

# WHEEL LOADER

# CASE

CONSTRUCTION

SINCE 1842.

## 821E

### ENGINE

Brand	FPT
Model	F4HE9684E*J109
Type	4 stroke, turbocharged, cooling system air-air, Mar-I/Tier 3
Cylinders	6
Bore x stroke	104 x 132 mm (4,09 x 5,19in)
Displacement	6,7 L (6.700 cm <sup>3</sup> )
Fuel injection	Electronic
Fuel	Diesel
Fuel filter	disposable cartridge full flow threadable
Air filter	Dry type element with obstruction alert
Cooling pack with central assemble	
External radiators with independent assemble	
Fan – Hydraulic driven	
Type	suction with 8 wings
Diameter	813 mm (32 in)
Water pump	
Type	Integral
Engine pump oil	
Type	Deep crank case with cooling through of injectors under the pistons
Pump operation angle	
Transverse	35°
Longitudinal	35°
Oil filter	Disposable, cartridge full flow threadable
Horsepower	
Maximum Power	
Gross	227 hp (169 kW) at 2,000 rpm
Net Power	213 hp (159 kW) at 2,000 rpm
Standard Power	
Gross	210 hp (157 kW) at 1,800 rpm
Net Power	198 hp (148 kW) at 1,800 rpm
Eco Power	
Gross	190 hp (142 kW) at 1,500 rpm
Net Power	181 hp (135 kW) at 1,500 rpm

NOTE: Power and gross torque according SAE J1995.  
Power and net torque according SAE J1349.

Torque	
Maximum Power	
Gross	1002 N.m (102,2 kgf.m) at 1.400 rpm
Net	966 N.m (98,5 kgf.m) at 1.400 rpm
Standard Power	
Gross	982 N.m (100,1 kgf.m) at 1.400 rpm
Net	950 N.m (96,8 kgf.m) at 1.300 rpm
Eco Power	
Gross	966 N.m (98,5 kgf.m) at 1.200 rpm
Net	940 N.m (95,8 kgf.m) at 1.200 rpm
Torque increase	
Standard power at 2.000 rpm	32,2%

### POWER TRAIN

Transmission	4F/3R	
	Proportional with electronic control module, automatic torque sensitive shift and manual shift	
Gears	Helical	
Gears ratio		
	Forward	Reverse
1 <sup>st</sup>	3,754	3,551
2 <sup>nd</sup>	2,089	1,981
3 <sup>th</sup>	1,072	1,017
4 <sup>th</sup>	0,636	don't available
Torque converter		
Ratio	2,28:1	
Differential	Limited slip on front and rear axles	
Rear axle oscillation	24° total	
Axles: front and rear		
Differential ratio	4,11	
Planetary ratio	6,00	
Final axle ratio	24,67	
Planetary	External	
Service brakes		
	Hydraulically driven, maintenance free, multiple discs immersed in oil with accumulator for the four wheels. Brake system in accordance with ISO 3450	
Disc surface	0,38 m <sup>2</sup> (per hub)	
Parking brake		
	Spring driven and hydraulically released Assembled on the output shaft of the transmission	

Ground speeds – km/h with tires 23,5x25 L3

	Forward	Reverse
1 <sup>st</sup>	7,1	7,9
2 <sup>nd</sup>	12,6	13,8
3 <sup>th</sup>	23,3	25,3
4 <sup>th</sup>	37,0	don't available

### ELECTRICAL SYSTEM

Voltage	24 volts, negative to ground
Alternator	70 A
Batteries	(2) 12 V

### HYDRAULIC SYSTEM

Pump (Steering/implements)	
	Closed centered system, with compensated pressure and flow
Variable displacement	
	120 L/min at 2.000 rpm at 248,22 bar (3,84 pol <sup>3</sup> /rev 31,6 gpm at 2.000 rpm at 3.600 psi)
Implements pump	
	Closed centered system, with compensated pressure and flow
Variable displacement	
	120 L/min at 2.000 rpm at 248,22 bar (3,84 pol <sup>3</sup> /rev 31,6 gpm at 2.000 rpm at 3.600 psi)
Loader control valve	
	Closed centered, sectional 2, 3 or 4 reels, with pilot control for lifting and tilting, auxiliary hydraulic system and electromagnetic detentions for lifting, floating and tilting.
Loader steering	
	Orbital hydraulics, with articulation centered on pivot with oil flow according to demand.
Steering system in accordance with SAE J1511 and ISO 5010	
Main relief pressure	250 bar (3.625 psi)
Filter	10 micron filter, disposable cartridges full flow in the return line, filter restriction indicator light

