

2024 Rule Revision and Notes

Rules for vehicle production, vehicle inspection, examination (static and dynamic) comply with Formula SAE Rules.

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Content of the course

- Results of items pointed out by 2023 car inspection
- Analysis of 2023 official Q&A (items with many inquiries)
- 2024 rule revision details
- 2024 rule compliance points to note (review from the past)
- About the evidence in general

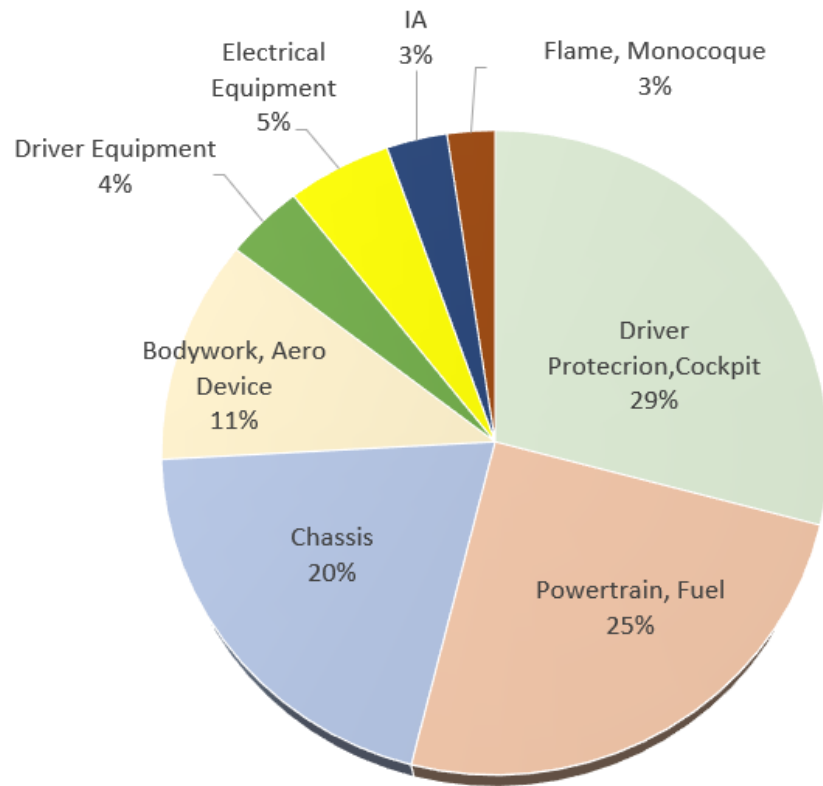
Results of items pointed out by 2023 car inspection

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1. Percentage of each items pointed out by car inspection
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1. Percentage of each items pointed out by car inspection

“Driver protection, Cockpit” “Powertrain, Fuel” “Chassis” are pointed out over half in car inspection.
(Page 3 and Page 4 of the Inspection sheet are mostly pointed out.)



Many
pointed
out item

2023

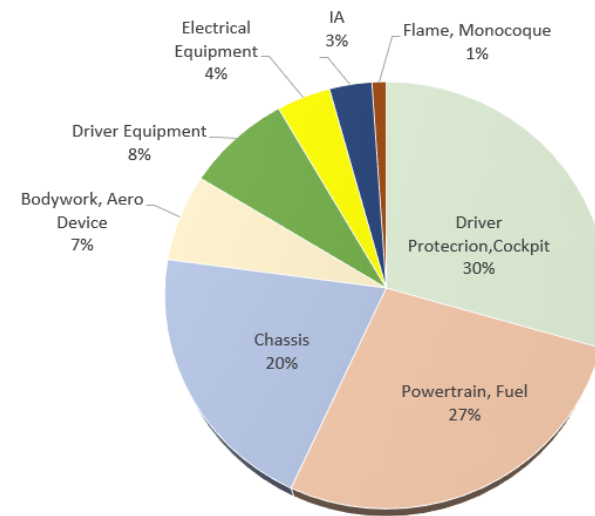
Item	Count	%
Driver Protecrtion,Cockpit	134	29
Powertrain, Fuel	114	25
Chassis	93	20
Bodywork, Aero Device	52	11
Driver Equipment	18	4
Electrical Equipment	24	5
IA	14	3
Flame, Monocoque	11	2
Total	460	100

Percentage of each items pointed out

2. Comparison of 2022 and 2023 competitions

- Both 2022 and 2023 showed similar trends.
- Please pay attention to the many pointed out items next year.

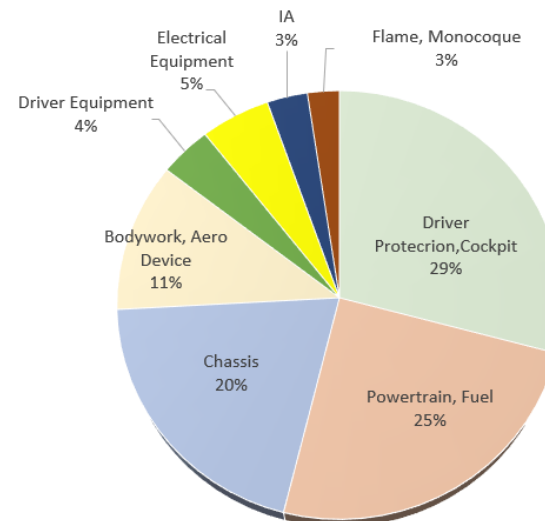
2022 Percentage of inspection items pointed out



2022

Item	Count	%
Driver Protection, Cockpit	138	29
Powertrain, Fuel	128	27
Chassis	95	20
Bodywork, Aero Device	31	7
Driver Equipment	37	8
Electrical Equipment	19	4
IA	15	3
Flame, Monocoque	5	1
Total	468	100

2023 Percentage of inspection items pointed out



2023

Item	Count	%
Driver Protection, Cockpit	134	29
Powertrain, Fuel	114	25
Chassis	93	20
Bodywork, Aero Device	52	11
Driver Equipment	18	4
Electrical Equipment	24	5
IA	14	3
Flame, Monocoque	11	2
Total	460	100

3. Many pointed out items by car inspection (10 over)

No.	pointed out items	Counts	pointed out detail
71	Brake	28	Fixing failure, Overlined, Line Hose Interference
28	Firewall	28	Unprocessed Edge, Defective Fixing, Opening Clearance
84	Cockpit cross-section	21	Foot Template NG
104	Air intake system	16	Lack of positive lock, fastened to frame
107	Throttle pedal	14	Stopper defective, caught
26	Wing edge	14	Edge Processing NG
73	CRITICAL FASTENERS brake	14	Wiring Defect
97	Driver foot protection	13	Edge, tie wrap, wire harness
63	Steering	13	Stopper NG, Rattled, Bolt Interference, Steer Play NG
66,67	Suspension	12	Interference during stroke, insufficient rod washer
87	Roll Bar Pad	12	fixation failure
136	Battery	12	Defective fixing, no protection circuit
113	Leakage of liquid	11	Caliper, Master Cylinder, Def, Engine
65	CRITICAL FASTENERS Steering	10	Bolt 2 mountain shortage
62	Non-crushable items	10	AIP Overtravel switch, pedal, reservoir tank to within 25 mm
90	Lap belt mount	10	Lap belt interferes with seat
101	Cockpit opening	10	Driver Sitting Template
125	Fuel tank	10	Lack of anchorage, fuel seepage, clearance with exhaust pipe outside envelope

4. Summary

- The trend in the number of complaints remained unchanged from last year, but the number of complaints declined overall.
- Since many of the items pointed out have a significant impact on safety, it is necessary to continue to focus on following them in the next year.

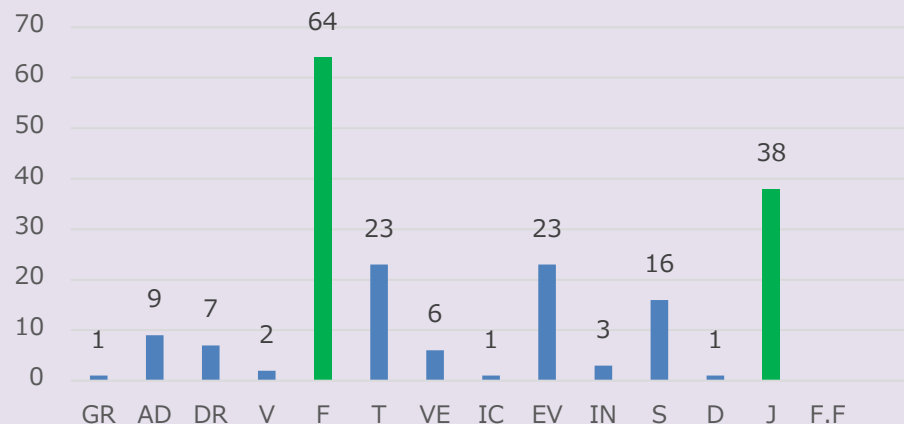
(Brakes, Firewalls, Cockpit Cross Sections, Air Intake)

No.	pointed out items	Counts	pointed out detail
71	Brake	28	Fixing failure, Overlined, Line Hose Interference
28	Firewall	28	Unprocessed Edge, Defective Fixing, Opening Clearance
84	Cockpit cross-section	21	Foot Template NG
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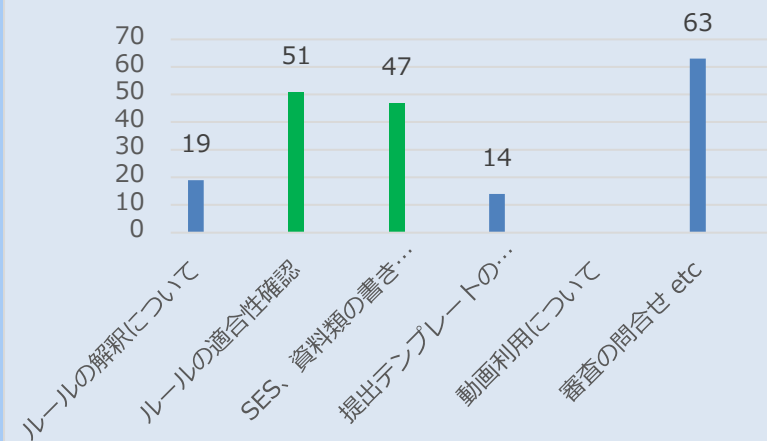
Frequently asked questions in Q&A in 2023

