

R 60

Technical Data.

Electric Forklift Trucks

Models R 60-22/R 60-25/R 60-25L/R 60-30.



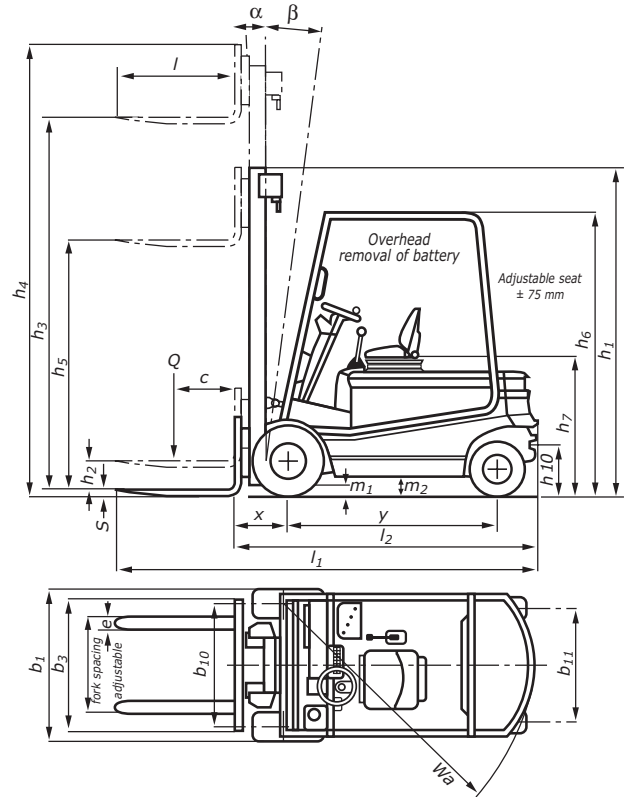
STILL
Making the right moves.

R 60 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.

