

## 2016 FSAE INSPECTION SHEET

<b>CAR NUMBER:</b>	(Inspector use only)			
<b>SCHOOL:</b>	Initials:	Day:	Time In:	Time Out:
<b>SES DEVIATIONS? YES/NO</b>	Initials:	Day:	Time In:	Time Out:
<b>TRANSPONDER NUMBER:</b>	Initials:	Day:	Time In:	Time Out:

### IMPORTANT

THIS FORM MUST STAY WITH THE CAR UNTIL THAT SPECIFIC PART OF INSPECTION HAS BEEN COMPLETED.

PRESENT THE VEHICLE FOR INSPECTION IN THE FOLLOWING ORDER:

- 1a. SAFETY GEAR CHECK (Bring **all items** from "DRIVER'S EQUIPMENT" section below, plus **rain tires**)
- 1b. TECHNICAL INSPECTION
2. FUELING & TILT TABLE INSPECTION
3. NOISE LEVEL & BRAKING PERFORMANCE INSPECTION

**NOTE - IF THERE IS A CONFLICT BETWEEN THIS FORM AND THE RULES, THE RULES PREVAIL**

<b>PART 1</b>		
<b>TECHNICAL INSPECTION</b>		
<b>TYRES &amp; WHEELS</b>		
DRY TIRES - Make: Size: Compound:	RAIN TIRES - Make: Size: Compound:	
WHEELS - Four wheels not in a line, 20.32 cm (8.0 in) min. diam. Wheels with single wheel nut must have positive retainer.	RAIN TIRES - 3/32 in. min. tread depth molded by tire manufacturer.	
<b>DRIVER'S EQUIPMENT</b>		
HELMETS - Snell SA2005, SA2010, <b>SAH2010, SA2015</b> ; M2005, M2010, <b>M2015</b> ; K2005, K2010, <b>K2015</b> . BS 6658-85 Type A/FR (not Types A or B). <b>SFI 31.2/2005,2010,2015; SFI 41.2/2005,2010,2015</b> ; FIA 8860-2004, <b>8860-2010, 8859-2015</b> . Closed Face, no Open Face, must have integrated shield (no dirtbike helmets). No camera mounts.	DRIVERS' SUITS - Single piece FIA 1986 or 2000 Standard, or SFI 3-2A/5 minimum rating, and LABELED AS SUCH.	
	GOGGLES / FACE SHIELDS - made of impact resistant material.	GLOVES - Fire resistant material. No holes. Leather allowed
	ARM RESTRAINTS - Must be installed so the driver can release them and exit unassisted regardless of vehicle's position.	SHOES - SFI 3.3 or FIA 8856-2000
HAIR COVER - Fire resistant (Nomex or equiv.) balaclava or full helmet skirt <b>REQUIRED FOR ALL DRIVERS</b> .	SOCKS - Nomex or equivalent, fire resistant socks.	
FIRE EXTINGUISHERS - Two (2) hand-held, 0.9 kg (2 lb.) minimum, dry chemical (10BC, 1A10BC, 34B, 5A 34B, 20BE or 1A 10BE) extinguishers; Must see BOTH at Tech. On-board fire system encouraged as alternative to hand-held that moves with car.		
<b>EXTERIOR, GENERAL</b>		
PUSH BAR - With car, detachable, push & pull for 2 people standing behind the car. EVs: HV Disconnect tool, if used.	TECH STICKER SPACE - 25 cm x 20 cm (10"x 8") on centerline of upper front nose of car.	
JACKING POINT - Must have an exposed tube at the rear perpendicular to the longitudinal axis approx. 30 cm (12 in) long by 2.5-2.9 cm (1.0-1.125") O.D. Painted orange. Visible to person standing 1 meter behind car. Rear tires must come off the ground using Quick-Jack (200mm lift).	TRANSPONDER (US events only) - AMB TranX 260 required. Securely mounted on RHS of car forward of Front Roll Hoop with clear view of ground.	
BODY & STYLING - Open wheeled, open cockpit, formula style body. Vertical keepout zones 75mm (2.95") in front & behind tires (no aero exceptions,) tires unobstructed from sides.	TRANSPONDER FUNCTION CHECK - Signal received with wand.	
BODYWORK - Min. 38 mm (1.5 in) radius on nose. No large openings in bodywork into driver compartment in front of or alongside driver (except cockpit opening).	WHEELBASE - Minimum 1524 mm (60 in)	
CAR NUMBERS - On front & both sides of car, minimum 15.24 cm (6") tall, 20 mm (3/4") stroke & spacing, B on W, W on B only, specified background shapes. Must be clearly visible.	AERODYNAMICS - ALL aero devices, wings, u/trays, splitters, maximum 70 cm (27.6") forward of front tires, maximum 250 mm (9.8") rearward of rear tires. Front wings no wider than outside of front tires. REAR WINGS no wider than INSIDE of rear tires. Undertrays no wider than line between front and rear tires. No power ground effects.	
SCHOOL NAME & OTHER DECALS - School Name, or recognized initials - 5.1 cm (2") tall min. on both sides in Roman letters.	AERO VERTICAL HEIGHT - Rear wing max 1.2 m (47.2") above ground (incl. end plates); Front wing max 250 mm (9.8 in) above ground but higher end plates are OK if < 25 mm thick. No bodywork or aero higher than 500 mm (19.7 in) between axles (except center 800 mm / 31.5" of car ie: cockpit panels.)	
WINGS - securely mounted, should not wiggle when gently touched, especially side to side. If in question, call organizers for formal test.	CAMERAS- If >0.25 kg (9 oz), must be secured by two points, see T14.15 (Typical GoPro-brand camera is < 9 oz.) No cameras mounted to helmet.	
WING EDGES - Horizontal leading edges min 5 mm (0.197 in) radius; vertical forward-facing edges min 3 mm (0.118 in) radius.		
SAE DECALS - SAE logo front and/or both sides, prominent location.		