Trends in Q&A in 2023 (comparison of number of cases)

ルール項目別

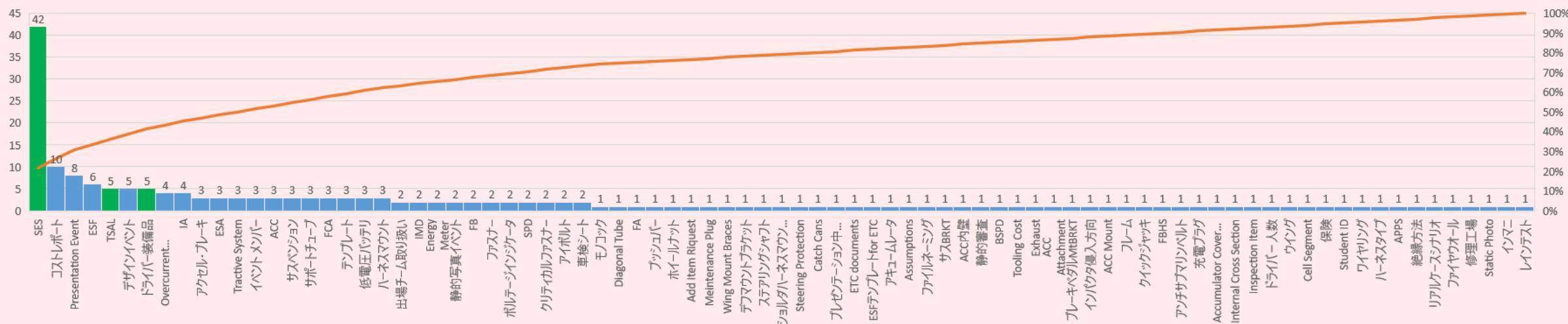


問合せの主旨別



- Many inquiries about F, J area
- Rules compatibility, questions about SES materials
- Concentration of inquiries to SES

部位・部品別



Trends in Q&A in 2023 (comparison of number of cases)



● Main contents of inquiries to SES

Target parts/parts	Summary of questions from the team in 2023
SES	Why is the IA adhesive area inappropriate and the judgment is EQ?
SES	I would like to check whether the calculation of the adhesive area of Honeycomb STD IA is correct.
SES	The ordering cells for ACC mount and chassis mount are difficult to understand.
SES	Why was AIP attachment welding OK last year but not this year?

2024 Rule revision

F part

F.3.5.2 Alternative Tubing Materials

A requirement was added for Alternative Tubing Materials.

2024

If any Alternative Materials are used, the SES must contain:

c. Details of the manufacturing technique and process

F.4.3.2 Primary Structure Laminate Testing

Three requirements were added for Primary Structure Laminate Testing.

2024

- d. Test panels must use the thickest core associated with each skin layup.
Designs may use core thickness that is 50% - 100% of the test panel core thickness associated with each skin layup.
- e. Calculation of derived properties must use the part of test data where deflection is 50mm or less
- f. Calculation of absorbed energy must use the integral of force times displacement

F.4.3.5 Perimeter Shear Test

Two requirements were added for Laminate Perimeter Shear Test.
(Criteria in SES is reflected on Rules.)

2024

- g. The first peak in the load-deflection curve must be used to determine the skin shear strength; this may be less than the minimum force required by **F.7.3.3 / F.7.5.5**
- h. The maximum force recorded must meet the requirements of **F.7.3.3 / F.7.5.5**

F.5.7.7 Front Hoop

A rule was added for Front Hoop except steel.

2024

F.5.7.7 A Front Hoop that is not steel must have a 4 mm hole drilled in a location to access during Technical Inspection

F.6.5.3 Shoulder Harness Mounting Bar

A requirement was added for load to Shoulder Harness Mounting Bar.

2024

F.6.5.3 The Shoulder Harness Mounting Bar should be loaded only by the Shoulder Harness
The Head Restraint, Firewall, driver's seat and light bodywork may attach to the mounting bar

F.7.1.4 Monocoque General Requirements

A requirement was added for Monocoque.

2024

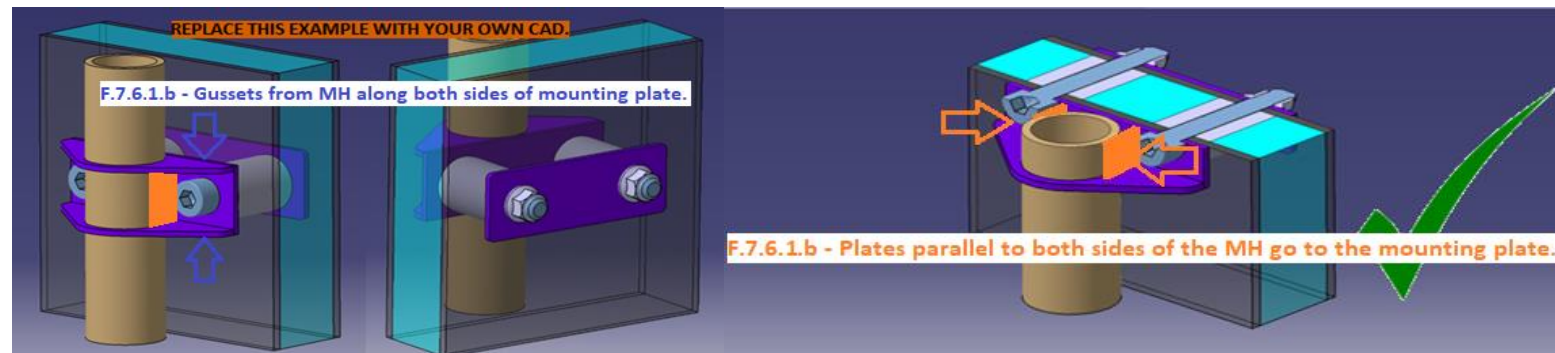
F.7.1.4 An inspection hole approximately 4mm in diameter must be drilled through a low stress location of every monocoque section regulated by the Structural Equivalency Spreadsheet.
This inspection hole is not required in the Vertical Side Impact Structure F.7.5.3.b

F.7.4.1 Monocoque Front Hoop Attachment (Bolted)

Detail requirements were added for Monocoque Front Hoop Attachment.

2024

- a. Front Hoop Mounting Plates must be the minimum thickness of the Front Hoop F.3.2.1.c
- b. The Front Hoop tube must be mechanically connected to the Mounting Plate with Mounting Plates parallel to both sides of the tube, with gussets from the Front Hoop tube along both sides of the mounting plate



F.7.4.3 Monocoque Front Hoop Attachment

A requirement was added for Monocoque Front Hoop Attachment.

2024

Add : c

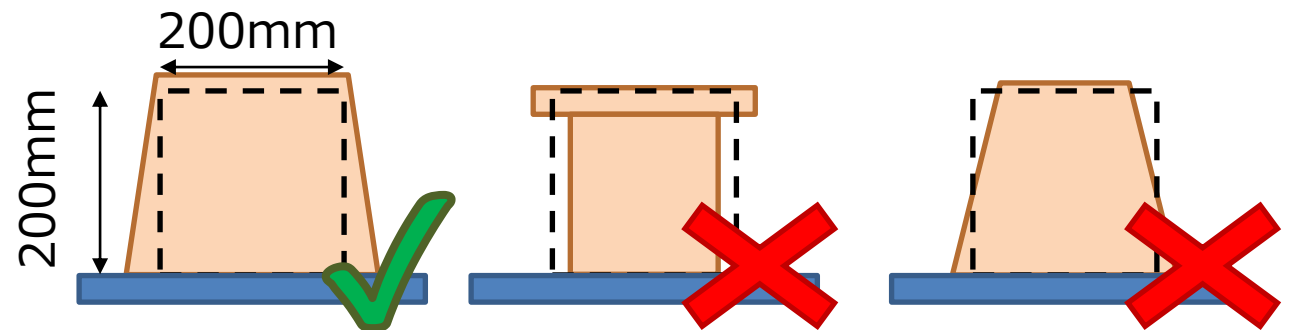
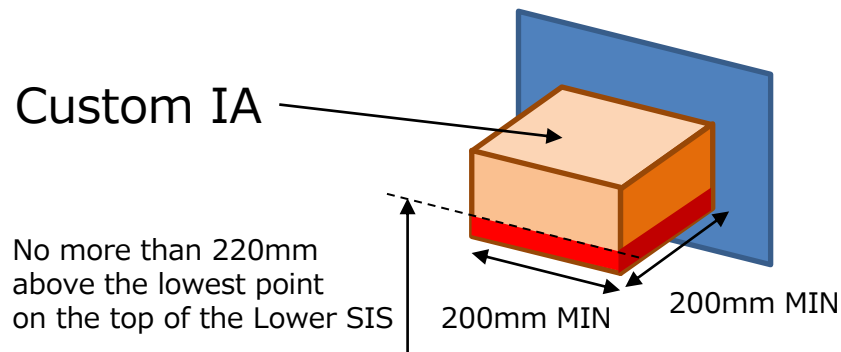
- c. A small gap in the laminate (approximately 25 mm) exists for inspection of the Front Hoop F.5.7.6

F.8.5.6 Impact Attenuator Position

Requirement (b) was added for Impact Attenuator Position.

2024

- a. All Impact Attenuators must mount with the bottom leading edge no more than 220 mm above the lowest point on the top of the Lower Side Impact Structure
- b. A Custom Impact Attenuator must mount with an area of 200 mm or more long and 200mm or more wide that intersects a plane parallel to the ground that is no more than 220mm above the lowest point on the top of the Lower Side Impact Structure



F.8.5.7 Impact Attenuator Orientation

New requirements were added for Impact Attenuator Direction.