## CYLINDERS

Lifting cylinders	
Cylinder bore	133.4 mm (5.25 in)
Rod diameter	76.2 mm (3 in)
Stroke	845.7 mm (33.3 in)
Unload cylinder	
Cylinder bore	165.1 mm (6.5 in)
Rod diameter	89 mm (3.5 in)
Stroke	599.6 mm (23.6 in)
Steering cylinder	
Cylinder bore	82.6 mm (3.25 in)
Rod diameter	44.5 mm (1.75 in)
Stroke	481.9 mm (18.97 in)

## INSTRUMENTS

Electronic Information Center	
Indicators/gauges	
Speedometer	
Tachometer	
Selected steering F/N/R	
Transmission Modes – automatic/manual	
Selected gear	
Engine cooling temperature	
Fuel level	
Transmission oil temperature	
Hydraulic oil temperature	
Hourmeter	
Working mode	
Warning lights	
Low Fuel level	
Corner lights	
High beam	
Brake pressure	
Main hazard light	
Parking brake	
Audible alert	
Caution alert	
Emergency alert	
Rear alert	
Horn	

## OPERATOR COMPARTMENT

ROPS/FOPS Cab with air conditioning and heater. In according with ISO 3471, 3449, SAE 1040C, J231, OSHA rules.	
Radio	
Key starter	
Articulated hydraulic steering with adjustable column	
Fully adjustable suspension seat	
Foot throttle	
Single control lever with wrist rest	
Cup holder	
Coat hanger	
Inner rearview mirror	
2-inch retractable seat belt	
Storage tray behind the seat	
Air conditioner	
Single brake pedal	
Gear key F/N/R	
Outer rearview mirrors	
Cooling box	
pressurized air filtering	
Defroster	
Lateral window, fully opening/partial	
Ceiling light	
Wiper, rear and front	
Corner flasher	
windshield washer, rear and front	
Glove compartment with key	
Comfort kit (cigarette lighter, Trinket box)	

## LOADER

Z cinematic arm	
Unique lift and tilt control	
Floatation with positive retention	
Automatic dig return	
Automatic height control	
Automatic shift return	
Disconnecting the transmission on the brake pedal (DeClutch)	
Bucket position indicator	

## CYCLE TIMES

Raise bucket with nominal load	5,6 s
Unload bucket with nominal load	
Z-Bar	1,2 s
Descent (empty)	
With power	2,8 s
Flotation	2,2 s

## SERVICE CAPACITY

Fuel tank	288
Hydraulic system	
Overhall	178 L
Reservoir	90,8 L
Transmission	
Service with filter	34,1 L
Front and Rear Axles	
Front axle	37,4 L
Rear axle	23,7 L
Engine oil with filter	13,25 L
Engine crankcase	12,3 L
Cooling system	38 L

## OPERATING WEIGHT

### Z-Bar

Unit equipped with ROPS / FOPS cab with heater and air conditioning, "Heavy Duty" counterweight, 23,5x25 16PR L3 tires, 3.25 m<sup>3</sup> (4.25 yd<sup>3</sup>) multi-purpose bucket with teeth and blade segments, fuel tank full and 79 kg operator's weight.

17,100 kg (37,699 lb)