## TECHNICAL INSPECTION (Cont'd)

## PRIMARY STRUCTURE

ALTERNATIVE FRAME - If alternative tube size/mat'l, approved SES req'd. If using Alternative Frame Rules, SRCF req'd. No Magnesium in primary structure.	SIDE IMPACT PROTECTION - Min. of two (2) tubes + diagonal must connect the main and front hoops. Upper tube must be between 300 mm and 350 mm (11.8" and 13.8") above the ground. Lower tube can be lower frame member. At least one diagonal per side must connect the upper and lower members between the main and front hoops. All tubes to be 1.0" OD x 0.065" wall or 25.0 mm OD x 1.75 mm wall steel or equivalent. Monocoques require signed SES.
INSPECTION HOLES - Tech may use ultrasound to measure wall thickness and/or ask 4.5mm holes be drilled.	
MAIN HOOP - MUST BE STEEL. 1.00" OD x 0.095" wall or 25.0 mm OD x 2.5 mm wall. Must be 1 piece & extend to lowest frame member. 380 mm (15 in) apart (inside dim.) where attaches to bottom tubes of the Major Structure. Above Major Structure, must be within 10° of vertical. No part angled rearwards more than 10° from vertical. Smooth bends with no wrinkles.	FRONT BULKHEAD - 1.0" OD x 0.065" wall, or 25.0 mm x 1.75 mm wall, steel tube or equiv. No non-crushable objects forward of bulkhead.
MAIN HOOP BRACING - MUST BE STEEL. One brace each side, 1.00" x 0.065" or 25.0 mm x 1.75 mm min., attached within 16 cm (6.3 in.) of top. Min. 30 deg. included angle with hoop. If main hoop is not vertical, bracing must not be on same side of vertical as main hoop. No bends. No rod-ends. Proper construction for removable braces (capping etc.) on BOTH ENDS. Must take load back to bottom of main hoop and node of upper side-impact tube thru proper triangulated structure.	FRONT BULKHEAD SUPPORT - Support back to front roll hoop; minimum 3 tubes per side, all 1.00" OD x 0.049" wall steel tube or equiv.. 1 bottom; 1 top within 50 mm (2") of top of bulkhead, and connecting within 4" above and 2" below upper SIS tube; 1 or more node-to-node diagonal to completely triangulate connections to upper and lower SIS tubes. (25.0 mm x 1.5 mm and 26.0 mm x 1.2 mm metric tubes OK)
BOLTED JOINTS - Edge of any bolt hole located > 1.5 x hole diameter from nearest edge of the material. (Primary structure joints only)	IMPACT ATTENUATOR - Need Impact Attenuator forward of bulkhead, 200 mm (7.8") long x 200 mm (7.8") wide x 100 mm (3.9") high. No wing supports through the IA.
SHOULDER HARNESS MOUNTING BAR/TUBE - 1.00" OD x 0.095" wall or 25.0 mm OD x 2.5 mm wall steel or equiv. Gussets or braces if not straight to main hoop.	IMPACT ATTENUATOR MOUNTING - All cars must have 1.5 mm steel, 4 mm Al, or approved equiv IA anti-intrusion plate. Plate must be capable of taking transverse and vertical loads (welded or min. four 8mm (5/16") bolts). Same size as outside dims. of Front Bulk'h'd if bolted or to tube c/l if welded. Standard IAD: requires diagonal brace if bulkhead >1" from IAD on any side.
