Linde Material Handling

Internal Combustion Engine Counterbalance Trucks

H16 – H20

Capacity 1.6 t – 2.0 t | Series 391

DIESEL HVO LPG CNG

Agile bundle of energy

- → Compact dimensions for operation in tight corners
- → Spacious, ergonomic workplace with outstanding visibility for maximum operating comfort
- → Sturdy design for the most demanding applications in dusty environments or multi-shift operation
- → Wide variety of models, comprehensive range of standard equipment, additional options and customer-specific solutions for maximum versatility
- → Hydrostatic direct drive, twin pedal control and Linde Load Control ensure powerful, fast and precise power delivery
- → Low fuel consumption, long service intervals and maintenance-free components ensure high availability and keep total cost of ownership as low as possible

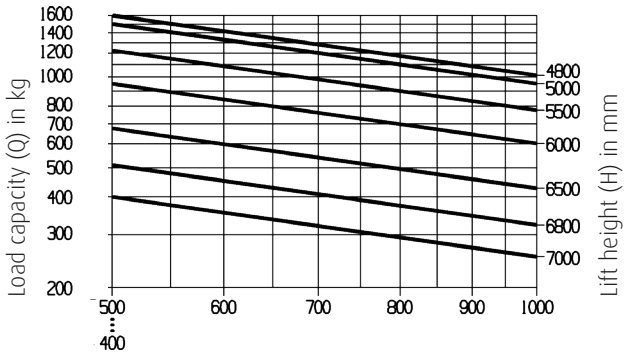
STANDARD AND OPTIONAL EQUIPMENT

	Manufacturer's type designation/equipment	H16 – H20 D	H16 – H20 T	H16 – H20 CNG
Workplace	Ergonomic and safe truck access due to a low entry step and grab handle on A-pillar	●	●	●
	Innovative decoupling concept reducing vibrations for operator	●	●	●
	Adjustable steering column tilt	○	○	○
	Container overhead guard: height 2133 mm	●	●	●
	Operator's seat – quick, easy mechanical weight adjustment aids operator comfort	●	●	●
	Different operator's seat options: heated seats, air suspension, active seat ventilation	○	○	○
	Swivelling seat for easier on/off access	○	○	○
	3.5" LED colour display with steering angle, tilt angle display, fuel gauge, clock, hour meter and servicing information	●	●	●
	Display shows engine oil pressure, engine overheating, parking brake, audible warning signal for engine and hydraulic oil temperature, blocked intake filter and low fuel consumption	●	●	●
	Armoured glass top screen	○	○	○
	Radio incl. DAB+, MP3 player and bluetooth hands-free kit	○	○	○
	Cabin doors with sliding window and door monitoring (complies with EN 16307-01 for the monitoring of restraint systems)	○	○	○
	Illuminated DIN A4 clip board	○	○	○
	Hot water heating/air conditioning with demist function and rear window heating	○	○	○
Drive and brake system	Linde hydrostatic transmission for exceptional truck control and low fuel consumption	●	●	●
	Deutz Diesel Engine EU 2016/1628 Stage 5	●	–	–
	Deutz CNG Engine EU 2016/1628 Stage 5	–	–	●
	Deutz LPG Engine EU 2016/1628 Stage 5	–	●	–
	Volumetric LPG tank (45l) including fill level indicator in the display	–	○	–
	LPG truck fitted with accurate ultrasonic fuel level indicator for exchange bottles	–	●	–
	Diesel particulate filter, oxidation catalysts, exhaust gas recirculation	●	–	–
	3-way catalytic converter	–	●	●
	Linde Engine Protection System (LEPS) – audible warning and speed reduction in critical engine conditions	●	●	●
	Hydraulic parking brake	●	●	●
	Hydraulic filter concept – hydraulic oil change after 6000 hours	●	●	●
	Power settings: Economy, Efficiency, Performance	○	○	○
Axles and tyres	Super-elastic (SE) tyres	●	●	●
	High performance Closed Shoulder tyres CS20	○	○	○
	Pneumatic tyres	○	○	○
	Anti-static tyres, non-marking	○	○	○
	Dirt deflectors/mud guards, front and rear	○	○	○
Mast	Top mounted tilt cylinders – for precise load handling at high lift heights	●	●	●
	Best visibility through standard, duplex, triplex mast	●	●	●
	Electronic end-position cushioning with tilt stop	●	●	●
	Hydraulic pressure accumulator protects loads and increases operator comfort over rough ground	○	○	○
Attachment / forks	Reinforced Linde forks – easy to adjust and long life time	●	●	●
	Integral roller guided sideshift with full lift capacity	○	○	○
	Integral fork positioner "View" for high residual capacities and optimized visibility	○	○	○
Safety	Linde Curve Assist – automatic reduction of travel speed around corners aids stability	●	●	●
	Electrical seat belt monitoring – visual and audible feedback	●	●	●
	Linde Load Assist – increased safety at high lift heights	●	●	●
	BlueSpot and TruckSpot – visual drive path warning for pedestrians and operators	○	○	○
	Load weight indicator incl. tare function – load weight indicator including load-dependent drive and lift limitation	○	○	○
	Linde Safety Pilot – load-dependent driving and lifting speed regulation with additional functions	○	○	○
	Linde Safety Guard – visual and audible proximity warning between trucks or between trucks and pedestrians	○	○	○
	Speed restriction options (via switch, indoor/outdoor, load-dependent)	○	○	○
	High safety and stability ensured by Linde Protector Frame	●	●	●
	Different lighting options truck lighting, working lamps, LED stripes, VertiLights	○	○	○
Digitalisation	Online data transmission	○	○	○
	WiFi data transmission	○	○	○
	Linde Fleet Management (local and cloud-based fleet management with various modules)	○	○	○
	Linde Pre-Op Check – customisable daily inspection log to check the readiness of the truck for operation	○	○	○
Operation/ load handling	Twin pedal control – smooth acceleration and quick reversing	●	●	●
	Single pedal control – smooth acceleration and fast manoeuvring	○	○	○
	Linde Load Control – central control lever fully integrated into the armrest for precise control of all hydraulic functions	●	●	●
	Individual lever control of working hydraulics, levers mounted on armrest	○	○	○

