

Competition Regulations Formula Offroad 2009

1. Competition description

Formula Offroad is a form of racing where four wheel drive vehicles compete in precision driving through steep hills and extreme terrain. All drivers must have a current driving license and a motor sports license. The vehicle must be licensed to current regulations.

Starting numbers are given out by the race organizer and should be with 20 cm tall numbers.

2. Classes

Vehicles are divided into two classes MODIFIED and UNLIMITED.

One or two drivers may compete with the same vehicle in the same race.

If there are two drivers, they may compete in separate classes if the vehicle is approved for both classes.

One driver may only compete in one class with the same vehicle.

A driver is not allowed to change vehicles during a race.

3. Race organizer committee

The committee must consist of at least three persons

The members of the committee are not allowed to compete in the race.

The committee is responsible to decide any additional rules for the competition, which must be supplied to the drivers minimum one week before the race.

4. Officials

The jury must consist of three licensed judges including the jury leader supplied by the country's motor sports organization. The head race official and the technical scrutinizers must be licensed and are not allowed to compete in the race.

In addition there must be a minimum of officials: race secretary, safety official, starter, timing official, head pit official and points judges. These officials do not need to be licensed, but must know their respective roles well.

5. Documents

- Organizing approval from the Motor Sports organization with the necessary insurances.
- Approval from the owner of the race area.
- Approval from the Police (or other authority)

The secretary shall keep these documents and give them to the jury leader.

6. Tracks

The number of tracks must be minimum six. Each track should be between 30 and 700 meters. Minimum width of the track is 4 meters.

The tracks must be clearly marked with gate markers – white on the left side for the Unlimited class and yellow for the Modified class. Right side markers are red or black for both classes. The gate markers must be placed such that they do not pose any risk for the drivers, officials or the audience. If the tracks are close together, the active gates must be marked in addition.

Each track should be divided into 5 points zones: 100, 200, 250, 300, 350.

The 350 point marker should be placed in such a way that it merely identifies a clean drive-away from the completed track.

The judges may give any points in the first three zones down to 10 points. The last three zones is not divided up. (I.E. you get 250, 300 OR 350 points – not 320 for example)

A photo or drawing of the tracks with markings **must** be given all drivers at the drivers meeting. **This photo must also include point markers (lines) and absolute outer markers for the course.**

7. Safety regulations

An ambulance with a medical crew must be present at all times.

Officials with minimum 6kg powder fire extinguishers must be present at the start and finish gates. A CO2 extinguisher should also be present at the starting gate.

Two manned rescue vehicles with winch and/or lifting equipment must be present at the race. Hydraulic cutting equipment, crowbar and a knife for cutting the safety belts must be in a manned mobile unit by the track.

Necessary restrictions must be put up to protect the audience from harm.

8. Pit

There must be two fire extinguishers – minimum 6kg powder – easily available.

Maximum speed limit in the pit is 5 km/hr.

Outside the pit there should be a test area available. The test area must be at least 25 meters long and driving is only allowed in one direction. The area must be available to the drivers throughout the competition.

9. Technical Inspection

All vehicles must be approved by technical inspection before any testing or racing.

Driver / mechanic must be present. A brake test must be passed.

Technical scrutiner decides the class of the vehicle.

10. Drivers meeting

A drivers meeting must be held minimum 30 minutes before the start of the race.

Drivers not attending the drivers meeting may be banned from the competition.

11. The Race

No passengers are allowed in the competing vehicles.

11.1 Start

The starting sequence is drawn by the organizer. If two drivers compete with the same vehicle, they should be placed such that half of the starting field separates them.

For each track, the starting drivers are moved to the back for the next track. The number of drivers moved for each track should be equal to the total number of drivers divided by the number of tracks.

The driver must be at the starting gate within one minute after the starter signals. **If the driver does not appear within this time the track closes for this driver.** The track closes for the driver if he does not start after one minute of the starter giving the signal to drive.

Any driver dropping out of the race must inform the secretary immediately.

11.2 Qualifying

If there are more than 12 drivers in one class, the organizer may run qualifying tracks.

11.3 Flags

There should be a total of three different flags used: red, green and starting flag.

Red flag is used when the track is closed and for signalling the driver of danger or disqualifying of the track.

