

Formula Drift Asia Professional Drifting 2010 Technical Guide



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Formula Drift Asia Pro Championship

2010 Technical Guide

Introduction

Entering its seventh season, **Formula DRIFT** is recognized as the North American professional drifting championship series. As the first official series in North America, Formula DRIFT has taken competitive motorsports to the extreme attracting fans and car enthusiasts from all walks of life. This high-skilled, high-powered motor sport where drivers intentionally maneuver their cars into well executed, controlled sideways slides at high speeds through a marked course, has dozens of professional drivers competing in all seven competitions this year.

The Formula Drift Asia Championship system is an extension to the Formula Drift Pro Championship. The FD Asia system is made up on various regional point series that caters to the team/driver in transition from amateur to professional. These affiliate series will feed the best up-and-coming drivers into the Formula Drift professional ranks.

Driftpac Pte Ltd

12 East Coast Rd
Singapore 428723

www.formuladriftasia.com (web)

Formula Drift Asia Professional Drifting 2010 Technical Guide

1 VEHICLE SYSTEMS

1.1 ELECTRICAL SYSTEM

1.1.1 Master Cut-Off

A Master electrical cut-off switch, wired to completely shut off all engine and electrical system function (except for electrically operated fire suppression systems, if applicable) is mandatory and must be mounted outside the vehicle, on the right side cowl just below the windshield and is to be clearly marked with the appropriate "OFF" markings.

The electrical terminals of the cut-off switch and/or any relays used in the circuit must be sufficiently insulated.

1.1.2 Battery

The battery must be securely mounted and the positive terminal completely insulated to avoid contact with any other metal parts. Batteries may be relocated. If the battery is located in the drivers compartment, it must be in a sealed box bolted to the unibody/chassis with the battery securely fastened inside the box and properly vented and drained.

1.1.3 Lights

All OEM lights and markers must remain in place. Brake lights, tail lights (rain lights), and headlights must function normally.

The use of electrical cut off switches, or any other device that renders the brake lights inoperative in any way, is strictly prohibited.

1.2 EXHAUST SYSTEM

Exhaust system modifications are free, but must exit aft of the rear axle or in the original location.

1.3 BRAKE SYSTEM

The brake system must operate all 4 wheels. Dual master cylinders pedal assemblies are allowed. Hydraulic fluid lines may not have removable connectors located inside the drivers compartment. Driver adjustable brake bias is allowed. The use of secondary brake systems is allowed but must be completely separate from the primary system.

1.4 ENGINE COOLING SYSTEM

Cooling system modifications are free but must be fully closed and free of leaks.

If cooling system lines are routed in the driver's compartment or a trunk area that is open to the driver, they must be separated from the driver by a crushable metal

Formula Drift Asia Pro Championship 2010 Technical Guide

enclosure made up of .036" steel, or .059" aluminum.

The floor of the enclosure must be designed to prevent accumulation of fluids.

Cooling systems shall be filled with water only. "Water wetter" is allowed.

1.5 OIL SYSTEM

Oil storage tanks that are not located in the original position must be surrounded by a 10 mm thick crushable structure. Provided that the oil tank is not located in close proximity to the outer surface of the bodywork, and there is some of the structure of the vehicle between the oil tank and the bodywork, the car's structure will meet the 10mm crushable structure rule.

If the oil tank is located in the cockpit area, or a trunk area that is open to the driver, it must be separated from the driver by a metal enclosure made up of .036" steel, or .059" aluminum. The floor of the enclosure must be designed to prevent accumulation of fluids.

1.6 INTERIOR MODIFICATIONS

- 1.6.1 The interior of the vehicle must be clean and professional in appearance. All non-essential and/or loose items must be removed. Any removable equipment such as spare tires, tools, bins, etc., shall be removed along with attaching hardware, brackets and covers
- 1.6.2 All carpeting and/or sound deadening material must be removed.
- 1.6.3 The modification of gauges is free.
- 1.6.4 The dashboard must be OEM or OEM replacement. OEM replacement must be same dimension and position of OEM dashboard.
- 1.6.5 Supplemental Restrain Systems (SRS) must be removed.
- 1.6.6 Any steering wheel except wood rimmed types may be used. Any shift knob may be used.
- 1.6.7 Interior mirror may be replaced with a multi-plane type mirror, but must not extend beyond the confines of the interior.

