BMW 325 CUP technical regulations 2019
PROJECT

1. GENERAL

1.1 Race car

Only series production cars manufactured by BMW AG with model code E90 and E92 with either saloon or coupe bodywork are eligible to participate. There are allowed to use only original or similar parts, unless these regulations state differently.

1.2 Changes

1.2.1 All changes are forbidden, unless allowed by these regulations. It is forbidden to machine or change the original parts in any way. Therefore, reducing weight by drilling, removing material or replacing with lighter materials is forbidden. Making changes to construction or working principal of components is forbidden, unless allowed by these regulations.

1.2.2 Parts that may be removed from the race car are listed in 3.1.6.

1.3 Original part

Original parts are considered hereafter parts meant for BMW E90 and E92 325i car by the manufacturer with the part number and markings of the original part.

1.4 Similar part

Similar part must resemble original part in terms of FFF (form, fit and function), material and dimensions, except for manufacturer's part number.

1.5 Definition of "Free" part

"Free" means that the original part, as well as its function (-s), may be removed or replaced with a new part, on condition that the new part has no additional function relative to the original part.

1.6 Fuel

Fuel in use must be unleaded (up to 0,013 g/L) and comply with FIA International sporting code Appendix J article 252 section 9.1. It is allowed to use only unleaded gasoline with octane rating RON95 and RON98 that is available through retail distributors. Racing fuels are forbidden. Adding fuel additives is forbidden.

1.7 Minimum weight

1.7.1 Minimum weight of the car (including the driver and his driving gear) under parc fermé rules will be announced when the first car will be race ready and the weight measured.

1.7.2 It is permitted to complete the weight of the car by adding a single unit of ballast that may be made from stacked metallic plates. The plates must be fixed by means of tools and must be placed visibly on the floor of the cockpit in the front passenger's location. The ballast must be attached to the bodyshell/chassis by bolts of at least two 8.8 - class with a minimum diameter of 8 mm, with counterplates. The minimum area of contact between bodyshell /chassis and counter plate is 40 cm2 for each fixing point. Any movable ballast system is forbidden.

1.8 Safety

Safety and construction must comply with the FIA International sporting code Appendix J unless the regulations state differently.

2. SAFETY REGULATIONS

2.1 Safety cage

2.1.1 Safety cage in compliance with Article 253.8

2.2 Safety harness

2.2.1 Safety harness must be according to FIA International sporting code Appendix J article 253.6.

2.2.2 Shoulder straps shall have separate mounting points to car body or to safety cage.
2.2.3 Safety harness cannot be worn and must have valid homologation.
2.2.4 In case of a collision it's mandatory to present the safety harness to the technical stewards for their evaluation which can forbid further use of the particular harness.
2.3 Fire extinguishing system
2.3.1 Fire extinguishing system is mandatory. The extinguishing system must be according to FIA VM Appendix J Art. 253-7 or manual extinguishers by FIA Art. 253.7.
2.3.2 The pressure gauge of the system must show green and the tank must have valid certificate from the manufacturer and cannot be older than 5 years.
2.3.3 In case of the use of the electrical extinguishing system, it must have separate battery, that can be tested.
2.4 Drivers safety equipment
2.4.1. Helmet must comply with FIA standard. Use of the HANS/FHR device which comply with FIA standard is mandatory.
2.4.2 Suits and underwear must be homologated according FIA standard No 8856-2000 and have corresponding markings.
2.4.3 Seats must be fixed to body according to FIA International sporting code Appendix J article 253.16 (FIA document 01.01.2018).
2.4.4 Drivers seat must be FIA homologated and in compliance with 8855-1999 FIA standard or 8862-2009 FIA standard. The limit for use is 10 years from the year of manufacture.
2.5 General circuit breaker
General circuit breaker switch is mandatory and must be set up so, that driver can switch it off when in driving position and it can also be switched off from outside of the vehicle. As for the outside, the triggering system of the circuit breaker must compulsorily be situated at the lower part of the windscreen mountings. It must be marked with a red spark on a white-edged blue triangle with a base of at least 12 cm. The general circuit breaker must cut all electrical circuits (battery, alternator or dynamo, lights, hooters, ignition, electrical controls, etc.) and must also stop the engine. General circuit breaker must comply with to FIA Appendix J Art. 253-13.
2.6 Towing eye
Towing eye must be both in front and rear of the car. They cannot extend out from the perimeter of the car, when viewed from above and they must be painted bright yellow, orange or red. Towing eyes must be easy to find. It is recommended to have a bright colored arrow, pointing towards them. Towing eye or a loop must have a diameter from 60 to100 mm.
2.7 Windows
2.7.1 Cars that have worn and/or cracked windshield to the extent where the visibility is limited, can be removed from the race. Stickers, dark shades or paint are allowed 25 cm from the top of the windshield upper edge. Side windows must be covered with transparent safety film.
2.7.2 Use of nets affixed to the safety cage is mandatory. These nets must have the following characteristics:
• Minimum width of the strips: 19 mm
• Minimum size of the meshes: 25 x 25 mm
• Maximum size of the meshes: 60 x 60 mm
Net must close up the window opening to the center of the steering wheel.