		R 60-22				R 60-25		R 60-25 L		R 60-30		
		SE/L		V		SE/L		V		SE		
Characteristics	1.1	Manufacturer		STILL		STILL		STILL		STILL		
	1.2	Manufacturer's model designation		R 60-22		R 60-25		R 60-25 L		R 60-30		
	1.3	Power supply - electric, diesel, petrol, gas, mains electric		electric		electric		electric		electric		
	1.4	Type of control - hand, pedestrian, stand-on, rider seated		rider seated		rider seated		rider seated		rider seated		
	1.5	Carrying capacity/load	Q (kg)		2200		2500		2500		3000	
	1.6	Load centre	c (mm)		500		500		500		500	
	1.8	Load distance	x (mm)		415		415		415		435	
	1.9	Wheelbase	y (mm)		1535		1535		1679		1679	
	Weight	2.1	Weight		kg		4149		4399		4772	
2.2		Axle loadings laden front		kg		5687		6196		7216		
2.2.1		Axle loadings laden rear		kg		662		703		1087		
2.3		Axle loadings unladen front		kg		2176		2217		2322		
2.3.1		Axle loadings unladen rear		kg		1973		2182		2450		
Wheels, tyres	3.1	Tyres - rubber (V), superelastic (SE), pneumatic (L), polyurethane (PE)		SE/L		V		SE/L		V		
	3.2	Tyre size - front		23x9-10 (20 PR)		21x9x13		23x9-10 (20 PR)		21x9x13		
	3.3	Tyre size - rear		18x7-8 (14 PR)		16x6x10 1/2		18x7-8 (14 PR)		16x6x10 1/2		
	3.5	Wheels - number front (x = drive wheel)		2x		2x		2x		2x		
	3.5.1	Wheels - number rear (x = drive wheel)		2		2		2		2		
	3.6	Track width - front		b ₁₀ (mm)		945		961		945		
	3.7	Track width - rear		b ₁₁ (mm)		900		880		900		
Dimensions	4.1	Tilt angle, mast/fork carriage forwards		degrees		3		3		3		
	4.1.1	Tilt angle, mast/fork carriage backwards		degrees		10		10		10		
	4.2	Closed height		h ₁ (mm)		2250		2230		2250		
	4.3	Free lift		h ₂ (mm)		160		160		160		
	4.4	Lift height		h ₃ (mm)		3220		3220		3220		
	4.5	Height, mast raised		h ₄ (mm)		3880		3880		4030		
	4.7	Height to top of overhead guard (cabin)		h ₆ (mm)		2250		2230		2250		
	4.8	Seat height		h ₇ (mm)		1070		1050		1070		
	4.12	Coupling height		h ₁₀ (mm)		392		372		392		
	4.19	Overall length		l ₁ (mm)		3262		3262		3406		
	4.20	Length to front face of forks		l ₂ (mm)		2262		2262		2406		
	4.21	Overall width		b ₁ (mm)		1192		1199		1192		
	4.22	Fork thickness		s (mm)		40		40		40		
	4.22.1	Fork width		e (mm)		100		100		100		
	4.22.2	Fork length		l (mm)		1000		1000		1000		
	4.23	Fork carriage to DIN 15173 - class / form A or B		ISO II B		ISO II B		ISO II B		ISO III B		
	4.24	Fork carriage width		b ₂ (mm)		1040		1040		1100		
	4.31	Ground clearance beneath mast, laden		m ₁ (mm)		100		80		100		
	4.32	Ground clearance at centre of wheelbase		m ₂ (mm)		138		120		132		
	4.33	Aisle width for pallets 1000 x 1200 wide		A _{st} (mm)		3569		3580		3745		
4.34	Aisle width for pallets 800 x 1200 long		A _{st} (mm)		3769		3780		3945			
4.35	Outer turning radius		W ₈ (mm)		1954		1965		2130			
4.36	Inner turning radius		b ₁₃ (mm)									
Performance	5.1	Speed laden		km/h		16		16		15		
	5.1.1	Speed unladen		km/h		16		16		15		
	5.2	Lift speed laden		m/s		0.4		0.38		0.31		
	5.2.1	Lift speed unladen		m/s		0.52		0.52		0.52		
	5.3	Lowering speed laden		m/s		0.6		0.6		0.6		
	5.3.1	Lowering speed unladen		m/s		0.45		0.45		0.45		
	5.5	Rated drawbar pull laden		N		3900		3860		3480		
	5.5.1	Rated drawbar pull unladen		N		4300		4370		4100		
	5.6	Max. drawbar pull laden		N		10780		10680		10075		
	5.6.1	Max. drawbar pull unladen		N		11190		11195		10695		
	5.7	Gradeability laden		%		8		7.2		5.9		
	5.7.1	Gradeability unladen		%		13		12.4		10.5		
	5.8	Max. gradeability laden		%		20		20		15		
	5.8.1	Max. gradeability unladen		%		24		24		24		
5.9	Acceleration time laden		s		5		5.1		5.3			
5.9.1	Acceleration time unladen		s		4.6		4.7		4.8			
5.10	Brakes		electr./hydr.		electr./hydr.		electr./hydr.		electr./hydr.			
Motors	6.1	Drive motor hourly capacity		kW		12.5		12.5		12.5		
	6.2	Hoist motor capacity at 15% duty factor		kW		13.5		13.5		13.5		
	6.3	Battery equipment to DIN 43531/35/36 A, B, C, no		43536 A		43536 A		43536 A		43536 A		
	6.4	Battery voltage		U (V)		80		80		80		
	6.4.1	Battery capacity		K 5 (Ah)		560 L [400 - 620]		560 L [400 - 620]		700 L [500 - 775]		
	6.5	Battery weight		kg		1558		1558		1863		
6.6	Energy consumption according to VDI cycle		kWh/h									
Other	8.1	Drive control		Stilltronic-SCR		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		pin		

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



Gradient Performance (dry, concrete surface = coefficient of friction 0.80, battery 560L)