2024

F.8.5.7 Impact Attenuator Orientation

- a. The Impact Attenuator must be centered laterally on the Front Bulkhead
- b. Standard Honeycomb must be mounted 200mm width x 100mm height
- c. Standard Foam may be mounted laterally or vertically

F.8.6 Front Impact Objects

2024

New rules were added for Front Impact Objects.

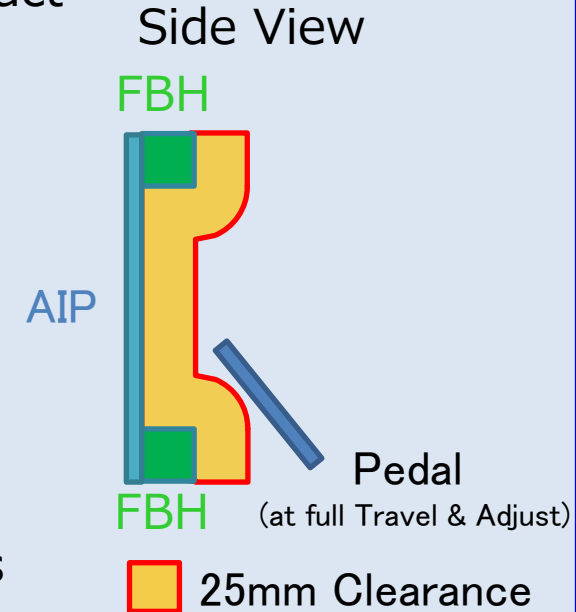
F.8.6.1 The only items allowed forward of the Anti Intrusion Plate in front view are the Impact Attenuator, fastener heads, and light bodywork / nosecones
Fasteners should be oriented with the nuts rearwards

F.8.6.2 Front Wing and Bodywork Attachment

- The front wing and front wing mounts must be able to move completely aft of the Anti Intrusion Plate and not touch the front bulkhead during a frontal impact
- The attachment points for the front wing and bodywork mounts should be aft of the Anti Intrusion Plate
- Tabs for wing and bodywork attachment must not extend more than 25mm forward of the Anti Intrusion Plate

F.8.6.3 Pedal assembly at full travel and adjustment must have a minimum 25 mm clearance to the:

- Rear face of the Anti Intrusion Plate
- All Front Bulkhead structure F.6.1, F.7.2, F.8.4.3
- All Non Crushable Items inside the Primary Structure Non Crushable Items include, but are not limited to batteries, master cylinders, hydraulic reservoirs



F.10.1.4, F.10.1.5 Accumulator Container Material

F.10.1.4 If the Accumulator Container is not constructed from steel or aluminum, the material properties should be established at a temperature of 60°C

F.10.1.5 If adhesives are used for credited bonding, the bond performance should be established at a temperature of 60°C

2024

Materials other than steel / aluminum and bond strength should be established at 60°C.
(Both of them may lose strength extremely at high temperatures, so be careful.)

F.10.5.8 Accumulator Attachment – All Types

2024

Add a,d

- a. Every fastener must withstand the Test Load in pure shear, using the minor diameter if any threads are in shear
- b. Every Accumulator bracket, chassis bracket, or monocoque attachment point must withstand the Test Load in bending, in pure tearout, pure pullout, pure weld shear if welded, and pure bond shear and pure bond tensile if bonded.
- c. Monocoque attachment points must meet F.7.8.8
- d. Fasteners must be spaced minimum 50 mm apart to be counted as separate attachment points

Rules in SES were also noted on the Rules.

Note that the bolt diameter is defined on the severe condition.
Attachment such that the core collapses was clearly prohibited.

T part

T.1.4.1/T1.4.2 Accelerator Pedal / Throttle System

Requirements were established for Accelerator Pedal / Throttle System.

T1.4.1, T1.4.2 New!

2024

- Explanation of PEDAL TRAVEL
- Throttle system cover is necessary.

T.1.4.1 Accelerator Pedal

- An Accelerator Pedal must control the Powertrain output
- Pedal Travel is the percent of travel from a fully released position to a fully applied position. 0% is fully released and 100% is fully applied.
- The Accelerator Pedal must:
 - Return to 0% Pedal Travel when not pushed
 - Have a positive stop to prevent any cable, actuation system or sensor from damage or overstress

T.1.4.2 Any mechanism in the throttle system that could become jammed must be covered. This is to prevent debris or interference and includes but is not limited to a gear mechanism

T.1.9.2 Tractive System Firewall (EV only)

Requirements were changed for Firewall of Tractive system(EV only).

2024

T.1.9.2 Tractive System Firewalls must be:

- a. Made of aluminum
- b. Grounded, refer to EV.6.7 Grounding

In 2024 rule, Firewall made of electrically insulating and Nonflammable two layers material is unnecessary.

2023 Rule T.1.9.2 Tractive System Firewalls must be composed of two layers: (see **IN.8.1**)

- a. The layer facing the Tractive System must be:
 - Made of aluminum with a thickness between 0.5 and 0.7 mm
 - Grounded according to **EV.7.7 Grounding**
- b. The layer facing the Driver must be:
 - Made of an electrically insulating and Nonflammable Material (**F.1.18**), not CFRP
 - Sufficient thickness to prevent penetrating this layer with a 4 mm wide screwdriver and 250 N of force.

This is a check that may be performed at Tech Inspection, not a design criteria

T.2.4.3 Harness Installation

Requirements of tab and bracket are changed for Harness Installation.

2023

2023 Delete : a,d

- a. Have a minimum cross sectional area of 60 mm² of steel to be sheared or failed intension at any point of the tab
- b. Be 1.6 mm minimum thickness
- c. Not be in bending when the attache part of the Harness is put under load.
- d. Where Lap Belts and Anti-Submarine Belts use the same attachment point, there must be a minimum cross sectional area of 90 mm² of steel to be sheared or failed in tension at any point of the tab.
- e. Not cause abrasion to the belt webbing



2024

2024 Add : a

- a. Support a minimum load in pullout and tearout before failure of:
 - If one belt is attached to the tab or bracket 15 kN
 - If two belts are attached to the tab or bracket 30 kN
- b. Be 1.6 mm minimum thickness
- c. Not be in bending when the attached part of the Harness is put under load
- d. Not cause abrasion to the belt webbing

T.2.5.6 Lap Belt Mounting

Requirements of Lap Belt Mounting are added.

2024

T.2.5.6 The Lap Belts must attach by one of the two:

- a. Bolt or eyebolt through a welded tube insert or tested monocoque attachment F.7.9
- b. Bolt or clip to a tab or bracket (T.2.4.3) on a tube frame



Ex. Welded eyebolt

Welded eyebolt(cutted) is allowed.

T.2.6.3 Shoulder Harness Mounting

Requirements of Shoulder Harness Mounting are added.

2024

T.2.6.3 The Shoulder Belts must attach by one of the four:

- a. Wrap around the Shoulder Harness Mounting bar
- b. Bolt through a welded tube insert or tested monocoque attachment F.7.9
- c. Bolt or clip to a tab or bracket (T.2.4.3) on the Shoulder Harness Mounting bar
- d. Wrap around physically tested hardware attached to a monocoque



Ex. Welded eyebolt

Welded eyebolt(cutted) is allowed.

T.2.7.4 Anti Submarine Belt Attachment

Requirements are added for Anti Submarine Belt Attachment.

2024

T.2.7.4 The Anti Submarine Belts must attach by one of the three:

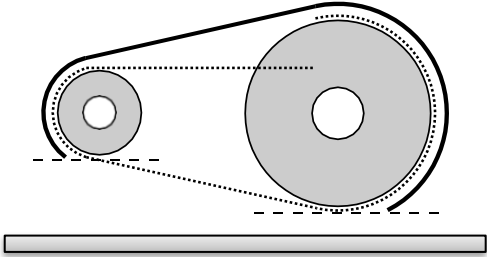
- a. Bolt or eyebolt through a welded tube insert or tested monocoque attachment F.7.9
- b. Bolt or clip to a tab or bracket (T.2.4.3) on a tube frame
- c. Wrap around a tube meeting F.3.2.1.j that connects the Lower Side Impact tubes F.6.4.5. The belt must not be able to touch the ground.



Ex. Welded eyebolt

Welded eyebolt(cutted) is allowed.

T.5.2.2 Final Drivetrain Shield



A requirement is added for Final Drivetrain Shield.

Cover the bottom of rotating components etc.

2024

T.5.2.2 The final drivetrain shield must:

...

d. Cover the bottom of the chain or belt or rotating component when fuel, brake lines T.3.1.8, control, pressurized, electrical components are located below

T.5.4.3 Coolant Fluid

A requirement was added for Liquid coolant of Accumulator cell.

2024

T.5.4.3 (EV only) Liquid coolant must not directly touch the cells in the Accumulator

T6.1.7 Cylinder Location

Requirements are changed for Compressed Cylinder Location.

2023

2023 Delete : b

T.6.1.7 Cylinder Location –
The gas cylinder/tank and the pressure regulator must be:

- a. Located outside of the Cockpit
- b. One or both of:
 - Inside the Primary Structure Envelope
 - Protected by structure meeting F.5.16 Component Protection



2024

2024 Add : c

T.6.1.7 Cylinder Location –
The gas cylinder/tank and the pressure regulator must be:

- a. Securely mounted inside the Chassis
- b. Located outside of the Cockpit
- c. In a position below the height of the Shoulder Belt Mount T.2.6
- d. Aligned so the axis of the gas cylinder/tank does not point at the driver

Rules “a & b” in 2024 exist in 2023 other rule number.

T.9.2.1 Low Voltage Battery

A requirement of Low Voltage battery was regulated in detail.

2023

T.9.2.1 All Low Voltage Batteries and onboard power supplies must be **attached securely to the Chassis.**



2024

T.9.2.1 All Low Voltage Batteries and onboard power supplies must be **securely mounted inside the Chassis below the height of the Shoulder Belt Mount T.2.6**

EV part

EV.4.3.7 Accumulator Container

A requirement was added for Accumulator Container.

