

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



RANGE TR

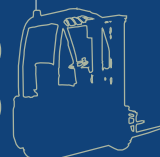
TECNA
2000

Electric forklift truck

Three wheels, rear AC drive motor,
48 V., with TECNA technology
Vector control.

TR 13 · 1.25 Tn. C.G.C. a 500 mm. load center

TR 15 · 1.50 Tn. C.G.C. a 500 mm. load center





TR 13 · 1.25 Tn. C.G.C. a 500 mm. load center

TR 15 · 1.50 Tn. C.G.C. a 500 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). (Optional).

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.



Manoeuvrability

A fast and easy steering with a small turning radius gives the truck a high grade of manoeuvrability very difficult to beat



Ergonomics

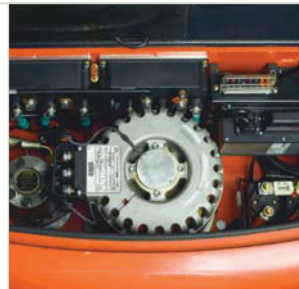
Operator compartment with the same dimensions, as those of a greater tonnage.

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 2.073 mm, adjustable tall stature.



Productivity

AC three phases drive motor 48 V and 6,5 Kw.

AC three phases pump motor 48V and 10 Kw.

Vector control TECNA

TECNA Batteries:

TRC 16/18 - 48 V 500 A (24 kW)

TRL 16/18/20 - 48 V 625 A (30 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.

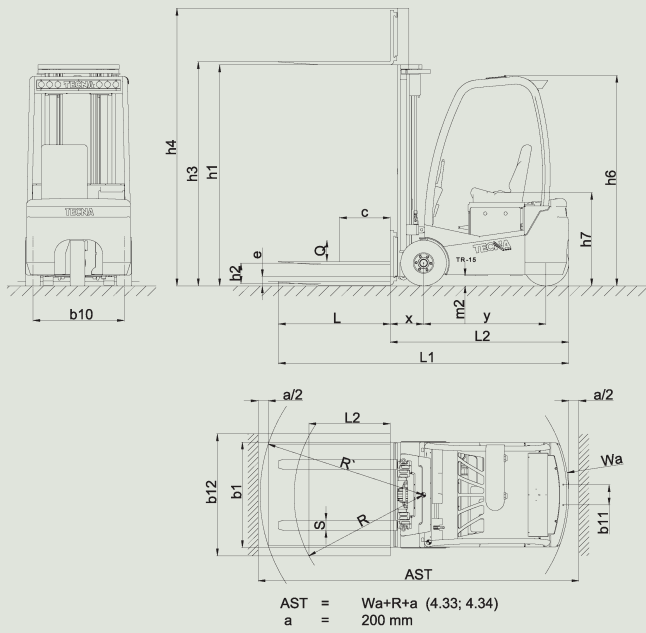
Programmable for optimum adaptation of truck characteristics to the operation request (Acceleration, speed, deceleration, braking, etc.) Diagnosis information and warning indicators.

