



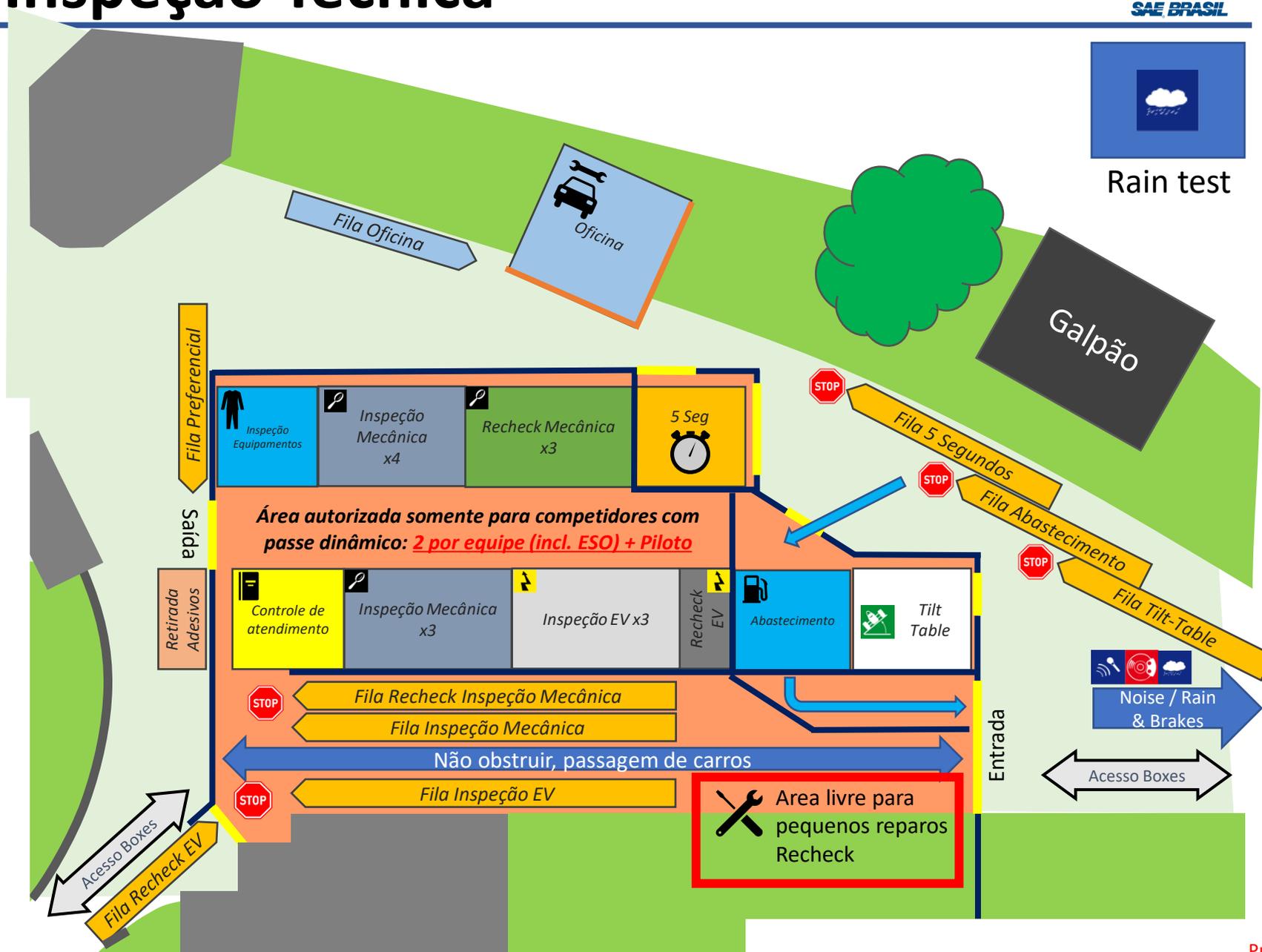
FÓRMULA SAE BRASIL 2023
TECHNICAL INSPECTION GUIDE IC&EV

Planejamento de Inspeção Técnica

Mapa de Inspeção

- Filas
- Área de Scrutineering
- Área de acesso de competidores
- Área construída do ECPA
- Grama
- Isolamento da Área de Scrutineering Controle de Acesso
- Scrutineering Controle de Acesso

Obs.: Sujeito a alterações

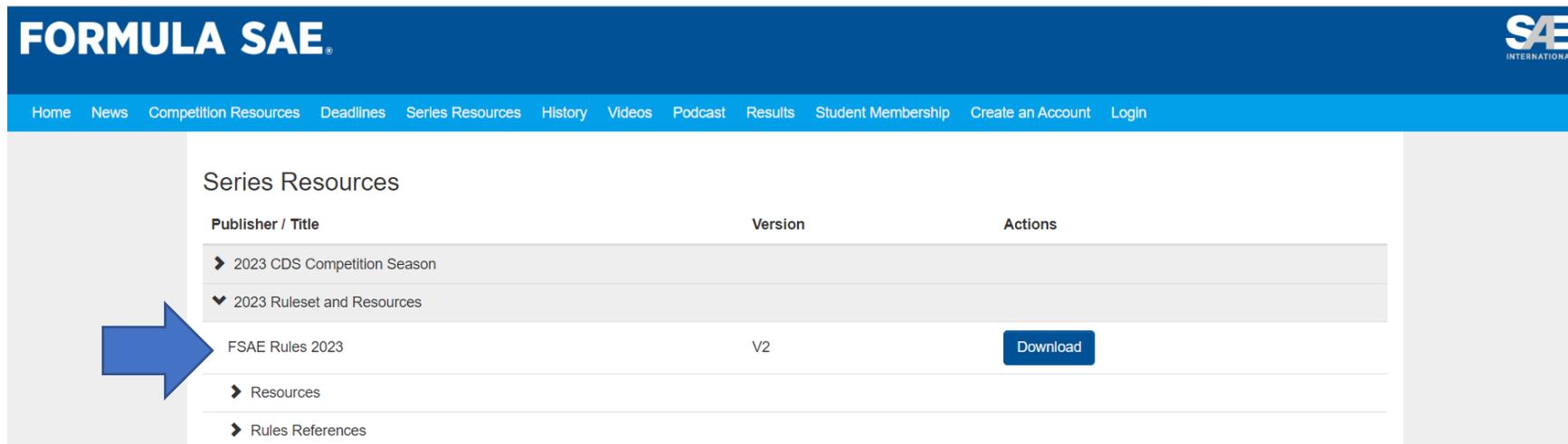


Planejamento de Inspeção Técnica

Informações gerais

- “Boa prática de engenharia” (GR.1.4)
 - Mesmo não estando explícito na regra, se o juiz encontrar alguma situação potencialmente perigosa, como má posição dos comandos, estado insatisfatório de componentes, caminho inadequado das cargas na estrutura ou mal isolamento do cockpit, ele está apto a solicitar mudanças.
- A decisão dos juízes é final e definitiva
 - Se a alteração for solicitada, ela deve ser executada. Casos especiais serão levados ao Comitê Técnico.
- A versão do regulamento abaixo é a vigente para a competição:
Formula SAE® Rules 2023 – Version 2

[Formula SAE \(fsaeonline.com\)](https://fsaeonline.com)

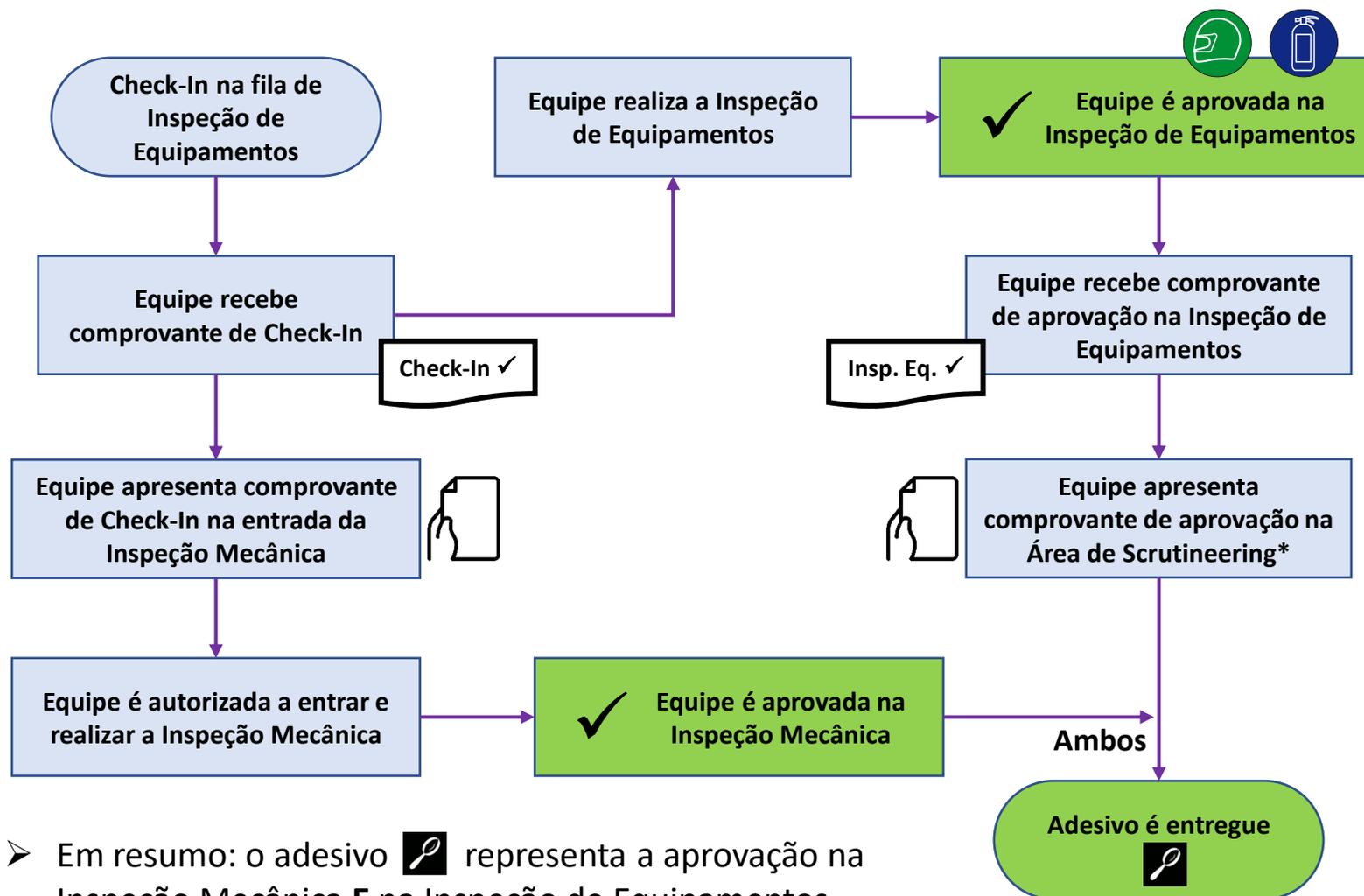


The screenshot shows the Formula SAE International website. The header includes the logo and a navigation menu with items like Home, News, Competition Resources, Deadlines, Series Resources, History, Videos, Podcast, Results, Student Membership, Create an Account, and Login. The main content area is titled 'Series Resources' and contains a table with the following data:

