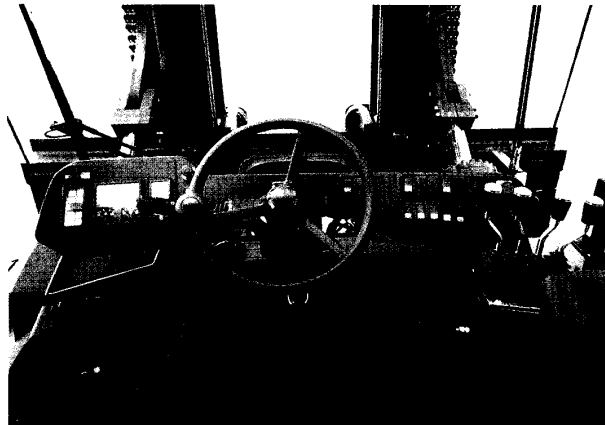
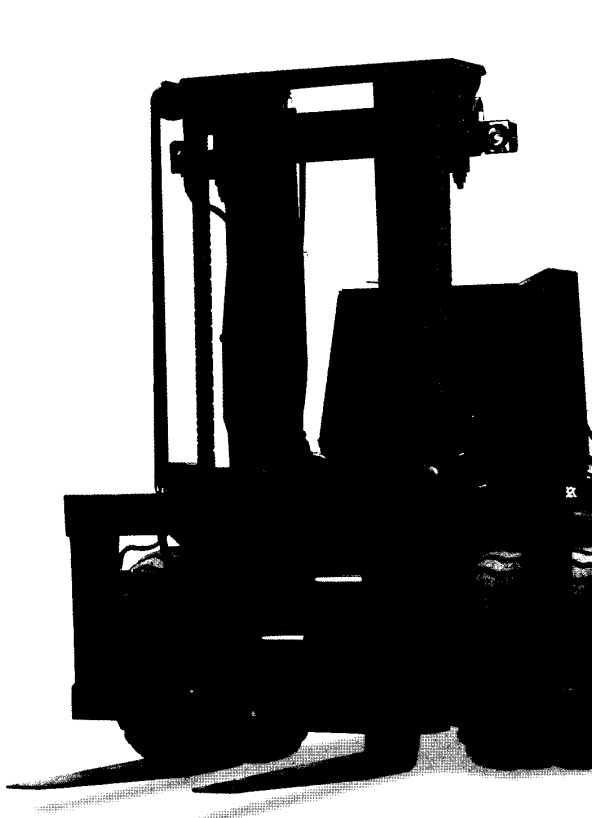


H 160 HP								
h_3	Lift	4000	5000	6000	7000	-	-	-
$h_3 + s$	Lift height	4085	5085	6085	7085	-	-	-
h_2	Normal freelif	150	150	150	150	-	-	-
h_1	Closed height *	3875	4375	4875	5375	-	-	-
h_4	Extended height	5800	6800	7800	8800	-	-	-
	Special freelif (Duplex)	2000	2500	3000	3500	-	-	-
H 180, H 200, H 220, H236 and H 250								
h_3	Lift	4000	5000	6000	7000	-	-	-
$h_3 + s$	Lift height	4110	5110	6110	7110	-	-	-
h_2	Normal freelif	150	150	150	150	-	-	-
h_1	Closed height *	3875	4375	4875	5375	-	-	-
h_4	Extended height	5800	6800	7800	8800	-	-	-
	Special freelif (Duplex)	2000	2500	3000	3500	-	-	-
H 280 and H 320								
h_3	Lift	4000	5000	6000	7000	8000	9000	-
$h_3 + s$	Lift height	4110	5110	6110	7110	8110	9110	-
h_2	Normal freelif	150	150	150	150	150	150	-
h_1	Closed height *	4075	4575	5075	5575	6075	6575	-
h_4	Extended height	6000	7000	8000	9000	10000	11000	-
	Special freelif (Duplex)	2000	2500	3000	3500	4000	4500	-
H 370								
h_3	Lift	4000	5000	6000	7000	8000	9000	10000
$h_3 + s$	Lift height	4135	5135	6135	7135	8135	9135	10135
h_2	Normal freelif	150	150	150	150	150	150	150
h_1	Closed height *	4625	5125	5625	6125	6625	7125	7625
h_4	Extended height	6550	7550	8550	9550	10550	11550	12550
	Special freelif (Duplex)	2000	2500	3000	3500	4000	4500	5000
H 520								
h_3	Lift	4000	5000	6000	7000	8000	9000	10000
$h_3 + s$	Lift height	4145	5145	6145	7145	8145	9145	10145
h_2	Normal freelif	150	150	150	150	150	150	150
h_1	Closed height *	5175	5675	6175	6675	7175	7675	8175
h_4	Extended height	7100	8100	9100	10100	11100	12100	13100
	Special freelif (Duplex)	2000	2500	3000	3500	4000	4500	5000

*) with 150 mm Freelif

H 160 HP**H 180****H 200****H 220****H 236****H 250****H 280****H 320****H 370****H 520**

Equipment



Safety

- Neutral starting device.
- Failsafe hydraulic braking system.
- Audible warning (horn).
- Good all-round visibility.
- Load lowering valve.
- Low noise levels.

Standard equipment

Fully equipped mid mounted cabin with hinged doors, front, top and rear screen wipers and washers, heaters and demisters. Full suspension seat. Comprehensive instrumentation. Scania turbo charged diesel engine. Clark powershift transmission. Rockwell wide track heavy duty double reduction drive axle.

Wet disc brake system.

Brake system accumulator.

Load sensing hydraulic system with twin piston type pumps.

Servo assisted hydraulic controls.

Hydrostatic power steering.

High lift and lowering speed.

Adjustable steering wheel; Forward reverse, up and down 80 mm.

Full road lighting.

Horn.

Internal rear view mirror.

Optional equipment

Safety control system:

- Overload protection.
- Maximum travel speed inhibitor.

Extra heating.

Air conditioning.

Radio/cassette player.

Fire extinguisher, powder 3 kg.

Hydraulic oil pre-heater.

Engine oil pre-heater.

Control system - oil levels and pressure in engine/transmission.

Central lubrication system.

Forward/reverse inhibitor.

Automatic gear shifting.

Front and rear mirrors.

Wide range of hydraulic specialist attachments.

Coil boom.

Crane jib.

Container handling spreaders, fixed, side and telescopic.

Working lights on spreader.

Reverse warning.

Quick change forks/attachments.

The manufacturer reserves the right to alter specifications without notice. Subject to change as a result of technological progress.

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