TECHNICAL SPECIFICATIONS ACCORDING TO VDI 2198

Distinguishing mark	1.1	Manufacturer (Abbreviation)		TECNA	TECNA
	1.2	Manufacturer's type designation		TR-13	TR-15
	1.3	Drive: Electric, Battery, Diesel, Petrol, Fuel gal			Battery
	1.4	Operator type: Hand, Pedestrian, Standing, Seated			Seated
	1.5	Load capacity / Rated load	Q (t)	1,25	1,5
	1.6	Load center distance	F (N)		500
	1.8	Load distance, centre of drive axle to fork	x (mm)		330 ¹⁾
	1.9	Wheelbase	y (mm)	1122	1203
	Weight	2.1	Service weight (with standard battery)	kg	2780
2.2		Axle loading, laden front/rear	kg	3465/470	3970/565
2.3		Axle loading, unladen front/rear	kg	1350/1430	1435/1600
Tyres, Chassis	3.1	Tyres: SE=Superelastic, N=Pneumatic			SE
	3.2	Tyre size, front			18x7-8
	3.3	Tyre size, rear			18x7-8
	3.5	Wheels, number front/rear (x=driven wheels)			2/1x
	3.6	Tread, front	b10 (mm)		890
	3.7	Tread, rear	b11 (mm)		0
	Dimensions	4.1	Tilt of mast/fork carriage forward/backward	Grad	
4.2		Height, mast lowered	h1 (mm)		2176
4.3		Free lift	h2 (mm)		150
4.4		Lift height	h3 (mm)		3306
4.5		Height, mast extended	h4 (mm)		3846
4.7		Height of overhead guard (cabin)	h6 (mm)		2073
4.8		Seat height	h7 (mm)		920
4.12		Coupling height	h10 (mm)		----
4.19		Overall length	l1 (mm)	2777	2858
4.20		Length to face of forks	l2 (mm)	1677	1758
4.21		Overall width	b1 (mm)		1040
4.22		Fork dimensions	s/e/l (mm)		35x100x1100
4.23		Fork carriage din 15173, class/type A, B			2A
4.24		Fork-carriage width	b3 (mm)		1020
4.31		Ground clearance, laden, below mast	m1 (mm)		90
4.32		Ground clearance, centre of wheelbase	m2 (mm)		100
4.33		Aisle width for pallets 1000(L6)x1200(B12)	Ast (mm)	3008	3089
4.34		Aisle width for pallets 1200(L6)x800(B12)	Ast (mm)	3130	3211
4.35		Turning radius	Wa (mm)	1349	1430
4.36		Internal turning radius	b13 (mm)		0
Performances	5.1	Travel speed, laden/unladen	km/h	11,5/12	11,5/12
	5.2	Lift speed, laden/unladen	m/s	0,45/0,66	0,42/0,66
	5.3	Lowering speed, laden/unladen	m/s	0,5/0,48	0,5/0,48
	5.5	Drawbar pull, laden/unladen	N	----	----
	5.6	Max. Drawbar pull, laden/unladen	N	----	----
	5.7	Gradeability, laden/unladen S2 30 min.	%	9,5/15	8/13
	5.8	Max. Gradeability laden/unladen S2 5 min.	%	13/20	11/18
	5.9	Acceleration time, laden/unladen 10m	s	----	----
	5.10	Service brake			Hydr./Elect.
	Electric-Motor	6.1	Drive motor rating S2 60 min.	kW	
6.2		Lift motor rating S3 15%	kW		10
6.3		Battery acc. to DIN 43531/35/36 A,B,C, no		no	no
6.4		Battery voltage, nominal capacity k5	V/Ah	48/375	48/500
6.5		Battery weight	kg	580	735
6.6		Energy consumption acc. To VDI cycle	kWh/h	----	----
Addition data	8.1	Type of drive control			AC / Inverter
	8.2	Operating pressure for attachments	bar		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) +25mm with lateral shideshifter included.

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



Load capacity

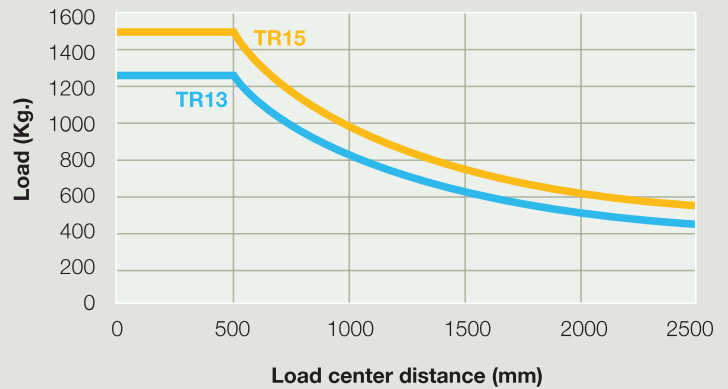


Table of masts

Model
Superelastic tyre
Tread, front

Designation	Lift height	Free lift	Height lowered upright	Height extended upright	Tilt Forward/Backward
	h3 mm	h2 mm	h1 mm	h4 mm	

DUPLEX B 21	2860	150	1953	3400	6 / 6
	3080	150	2063	3620	6 / 6
	3306 ¹⁾	150 ¹⁾	2176 ¹⁾	3846 ¹⁾	6 / 6 ¹⁾
	3630	150	2338	4170	6 / 6
	3930	150	2488	4470	6 / 6
	4230	150	2638	4770	6 / 6
	4530	150	2788	5070	6 / 6
DUPLEX Free lift B 22	2910	1413	1953	3450	6 / 6
	3130	1523	2063	3670	6 / 6
	3350	1636	2176	3890	6 / 6
	3700	1812	2352	4240	6 / 6
	4100	2012	2552	4640	6 / 6
	4500	2212	2752	5040	6 / 6
	4900	2412	2952	5440	6 / 6
TRIPLEX B 32	4330	1413	1953	4870	6 / 6
	4660	1523	2063	5200	6 / 6
	5000	1636	2176	5540	6 / 6
	5500	1812	2352	6040	6 / 4
	6000	2012	2552	6540	6 / 4
	6500	2212	2752	7040	6 / 4

