

BADLRC Trials Technical Regulations 2010

Introduction

These regulations are based on the 2010 MSA blue book and apply to all vehicles taking part in all trials, where clarification is required the primary reference source will be the 2010 MSA blue book

BADLRC is a single make Land Rover club, hence all vehicles need to be derived from production Land Rover components

Standard, Modified and Super Modified vehicles taking part in events held wholly on private property need not be registered, taxed or be fitted with a speedometer.

It is strongly recommended that Modified Vehicles have a Roll/safety cage, substantial seats with head restraints or bucket seats and safety harnesses with at least 4 anchor points

Well maintained production standard vehicles should in most cases meet the requirements of these regulations in relation to vehicles entering in a Standard Class, the 2 exceptions are the requirement for seatbelts & throttle return spring.

All vehicles should be presented for scrutineering in a clean and tidy condition.

Competitors Vehicles (J) All Competitors Vehicles Must Comply

General

5.1. As a general principle in all Technical Regulations, it is prohibited to carry out any tuning or modification that is not specifically permitted. The fact that some modifications are mentioned as prohibited, does not imply that others are allowed.

Chassis/Bodywork

5.2.1. Be fitted with bodywork including a driver (and passenger) compartment isolated from the engine, wet batteries, gearbox, hydraulic reservoirs, transmission shafts, chains, belts and gears, brakes, road wheels, their operating linkages and attachments, petrol/fuel tanks, oil tanks, water header tanks, catch tanks and fuel system components.

Exposed transmission shafts, gears and chains must be guarded so as to prevent danger.

Where a radiator is not isolated from the driver/passenger compartment a suitable deflector is to be fitted so as to prevent fluid coming directly into contact with the vehicles occupants.

5.2.2. Have a bonnet, casing of metal or solid flame resistant material covering and surrounding the main engine structure (All moving parts must be covered). Have a protective bulkhead of non-flammable material between the engine and the driver/passenger compartment capable of preventing the passage of fluid or flame in the case of fire. Gaps must be sealed with GRP or putty that completely closes any gap at all times.

Magnesium is prohibited for bulkheads.

5.2.3. Have a complete floor of adequate strength, rigidly supported within the driver/passenger compartment. No gaps or holes should be visible. Excessive corrosion that compromises this requirements is not allowed.

5.2.4. Not have the space normally occupied by passengers encroached upon, but may have the passenger seats removed.

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5.2.5. Have bodywork providing a minimum transverse cockpit opening width of 81cm. This width may not be interrupted.

5.2.6. Be equipped on all wheels with mudguards which present no sharp edges and cover the full width of the tyre around an arc of 120 degrees. This minimum coverage must:

- a) Be achieved with a continuous surface of rigid material uninterrupted by any gaps, holes, slots or vents.
- b) Extend forward ahead of the axle line.
- c) Extend downward behind the wheel to not more than 7.5cm above the axle line.
- d) Standard production wheel arches are acceptable on any vehicle in any class.

5.2.7. Not Applicable

5.2.8. Driver/passenger doors, hatchback doors, sliding doors opening boots or tailgates and bonnets must be secured in the closed position during events.

5.2.9. Have effective means of ventilating closed cars.

5.2.10. Tinted glass in any window which can significantly effect through vision (in or out) is prohibited.

5.2.11.sr. Vehicles must not have excessive body damage or sharp edges. Vehicles competing in standard classes must have full width bumpers & or bodywork front & rear

5.2.12.sr. Tailgates may be removed (MSA ref P 56.2.2)

Seats, Seat Belts and Harnesses

5.3.1. Have a normal adequate seat for driver/passenger.

5.3.2. The seat must be rigidly located within the compartment and must not tilt, hinge or fold, unless it is a production seat fitted with a serviceable locking device which will prevent inadvertent operation.

5.3.3. the seat must support and retain the driver within the vehicle.

5.3.4. The seat cushion (i.e. the part on which the occupant sits) when uncompressed, must not be less than 15.25cm below the top edge of the adjacent body side or door.

