

TECNA, THE MOST EFFICIENT  
AND RELIABLE, LOYAL AND  
SECURE PARTNER FOR THE  
LOGISTICS AND MAINTENANCE  
OF YOUR COMPANY.



RANGE **TSD**

**TECNA**  
2000

## Electric forklift truck

Four wheels, two front AC  
drive motor, 80 V., with TECNA  
technology Vector control.

**TSD 20 · 2.0 Tn.** C.G.C. a 500 mm. load center

**TSD 25 S · 2.5 Tn.** C.G.C. a 500 mm. load center

**TSD 30 S · 3.0 Tn.** C.G.C. a 500 mm. load center

**TSD 25 · 2.5 Tn.** C.G.C. a 500 mm. larga load center

**TSD 30 · 3.0 Tn.** C.G.C. a 500 mm. larga load center

**TSD 35 · 3.5 Tn.** C.G.C. a 500 mm. load center

**TSD 35 L · 3.5 Tn.** C.G.C. a 600 mm. load center





**TSD 20 • 2.0 Tn.** C.G.C. a 500 mm. load center

**TSD 25 S • 2.5 Tn.** C.G.C. a 500 mm. load center

**TSD 30 S • 3.0 Tn.** C.G.C. a 500 mm. load center

**TSD 25 • 2.5 Tn.** C.G.C. a 500 mm. larga load center

**TSD 30 • 3.0 Tn.** C.G.C. a 500 mm. larga load center

**TSD 35 • 3.5 Tn.** C.G.C. a 500 mm. load center

**TSD 35 L • 3.5 Tn.** C.G.C. a 600 mm. load center

## ALL TECHNOLOGICAL ADVANCES OF TECNA CONCENTRATED IN THIS NEW SERIES:



### Security

Operation control system for speed reduction at curves (Anti turning)

System for lift speed reduction control (Anti turning).

System for speed reduction control in determined areas (High Security). (Optional).



### Upright

Upright Duplex, Duplex F.L. and Triplex F.L., one perfect GRAN VISION (new generation).

Integral side shifter as Standard.

**TECNA**  
2000



### Ergonomics

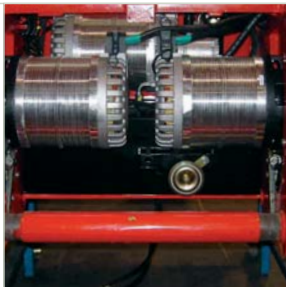
Operator compartment with the same dimensions, as those of a greater tonnage.

Manipulation by means of Joystic (option – levers).

Great comfort seat safety belt, weight adjustment and height and leaning-back positioning.

LCD display with constant control of the machine functions.

The OHG height is 2.200 mm, adjustable tall stature.



### Productivity

Three-phase AC drive motors, 80 V 2 x 7,5 kW .

Three-phase AC lift motor, 80 V and 16,5 kW .

TECNA Vector control.

### Tecna Batteries:

TSD 20/25S/30S - 80 V 620 A (49,6 kW )

TSD 25/30/35/35XL - 80 V 775 A (62 kW )

Energy regeneration when braking.



### Display

Display with digital hour meter, battery indicator and constantly providing the driver information on the system conditions of the truck.

P.M service count - down.

Programmable for optimum adaptation of truck characteristics to the operation request (Acceleration, speed, deceleration, braking, etc.)  
Diagnosis information and warning indicators.