● Standard equipment ○ Optional equipment – Not available

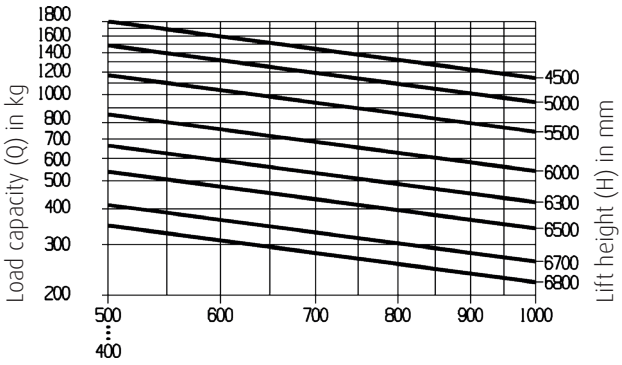
LOAD CAPACITY

H16



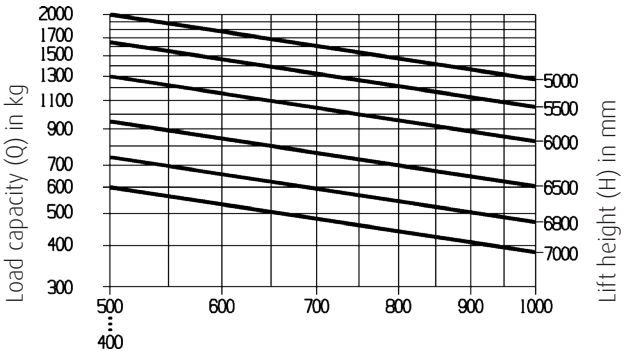
Load centre (c) in mm

H18



Load centre (c) in mm

H20



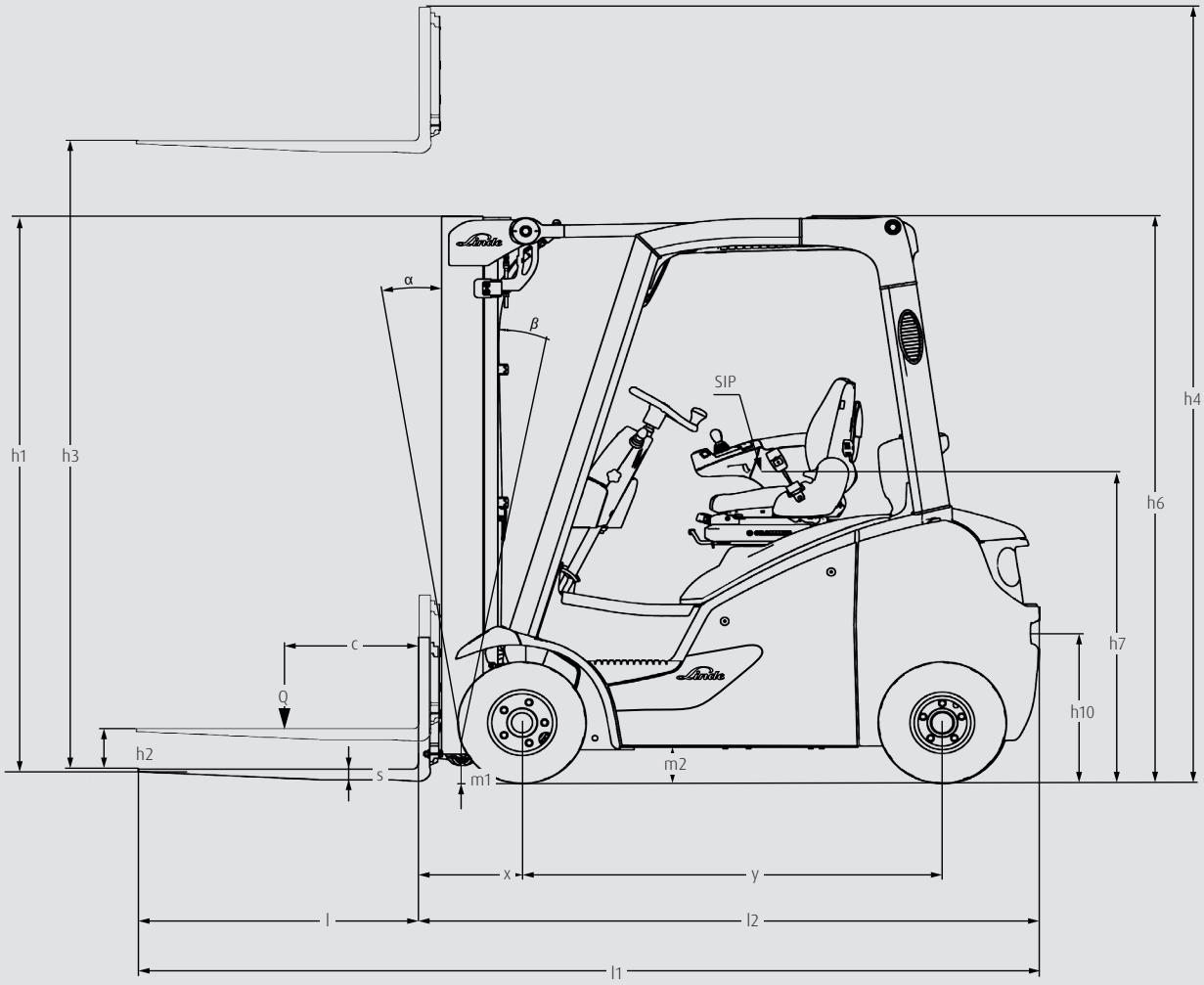
Load centre (c) in mm

TECHNICAL DATA (according to VDI 2198)