FRONT HOOP- Must be closed section metal tube. 1.00" OD x 0.095" wall or 25.0 mm OD x 2.5 mm wall steel, or equiv. Can be multi-piece. Must extend down to lowest frame member. Max. 20 deg. to vertical. No lower than top of steering wheel. Max. 25 cm (9.8 in) horizontal distance to steering wheel.	SEAT - Insulated against heat conduction, convection and radiation. Lowest point no lower than bottom of side rails OR must have longitudinal 1.00" OD x 0.065" steel tube underneath.
FRONT HOOP BRACING - Two forward facing braces, 1.00" OD x 0.065" or 25.0 mm OD x 1.75 mm steel or equivalent, attached within 5 cm (2 in) of top. Extra rearward bracing required if Front Hoop leans backwards more than 10 deg.	MONOCOQUE - Must see laminate test specimens (2 or more) for both SIS and primary structure constructions. Steel backing plates (>2mm thick) used at attachment points.
OTHER SIDE TUBES - Design prevents driver's neck hitting bracing or other side tubes.	

## STEERING, SUSPENSION, BRAKES

GROUND CLEARANCE - Sufficient clearance so that no part of the car other than the tires will contact the track surface.	STEERING - All steerable wheels must have positive stops to prevent linkage lock-up or tires contacting any part of the car. 7 degrees max. freeplay at the steering wheel. NO STEER-BY-WIRE on front wheels. Rear steer limited to 6° total, with mechanical stops. No bonded joints in column.
SUSPENSION - Fully operational with dampers front and rear; 50mm (2.0 in) minimum wheel travel with driver in vehicle.	
SUSPENSION PICK-UP POINTS - Inspected thoroughly for integrity.	FASTENERS - Intake manifold, fuel rail, steering, braking, harness & suspension sys. use SAE Grade 5, Metric Grade 8.8 or higher (AN/MS) w/ visible positive locking mechanisms, no Loctite or lock washers. Min. of 2 exposed threads. Rod ends in single shear are captured by a washer larger than the ball diameter. Adjustable rod ends have jam nuts to prevent loosening. No button head cap, pan head or round head screws in critical locations, e.g cage structure or harness mount. Nylon locknuts not for use above 80°C ie: near exhaust.
BRAKES - Dual hydr. sys. & reservoirs, operating all 4 wheels, (one brake on limited slip OK). System protected by structure/shields from d/train failure & minor collisions. No plastic brake lines or brake-by-wire. No parts below chassis/tub in side view. Brake pedal capable of 2000N (450 lbs-f) with no failures (tested only by organizers.)	
STEERING WHEEL - Continuous perimeter, near round (no concave sections) with driver operable quick disconnect. 25 cm (9.8 in) max. from Front Hoop.	
	Cable Steering - If steering is cable actuated, require approved FMEA (part of SES approval); confirm FMEA is representative of system, and reasonable.
	VISIBLE ACCESS - To <b>all</b> items on Tech Sheet

