

Safety Level 3

Overview

It is intended that Safety Level 3 be similar to that of SCCA Road Racing. Vehicles of motorsports-specific construction are required to meet these specifications. For National Time Trial Events, vehicles prepared beyond Max Category Rules and competing on tires without DOT-Approval must meet Safety Level 3 Standards.

All Safety Level 3 vehicles must meet the requirements of Safety Levels 1 and 2, plus the inclusion of a roll cage compliant with specifications listed here. A roll cage consists of the main hoop, front hoop, side protection, and braces as specified in these Rules.

These specifications apply to all vehicles other than those issued an SCCA Logbook before 1/1/19. Cars issued an SCCA Logbook before 1/1/19 may continue to compete with their previously approved rollover structure or comply with the following specifications.

Please see [SCCA General Competition Rules](#) section 9.4 for diagrams and illustrations.

Roll Cages

1 Main Hoop

The main hoop (behind the driver) must be the full width of the cockpit for all cars. It must be one continuous length of tubing with smooth bends and no evidence of crimping or wall failure. The main hoop must maintain a single plane.

- A.** On all closed cars, the main hoop must be as close as possible to the roof and "B" pillars.
- B.** On open cars retaining the windshield frame, the main hoop must be full height for the entire width of the hoop. The top of the main hoop must be at least 2 inches above the driver's helmet.
- C.** Open cars without the windshield frame may use an asymmetric main hoop. The main hoop must be full width to the passenger side of the car. On the passenger side of the car, the hoop must be at least as high as the top of the rear corner of the door. The main hoop must be high enough that a straight line drawn from the top of the main hoop to the top of the front hoop would pass over the driver's helmet and steering wheel when the driver is seated in the normal driving position. Additionally, the top of the main hoop must be at least 2 inches above the driver's helmet.

2 Main Hoop Bracing

- A.** Main hoops shall incorporate a diagonal brace. The brace shall either be in the plane of the main hoop or extend from the top of one rear brace to the bottom of the opposite rear brace.

Automobiles with mid-mounted engines can have the lower mounting point attach to the frame of the automobile within 6 inches of the main hoop. In the case of braces in the plane of the main hoop, the brace must span at least 50% of the width of the main hoop, and at least 75% of the height of the main hoop. In convertible vehicles with a production line beginning 1990 or later, such as the Mazda Miata, a "V" design, also known as a "double diagonal" used between the rear supports is acceptable.

B. Cars must incorporate a main hoop horizontal brace at the approximate level of the driver's shoulders but not lower than the shoulder belt mounting point as described. If a double-diagonal "X" brace is used in the plane of the main hoop, a half-width horizontal brace may be used behind the driver's seat to mount the seat back and shoulder harness.

C. Cars must have two (2) braces extending to the rear from the main hoop and attaching to the frame or chassis. Braces must be attached as near as possible to the top of the main hoop (not more than 6 inches below the top), and at an included angle of at least 30 degrees.

D. Open cars must have two (2) braces extending forward from the main hoop and attaching to the front hoop, not more than 6 inches below the top of the front and main hoop. It is recommended that the front and rear braces attach to the main hoop as close as possible to each other.

E. On cars where the rear window/bulkhead prohibits the installation of rear braces (e.g., Honda del Sol), the main hoop shall be attached to the body by plates welded to the cage and bolted to the stock shoulder harness mounting points. This installation design must incorporate a diagonal bar connecting the top of the main hoop to the lower front passenger side mounting point (Petty bar). Alternatively, the rear window may be removed and a clear, LEXAN™ replacement installed. The rear cage braces may pass through this replacement window and through the engine cover or bodywork to allow connection to the frame or unibody.

3 Front Hoop

A. Roll cages may be of two designs, low front hoop or high front hoop. All closed-top cars and cars that retain the windshield frame must have a high front hoop design. Open cars may incorporate a high or low front hoop design. High front hoops are also referred to as side hoops.

1. Closed cars: The front hoop (side hoop) must follow the line of the A-pillars to the top of the windshield and be connected by horizontal bars to the top of the main hoop on each side (as close to the roof as possible). Instead of a single front hoop, two side hoops (down tubes) may be used. Alternatively, a top "halo" hoop following the roof line from the main hoop to the windshield with forward down tubes following the A-pillars to the floor may be used. Regardless of which one of the two approved tubing configurations, there shall be a tube connecting the two A-pillar tubes at the top of the windshield.