Formula Drift Asia Pro Championship
2010 Technical Guide

1.7 EXTERIOR MODIFICATIONS

- 1.7.1 Two (2) hood pins, equally spaced across the front of hood, are required within 24" of the leading edge of the hood. Additional hood pins, i.e. at the back plane of the hood, are also recommended. The original stock latch must be removed.
- 1.7.2 All bodywork must be painted or covered, securely latched and/or fastened and not loose in any manner.
- 1.7.3 Door, quarter and rear window glass must be OEM or clear Lexan with a 3mm minimum thickness and securely bolted in place.
- 1.7.4 Windshields must be installed and OEM glass or OEM replacement material (i.e. Speedglass) and be free of cracks. Non-glass, replacement windshields must be a minimum 3/16" thickness and have supplemental, vertical bracing down the center of the opening, mounted inside the vehicle.
- 1.7.5 Cars must have functioning windshield wipers.
- 1.7.6 Two external, rear-facing mirrors are required, and must be mounted in stock location and must be positioned so that the driver can see objects along both sides of the vehicle.
- 1.7.7 The outside door latch/lock operating mechanism may be removed or modified. If it is not in the original location, the door must be operable from the exterior and the opening mechanism must be clearly visible and/or marked for access by safety personnel.
- 1.7.8 All required FORMULA DRIFT and/or other decals or markings must be present in their specified location. FORMULA DRIFT windshield banners are required. FORMULA DRIFT reserves the right to have any decals, marks, or other items removed or covered at their discretion.

Formula Drift Asia Pro Championship

2010 Technical Guide

2 TIRES

2.1 TIRE ELIGIBILITY

Tires must have a minimum production run of 2,500 tires, tires available in Asia Pacific at regular retail outlets.

Tires must have a minimum tread wear rating of 140 (UTQG).

Entrants must declare their tire manufacturer as a part of the event entry form.

2.2 MODIFICATIONS

2.2.1 Any attempt to modify tires in any manner is prohibited. "Grooving" or "Shaving" of tires is prohibited.

2.2.2 The use of traction compounds or any other substance that may alter the physical properties of the tire are prohibited.

2.2.3 Tire warmers or any other means of artificially altering the tire temperatures is prohibited.

3 COMPETITION VEHICLES

3.1 WINDOW RESTRAINTS

All cars shall have a window net, the clear O.E.M. glass, or a piece of clear Lexan or other polycarbonate material, in place of both front window openings whenever the car is on-track. All open top cars (i.e. convertibles) shall use arm restraints instead of a window or window net. Occupants may choose to use arm restraints in lieu of the required window or window net.

3.2 TOWING APPARATUS

All cars must have a minimum (1) front and (1) rear permanently installed towing apparatus (eye, strap, cable, etc.) with a minimum hole diameter of 50 mm or 2".

Formula Drift Asia Pro Championship

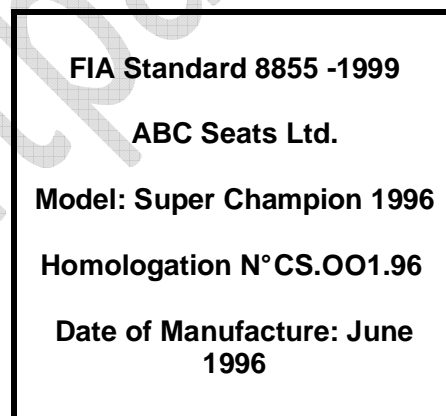
2010 Technical Guide

- 3.2.1 The apparatus shall be strong enough to withstand the weight of the vehicle being pulled from non-racing surfaces such as gravel traps, approximately equal to 5000 lbs.
- 3.2.2 Tow apparatus must be a unique-purpose device. Using other structures i.e; a wing, body panel, or wheel is not allowed. The use of factory "tie down loops" is not permitted.
- 3.2.3 Tow apparatus must be easily accessible if the car is stopped in a gravel bed without removal or manipulation of body panels or other bodywork.
- 3.2.4 Tow apparatus must not protrude more than 1" **beyond the furthest forward or rearward dimension of the bodywork** or otherwise are hinged and/or collapsible in order to create a blunt surface.
- 3.2.5 Tow apparatus must be painted or the strap material woven in a color contrasting the body color.
- 3.2.6 Tow apparatus must be clearly marked with an arrow in a contrasting color to the body color by using paint or by using a decal.

