Sheet Version V05 — 10/01/2011

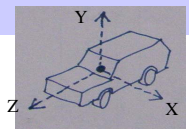
Bugatti Veyron 16/4 — 2002/2004

4 Wheels

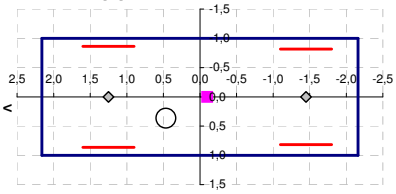
DIMENSIONS

Total height	0,921m	Length	4,323m	Wheelbase	2,700m
Ground clearance	0,121m	Width	2,000m	Front track	1,725m
		Body heigth	0,800m	Rear track	1,632m

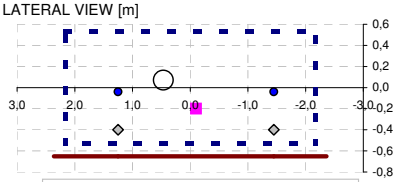
NullPoint (0,0,0) Supossed at: 0,530m of body base



UPPER VIEW [m]



LATERAL VIEW [m]



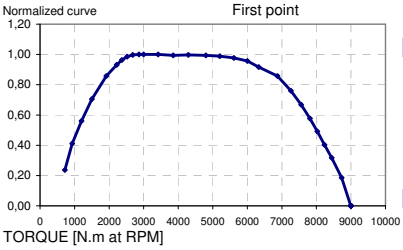
■ Center of gravity ♦ Roll centers
● Suspension position o Steering wheel
Wheels ---- Body Floor

WEIGHTS

Body	1.550kg		
Engine		1.550kg	SPRUNG WEIGHT
Front wheels	25kg	+	
Rear wheels	25kg	50kg	UNSPRUNG WEIGHT
DISTRIBUTION front	50%	1.600kg	TOTAL MASS
rear	50%		

	X pitch	Y yaw	Z roll
Steering wheel	◯		
Center of gravity [m]	■	-0,20	-0,10
Rotational inertias [kg.m2]	1.199	2.597	244
Estimated [kg.m2]	(2.916)	(2.916)	(400)

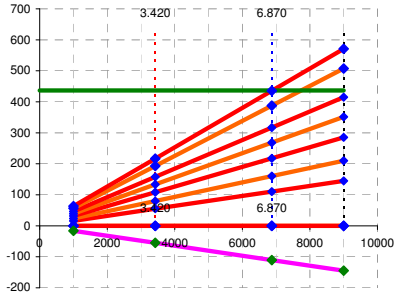
Normalized curve — First point



TORQUE [N.m at RPM]

ENGINE

		9.000rpm	max
Maximum power	1048 CV	6.870rpm	(776kW)
Maximum torque	1.250 N.m	3.420rpm	(127mkp)
		1.000rpm	min
CONSUMPTION		0,0000200 g/J	
Fuel tank	50 L	Gasoline	(default values)



SPEED BY GEAR [km/h at RPM] — Vmáx

AERODYNAMIC

Frontal area 1,80m2 →→→ ↓↓↓↓↓↓

COEFFICIENTS	width	longitudinal [Z] span	Cx 0,360 Cd	vertical [Y] angle	Kd 1,0155 Kd
frontaxledf	1,00	1,00	40,00	1,00	0,4513
rearaxledf	1,00	1,00	50,00	1,00	0,5642

AERODYNAMIC CHANGES

V [km/h]	+/- ΔM [kg]	+/- ΔAx	- ΔAz
100	80	5,0%	-0,02G
150	180	11,2%	-0,05G
200	320	20,0%	-0,08G
250	499	31,2%	-0,13G
300	719	44,9%	-0,19G

TRANSMISION

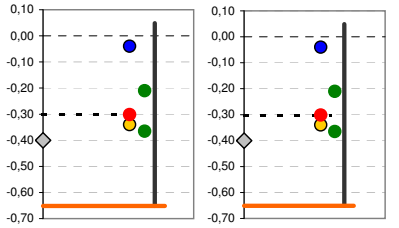
Drive: rear — gears 7
Gearbox: manual — differential ratio 2,60
HELP TO DRIVE:
without ABS — SHIFT:
without ASD — 9.000rpm — At max RPM

0,59 +Fz

GEAR RATIOS		V [km/h]	+ Az
1ª	3,154	145	1,87G
2ª	2,176	210	1,29G
3ª	1,600	285	0,95G
4ª	1,300	351	0,77G
5ª	1,100	415	0,65G
6ª	0,900	507	0,53G
7ª	0,80	571	0,47G
8ª			
9ª			
MA	-3,15	-145	-1,87G

BRAKES

	BRAKE TORQUE	BRAKE FORCE		Handbrake:
front	2.700 N.m	15.429 N	54%	To wheels rear
rear	2.300 N.m	13.143 N	46%	Az [m/s2]
		28.571 N		-1,82G