Green flag is used to signal that the track is ready and should be lowered as soon as the driver enters the track.

Starting flag (national flag) is used to start the vehicle. This flag may be substituted by a light signal.

12. Judging

For a correctly driven track a driver is awarded 350 points. A point zone is considered complete when the centre of the rear wheels has passed the points marking. All gates must be passed in the right direction and sequence. **Passing of a gate can only be done once – you must always have at least one wheel on the far side of a gate already passed – if not, the point counting is aborted at that time.** In some instances there may be an absolute outer marker in the track symbolizing a line which the driver can not touch. **These should be used by the track master to prohibit driving in areas not intended for the course and must be placed at least one meter outside a regular marker.**

Penalties are given for the following:

- Stops in the track and continues 10 points
- Touches a gate marker with one wheel 20 points
- Touches a gate marker with two wheels 40 points
- Touches a gate marker with three wheels 60 points
- Drives with only one wheel within/on the gate marking 100 points
- Reverses within the track (penalized only when attempting to continue) 40 points
- Destroys the track unnecessary 50 points

The judges stop giving points when the driver:

- Starts before the sign is given
- Rolls over
- Passes a gate incorrect
- **Goes back past a gate already passed correctly**
- Gets stuck or stops for more than one minute
- Touches the line of the outer marker
- Takes helmet or safety belts off
- Signals the officials that he gives up

Points deduction for the 300 and 350 gates are 50% or regular deduction.

If a gate is not passed to award points, there should be no points deduction.

Minimum points for any track is 0.

Time track

The time track should be passable for all drivers. The time is taken from the point where the vehicle passes the starting line to the time it passes the finishing line.

(Flying start)

Electronic timing equipment is preferred. If manual timing is used, there must be three stopwatches and the meantime between the three will be used.

The fastest driver is awarded 350 points. The other drivers is deducted 1 point for every 1/10th of a second slower than this time.

Maximum time for the track is three minutes. Minimum points awarded for completed track is 150.

The track is divided into four zones. Any driver not completing the full course is awarded 25 points for each zone entered. If the maximum time is exceeded, the timing stops and the driver is awarded points according to these zones.

All gates must be passed in the right order and direction. Touching the markers is penalized by 10 points. Minimum one wheel must touch or be within the gate.

Backing up and turning around is allowed without penalty.

The race's additional rules may include restrictions in addition to these rules.

The winner of the race is the driver that has the highest number of points at the end of the race.

Results must be posted available to all drivers after each track throughout the competition.

13. Decisions when equal point count occurs

If any of the three top results have the same point count, the result is awarded according to which driver has the highest point count in the most tracks. If this is still not decides the result, these drivers must drive one track over again.

14. Protest

The time limit for protesting is 30 minutes after the result is posted.

Protesting against wrong classification of a vehicle must be minimum 30 minutes before starting the first track.

15. Drivers personal security equipment

- Driving suit approved by FIA or SFI
- Fire proof drivers hood
- Fire proof gloves
- Fire proof shoes
- Full face helmet approved by **FIA 8860-2004, Snell SA 2000, Snell SA2005, SFI 31.1A, SFI 31.2A or BS6658-85 type A/FR certified** for automotive racing use. (date markings not applicable). Through-and-back type lock on the chin strap highly recommended.
Attention: Organizer can allow other helmets according to local ASN regulations.
- Splinter safe goggles or visir
- Full circle neck brace. Thickness of brace must correspond to the distance between helmet and shoulders to give adequate support and minimal movement of the head.

Technical regulations Formula Offroad 2009

MODIFIED CLASS

APPROVED VEHICLES

All vehicles must have two axles and four wheel drive.

All vehicles must have a bodyshape that resembles a mass produced vehicle.

All vehicles licensed after 01.01.2006 must have two seats installed side by side.

After 01.01.2010 ALL vehicles competing in the Modified class must have two seats installed side by side.

1. Chassis

Frame and chassis structure.