Characteristics	1.1	Manufacturer (abbreviation)		Linde MH	Linde MH	Linde MH	Linde MH
	1.2	Manufacturer's type designation		H16 D	H16 T	H16 CNG	H18 D
	1.2a	Series		391-02	391-02	391-02	391-02
	1.3	Drive		Diesel	LPG	CNG	Diesel
	1.4	Operation		Seat	Seat	Seat	Seat
	1.5	Rated capacity/rated load	Q (t)	1.6	1.6	1.6	1.8
	1.6	Load centre distance	c (mm)	500	500	500	500
	1.8	Load distance, centre of drive axle to fork	x (mm)	365	365	365	370
	1.9	Wheelbase	y (mm)	1600	1600	1600	1600
Weight	2.1	Service weight	kg	2745	2725	2810	2920
	2.2	Axle loading, laden front/rear	kg	3815/530	3775/550	3849/561	4139/581
	2.3	Axle loading, unladen front/rear	kg	1350/1395	1310/1415	1384/1426	1360/1560
Tyres/chassis	3.1	Tyres: solid rubber, superelastic, pneumatic, polyurethane		SE	SE	SE	SE
	3.2	Tyre size, front		180/70-8 (18x7-8)	180/70-8 (18x7-8)	180/70-8 (18x7-8)	180/70-8 (18x7-8)
	3.3	Tyre size, rear		180/70-8 (18x7-8)	180/70-8 (18x7-8)	180/70-8 (18x7-8)	180/70-8 (18x7-8)
	3.5	Wheels, number front/rear (x = driven wheels)		2x/2	2x/2	2x/2	2x/2
	3.6	Tread, front	b10 (mm)	930	930	930	930
	3.7	Tread, rear	b11 (mm)	873	873	873	873
Dimensions	4.1	Mast/fork carriage tilt, forward/backward	a/b (°)	6.0/9.0[1]	6.0/9.0[1]	6.0/9.0[1]	6.0/9.0[1]
	4.2	Mast height, lowered	h1 (mm)	2197[2]	2197[2]	2197[2]	2197[2]
	4.3	Free lift	h2 (mm)	150	150	150	150
	4.4	Lift	h3 (mm)	3150	3150	3150	3150
	4.5	Mast height, extended	h4 (mm)	3754	3754	3754	3754
	4.7	Height of overhead guard (cabin)	h6 (mm)	2123	2123	2123	2123
	4.8	Seat height relating to SIP/stand height	h7 (mm)	1138	1138	1138	1138
	4.12	Coupling height	h10 (mm)	530	530	530	530
	4.19	Overall length	l1 (mm)	3211	3222	3222	3227
	4.20	Length to fork face	l2 (mm)	2311	2322	2322	2327
	4.21	Overall width	b1/b2 (mm)	1086	1086	1086	1086
	4.22	Fork dimensions DIN ISO 2331	s/e/l (mm)	40/80/900	40/80/900	40/80/900	45/100/900
	4.23	Fork carriage to ISO 2328, class/type A, B		2A	2A	2A	2A
	4.24	Fork carriage width	b3 (mm)	980	980	980	980
	4.31	Ground clearance, laden, below mast	m1 (mm)	93	93	93	92
