Sheet Version V05 12/01/2011

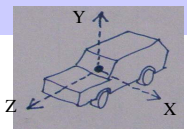
1969 Mustang 1969

4 Wheels

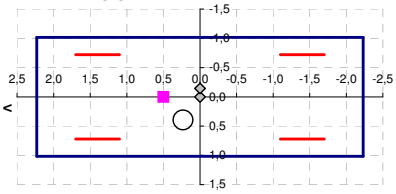
DIMENSIONS

Total height	0,926526793	Length	4,460m	Wheelbase	2,800m
Ground clearance	0,127m	Width	2,030m	Front track	1,440m
		Body heigth	0,800m	Rear track	1,440m

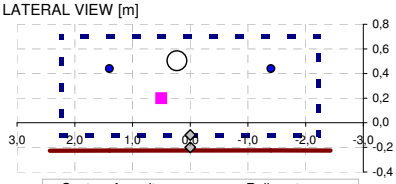
NullPoint (0,0,0) Supossed at: 0,100m of body base



UPPER VIEW [m]



LATERAL VIEW [m]



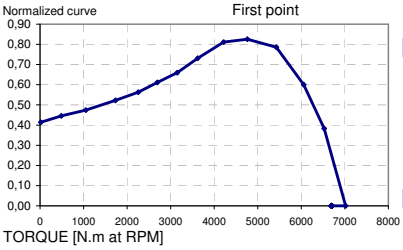
■ Center of gravity ♦ Roll centers
● Suspension position o Steering wheel
Wheels ---- Body Floor

WEIGHTS

Body	1.200kg		
Engine	383kg	1.583kg	SPRUNG WEIGHT
Front wheels	40kg	+	
Rear wheels	40kg	80kg	UNSPRUNG WEIGHT
DISTRIBUTION front	68%	1.663kg	TOTAL MASS
rear	32%		

		X pitch	Y yaw	Z roll
Steering wheel	◯			
Center of gravity [m]	■		0,20	0,50
Rotational inertias [kg.m2]		3.000	2.000	600
	Estimated [kg.m2]	(2.844)	(2.844)	(428)

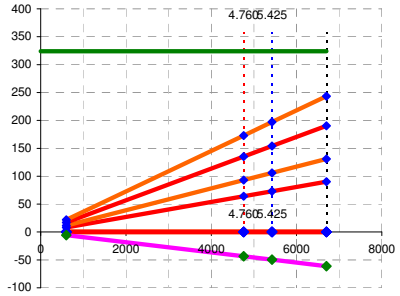
Normalized curve First point



TORQUE [N.m at RPM]

ENGINE

		6.700rpm	max
Maximum power	392 CV	5.425rpm	(290kW)
Maximum torque	533 N.m	4.760rpm	(54mkp)
		600rpm	min
CONSUMPTION		0,0000200 g/J	*(default values)*
Fuel tank	50 L	Gasoline	



SPEED BY GEAR [km/h at RPM] Vmáx

AERODYNAMIC

Frontal area 1,70m2 → → → ↓↓↓↓↓↓

COEFFICIENTS longitudinal [Z] Cx 0,335 vertical [Y] Kd 0,0736

	width	span	Cd	angle	Kd
FrontDam	1,50	0,15	0,50	30,00	0,0381
RearSpolier	1,40	0,30	0,75	10,00	0,0355

AERODYNAMIC CHANGES

V [km/h]	+/- ΔM [kg]	+/- ΔAx	- ΔAz
100	6	0,3%	-0,02G
150	13	0,8%	-0,04G
200	23	1,4%	-0,07G
250	36	2,2%	-0,11G
300	52	3,1%	-0,16G

TRANSMISION

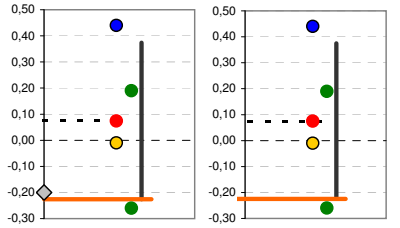
Drive:	rear	gears	4
Gearbox:	manual	differential ratio	3,62
HELP TO DRIVE:			
	without ABS	SHIFT:	
	without ASD	6.700rpm	At max RPM

0,39 +Fz

GEAR RATIOS		V [km/h]	+ Az
1ª	2,320	90	0,92G
2ª	1,600	131	0,63G
3ª	1,100	190	0,43G
4ª	0,860	243	0,34G
5ª			
6ª			
7ª			
8ª			
9ª			
MA	-3,42	-61	-1,35G

BRAKES

	BRAKE TORQUE	BRAKE FORCE		Handbrake:
front	2.000 N.m	13.333 N	63%	To wheels rear
rear	1.200 N.m	8.000 N	38%	**Az [m/s2]**
		21.333 N		**-1,31G**



Front Rear

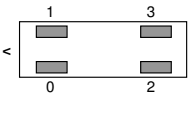
SUSPENSION GEOMETRY [cm]