2. Open cars: The height of the front hoop must be consistent across the full width of the cockpit.

B. Front Hoop Bracing

All open cars with a high front hoop and all tube frame closed cars must incorporate a horizontal front hoop brace at the approximate level of the dashboard. It is recommended production-chassis cars also have the front hoop brace.

1. **Tube(s)** may extend, from each front down tube, forward to the firewall. **For** Unlimited or SCCA GCR-class cars which allow it, **tube(s) may extend** through the firewall. In this case it is recommended this tube, one on each side, connect to the chassis at a point not more than 12 inches forward of the front axle centerline.

4 Side Protection

A. Side tubes connecting the front and main hoops across both door openings are strongly recommended. Tubes that are welded to any part of the same mounting plate are considered to be connected to one another.

B. NASCAR-style side protection or one bar bisecting another to form an "X" is permitted. Door side tubes may extend into the front door.

1. Door window glass, window operating mechanism, inner door trim panel, armrest, map pockets, wiring harnesses for door locks, windows, power mirrors, seat wiring, etc., and inside door latch/lock operating mechanism may be removed and the inner door structural panel may be modified.

2. The stock outside door latch/lock operating mechanism shall not be removed or modified unless specifically authorized in the Rules.

5 Roll Cage Attachment Points

A. Production-chassis cars: The roll cage must attach to the vehicle structure within the passenger compartment in a minimum of six (6) points as specified in these Rules.

B. Tube-frame cars: The roll cage shall be integrated into the frame or chassis.

C. Mounting Plates

1. Mounting plates welded to the structure of the car shall not be less than 0.080 inches thick and no more than 0.25 inch thick. Plates may be on multiple planes.

2. The thickness of mounting plates bolted or riveted to the structure of the car must not be less than the thickness of the roll hoop or brace that they attach to the chassis and must be backed

up with a plate of equal size and thickness on the opposite side of the chassis panel. Plates may be on multiple planes but shall not be greater than 15 inches on any side.

3. Fasteners for bolted or riveted mounting plates must be Grade 5/Metric 8.8 or better with a minimum diameter of 5/16 inch.

6 Roll Cage Tubing

A. Seamless or DOM mild steel tubing (SAE 1020 or 1025 recommended) or alloy steel tubing (SAE 4130 or T45), or Docol R8 tubing must be used for all roll cage structures. Alloy and mild steel tubing may not be mixed. ERW tubing is not allowed.

B. The following table shows the minimum allowed tubing outer diameter and wall thickness by vehicle weight:

Vehicle Weight (not including driver)	Tubing Size (inches) (outer diameter x wall thickness)
Up to 1,000 lbs.	1.00 x 0.060
1,001 Up to 1,500 lbs.	1.25 x 0.090
1,501–1,700 lbs.	1.375 x 0.080
1,701–2,699 lbs.	1.500 x 0.095 1.625 x 0.080
2,700 lbs. and up	1.500 x 0.120 1.750 x 0.095 2.000 x 0.080

C. For purposes of determining tubing sizes, the vehicle weight is as raced without driver, fuel and ballast. The minus tolerance for wall thickness should not be less than 0.010 inch below the nominal thickness.

D. The required tubing elements must meet the material minimums set forth above. Optional tubing elements may be any size.

E. The minus variance of tubing wall thickness due to manufacturing tolerances is limited to 0.010 inch.

F. Either an inspection hole between 3/16- and 1/4-inch diameter must be drilled in a non-critical area of the front and rear hoops, as well as one of the supplemental braces to facilitate verification of wall thickness; or alternatively, wall thickness may be determined by non-invasive means and noted in the logbook and inspected by such means.

7 Basic Design Considerations

A. All portions of the roll cage subject to contact by the driver must be padded with a minimum 1 inch of material. Padding that meets or exceeds SFI 45.1 or FIA 8857-2001 (curved padding), or SFI 45.2 or FIA sports car head rest material (flat padding) specification is recommended.

B. No portion of the roll cage may have an aerodynamic effect by creating a vertical force.

C. The radius of all bends in the roll cage (measured at centerline of tubing) must not be less than three times the diameter of the tubing.

D. It is recommended that all joints of the roll cage be welded. All welding must include full penetration, no cold lap, no surface porosity, no crater porosity, no cracks, no whiskers, and so forth. Welds shall be continuous around the entire tubular structure. Procedures for welding alloy steel shall be in accordance with accepted industry practice. It is recommended that a certified AWS D1.1 welder do all welding.