Publisher / Title	Version	Actions
2023 CDS Competition Season		
2023 Ruleset and Resources		
FSAE Rules 2023	V2	Download
Resources		
Rules References		

Planejamento de Inspeção Técnica

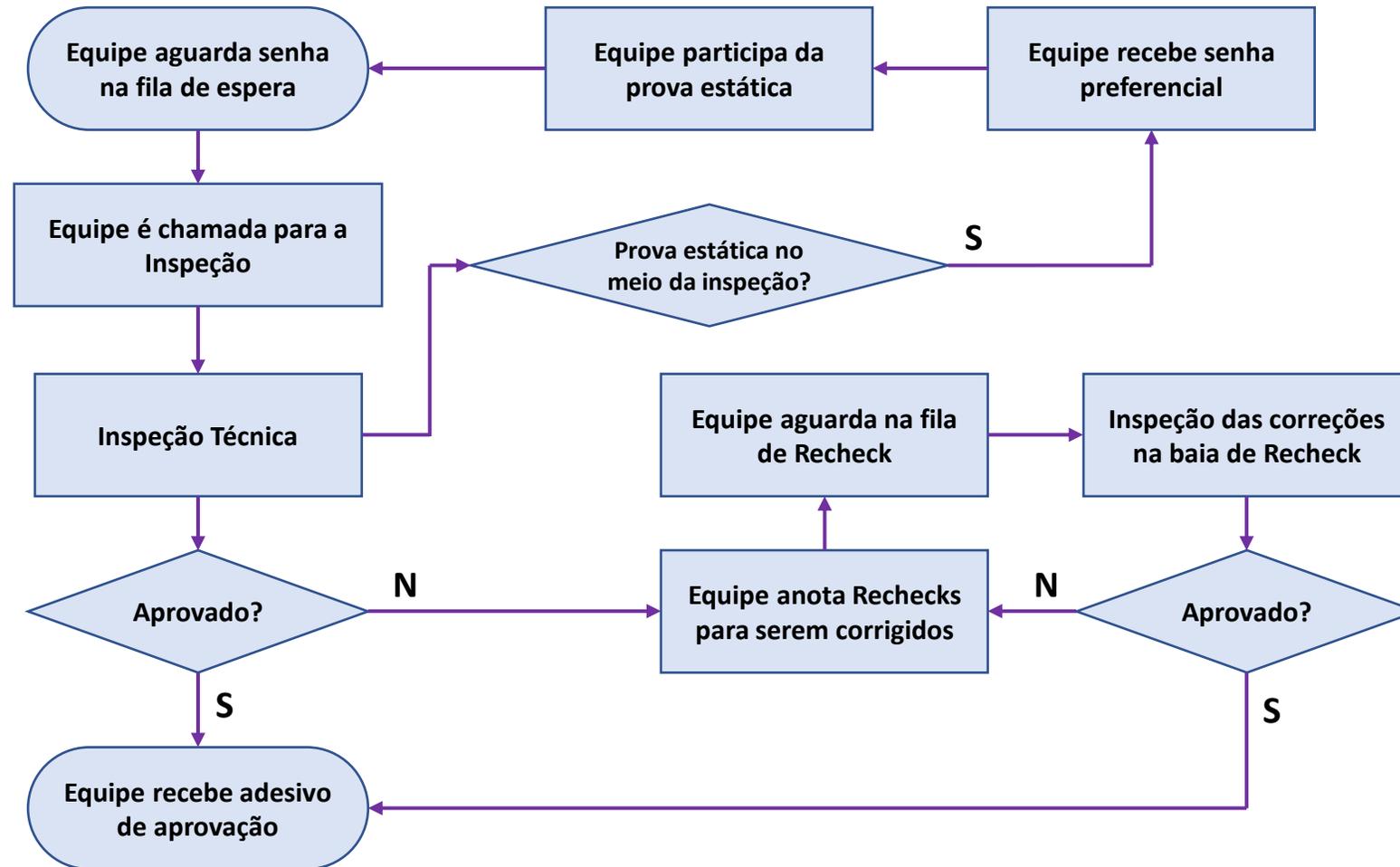
Inspeção de Equipamentos e Inspeção Mecânica



- Em resumo: o adesivo  representa a aprovação na Inspeção Mecânica E na Inspeção de Equipamentos. Elas podem ser realizadas em paralelo.

Planejamento de Inspeção Técnica

Fluxograma de Inspeção técnica



Pré Inspeção

DRIVER'S EQUIPMENT & EXTERIOR GENERAL

Acceptable helmet standards are listed below. Any additional approved standards are shown on the Technical Inspection Form or the FAQ on the FSAE Online website.

- Snell K2010, K2015, K2020, M2010, M2015, M2020, SA2010, SAH2010, SA2015, SA2020
- SFI Specs 31.1/2010, 31.1/2015, 41.1/2010, 41.1/2015
- FIA Standards FIA 8860-2004, FIA 8860-2010, FIA 8860-2018, FIA 8859-2015

Válido capacetes com 05 anos de uso e vencimento (destes 05 anos) até dezembro 2023
Utilização de capacetes com mais de 5 anos deve ser na condição de novo sem uso.

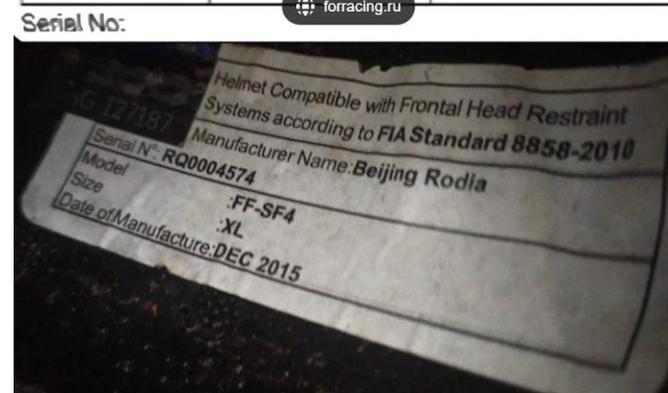
Qualquer capacete fora desta listagem está inadequado para utilização.

A regra não indica uma data de vencimento, mas como boa prática de engenharia e **ações de segurança de automobilismo**, não autorizamos capacetes com mais de 5 anos após sua fabricação.

O casco do capacete e demais componentes sofrem com as ações do tempo, degradação UV, modos de utilização e zelo.

Exemplo: na foto acima temos um capacete tem data de fabricação Dezembro de 2015, e especificação anterior, logo ele não é adequado para uso durante a competição da FSAE 2023.

Tenhamos bom senso de utilização pois o "aluno" estará pilotando o carro em uma competição de velocidade.



Pré Inspeção

Driver's Suits

Driver Suit A one piece suit, made from a minimum of two layers of Flame Resistant Material that covers the body from the neck to the ankles and the wrists. Each suit must meet one or more of the following standards and be labeled as such:

- SFI 3.2A/5 (or higher ex: /10, /15, /20)
- SFI 3.4/5 (or higher ex: /10, /15, /20)
- FIA Standard 1986
- FIA Standard 8856-2000
- FIA Standard 8856-2018



Driver Gear

Flame Resistant Material For this section some materials are: Carbon X, Indura, Nomex, Polybenzimidazole (common name PBI) and Proban.

(macacão, sapatilhas, luvas, restritor de braços, balaclavas)

Proibido utilização de macacões com certificação CIK - FIA

Underclothing

All competitors should wear fire retardant underwear (long pants and long sleeve shirt) under their approved Driver Suit.

We require underwear, socks, t-shirts to be cotton



Qualquer item do Diver Suits e Driver Gear não deve apresentar furos ou rasgos.

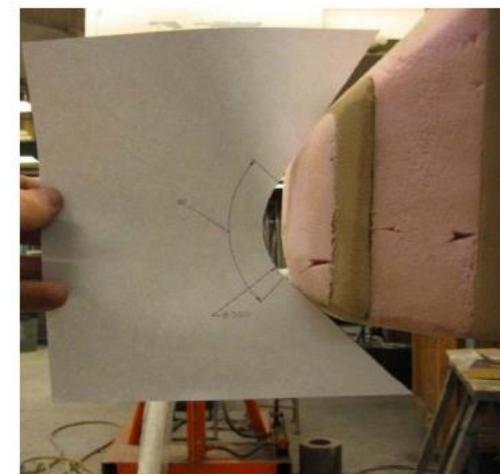
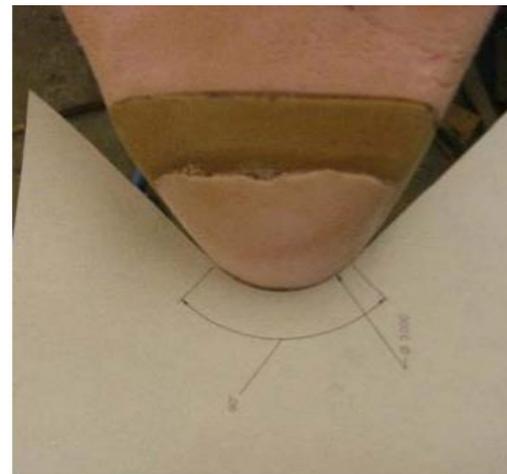
Se a Equipe realizar reparos as linhas deste reparo deve ser de material resistente a altas temperaturas e fogo conforme materiais descritos ao lado em “Driver Gear”

Inspeção Técnica

Body

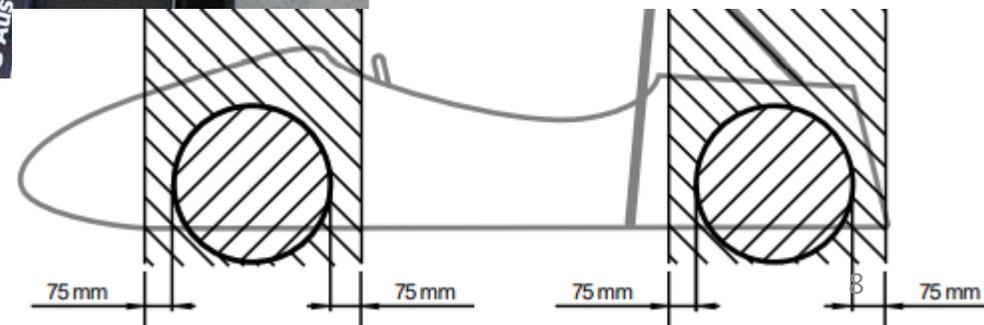
All forward facing edges on the bodywork that could impact people, e.g. the nose, must have forward facing radii of at least 38 mm (1.5 inches).

This minimum radius must extend to at least 45 degrees relative to the forward direction, along the top, sides and bottom of all affected edges.