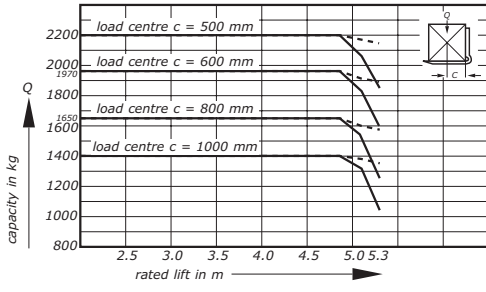
Example:
R60-22 with 2,200 kg load, 15% gradient, 54 m distance and SE tyres.
This gradient is negotiable 10 times per hour.

	R60-22		R60-25 (L)		R60-30	
	L/SE	V	L/SE	V	SE	V
<i>unladen</i>	24%-					
	20%-					
	15%-					
	10%-					
	5%-					
<i>laden</i>	20%-					
	15%-					
	10%-					
	5%-					
	travel permitted in one hour					

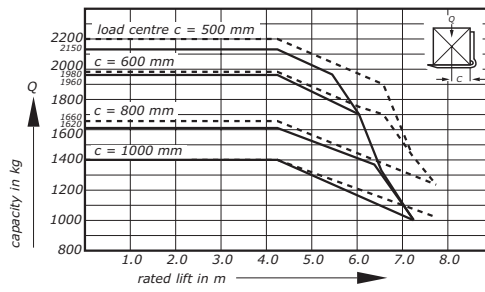
		Telescopic mast			HiLo mast			Triple mast		
		SE/L	V	V	SE/L	V	V	SE	V	
R60-22/25	Rated lift	h_3	2320-2820	2920-4220	4320-5120	2500-2800	2900-4200	4300-5300+	3580-7780	
	Closed mast height	SE/L	h_1	1800-2050	2100-2750	2800-3200	1800-1950	2000-2650	2700-3200	1800-3200
		V		1780-2030	2080-2730	2780-3180	1780-1930	1980-2630	2680-3180	1780-3180
	Free lift	SE/L	h_2/h_5	160			1170-1320	1370-2020	2070-2570	1170-2570
		V		160			1150-1300	1350-2000	2050-2550	1150-2550
	Raised mast height		h_4	2980-3480	3580-4880	4980-5780	3160-3460	3560-4860	4960-5960	4255-8455
	Angle of tilt		v/h	3/7	3/10*		3/7	3/10**		3/8*
Overall width	SE/L	b_1	1192		1295	1192		1295	1295	
	V					1199			1284	
Track width, front	SE/L	b_{10}	945		1048	945		1048	1048	
	V					961			1048	
R60-22	Overall length	l_2				2262			2292	
	Load distance	x				415			445	
	Aisle width	A_{st}				3569/3769			3599/3799	
R60-25	Overall length	l_2				2262			2292	
	Load distance	x				415			445	
	Aisle width	A_{st}				3580/3780			3610/3810	
R60-25 L	Overall length	l_2				2406			2436	
	Load distance	x				415			445	
	Working aisle width	A_{st}				3745/3945			3610	
R60-30	Rated lift	h_3	2320-2820	2920-4120	4220-5120	2390-2690	2790-3890		3430-7630	
	Closed mast height	SE/V	h_1	1800-2050	2100-2700	2750-3200	1800-1950	2000-2550		1800-3200
	Free lift	SE/V	h_2/h_5	160			1020-1170	1220-1770		1020-2420
	Raised mast height		h_4	3130-3630	3730-4930	5030-5930	3200-3500	3600-4700		4255-8455
	Angle of tilt		v/h	3/7	3/10*		3/7	3/10**		3/8*
	Overall width	SE	b_1	1192		1295	1192		1295	
		V		1240			1240		1302	
	Track width, front	SE	b_{10}	945		1048	945		1048	
		V		986			986		1048	
	Overall length	l_2					2426			2456
	Load distance	x					435			465
Working aisle width	A_{st}					3765/3965			3795/3995	

