R 20

Technical Data.

Electric Forklift Trucks
Models R 20-14/R 20-15/R 20-16/R 20-18/R 20-20.

STILL
Making the right moves.

R 20 Electric Forklift Trucks.

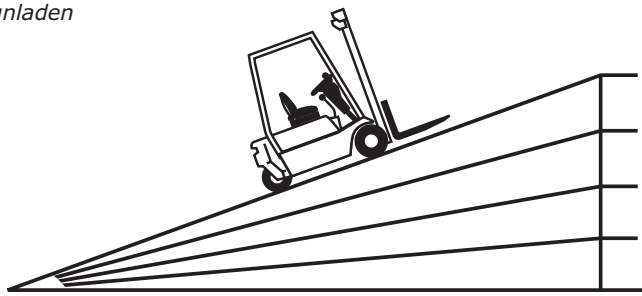
In accordance with VDI guidelines 2198, this specification applies to the standard model only.
Alternative tyres, mast types, ancillary equipment, etc. could result in different values.

Characteristics	1.1	Manufacturer		STILL	STILL	STILL	
	1.2	Manufacturer's model designation		R 20-14	R 20-15	R 20-16	
	1.3	Power supply – electric, diesel, petrol, gas, mains electric		electric	electric	electric	
	1.4	Type of control – hand, pedestrian, stand-on, rider seated		rider seated	rider seated	rider seated	
	1.5	Carrying capacity/load	Q (kg)	1400	1500	1600	
	1.6	Load centre	c (mm)	500	500	500	
	1.8	Load distance	x (mm)	350	350	355	
	1.9	Wheelbase	y (mm)	1232	1340	1445	
Wheels, tyres	2.1	Weight	kg	2760	2810	2940	
	2.2	Axle loadings laden front	kg	3656	3740	3965	
	2.2.1	Axle loadings laden rear	kg	504	570	575	
	2.3	Axle loadings unladen front	kg	1310	1360	1425	
	2.3.1	Axle loadings unladen rear	kg	1450	1450	1515	
Wheels, tyres	3.1	Tyres – rubber (V), superelastic (SE), pneumatic (L), polyurethane (PE)		SE/L	SE/L	SE/L	
	3.2	Tyre size – front		18 x 7-8 (16 PR)	18 x 7-8 (16 PR)	18 x 7-8 (16 PR)	
	3.3	Tyre size – rear		15 x 4 1/2-8 (12 PR)	15 x 4 1/2-8 (12 PR)	15 x 4 1/2-8 (12 PR)	
	3.5	Wheels – number front (x = drive wheel)		2x	2x	2x	
	3.5.1	Wheels – number rear (x = drive wheel)		2	2	2	
	3.6	Track width – front	b_{10} (mm)	932	932	932	
	3.7	Track width – rear	b_{11} (mm)	170	170	170	
Dimensions	4.1	Tilt angle, mast/fork carriage forwards	degrees	3	3	3	
	4.1.1	Tilt angle, mast/fork carriage backwards	degrees	7	7	7	
	4.2	Closed height	h_1 (mm)	2260	2260	2260	
	4.3	Free lift	h_2 (mm)	150	150	150	
	4.4	Lift height	h_3 (mm)	3430	3430	3430	
	4.5	Height, mast raised	h_4 (mm)	4080	4080	4080	
	4.7	Height to top of overhead guard (cabin)	h_6 (mm)	1960	1960	1960	
	4.8	Seat height	h_7 (mm)	892	892	892	
	4.12	Coupling height	h_{10} (mm)	460	460	460	
	4.19	Overall length	l_1 (mm)	2565	2673	2782	
	4.20	Length to front face of forks	l_2 (mm)	1765	1873	1982	
	4.21	Overall width	b_1 (mm)	1080/1115	1080/1115	1080/1115	
	4.22	Fork thickness	s (mm)	35	35	40	
	4.22.1	Fork width	e (mm)	80	80	80	
	4.22.2	Fork length	l (mm)	800	800	800	
	4.23	Fork carriage to DIN 15173 – class / form A or B		ISO II B	ISO II B	ISO II B	
	4.24	Fork carriage width	b_3 (mm)	980	980	980	
	4.31	Ground clearance beneath mast, laden	m_1 (mm)	91	91	91	
