Sheet Version V05 10/01/2011

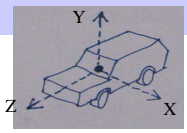
Bugre Bacurau 2006

4 Wheels

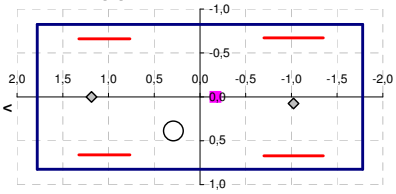
DIMENSIONS

Total height	1,045m	Length	3,560m	Wheelbase	2,069m
Ground clearance	0,010m	Width	1,650m	Front track	1,320m
		Body heigth	1,035m	Rear track	1,344m

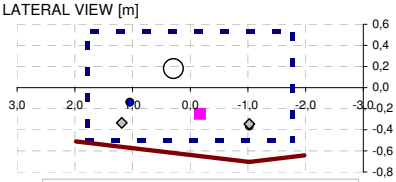
NullPoint (0,0,0) Supossed at: 0,500m of body base



UPPER VIEW [m]



LATERAL VIEW [m]



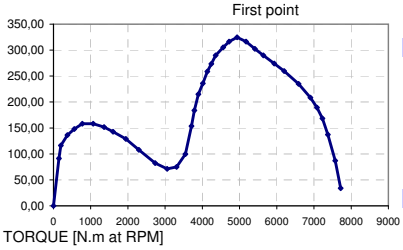
■ Center of gravity ♦ Roll centers
● Suspension position o Steering wheel
Wheels ---- Body Floor

WEIGHTS

Body	770kg		
Engine	145kg	915kg	SPRUNG WEIGHT
Front wheels	60kg	+	
Rear wheels	61kg	121kg	UNSPRUNG WEIGHT
DISTRIBUTION front	41%	1.036kg	TOTAL MASS
rear	59%		

	X pitch	Y yaw	Z roll
Steering wheel	◯		
Center of gravity [m]	■	-0,25	-0,17
Rotational inertias [kg.m2]	1.350	1.250	310
Estimated [kg.m2]	(1.075)	(1.075)	(176)

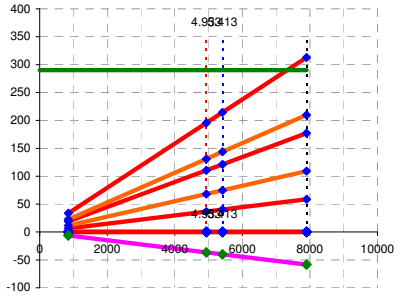
First point



TORQUE [N.m at RPM]

ENGINE

		7.900rpm	max
Maximum power	350 CV	5.413rpm	(259kW)
Maximum torque	487 N.m	4.933rpm	(50mkp)
		850rpm	min
CONSUMPTION		0,0000200 g/J	*(default values)*
Fuel tank	50 L	Gasoline	



SPEED BY GEAR [km/h at RPM] Vmáx

AERODYNAMIC

Frontal area 1,87m2 →→→ ↑↑↑↑↑↑

COEFFICIENTS longitudinal [Z] Cx 0,390 vertical [Y] -Kd 0,0054

	width	span	Cd	angle	Kd
Body Lift	1,20	0,10	-4,00	1,00	-0,0054

AERODYNAMIC CHANGES

V [km/h]	+/- ΔM [kg]	+/- ΔAx	- ΔAz
100	0	0,0%	-0,04G
150	-1	-0,1%	-0,08G
200	-2	-0,2%	-0,14G
250	-3	-0,3%	-0,22G
300	-4	-0,4%	-0,32G

TRANSMISION

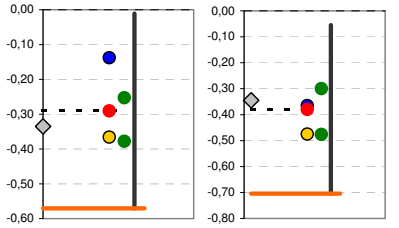
Drive: rear gears 5
Gearbox: manual differential ratio 4,30
HELP TO DRIVE:
with ABS SHIFT:
without ASD 7.900rpm At max RPM

0,63 +Fz

GEAR RATIOS		V [km/h]	+ Az
1ª	3,567	59	2,26G
2ª	1,922	109	1,22G
3ª	1,184	177	0,75G
4ª	0,999	210	0,63G
5ª	0,670	313	0,42G
6ª			
7ª			
8ª			
9ª			
MA	-3,58	-58	-2,27G

BRAKES

	BRAKE TORQUE	BRAKE FORCE		Handbrake:
front	800 N.m	5.719 N	74%	To wheels rear
rear	320 N.m	1.971 N	26%	**Az [m/s2]**
		7.690 N		**-0,76G**



Front Rear

SUSPENSION GEOMETRY [cm]

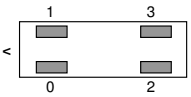
STEERING

Steer lock 2,5 between locks To front wheels
Turning diameter 5,91 m Ackerman
STEERING WHEEL POSITION