# TECHNICAL SPECIFICATIONS ACCORDING TO VDI 2198

Distinguishing mark	1.1	Manufacturer (Abbreviation)		TECNA			TECNA			
	1.2	Manufacturer's type designation		TSD20	TSD25S	TSD30S	TSD25	TSD30	TSD35	TSD35L
	1.3	Drive: Electric, Battery, Diesel, Petrol, Fuel gal		Battery			Battery			
	1.4	Operator type: Hand, Pedestrian, Standing, Seated		Seated			Seated			
	1.5	Load capacity / Rated load	Q (t)	2	2,5	3	2,5	3	3,5	3,5
	1.6	Load center distance	c (mm)	500			500			600
	1.8	Load distance, centre of drive axle to fork	x (mm)	452 <sup>1)</sup>		457 <sup>2)</sup>	452 <sup>1)</sup>	457 <sup>2)</sup>	482 <sup>2)</sup>	
	1.9	Wheelbase	y (mm)	1570			1720			
Weight	2.1	Service weight (with standard battery)	kg	4425	4850	5385	4700	5075	5880	6175
	2.2	Axle loading, laden front/rear	kg	5729/696	6537/813	7363/1022	6543/657	7306/769	8410/970	8588/1087
	2.3	Axle loading, unladen front/rear	kg	2500/1925	2500/2350	2500/2885	2640/2060	2605/2470	2875/3005	2850/3325
Tyres, Chasis	3.1	Tyres: SE=Superelastic, N=Pneumatic		SE			SE			
	3.2	Tyre size, front		7.00-12			7.00-12		27x10-12	
	3.3	Tyre size, rear		21x8-9			21x8-9			
	3.5	Wheels, number front/rear (x=driven wheels)		2x/2			2x/2			
	3.6	Tread, front	b10 (mm)	1028			1028		1096	
	3.7	Tread, rear	b11 (mm)	890			890			
Dimensions	4.1	Tilt of mast/fork carriage forward/backward	Grad	6x6			6x6			
	4.2	Height, mast lowered	h1 (mm)	2236			2236		2281	
	4.3	Free lift	h2 (mm)	150			150			
	4.4	Lift height	h3 (mm)	3306			3306			
	4.5	Height, mast extended	h4 (mm)	3964		3964	4024			
	4.7	Height of overhead guard (cabin)	h6 (mm)	2200			2200			
	4.8	Seat height	h7 (mm)	1150			1150			
	4.12	Coupling hight	h10 (mm)	--			--			
	4.19	Overall width	l1 (mm)	3462		3467	3612	3617	3642	3742
	4.20	Lenght to face of forks	l2 (mm)	2362		2367	2512	2517	2542	2642
	4.21	Overall lenght	b1 (mm)	1216			1216		1370	
	4.22	Fork dimensions	s/e/l (mm)	40x100x1100		45x100x1100	40x100x1100	45x100x1100		45x125x1100
	4.23	Fork carriage din 15173, class/type A, B		2A		3A	2A	3A		
	4.24	Fork-carriage width	b3 (mm)	1100			1100			
	4.31	Ground clearance, laden, below mast	m1 (mm)	150			150			
	4.32	Ground clearance, centre of wheelbase	m2 (mm)	150			150			
	4.33	Aisle width for pallets 1000(L6)x1200(B12)	Ast (mm)	3705		3710	3834	3839	3864	3956
	4.34	Aisle width for pallets 1200(L6)x800(B12)	Ast (mm)	3903		3908	4034	4039	4064	4156
	4.35	Turning radius	Wa (mm)	2051			2182			2274
	4.36	Internal turning radius	b13 (mm)	526			577			
Performances	5.1	Travel speed, laden/unladen	km/h	18/18			18/18	18/18	18,5/18,5	18,5/18,5
	5.2	Lift speed, laden/unladen	m/s	0,59/0,57	0,59/0,52	0,59/0,48	0,59/0,52	0,59/0,48	0,56/0,42	0,56/0,40
	5.3	Lowering speed, laden/unladen	m/s	0,48/0,46			0,48/0,46			
	5.5	Drawbar pull, laden/unladen	N	-----	-----	-----	-----	-----	-----	-----
	5.6	Max. Drawbar pull, laden/unladen	N	-----	-----	-----	-----	-----	-----	-----
	5.7	Gradeability, laden/unladen S2 30 min.	%	12,5/19,5	10,5/17,5	9/15,5	11/18	9,5/16,5	8/14	7,5/13
	5.8	Max. Gradeability laden/unladen S2 5 min.	%	16,5/25,5	14/23	12/20	14,5/23,5	12,5/21,5	10,5/18,5	10/17,5
	5.9	Acceleration time, laden/unladen 10m	s	-----	-----	-----	-----	-----	-----	-----
	5.10	Service brake		Hydr./Elect.			Hydr./Elect.			
Electric-Motor	6.1	Drive motor rating S2 60 min.	kW	2x8,5			2x8,5			
	6.2	Lift motor rating S3 15%	kW	24			24			
	6.3	Battery acc. to DIN 43531/35/36 A,B,C, no		43536 A			43536 A			
	6.4	Battery voltage, nominal capacity k5	V/Ah	80x620			80x775			
	6.5	Battery weight	kg	1558			1850			
	6.6	Energy consumption acc. To VDI cycle	kWh/h	-----	-----	-----	-----	-----	-----	-----
Additon data	8.1	Type of drive control		AC/Inverter			AC/Inverter			
	8.2	Operating pressure for attachments	bar	140			140			
	8.3	Oil volume for attachments	l/min	-----			-----			
	8.4	Sound level at the driver's ear acc. To DIN 12 053	dB (A)	-----			-----			
	8.5	Towing coupling, type DIN		-----			-----			