In plan view, no part of any aerodynamic device, wing, undertray or splitter can be further forward than 762 mm (30 inches) forward of the fronts of the front tires, and no further rearward than 305 mm (12 inches) rearward of the rear of the rear tires.

No part of any such device can be wider than the outside of the front or rear tires measured at the height of the front hubs whichever is wider.



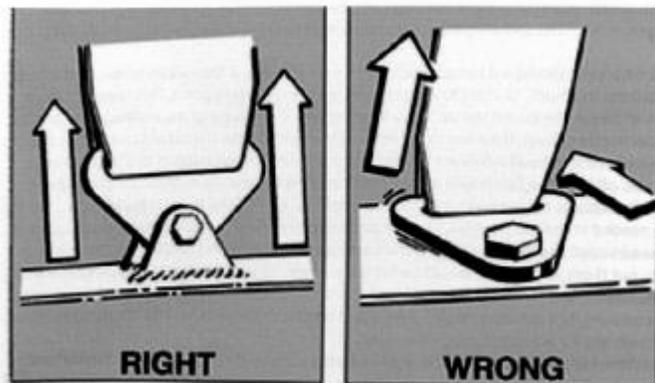
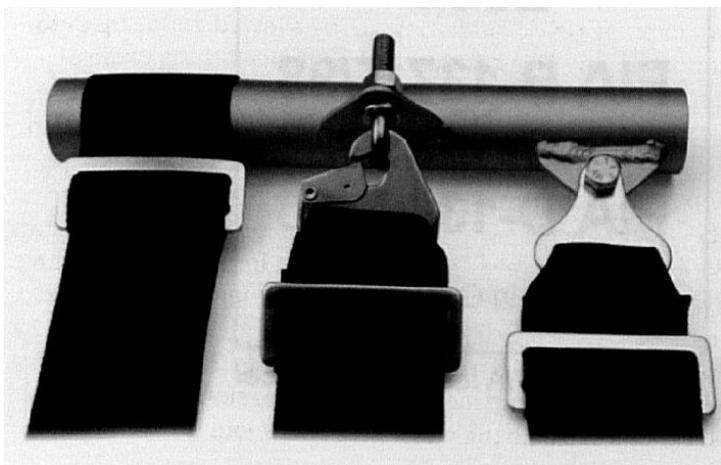
Inspeção Técnica

Belt Mounting

Modos mais comuns e aceitáveis de fixação do cinto de segurança no veículo estão ilustrados abaixo. Algo que estiver fora disto será analisado com cautela pelo juiz.

O cinto de segurança deverá estar longe de qualquer aresta cortante e as suas ancoragens deverão ter liberdade para articulação.

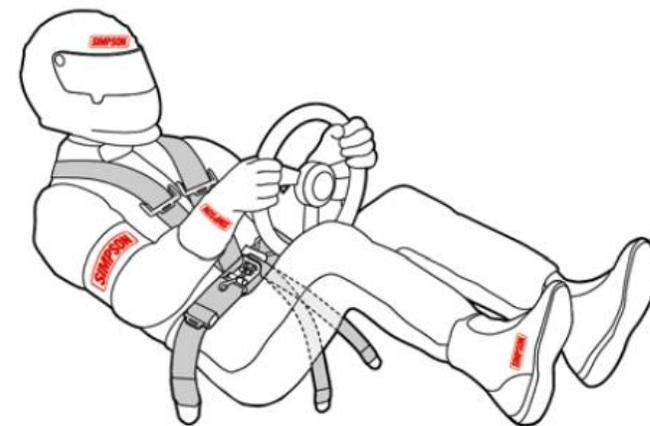
Parafuso mínimo M8 8.8 ou recomendado pelo fabricante



*Será que passa ?
Não, não há triangulação entre tubos. Portanto numa frenagem brusca pode haver colapso estrutural.*

Inspeção Técnica

Belt Mounting



Inspeção Técnica

Firewall

É muito importante a observação de algumas recomendações conforme a Regra “**T1.8Firewall**”.

Deve proteger o pescoço do piloto mais alto. Isto deve estender-se suficientemente para cima e/ou para trás, de modo que qualquer ponto inferior +/- 100 mm (4 pol.) acima da parte inferior do capacete do piloto mais alto não deve estar em linha direta de visão com qualquer parte do sistema de combustível, sistema de arrefecimento ou o sistema de óleo do motor.

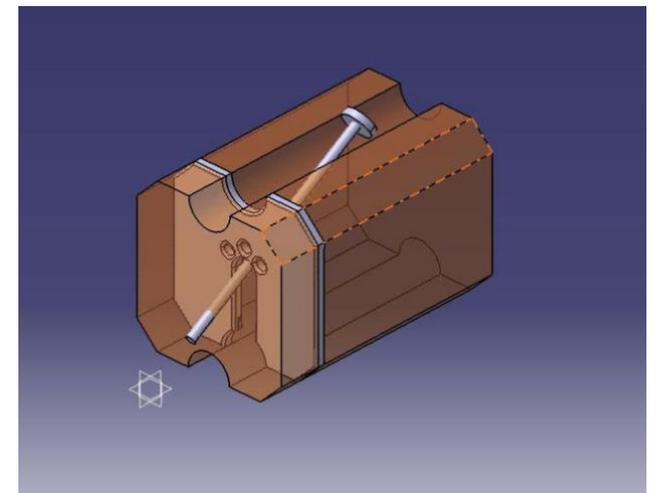
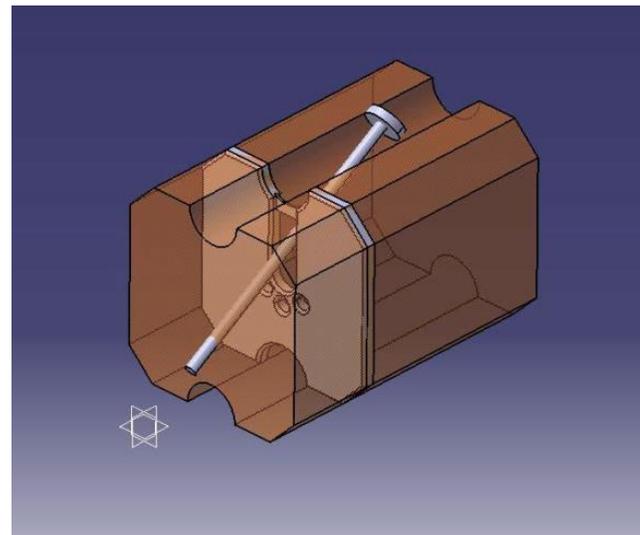
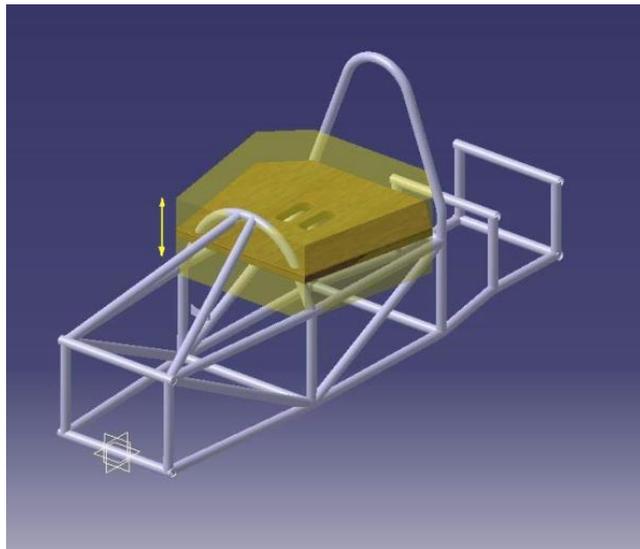
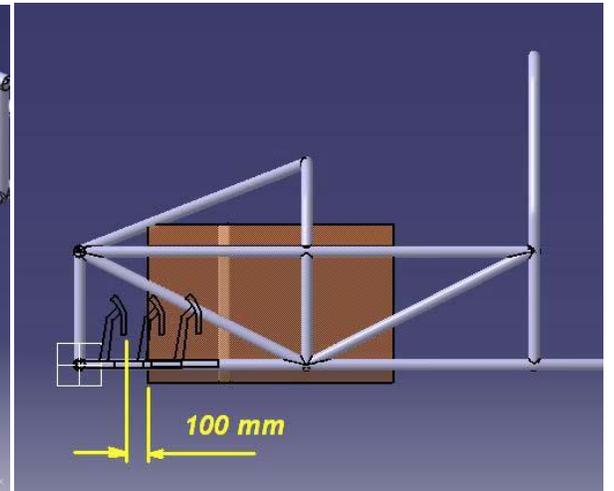
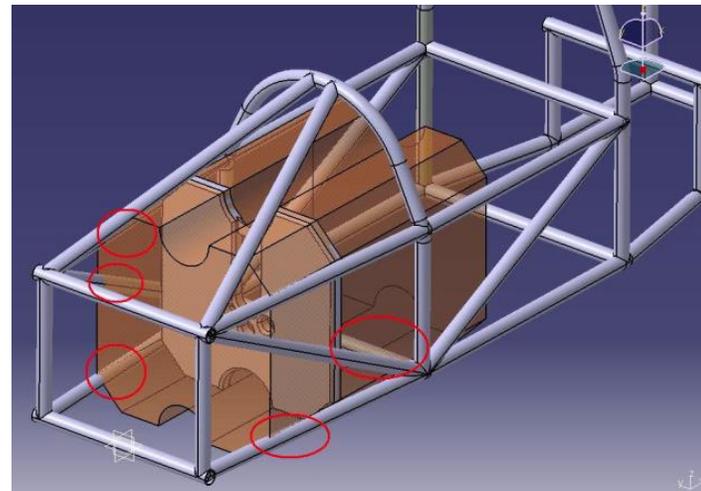
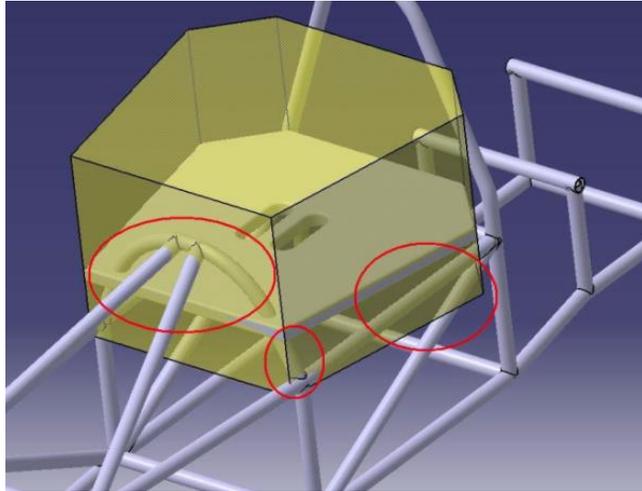
Para garantir a selagem da Firewall em passagem de cabos, sugerimos *Grummets* sanfonados ou cegos tanto do lado externo quanto interno.

É expressamente proibido o uso de qualquer material de origem betuminosa para selar a *firewall*, assim como materiais inflamáveis ou que emitam gases tóxicos sob alta temperatura.