3.3 SEATS

All cars must have a seat for the driver. Seats must be homologated to FIA standard 8855-1999 or SFI 39.2.

Sample FIA seat homologation label:



Note: Letters must be at least 8mm high

The homologation labels must be visible

Formula Drift Asia Pro Championship

2010 Technical Guide

3.4 ROLL CAGES

Roll cages are required.

3.4.1 BASIC DESIGN CONSIDERATIONS

- A. The basic purpose of the roll cage is to protect the occupant if the car turns over, runs into an obstacle, or is struck by another car. It shall be designed to withstand compression forces from the weight of the car coming down on the rollover structure and to take fore/aft and lateral loads resulting from the car skidding along on its rollover structure.
- B. Forward braces and portions of the main hoop subject to contact by the occupant's helmet (as seated normally and restrained by seatbelt/shoulder harness) shall be padded with non-resilient material. Ethafoam® or Ensolite®, or other similar material with a minimum thickness of one-half (1/2) inch and conforming to SFI spec 45.1 is required

3.4.2 General Construction

All roll cages must be based on a single Main Hoop of one (1) continuous length of tubing with smooth continuous bends and no evidence of crimping or wall failure. The radius of bends in the roll cage hoop (measured at centerline of tubing) shall not be less than three (3) times the diameter of the tubing.

Welding shall conform to American Welding Society D1.1:2002, Structural Welding Code, Steel Chapter 10, Tubular Structures. Whenever D1.1 refers to "the Engineer" this shall be interpreted to be the owner of the vehicle. Welds shall be continuous around the entire tubular structure. All welds shall be visually inspected and shall be acceptable if the following conditions are satisfied:

1. The weld shall have no cracks.
2. Thorough fusion shall exist between weld metal and base metal.
3. All craters shall be filled to the cross section of the weld.
4. Undercut shall be no more than 0.01 inch deep.

Aluminum bronze or silicon bronze welding technique is permitted, but extreme care shall be used in preparation of parts before bronze welding and in the design of the attaching joints.

No portion of the cage may permeate the firewall and shall be fully contained within the occupant's compartment.

The main components of the cage must be made of the same material, size and thickness of tubing.

3.4.3 Roll Cage Material

Seamless SAE 1020 or 1025, etc. mild steel tubing (DOM) is the preferred material for Roll Cage construction. Please contact FORMULA DRIFT for

Formula Drift Asia Pro Championship
 2010 Technical Guide

approval if any alloy material will be used. An approved supplier **MUST** construct alloy steel cages. ERW tubing is not permitted.

3.4.4 Tubing Size

Roll Cage tubing must conform to the table below and is determined by the vehicle weight as raced without fuel and driver. The minus tolerance for wall thickness should not be less than .010" below the nominal thickness.

Vehicle Weight	<u>Alloy or DOM</u> O.D. x wall thickness (inches)
Up to 3500 lbs	1.500 x .095

Vehicles weighing over 3500 lbs. must petition FORMULA D for approval of the roll cage prior to entering an EVENT.

3.4.5 Inspection Hole

An inspection hole at least 3/16 inch diameter, but no greater than 1/4 inch diameter, shall be drilled in a non-critical area of all tubes to facilitate verification of wall thickness.

3.4.6 Main Hoop:

The main roll hoop (behind the driver) shall extend the full width of the driver/passenger compartment and shall be as near the roof as possible with a maximum of 4 bends, totaling 180 degrees \pm 10degrees.

The roll cage Main Hoop should start from the floor of the car, and, in the case of tube frame construction, be attached to the chassis tubes by means of gussets or sheet metal webs with support tubes beneath the joints to distribute the loads. It is recommended that gussets be used.

The Main Hoop shall incorporate a diagonal lateral brace to prevent lateral distortion of the hoop. Any number of additional reinforcing bars is permitted within the structure of the cage.

A section of tubing equal to the roll bar shall be installed horizontally from the main hoop to the diagonal brace behind the drivers seat. This tube shall be no higher than shoulder height and continue from the diagonal to the passenger side main hoop upright

3.4.7 Front/Side Hoops:

The front hoops, side hoops, or down tubes shall begin at the floor.

Several configurations are allowed:

Side Hoop Configuration: Side Hoops connect directly from the floor of the occupant's compartment and continue, in one piece, to connect to the Main Hoop. If Side Hoops are used, they are to be connected together by

Formula Drift Asia Pro Championship 2010 Technical Guide

a single horizontal tube across the top of the windshield with a maximum of 4 bends totaling 90 degrees \pm 10 degrees.