3. CAR
3.1 Body
3.1.1 Strengthening the body by adding material is forbidden, except in cases allowed by these regulations. If body shell repairs have been carried out, the resulting structure strength and appearance must be similar to the original body. Spot welds can be

strengthened with the continuous or stitch welding. Subframes, suspension top fixing points and jacking points may be strengthened locally. Their position must stay original.
3.1.2 Hood and trunk lid locks must be removed and replaced with quick release locks that can be opened from outside.
3.1.3 AC system may be removed..
3.1.4 Cars appearance must be correct, without damage and rust..
3.1.5 Strut bars are allowed.
3.1.6 Following parts can be removed from the car:
- sound and heat insulation materials
- headlight washers
– license plate lights
- windshield washer tank with all the tubing- spare wheel mounting fittings
- interior body moldings and their fittings
- splashguards from the wheel wells
- door, hood and trunk lid rubber moldings
- purge canister

3.2 Aerodynamics
3.2.1 Underbody aerodynamic elements are forbidden.

3.3 Lights
3.3.1. Lights must be in working condition including indicators. It's recommended to cover lights with the safety film.
3.3.2. Rear fog light is mandatory and must be used during rain. Front fog lights are free.

3.4 Engine
3.4.1 It is allowed to use only engine N52B25. In any instance there is not allowed to interchange parts between engines. All the components used in the engine and around it must belong to the engine type in question.
3.4.2 Oil filter, spark plugs and drive belts are free regarding their make. Original air filter insert / cartridge will be from one manufacturer. Manufacturer TBA.
3.4.3 Plastic fairings directly screwed to the engine and for optional purpose only, e.g. cylinder head covering, and having no effect on the engine performance and no other function, e.g. air ducts, may be removed.
3.4.4. Oil pan can have additional baffles. Additional oil cooler is allowed, as long as it is not placed lower than cooling radiator and is attached to the body with rubber bushings. It is allowed to use M3 oil pickup tube and filter housing.
3.4.5 Engine mounting rubber bushings are free. Engine supporting brackets are free as long as they are not lighter than original brackets. Engine position must remain original.
3.4.6 The Vmax limitation may be suspended.
3.4.7 Crankcase ventilation can be directed to additional catch tank that has at least 1L capacity and additional breather output.
3.4.8 Cooling. The installation of an oil cooler for rear axle and / or the gearbox is permitted. Engine oil cooler see following article 3.4.9 Lubrication system.
The differential cover may be provided with cooling fins. It is permitted to improve the cooling for the power steering by modifying the cooling loop or relocate the air stream. The thermostat for the engine cooling system is free.
3.4.9 Lubrication system. It is permitted to install oil baffles in the standard oil sump. Oil coolers are free but they must not be installed outside the bodywork. The crankshaft ventilation including oil catch tank / separator may be modified but must form a closed system.

3.4.10 All repair work carried out within the engine must comply with manufacturers specifications and procedures unless stated otherwise by these regulations.
3.4.11 Two fasteners of the camshaft cover should be pierced to allow the engine to be sealed by the scrutineers.