TECHNICAL INSPECTION (Cont'd)
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INTERIOR
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<p>DRIVER RESTRAINT HARNESS - SFI 16.1, SFI 16.5 or FIA spec 5, 6 or 7 point and be labeled. 50 mm (2") wide shoulder belts OK with HANS. 50 mm (2 in.) lap belts OK for FIA &amp; SFI 16.5, not OK for SFI 16.1. All lap belts must have Quick Adjusters. Reclined drivers must have 6 or 7 point, and Quick Adjuster sub-belts or 2 sets of sub belts.</p>	<p>MAIN HOOP &amp; FRONT HOOP HEIGHTS - Helmet of tallest driver to be 50 mm (2.0 in) below lines between top of front and main roll hoops and between top of main hoop to rear attachment point of main hoop bracing.</p>
<p>HARNESS MOUNTS - No belts can pass through a firewall. (Belts must mount on driver side of firewalls.) All belts attached securely to primary structure - 1.00" OD x 0.065" steel tube min. Any tabs to be 1.0" x 0.063" thick min. Double shear preferred. Bolt-on tabs use minimum of two 1/4" dia Gr 5 bolts.</p>	<p>HEAD RESTRAINT - Near vertical. Must take 890 N (200 lbs.f) load. 38 mm (1.5 in) thick, energy absorbing padding. Max. 25.4 mm (1.0") from helmet. Helmet contact point 50 mm min. from any edge. APPLIES TO ALL DRIVERS. May be changed for different drivers. Minimum 6"x6" AND height adjustment of 7"; OR 6"x11"</p>
<p>LAP BELT MOUNTING - Must pass over pelvic area at between 45-65 deg. to horiz for upright driver, 60-80 deg. for reclined. Pivoting mounting with eye bolts or shoulder bolts attached securely to Primary Structure.</p>	<p>ROLL BAR PADDING - Rollbar or bracing that could be hit by driver's helmet must be covered with 12 mm (0.5 in) thick, SFI or FIA (hard) padding. Pipe insulation and foam not OK.</p>
<p>SHOULDER HARNESS MOUNTING - Mounting points 7"- 9" (178-229 mm) apart. Angle from shoulder between 10 deg. up and 20 deg. down to horizontal. Attach to Primary Structure not to put bending loads into Main Hoop Bracing w/o extra bracing.</p>	<p>VISIBILITY - 100 deg. min. field either side. Head rotation OK or mirrors. If mirrors, must be firmly installed and adjusted.</p>
<p>FIREWALL - Fire resistant material; must separate driver (line-of-sight up to mid-height of driver's helmet) from fuel, cooling &amp; oil systems. Wire/cable pass-throughs OK with grommets. Multiple panels OK w/ gaps sealed. No gaps at sides or bottom.</p>	<p>VEHICLE CONTROLS - All controls, including shifter, must be inside cockpit. No hands, arms or elbows outside side impact system to actuate.</p>
<p>FLOOR CLOSEOUT PANEL - Required from foot area to firewall; solid, non-brittle material; multiple panels are OK if gaps less than 3.18 mm (1/8 in).</p>	<p>DRIVER'S FOOT PROTECTION - Feet must be rearward of the Front Bulkhead and no part of shoes or legs above or outside the Major Structure in side or front views when touching pedals.</p>
	<p>DRIVER'S LEG PROTECTION - Covers inside cockpit over sharp parts or moving suspension and steering components.</p>
	<p>EGRESS - 5 seconds max. to actuate cockpit master switch and exit to side of vehicle, from fully seated position with all safety equipment; wings must remain fixed in position. ALL DRIVERS.</p>