Front Hoop Configuration: A front hoop connected to the floor on both sides of the occupant compartment and following the line of the front pillars in one continuous piece may be used. A front hoop must be connected at the top by horizontal bars running back to the main hoop on each side, above the doors with a maximum of 4 bends, totaling 180 degrees \pm 10degrees.

HALO Configuration: A top "halo" hoop following the roof line in one continuous piece from each side of the main hoop along the tops of the doors and windshield. A HALO must be connected to the floor with forward "down tubes" following the line of the front pillars with a maximum of 4 bends, totaling 180 degrees \pm 10degrees and a maximum of 2 bends allowed on the down tubes.

The front, side or down hoops may extend through the dash pad, including the forward part of the door panel if it is an extension of the dash panel.

One (1) "Knee" bar is recommended in a horizontal plane between forward cage braces in the dash area for all configurations.

3.4.8 Rear Hoop Supports:

The main roll hoop shall have two braces extending to the rear attaching to the frame or chassis. Braces shall be attached as near as possible to the top of the main hoop not more than six (6) inches below the top and at an included angle of at least thirty (30) degrees. No bends are allowed on rear braces. On cars where the rear window/bulkhead prohibits the installation of rear braces, the main hoop shall be attached to the body by plates welded to the cage and bolted to the stock shoulder harness mounting points.

3.4.9 BOLT IN ROLL CAGES

Bolt In roll cages are allowed but welded roll cages are preferred.

3.4.10 Supplemental Bracing:

Supplemental bracing is allowed.

3.4.11 Side Protection:

All cars shall have a minimum of two (2) door bars across each front door opening. The door bars may run parallel, or in the shape of an "X". If the two door bars do not intersect as they do when forming an "X", then a minimum of two vertical tube sections shall connect the upper and lower door bars. Teams may also choose to install a second row of double horizontal door bars that run parallel to the inner bars and extend into the outer door skin, these are also known as "NASCAR-STYLE" bars. In this configuration, the outer bars must also have a minimum of two (2) vertical tube sections

Formula Drift Asia Pro Championship 2010 Technical Guide

connecting the upper and lower bars. The inner door panel and door internals may be removed.

3.4.12 Mounting Plates:

3.4.12.1 Each mounting plate shall be at least .080" thick

3.4.12.2 Mounting plates must be fully welded to the structure of the vehicle.

3.4.12.3 Each mounting plate shall not be greater than 100 square inches and shall be no greater than twelve (12) inches or less than two (2) inches on a side. The mounting plate may be multi-angled but must not exceed these dimensions in a flat plane.

3.4.12.4 Whenever possible, mounting plates shall extend onto a vertical section of the structure (such as a rocker box or door pillar).

3.4.12.5 Any number of tubes may attach to a single plate or to each other.

3.5 MOUNTING HARDWARE (BOLTS)

All hardware used in the mounting of seats, or other structural supports shall be SAE Grade 5 or better with a 5/16" minimum diameter.

3.6 FIRE SUPPRESSION SYSTEM

All cars must be fitted with a minimum two (2) lb. fire-extinguishing bottle mounted in the driver's compartment within reach of the driver when he/she is in the normal seated position. The mounting bracket must be a quick-release type, and must be mounted so that it can be removed easily for label inspection and verification of full charge by weighing.

Acceptable extinguishants are Halon 1211, Halon 1301, Underwriters Laboratory 10BC rated Potassium Bicarbonate (Purple K), Underwriters Laboratory 1A10BC Ammonium Phosphate/Barium Sulfate, or Monnex.

Formula Drift Asia Pro Championship

2010 Technical Guide

3.7 ENGINE & TRANSMISSION

3.7.1 Modifications

3.7.1.1 Engine, transmission, ECU and/or final drive modifications are free, but only the rear wheels may propel the vehicle.

3.7.1.2 Engine and radiator catch tanks with a minimum capacity of one (1) quart each are required and securely fastened and sealed in the engine compartment.