Inspeção Técnica

Gabaritos do cockpit



Inspeção Técnica

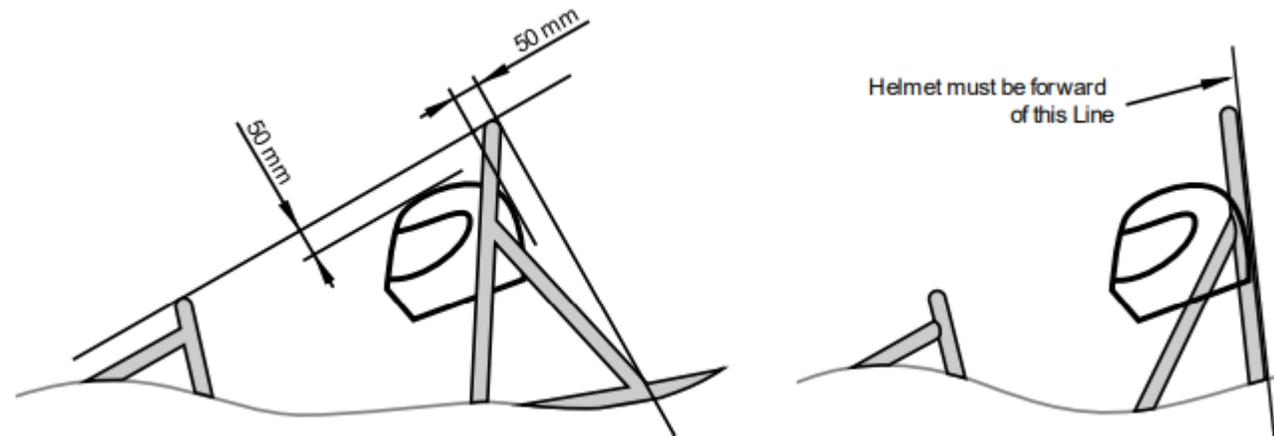
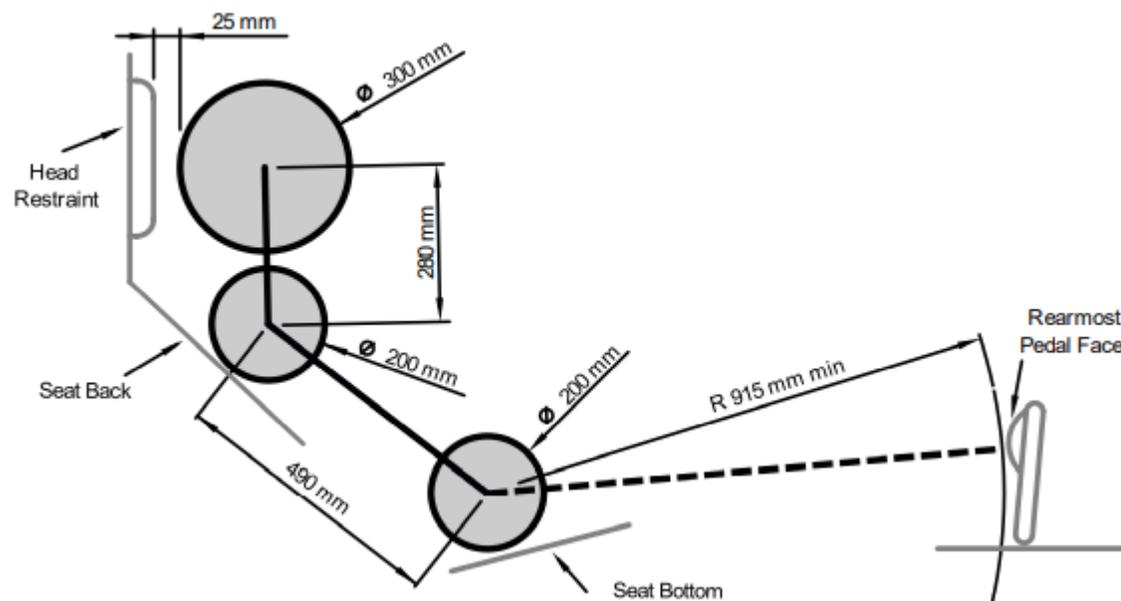
Gabaritos do cockpit

Driver Template Position The Driver Template will be positioned as follows:

- The seat will be adjusted to the rearmost position
- The pedals will be placed in the most forward position

F.5.6.3 Roll Hoop and Driver Position When seated normally and restrained by the Driver Restraint System, the helmet of a 95th percentile male (see V.2.1.1) and all of the team's drivers must:

- Be a minimum of 50 mm from the straight line drawn from the top of the Main Hoop to the top of the Front Hoop.
- Be a minimum of 50 mm from the straight line drawn from the top of the Main Hoop to the lower end of the Main Hoop Bracing if the bracing extends rearwards.
- Be no further rearwards than the rear surface of the Main Hoop if the Main Hoop Bracing extends forwards.



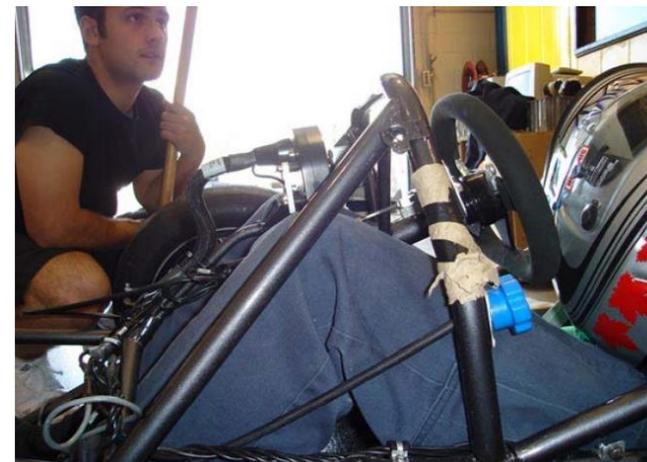
Inspeção Técnica

Cockpit

To keep the driver's legs away from moving or sharp components, all moving suspension and steering components, and other sharp edges inside the cockpit between the front roll hoop and a vertical plane 100 mm (4 inches) rearward of the pedals, must be shielded with a shield made of a solid material.

(pedals, gear shift lever, steering wheel and steering column are exceptions). must be properly protected

- Moving components include, but are not limited to springs, shock absorbers, rocker arms, anti-roll/sway bars, steering racks and steering column CV joints.
- Covers over suspension and steering components must be removable to allow inspection of the mounting points.



Inspeção Técnica

Driver Seat

T.1.5.1 The Driver's Seat must be protected by one of the following: a. In side view, the lowest point of any Driver's Seat must be no lower than the upper surface of the lower frame rails b. A longitudinal tube (or tubes) that meets the requirements for Side Impact tubing (F.3.2.1.e), passing underneath the lowest point of the Driver Seat.

Thermal Protection

T.1.6.1 When seated in the normal driving position, sufficient heat insulation must be provided to ensure that the driver will not contact any metal or other materials which may become heated to a surface temperature above 60°C.5

- a. Conduction Isolation.
- b. Convection Isolation
- c. Radiation Isolation

T.1.6.3 The design must address all three types of heat transfer between the heat source (exhaust pipe, coolant hose/tube, Accumulator Container) and the panel that the driver could contact (seat or floor):



The lowest point of the driver's seat must be no lower than the bottom surface of the lower frame rails or by having a longitudinal tube (or tubes) that meets the requirements for Side Impact tubing, passing underneath the lowest point of the seat.

Inspeção Técnica

Driver's Package

If there is a roll hoop brace or other frame tube alongside the driver, at the height of the neck of any of the team's drivers, a metal tube or piece of sheet metal must be firmly attached to the Frame to prevent the drivers' shoulders from passing under the roll hoop brace or frame tube, and his/her neck contacting this brace or tube.

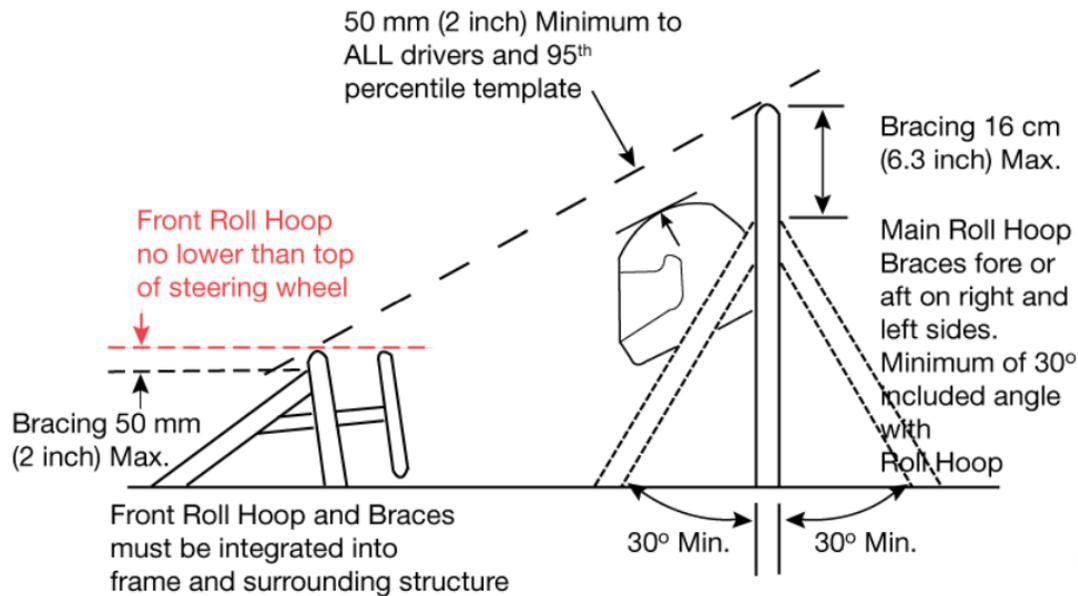
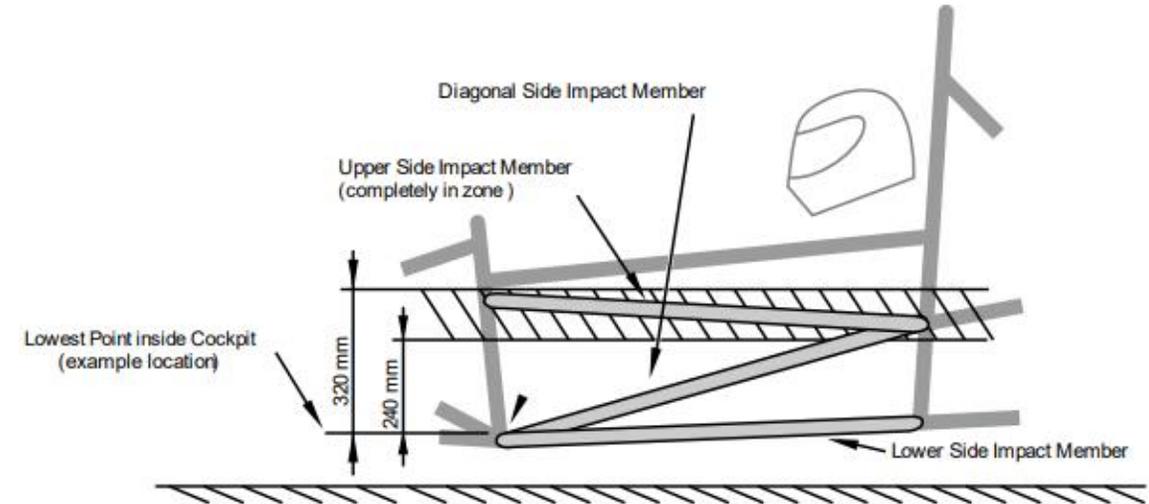


FIGURE 1



If during the dynamic tests, pilots with their arms out of the frame will be verbally penalized. If the judges see new occurrences, the team will be penalized and must insert an additional tube as shown above.



