

Competitors: Please read the Instructions-Tips (tab below) prior to the completion and submission of this sheet.

Car No.	81
School	Ecole Centrale de Lyon

Dimensions	Front	Rear
Overall Length, Width, Height	2780 mm long, 1468 mm wide, 1154 mm high	
Wheelbase	1610 mm	
Track Width	1300 mm	1246 mm
Mass with 68kg driver seated	150 kg (0.47)	166 kg (0.53)

Suspension Parameters	Front	Rear
Suspension Type	Double unequal length and non-parallel A-Arm pull rod actuated Ohlins TTX 25 dampers	Double unequal length and non-parallel A-Arm pull rod actuated Ohlins TTX 25 dampers
Tire Size, Compound and Make	20.5x7,0-13 R25B Hoosier	20.5x7,0-13 R25B Hoosier
Wheels (width, construction)	7" wide aluminum oz racing ET 22	7" wide aluminum oz racing ET 22
Center of Gravity Design Height	31 mm, confirmed via tilt test	
Suspension design travel	36 mm jounce/ 54 mm rebound	33 mm jounce/ 47 mm rebound
Wheel rate (chassis to wheel center)	18.6 N/mm	22.7 N/mm
Roll rate (chassis to wheel center)	2.5 degrees per g	
Sprung mass natural frequency	2.78 Hz	2.89 Hz
Jounce Damping	N/A adjustable according to the event	N/A adjustable according to the event
Rebound Damping	N/A adjustable according to the event	N/A adjustable according to the event
Motion ratio / type	1.68 / progressive rate [1,81:1,48]	1.52 / progressive rate [1,65:1,3]
Rate of Camber Change- Ride Camber (deg / m)	40.8 deg / m	55 deg / m
Roll Camber (deg / deg)	0.56 deg / deg	0.42 deg / deg
Static Toe	2° Toe in	1,32° Toe in
Static camber and adjustment method	-0.75 deg, adjustable via adjusting shim range [1:-4]	-0.87 deg, adjustable via adjusting shim range [1:-4]
Front Caster and Kinematic Trail	5.75° degrees, non-adjustable, 19 mm trail	
Front Kingpin Axis Inclination and Offset	4.16° degrees non-adjustable, 29.6 mm offset	
Static Ackermann and adjustment method	92% non-adjustable	
Anti dive / Anti Squat	0%	0%
Roll center position static	48 mm above the ground	79mm above the ground
Roll center position at 1g lateral acc	48 mm above the ground, 49 mm toward unladen side	78 mm above the ground, 106 mm toward unladen side
Steer location, Gear ratio, Steer Arm Length	Front steer, 90 mm Gear Ratio, 81 mm steer arm	

Brake System / Hub & Axle	Front	Rear
Rotors	floating, 230mm, 3.5mm, cast-iron, hub mounted	floating, 230mm, 3.5mm, cast-iron, hub mounted
Master Cylinder	Front: 12.7mm Rear: 12.7mm, short push type, Driver adjustable mechanical bias bar	
Calipers	Dual piston, 32mm bore	Dual piston, 27mm bore
Pedal Force and Line Pressure @ 1g decel	350 N 30bar	350 N 10bar
Upright Assembly	7075 Al, lug mount caliper, camber setting	7075 Al, lug mount caliper, toe and camber settings
Hub Bearings	2 Angular contact ball bearings	2 Angular contact ball bearings
Axle type, size, and material	N/A	steel, right : 410 mm, left : 405 mm

Ergonomics	
Driver Size Adjustments	Fixed steering wheel, adjustable pedals (up to 120 mm adjustment). Removable and interchangeable foam padding.
Seat (materials, padding/damping)	Fibreglass seat with removeable high density foam padding.
Driver Visibility (angle of side view, mirrors?)	210 degree side visibility
Shift Actuator (type, location)	Electric shifter , actuated by paddles on the steering wheel
Clutch Actuator (type, location)	Hand actuated (pull cable) , lever on the side of the cockpit
Instrumentation	Water temp. gauge, fan indicator, gear indicator, shift-light, Tachometer, Neutral indicator and Oil pressure warning light

Electrical Power/Control/Systems Management	
Power Distribution Management / Control	All electrical components are fuse protected, and all power devices are relay-activated. Only relay signals pass through the cockpit (to the dashboard) - all electrical power remains behind the firewall. Dashboard indicators indicate if certain systems are activated (e.g. the cooling fan).