3.5 Fuel system
3.5.1 It is allowed to use two fuel pumps. It is also allowed to use additional 1-liter collection tank with additional fuel pump, given that it is properly connected and positioned inside the original spare wheel compartment. All the fuel pumps must only operate when the engine is running, except during the starting process.
3.5.3 Fuel lines can run inside the cockpit if they pass through the sheet metal according to FIA Appendix J Article 253 drawings 253-59 and 253-60 3.5.4 Fuel tank may be filled with safety foam.
3.5.4 It is allowed to use FIA FT3, FIA FT5 and SFI standard safety fuel tanks with a maximum capacity not exceeding 70 l. It must be located in rear trunk and separated from the cockpit by fireproof and liquid-proof bulkhead or case. All safety fuel tanks can be used up to 2 years after end of validity period. In any case, original fuel tank must stay attached in original location
3.6 Exhaust
3.6.1. Exhaust manifold is original, but modifications are allowed according to below points.
3.6.2 Exhaust system secondary pipes and end pipe shall remain original until the point where it originally enters to the first catalytic converter. If these pipes are not original (i.e aftermarket item), they still must match with all original measures. From that original catalyst converter inlet point downstream, it is allowed to change the rest of the exhaust system to be 2.5" maximum external diameter.
3.6.3 Silencers/mufflers are the only additional elements allowed to exhaust system (compared to original system)
3.6.4. Catalytic converter is free and not mandatory.
3.6.5 The exhaust exit must be inside the car's perimeter and it must be located in original position
3.6.6 Wrapping of the exhaust system is allowed.
3.6.7 Noise level must comply with requirements according to supplementary regulation of the event but not exceeding 108 dB / 6000 rpm.

3.7 Electronics and electrical
3.7.1 Chiptuning is forbidden, except for a few ECU configurations provided by the promoter and paid by the participant. All ECUs are sealed by the promoter.
3.7.2 Original diagnostics connector must be operational and in its original position.
3.7.3 Data loggers are allowed. Additional sensors for data logging purposes are allowed. Data loggers for scrutineering will be mandatory from season 2021 if number of participants in any of the events is 10 or more in season 2020.
3.7.4 Spark plugs are free. Ignition coils must be original or similar.
3.7.5 Battery is free, it must be located in one of its original places, firmly fixed. Battery positive connector must be covered.
3.7.6 The original wire loom may not be modified, except for the modifications in relation to the permitted freedom, for example the removal of the airbags, the installation of data logger, the relocation of the catalytic unit with the lambda probe, battery, steering ignition lock, radio, navi, air-conditioning. It is permitted to replace the wire loom by the replacement wire loom, but all the sensors must comply with the original wire loom.
3.7.7 A wet battery may be replaced by a dry battery. Its location may be nearby the standard location, but still in the same installation space. The installation of a battery in the vehicle interior is prohibited.

3.7.8 Fog lamps may be removed. The apertures may be used to bring air to the brakes for cooling or they must be closed by caps.
3.7.9 A rear fog lamp is mandatory.
3.7.10 Additional instruments which do not enhance the performance are permitted.

3.8 Interior
An FIA homologated competition seat with attachments complying with the Appendix J, Article 253.16 is compulsory.
3.8.1 The passenger seat must be removed.
3.8.2 Steering wheel and steering wheel fixation are free, but the steering wheel must be closed.
3.8.3 Gearshift-lever mechanism is free.
3.8.4 The complete rear seats must be removed.
3.8.5 The original seat belts, the rear-window shelf, the carpets and the soundproofing material on the floor must be removed.
3.8.6 The standard centre console may be removed. The standard glove compartment cover must be in place. The front panel must be original, but cosmetic modifications are allowed.
3.8.7 Door and rear side trim may be the original ones or must be made from metal sheeting at least 0.5 mm thick, from carbon fibre at least 1 mm thick or from another solid and non-combustible material at least 3 mm thick. These door panels must completely and effectively cover all movable parts and the parts needed for the door, hinges, locks and window lift devices.
3.8.8 The original air conditioning may be removed.
3.8.9 The original driver, passenger, side and roof airbags may be removed. The dashboard must be original, the instruments are free. Adjustment for the installation of the rollcage are permitted. The trimmings situated below the dashboard may be removed.