* 7° on truck fitted with a front screen ** 7° on truck fitted with a front screen and 3rd and 4th hyd. functions + On the R60-25 only up to a lift height of 4,800 mm

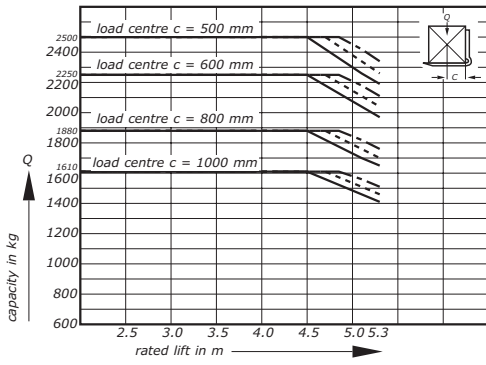
Capacity Chart R 60-22 Tele HiLo mast



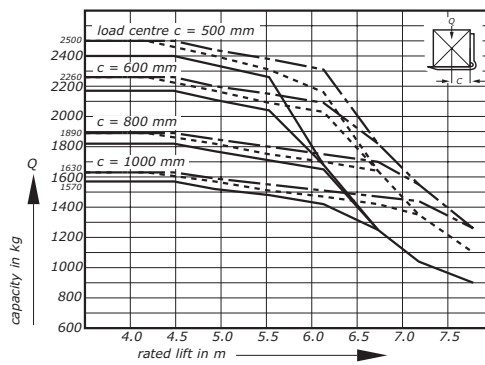
Capacity Chart R 60-22 Triple mast



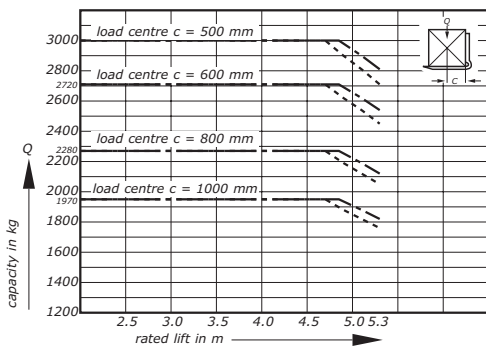
Capacity Chart R 60-25/R 20-25L Tele HiLo mast



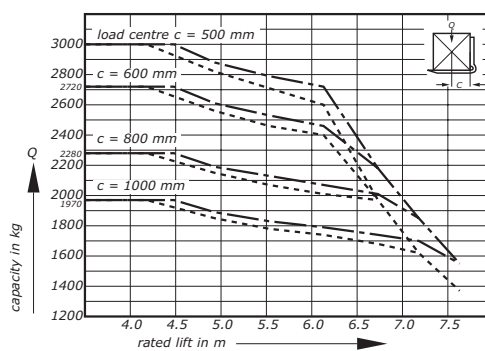
Capacity Chart R 60-25/R 20-25L Triple mast



Capacity Chart R 60-30 Tele HiLo mast



Capacity Chart R 60-30 Triple mast



- pneumatic tyres
- - - SE tyres
- · - rubber tyres

- pneumatic tyres
- - - SE tyres
- · - rubber tyres

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Electric Forklift Trucks

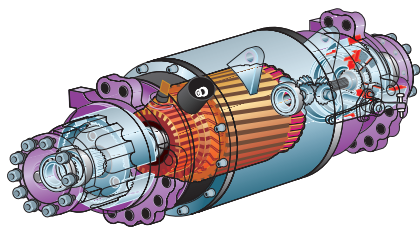
Models R 60-22/R 60-25/R 60-25 L/R 60-30.

■ Drive.