	4.32	Ground clearance at centre of wheelbase	m_2 (mm)	100	110	110	
	4.33	Aisle width for pallets 1000 x 1200 wide	A_{st} (mm)	3092	3200	3309	
	4.34	Aisle width for pallets 800 x 1200 long	A_{st} (mm)	3216	3324	3433	
	4.35	Outer turning radius	W_a (mm)	1415	1523	1627	
	4.36	Inner turning radius	b_{13} (mm)	–	–	–	
Performance	5.1	Speed laden	km/h	14	14	14	
	5.1.1	Speed unladen	km/h	16	16	16	
	5.2	Lift speed laden	m/s	0.42	0.42	0.42	
	5.2.1	Lift speed unladen	m/s	0.6	0.6	0.6	
	5.3	Lowering speed laden	m/s	0,.6	0.6	0.6	
	5.3.1	Lowering speed unladen	m/s	0.47	0.47	0.47	
	5.5	Rated drawbar pull laden	N	2700	2700	2700	
	5.5.1	Rated drawbar pull unladen	N	2700	2700	2700	
	5.6	Max. drawbar pull laden	N	7550	7550	7550	
	5.6.1	Max. drawbar pull unladen	N	7700	7700	7700	
	5.7	Gradeability laden	%	6	6	5.9	
	5.7.1	Gradeability unladen	%	10	10	10	
	5.8	Max. gradeability laden	%	18	18	17	
	5.8.1	Max. gradeability unladen	%	28	29	28	
	5.9	Acceleration time laden	s	4.7	4.7	4.8	
	5.9.1	Acceleration time unladen	s	4	4	4.1	
	5.10	Brakes		electr./mech.	electr./mech.	electr./mech.	
Motors	6.1	Drive motor hourly capacity	kW	2 x 4	2 x 4	2 x 4	
	6.2	Hoist motor capacity at 15% duty factor	kW	9	9	9	
	6.3	Battery equipment to DIN 43531/35/36 A, B, C, no		DIN 43531 A	DIN 43531 A	DIN 43531 A	
	6.4	Battery voltage	U (V)	48	48	48	
	6.4.1	Battery capacity	K 5 (Ah)	460 (400–500)	575 (500–625)	690 (600–750)	
	6.5	Battery weight	kg	708	856	1013	
	6.6	Energy consumption according to VDI cycle	kWh/h				
Other	8.1	Drive control		Stilltronic-SCR	Stilltronic-SCR	Stilltronic-SCR	
	8.2	Operating pressure for attachments	bar	170	170	170	
	8.3	Oil flow for attachments	l/min				
	8.4	Average noise peak at operator's ears	dB (A)				
	8.5	Trailer coupling, type/DIN		pin	pin	pin	

	STILL	STILL
	R 20-18	R 20-20
	electric	electric
	rider seated	rider seated
	1800	2000
	500	500
	355	355
	1445	1727
	3070	3210
	4375	4681
	495	529
	1510	1574
	1560	1636
	SE	SE
	200/50-10	200/50-10
	15 x $4^1/_2$-8	15 x $4^1/_2$-8
	2x	2x
	2	2
	942	942
	170	170
	3	3
	7	7
	2260	2260
	150	150
	3430	3350
	4080	4000
	1960	1960
	892	892
	460	460
	2782	2892
	1982	2092
	1142	1142
	40	40
	80	80
	800	800
	ISO II B	ISO II B
	1040	1040
	100	100
	110	110
	3309	3418
	3433	3542
	1627	1727
	–	–
	14	14
	16	16
	0.38	0.38
	0.6	0.6
	0.6	0.6
	0.47	0.47
	2300	1870
	2300	2120
	7480	7480
	7630	7630
	5.5	3.6
	9.5	7.1
	17	14.3
	28	24.5
	4.9	5.0
	4.2	4.3
	electr./mech.	electr./mech.
	2 x 4	2 x 4
	9	9
	DIN 43531 A	DIN 43541 A
	48	48
	690 (600–750)	690 (600–750)
	1013	1013
	Stilltronic-SCR	Stilltronic-SCR
	170	170
	pin	pin