ENGINE COMPARTMENT
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<p>ENGINE - Four cycle piston engine, 610 cc maximum swept displacement. No hybrids. Waste heat recovery allowed.</p>	<p>EXHAUST OUTLET - Outlet 45 cm (17.7 in) max. behind rear axle centerline and 60 cm (23.6 in) max. above the ground.</p>
<p>COMPRESSORS - Turbo or super chargers allowed if not OEM to engine; must be between restrictor and throttle. Carbs not allowed if compressors are used. <b>Compressor recirculation valves ok if downstream of restrictor.</b></p>	<p>EXHAUST SHIELDING - Exhaust components outside the body forward of main hoop must be shielded from people approaching the car. No fibrous / cloth wraps around exhaust tubes.</p>
<p>AIR INTAKE SYSTEM ROLL OVER PROTECTION - All parts of air intake system (including throttle body or carb, air intake ducting, air cleaner &amp; air box) must be within a surface defined by the top of the roll bar and the outside top edge of the tires.</p>	<p>SCATTERSHIELD MATERIALS-For chains, 2.7 mm (0.105 in) min. thick STEEL, 3 x chain width. For belts, 3 mm (0.12 in) min. thick aluminum 6061-T6, 1.7 x belt width.</p>
<p>AIR INTAKE SYSTEM - Any portion &lt; 350 mm above ground has Side Impact protection. Supported if cantilevered (isolated to frame, rigid to engine.) No enlarged air chambers (&gt; 60 mm dia.) before throttle.</p>	<p>SCATTERSHIELDS GENERAL - Required for clutches, chains, belts, CVT rotating parts, etc. No holes. 6mm diam M8.8 or 1/4" diam Grade 5 fasteners minimum. End parallel to lowest part of front and rear sprockets.</p>
<p>ELECTRONIC THROTTLE CONTROLS - ETC or "drive-by-wire" only permitted with pre-approval, requires special separate inspection.</p>	<p>CATCH TANKS - Coolant overflow, crankcase breather &amp; lube system vents must have separate catch tanks. 1 qt min. each. 100°C mat'l. Behind firewall, below shoulder level. 3 mm min. diameter vent, away from driver. PCV OK if routed to intake sys upstream of restrictor. Cannot attach breather to exhaust. Trans or diff., unless sealed, require 50 mL (1.7 oz) catch bottle.</p>
<p>THROTTLE PEDAL - Must have positive stop to prevent overstressing cable.</p>	<p>COOLANT - Only 100% water. NO ADDITIVES WHATSOEVER.</p>
<p>THROTTLE - Minimum of 2 springs at the TB, each capable of closing the throttle independently. TPS not acceptable as a return spring. Cable must have smooth operation with no binding or sticking; min. 50.8 mm (2 in) from any exhaust component.</p>	<p>ON-BOARD STARTER - Required.</p>
<p>RESTRICTOR - Must be circular; max. diam. 20.0 mm (0.7874 in) for gasoline fueled cars and 19.0 mm (0.7480 in) for E85 fueled cars. Cannot be movable.</p>	<p>GAS CYLINDERS - Proprietary manufacture &amp; labeled, nonflammable gas, regulator on tank, securely mounted, axis not pointed at driver, to rear of Main Hoop within the frame envelope, or in structural sidepod, but not in cockpit, insulated from exhaust, appropriate lines &amp; fittings.</p>
<p>INTAKE MANIFOLD - Securely attached to block or head with brackets &amp; mechanical fasteners w/ positive locking mechanisms. OEM type rubber bushings not sufficient.</p>	<p>D'TRAIN FINGER GUARDS - Req'd to cover all drivetrain parts that spin while car is at rest. No holes &gt;12 mm dia.</p>
<p>HIGH PRESSURE HYDRAULICS - Pumps and lines must have 1 mm thick steel or aluminum shields to protect driver and workers.</p>	<p>FUEL RAIL - Securely attached to block, head or int. manifold with brackets &amp; mechanical fasteners. <b>No plastic or composite fuel rails, except if unmodified OEM part.</b></p>
<p>FLUID LEAKS - Oil, coolant, fuel - none permitted.</p>	<p>VISIBLE ACCESS - To all items on Tech Sheet</p>