1) +20 mm with integral sidesighter included; 2) +30 mm with integral sidesighter included.

TECNA products and Specifications are submitted to modifications without previous notification.

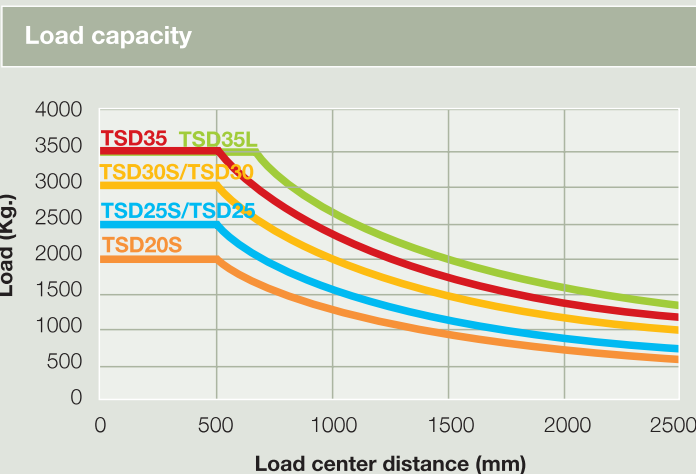
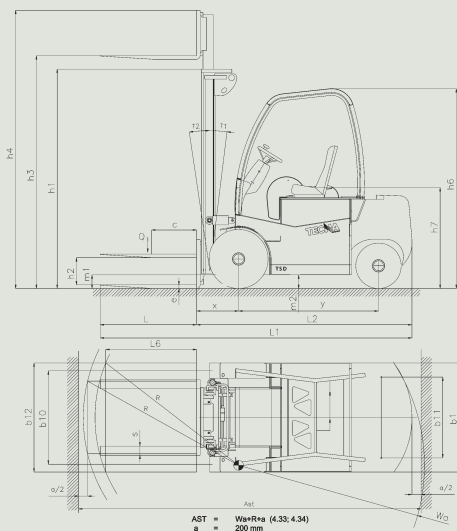


Table of masts								
Designation	Lift height h3 mm	Free lift h2 mm		Height lowered upright h1 mm		Height extended upright h4 mm		Tilt Forward/ Backward
		TSD20-25-30 (D-E)	TSD 35 (F)	TSD 20-25-30 (D-E)	TSD 35 (F)	TSD 20-25-30 (D-E)	TSD 35 (F)	
<b>DUPLEX</b>  <b>D 21</b> <b>E 21</b> <b>F 21</b>	3080	150	150	2123	2168	3738	3798	6/6
	3306 <sup>1)</sup>	150	150	2236	2281	3964	4024	6/6
	3630	150	150	2398	2443	4288	4348	6/6
	3930	150	150	2698	2743	4888	4948	6/6
	4230	150	150	2848	2893	5188	5248	6/6
<b>DUPLEX</b> <b>Free lift</b>  <b>D 22</b> <b>E 22</b> <b>F 22</b>	4530	150	150	2848	2893	5188	5248	6/6
	3130	1430	1415	2123	2168	3823	3883	6/6
	3350	1543	1528	2236	2281	4043	4103	6/6
	3700	1720	1705	2413	2458	4393	4453	6/6
	4100	1920	1905	2613	2658	4793	4853	6/6
<b>TRIPLEX</b>  <b>D 32</b> <b>E 32</b> <b>F 32</b>	4500	2120	2105	2813	2858	5193	5253	6/6
	4900	2320	2305	3013	3058	5593	5653	6/6
	4660	1430	1415	2123	2168	5353	5413	6/6
	5000	1543	1528	2236	2281	5693	5753	6/6
	5500	1720	1705	2413	2458	6193	6253	6/6
	6000	1920	1905	2613	2658	6693	6753	6/4
	6500	2120	2105	2813	2858	7193	7253	6/4
	7000	2320	2305	3013	3058	7693	7753	6/2