	4.32	Ground clearance, centre of wheelbase	m2 (mm)	119	119	119	118
	4.34.1	Aisle width for pallets 1000 × 1200 crossways	Ast (mm)	3686[3]	3686[3]	3686[3]	3691[3]
	4.34.2	Aisle width with pallet 800 × 1200 lengthways	Ast (mm)	3886[3]	3886[3]	3886[3]	3891[3]
	4.35	Turning radius	Wa (mm)	2121	2121	2121	2121
	4.36	Inside turning radius	b13 (mm)	600	600	600	600
Performance	5.1	Travel speed, laden/unladen	km/h	20/20	20/20	20/20	20/20
	5.2	Lifting speed, laden/unladen	m/s	0.6/0.63	0.6/0.63	0.6/0.63	0.6/0.63
	5.3	Lowering speed, laden/unladen	m/s	0.57/0.57	0.57/0.57	0.57/0.57	0.57/0.57
	5.5	Drawbar pull, laden/unladen	N	12900/9900	12900/9900	12900/9900	12900/10300
	5.7	Gradeability, laden/unladen	%	32.0/37.0	32.0/37.0	32.0/37.0	29.0/36.0
	5.9	Acceleration time, laden/unladen	s	5.1/4.5	5.0/4.3	5.0/4.3	5.3/4.6
	5.10	Service brake		hydrostatic	hydrostatic	hydrostatic	hydrostatic
Combustion-engine	7.1	Engine manufacturer/type		Deutz TD 2.2 L3	Deutz G 2.2 L3	Deutz G 2.2 L3	Deutz TD 2.2 L3
	7.2	Engine power according to ISO 1585	kW	30	30	30	30
	7.3	Rated speed	1/min	2200	2200	2200	2200
	7.4	Number of cylinders/displacement	-/cm³	3.0/2194.0	3.0/2194.0	3.0/2194.0	3.0/2194.0
	7.5	Fuel consumption according to DIN EN 16796	l/h	2.2	-	-	2.3
	7.5a	Fuel consumption according to DIN EN 16796	kg/h	-	2.0	-	-
	7.5b	Fuel consumption according to VDI cycle	m3/h	-	-	2.2 (H); 2.4 (L)[4]	-
	7.5.1	CO2 equivalent according to EN 16796	kg/h	7	6.8	5.4 (H); 5.9 (L)[4]	7.3
	7.6	Turnover output according to VDI 2198	t/h	134.0	134.0	134.0	148.0
	7.7	Turnover efficiency according to VDI 2198	t/l	41.9	46.2	-	44.8
Drive	8.1	Type of drive unit		hydrost./stepl.	hydrost./stepl.	hydrost./stepl.	hydrost./stepl.
Additional data	10.1	Operating pressure for attachments	bar	170	170	170	170
	10.2	Oil flow for attachments	l/min	38	38	38	38
	10.7	Sound pressure level LpAZ (at the operator's seat)	dB(A)	80	80	80	80
	10.8	Towing coupling, type DIN 15170		-	-	-	-
	11.2	Static stability		1.61	1.64	1.65	1.59