The main frame structure must be constructed of: **(applies only to vehicles licensed after 01.01.2006)**

- Original frame from a mass produced 4x4 vehicle,
or
- Seamless steel tubing of minimum size 45x2,5mm or 50x2mm (350 N/mm²),
or
- **Rectangular** tubing of minimum size 40x60x3mm (350 N/mm²)
- **Square tubing of minimum size 45x45x3mm (350 N/mm²)**

Aluminum, **Stainless steel** or Chromemoly steel is not allowed.

2. Wheels and suspension

Tires

Only paddle tires type "Multipaddle" or "Padla Trak" are allowed.

All types of tires approved for street use is allowed. It is not allowed to custom groove resurfaced tires.

Snow chains or any kind of attachments to improve traction is not allowed.

Wheels

Free of choice.

Suspension

Free of choice.

Active, adjustable suspension is not allowed in competition.

For vehicles licensed after 01.01.06 properly mounted bumpstops/Airshox of gas charged hydraulic design is mandatory.

This is also *highly* recommended for older vehicles.

All vehicles must have this installed after 01.01.2010

Shock absorbers

Free of choice

3. Drivetrain

Engine

Free of choice.

Supercharger(s), Turbocharger(s) and Nitrous Oxide are allowed.

For roots type superchargers a shield made of 1,5mm steel or 2,5mm aluminium must cover the drive belt. The shield must be securely mounted to the engine or chassis. Any fuel, nitrous or oil hoses nearby the drive belt must be enclosed in steel pipe or be of a steel reinforced type. SFI approved limiting straps must be installed in case of a supercharger blowing off the manifold. All fuel hoses must be long enough as to not break in such a case.

Harmonic balancer (if so equipped) and flexplate/flywheel must be of racing type. Dual, correctly working return springs must be installed on the carburettor/throttle body.

Fuel system

Fuel tank must be designed for racing and securely fastened. It must not be installed in the driver compartment. There must be a wall to prevent fuel leaking into the driver compartment in case of a rollover. The fuel cap must be leak proof and a check valve must be installed in the vent hose.

All fuel lines must be one-piece and securely fastened. Any fuel lines passing through the driver compartment must pass through a steel tube of 1mm thickness with a diameter of 2 times the diameter for the fuel line.

Diesel, Bio Diesel, E85, Gasoline and Racing gasoline is allowed.

Lead substitute and Octane booster is allowed. All other fuel additives are banned.

Water injection is allowed. Propane (LPG) injection is not allowed.

Nitrous oxide is allowed if installed according to appendix A.

Methanol fuel is not allowed.

Cooling system

Radiator and overflow tank is not allowed the driver compartment. All hoses must be undamaged and of high quality.

Any hoses or tubes passing through the driver compartment must be covered and without splices.

Exhaust system

Free of choice. Noise level can not exceed 110dB according to FIA measurement rules.

Electrical system

Battery must be of dry cell design and securely mounted with upper and lower brackets. The positive battery post must be securely covered with a non conductive material.

All cables must be securely fastened.

An electrical master switch must be installed in reach of the driver when sitting with the seatbelts tightened. A second switch or a wire actuating the primary switch must be installed in the rear of the vehicle. The rear switch or release handle must be clearly marked with a blue triangle and a red lightning inside the triangle.

Transmission and drive shafts

Free of choice. Automatic transmissions must have a properly working neutral safety switch and a flexplate/transmission shield made from 6mm thick steel plate or SFI approved.

Transmissions with a SFI approved bellhousing do not need these shields.

Vehicles with manual transmissions must have the starting current wired through a switch mounted on the brake pedal or clutch pedal in such a way that the vehicle will only start with the pedal fully depressed.

Front and rear driveshafts must have a safety loop made of 5x50mm steel or 21x1,5mm steel tube bolted to the chassis or transfer case with minimum two grade 8.8 M10 bolts. The safety loops must be on the transfer case end of the drive shafts.

4. Brake system

Regular brakes

Free of choice, but must be operated by foot, positively work on all four wheels and capable of locking up all four wheels simultaneously.

Driveshaft mounted brakes are not allowed.

Parking brake

Properly working handbrake and/or park function in transmission must be installed.

Brake lines

All brake lines must be undamaged and securely fastened.

Steering brake

No form of steering brake system is allowed.