Table of load capacities (kg)

TR13				TR15			
18x7-8				18x7-8			
890				890			
Fork carriage		Integrated sideshift		Fork carriage		Integrated sideshift	
c (mm)		c (mm)		c (mm)		c (mm)	
500	600	500	600	500	600	500	600

1250	1125	1125	1000	1500	1350	1350	1225
1250	1125	1125	1000	1500	1350	1350	1225
1250	1125	1125	1000	1500	1350	1350	1225
1250	1125	1125	1000	1500	1350	1350	1225
1250	1125	1125	1000	1500	1350	1350	1225
1250	1125	1125	1000	1500	1350	1350	1225
1200	1125	1100	1000	1450	1350	1350	1225
1250	1125	1125	1000	1500	1350	1350	1225
1250	1125	1125	1000	1500	1350	1350	1225
1250	1125	1125	1000	1500	1350	1350	1225
1250	1125	1125	1000	1500	1350	1350	1225
1200	1125	1100	1000	1450	1350	1350	1225
1100	1075	1025	1000	1325	1300	1225	1225
1250	1125	1125	1000	1500	1350	1350	1225
1175	1125	1075	1000	1400	1350	1300	1225
1075	1050	1000	975	1300	1275	1200	1175
950	950	875	875	1150	1125	1075	1050
825	825	775	750	1000	975	925	925
725	700	675	650	875	850	800	800

1) Standard.

Specifications are without obligations for typographical errors.

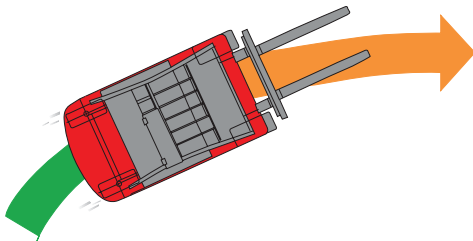
¿Danger?

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



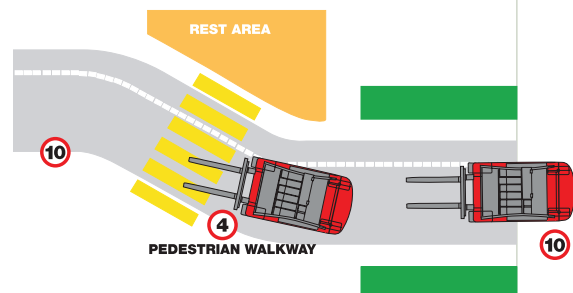
1 Anti-overturning electronic system

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



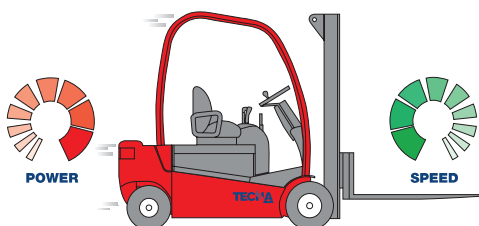
2 Speed limitation in predetermined zones*

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



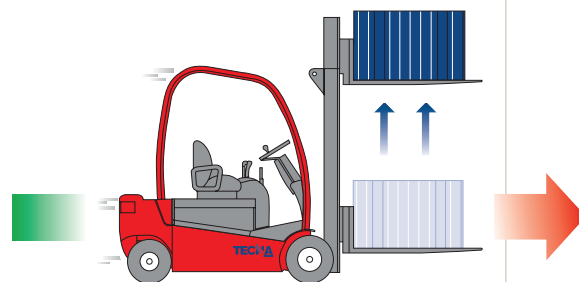
3 Speed and power control

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 three wheels, rear wheel drive 48 V. Vector control.

Series TR 13/15: 1.250 and 1.500 Kg

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 automotion 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 10 kW, permits the quick lifting. They integrate a control system for speed limitation when 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

One single drive motor, in the back of the truck, with one single tyre 18.7.8 (Front tyres are the same size). Drive motor, drive transmission and steering axle in one single set, however, the motor keeps all time fixed without any kind of movement. Motor is well protected in electronics housing. The total rear axle is protected by the counterweight.

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 «automotion» 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).