1) Lift height and equipment can alter rear mast tilt angle
2) With 150 mm free lift
3) Including a 200 mm (min.) operating aisle clearance
4) (H)= high quality, (L)= low quality

	Linde MH	Linde MH	Linde MH	Linde MH	Linde MH
	H18 T	**H18 CNG**	**H20 D**	**H20 T**	**H20 CNG**
	391-02	391-02	391-02	391-02	391-02
	LPG	CNG	Diesel	LPG	CNG
	Seat	Seat	Seat	Seat	Seat
	1.8	1.8	2.0	2.0	2.0
	500	500	500	500	500
	370	370	374	374	374
	1600	1600	1600	1600	1600
	2900	2985	3110	3090	3175
	4099/601	4173/612	4483/628	4443/648	4517/659
	1320/1580	1394/1591	1390/1720	1350/1740	1424/1751
	SE	SE	SE	SE	SE
	180/70-8 (18x7-8)	180/70-8 (18x7-8)	200/50-10	200/50-10	200/50-10
	180/70-8 (18x7-8)	180/70-8 (18x7-8)	180/70-8 (18x7-8)	180/70-8 (18x7-8)	180/70-8 (18x7-8)
	2x/2	2x/2	2x/2	2x/2	2x/2
	930	930	945	945	945
	873	873	873	873	873
	6.0/9.0[1)]	6.0/9.0[1)]	6.0/9.0[1)]	6.0/9.0[1)]	6.0/9.0[1)]
	2197[2)]	2197[2)]	2198[2)]	2198[2)]	2198[2)]
	150	150	150	150	150
	3150	3150	3150	3150	3150
	3754	3754	3755	3755	3755
	2123	2123	2123	2123	2123
	1138	1138	1138	1138	1138
	530	530	530	530	530
	3227	3227	3231	3231	3231
	2327	2327	2331	2331	2331
	1086	1086	1152	1152	1152
	45/100/900	45/100/900	45/100/900	45/100/900	45/100/900
	2A	2A	2A	2A	2A
	980	980	980	980	980
	92	92	95	95	95
	118	118	121	121	121
	3691[3)]	3691[3)]	3695[3)]	3695[3)]	3695[3)]
	3891[3)]	3891[3)]	3895[3)]	3895[3)]	3895[3)]
	2121	2121	2121	2121	2121
	600	600	638	638	638
	20/20	20/20	20/20	20/20	20/20
	0.6/0.63	0.6/0.63	0.6/0.63	0.6/0.63	0.6/0.63
	0.57/0.57	0.57/0.57	0.57/0.57	0.57/0.57	0.57/0.57
	12900/10300	12900/10300	12900/10700	12900/10700	12900/10700
	29.0/36.0	29.0/36.0	27.0/36.0	27.0/36.0	27.0/36.0
	5.2/4.5	5.2/4.5	5.4/4.7	5.3/4.6	5.3/4.6
	hydrostatic	hydrostatic	hydrostatic	hydrostatic	hydrostatic
	Deutz G 2.2 L3	Deutz G 2.2 L3	Deutz TD 2.2 L3	Deutz G 2.2 L3	Deutz G 2.2 L3
	30	30	30	30	30
	2200	2200	2200	2200	2200
	3.0/2194.0	3.0/2194.0	3.0/2194.0	3.0/2194.0	3.0/2194.0
	-	-	2.4	-	-
	2.1	-	-	2.2	-
	-	2.3 (H); 2.5 (L)[4)]	-	-	2.4 (H); 2.6 (L)[4)]
	7.1	5.7 (H); 6.2 (L)[4)]	7.6	7.5	5.9 (H); 6.4 (L)[4)]
	148.0	148.0	160.0	160.0	160.0
	49.3	-	45.7	51.6	-
	hydrost./stepl.	hydrost./stepl.	hydrost./stepl.	hydrost./stepl.	hydrost./stepl.
	170	170	170	170	170
	38	38	38	38	38
	80	80	80	80	80
	-	-	-	-	-
	1.61	1.63	1.57	1.59	1.60