2024

EV.4.3.7 Pressure relief valves must not have line of sight to the driver, with the Firewall installed or removed

2024 Rule compliant Attention point

F.5.2.3 Bent pipe

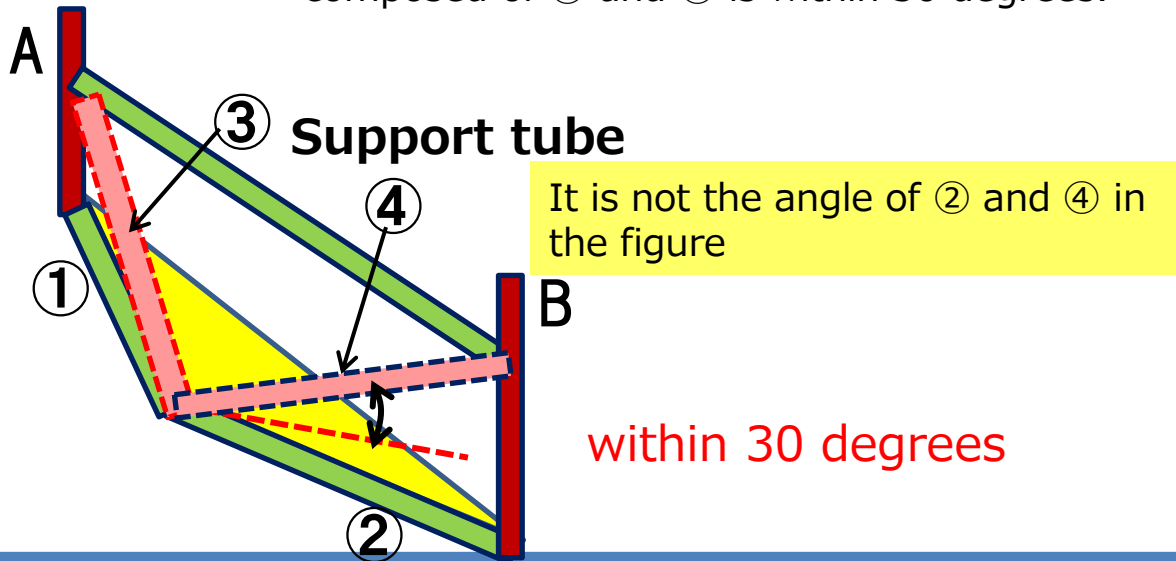
If a curved tube (or a member consisting of multiple tubes that are not aligned) is used anywhere in the primary structure other than a roll hoop, Additional tubes must be installed to support it.

- The attachment point of the support tube should be the furthest point along the curved tube from the straight line connecting the two ends.
- Support tubes must terminate at the nodes of the chassis
- Support tubes for bent tubes (excluding upper side impact members or shoulder harness mounting bars) must meet the following conditions:
 - Same diameter and thickness as the bent tube
 - An angle within 30° from the plane of the bent tube

(Example 1)

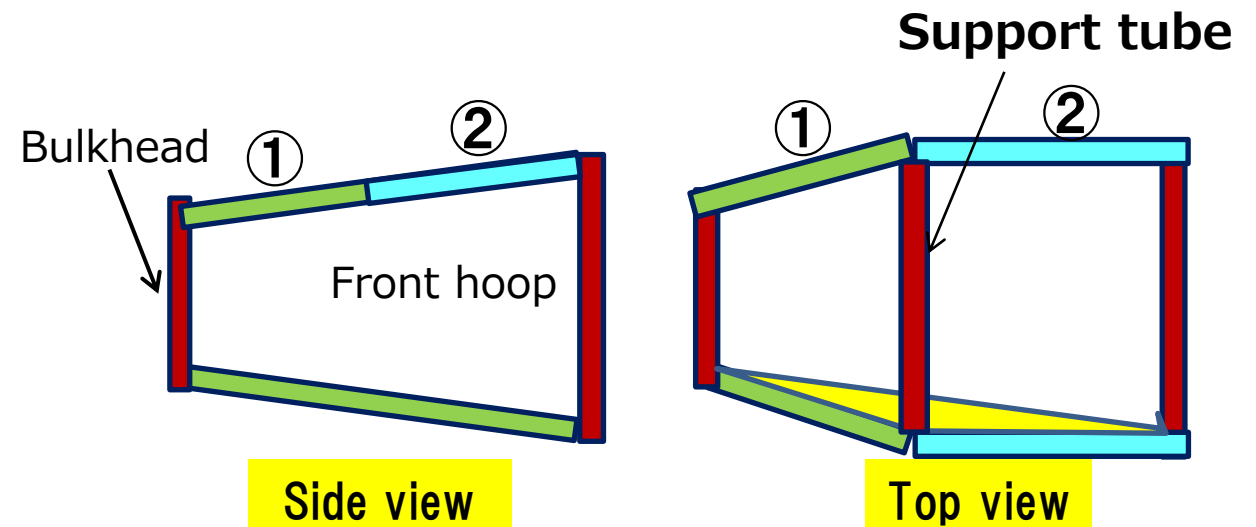
If pipe ①② is bent against pipe A-B, support tube ③ or ④ is required

Additional node angle: Meaning that the angle projected on the yellow plane composed of ① and ② is within 30 degrees.



(Example 2)

Left figure: (1) and (2) are straight lines when viewed from the side
Right figure: Viewed from the top, ① and ② are curved pipes,
The support tube is 0 degrees against the yellow surface. In other words, it is on the same plane as the yellow plane.



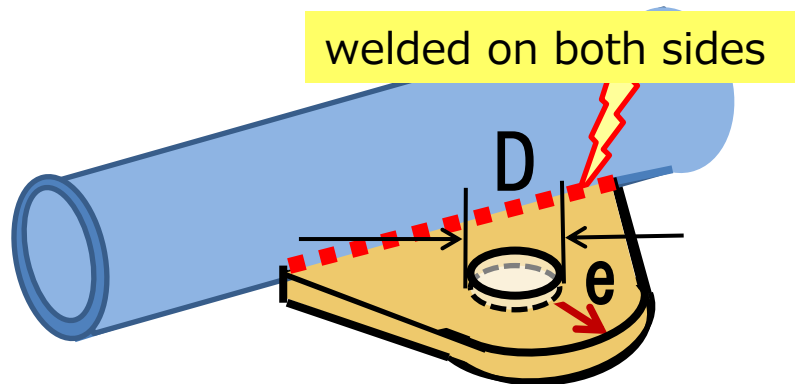
F.5.4.3 primary structure fasteners

Plates welded directly to the main structure, limited to installation of important safety parts (steering, brakes, driver harness system).

Primary structure bolting using tabs or brackets requires an edge distance ratio " e/D " of 1.5 or greater
" D " is the same as the diameter of the hole.
" e " refers to the edge distance from the edge of the hole to the nearest Tabs attaching suspension members to the primary structure need not meet this requirement

T.2.4.4 Harness mounting

When welding a single shear tab, the base of the tab should be welded on both sides.



" D " = hole diameter

" e " = distance of the free end closest to the end of the bolt hole

Acceptable when $e/D \geq 1.5$

F.6.5 Shoulder harness mount

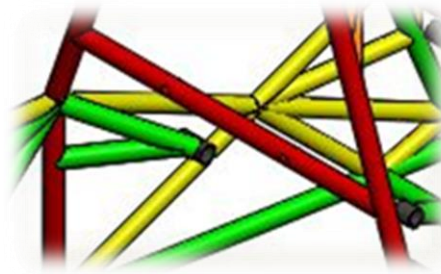
Conforming to F.3.2.1.k be a single piece of uncut continuous closed section steel pipe

The basic shape is a straight pipe welded directly to the main hoop.
A single bent pipe is also permitted, but braces are required (angle of 30 degrees or more when viewed from the side).
In that case, the pipe bending radius should be at least 3 times the pipe diameter. Hooked bent pipes are not permitted. No detachable type with bolts is allowed.

No spliced pipes allowed

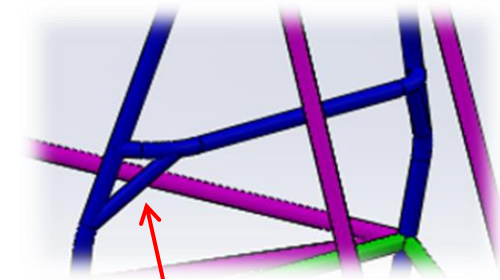


Weld straight pipe directly to MH



OK

1Real bent pipes are OK

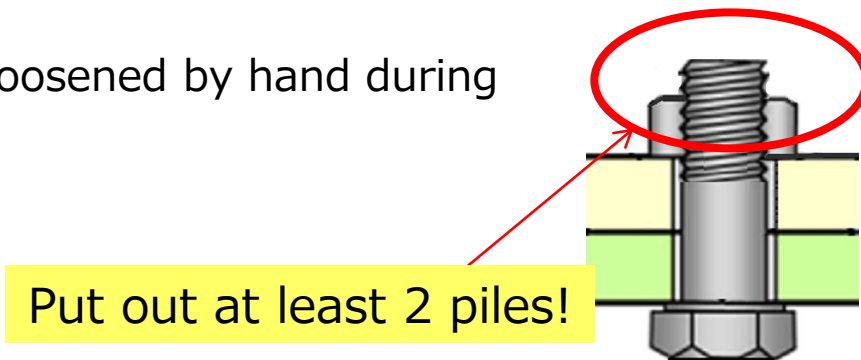


Brace required

OK

[General screw fastening parts]

- Driver cell structure, steering, brakes, driver harness, suspension system And the intake manifold attachment and fuel rail attachment are SAE G5 grade and Metrics grade Require 8.8 or higher.
 - There is an example of using a low grade for simple machines
- Ensure a secure locking mechanism that can be seen visually.
 - In some cases, there is a nut between the hub and the upright that cannot be seen
 - Present drawings as evidence
- At least 2 screw protruding threads are required.
 - There is an example where two peaks do not protrude
 - In particular, there are cases where the amount of protrusion is different in the suspension system (Vehicle inspections of unmanaged teams take time)
- Attach double nuts to adjustable tie rods.
 - There is an example of only a single nut, There are cases where it is loosened by hand during vehicle inspection.