Gradient performance (dry, concrete surface = coefficient of friction 0.8, b
[R 20-15 : 500 A/h])

unladen



	R 20-15I	R 20-1
20% –	780 m	800
15% –	1700 m	1660
10% –	4200 m	4600
5% –	16590 m	16075

travel permitted in o

Example (R 20-16 with 1600 kg load): 9 % gradient,
10 m distance. This gradient is negotiable 145 times per hour.

laden

	R 20-15I	R 20-1
12% –	700 m	650
9% –	1500 m	1450
5% –	5650 m	5543
3% –	13630 m	13285

Mast Types.

			Telescopic				Full fr	
			from	to	from	to	from	to
R 20-14/15/16	Rated lift	h_3 mm	2630-3530		3630-5430		2775-3575	
	Closed mast height	h_1 mm	1860-2310		2360-3260		1860-2260	
	Raised mast height	h_4 mm	3280-4180		4280-6080		3425-4225	
	Free lift	h_2/h_5 mm	150				1230-1630	
	Angle of tilt	α | β ∢ °	3	7	3	9	3	7
R 20-14	Length	l_2 mm	1765				176	
	Lost load centre	x mm	350				35	
	Aisle width Pallets 1000 x 1200 wide | 800 x 1200 long	A_{st} mm	3092		3216		3092	
R 20-15	Length	l_2 mm	1873				187	
	Lost load centre	x mm	350				35	
	Aisle width Pallets 1000 x 1200 wide | 800 x 1200 long	A_{st} mm	3200		3324		3200	
R20-16	Length	l_2 mm	1982				198	
	Lost load centre	x mm	355				35	
	Aisle width Pallets 1000 x 1200 wide | 800 x 1200 long	A_{st} mm	3309		3433		3309	
R 20-18	Rated lift	h_3 mm	2630-3530		3630-5430		2675-3475	
	Closed mast height	h_1 mm	1860-2310		2360-3260		1860-2260	
	Raised mast height	h_4 mm	3288-4180		4280-6080		3343-4143	
	Free lift	h_2/h_5 mm	150				1212-1612	
	Angle of tilt	α | β ∢ °	3	7	3	9	3	7
	Length	l_2 mm	1982				198	
	Lost load centre	x mm	355				35	
	Aisle width Pallets 1000 x 1200 wide | 800 x 1200 long	A_{st} mm	3309		3433		3309	
R 20-20	Rated lift	h_3 mm	2550-3350		3430-5330		2670-3570	
	Closed mast height	h_1 mm	1860-2260		2310-3260		1860-2310	
	Raised mast height	h_4 mm	3200-4000		4100-6000		3320-4220	
	Free lift	h_2/h_5 mm	150				1230-1680	
	Angle of tilt	α | β ∢ °	3	7	3	9	3	7
	Length	l_2 mm	2092				209	
	Lost load centre	x mm	365				36	
	Aisle width Pallets 1000 x 1200 wide | 800 x 1200 long	A_{st} mm	3418		3542		3418	