5. Steering system

Steering parts

The vehicle must be controlled by a conventional steering wheel mounted in front of the driver. Hydraulic steering and all types of conventional steering from vehicle manufacturer are allowed. All steering components must be well dimensioned for safe control of the vehicle at all times. All hydraulic hoses except for the drain hose must have pressed-on ends, be free of any damages and have sufficient length to allow full movement of the suspension.

All steering hoses must be protected from potential damage caused by engine or suspension components. All hoses connected to the orbitrol must be shielded from the driver.

Minimum diameter of the steering rod in hydraulic cylinder is 22mm.

Four wheel or mid-chassis steering is not allowed.

6. Body

Bodyparts

The bodyshape must resemble a mass produced vehicle. The length of the body must cover the wheelbase of the vehicle. Hood, side body panels, front and rear fenders must be installed and resemble the original vehicle.

Engine air intake protruding through the body must be designed to protect the driver from direct blowback from the carburettor/throttle body.

Any windows must be made of laminated glass or polycarbonate/lexan.

Driver compartment

Walls separating the driver's compartment from the engine, oil coolers and radiator must be installed. The purpose is to prohibit fluids and/or flames spreading.

If the engine air intake is in the driver's compartment it must be baffled to protect the driver from any blowbacks.

Armstraps or window nets with maximum 50mm web size and minimum 2mm thread size must be used if the distance from the center of drivers seat to the outer edge of the rollcage is less than 50cm. If this distance is less than 40cm window nets must be used.

The distance from the top of the driver's helmet to the top of the rollcage must be at least 10cm.

Armstraps must be attached below the elbow of the driver and must be released simultaneously with the seatbelt.

Floor

Floor of the vehicle must be made of 1mm steel or 2mm aluminium and completely cover the whole floor. If the front driveshaft passes under the driver seat, the material in this area must be at least 2mm steel or 3mm aluminium.

Drivers seat

Seat must be of racing type and have holes for a 5 point seat belt.

Seat must be securely fastened and the back of the seat must rest against the rollcage or braced in a similar way. If the seat is mounted on a sliding bracket, there must be an extra safety pin installed to prevent sliding of the seat.

The back of the seat must be high enough to cover 2/3 of the drivers helmet.

Side supports for helmet must be installed on the seat or in the chassis behind the seat.

This must be fabricated of minimum 3mm thick aluminium or 3mm thick steel plate.

Must be minimum 10 cm wide and extend forward at least 20cm from the back of the seat at no less than 75 degrees and insulated such to not damage the helmet during normal use. Distance from side of helmet to support must be no more than 10 cm.

Side supports must be installed by welding or bolted with minimum 2 x M8 bolts on each side.

A seat manufactured and approved by FIA/SFI with helmet supports may be used instead.

Rollcage

6-point rollcage according to appendix B mounted directly to the frame must be installed.

Seatbelts

Only 3" wide FIA/SFI approved seat belt with 5 or more fasteners is approved.

Seatbelts with latch style locks are highly recommended.

Seat belt must be undamaged and must be within approved date markings.

Shoulder straps must be installed in line with the drivers shoulder or lower such that the angle between the back of the seat and shoulder straps is between 45 and 90 degrees. If the seat belt is installed using bolts the bolts must be minimum M10 bolts with of at least 8.8 grade. If the bolts are installed in the bodywork, the area must be reinforced with a 2mm steel plate of at least 20cm².

Drilling in the rollcage for mounting seatbelts is not allowed.

7. Miscellaneous

Lights

Any external lighting made of glass must be taped over during competition.

Gauges and switches

Free of choice

Towing hooks

Front and rear towing hooks or eyes with at least 35mm diameter hole must be in the front and rear of the vehicle.

There must also be a lifting point on the top of the vehicle for lifting – preferably in the balance point of the car. (May be through a suitable point in the rollcage).

Towing and lifting points must be marked in bright color to stand out.

Communication

Communication between driver and a person outside the vehicle is not allowed while the vehicle is in a track.

Weight

Minimum weight without driver is 600kg. Any extra weight must be securely fastened.

Extra equipment

Any extra equipment (fire extinguishers, flags, aerodynamic wings, etc.) must be securely fastened and must not pose as a potential hazard to the driver or spectators/officials.

Ventilation

All vent hoses from fuel tank, transmission, hydraulic system, transfer case, engine and axles must be routed in such a way that it will not leak in case of a rollover – or connected to a catch tank.