## 2016 FSAE INSPECTION SHEET

CAR NUMBER:
SCHOOL:
ENGINE MODEL:
ENGINE BORE X STROKE:
ABS? YES/NO

### IMPORTANT

THIS FORM MUST STAY WITH THE CAR UNTIL THESE PARTS OF INSPECTION HAVE BEEN COMPLETED

<b>PART 2</b>	
<b>FUEL SYSTEM &amp; TILT TABLE INSPECTION</b>	
FUEL SPILLAGE - No fuel spill permitted when car is tilted to 45 degrees in the direction most likely to create spillage; Tanks must be filled to scribe line.	VEHICLE STABILITY - All wheels in contact with tilt table when tilted to 60 degrees to the horizontal.
FUEL STICKER - Fuel sticker in place adjacent to F/T filler. MARK TYPE OF FUEL USED (e.g. 93, 100 or E-85) ON THIS FORM	FUEL TYPE
NON-COMPLIANCE / COMMENTS: <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/>	
APPROVED BY:	DATE:

<b>PART 3</b>	
<b>NOISE LEVEL &amp; BRAKING PERFORMANCE INSPECTION</b>	
NOISE LEVEL - 110 dB (C) ("C" scale) maximum during a static test, gearbox in neutral, UP TO a specified rpm (see Rule IC 3.2.4). <b>103 dBC</b> at idle. Microphone level with the exhaust outlet(s), 0.5 m (19.7") from the outlet(s), at 45 degrees to the outlet. If multiple outlets, all to be checked. If movable tuning or throttling device, see IC 3.2.3.	BRAKING PERFORMANCE - Must lock-up all four wheels on dry asphalt at any speed. If adjustments are made to the vehicle after three failed attempts before retest, the car may run on the Practice Track without the final Brake Performance Tech Sticker.
MASTER SWITCH - Master switch on RHS of main roll hoop must cause engine to stop when actuated. (Perform at end of noise test)	
NOISE LEVEL:	ATTEMPTS:
NON-COMPLIANCE / COMMENTS: <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/>	
APPROVED BY:	DATE:

TECHNICAL INSPECTION (Cont'd)

NON-COMPLIANCE / COMMENTS (CONT'D):

Lined area for non-compliance or comments.

APPROVED BY:

DATE:

**FORMULA SAE - DRIVER COCKPIT CHECKS**

<b>Car #</b>	<b>University:</b>
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Driver's Name	Helmet Line.	Head Rest-Fore & Aft	Head Rest-To Edges	Lap Belt	Shoulder Belts	Sub Belts	Egress	Drivers License	Inspector

Helmet 50 mm (2 in) min. below lines between Main & Front Hoops and between Main Hoop & rear attachment point of Main Hoop Bracing

Head Restraint - Fore & aft, 25.4 mm (1 in) max. to back of helmet.

Head Restraint - Helmet contact point 50 mm minimum from any edge.

Lap Belt - Over hip bones and tight.

Shoulder Belts - 10 deg. up & 20 deg. down to horizontal and tight.

Sub Belts - Tight.

Less than 5 secs. "go" to BOTH feet on ground. Must include actuation of cockpit master switch.

**FORMULA SAE - DRIVER COCKPIT CHECKS**

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