T.2.8 Headrest

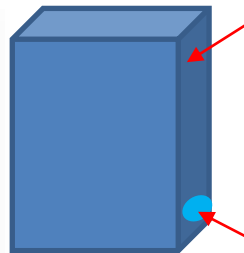
Make sure you are using the following as specified in the 2022 and newer regulations

- Minimum size width 150mm × height 150mm
- Has a height adjustment of 175 mm, or if the height is 280 mm or more, no adjustment mechanism is required.
- Thickness is 38mm or more

Materials must meet one of the following two standards.

- SFI Standard 45.2 (gray)
- CONFOR CF45 (blue) or CF45M (blue) (FIA Technical List No. 17)

CONFOR CF45



Covered with a thin and flexible material T.2.8.6.e
⇒ Hard materials that impair the softness are not allowed.
(Example: Wrapped in cloth packing tape)

- There is an inspection hole of $\phi 20\text{mm}$ or less on the front surface "other than" Being T.2.8.6.e
- It should be a "round hole", but other types are also acceptable. Removable covers are allowed.
- The intention of the rule is to "be able to palpate".

SFI Standard 45.2



The conventionally recognized pink color is "CF42", Not allowed under current rules.



【Reference】

Pink:・・・Hardness suitable for outside temperatures of 30 degrees or less
Blue:・・・Hardness suitable for outside temperatures of 30 degrees or higher
Separated by the shock absorber standard above

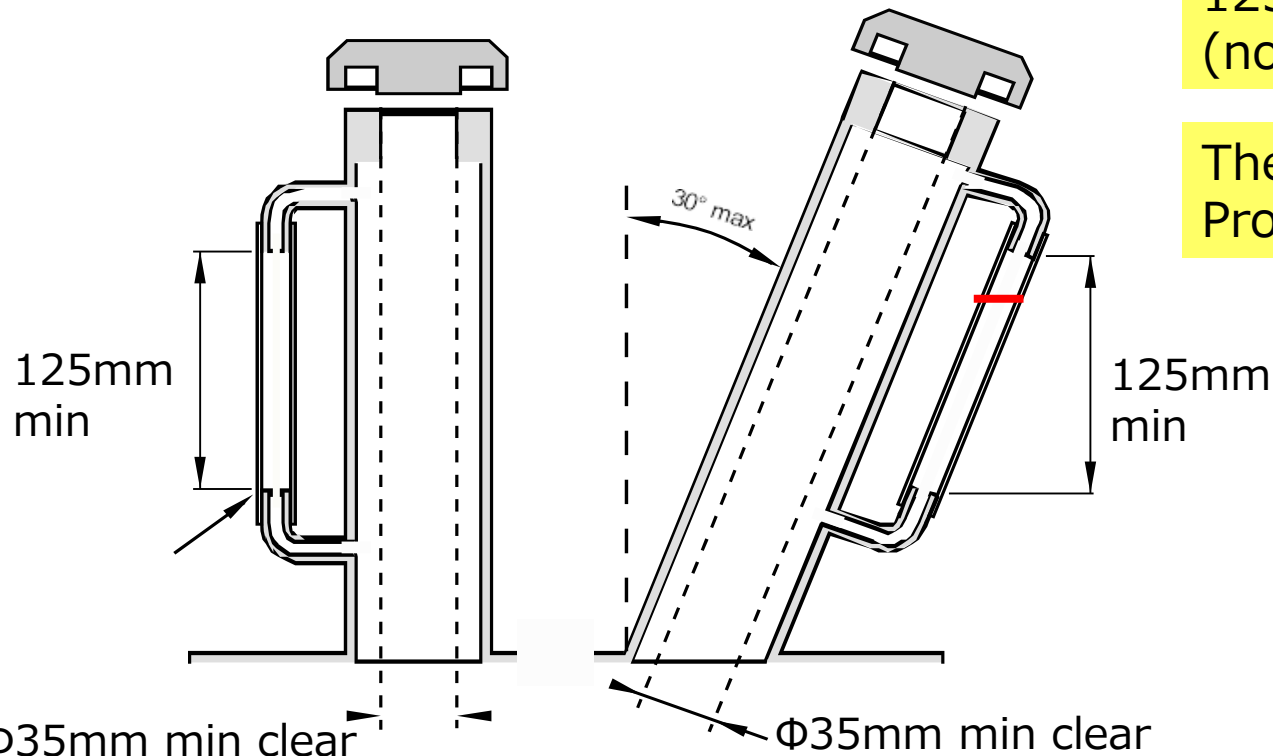
IC.5.4 Fuel filler neck & sight tube

All fuel tanks must have a filler neck.

a: Inside diameter of 35 mm (1.375 inches) or more at any point between the fuel tank and the fuel filler cap

b: Vertical height is 125 mm (4.9 inches) or more

c: the angle with the vertical is 30 degrees (30°) or less



125mm is vertical height,
(not the total length of the tube)

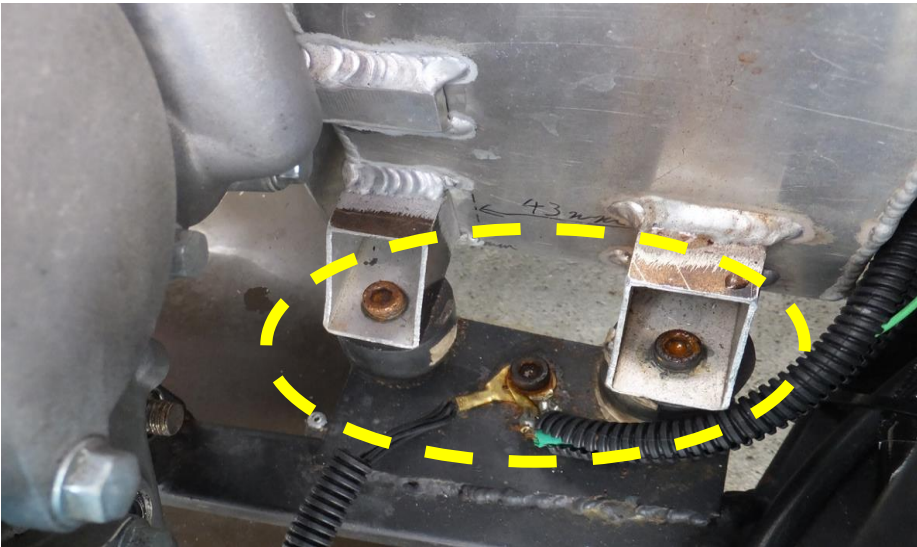
The level line is not the top of the L-shaped pipe
Provide 12 to 25 mm above the transparent tube

IC.5.3.1 Fuel tank

Securely attach to the vehicle structure, but be careful not to stress the fuel tank from the chassis flex

To prevent the tank from receiving the load (twisting) of the chassis, provide a margin (such as inserting a rubber bush) in the installation (XY axis).

- Be sure to take measures to reduce the axial torque of the mounting bolts. If the bracket is fragile, a crack may occur from there, so be careful



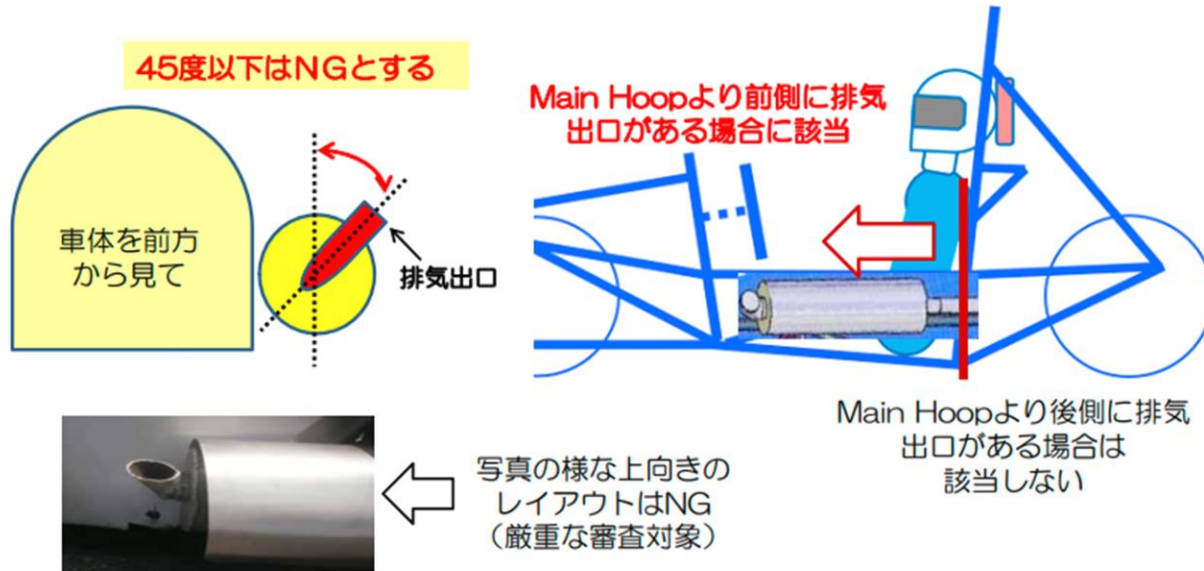
IC.7.2 Exhaust outlet

排気出口の向き

排気出口のレイアウトでは下記基準で審査します。

IC.7.2 エキゾーストアウトレット

IC.7.2.1 排気は、どんな走行速度でも、車両の気流を考慮してドライバーが排気煙にさらされないような経路を通るようにしなければならない。



Although it is not stated in the FSAE rules or local rules, the content on the left is determined as an internal rule for the Japan tournament.

background

- Difficulty installing the microphone for measuring the exhaust volume
- Exhaust gas may hit the driver increased and dangerous