### Z-Bar Granite Version

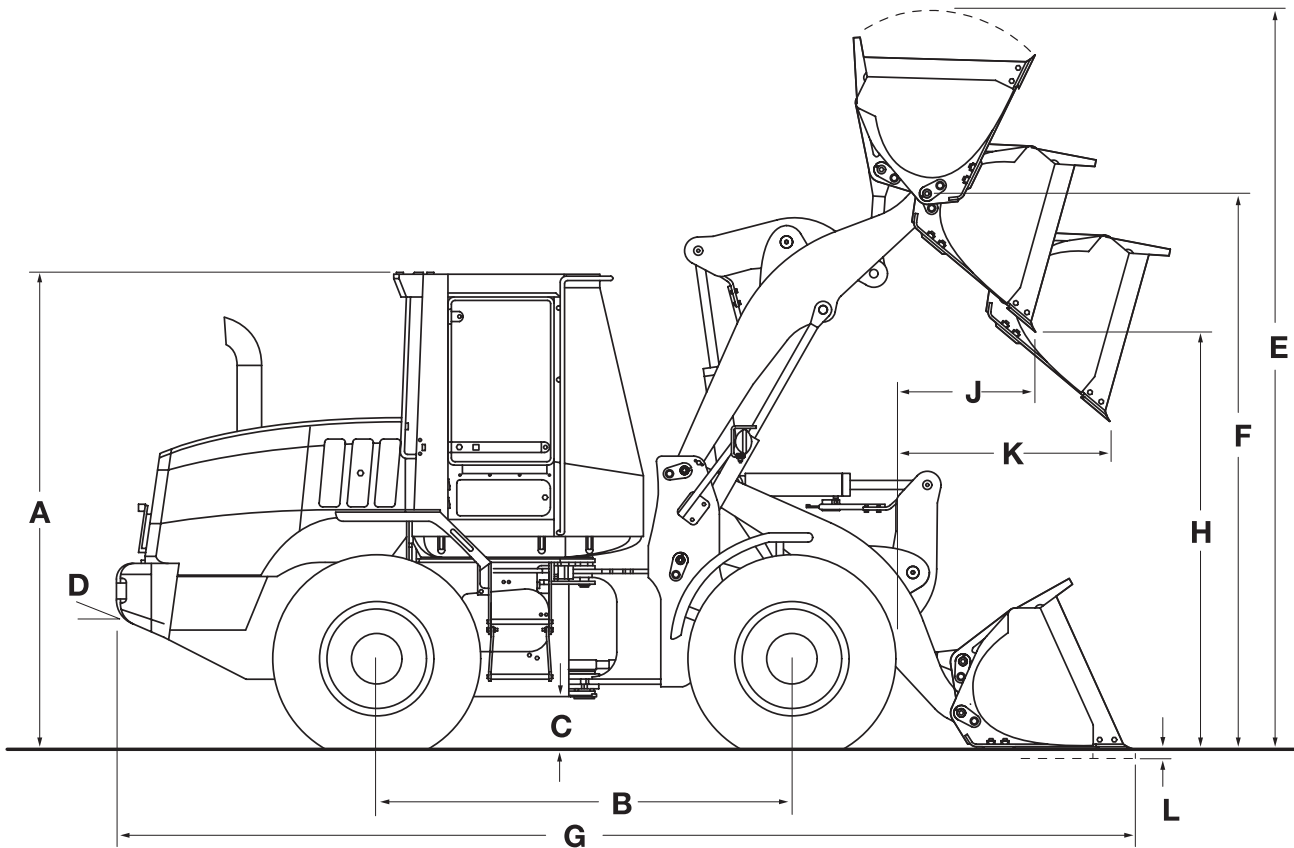
Unit equipped with ROPS / FOPS cab with heater and air conditioning, "Heavy Duty" counterweight, 23,5x25 20PR L5 tires, 1.9 m<sup>3</sup> (2.5 yd<sup>3</sup>) special granite bucket with "V" blade, fuel tank full and 79 kg operator's weight.

18.609 kg (41.026 lb)

## DIMENSIONS

<b>A.</b> Height to top of cab ROPS	3,450 mm (135.8 in)
<b>B.</b> Wheelbase	3,340 mm (131.5 in)
<b>C.</b> Ground clearance	416 mm (16.38 in)
<b>D.</b> Rear departure angle	33°
Width	
Total* w/o bucket	2,562 mm (100.86 in)
Tread width	2,230 mm (87.8 in)
Turning radius	6,032 mm (237.5 in)
<b>STEERING ANGLE</b>	
From the center	40°
Overall angle	80°
Rear axle oscillation	24° total

NOTE: \*Dimensions obtained with 23,5 – 25 XHATL tires.  
Additional dimensions on pages 4 and 5.