STEERING

Steer lock	0,4	between locks		To rear wheels	
Turning diameter	#¡VALOR!	m		Ackerman	1,00
STEERING WHEEL POSITION		X	Y	Z	
	m	0,40	0,50	0,23	

WHEELS ANGLE

º out	º in
1,25	1,26
2,50	2,56
5,00	5,23
10,00	10,97



SUSPENSION

LENGTH	●	●	●	kerb weight	
[m]	hung	mín	max	inicio ●	weight [kg]
Front	0,450	0,250	0,700	0,366	524
Rear	0,450	0,250	0,700	0,365	227

STIFFNESS [N/m]	Wheels	Susp.	Total	antiroll
Front	280.000	61.253	50.258	25.000
Rear	250.000	26.215	23.727	

RESUME

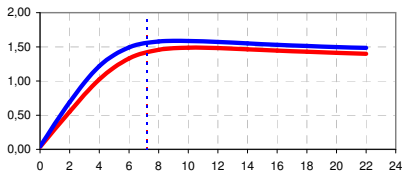
Vertical stiffness	k 147.971 N/m
Frecuencie	w 1,54 Hz
Wheel vertical stiffness	k 1.060.000 N/m
Frecuencie	w 18,32 Hz

ROLL CENTER	♦	X	Y	Z
Front	m		-0,20	
Rear	m	-0,14	-0,10	

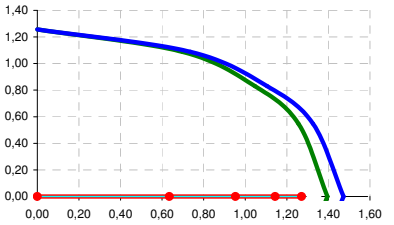
Damping 10%

critical	30.610 N/m/s
real	3.060 N/m/s

SUSPENSION POSITION	●	[m]	X	Y	Z
Wheel	0		0,72	0,44	1,40
	1		-0,72	0,44	1,40
	2		0,72	0,44	-1,40
	3		-0,72	0,44	-1,40



TRANSVERSAL GRIP [mux at (º)slip]

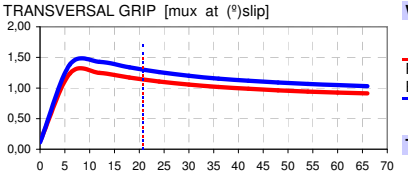


GRIP ELIPSE [muz at mux]

WHEELS

optimal values

[m]	Radius	Perimeter	SR [-]	SA [rad]	
Front	0,300	1,885	0,207	0,126	-
Rear	0,300	1,885	0,207	0,126	
media	0,300	1,885			-



LONGITUDINAL GRIP [muz at %slip]

TEORICAL PERFORMANCE

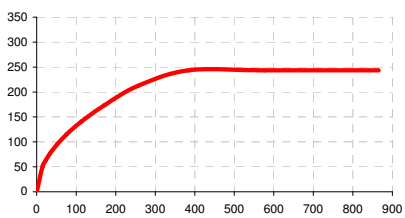
Speed	324 km/h	By power	(201mph)
	243 km/h	By transmision	(151mph)
Acceleration	9,65 seg	from 0 a 100 km/h	(4,24s Weight/Power)
	15,90 seg	from 0 to 400 m	
	26,59 seg	from 0 to 1000 m	
Brake	10,8m	from 60 to 0 km/h	
	58,9m	from 140 to 0 km/h	
Adelantament	2,72 seg	from 20 a 50 km/h in 2ª	
	10,10 seg	from 60 to 120 km/h in 4ª	
	6,47 seg	from 80 to 120 km/h in 4ª	
Consumption		1,3 L at 90km/h	
100 km		1,8 L at 120km/h	
	Autonomy	2.828 Km at 120km/h	

ROLL COEFFICIENT 0,015 *(default values)*

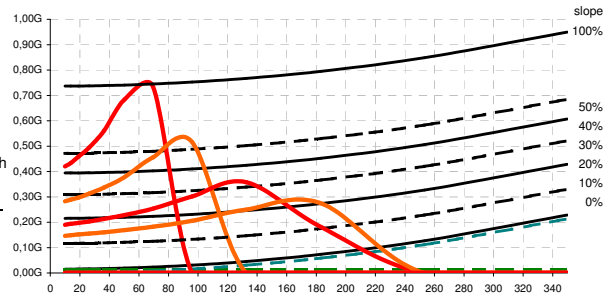
TRANSVERSAL DYNAMIC

	Roll over	Longitudinal	Transversal
V = 243 km/h	1,81G		1,36G
		Amáx 0,56G (166%)	
		Fmáx -0,84G (64%)	
V = 0 km/h	1,81G		1,34G
		Amáx 0,53G (58%)	
		Fmáx -0,78G (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

Based on a 1969 Mustang owned by Hal Baer
Model and textures created by Storm

version RACER: 052b79