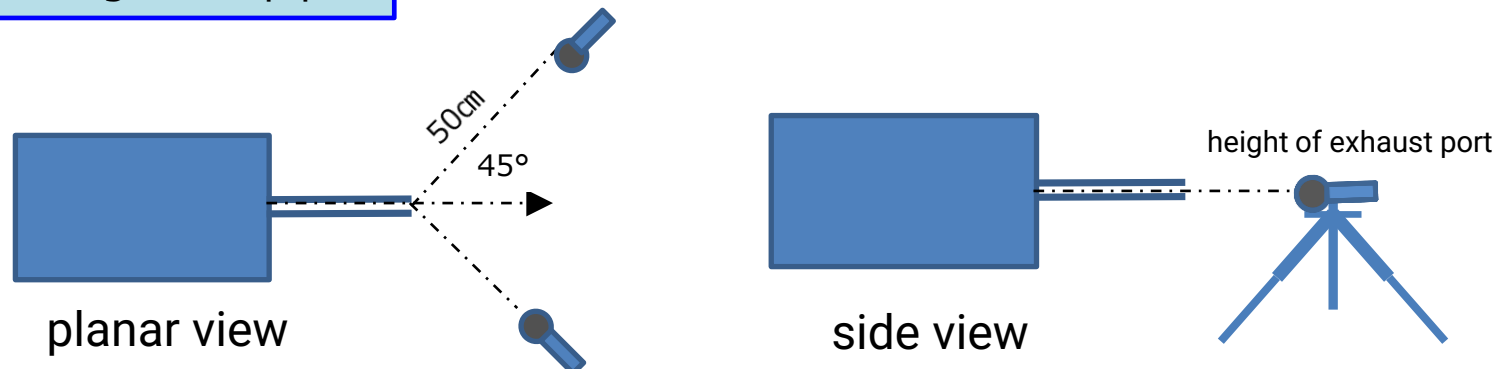
IN.10.1.2 Noise measurement

Measurements are made with a free field microphone placed

- There should be no obstacles
- Measured at the vertical height of the exhaust outlet
- A place 0.5 m away from the end of the exhaust outlet
- Direction of 45 degrees from the horizontal plane of the exhaust outlet

1. Regardless of the angle of the exhaust end face, the center axis is used as the reference, and the horizontal plane of the exhaust outlet is 45 degrees. * See the guide below
2. For upward exits, measure at a position 50 cm above the horizontal plane of the exit. *Possible at any location as there is no horizontal 45 degrees
3. For oblique upper outlets, measure at a position 45 degrees from the horizontal plane of the exhaust outlet.

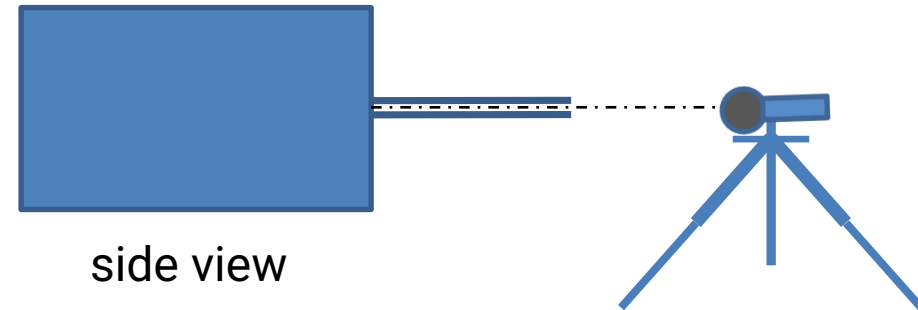
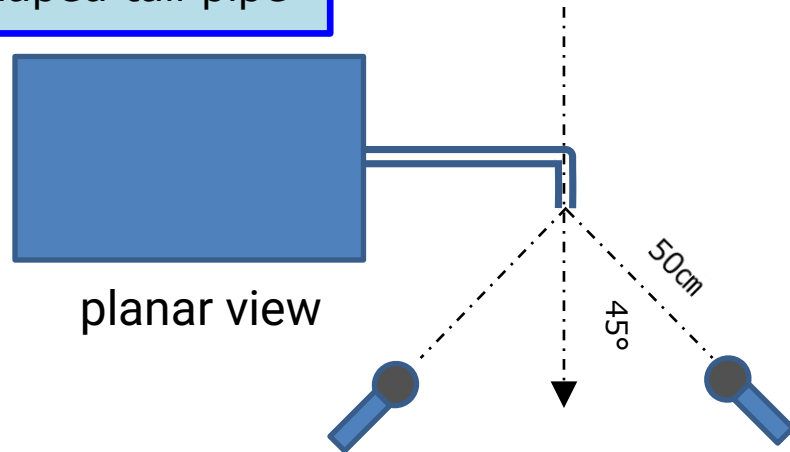
1) Basics: For straight tail pipes



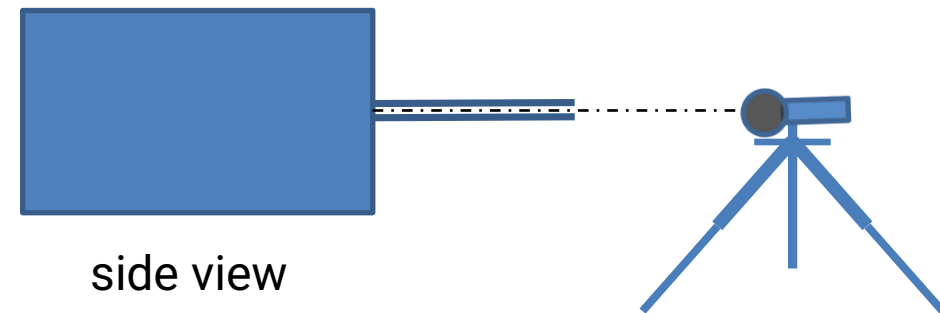
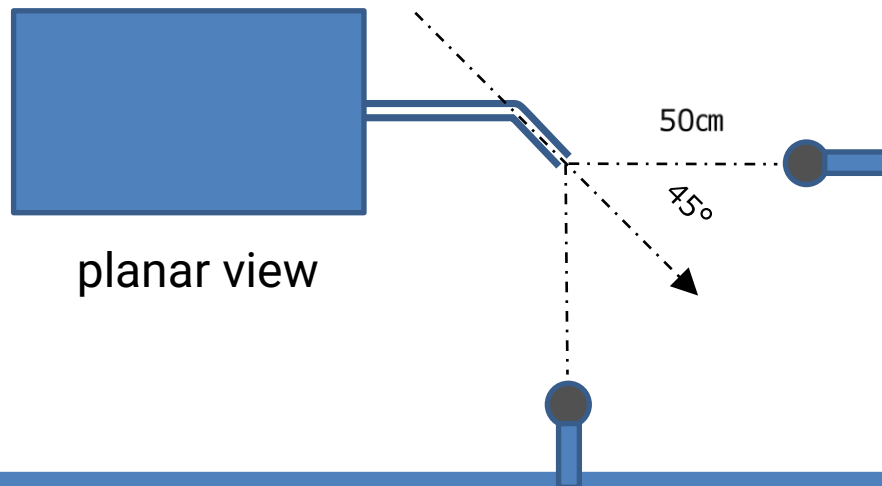
2024 Rule compliant

IN.10.1.2 Noise measurement

2) For L-shaped tail pipe

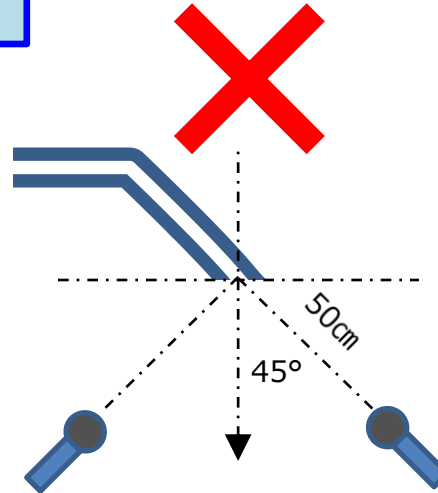
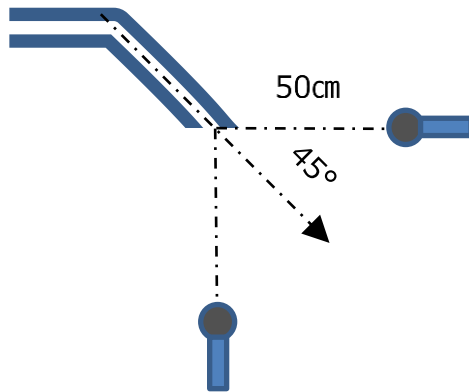


3) For slanted tail pipes

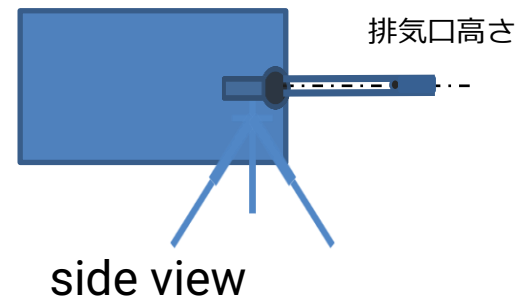
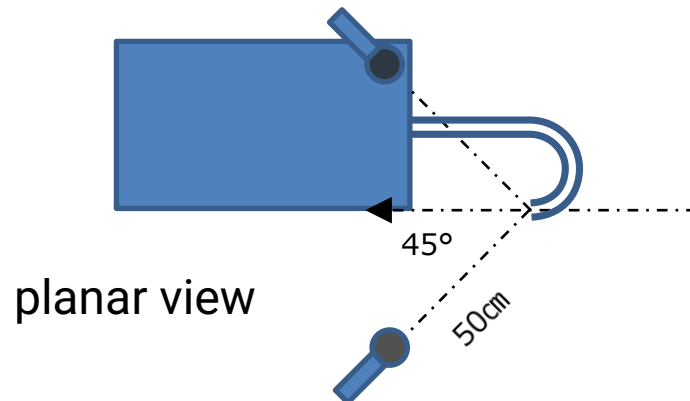


IN.10.1.2 Noise measurement

3') For slanted tail pipes (end face treatment)