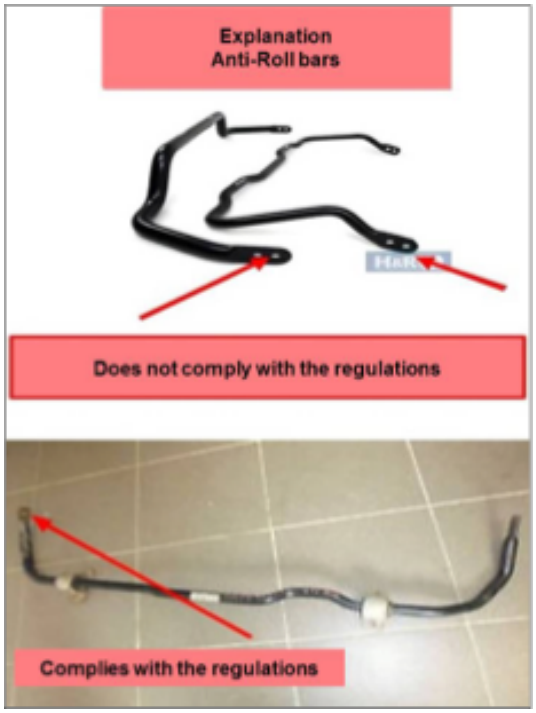
3.9 Steering mechanism
3.9.1 Steering lock must be removed. Steering wheel is free, quick release fixings are allowed, if they are meant for racing.
3.9.2 Steering column position can be changed both height- and lengthwise. Steering column must be firmly fixed and cannot be adjustable, except original adjustable steering column.
3.9.3 Power steering pump must be original, but the high pressure hoses are free. Steering fluid additional cooling is allowed.
3.9.4 The original speed or high-speed steering of the original steering rack is allowed.

3.10 Suspension
3.10.1 Only standard original parts provided for the corresponding vehicle type and for the intended purpose may be used.
3.10.2 The use of aftermarket parts is permitted. Please note that in VLN or RCN use of the aftermarket parts is forbidden.
3.10.3 Suspension must be ST XTA and must be bought only from Ape Motors. Contacts: Modris Žeimuts, +371 28663366, modris.zeimuts@apemotors.lv.
3.10.4 The suspension points and the brackets of the rear shock absorbers must comply with the original. See drawings 1+2:

Drawing 1: Correct mounting

Drawing 2: Wrong mounting

3.10.5 It is permitted to replace anti-roll bars by other anti-roll bars, the pendulum supports, mounting and suspension points. Adjustable sword-type anti-roll bars are prohibited, unless it is a series specification, see drawing:



3.10.6 The springs are free. The number of springs, provided they are arranged in a row and one after another, is free.
3.10.7 The upper joints of spring / shock-absorber strut units (McPherson type) on the suspension strut wheel suspensions are free, provided that the original mounting points on the bodywork are retained and that only the wheel camber is adjustable. This means that an adjustment must only be possible at an angle of 90° transversally to the car longitudinal axis when seen from the top onto the vehicle.
3.10.8 Modifications on the bodywork are not authorized, but the original mounting bolts or bolt holes with a maximum diameter of 8.5 mm each may be in the upper bell housing of the shock absorber for the mounting of the upper joint support.
3.10.9 Only standard long holes are permitted.
3.10.10 Spring suspension / spring seats are free.
3.10.11 For any other wheel suspension (no McPherson type axis) the wheel camber may be adjusted by means of the following principles:

a) by moving the ball pin at the upper wishbone by 90° in relation to the car longitudinal axis,
b) by installing an asymmetric ball-and-socket joint,
c) by installing a steering swivel with modified camber.

3.10.12 For other wheel suspensions, the original spring suspensions must be retained on the bodyshell side and on the axis.
3.10.13 The wheel camber adjustment for other wheel suspensions may be modified by eccentric or corresponding ball-and-socket joints.
3.10.14 Transversal struts may be fitted to the front and rear axle between two identical upper and lower, right and left axle pivot points, provided that they are removable and that they are bolted to the suspension attachment points. It is permitted to bore two additional holes on each side of the upper bodyshell for this purpose
3.10.15 The wishbones (part no. 31122227249/250) may be used in the BMW E36.
3.10.16 Threaded running gears adjustable in height are permit- ted.
3.10.17 The wheel track is free. Non-standard track extenders are permitted.
3.10.18 The original wheelbase may not be modified.

3.11 Transmission
3.11.1 The engine bearings and transmission bearings / standard rubber bearings may be replaced by rubber / plastic bearings with a different Shore hardness, but the original shape and dimensions must be retained. As a principle, the complete standard clutch must be used.
3.11.2 The mechanical differential locks are not allowed. (In VLN or RCN it is allowed).
3.11.3 Allowed final drive ratio is 3.73.