## WEIGHT ADJUSTMENTS

Select options	Weight setup	Tipping load adjustment	Load adjustment tipping articulated at 40°
Standard Counterweight	-680 kg (-1499 lb)	-1577 kg (-3476 lb)	-1330 kg (-2933 lb)
L2 Bias Ply Tires	-506 kg (-1116 lb)	-391 kg (-861 lb)	-344 kg (-759 lb)
L3 Bias Ply Tires	-218 kg (-480 lb)	-168 kg (-370 lb)	-148 kg (-325 lb)

NOTE:

Unit equipped with Z-Bar loader arms, 3.2 m<sup>3</sup> (4.25 yd<sup>3</sup>) multi-purpose pinned bucket with bolted edge, 23,5x25 20PR L5 tires, ROPS cab with heating and air conditioning, maximum counterweight, batteries, front and rear fenders, fuel tank full and 79 kg operator. Adjust the selected options from the nominal weight.

## PERFORMANCE DATA

821E	Bucket 1,9 m <sup>3</sup> (2,5 yd <sup>3</sup> ) "V" Blade (special for granite mining - block tipping)	Bucket 2,7 m <sup>3</sup> (3,5 yd <sup>3</sup> ) Bolt-on edge	Bucket 2,7 m <sup>3</sup> (3,5 yd <sup>3</sup> ) Bolt-on edge (Heavy Duty)	Bucket 2,7 m <sup>3</sup> (3,5 yd <sup>3</sup> ) Teeth (Heavy Duty)
Bucket capacity - struck (SAE)	1,90 m <sup>3</sup> (2,49 yd <sup>3</sup> )	2,22 m <sup>3</sup> (2,90 yd <sup>3</sup> )	2,22 m <sup>3</sup> (2,90 yd <sup>3</sup> )	2,22 m <sup>3</sup> (2,90 yd <sup>3</sup> )
Heaped	ND	2,63 m <sup>3</sup> (3,44 yd <sup>3</sup> )	2,63 m <sup>3</sup> (3,44 yd <sup>3</sup> )	2,63 m <sup>3</sup> (3,44 yd <sup>3</sup> )
Bucket width - external	3.120 mm (122.8 in)	3.030 mm (119.3 in)	3.030 mm (119.3 in)	3.030 mm (119.3 in)
Weight of bucket	2.073 kg	1.469 kg	1.469 kg	1.523 kg
<b>E.</b> Fully raised operating height with retaining plate	5.759 mm (226.7 in)	5.470 mm (215.3 in)	5.500 mm (216.5 in)	5.540 mm (218.1 in)
<b>F.</b> Height to hinge pin totally raised	4.112 mm (161.9 in)	4.077 mm (160.5 in)	4.110 mm (161.8 in)	4.077 mm (160.5 in)
<b>G.</b> Total length - bucket leveled on the ground	7.973 mm (313.9 in)	7.723 mm (304.0 in)	7.690 mm (302.8 in)	7.872 mm (309.9 in)
Dump angle - fully raised	55°	55°	55°	55°
<b>H.</b> Unloading height fully raised, dump at 45°	2.917 mm (114.8 in)	3.051 mm (120.1 in)	3.100 mm (122.0 in)	2.952 mm (116.2 in)
<b>J.</b> Bucket reach fully raised, dump at 45°	1.202 mm (47.3 in)	987 mm (38.8 in)	950 mm (37.4 in)	1.091 mm (42.9 in)
<b>K.</b> Bucket reach height 2.13 m, dump at 45°	1.766 mm (69.5 in)	1.613 mm (63.5 in)	1.590 mm (62.6 in)	1.672 mm (65.8 in)
Operating load - ISO	6.957 kg	6.383 kg	6.590 kg	6.357 kg
Maximum material density - ISO	3.662 kg/m <sup>3</sup>	2.427 kg/m <sup>3</sup>	2.506 kg/m <sup>3</sup>	2.417 kg/m <sup>3</sup>
Tipping load in a straight line - ISO	16.072 kg	14.621 kg	15.088 kg	14.568 kg
Tipping load articulated at 40° - ISO	13.915 kg	12.766 kg	13.179 kg	12.713 kg
Lifting Capacity - Maximum height	8.653 kg	9.265 kg	9.265 kg	9.212 kg
Lifting Capacity - Maximum reach	11.797 kg	12.438 kg	12.438 kg	12.384 kg
Lifting Capacity - Ground	15.441 kg	16.380 kg	16.389 kg	16.334 kg
Breakout force with discharge cylinder	14.106 kg	18.527 kg	18.548 kg	16.439 kg
Maximum recoil - Ground	41°	42°	41°	42°
Maximum recoil - Transport position	44°	45°	44°	45°
Maximum recoil - Maximum reach	54°	54°	54°	54°
Maximum recoil - Maximum height	59°	59°	59°	59°
<b>L.</b> Digging depth	40 mm (1.6 in)	107 mm (4.2 in)	107 mm (4.2 in)	107 mm (4.2 in)
Maximum leveling angle with reverse drag bucket	61°	59°	59°	60°
Loader turning diameter	13.420 mm (528.3 in)	13.197 mm (519.6 in)	13.186 mm (519.1 in)	13.270 mm (522.4 in)