Technical regulations Formula Offroad 2009

UNLIMITED CLASS

APPROVED VEHICLES

All vehicles must have two axles and four wheel drive.

Overall design of vehicle is free of choice within the following regulations.

1. Chassis

Frame and chassis structure.

The main frame structure must be constructed of: (**applies only to vehicles licensed after 01.01.2006**)

- Original frame from a mass produced 4x4 vehicle,
or
- Seamless steel tubing of minimum size 45x2,5mm or 50x2mm (350 N/mm²),
or
- **Rectangular** tubing of minimum size 40x60x3mm (350 N/mm²)
- **Square tubing of minimum size 45x45x3mm (350 N/mm²)**

Aluminum, **Stainless steel** or Chromemoly steel is not allowed.

2. Wheels and suspension

Tires

Free of choice. Tires must be made of rubber and inflated with air.

Snow chains or any kind of attachments to improve traction is not allowed.

Wheels

Free of choice.

Suspension

Free of choice.

Active, adjustable suspension is not allowed in competition.

For vehicles licensed after 01.01.06 properly mounted bumpstops/Airshox of gas charged hydraulic design is mandatory.

This is also highly recommended for older vehicles.

All vehicles must have this installed after 01.01.10

Shock absorbers

Free of choice

3. Drivetrain

Engine

Free of choice.

Supercharger(s), Turbocharger(s) and Nitrous Oxide is allowed.

For roots type superchargers a shield made of 1,5mm steel or 2,5mm aluminium must cover the drive belt. The shield must be securely mounted to the engine or chassis.

Any fuel, nitrous or oil hoses nearby the drive belt must be enclosed in steel pipe or be of a steel reinforced type. SFI approved limiting straps must be installed in case of a

supercharger blowing off the manifold. All fuel hoses must be long enough as to not break in such a case.

Harmonic balancer (if so equipped) and flexplate/flywheel must be of racing type. Dual, correctly working return springs must be installed on the carburettor/throttle body.

Fuel system

Fuel tank must be designed for racing and securely fastened. It must not be installed in the driver compartment. There must be a wall to prevent fuel leaking into the driver compartment in case of a rollover. The fuel cap must be leak proof and a check valve must be installed in the vent hose.

All fuel lines must be one-piece and securely fastened. Any fuel lines passing through the driver compartment must pass through a steel tube of 1mm thickness with a diameter of 2 times the diameter for the fuel line.

Diesel, Bio Diesel, E85, Gasoline and Racing gasoline is allowed.

Lead substitute and Octane booster is allowed. All other fuel additives are banned.

Water injection is allowed. Propane (LPG) injection is not allowed.

Nitrous oxide is allowed if installed according to appendix A.

Methanol fuel is allowed if the vehicle is clearly marked front and rear with "METHANOL FUELED" in a yellow square 15x30cm and has a FIA approved fire extinguishing system installed in the vehicle with at least 3 nozzles towards the engine and 2 nozzles in the driver compartment.

Cooling system

Radiator and overflow tank is not allowed the driver compartment. All hoses must be undamaged and of high quality.

Any hoses or tubes passing through the driver compartment must be covered and without splices.

Exhaust system

Free of choice. Noise level can not exceed 110dB according to FIA measurement rules.

Electrical system

Battery must be of dry cell design and securely mounted with upper and lower brackets. The positive battery post must be securely covered with a non conductive material.

All cables must be securely fastened.

An electrical master switch must be installed in reach of the driver when sitting with the seatbelts tightened. A second switch or a wire actuating the primary switch must be installed in the rear of the vehicle. The rear switch or release handle must be clearly marked with a blue triangle and a red lightning inside the triangle.

Transmission and drive shafts

Free of choice. Automatic transmissions must have a properly working neutral safety switch and a flexplate/transmission shield made from 6mm thick steel plate or be SFI approved.

Transmissions with a SFI approved bellhousing do not need these shields.

Vehicles with manual transmissions must have the starting current wired through a switch mounted on the brake pedal or clutch pedal in such a way that the vehicle will only start with the pedal fully depressed.