Table of load capacities (kg)																						
Model	TSD 20 S				TSD 25 S / 25						TSD 30 S / 30				TSD 35				TSD 35 L			
Superelastic tyre	7.00-12				7.00-12						7.00-12				27x10-12				27x10-12			
Tread, front	1028				1028						1028				1096				1096			
Designation	Fork carriage		Integrated sideshift		Fork carriage			Integrated sideshift			Fork carriage		Integrated sideshift		Fork carriage		Integrated sideshift		Fork carriage		Integrated sideshift	
	c (mm)		c (mm)		c (mm)			c (mm)			c (mm)		c (mm)		c (mm)		c (mm)		c (mm)		c (mm)	
	500	600	500	600	500	600	700	500	600	700	500	600	500	600	500	600	500	600	600	700	600	700
DUPLEX	2000	1800	1850	1675	2500	2250	2075	2350	2125	1950	3000	2725	2775	2525	3500	3175	3250	2950	3500	3200	3250	3000
	2000	1800	1850	1675	2500	2250	2075	2350	2125	1950	3000	2725	2775	2525	3500	3175	3250	2950	3500	3200	3250	3000
D 21	2000	1800	1850	1675	2500	2250	2075	2350	2125	1950	3000	2725	2775	2525	3500	3175	3250	2950	3500	3200	3250	3000
	2000	1800	1850	1675	2500	2250	2075	2350	2125	1950	3000	2725	2775	2525	3500	3175	3250	2950	3500	3200	3250	3000
E 21	2000	1800	1850	1675	2500	2250	2075	2350	2125	1950	3000	2725	2775	2525	3500	3175	3250	2950	3500	3200	3250	3000
	2000	1800	1850	1675	2500	2250	2075	2350	2125	1950	3000	2725	2775	2525	3500	3175	3250	2950	3500	3200	3250	3000
F 21	1925	1800	1825	1675	2400	2250	2075	2300	2125	1950	2875	2725	2725	2525	3350	3175	3200	2950	3350	3200	3250	3000
	2000	1800	1850	1675	2500	2250	2075	2350	2125	1950	3000	2725	2775	2525	3500	3175	3250	2950	3500	3200	3250	3000
DUPLEX	2000	1800	1850	1675	2500	2250	2075	2350	2125	1950	3000	2725	2775	2525	3500	3175	3250	2950	3500	3200	3250	3000
	2000	1800	1850	1675	2500	2250	2075	2350	2125	1950	3000	2725	2775	2525	3500	3175	3250	2950	3500	3200	3250	3000
D 22	2000	1800	1850	1675	2500	2250	2075	2350	2125	1950	3000	2725	2775	2525	3500	3175	3250	2950	3500	3200	3250	3000
	2000	1800	1850	1675	2500	2250	2075	2350	2125	1950	3000	2725	2775	2525	3500	3175	3250	2950	3500	3200	3250	3000
E 22	1925	1800	1825	1675	2425	2250	2075	2325	2125	1950	2900	2725	2750	2525	3375	3175	3225	2950	3375	3200	3225	3000
	1775	1750	1625	1650	2200	2175	2075	2125	2075	1950	2650	2600	2500	2450	3075	3025	2950	2900	3100	3025	2950	2900
F 22	1875	1800	1775	1675	2325	2250	2075	2250	2125	1950	2800	2725	2650	2525	3250	3175	3125	2950	3275	3200	3125	3000
	1750	1700	1650	1625	2150	2125	2075	2075	2025	1950	2575	2525	2450	2400	3000	2950	2875	2825	3025	2950	2875	2825
D 32	1550	1525	1475	1450	1900	1875	1850	1825	1800	1775	2250	2200	2125	2100	2625	2575	2500	2475	2625	2600	2525	2475
	1375	1375	1325	1300	1675	1650	1625	1600	1575	1550	1925	1900	1825	1800	2250	2225	2150	2150	2275	2225	2175	2150
E 32	1225	1200	1175	1150	1450	1425	1400	1375	1375	1350	1650	1625	1550	1525	1925	1875	1825	1800	1925	1900	1850	1825
	1075	1075	1025	1000	1250	1225	1200	1200	1175	1150	1375	1375	1325	1300	1625	1600	1550	1525	1625	1600	1550	1525
F 32																						