	X	Y	Z
m	0,39	0,18	0,29

WHEELS ANGLE

º out	º in
1,25	
2,50	
5,00	
10,00	



SUSPENSION

LENGTH kerb weight

[m]	hung	mín	max	inicio ●	weight [kg]
Front	0,228	0,115	0,240	0,153	154
Rear	0,110	-0,065	0,111	0,015	243

STIFFNESS [N/m]

	Wheels	Susp.	Total	antiroll
Front	220.000	20.000	18.333	14.000
Rear	250.000	25.000	22.727	

RESUME

Vertical stiffness	k 82.121 N/m
Frecuencie	w 1,51 Hz
Wheel vertical stiffness	k 940.000 N/m
Frecuencie	w 14,03 Hz

ROLL CENTER ♦

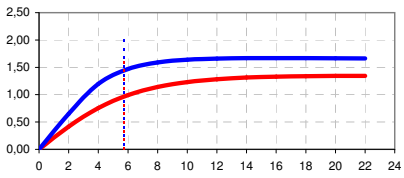
		X	Y	Z
Front	m		-0,34	1,19
Rear	m	0,08	-0,35	-1,02

Damping 4%

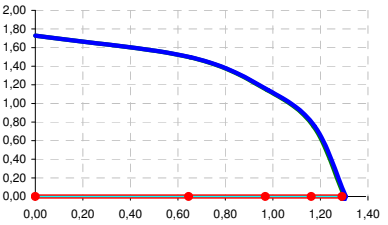
critical	17.337 N/m/s
real	740 N/m/s

SUSPENSION POSITION

Wheel	[m]	X	Y	Z
●	0	0,66	-0,14	1,05
	1	-0,66	-0,14	1,05
	2	0,67	-0,37	-1,02
	3	-0,67	-0,37	-1,02



TRANSVERSAL GRIP [mux at (º)slip]

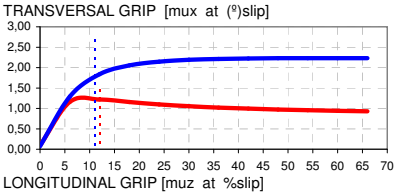


GRIP ELIPSE [muz at mux]

WHEELS

optimal values

[m]	Radius	Perimeter	SR [-]	SA [rad]	
Front	0,280	1,758	0,120	0,100	-
Rear	0,325	2,040	0,110	0,100	
media	0,302	1,899			-



LONGITUDINAL GRIP [muz at %slip]

TEORICAL PERFORMANCE

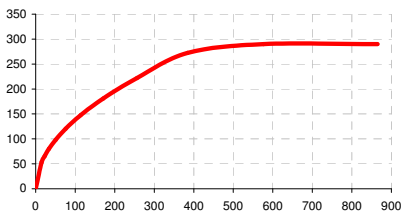
Speed	290 km/h	By power	(180mph)
	313 km/h	By transmision	(194mph)
Acceleration	4,83 seg	from 0 a 100 km/h	(2,96s Weight/Power)
	15,28 seg	from 0 to 400 m	
	27,16 seg	from 0 to 1000 m	
Brake	18,7m	from 60 to 0 km/h	
	101,8m	from 140 to 0 km/h	
Adelantament	3,78 seg	from 20 a 50 km/h in 2ª	
	10,20 seg	from 60 to 120 km/h in 3ª	
	10,98 seg	from 80 to 120 km/h in 4ª	
Consumption		1,2 L at 90km/h	
100 km		1,8 L at 120km/h	
Autonomy		2.742 Km at 120km/h	

ROLL COEFFICIENT 0,015 -

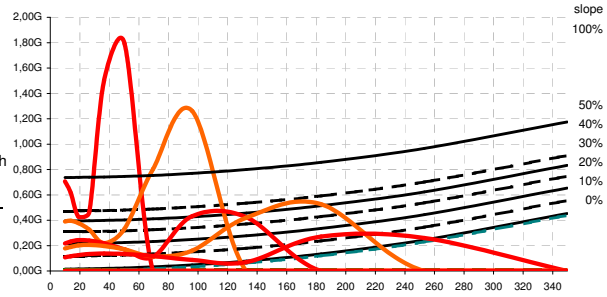
TRANSVERSAL DYNAMIC

	Roll over	Longitudinal	Transversal
V = 290 km/h	2,96G		1,49G
		Amáx 1,61G (380%)	
		Fmáx -0,67G (88%)	
V = 0 km/h	2,96G		1,46G
		Amáx 1,37G (60%)	
		Fmáx -0,86G (114%)	

(% of available aceleration/braking)



SPEED AT CURVE [km/h at R curve,m]
With Az = 0



MARCH DIAGRAM [Az m/s2 at V km/h, and climbing slope %]

COMMENTS BY MODELERS

Motor boxer 2,3L - turbo .48/.70
Created by Paulo Afonso Alcântara

version RACER: 052b9