E. It is recommended that gussets be used at all joints.

F. Any number of additional tube elements is permitted within the boundaries of the cage structure. Such tube elements may pass through any mandatory or optional bulkhead or panel separating the driver/passenger compartment from the trunk/cargo area/fuel tank/fuel cell area provided the bulkhead is sealed around such tube elements.

G. Removable roll cage bracing is acceptable in one of the following configurations.

1. If one tube fits inside another tube to facilitate removal, the removable portion must fit tightly and must bottom by design, and at least two (2) bolts must be used to secure each joint. The telescoping section must be at least 8 inches long. The minimum bolt diameter is 3/8 inch.

2. Removable bracing may incorporate connectors of the double-lug, double ear-type, tapered or muff-type. The double-lug type must include a doubler, gusset, or capping arrangement to avoid distortion or excessive strain caused by welding. Double ear-type joints must be fully welded at all the mating surfaces.

8 Manufactured Supplied/FIA/MSA/SCCA Homologated Roll Cages

A. Cars may compete with FIA or FIA-Approved Test Houses homologated cages provided the cage was built by the manufacturer or a manufacturer designated shop/team and approved for use. Cars must have the FIA identification plate attached to the cage along with a letter from SCCA Technical Services certifying the origins of the car, or confirmation that the cage was certified by an FIA-Approved Test House.

B. Cars may compete with an approved MSA (Motor Sports Association UK) Roll Over Protection System Certificate. All related engineering drawings and documents shall be submitted to SCCA Technical Services. Cars must have MSA identification plate attached to the cage along with a letter from SCCA Technical Services certifying the cage was approved by the MSA.

C. Cars which do not comply with the design criteria set forth for roll hoops must have a waiver/homologation certificate issued by the Road Racing Technical Staff. Cars which are excepted from the published design criteria, shall at all times have available for examination a current logbook, a copy of the letter of exception from the Road Racing department and supporting engineering documentation. Cars which have previously been issued homologation Certificates may satisfy this rule by presentation of said certificate or a copy. Vehicles with an SCCA logbook issued before prior to January 1, 1983 do not require homologation certificates.

Note: This line primarily applies to those who own older SCCA road racing cars or factory-built racecars that probably had a previous history with the SCCA or other sanctioning body. While the Road Racing Technical Staff can evaluate and approve another design, the far easier (and less expensive path) here is to build it to the published specs. If you have an older formula car or sports racer, it should have a homologation certificate that goes with it.

Safety Level 3 Driver Gear

1 Helmets - Safety Level 2 and 3

1. For Safety Level 2, helmets meeting one of the following standards are acceptable and must be worn while on course:

A. Snell Foundation Standards with Snell sticker 2015 or later for Special Application (SA2020, EA2016, SA2015).

B. SFI standards 31.1/2015, 31.1/2020

C. FIA standards 8859-2015, 8860-2010 or newer.

2. For drivers of any vehicle without a DOT-approved windshield (such as kit-cars, Sports Racers, Formula Cars and Specials) or any other vehicle with less than standard-sized windshield, helmets meeting these additional criteria are required:

A. Helmets must be full face.

B. A shield, preferably made of impact-resistant materials, shall be used while on course (conventional eyeglasses are not sufficient).

2Driver Clothing - Safety Level 2 and 3

1. Driving suits shall meet one of the following standards:

A. FIA standards (8856 -1986, 8856-2000 or 8856-2018).

B. SFI 3-2A/5 or higher (e.g., /10, /15, /20) certification.

C. Suits carrying SFI 3-2A/1 certification may be worn only with fire resistant underwear.

D. Gloves made of leather and/or accepted fire-resistant material containing no holes.

E. Socks made of accepted fire-resistant material.

F. Face coverings (balaclavas) of accepted fire-resistant material for drivers with beards or mustaches.

G. Shoes, with uppers of leather and/or nonflammable material that, at a minimum, cover the instep

3Driver Accessory Gear - Safety Level 2 and 3

1. For drivers of any vehicle where the compatibility of belts and seats meet the use of head and neck support systems, the use of a head and neck support system is highly recommended.

2. For a track-based event (Time Attack/TrackSprint) a driver's-side window safety net or arm restraints are highly recommended for all cars.

3. For a HillClimb event, arm restraints are required in any open car and a window net or arm restraints are required for closed cars.