Front and rear driveshafts must have a safety loop made of 5x50mm steel or 21x1,5 steel tube bolted to the chassis or transfer case with minimum two grade 8.8 M10 bolts. The safety loops must be on the transfer case end of the drive shafts.

4. Brake system

Regular brakes

Free of choice, but must be operated by foot, positively work on all four wheels and capable of locking up all four wheels simultaneously.

Driveshaft mounted brakes are not allowed.

Parking brake

Properly working handbrake and/or park function in transmission must be installed.

Brake lines

All brake lines must be undamaged and securely fastened.

Steering brake

No form of steering brake system is allowed.

5. Steering system

Steering parts

The vehicle must be controlled by a conventional steering wheel mounted in front of the driver. Hydraulic steering and all types of conventional steering from vehicle manufacturer are allowed. All steering components must be well dimensioned for safe control of the vehicle at all times. All hydraulic hoses except for the drain hose must have pressed-on ends, be free of any damages and have sufficient length to allow full movement of the suspension.

All steering hoses must be protected from potential damage caused by engine or suspension components. All hoses connected to the orbitrol must be shielded from the driver.

Minimum diameter of the steering rod in hydraulic cylinder is 22mm.

If rear wheel steering is installed, this must be operated by separate controls and must be self aligning.

Mid chassis steering is not allowed.

6. Body

Bodyparts

The length of the body must cover the wheelbase of the vehicle. Hood and side body panels must be installed.

Engine air intake protruding through the body must be designed to protect the driver from direct blowback from the carburettor/throttle body.

Any windows must be made of laminated glass or polycarbonate/lexan.

Driver compartment

Walls separating the driver's compartment from the engine, oil coolers and radiator must be installed. The purpose is to prohibit fluids and/or flames spreading.

If the engine air intake is in the driver's compartment it must be baffled to protect the driver from any blowbacks.

Armstraps or window nets with maximum 50mm web size and minimum 2mm thread size must be used if the distance from the center of drivers seat to the outer edge of the rollcage is less than 50cm. If this distance is less than 40cm window nets must be used.

The distance from the top of the driver's helmet to the top of the rollcage must be at least 10cm.

Armstraps must be attached below the elbow of the driver and must be released simultaneously with the seatbelt.

Floor

Floor of the vehicle must be made of 1mm steel or 2mm aluminium and completely cover the whole floor. If the front driveshaft passes under the driver seat, the material in this area must be at least 2mm steel or 3mm aluminium.

Drivers seat

Seat must be of racing type and have holes for a 5 point seat belt.

Seat must be securely fastened and the back of the seat must rest against the rollcage or braced in a similar way. If the seat is mounted on a sliding bracket, there must be an extra safety pin installed to prevent sliding of the seat.

The back of the seat must be high enough to cover 2/3 of the drivers helmet.

Side supports for helmet must be installed on the seat or in the chassis behind the seat.

This must be fabricated of minimum 3mm thick aluminium or 3mm thick steel plate.

Must be minimum 10 cm wide and extend forward at least 20cm from the back of the seat at no less than 75 degrees and insulated such to not damage the helmet during normal use. Distance from side of helmet to support must be no more than 10 cm.

Side supports must be installed by welding or bolted with minimum 2 x M8 bolts on each side.

A seat manufactured and approved by FIA/SFI with helmet supports may be used instead.

Rollcage

6-point rollcage according to appendix B mounted directly to the frame must be installed.

Seatbelts

Only 3" wide FIA/SFI approved seat belt with 5 or more fasteners is approved.

Seatbelts with latch style locks are highly recommended.

Seat belt must be undamaged and must be within approved date markings.

Shoulder straps must be installed in line with the drivers shoulder or lower such that the angle between the back of the seat and shoulder straps is between 45 and 90 degrees.

If the seat belt is installed using bolts the bolts must be minimum M10 bolts with of at least 8.8 grade. If the bolts are installed in the bodywork, the area must be reinforced with a 2mm steel plate of at least 20cm².

Drilling in the rollcage for mounting seatbelts is not allowed.

7. Miscellaneous

Lights

Any external lighting made of glass must be taped over during competition.

Gauges and switches

Free of choice

Towing hooks

Front and rear towing hooks or eyes with at least 35mm diameter hole must be in the front and rear of the vehicle.