OK



Not OK

Inspeção Técnica

Steering Wheel

V.3.2.1 The Steering Wheel must be mechanically connected to the front wheels.

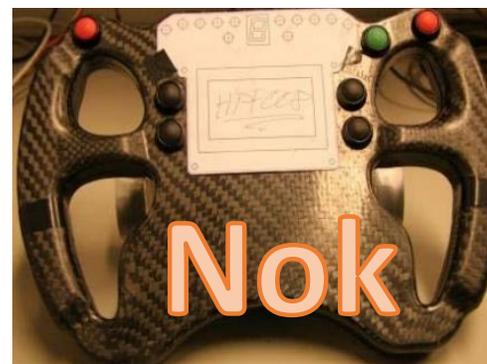
V.3.2.2 Electrically actuated steering of the front wheels is prohibited.

V.3.3.2 The Steering Wheel must be attached to the column with a quick disconnect.

V.3.3.3 The driver must be able to operate the quick disconnect while in the normal driving position with gloves on.

V.3.2.4 The steering system must have positive steering stops that prevent the steering linkages from locking up (the inversion of a four bar linkage at one of the pivots). The stops may be placed on the uprights or on the rack and must prevent the wheels and tires from contacting suspension, bodywork, or Chassis during the track events.

The outer perimeter profile can have some straight sections, but no concave sections.

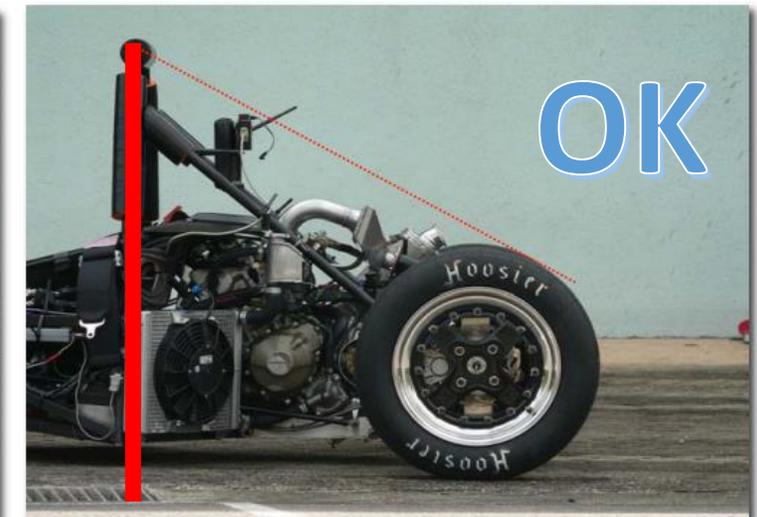
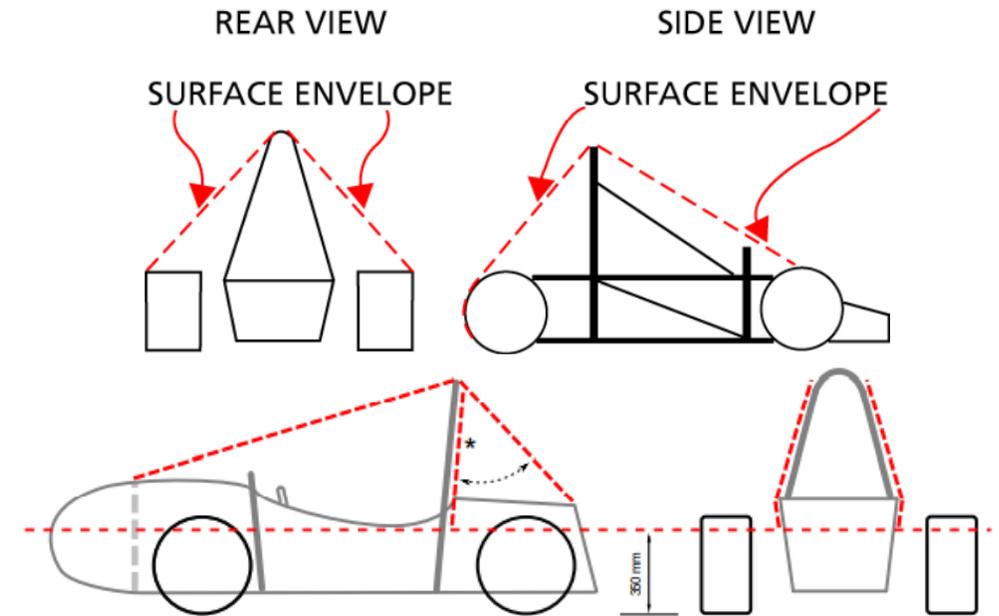


Inspeção Técnica

Engines

All parts of the engine air and fuel control systems (including the throttle or carburetor, and the complete air intake system, including the air cleaner and any air boxes) must lie within the surface defined by the top of the roll bar and the outside edge of the four tires

IC.2.2.2 Any portion of the air intake system that is less than 350 mm above the ground must be shielded from side or rear impacts by structure built per F.6.4 / F.7.6 as applicable.



Inspeção Técnica

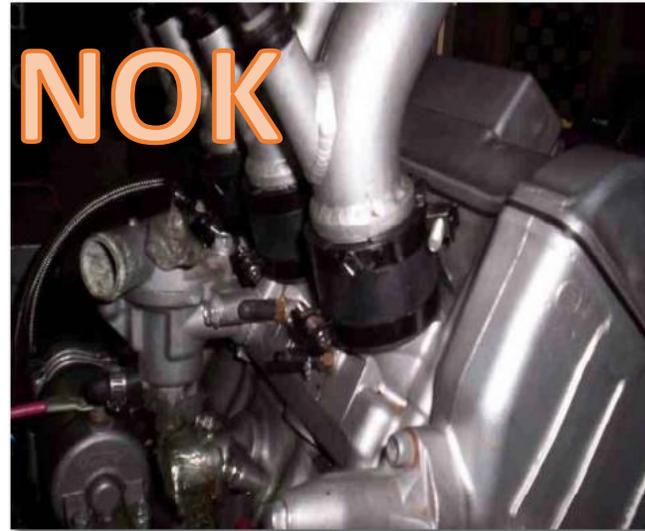
Intake System Mounting

C.2.3.1 The intake manifold must be securely attached to the engine block or cylinder head with brackets and mechanical fasteners.

- Hose clamps, plastic ties, or safety wires do not meet this requirement.
- The use of rubber bushings or hose is acceptable for creating and sealing air passages, but is not a structural attachment.

IC.2.3.2 Threaded fasteners used to secure and/or seal the intake manifold must have a Positive Locking Mechanism, see T.8.3.

IC.2.3.3 Intake systems with significant mass or cantilever from the cylinder head must be supported to prevent stress to the intake system. a. Supports to the engine must be rigid. b. Supports to the Chassis must incorporate some isolation to allow for engine movement and chassis flex.



Intake Manifold – The intake manifold must be securely attached to the engine block or cylinder head with brackets and mechanical fasteners. This precludes the use of hose clamps, plastic ties, or safety wires. The use of rubber bushings or hose is acceptable for creating and sealing air passages, but is not considered a structural attachment.

Inspeção Técnica

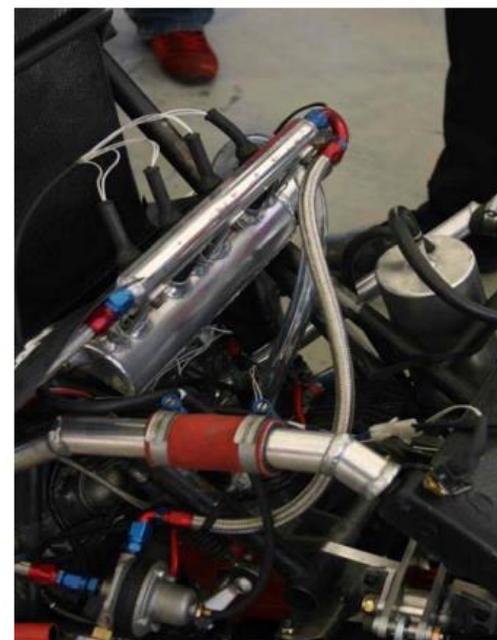
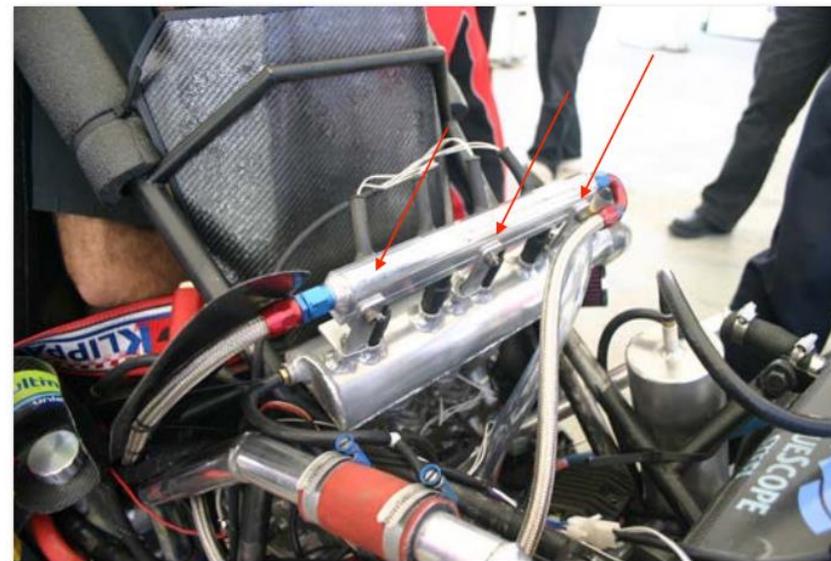
Fuel Attachment

Fuel Rail – The fuel rail must be securely attached to the engine cylinder block, cylinder head, or intake manifold with brackets and mechanical fasteners. This precludes the use of hose clamps, plastic ties, or safety wire.