3.12 Brakes
3.12.1 Brake discs' machining is allowed, grooves are forbidden, cross drilling is forbidden.
3.12.2 Brake fluid is free.
3.12.3 Brake discs will be from one manufacturer. Manufacturer Fremax. Maximum diameter for front and rear brake discs is 300 mm.
3.12.4 The number of fixations between friction ring and brake disc chamber is free. Brake pads are free.
3.12.5 The ABS block is original.
3.12.6 Originally fitted ABS, ASR and ESP may be disconnected.
3.12.7 The design of air baffles may be modified or they may be removed.
3.12.8 For each wheel, one flexible cooling duct bringing the air to the brakes is allowed. These air ducts must not protrude beyond the periphery of the vehicle.
3.12.9 It is permitted to replace the original brake hoses by steel-wrapped brake hoses. Quick fasteners are prohibited. Brake tubes are free.
3.12.10 The original hand brake must be retained and in working order.
3.12.11 Pedal covers are free. Pedal covers cannot extend towards driver more than 20 mm from the original pedal pad.

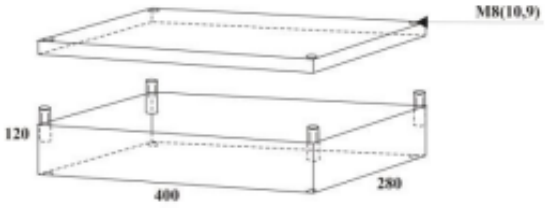
3.13 Tires and wheels
3.13.1 Rims and wheel bolts are free. Rim diameter 17 inches, maximum width 8 inches, minimum weight 7 kg.
3.13.2 Tire type is Nankang AR-1 or according to Sporting Regulations.
3.13.3 Tire size is 225/45R17.

3.14 Handicap Weight
3.14.1 Handicap weight is an additional weight for the car. It must be placed in special separate container.

3.14.2 After each event, if a driver has finished in TOP3 in the previous round his car will be added an additional weight according to the formula. The maximum handicap weight is 90 kg.
3.14.3 The driver must at any moment of the event be able to show the handicap weight and content of the container for Scrutineering.
3.14.4 Handicap weight Formula
Driver's place in the overall results of the event: points from Race 1 + points from Race 2. Handicap weight for the next event.

1	+ 50 kg
2	+ 40 kg
3	+ 30 kg
4	0 kg
5	- 10 kg
6	- 20 kg
7	- 30 kg
8	- 40 kg
9	- 50 kg
10 and lower	- 50 kg
DNF	- 50 kg
DNS	0 kg
DSQ	0 kg

3.14.5 The container must be sealed with 4 bolts. The thickness of plates is 2mm, see container dimensions in drawing 632. The container's location in car, see in drawing 633.



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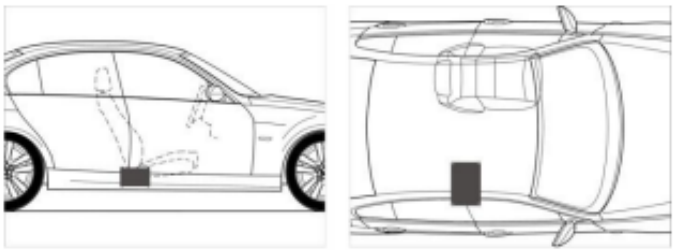
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4. **Scrutineering.**
4.1 If there is a need to change structures or make changes to the car as additional safety and these changes come in conflict with regulations, then they must have written approval ("waiver") of technical committee. In this approval changes must be described and this approval shall be available when requested for review. This waiver could be done only if safety is not decreased.
4.2 All costs that might come to the competitor in proving the cars compliance with the regulations, will be solely covered by the competitor. Fuel testing is made only by the initiative of the scrutineering. Competitor cannot refuse from the technical inspection in the threat of the exclusion.
4.3 Serious violations of current regulations during the season may come to complete disqualification from all points for this season.
4.4 Organizer/scrutineering can seal any part of the car during the event. Competitor is responsible that the sealing remains in whole event or as otherwise stated by the scrutineering.
4.5 Data logger. If in a season number of competitors in one event is 10 or more, starting from the next season data logger for scrutineering is mandatory. Promoter will choose which data logging system to be used. Costs covered by participants.