3.7.1.3 All fluid systems must be free of leaks.

3.7.1.4 All cars must be equipped with an on-board starter and power supply which must be in working order at all times

3.7.1.5 All vehicles must be equipped with a **functioning** reverse gear.

3.8 CHASSIS & SUSPENSION

3.8.1 Basic Chassis Design

The vehicle chassis, frame and/or unibody must remain unmodified between the vertical planes created by the original forward most and rearward-most suspension mounting points.

Uni-body or chassis may be seam welded.

3.8.2 Suspension Design

The basic OEM suspension design type may be freely modified. The original suspension mounting "pick-up points" must remain in the stock, unmodified location.

3.8.3 Modifications of the stock, OEM firewall and transmission tunnel are not allowed. Any holes in the firewall must be of the minimum size for the passage of controls and wires, and must be completely sealed to prevent the passage of fluids or flames from the engine compartment to the cockpit.

3.8.4 Front cross member and/or front or rear sub-frame

Front and rear sub-frames and cross members may be replaced using same-make, OEM brand family equipment only and must remain unmodified. Modifications, cutting, welding, strengthening, etc is not allowed.

3.8.5 Modified or aftermarket suspension parts

Modified or aftermarket suspension parts, including hubs, are allowed.

3.8.6 Wheel Tethers

Wheel tethers are strongly recommended on the front and rear wheels.

Formula Drift Asia Pro Championship

2010 Technical Guide

3.8.7 Steering

Modifications of steering components (steering rack, tie rods, etc) are free.

3.9 FUEL SYSTEM

3.9.1 Fuel Cells

The fuel system design is free. Fuel cells are recommended.

Fuel tank/cell must be separated from the driver's cockpit by a permanently mounted steel or aluminum bulkhead.

Any fuel cell must have a flapper valve installed to prevent spillage in the event of a roll over.

3.9.2 Fuel Lines

Fuel lines and fittings must be high-pressure type and routed in such a way that do not interfere with moving parts and be securely insulated and attached to the unibody or chassis. No fuel lines may be routed through the driver's compartment.

Formula Drift Asia Pro Championship 2010 Technical Guide

3.10 VEHICLE ELIGIBILITY

3.10.1 Determination

3.10.1.1 Only rear wheel drivers vehicles are eligible and must have a valid manufacturer VIN number or equivalent.

3.10.2 Body Work

3.10.2.1 Cars must maintain the OEM look and feel and be clean, free of damage and presentable for competition.

3.10.2.2 Aftermarket body panels, front and/or rear fascias, side skirts and wings, etc are permitted; body work that is not designed as O.E.M. or an O.E.M. replacement of the original make and model of the vehicle must be approved by FORMULA DRIFT TECHNICAL MANAGER.

3.10.2.3 No vertical aerodynamic elements may be added other than, 2 (two) wing standoffs and 2 (two) wing end plates. The size of each of these may not exceed 12x16 inches in size per unit (**dimension, not surface area**). The installation of these devices may not obstruct the view, from any angle, or operation any of safety device, signaling light, indicator, or other equipment.

3.11 ENGINE & TRANSMISSION

3.11.1 Modifications

3.11.1.1 Engine, transmission, ECU and/or final drive modifications are free, but only the rear wheels may propel the vehicle.

3.11.1.2 Engine and radiator catch tanks with a minimum capacity of one (1) quart each are required and securely fastened and sealed in the engine compartment.

3.11.1.3 All fluid systems must be free of leaks.

3.11.1.4 All cars must be equipped with an on-board starter and power supply which must be in working order at all times

3.11.1.5 All vehicles must be equipped with a **functioning** reverse gear.

3.11.2 Traction Control

Traction control and other non-specified “driver aids” are not allowed. Wheel speed sensors must be removed.