Fuel Lines – On low pressure fuel injected systems, any flexible fuel lines must be either (i) Metal braided hose with either crimped-on or reusable, threaded fittings, or (ii) Reinforced rubber hose with some form of abrasion resistant protection with fuel line clamps per B.8.8.2. Note: Hose clamps over metal braided hose will not be accepted.

If rubber fuel line or hose is used, the components over which the hose is clamped must have annular bulb or barbed fittings to retain the hose. Also, clamps specifically designed for fuel lines must be used. These clamps have three (3) important features,

- (i) a full 360 deg. wrap,
- (ii) a nut and bolt system for tightening, and
- (iii) rolled edges to prevent the clamp cutting into the hose. Worm-gear type hose clamps are not approved for use on any fuel line.

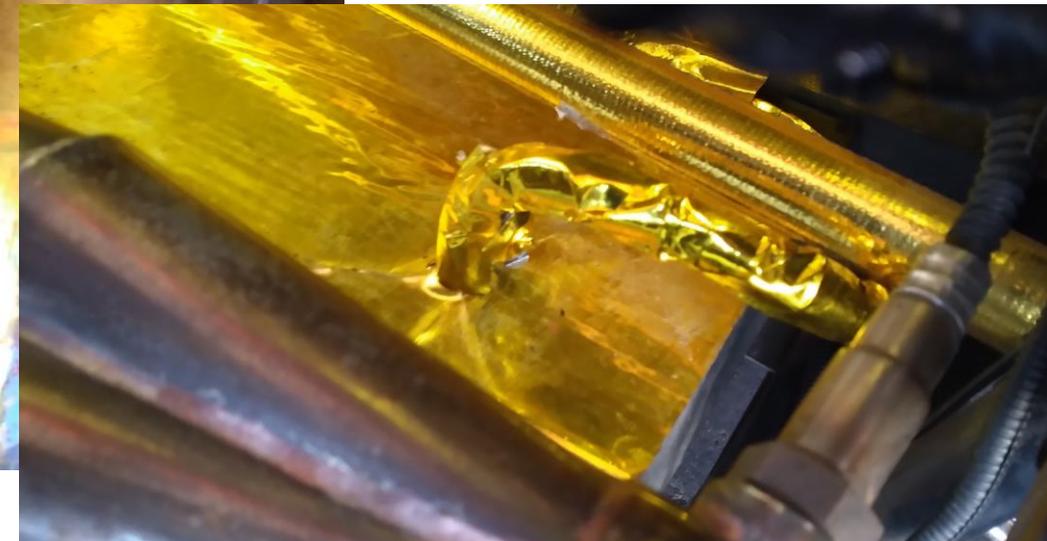


Inspeção Técnica

Fuel Attachment – FSAE 2022 issues



The team set up the fuel line with protection and a new route, with a safe distance from the exhaust manifold.



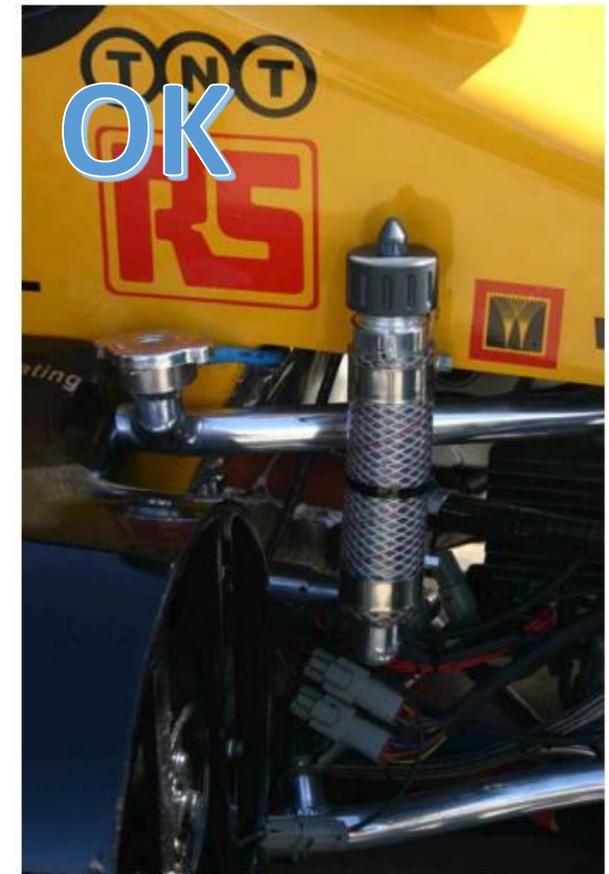
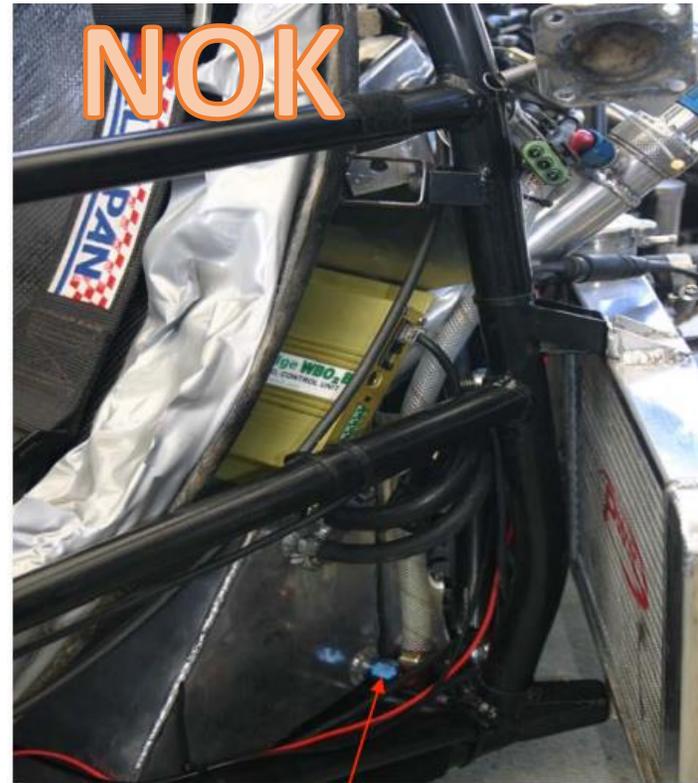
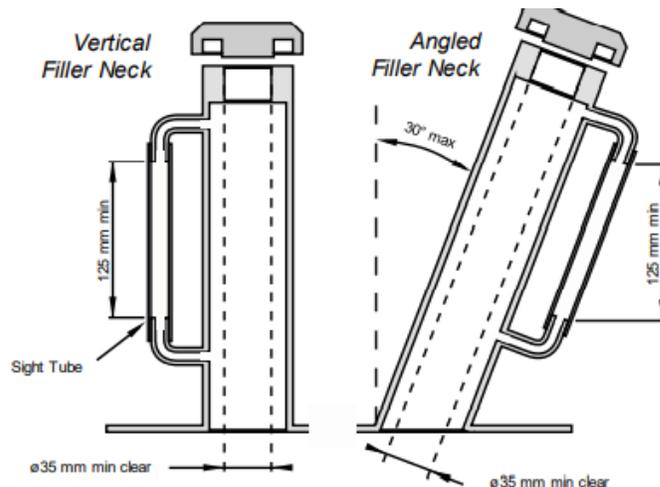
Inspeção Técnica

Fuel Tank

All fuel tanks must have a filler neck: (a) at least 35mm diameter, (b) at least 125 mm (4.9 inches) vertical height and c) angled at no more than 45 degrees from the vertical. The 125 mm of vertical height must be above the top level of the fuel tank, and must be accompanied by a clear, fuel resistant sight tube for reading the fuel level (Figure 7).

The minimum inside diameter of 6 mm (0.25 inches). The sight tube must not run below the top surface of the fuel tank.

A clear filler tube may be used, subject to approval by the Rules Committee or technical inspectors at the event.



Inspeção Técnica

Wheel Attachment

V.4.2.1 Any wheel mounting system that uses a single retaining nut must incorporate a device to retain the nut and the wheel if the nut loosens. A second nut (jam nut) does not meet this requirement

V.4.2.2 Teams using modified lug bolts or custom designs must provide proof that Good Engineering Practices have been followed in their design.

V.4.2.3 If used, aluminum wheel nuts must be hard anodized and in pristine condition.

Standard wheel lug bolts are considered engineered fasteners and any modification will be subject to extra scrutiny during technical inspection. Teams using modified lug bolts or custom designs will be required to provide proof that good engineering practices have been followed in their design.



O que há de errado?

A roda esta fixada ao cubo com um parafuso DIN 933 e necessita de um positive locking



Inspeção Técnica

Fasteners in Primary Structure / Abas de fixação

Bolted connections in the Primary Structure using tabs or brackets must have an edge distance ratio "e/D" of 1.5 or greater.

"D" equals the hole diameter. "e" equals the distance from the edge of the hole to the nearest free edge

Tabs attaching the Suspension to the Primary Structure are NOT "in the Primary Structure" Tabs attaching suspension members to the primary structure are not required to meet this rule"

- Se houver no projeto junta aparafusada como um suporte, ela deve seguir a seguinte regra conforme abaixo:

$$E \geq 2 * D$$

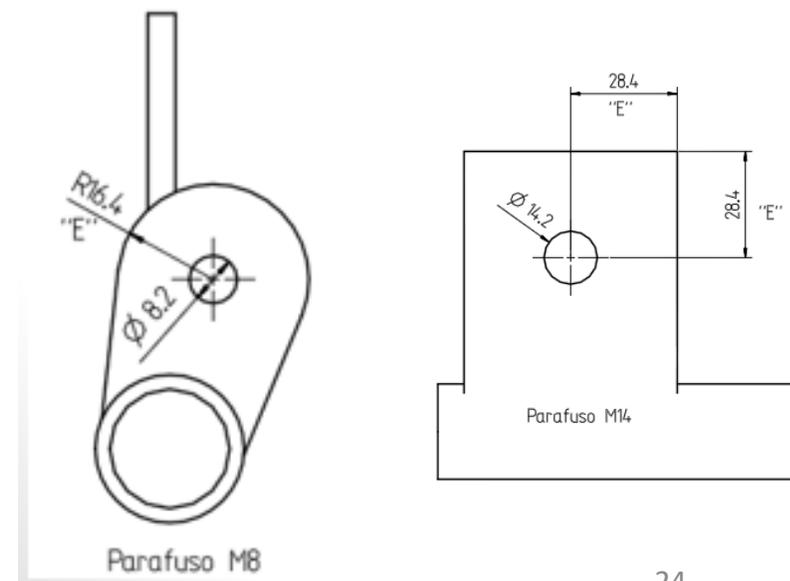
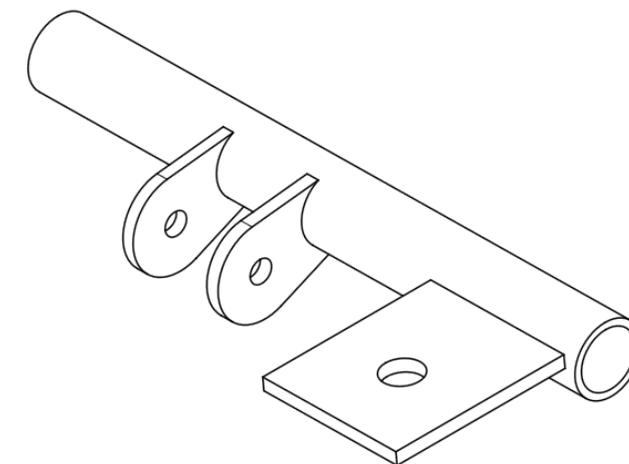
D = Diâmetro do furo

E = Distancia de centro do furo até a borda da forma geométrica adotada

Ou seja, se a equipe estiver fazendo suportes "orelhas" para fixação do motor, ou qualquer outro suporte para fixação de componentes na estrutura primária, este suporte deve ter uma área ao redor do furo de duas vezes o diâmetro deste furo.