5.3.5. Any other seats must similarly comply & all seats used during competition must face forward.

5.3.6.sr. Vehicles competing in any Modified class must have either a substantial seat with headrest or approved competition bucket seat for each occupant. The headrest should be within 5cm of the drivers/passengers head when normally seated so as to reduce whiplash of neck and spine in cases of impact. It is strongly recommended that vehicles competing in any standard class have as a minimum a substantial seat with headrest for each occupant. (MSA refK 2.3 & K 13)

5.3.7.sr. Where non standard seats are fitted the seat supports, should be attached to the body/chassis via at least 4 mounting points per seat, using bolts with a minimum diameter of 8mm and counterplates as illustrated in appendix 2 drawing 32. The minimum area of contact between support, body/chassis should be 40cm² for each mounting point. (MAS ref P2.2.1.)

If quick release systems are used, they should be capable of withstanding a vertical and horizontal forces of 18,000N (not applied simultaneously). If rails for seat adjustment are used, they must be either those originally supplied with the car or those supplied with the seat.

5.3.8.sr. Where non standard seats are fitted the seat should be attached to the seat supports via 4 mounting points, 2 at the front and 2 at the rear of each seat, using bolts with a minimum diameter of 8mm, these bolts must pick up on the reinforcements integrated in to the seat. (MAS ref K 2.2.2.)

5.3.9.sr The minimum thickness of the seat supports and counterplates is 3mm for steel and 5mm for light alloy material. The minimum longitudinal dimension for each seat support mounting point is 6cm (MAS ref K 2.2.3.)

5.3.10.sr All seat safety belts should be complete units sourced from a recognised manufacture and fitted in accordance with the manufacturer's instructions, MSA recommendations or FIA requirements.

Seat belts, from one of the following specified configurations must be worn correctly fitted and adjusted at all times during competition.

The minimum requirement for any competing vehicle is one **Three Point Seat Belt** for each occupant, the integral seat safety belt design of the Range Rover is acceptable. Vehicles not originally fitted with seat belts must comply with this requirement. (MSA ref K 2.1)

5.3.11.sr Three Point Seat Belt, One diagonal shoulder strap and one lap strap, with three anchorage points on the chassis, bodyshell or roll over bar of the vehicle. Anchorage points should be located one each side and to the rear of the seat base, one at or around shoulder level and to the rear of the seat back. (MSA ref K 2.1)

5.3.12.sr Four Point Seat Belt, Two shoulder straps and one lap strap, with four anchorage points on the chassis, bodyshell or roll over bar of the vehicle. Anchorage points should be located one each side and to the rear of the seat base, two at or around shoulder level and to the rear of the seat back. (MSA ref K 2.1.2.)

5.3.13.sr Six Point Seat Belt, Two shoulder straps, one lap strap, and two straps between the legs, with six anchorage points on the chassis, bodyshell or roll over bar of the vehicle.

Anchorage points should be located one each side and to the rear of the seat base, two at or around shoulder level and to the rear of the seat back(or one symmetrical for the two shoulder straps) and two between the legs. (MSA ref K 2.1.3.)

5.3.14.sr It is not permitted to mix parts of seat belts. Only complete sets as supplied by the manufacture should be used. (MSA ref K 2.1.7.)

5.3.15.sr Only one release mechanism is permitted on each seat belt set and this must be available for the wearer to operate whilst seated in the competing position. (MSA ref K 2.1.8)

5.3.16.sr The anchorage points for the shoulder straps should be positioned so that the strap is as near horizontal as possible. It should not be located on the floor directly behind the driver/co-driver. (MSA ref K 2.1.9)

5.3.17.sr Seat belts once involved in a serious accident should be discarded as they are likely to have stretched. Belts subjected to oil, acid or heat should be replaced. (MSA ref K 2.1.10)

5.3.18.sr Seat belt Anchorage. Where seat belts are anchored to the body work sufficient additional strength must be added to the original structure, to prevent the anchorage pulling through the original panels. A steel backing or counterplate of at least 25cm² and 3mm thick should be used. (MSA ref K 2.1.11)

On soft aluminium panels found on many Landrover type vehicles any work done to provide the additional mounting points required for the fitment of a safety harness must be done to a very high standard.