NOTE: Performance data from unit equipped with 23.5 x 25 16 L5 tires, ROPS/FOPS cab with air conditioning, HD counterweight (Heavy Duty), full fuel tank and 79 kg operator. Specifications according to standards SAE J732, J1234, J695, J742, J818, ISO 14397, ISO 5998, ISO 7546.

Bucket 2,7 m <sup>3</sup> (3,5 yd <sup>3</sup> ) Bolt-on "V" Blade (Heavy Duty)	Bucket 3,2 m <sup>3</sup> (4,25 yd <sup>3</sup> ) Bolt-on edge	Bucket 3,2 m <sup>3</sup> (4,25 yd <sup>3</sup> ) Teeth	Bucket 3,4 m <sup>3</sup> (4,5 yd <sup>3</sup> ) Bolt-on edge	"Bucket 5,0 m <sup>3</sup> (6,5 yd <sup>3</sup> ) Bolt-on edge (lightweight materials)"
2,22 m <sup>3</sup> (2,90 yd <sup>3</sup> )	2,71 m <sup>3</sup> (3,54 yd <sup>3</sup> )	2,71 m <sup>3</sup> (3,54 yd <sup>3</sup> )	2,89 m <sup>3</sup> (3,78 yd <sup>3</sup> )	4,43 m <sup>3</sup> (5,79 yd <sup>3</sup> )
2,63 m <sup>3</sup> (3,44 yd <sup>3</sup> )	3,17 m <sup>3</sup> (4,15 yd <sup>3</sup> )	3,17 m <sup>3</sup> (4,15 yd <sup>3</sup> )	3,39 m <sup>3</sup> (4,43 yd <sup>3</sup> )	5,0 m <sup>3</sup> (6,5 yd <sup>3</sup> )
3.030 mm (119.3 in)	2.929 mm (115.3 in)	3.049 mm (120.0 in)	2.929 mm (115.3 in)	3.150 mm (124.0 in)
1.513 kg	1.561 kg	1.615 kg	1.591 kg	1.936 kg
5.470 mm (215.3 in)	5.496 mm (216.4 in)	5.496 mm (216.4 in)	5.531 mm (217.7 in)	5.783 mm (227.7 in)
4.077 mm (160.5 in)	4.123 mm (162.3 in)	4.123 mm (162.3 in)	4.123 mm (162.3 in)	4.112 mm (161.9 in)
7.879 mm (310.2 in)	7.859 mm (309.4 in)	7.993 mm (314.7 in)	7.893 mm (310.8 in)	8.270 mm (325.6 in)
55°	55°	55°	55°	55°
2.951 mm (116.2 in)	2.984 mm (117.5 in)	2.897 mm (114.1 in)	2.962 mm (116.6 in)	2.719 mm (107.0 in)
1.106 mm (43.5 in)	1.107 mm (43.6 in)	1.210 mm (47.6 in)	1.133 mm (44.6 in)	1.389 mm (54.7 in)
1.686 mm (66.4 in)	1.703 mm (67.0 in)	1.764 mm (69.5 in)	1.719 mm (67.7 in)	1.846 mm (72.7 in)
6.362 kg	6.181 kg	6.145 kg	6.127 kg	6.947 kg
2.419 kg/m <sup>3</sup>	1.950 kg/m <sup>3</sup>	1.939 kg/m <sup>3</sup>	1.808 kg/m <sup>3</sup>	1.390 kg/m <sup>3</sup>
14.577 kg	14.308 kg	14.237 kg	14.189 kg	15.998 kg
12.723 kg	12.362 kg	12.290 kg	12.254 kg	13.895 kg
9.221 kg	9.249 kg	9.195 kg	9.217 kg	8.782 kg
12.394 kg	12.293 kg	12.238 kg	12.255 kg	11.894 kg
16.336 kg	15.905 kg	15.844 kg	15.800 kg	15.299 kg
17.731 kg	16.060 kg	14.504 kg	15.610 kg	11.941 kg
42°	41°	41°	41°	41°
45°	44°	44°	44°	44°
54°	54°	54°	54°	54°
59°	59°	59°	59°	59°
107 mm (4.2 in)	75 mm (2.9 in)	75 mm (2.9 in)	75 mm (2.9 in)	71 mm (2.8 in)
60°	60°	61°	60°	65°