Ex.: Se um suporte tiver um furo de 8,2 mm para utilizar um parafuso M8, a borda deve estar a uma distância do centro do furo de no mínimo 16,4 mm.

Atenção: Somente os suportes do sistema de suspensão, e demais "attachment" estão fora desta regra.



Inspeção Técnica

Positive Locking Mechanisms

T.8.3.1 Positive Locking Mechanisms are defined as those which: a. Technical Inspectors / team members can see that the device/system is in place (visible). b. Do not rely on the clamping force to apply the locking or anti vibration feature. Meaning If the fastener begins to loosen, the locking device still prevents the fastener coming completely loose

T.8.3.2 Examples of acceptable Positive Locking Mechanisms include, but are not limited to: a. Correctly installed safety wiring b. Cotter pins c. **Nylon lock nuts (where temperature does not exceed 80°C)** d. **Prevailing torque lock nuts** Lock washers, bolts with nylon patches and thread locking compounds (Loctite®), **DO NOT meet the positive locking requirement.**

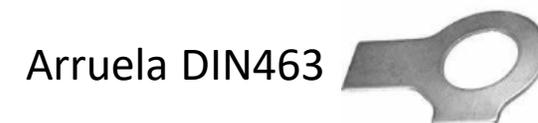


Travamento do Rod End



Safety Wiring

Atenção: deixar no mínimo 02 fios de rosca passante na porca



Travamento do Tie End

Porca e contra porca não é aceito
Utilizar Porca Parlock ou Arruela de segurança DIN463

Inspeção Técnica

Positive Locking Mechanisms



SEXTEVADA
CÔNICA



GAIOLA



SEXTEVADA



NYLON
BAIXA



CALOTA



GARRA



SEXTEVADA
FLANGEADA
COM NYLON



RÁPIDA



BORBOLETA

REVISTA
MANUTENÇÃO



PROLONGADORA



SOLDA
QUADRADA



SEXTAVADA
LÂMINA TRATOR



QUADRADA
ESTEIRA
TRATOR



SEXTEVADA
CÔNICA



CASTELO
SEM COROA



CASTELO ALTA
COM COROA



CASTELO BAIXA
COM COROA



SEXTAVADA
FLANGEADA
SERRILHADA



CALOTA
BAIXA



PALL NUT



SEXTAVADA
TORQUE



SOLDA

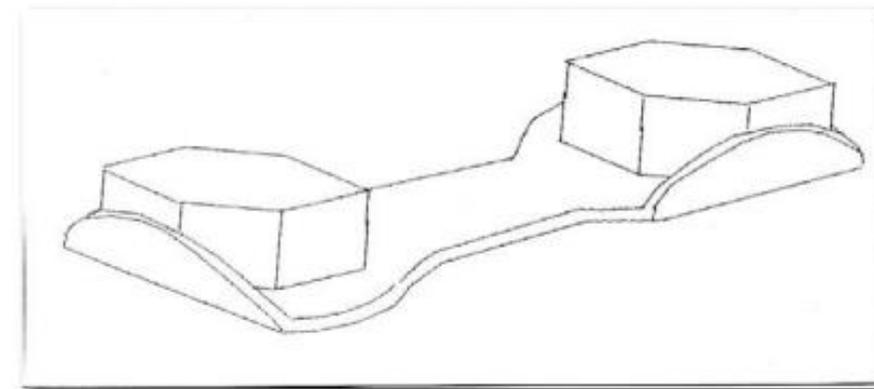
REVISTA
MANUTENÇÃO



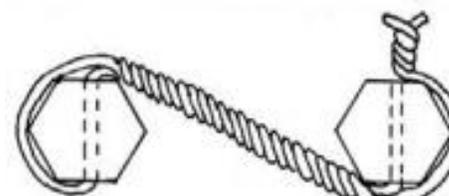
DUPLA



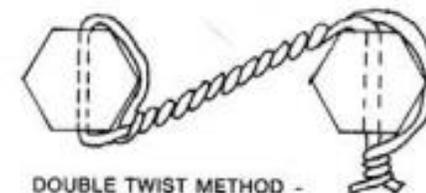
BAIXA



Use for screws



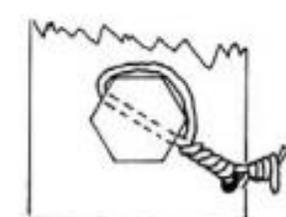
DOUBLE TWIST METHOD - CORRECT



DOUBLE TWIST METHOD -
INCORRECT



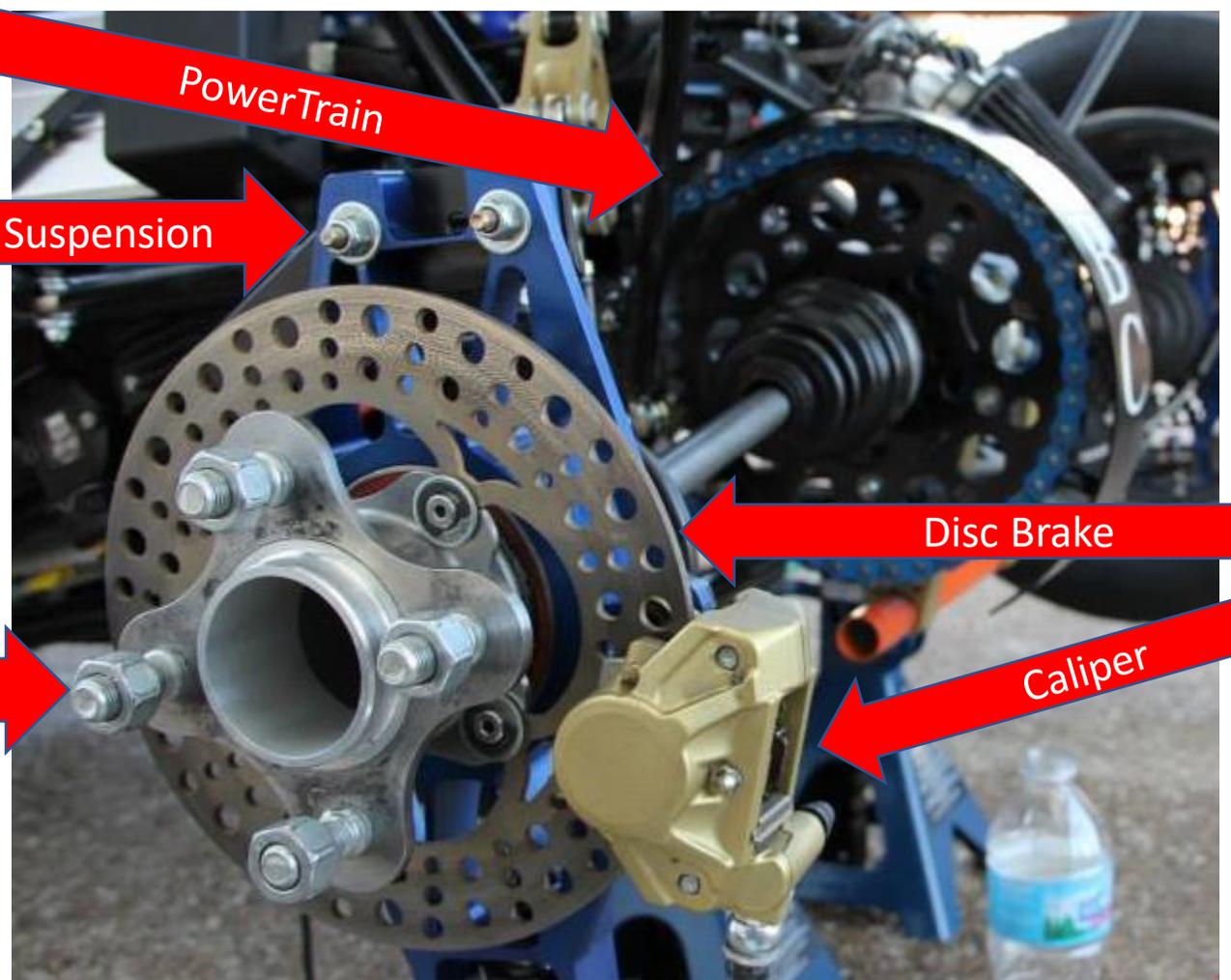
DOUBLE TWIST METHOD - MULTIPLE FASTENER



DOUBLE TWIST -
SINGLE FASTENER

Inspeção Técnica

Positive Locking Mechanisms



PowerTrain

Suspension

Disc Brake

Caliper

NYLON BAIXA

Frenagem de parafuso

SEXTAVADA CÔNICA

SEXTAVADA TORQUE

Whell Nuts

Frenagem de parafuso

The diagram illustrates the positive locking mechanisms on a Formula SAE car's rear wheel assembly. Red arrows point to the PowerTrain, Suspension, Disc Brake, and Caliper. Surrounding the main image are four callouts: a Nylon Baja nut, a lock washer (Frenagem de parafuso), a Conical Lock Washer (Sextavada Cônica), and a Torque Lock Washer (Sextavada Torque). The main image also has a vertical red line on the left and right sides.

Inspeção Técnica

Recheck



Inspeção Técnica

Recheck



Não é permitido uso de fita termica no tubo escape.



Inspeção Técnica

2 - Tilt Table

- Nesta etapa, o veículo deverá estar com todos os fluídos completos (água, óleo, combustível, etc.). O piloto desta prova será o **mais alto** da equipe, com todos os equipamentos de segurança.
- O juiz determinará o lado para se inclinar o carro.
- IN.9.1 / d - Carros IV Motores equipados com bombas de combustível acionadas mecanicamente devem ser acionados para encher e pressurizar o sistema da bomba de alta pressão. Veja IC.6.2
- Ao inclinar a rampa a 45°, **nenhum fluido** poderá vazar do veículo.
- Ao inclinar a rampa a 60°, **nenhum pneu** poderá perder contato com a base. Nesta inclinação, também não poderá haver **nenhum vazamento de maneira contínua de fluidos inflamáveis** (óleo ou combustível). Gotejamentos serão avaliados. (Veja Informativo 14)

Quando aprovada, a equipe recebe o adesivo de Tilt-Table e pode se encaminhar para a próxima parte da avaliação – Noise Test ou Rain Test

- Se algum piloto mais alto do que o aprovado na Tilt-Table se apresentar mais tarde e passar no teste de saída de 5 segundos, **a equipe perderá o adesivo da Tilt-Table** (IN.13.3 Inspection Validity) e terá que refazê-la com o novo piloto. Se o carro for reprovado na primeira tentativa com este piloto, a equipe também perderá o adesivo de Brake Test. Pode-se optar por desqualificar o piloto para que os adesivos não sejam perdidos.