Engines

5.4.1. If forced induction is used the coefficient will be less than 1.7 to 1

5.4.2. Be equipped with a positive method of throttle closing by means of external spring/springs, so that in the event of failure of any part of the throttle linkage the throttle(s) are sprung closed. (if an additional spring is required it must be fitted on the final linkage.)

5.4.3. Vehicles fitted with electronic throttle control as standard original manufactures equipment for that vehicle are the only exemption from requirement 5.4.2 above

5.4.4.sr. The choice of make and size of engine is free in all modified trials classes.

5.4.5.sr. Engines in standard class vehicles must either be a standard Land Rover engine fitted to that model type, or any other engine with similar output.

5.4.6.sr. Engines that produce excessive smoke may result in exclusion from further competition. This will be a decision based on fact, as observed by the scrutineer and Clerk of Course.

Suspension

5.5.1. Standard class vehicles must be fitted with sprung suspension between the wheels and the chassis unless originally manufactured otherwise.

5.5.2. Suspension and steering movement must be controlled to avoid fouling of wheels and tyres on chassis or bodywork

5.5.3.sr. In standard class, the choice of spring and damper length is free. Provided the vehicle is not lifted more than 5cm. Springs and dampers must use their original mounting points. Dampers must not bottom out before the limit of upward suspension travel is reached.

5.5.4.sr. In standard class, remote reservoir & coil over dampers are prohibited.

5.5.5.sr. In standard class, suspension arms and members must be as originally fitted by the manufacture. Dislocation cones are allowed.

5.5.6.sr. In standard class, vehicles originally fitted with leaf springs may be fitted with parabolic springs, provided that suitably up rated dampers are also fitted. (*Parabolic springs do not have the same degree of natural damping as provided by leaf springs, hence the need for up rated dampers.*)

5.5.7.sr. Where the top mounting of the shock absorber is mounted directly to a main member of the roll-cage a brace must be fitted between the mounting point and the chassis, or those members of the vehicle frame acting as the chassis. (MAS ref P 56.5.1)

5.5.8.sr. It is prohibited to mount the shock absorber by drilling and/or welding a stud directly onto the roll/safety cage. (MAS ref P 56.5.2)

Brakes

5.6.1. Be fitted with brakes that are operative and capable of stopping and holding the vehicle as required. A foot operated single pedal brake system should be used to achieve this.

5.6.2.sr. Independently operated front or rear brakes are permitted in super modified class vehicles only, to act as fiddle brakes. They are not permitted in modified or standard class trials vehicles.

5.6.3.sr. A separate hand brake system must be fitted to all vehicles.

5.6.4.sr. Braking systems must be maintained in good working order

Steering

5.7.1. Have a steering wheel with a continuous rim not incorporating any reflex angles in the basic shape. Wheels with a flat rim segment i.e. D shaped wheels are permitted.

5.7.2. Specifically not permitted are steering wheels having a non-continuous rim shape.

5.7.3. Not Applicable

5.7.4. Have steering movement controlled to avoid fouling of wheels and tyres on chassis or bodywork.

5.7.5. Rear wheel or four wheel steering is prohibited.

5.7.6.sr. Vehicles must have the steering wheel and the steered wheels directly connected by a mechanical link.

5.7.7.sr. Steering systems must be maintained in good order

5.7.8.sr. Steering wheels with wooden rims should be avoided as they may splinter during an accident. (MSA ref. 14.1.3)

Wheels

5.8.1. Have not less than four road wheels and tyres (excluding the spare).

5.8.2. Not be fitted with any wheel spacers exceeding 30mm in thickness or of less than hub diameter. Multiple or Laminated spacers and extended studs are prohibited. (MSA ref 56.6)

5.8.3. Have all hub nave plates and wheel embellishers removed.

Tyres

5.9.1.sr. The use of dumper style, open-centered or very aggressive tread pattern tyres is prohibited in all classes. Hand cutting of tyres is strictly forbidden in all classes.

5.9.2. All tyres used on any event must be in good condition and have at least 1.6mm of tread at the start of the event.

5.9.3.sr. A spare wheel need not be carried.