Formula Drift Asia Pro Championship

2010 Technical Guide

3.12 CHASSIS & SUSPENSION

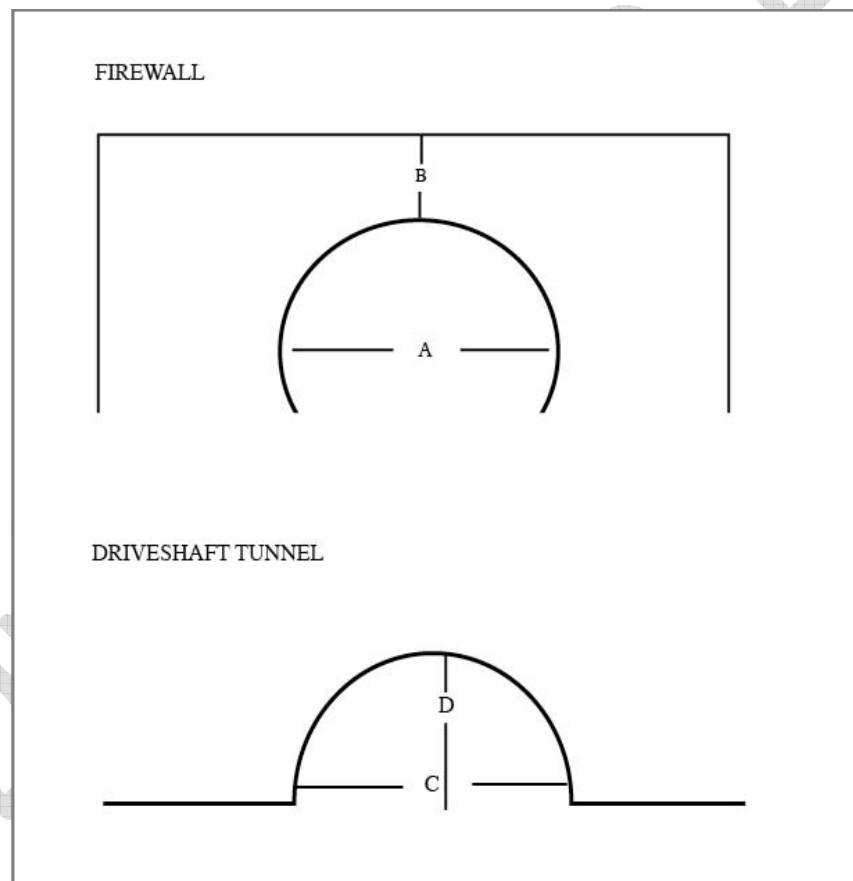
3.12.1 Basic Chassis Design

The vehicle chassis, frame and / or unibody must remain unmodified between the vertical planes created by the original forward most and rearward most suspension mounting points unless otherwise specified in these rules. Uni-body or chassis may be seam welded.

3.12.2 Suspension Design

The basic OEM suspension design type may be freely modified. The original suspension mounting “pick-up points” must remain in the stock, unmodified location.

3.12.3 Modifications of the stock, OEM firewall and transmission tunnel are allowed as follows:



- **Dimension A: Tunnel Width May be no wider than 18 Inches**
- **Dimension B: Minimum dimension of 10 inches between the bottom of the windshield and the top of the transmission tunnel.**

Formula Drift Asia Pro Championship 2010 Technical Guide

- **Dimension C: Modifications of the driveshaft tunnels behind the transmission tunnel taper vertical plane should not exceed an overall width of 10 inches.**
- **Dimension D: Modifications to driveshaft tunnels behind the transmission tunnel taper vertical plane should not exceed an overall width of 10 inches.**
- **Taper Length: (from the firewall to the end of the transmission tunnel into the beginning of the driveshaft hump) may be no longer than 36 inches.**
- **No part of the engine casing may cross the vertical plane of the original firewall into the transmission tunnel.**
- **No other modifications may be made to the vehicle chassis, frame, or uni-body unless otherwise specified in these rules.**
- **Any holes in the firewall must be of the minimum size for the passage of controls and wires, and must be completely sealed to prevent the passage of fluids or flames from the engine compartment to the cockpit.**

3.12.4 Front cross member and/or front or rear sub-frame

Front and rear sub-frames and cross members must be stock and available on the exact model that is competing in Formula Drift. The subframe must also be mounted in the exact stock location, without being moved in any plane.

Front subframes may only be modified to directly allow for oilpan / starter clearance and steering rack relocation. The front subframe must retain intact on at least one major member on one face that spans the entire width of the subframe, thereby keeping the original dimensions of the subframe intact. Any other modifications, cutting, welding, strengthening, etc is not allowed.

Rear subframes may only be modified to allow for mounting or relocating a differential. The rear subframe must retain at least one major member that spans the entire width of the subframe, thereby keeping the original dimensions of the subframe intact. Any other modifications, cutting, welding, strengthening, etc is not allowed.

3.12.5 Modified or aftermarket suspension parts

Modified or aftermarket suspension parts, including hubs, are allowed.

3.12.6 Steering

Modifications of steering components (steering rack, tie rods, etc) are free. This includes mounting the steering rack to the front subframe.

END