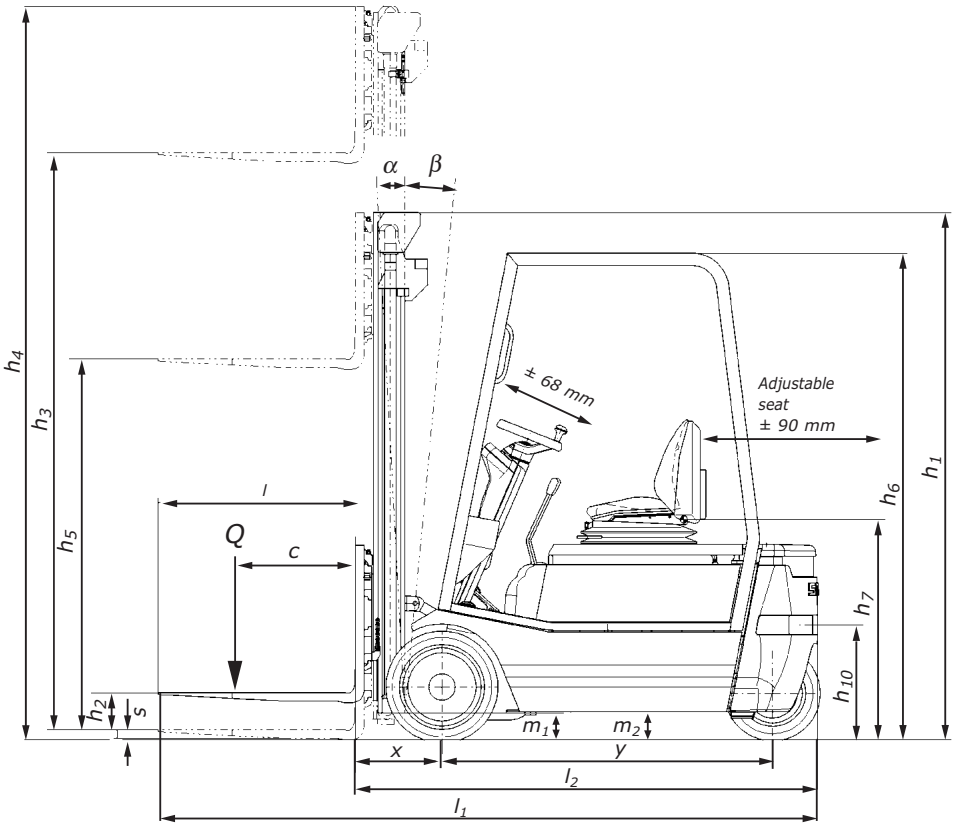
The models depicted in this brochure may contain special parts or attachments which are not supplied as standard.

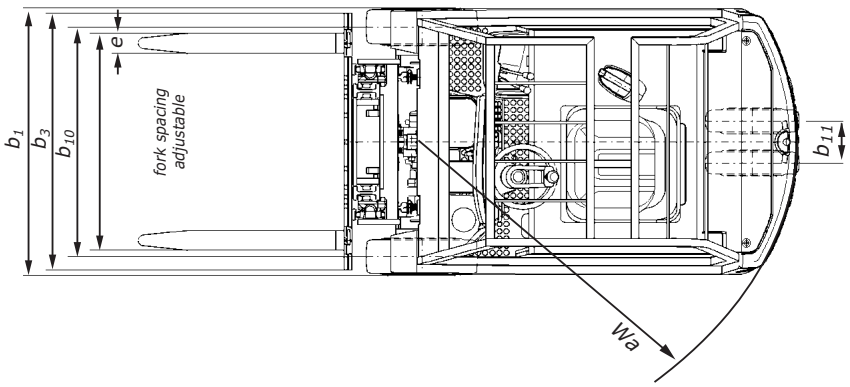
attery 600 A/h

16I	**R 20-18I**
m	*780 m*
m	*1540 m*
m	*3785 m*
m	*13675 m*

ne hour

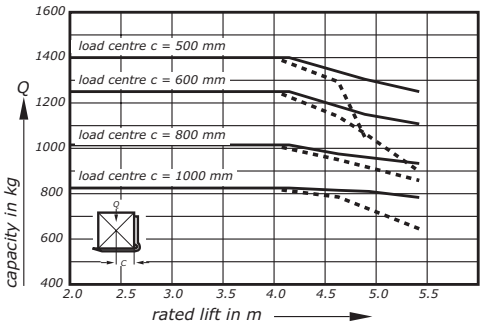
6I	**R 20-18I**
m	*620 m*
m	*1400 m*
m	*5400 m*
m	*11270 m*