5.9.4.sr. The use of tyre chains or studded tyres is prohibited.

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5.9.5.sr. Tyres should be covered by mudguards or body work for the full width of the treaded area.

5.9.6.sr. For the protection of marshals & spectators the Fitting of mud flaps, behind each road wheel extending beyond each side of the tyre tread is strongly recommended. (MSA ref 57.5.2)

Cooling

5.10.1. Any fluid lines, tubes or hoses carrying coolants through the driver and passenger compartment must be enclosed in a solid metal cover, insulated and isolated to prevent the occupants of the vehicle touching any hot surfaces. Such lines or tubes or coverings must be painted red.

5.10.2. Screwed hose clips (e.g. Jubilee clips) may only be used in conjunction with a suitably swaged pipe.

5.10.3.sr. All open radiators or expansion bottles whether front or rear mounted, must be covered in such a manner that nobody can be burnt on the hot areas of the radiator/expansion bottle.

5.10.4.sr. If a radiator or expansion tank explodes/vents the occupants must be protect from hot water. (MSA ref. K 14.1.7)

Transmission

5.11.1. Have the transmission outside the driver/passenger compartment, beneath the floor or secured in casings or covering of solid material.

5.11.2. Be equipped with a reverse gear in normal working order.

5.11.3.sr. The use of limited slip, torque biasing, or locking differentials is not permitted in Standard and Modified classes only Super Modified.

5.11.4.sr. Super Modified vehicles may have their differentials welded or pegged permanently locked.

5.11.5.sr. Vehicles with automatic transmissions must only be capable of starting in park and/or neutral.

Oil Systems

5.12.1. Have any oil lines passing through the driver/passenger compartment protected, and if non-metallic enclosed in internally or externally metal braided hydraulic pressure hose.

5.12.2.sr. Oil coolers and filters must not be fitted in a position where if they burst, the hot fluid could come into contact with the occupants of the vehicle.

Fuel Systems

5.13.1. Have any fuel lines passing through the driver/passenger compartment protected and if non-metallic, to be internally or externally metal braided hydraulic pressure hose, or fuel lines complying with FIA specification.

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5.13.2. They may only be joined by screwed sealing joints or vehicle manufactures approved joint.

5.13.3. If fitted with fuel fillers in a closed boot, or under closure, have collector/ spill trays incorporated to enable spillage to drain outside the vehicle.

5.13.4. Use normally available pump fuel. The use of fuel additives, octane boosters, or AVGAS /AVTUR (aviation fuel) is prohibited.

5.13.5. If using LPG, the entire system must comply with Construction and Use Regulations, and also the LPG Industry Technical Association Code of Practice No.11

5.13.6.sr. Have tank fillers and caps which do not protrude beyond the bodywork, or are situated within the driver/passenger compartment. The caps must have an efficient locking action to reduce the risk of accidental opening during an accident and ensure closing after refuelling. (MSA ref K6)

5.13.7.sr. Fuel tank vents must be at least 25cm to the rear of the cockpit and must be designed to prevent the escape of fuel should the vehicle become inverted. It is recommended that a non return valve (that is manufactured for use in fuel systems) is incorporated in the vent. All fuel caps should be of the sealed type to prevent spillage. (MSA ref K6)

5.13.8.sr. It is strongly recommended that the fuel tank is covered with an outer steel container which acts as a second line of defence in the event of a roll over.

Electrical Systems

5.14.1. Have any wet batteries in driver/passenger compartment enclosed in a securely located leak proof container. In order to protect the occupants the container must remain leak proof even in the event of a rollover.

5.14.2. Have batteries duly protected and secured so as to prevent short circuits or sparks even in the event of a rollover.

5.14.3. Be equipped with battery, generator and self-starter & horn.

5.14.4. During night events headlights, tail lights & reversing lights will be required on all vehicles.

5.14.5. Have the battery earth lead, if not readily distinguishable, identified by a yellow marker.

5.14.6.sr. For modified vehicles it is strongly recommended that they be equipped with a circuit breaker/battery isolator. Operation of the circuit breaker/battery isolator should be possible from both inside and outside the vehicle, or alternatively two separate controls could be provided. Operation of the circuit breaker/battery isolator must cut the engine and isolate the battery from all electrical circuits, with exception of those that electrically trigger any fire extinguisher systems.