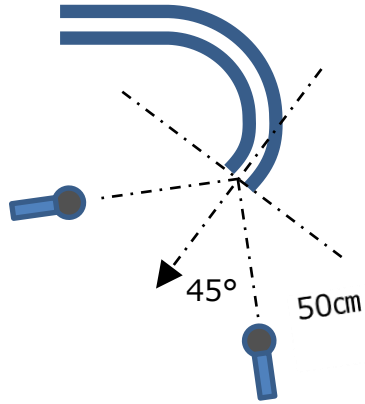


4) For U-shaped tail pipe



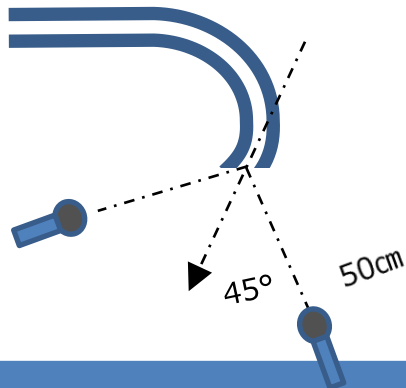
IN.10.1.2 Noise measurement

5) For J-shaped tail pipe

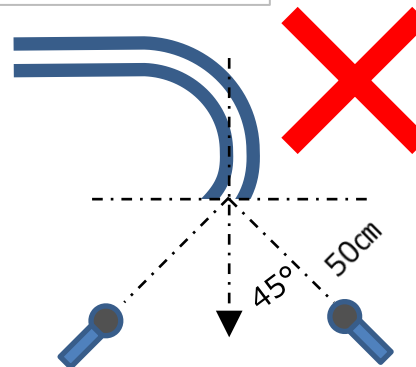


5') For J-shaped tail pipe (end face treatment)

Pipe direction reference

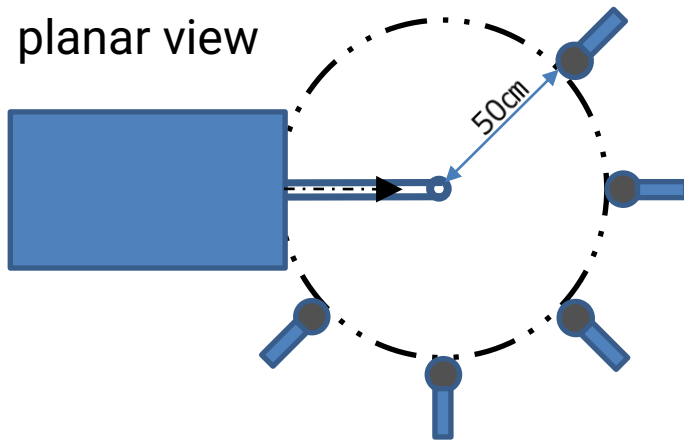


Pipe end face reference

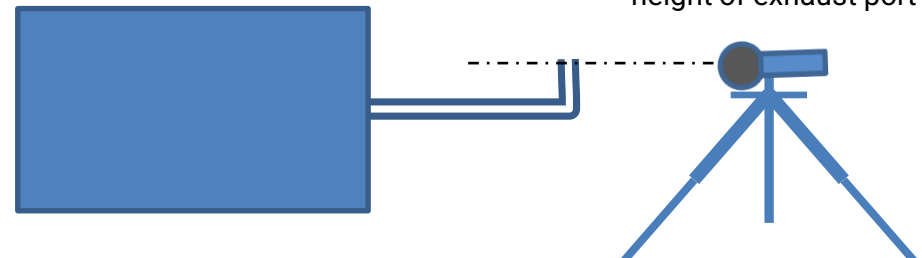


IN.10.1.2 Noise measurement

6) For upward tail pipe

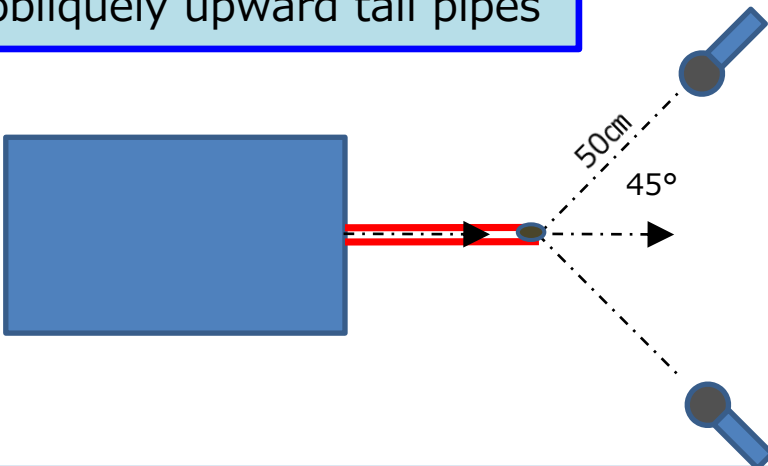


side view

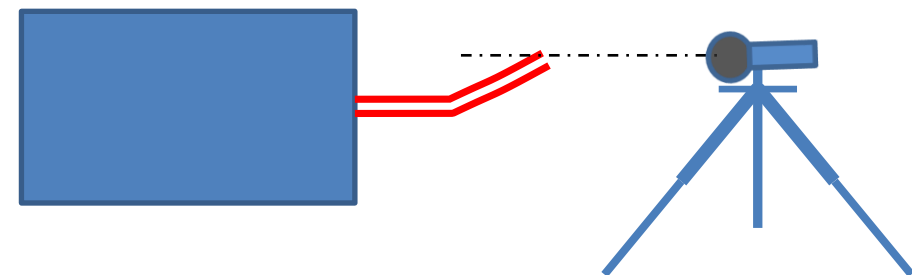


Since the exhaust outlet does not exist in the vertical direction = horizontal direction 45° , only the distance is specified

7) For obliquely upward tail pipes



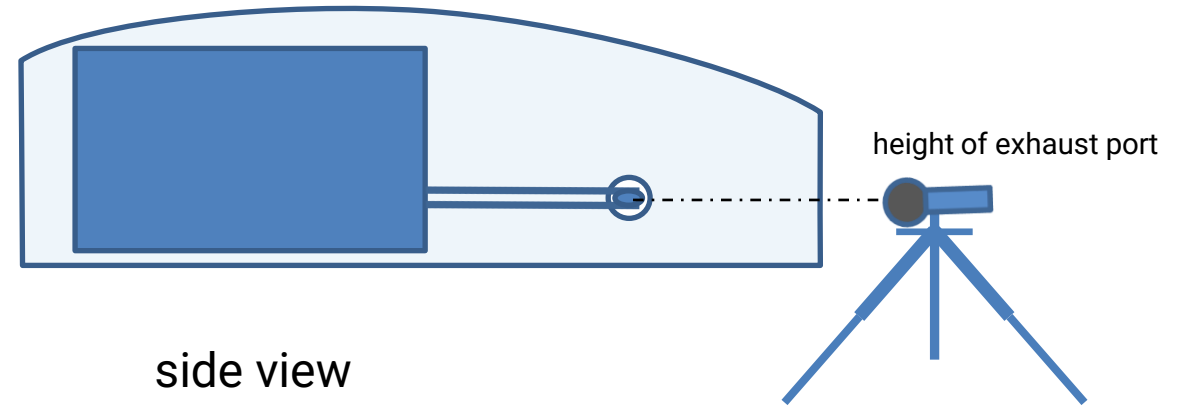
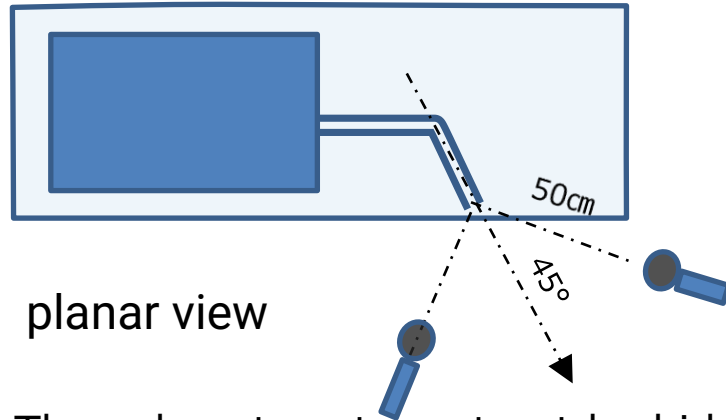
height of exhaust port



2024 Rule compliant

IN.10.1.2 Noise measurement

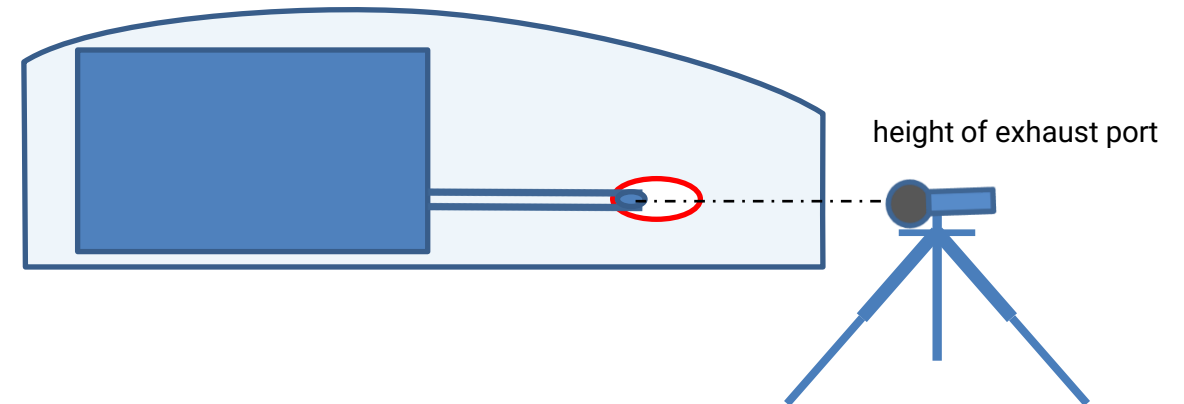
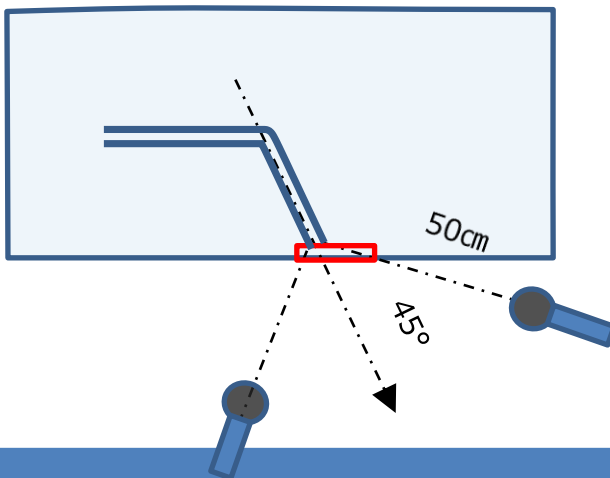
Reference In the case of exhaust inside the cowl



detail

The exhaust port must not be hidden by the cowl. All of the exhaust ports must be visible from the imaginary 45-degree line without being obstructed by the cowl.