There must also be a lifting point on the top of the vehicle for lifting – preferably in the balance point of the car. (May be through a suitable point in the rollcage).

Towing and lifting points must be marked in bright color to stand out.

Communication

Communication between driver and a person outside the vehicle is not allowed while the vehicle is in a track.

Weight

Minimum weight without driver is 600kg. Any extra weight must be securely fastened.

Extra equipment

Any extra equipment (fire extinguishers, flags, aerodynamic wings, etc.) must be securely fastened and must not pose as a potential hazard to the driver or spectators/officials.

Ventilation

All vent hoses from fuel tank, transmission, hydraulic system, transfer case, engine and axles must be routed in such a way that it will not leak in case of a rollover – or connected to a catch tank.

Technical regulations Formula Offroad 2009

APPEDIX A

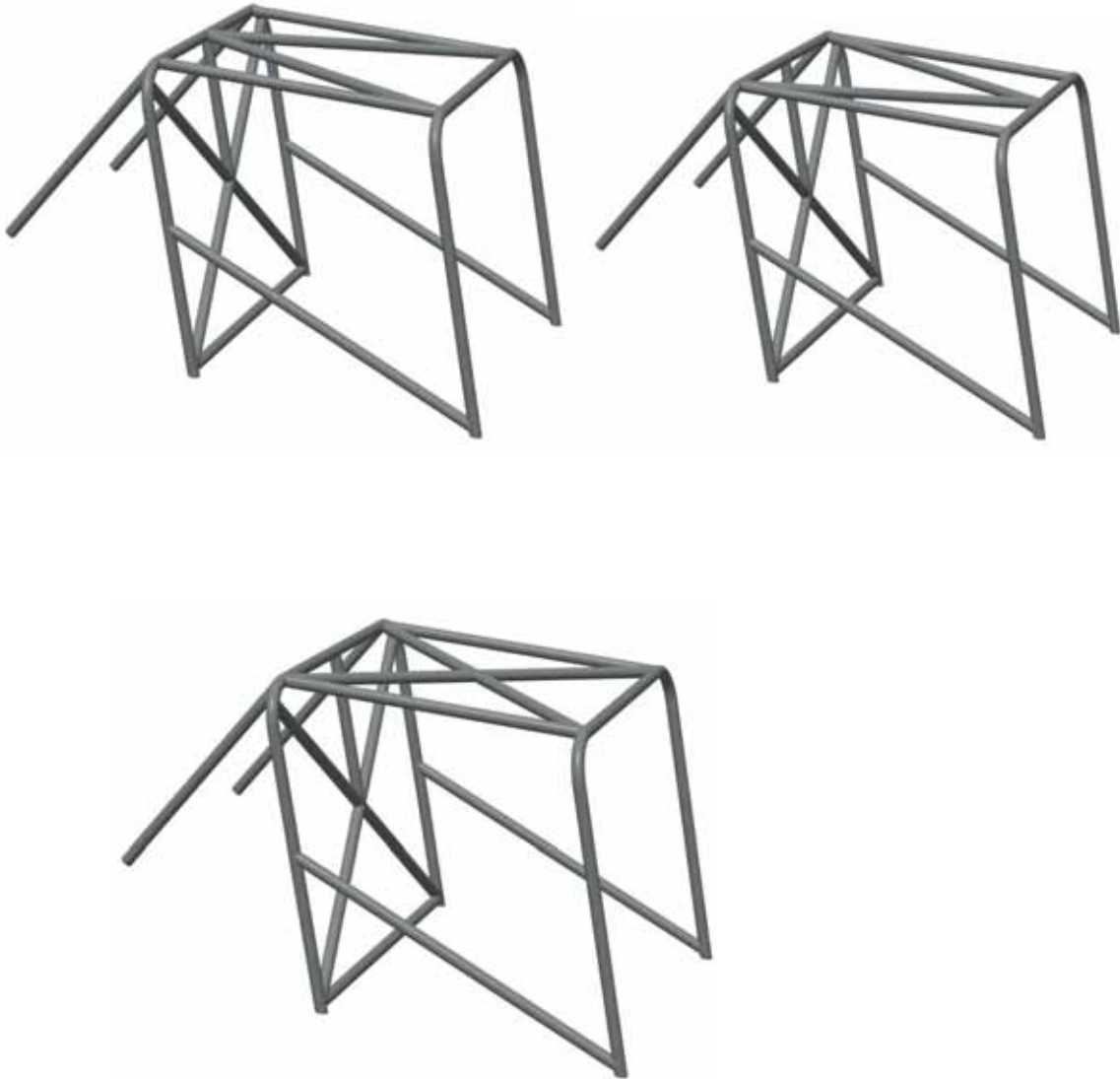
Nitrous Oxide

- Only complete systems from reputable manufacturers installed according to instructions are allowed.
- Nitrous bottle must be securely mounted with two steel bands of at least 2,5x25mm completely circling the bottle.
- Nitrous bottle can not be installed in the engine compartment.
- Nitrous bottle must be installed with the valve end pointing away from the driver or have a shield protecting the driver from a valve blowoff made of 2mm steel or 4mm aluminium plate.
- Nitrous bottle must be installed in such a way that it is protected from outside impact in case of a rollover.
- All nitrous hoses must be able to handle at least 3000psi.
- All nitrous hoses must be securely fastened.
- **Electrical system for nitrous:**
 1. Circuits can not be “-“ switched.
 2. It should not be possible to switch system on unless ignition is on.
 3. The system must have a separate arming switch for the driver clearly marked NOS on/off.
 4. The system should only be possible to activate at WOT throttle position.
 5. The system should only be possible to activate above 2000 engine rpm.
 6. A fuel pressure safety switch must be installed to disable the system if fuel pressure to system falls below 5psi.
- Closed vehicles must have a FIA/SFI approved fire extinguishing system installed with at least one nozzle aimed at the driver and one aimed at the engine.
- FIA warning sign for NOS – Green square with white lettering must be on the back of vehicle.