Location of the circuit breaker/battery isolator control for external operation should be on the drivers side, slightly forward of the front door and near to the bottom edge of the windscreen.

The circuit breaker/battery isolator control(s) must be identified by a red spark on a white edged blue triangle (12cm base) with the ON and OFF positions clearly marked. If a diesel engine is fitted with a pull cable stop system, a second cable must be fitted next to the isolator switch and marked clearly "pull to stop engine" on a plate 75mm x 50mm white background with red lettering. (MSA ref.K8.1 to 8.5)

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5.14.7. Be fitted with suppressors as required by the Wireless Telegraphy Regulations.

Roll Over Protection

5.15.sr. It is strongly recommended that all competing vehicles have additional rollover protection fitted in the form of a Rollbar.

5.15.1.sr. All competing vehicles must have as a minimum Rollover Protection meeting one of the requirements listed in 5.15.2.sr.

5.15.2.sr. Minimum rollover protection for any competing vehicle:-

- Unmodified manufacturers standard roof structure, apart from modification recommended in 5.20.16.sr. (Discovery, Range Rover or Freelander type vehicles)
- Correctly fitted manufacturers standard hard top & screen
- Correctly fitted manufacturers standard truck cab & screen
- Correctly fitted manufacturers standard soft top frame & screen
- Correctly fitted manufacturers standard military rollover hoop & screen
- Correctly fitted Main Rollbar, Diagonal Member and back stays as in MSA section K drawing No.38
- Custom built specials should be constructed around a full rollcage

5.15.2.sr Further guidance on roll over protection & rollcage construction is given in Competitors Safety Section K.

Exhaust System

5.16.1. Have the exhaust system isolated from the driver/passenger compartment (e.g. beneath the floor or secured in casings of solid material).

5.16.2. Have no part of the exhaust system protruding to the rear of the bodywork more than 15cm.

5.16.3 Not Applicable.

5.16.4. Not Applicable.

5.16.5. Have all exhaust outlets terminating behind the mid-point of the wheel base of the vehicle and within 15cm of the outside of the bodywork periphery in plan view. Side exhausts are not to protrude beyond a line connecting the outside edge of the front & rear tyres with the wheels in the straight ahead position.

5.16.6. Exhaust catalytic converters must be fitted to all petrol engined vehicles manufactured after 31/12/99.

5.16.7.sr. All exhaust outlets to be not more than 610mm from the ground and face to the rear and downwards. Any production standard exhaust system will be acceptable, as will any exhaust system with an outlet in a similar position to a production standard vehicle.

Silencing

5.17.1. The reason for Silencing (Sound Control) is to reduce environmental impact and to keep Motor Sport running. Environmental Protection legislation has increased the pressure on activities generating noise, and Local Authorities have the power to suppress any noise source deemed to be causing a nuisance.

BADLRC is committed to running events which do not exceed maximum permitted noise level as laid down in the current MSA 'Blue book'.

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The current requirement as listed in the 2010 MSA blue book is a Maximum of 100db at 0.5m with the engine at 2/3 maximum revs. During testing rpm will not exceed 4500 rpm.

5.17.2. All competing vehicles are subject to mandatory Silencing. Where silencing is specified as mandatory a silencer must be used, irrespective of the exhaust sound generated without it.

5.17.3. to 6. Not applicable.

5.17.7. Temporary silencers, bypass pipes and the inclusion of temporary parts to achieve silencing requirements are prohibited. Officials may refuse to carry out noise checks on vehicles utilising temporary parts in exhaust systems. Organisers are empowered to exclude such vehicles.

Sound Test Requirements

5.18.1.sr. Random noise testing will take place during events and competitors will be advised of excessive noise via, in the first instance a WARNING.