- Easily serviced single motor front wheel drive with independently excited shunt wound dc motor.
- Speed and torque can be regulated independently. This gives very sensitive response, powerful acceleration and non-wearing electrical braking simply by using the drive pedal.
- An inaudible power unit using MOS-FET technology at a cycle frequency of 16 kHz controls the drive motor. Wear prone direction and braking contactors are dispensed with.
- Regenerative braking (feedback of energy) with a high efficiency of up to 15% is possible. When plugging, braking or releasing the drive pedal energy flows back into the battery. This gives the new R60 a longer work cycle from one battery charge or will often allow the use of a smaller capacity battery.

■ Front axle with drive motor.

Integral drive motor on the front axle drives both front wheels via a differential.



This exclusive design of a single motor front wheel drive power pack allows the armature to be removed without first taking off the mast.

■ Electrical system.

Digital electrics permit easy adjustment to suit changing applications. The exchange of data between electrical assemblies e. g. the drive controller, display and operating unit is achieved through the CAN bus system (Controller Area Network) which has proved successful in other vehicles. The number of cables and plug connectors is reduced and reliability increased. Additionally, variants of the electrical equipment are easily implemented.

■ Mast.

- Standard end of stroke damping on HiLo and triplex masts allows virtually silent lifting and lowering of the load.
- Hoist chains run in guide rails which prevent rattling and protect the chain.

- Tilt cylinders are protected from dust by bellows fitted as standard.

■ Frame.

- Mudguards are bolted onto the frame and are easily adapted to accommodate a wider track or dual wheels.

■ Driver's compartment.

- The driver's compartment is an all round enclosed structure resiliently mounted on rubber mountings. This reduces vibration induced stress on the driver.
- LCD display featured in the cockpit allows the driver to pre-select the drive characteristics. The software can be altered to cater for other adjustments of the drive parameters to suit the application.
- The drive pedal gives the speed required by the driver. Load and surface conditions do not alter the speed.



- Driving characteristics of the R60 allow the truck to be held on a gradient or on uneven surfaces without touching the hand or foot brakes.
- Roomy foot well with inclined floor plate and non-slip rubber matting.
- Automotive style hand brake to the right of the driver's seat.
- Adjustable steering column facilitates an unstressed working position for the driver.
- Hand grip on the overhead guard and a wide step on the left hand side, visible from above, provide additional safety when getting in and out.

■ Steering.

- Hydrostatic power steering fitted with a priority valve.
- On-demand pump operation gives optimum energy economy.

■ Hydraulic system.

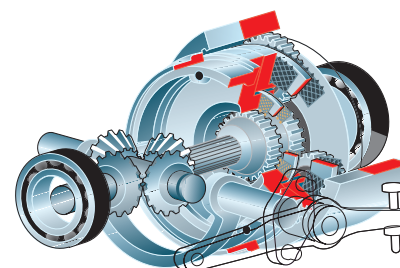
- Pump motor speed responds precisely to driver input at the valve lever, thus

meeting exactly the demand of the application. This saves energy and makes better use of a battery charge cycle.

- The pump motor is mounted below the floor plate to reduce noise.
- The oil passes through a suction filter before flowing into the hydraulic assemblies. This reduces wear to a minimum.

■ Service brake.

- The service brake is a maintenance-free multiple disk brake which runs in an oil bath and is thus wear free. The multiple disc brake will never need new brake linings and is silent in operation. Half of the discs move with the wheel hub, the other half with the drive axle. Braking is achieved by pressing the discs together, the heat generated being taken up by the oil. This means perfect braking for the R60 whatever the weather conditions.
- The multiple disc brake is encapsulated to protect it from dirt and water.
- Readjustments are a thing of the past.
- Maintenance-free and silent in operation, the multiple disc brake does



away with brake servicing charges – which account for up to 30% of the maintenance costs of a conventional truck.

■ Safety.

The new R60 complies with all applicable EC safety requirements and regulations. It thus carries the "CE" symbol.

■ Quality.

All forklift trucks from STILL comply with the ISO 9001 quality standard. They are carefully constructed and manufactured. The materials used are checked to stringent standards.

■ Service.

The maintenance interval is 1000 hours. This is achieved with high technical quality and fewer components requiring maintenance.