α
β
SIP
h1
h3
h4
h6
h7
h10
c
Q
h2
s
m1
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l2
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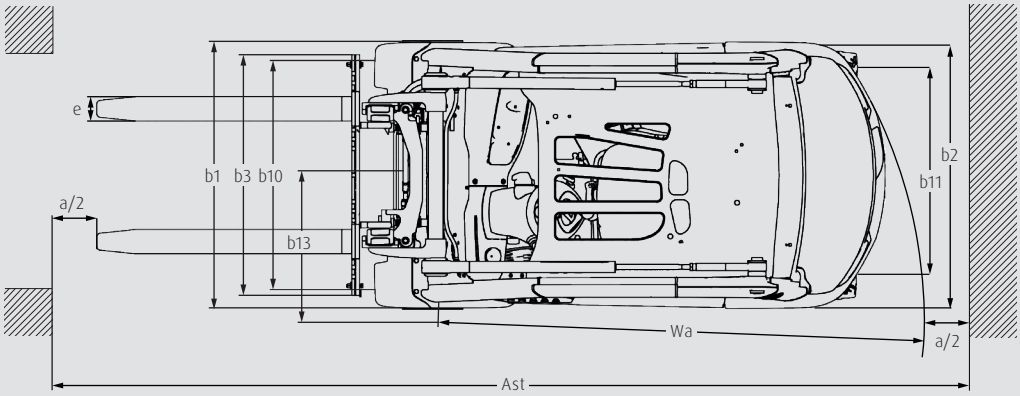
e
b1
b3
b10
b13
a/2
b2
b11
Wa
a/2
Ast

MAST TABLES

STANDARD MAST (mm)

Series	1521		
Lift	**h3: 3150**	**h3: 3850**	**h3: 4250**
Height measurements	h1: 2121 h2: 150 h4: 3753	h1: 2471 h2: 150 h4: 4453	h1: 2671 h2: 150 h4: 4853
Manufacturer's type designation			
H16	○	○	○
H18	○	○	○
H20	○	○	○

Series	1521	
Lift	**h3: 3145**	**h3: 3845**
Height measurements	h1: 2121 h2: 1518 h4: 3747	h1: 2471 h2: 1868 h4: 4447
Manufacturer's type designation		
H16	○	○
H18	○	○
H20	○	○

TRIPLEX MAST (mm)

Series	1521	
Lift	**h3: 4625**	**h3: 5475**
Height measurements	h1: 2121 h2: 1519 h4: 5227	h1: 2471 h2: 1869 h4: 6077
Manufacturer's type designation		
H16	○	○
H18	○	○
H20	○	○

○ Optional equipment

Figures for other equipments and triplex masts on request

CHARACTERISTICS

Linde Protector Frame

Safety

→ Linde Protector Frame for the highest level of operator safety
→ Particularly slim lift mast profile for optimum visibility
→ Linde Curve Assist for reduced speed around corners, reducing the risk of the forklift truck tipping over
→ Linde Engine Protection System for monitoring important engine operating parameters such as oil pressure, coolant level and temperature

Driver workplace

Ergonomics

→ Spacious cabin with a large footwell, comfortable seat and automotive ambience for low-fatigue working
→ Ergonomic configuration of all controls with adjustable armrest and seat for efficient, comfortable working
→ Precise and sensitive control of all mast and lifting movements for effortless manoeuvring
→ Operator`s cab, mast and drive axle isolated from chassis for almost vibration and shock-free operation

Linde Load Control

Handling

→ Hydrostatic direct drive for responsive, smooth and precise movement
→ Durable diesel, LPG or natural gas engines ensure high torque and minimal fuel consumption
→ Twin or single pedal control for efficient operation
→ Linde Load Control for pin-point precision control of all mast functions

Easy service access

Service

→ Maintenance-free mounting of axles and tilt cylinders for minimal downtime and operating costs
→ Linde hydrostatic transmission reduces service costs, guarantees excellent availability and increases handling performance
→ Easy access to maintenance components for fast servicing and increased truck availability
→ Rapid diagnostics via laptop

Linde Material Handling

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