Miscellaneous

5.20.1. Vehicles must be of sound construction and mechanical condition and suitably maintained

5.20.2. Have protective fastenings for all doors and all hinged or detachable parts of the bodywork.

5.20.3. Have no temporary parts incorporated in their construction

5.20.4. Not necessarily be equipped with speedometer, spare wheel or bumpers if the event is held on private property unless specified to the contrary by Special Regulations. Any exposed sharp ends of bumper etc. **MUST** be protected.

5.20.5. Be prohibited from carrying cameras/video equipment unless authorised by the scrutineer and event organiser (Clerk of Course)

5.20.6.sr. Vehicles may be derived from a commercial variant of the Land Rover Make

5.20.7. Have a minimum wheel base or 183cm (72")

5.20.8. Be fitted with a windscreen, if plastic windscreen, side-screen or rear windows are fitted the thickness must not be less 4mm. If a windscreen becomes damaged it may be removed for safety reasons (one event only) provided the occupants wear suitable goggles or visor.

5.20.9. to 11. Not Applicable

5.20.12. Not carry or pass any liquids in or through any tube/section comprising part of the chassis structure or safety roll-over bar/safety cage.

5.20.13. It is strongly recommended that all competitors participating in trials have available a self contained spill kit capable of effectively absorbing 1.5 litres of fluid. Used kits should be disposed of responsibly.

5.20.14.sr. The use of mesh or net hinged side-screens on open vehicles to retain the limbs of driver/passenger in the event of a roll-over is strongly recommended.

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5.20.15.sr. Although mesh front screens are not prohibited, use of any such screen will require the occupants to wear suitable goggles/visor during competition.

5.20.16.sr. It is strongly recommended that vehicles have a solid rather than canvas roof. The use of a sun roof with glass is not recommended if appropriate it should be replaced with a metal panel.

5.20.17.sr. All equipment carried in any vehicle during competition should be securely restrained so as not to become mobile where it could potentially cause injury to the vehicle occupants. If it is not possible to effectively restrain vehicle contents then they must be removed.

5.20.18.sr. It is strongly recommended that a passenger grab rail/handle or strap is fitted in front of the passenger. If fitted it must be constructed and installed so as not to compromise the safety of the crew. (MAS ref P 57.5.1)

Recovery

6.sr. Recovery Points. All competing vehicles should have suitable recovery points front and rear. Manufacturers lashing points which are welded to the chassis are not suitable for recovery.

6.1. Recovery Points. Modified vehicles must be equipped with substantial towing points front and rear, painted in a contrasting colour. The tow ball or point should be secured using suitable nuts and bolts of adequate size. The recovery points should accept a rope loop and be secure without requiring the use of shackles or other such attachments. On vehicles where a tow-ball is used, it should be fitted so as to retain the rope, i.e. it should either be mounted with the ball facing away from the direction of pull, or, where it is mounted close to a chassis member, a trap should be formed to prevent the rope from becoming accidentally detached. (MAS ref P 60.2.2)

6.2. Recovery Rope/Strop. The use of nylon ropes for recovery is recommended. Each competing vehicle is to be equipped with a suitable recovery rope/strop. This rope/strop should have a closed loop at each end and be of at least 4.5 metres in length. If for attaching the recovery rope/strop to the competitors vehicle a shackle is required the competitor should carry said shackle.. (MSA ref P 60.4.1)

6.3 Chain or wire ropes. The use of Chain or wire ropes is prohibited. N.B. Marshals may use any recovery equipment approved by the Clerk of the Course (MSA ref P60.4.3)

Fire Extinguisher

7. It is strongly recommended that a hand held fire extinguisher is carried in all competing vehicles. Recommended minimum capacity is listed below

AFF:-	Recommended capacity 1.75 Litres
Zero 200:-	Recommended capacity 2.25 Litres

Dry powder extinguishers are prohibited

Further guidance on extinguisher systems can be found in the 2010 MSA blue book section K Competitor Safety.

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Overalls.

8.sr. Although overalls are not compulsory they are strongly recommended. Oil soaked clothing should not be worn whilst competing.

Crash Helmet

9.sr. Crash helmets are recommended for all vehicles where a solid roof is not fitted.