## STANDARD EQUIPMENT

### OPERATOR COMPARTMENT

Refer to page 2

#### Engine

MAR-I (Tier 3)

Selectable working modes

- Maximum Power
- Automatic Power
- Standard Power
- Eco Power

Turbocharger

Cooling the intake air

Automatic adjustment of the alternator belt

Integral engine oil cooling

Fuel filter with water separator

Air filter with two elements

Alternator 70 A

(2) batteries 700 CCA 12 V

Muffler without spark suppressor

Cooling pack with central assemble

Electronic Common Rail Fuel Injection

#### Loader

Refer to page 2

### POWER TRAIN

4 wheel drive

Selectable 4F / 3R transmission

automatic/manual

Electronic Control Module - Programmable

Proportional gear shifting

controlled by computer with selection of programmable gears

On-board diagnostics

Single lever for electronic control

of gear selection

Gear key F/N/R on lever

to control the loader

Downshift button

Torque converter

External planetary axles

Limited slip differential

Transmission oil cooler

Disconnecting the transmission by the brake

pedal (DeClutch)

Oil-immersed hydraulic brake discs

Spring-applied parking brake

hydraulically released

Limp-Home mode

Cardan with permanent lubrication

### Hydraulic system

Lever loader control valve

unique and 2 reels

Low effort steering

Reversing hydraulic fan

(8) quick diagnostic couplings

### Others

Electric hood lift

Front and rear fenders

Headlights

(2) headlights (high beam / low beam)

(2) front working headlights

(2) rear brake lights and reverse lights

(2) rear working headlights

Direction indicators / Front / rear warning lights

Standard Counterweight

Trailer pin

Joint locking bar

Lifting arm locking bar

Holder point and tie - front and rear

Reverse gear alarm

Remote drainage points

Note: The configuration of standard equipment may vary according the industry.

## OPTIONAL EQUIPMENT

### OPERATOR COMPARTMENT

Fabric-covered air suspension seat

RH side stairs and platform

Rotating light

Second brake pedal

#### Engine

Cold weather kit

#### Loader

Buckets (see pages 4 and 5)

#### Hydraulic system

Auxiliary hydraulics

Ride Control

Loader valves with 3 or 4 reels,

With 2 or 3 Loader control lever

### Special versions

#### Sugarcane version:

- Cyclonic prefilter at engine inlet and air conditioning for better system efficiency and avoid clogging
- Bucket designed for handling bagasse (4.0 m<sup>3</sup>)
- Chassis with openings to prevent material accumulation
- Alternator with openings to prevent material build-up and prevent fire
- Fire extinguisher

#### Granite extraction (block handling):

- Special bucket and heavy-duty counterweight

#### Rock extraction:

- HD bucket, counterweight and heavy-duty tires

### TIRES

23,5x25 L2/L3/L5 diagonals

23,5 R25 radial

### Others

Spare tires

Transmission guard

Tool box

Side covers and drain protection



CASE reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold. The specifications, descriptions and illustrative material contained herein correctly reflect the data known at the time of publication, but may vary from region to region and are subject to change without notice. The illustrations may include optional equipment and accessories and may not include all standard equipment.

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**CaseCE.com.br**

#### Business office

Garin – Buenos Aires

Rep. Argentina

Calle 28, 920

Panamericana km 38,5

Phone: +54 3327-4461000

#### Plants

Contagem – Minas Gerais – Brazil

Av. General David Sarnoff, 2237

Inconfidentes – Zip Code 32210-

900 Phone: +5531 2104-3392

Sorocaba – São Paulo – Brazil

Av. Jerome Case, 1801

Inconfidentes – CEP 18087-220

Phone: +5515 3334-1700