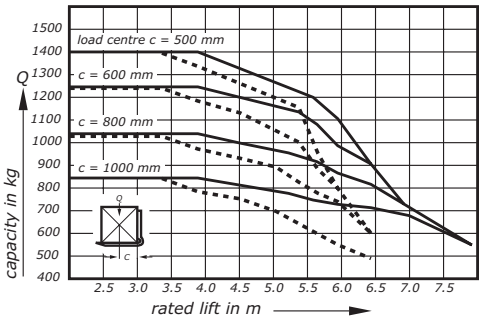
ee lift		Triple			
from	to	from		to	
3675-4075		4020-8020			
2310-2510		1860-3260			
4325-4725		4670-8670			
1680-1880		1230-2630			
3	9	3		5	
65		1785			
50		370			
3216		3110		3325	
73		1893			
50		370			
3324		3218		3343	
82		2002			
55		375			
3433		3327		3452	
3575-3975		3870-5370		5665-8065	
2310-2510		1860-3260		2460-3260	
4243-4643		4670-6170		6330-8730	
1662-1862		1212-1712		1830-2630	
3	9	3	5	3	5
82		2002		2014	
55		375		387	
3433		3327	3452	3338	3463
3670-4370		3865-8065			
2360-2710		1860-3260			
4320-5020		4530-8730			
1730-2080		1230-2630			
3	9	3		5	
92		2114			
55		387			
3542		3438		3563	

Capacity Chart R 20-14 Telescopic/Full free lift mast



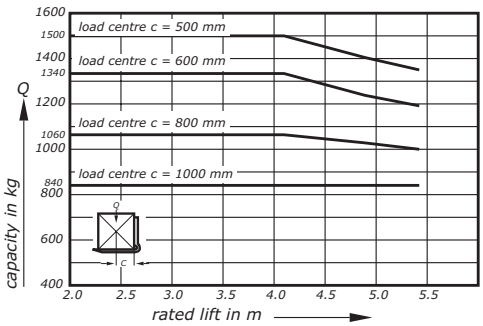
pneumatic tyres
SE tyres

Capacity Chart R 20-14 Triple mast

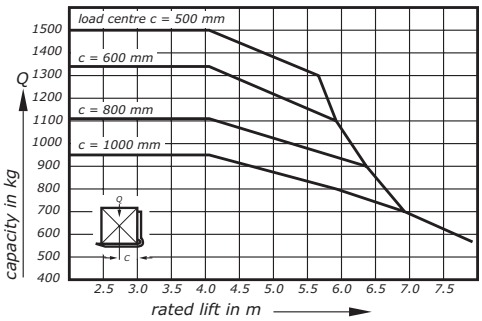


pneumatic tyres
SE tyres

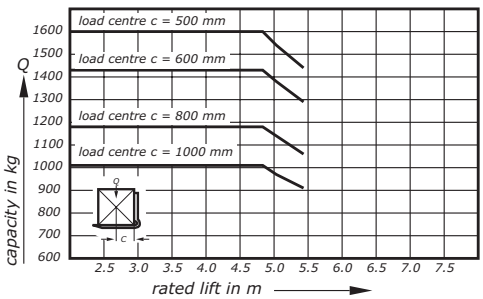
Capacity Chart R 20-15 Telescopic/Full free lift mast