1) Standard. Specifications are without obligations for typographical errors.

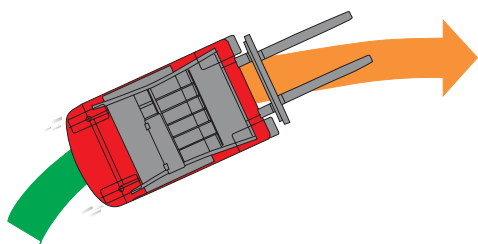
# ¿Danger?

GET TO KNOW THE ACTIVE SECURITY OF FORKLIFT TRUCKS TECNA AND COOL DOWN.



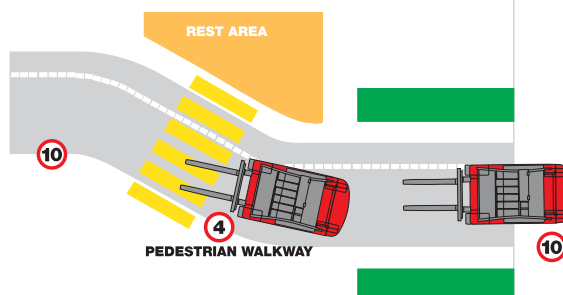
## 1 Anti-overturning electronic system

When turning, the forklift truck TECNA 2000 reduces its speed proportionally to the curve degrees.



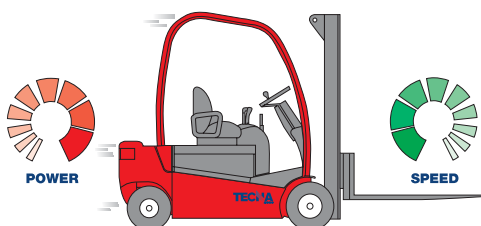
## 2 Speed limitation in predetermined zones\*

Automatic system for predetermination of maximal speed in different areas of work.  
\*(optional)



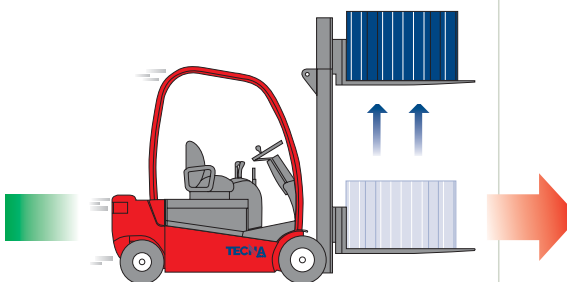
## 3 Speed and power control

The forklift truck TECNA 2000 disposes of device for speed limitation without power loss.



## 4 Speed limitation with lifting device

When lifting the cargo at a determined altitude, the speed of forklift truck displacement is automatically reduced.





**Technical data and specifications of forklift truck TECNA version with four wheels, front wheel drive 80 V. Vector control.**

**Series TSD 20/25S/30S: 2.000, 2.500 and 3000 Kg**

**Series TSD 25/30/35/35XL: 2.500, 3.000, 3.500 Kg - 500 mm load center and 3.500 kg - 600 mm. load center**

#### Driving

The forklift truck operation has exceptional ergonomic conditions. Easy access to operator compartment due to its low height of construction (550 mm). The steering column multi-positioning and the seat adjusted in height and resting, allows adaptation to the body characteristics of each person. The pedals are of automation type making easy the adaptation to driving the truck. The Joystick, easy accessible, permits very sensible control of lifting tilting side shifter. The hydrostatic steering is operated without any effort, the system for actuating the pump functions only is required by the steering-wheel guaranteeing great energy saving. The vector control system permits easy change, from forward to reverse, and offering easy and smooth dynamic operation. The noise level in operator's ears is according to Standard DIN 12 053 < 65 dB.