* Roughly the range of "red frame" is necessary for cowl opening



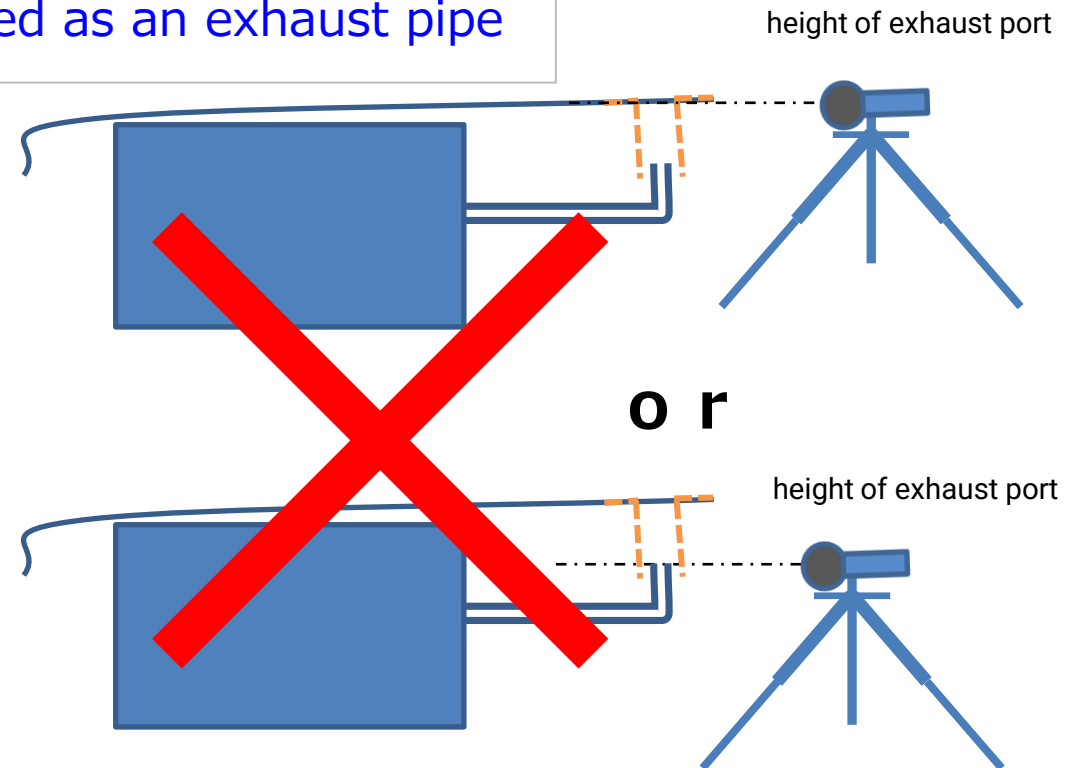
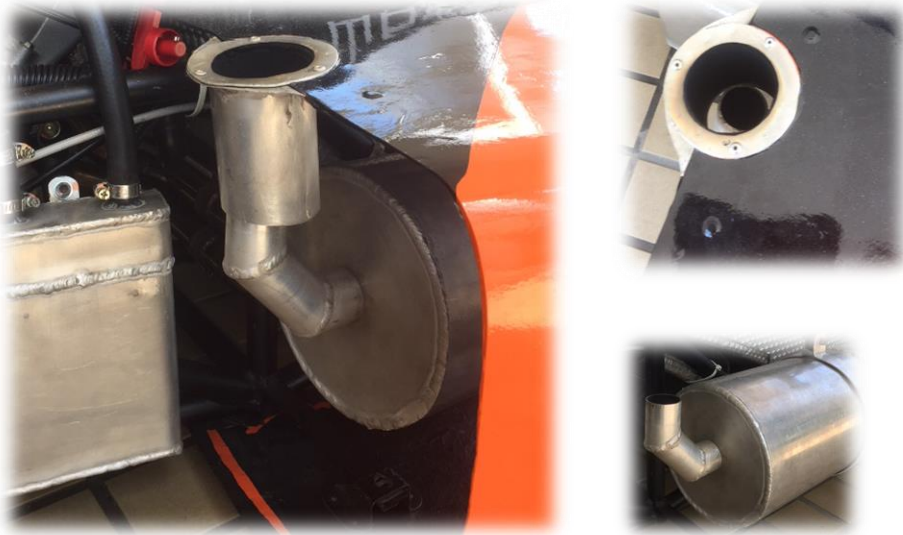
2024 Rule compliant

IN.10.1.2 Noise measurement

Reference In the case of an upward facing tail pipe (cowl extension)

A metal tube is provided on the cowl. A case where the team made a judgment on the "exhaust pipe including the cylinder"

⇒The one manufactured separately is not recognized as an exhaust pipe



Evidence in general

It is meaningless just to have evidence

[The safe operation of the vehicle is the top priority]
[Responsibility for the vehicle that we made]

Require the presentation of evidence for various vehicle inspection items.

Example 1: If the engine body is to be modified, documentary evidence showing the details of the modification (especially lubrication system including oil pan)

Example 2: Evidence materials showing the heat resistance of catch tanks, etc. (You can't say that last year was OK.)

Example 3: Evidence drawings that show whether parts that cannot be visually inspected are structurally safe and meet the rules

Example 4: Evidence document that the battery satisfies the rules

Example 5: In the case of a carbon monocoque body, evidence photos showing the manufacturing process

Example 6: Evidence drawings that can be presented when requested by a vehicle inspector → Indicates the outer diameter and wall thickness of the frame → Materials showing the details of the IA intrusion prevention plate

Example 7: If it is a purchased product, documentation showing specifications + delivery note, etc.

Positive lock OK example

T.8.3 Positive lock fastener

HARD LOCK NUTS FOR BEARING
ベアリング用ハードロックナット/ファインUナット®

CADデータフォルダ名: 14_Bearings_with_Holder

ハードロックナット

Type	標準タイプ	薄型タイプ	材質	H硬度	S 表面処理
HLB	—	—	SS400相当	—	パーカー
HLBM	—	—	—	—	電鍍ニッケルめっき
HLBC	HLBU	—	S45C調質	22~28HRC	パーカー
HLBS	—	—	SUS304	—	—

*第2ナット凸部（ボス）の中心とねじの中心には所定のズレが設けてあります。

① 薄型タイプ（HLBU）は第2ナット（上ナット）より取り付けてください。

ねじ精度 JIS B0211 6H (2級)

OK

Slotted nut



OK

Since you can't see Photos of the production process, etc. to present evidence



OK

ハードロックナット

雄ナット、雌ナット二つ一組で使用

詳細 <http://www.hardlock.co.jp/hl/02.php>

Helicoil



図.1 ヘリコイル全体図

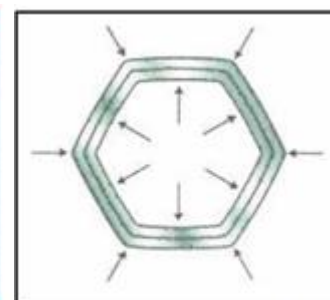


図.2 緩み止め機構

OK

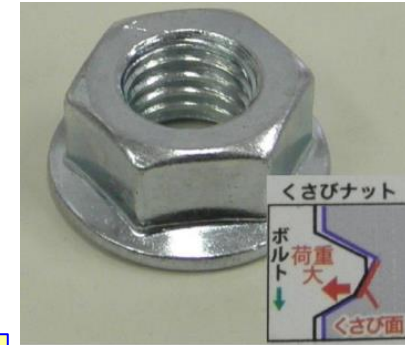
Positive lock OK example



OK

U nut

Things that are difficult to distinguish from the outside to present evidence



OK

Wedge lock nut



OK

Super slit nut



OK

Muscle nut

Judgment against the following requirements for locking fasteners

- Technical inspectors/team members should be able to verify that the device/system is in place.
- Do not rely on clamping force to apply locking or anti-vibration functions. Even if the fastener starts to loosen, the locking device prevents the fastener from loosening completely

[When important parts are OEM products]

If the intake manifold, fuel rail, and brake (caliper) are OEM products, they are allowed to be fastened with the original bolts, etc., and no additional fastening such as wiring is allowed.

→ Present evidence that proves it is an OEM product

→ Torque management of bolts, etc.



Battery precautions

Gel-type batteries are considered "non-dry", wet batteries.



Ordinary batteries should not be placed horizontally.
I will only allow what he can present as evidence that "horizontal placement is OK".

*Even if the battery is a shielded battery, it may leak if it is placed horizontally.

T.9.2.2 Overcurrent protection circuit

Overcurrent protection circuit applies to all batteries.

- (1) Confirm that the fuse is directly under the battery.
- (2) Presentation of maximum allowable current value
- (3) Show the fuse characteristics and ask for an explanation that the trip occurs below the maximum allowable current value.

Lithium Ion Battery

- Isolated from the driver compartment by a firewall (T.1.8.1.a)
- Have a solid and robust flame-retardant case (T.9.2.5)