Front — Rear

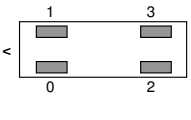
SUSPENSION GEOMETRY [cm]

STEERING

Steer lock	0,5	between locks		To front wheels	
Turning diameter	7,71	m		Ackerman	1,10
STEERING WHEEL POSITION		X	Y	Z	
	m	0,37	0,07	0,47	

WHEELS ANGLE

º out	º in
1,25	1,39
2,50	2,83
5,00	5,81
10,00	12,32



SUSPENSION

LENGTH				kerb weight	
[m]	hung	mín	max	inicio ●	weight [kg]
Front	0,300	0,170	0,325	0,261	375
Rear	0,300	0,170	0,325	0,261	375

STIFFNESS [N/m]	Wheels	Susp.	Total	antiroll
Front	325.000	95.000	73.512	9.000
Rear	325.000	95.000	73.512	9.000

RESUME

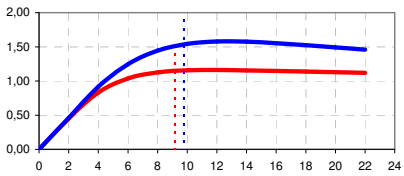
Vertical stiffness	k 294.048	N/m
Frecuencie	w 2,19	Hz
Wheel vertical stiffness	k 1.300.000	N/m
Frecuencie	w 25,66	Hz

ROLL CENTER		X	Y	Z
Front	m		-0,40	1,25
Rear	m		-0,40	-1,45

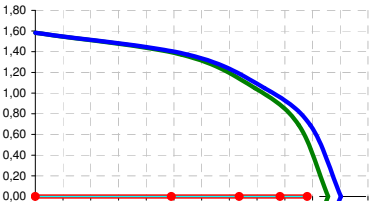
Damping 9%

critical	42.698	N/m/s
real	3.750	N/m/s

SUSPENSION POSITION	[m]	X	Y	Z
Wheel	0	0,86	-0,04	1,25
	1	-0,86	-0,04	1,25
	2	0,82	-0,04	-1,45
	3	-0,82	-0,04	-1,45



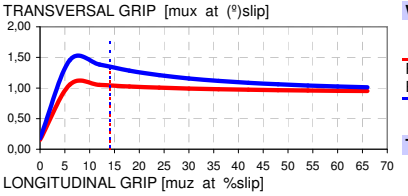
TRANSVERSAL GRIP [mux at (º)slip]



GRIP ELIPSE [muz at mux]

WHEELS

	optimal values			
[m]	Radius	Perimeter	SR [-]	SA [rad]
Front	0,350	2,199	0,140	0,160
Rear	0,350	2,199	0,140	0,170
media	0,350	2,199		



LONGITUDINAL GRIP [muz at %slip]

TEORICAL PERFORMANCE

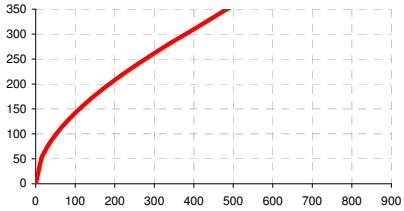
Speed	437 km/h	By power	(271mph)
	571 km/h	By transmision	(355mph)
Acceleration	4,83 seg	from 0 a 100 km/h	(1,53s Weight/Power)
	11,56 seg	from 0 to 400 m	
	19,09 seg	from 0 to 1000 m	
Brake	7,8m	from 60 to 0 km/h	
	42,3m	from 140 to 0 km/h	
Adelantament	1,23 seg	from 20 a 50 km/h in 2ª	
	2,13 seg	from 60 to 120 km/h in 3ª	
	1,60 seg	from 80 to 120 km/h in 4ª	
Consumption	1,3 L	at 90km/h	
100 km	1,9 L	at 120km/h	
Autonomy	2.640	Km at 120km/h	

ROLL COEFFICIENT 0,015

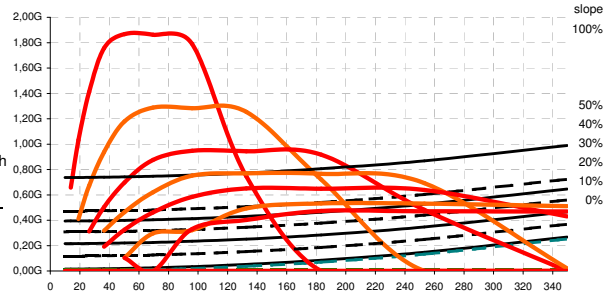
TRANSVERSAL DYNAMIC

	Roll over	Longitudinal	Transversal
V = 437 km/h	1,96G		2,07G
		Amáx 1,02G (216%)	
		Fmáx -1,33G (73%)	
V = 0 km/h	1,96G		1,31G
		Amáx 0,8G (43%)	
		Fmáx -1,07G (59%)	

(% 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

alpha version
3D model by Empire 3D, converted by Crazy_UmKA , Update by Bandit82 and R1BURNOUT

version RACER: 052b75