Inspeção Técnica

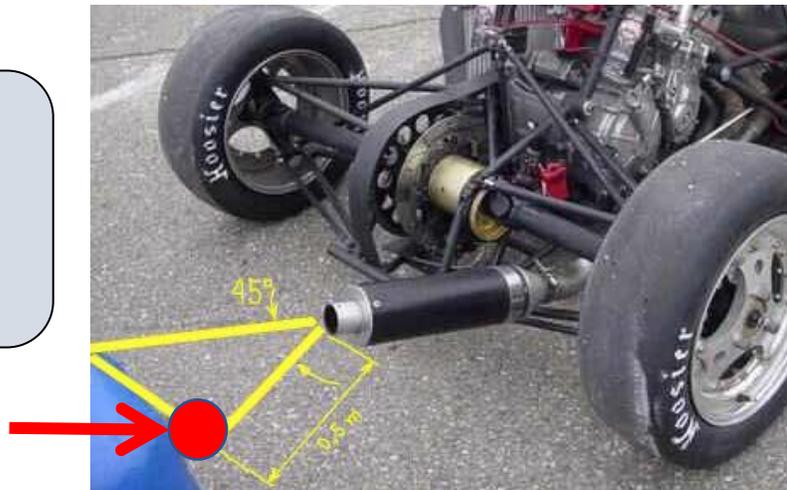
3IC – Noise Level Test



- A partir deste momento o motor pode ser ligado, mas o veículo ainda assim deve ser empurrado **desligado e pela push bar** para se movimentar, estando o piloto dentro dele.
- O microfone é colocado a 45° a uma distância de 0,5m da linha da saída do escape, no plano horizontal. Se houver casos nos quais o escapamento esteja em local duvidoso, o Comitê Técnico irá determinar o procedimento de medição.
- Após *warm-up*, são realizadas as medições do ruído em marcha lenta e em alta rotação (**IN.10.4.1**). Limites de 103dBC e 110dBC (**IN.10.5**) são verificados, respectivamente.
- A verificação de ruído pode ser refeita em qualquer momento da competição a partir de uma decisão do Comitê Técnico (**IN.10.6.1**).

Quando aprovada, a equipe recebe o adesivo de Noise Test e pode se encaminhar para a última parte da avaliação – Brake Test

Posição do microfone



FSAE NOISE TEST ENGINE SPEEDS

For Automotive or Motorcycle Engines									
The equation is:		Calculated Test Speed =		914.4 x 1000		rpm			
				2 x Stroke (mm)					
Model	Bore x Stroke	Displ/Cyl	Cyls	Displ.	Test rpm	Calculated	Rounded		
Honda CBR 250 RR	48.5 x 33.7 mm	62.26 ccs	4 cyl.	249 ccs	13,567	13,567	13,500		
Honda CBR 250 RR	48.0 x 34.5 mm	62.43 ccs	4 cyl.	250 ccs	13,252	13,252	13,500		
Yamaha FZR 400	58.1 x 40.5 mm	107.37 ccs	4 cyl.	430 ccs	11,289	11,289	11,500		
Kawasaki EX250	62.0 x 41.2 mm	124.39 ccs	2 cyl.	249 ccs	11,097	11,097	11,000		
Triumph TT600 (2003)	68.0 x 41.3 mm	149.99 ccs	4 cyl.	600 ccs	11,070	11,070	11,000		
Triumph Daytona 600 (Speed 4)	68.0 x 41.3 mm	149.99 ccs	4 cyl.	600 ccs	11,070	11,070	11,000		
Honda CB-1	55.0 x 42.0 mm	99.79 ccs	4 cyl.	399 ccs	10,886	10,886	11,000		
Honda NC35	55.0 x 42.0 mm	99.79 ccs	4 cyl.	399 ccs	10,886	10,886	11,000		
Honda CBR 600 F4	67.0 x 42.5 mm	149.80 ccs	4 cyl.	599 ccs	10,758	10,758	11,000		
Kawasaki Ninja ZX-6R	66.0 x 43.8 mm	149.85 ccs	4 cyl.	599 ccs	10,438	10,438	10,500		
Yamaha 1999 YZF-600R	65.5 x 44.5 mm	149.95 ccs	4 cyl.	600 ccs	10,274	10,274	10,500		
Yamaha YZF-R6	65.5 x 44.5 mm	149.95 ccs	4 cyl.	600 ccs	10,274	10,274	10,500		
Suzuki GSXR 600	65.5 x 44.5 mm	149.95 ccs	4 cyl.	600 ccs	10,274	10,274	10,500		
Honda CBR 600 F2	65.0 x 45.2 mm	149.99 ccs	4 cyl.	600 ccs	10,115	10,115	10,000		
Honda CBR 600 F3	65.0 x 45.2 mm	149.99 ccs	4 cyl.	600 ccs	10,115	10,115	10,000		
Kawasaki ZX6	64.0 x 46.6 mm	149.91 ccs	4 cyl.	600 ccs	9,811	9,811	10,000		
Honda CBR 600 F1	63.0 x 48.0 mm	149.63 ccs	4 cyl.	599 ccs	9,525	9,525	9,500		
Yamaha YZF600R	62.0 x 48.6 mm	149.75 ccs	4 cyl.	599 ccs	9,218	9,218	9,000		
Mahle FSAE	70.9 x 51.6 mm	203.39 ccs	3 cyl.	610 ccs	8,867	8,867	9,000		
Honda CX500	78.0 x 52.0 mm	248.50 ccs	2 cyl.	497 ccs	8,792	8,792	9,000		
Kawasaki Ninja	60.0 x 52.4 mm	148.16 ccs	4 cyl.	593 ccs	8,725	8,725	9,000		
Yamaha FZR600	59.0 x 54.8 mm	149.80 ccs	4 cyl.	599 ccs	8,343	8,343	8,500		
Suzuki K6A	68.0 x 55.8 mm	202.60 ccs	3 cyl.	608 ccs	8,193	8,193	8,000		
Honda VT500C	71.0 x 62.0 mm	245.50 ccs	2 cyl.	491 ccs	7,374	7,374	7,500		
Yamaha SV650 (reduced bore)	78.5 x 62.6 mm	302.97 ccs	2 cyl.	606 ccs	7,304	7,304	7,500		
Yamaha WR450 (2005)	95.0 x 63.5 mm	534.07 ccs	1 cyl.	534 ccs	7,200	7,200	7,000		
Polaris Sportsman 600 (2000)	76.4 x 66.0 mm	302.80 ccs	2 cyl.	606 ccs	6,927	6,927	7,000		
Yamaha YZF450	100.0 x 68.0 mm	534.07 ccs	1 cyl.	534 ccs	6,724	6,724	6,500		
Honda TRX 400EX	85.0 x 70.0 mm	397.22 ccs	1 cyl.	397 ccs	6,531	6,531	6,500		
Husaberg 500 cc	95.0 x 70.7 mm	501.10 ccs	1 cyl.	501 ccs	6,467	6,467	6,500		
KTM Duke LC-4 620	101.0 x 76.0 mm	608.90 ccs	1 cyl.	609 ccs	6,016	6,016	6,000		
KTM 450	97.0 x 77.9 mm	575.67 ccs	1 cyl.	576 ccs	5,869	5,869	6,000		
Honda NX650XR600	97.0 x 82.0 mm	605.90 ccs	1 cyl.	606 ccs	5,576	5,576	5,500		

Inspeção Técnica

3EV - Rain Test

- Nesta avaliação, o veículo não poderá ter nenhuma de suas rodas em contato com o solo. O uso de cavaletes ou método semelhante é necessário. Além disso, o sistema de tração deverá estar ativado.
- O carro ficará em contato com um spray de água por 120 segundos, seguidos de 120 segundos adicionais para observação.
 - Nenhum membro da equipe poderá estar em contato com o veículo durante a avaliação.
- **Nenhum alerta no IMD poderá aparecer dentro dos 240 segundos de teste.**

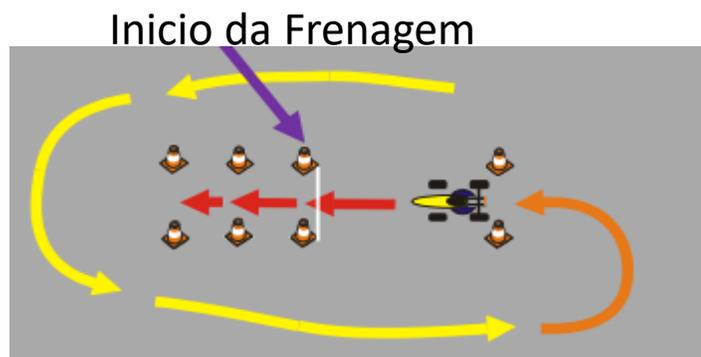
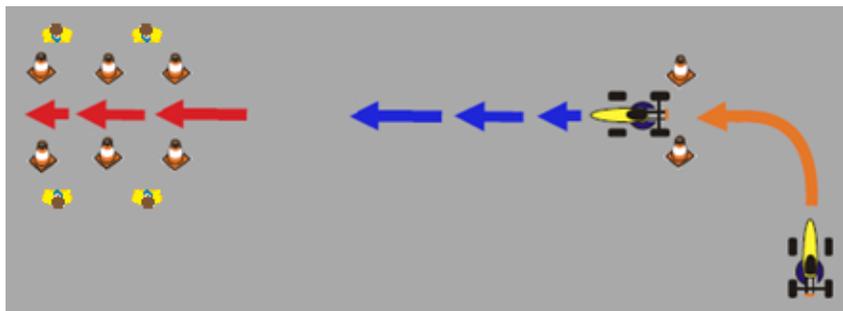
Quando aprovada, a equipe recebe o adesivo de Rain Test e pode se encaminhar para a última parte da avaliação – Brake Test



Inspeção Técnica

4 - Brake Test

- São 30 metros de aceleração, para então o veículo entrar numa área de 10 metros de extensão, onde deve frear em linha reta para travar todas as rodas.
- 4 Juízes/Comissários, cada um responsável por uma roda, irão verificar se elas serão travadas. O veículo deverá travar todas as rodas **ao mesmo tempo e em linha reta** (IN.12.1).
- Em caso de avarias leves ou médias durante a frenagem, o responsável pela prova poderá solicitar um Recheck da Inspeção Técnica. **Se o veículo quebrar severamente, o mesmo perderá o adesivo de Inspeção Técnica Mecânica e Tilt-Table.**



Quando aprovada, a equipe recebe o adesivo de Brake Test e está liberada para as provas dinâmicas