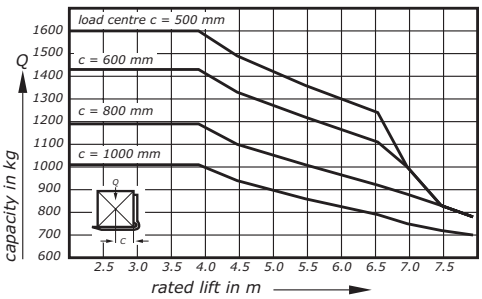
Capacity Chart R 20-15 Triple mast



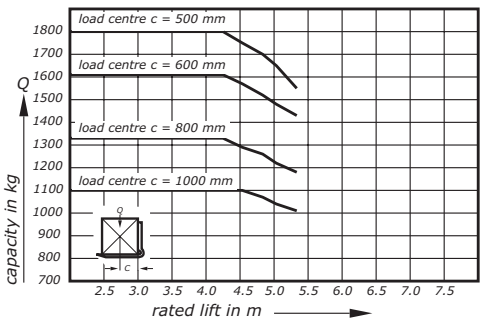
Capacity Chart R 20-16 Telescopic/Full free lift mast



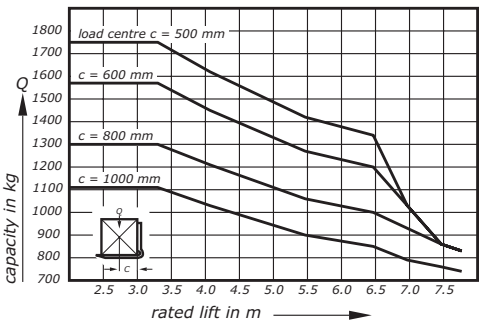
Capacity Chart R 20-16 Triple mast



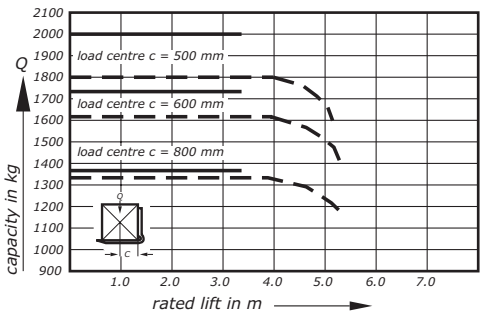
Capacity Chart R 20-18 Telescopic/Full free lift mast



Capacity Chart R 20-18 Triple mast

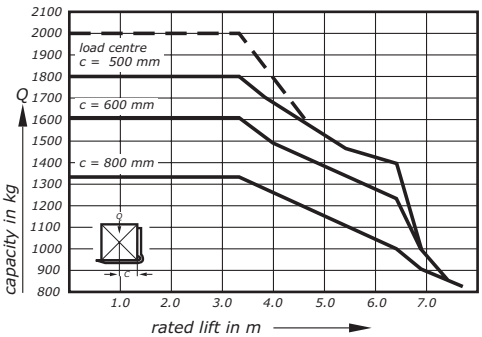


Capacity Chart R 20-20 Telescopic/Full free lift mast



Tele up to 2240 mm
Tele/full free lift from 2290 mm

Capacity Chart R 20-20 Triple mast



up to closed height of 2190 mm
over closed height of 2240 mm

Technical Data
Electric Forklift Trucks
Models R 20-14/R 20-15/R 20-16/R 20-18/R 20-20.

Dual motor front wheel drive.

With a 48 volt battery and dual motor front wheel drive, the R 20 is a high performance machine.

Two heavy duty drive motors provide powerful traction, particularly on steep slopes.

The tractive power of the drive motors is precisely matched to the movement of the steering, i.e. at a 90° steering lock both drive motors turn the truck actively into the corner. This makes for sensitive operation in narrow aisles and gives better manoeuvrability.

- Speed and torque can be regulated independently of each other, allowing sensitive driving, powerful acceleration and wear free electrical braking using only the drive pedal.