Wiring / Loom / ECM mounting	All wiring follows a specific color-code which allows cables to be identified. Thicker wire is used where power passes through cables. Spiral wrap and zipties are mainly used to guide and protect electrical wiring harness. ECM is mounted using strong locktite glue on a specific plate which is bolted to the chassis.
Battery / Charging System	Super-B LiFePO4 battery 12v, 7.8Ah, charged by the stock Honda alternator
Grounding	Specific ground bolts are located behind the dashboard, near the engine and battery. Dedicated ground wires connect engine body, chassis and battery negative together.
Driver Assist Systems	Shift without Lift thanks to Anti-Dribble clutch.
Logging / Telemetry	N/A
Special Sensing Technology	N/A

Frame	
Frame Construction	Steel spaceframe
Material	SAE 4130 steel round tubing
Joining method and material	TIG welding / SAE 4130 steel filler
Targets (Torsional Stiffness or other)	2250 N-m / deg
Torsional stiffness and validation method	1623 N-m/deg CAE beam model, 1059 N-m/deg physical test
Bare frame mass with brackets and paint	40 kg
Impact Attenuator material	IMPAXX 700 Energy Absorbing Foam
Impact Attenuator dimensions	Standard Impact Attenuator Type 14 dimensions
Impact Attenuator energy capacity	Standard Impact Attenuator Type 14 energy capacity

Powertrain	
Manufacturer / Model	Honda CBR600RR (PC37)
Bore / Stroke / Cylinders / Displacement	67 mm bore / 42.5 mm stroke / 4 cylinders / 599 cc
Compression ratio	12.0:1
Induction (natural or forced, intercooled)	Naturally aspirated
Throttle Body / Mechanism	28mm, butterfly actuation
Fuel Type	98 octane unleaded gasoline
Max Power design RPM	11,000
Max Torque design RPM	10,000
Min RPM for 80% max torque	5,500
Fuel Injection System (manf'r, and type)	Stock Honda fuel rail and injectors, aftermarket pressure regulator
Fuel System Sensors (used in fuel mapping)	Throttle pos., tachometer, crank pos., camshaft pos., coolant temperature, MAP, IAT
Fuel Pressure	3.4 bar
Injector location	110 mm before ports and directed towards ports
Intake Plenum volume and runner length(s)	20342 cc, 165 mm runners
Exhaust header design	4-2-1 configuration, 400 mm primary, equal length (+/- 30 mm), 170 mm collector
Effective Exhaust runner length	1140 mm
Ignition System	Stock Honda Ignition System
Ignition Timing	Stock Honda Ignition Timing
Oiling System (wet/dry sump, mods)	Stock Honda wet sump
Coolant System and Radiator location	Single side mounted 2 core aluminium radiator, 624 cfm fan mounted to the radiator
Fuel Tank Location, Type	Floor mounted between firewall and engine, aluminum tank with anti-slosh foam
Muffler	After market muffler, 570mm long
Other significant engine modifications	Anti-dribble clutch

Drivetrain	
Drive Type	Chain 525
Differential Type	Limited slip differential
Final Drive Ratio	3,75 : 1
Vehicle Speed @ max power (design) rpm	11000 rpm
1st gear, 2nd gear	51 kph 70 kph
3rd gear, 4th gear	85 kph 96 kph
5th gear, 6th gear	108 kph 116 kph
Half shaft size and material	Axles : right : 410mm left : 405mm. Steel hollow tube diameter 20 mm.
Axle Joint type	Tripod

Aerodynamics (if applicable)	N/A
Type / Configuration	
Total Downforce and Drag (scale using incl. note)	Downforce =xxx N, Drag =xxx N (at 80 kph)
Coefficients of Lift & Drag, and Reference Area	$C_l = 0.xx$, $C_d = 0.xx$, $A = xx.x \text{ m}^2$
Aero Balance (% Front at v=80 kph)	xx.x % front
Noteable Features (active, etc)	

Other Information	
Body Work (material, process)	Carbon fiber Vacuum infusion
Optional Information	N/A