#### Motors and technologies AC

The drive motors, as well as the hydraulic one are CA, class F with protection IP20, without carbon brushes nor collector, are prepared for the hardest applications. In case of contaminated atmosphere, they are dust and dirtiness resistant. The availability for selection of systems with different output, gives acceleration and one very good lifting capacity. This is one of the greatest advantages of AC. This technology permits the machine components to be revised and checked at longer periods of time, which significantly reduces the costs for maintenance.

#### Uprights

With good visibility (Gran Visibilidad), Duplex (Duplex), Duplex free lift and Triplex free lift. Specific design of I profiles compactly bent in, strongly to torsion and assembled with inclined bearings, replaceable and adjustable by means of

shims (allows great improvement in profitability of maintenance when implementing this operation for quite a short time) greased for life. The lift cylinders with break system at both ends of its stroke, are installed in the cavities of the curves. The upright is connected to the chassis by means of greased bushings. This upright is characterized with high security rate, which supplied by the powerful engine pump of 16,5 kW, permits the quick lifting. They integrate a control system for speed limitation went lifting. (Against overturning).

#### Vector control

The Vector control follows the Frequency Control (motion control, Slip Control) in the whole range of counterbalance forklift trucks and tow tractors Tecna. This technology eliminates all components related to wear-out and maintenance (unlimited functioning). The module system of power equipments (invertors), interchangeable in between them, with a map for general control for all analogue and digit signals of the system, operated by powerful microprocessors (DSP), and the motor mathematically driven in real time gives maximal result (Vector Modulation). The system allows machine high stability in its all three stages of operation (low, standard, high average and high), obtaining high levels of output and efficiency due to its dynamic concept. The display provides the following stages of information: usage, diagnosis, calibration and signalization. All this includes a new range of motors, which do not require maintenance, moreover, a new secure generation has been used. The combination of all these systems protects against overheating in the system, which is in direct relation to battery autonomy.

#### Transmission

The front two drive motors are carried out by means of independent and separate transmissions with gears constantly connected with inside a bath of oil. The steady conjunctions with easy access are perfectly protected in its position, by the chassis.

#### Steering Axle

The steering axle incorporate, as a new feature, a turning radius up to 185°fs26, which permits an improved maneuvering

compared to the traditional three wheels forklift trucks. The axle has two identical integrates two identical wheels of 16/6", which significantly improves the stability and maintenance of rear axle.

#### Hydraulic system

The big reservoir for hydraulic oil is integrated to the frame structure, due to which the liquid refrigeration is aided to a great extent from this configuration. The sections for oil conduction are short, without curves, no prerequisites for energy loss from rubbing or friction heating are generated. It incorporates safety valves in elevation and descent and auxiliary valves for overpressure. In the tilting circuit there is an anti-cavity system. In the retard circuit is incorporated a filter of 25 microns. The main hydraulic valve may incorporate one 4th functions and auxiliary electrovalves.

#### Brakes

The front axle brakes are multidisc system in constant bath of oil, actuated by a pedal of «automation» type heaving long life without maintenance. Electronic breaking with energy recovery. Hand brake for parking. Proportional electronic brake.

#### Frame

The frame designed by means of a computer using the system for finite methods, forms a very stable and robust set, integrating also the motors and the steering axle. Its low profile provides an optimal center of gravity of the forklift, which besides its good appearance, secures a high safety rate of these machines.

#### Battery

The serial battery TECNA perfectly fits its place, fixed in operating position by means of a well designed access, which secures protection from the truck roof to the driver. For that reason its extraction and placement back is realized in very short time.

#### CE

Security. This family of machines completely meets the actual Standards of CEE. The specifications may be changed and modified without preliminary notification.



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Tecna 2000 possesses certificates for legal audits under the system for labour safety carried out by A.S.G. (Audit Management Systems).