- High efficiency regenerative braking (energy recovery) of up to 10 % is possible. When plugging or braking, or if the drive pedal is released, energy flows back into the battery to give the R 20 a greater working range from one battery charge. It is often possible to use a smaller battery.

Electrics.

The digital electrical system allows simple adaptation to altered operating conditions. The exchange of information between electrical assemblies, e.g. between the drive controller and the cockpit, is achieved using the CAN bus system (Controller Area Network) already used successfully in other types of vehicle. The number of cables and plug connectors is reduced in comparison to the previous system and thus reliability is increased. In addition, it is easy to implement variants to the electrical equipment.

Mast.

STILL clear view masts in telescopic, HiLo and triplex designs for every application:

- Telescopic:
the mast suitable for most applications. Economical mast design.

- HiLo:
for high stacking under low ceilings. Utilises the space right up to the roof.

- Triplex:
for applications with low doorways and greater stacking heights. Utilises the space right up to the roof.

- Fork carriage
The fork carriage, completely redesigned for this truck, gives a clear view onto the load being picked up thanks to its optimised profiles. Hydraulic hoses for attachments are run in the dead visibility area of the mast sections – with no hose reels – for wear-free operation.

Steering.

- The steering operates on the hydrostatic principle with a priority valve.

- The pump operates "on demand" – i.e. only when the steering wheel is moved – for optimal energy economy.

- 90° steering makes the R 20 very manoeuvrable for use in tight production areas and storage space.

- Extremely safe and reliable operation due to the fully encapsulated steering system, protected against dirt and damp.

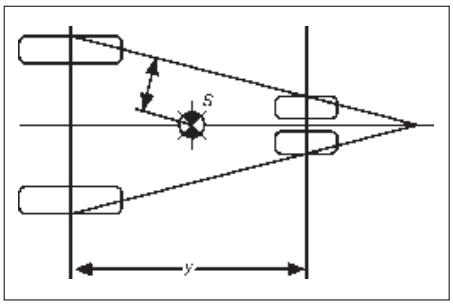
Hydraulics.

- Pump motor speed precisely follows valve lever position to match demand exactly, thereby conserving energy to give longer operation from a battery charge. Working safety is increased due to precision hoisting.

- The oil is filtered through a suction filter before going to the hydraulic units, reducing wear to a minimum.

Stability.

Because of its high stability the R 20 can travel quickly around corners, allowing a fast throughput of goods.



Long wheel-base and twin rear wheel design means that the tipping lines are spread wide apart and are thus a long way from the truck's centre of gravity. The greater this distance, the higher the stability.

Driver's compartment.

- The cockpit has an LCD display and a facility for the driver to select from a range of pre-set drive performance levels. He can select the most suitable acceleration or braking and travel speeds from 5 pre-set options. Further adjustments of the drive parameters to suit the application conditions can be made by simply altering the software.

- The drive pedal* sets the travel speed required by the driver, which is unaffected by either load or road surface.

- The up-to-date driving characteristics of the R 20 allow the truck to be held on a gradient or on uneven roadways without the use of hand or foot brakes.

- Roomy footwell with inclined floor plate and non-slip rubber matting.

- Automotive style hand brake to the right of the driver's seat.

- Low step gives convenient entry and exit to the spacious footwell. Inclined floor plate helps reduce leg fatigue.

- Comfortable seat adjusts to the driver's weight. Generous squab length gives added support to the thighs and reduces fatigue.

- Adjustable steering column plus reach and rake adjustment for the seat provide an extremely comfortable working position for any physique.

Service.

The servicing interval is doubled – from the previous 500 operating hours up to 1000. This has been made possible by improvements in quality and by reducing the number of components which require maintenance.

* Available with dual pedal control on request.

R 20-14/20 – e 2.5 3/04 td Subject to technical modifications.

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