- Bottle warming system must be from a reputable manufacturer and installed according to instructions. NO open flames allowed!
- Nitrous pressure gauge must be installed if bottle warming system is used.

APPENDIX B

Rollcage

- All vehicles must have a six point rollcage mounted directly to the frame or chassis structure that connects all six points.
- Rollcage must be designed to protect the driver from all sides.
- Seamless Steel tubes of at least 350 N/mm² must be used. Aluminum, **Stainless steel** or Chromemoly Steel is not allowed.
- Tube size must be minimum 2,5 x 45mm alternatively 2 x 50mm.
- No tube bends may be smaller than 3 x the tube diameter.
- All welds must be high quality. Grinding of the welds is not allowed.
- Minimum requirements of design (refer to schematic drawing):
 1. One piece main rollbar installed from side to side of vehicle.
 2. **Main rollbar must be installed within 75-105 degrees. (+/- 15 degrees from vertical)**
 3. One piece front bar installed from side to side or one piece side bars with front bar connecting the two.
 4. Rear braces from rear top corners to back of vehicle in minimum 30 degree angle.
 5. Diagonal cross braces in main rollbar or in rear braces. (For vehicles licensed after 01.01.2006 it must be in the main rollbar)
 6. If rollbar width is more than 100cm: Vertical bar from top center of rear rollbar to meeting point of cross braces.
 7. "V" or "X" bars in roof of rollcage.
- Roof plate mounted on top of rollcage:
 1. 1mm steel plate securely welded in place,
or
 2. 2mm steel plate bolted in place with M8 bolts of 8.8 grade no more than 50cm apart,
or
 3. 3mm aluminium plate bolted in place with M8 bolts of 8.8 grade no more than 50cm apart.
 4. For bolting of plate mounting brackets must be welded to rollcage. No drilling allowed in rollcage.
- **For vehicles licensed after 01-01-2006:**
 1. Minimum size of roofplate is 0,75 m²
 2. Minimum width of rollcage is 100cm.
 3. Minimum distance from center of driver seat to outer edge of rollcage is 40cm (**measured at shoulder height**).
 4. Tube connecting left and right side of main rollbar mounted as low as possible in the chassis.
 6. Tubes connecting front and rear rollbar. Preferred location is as low as possible in front bar and mid height in the main rollbar.



These are the preferred construction schematics for the roll cage.