Drag & Roll Racing
Definitions and Requirements

01/2021

Preamble:

This section of the RACERS Operations Manual (ROM) is to be read in conjunction with the general requirements set out in the ROM and, unless specifically stated in this section, will be suborned to any conflict with information contained in the ROM.

This section has been specifically designed for the use of regional drag strips in the conduct of meetings that are not of top-line national championship significance. Should a Venue Operator or an Event Organiser require a section to deal with events of that type the need should be raised with RACERS management for discussion and consideration.

Venue Operators and Event Providers are encouraged to provide new types of activities to bring new customers to their venues and sports. RACERS will undertake to provide a delivery environment with guidelines to make those new types of activities generally available within a risk minimisation structure.

In this document the word "vehicle" refers to any form of motorised conveyance (including motor bikes) that the Event Provider has included in their sporting regulations.

Definition:

Drag racing is a test of acceleration from a standing start usually over a prescribed distance, for a specific length of time or the amount of time required to reach a specified speed.

Drag racing is both a two and four wheel sport with categories defined by compliance with a set of vehicle regulations. Sporting regulations define achievements in accord with, the shortest elapsed time, the higher speed at the end of the prescribed distance, or the closest achievement to a nominated time; usually called "bracket racing".

Levels of Competition:

Basic: or Category 1, requires the use of Road registered vehicles which have been driven to the venue, and during runs, by road licensed drivers. Participation in this level of competition is the same as category one of the "Vehicle and Apparel Requirements". No special clothing or safety equipment is required to participate in what are basically "Street runs" but drivers must wear fully enclosed leather footwear and non-flammable full cover clothing. No competition licence is required for drivers in this category of events.

Club: or Category 2, is a mix of Road and non-registered specially prepared vehicles generally between members of the same club but may be extended to include the

members of other local and similar clubs. Vehicles in this category will have up to 800 hp and not capable of reaching speeds above 180 km/h in 200 m.

Helmets and full cover clothing is the minimum requirement for participation in club level competition in Road registered vehicles; for non-registered specially prepared vehicles a flameproof one piece race suit is required with an SFI approval appropriate to the type of vehicle being used.
Drivers in Club level events must hold a RACERS Clubman Licence which may be purchased on the day.

Championship: or Category 3, championship events are those events that have Championship Level vehicles competing i.e. vehicles with greater than 800 hp or are capable of reaching speeds in excess of 180 km/h in 200 m. Obviously, these vehicles represent the greatest hazard to both participants and spectators during an event due to the amount of kinetic energy that they generate.

In Championship Events, vehicles below the Championship ranking may be raced on a Clubman licence with the appropriate apparel denoted for club racing. Vehicles at or above the club level performance standards must have the full safety equipment as defined for this type of activity by recognised international drag racing bodies.
Drivers in championship level cars must hold either a RACERS National Competition Licence or a RACERS Clubman License if they are the holder of a licence from a recognised national sanctioning authority.

Test and Tune: in addition to the three levels of competition there will be occasions where participants will need to test their set up and tune their drive lines. In a test and tune only one car can go down the track at a time. The staging of the second car can commence immediately the preceding car has left the starting area and it can commence its run immediately the preceding car has crossed the finish line.

The drivers of road registered vehicles that are driven to the venue require at least current drivers licence issued by a state authority to participate in the sessions. Drivers of non-registered and race prepared vehicles will require at least a RACERS Clubman licence.

Other activities: for Burnout's, drifting and roll racing the requirements set out in "Club" above will be used where they are relevant to the activity. For advice on other activities please send your requests to admin@racers.world

VENUE COMPETITION AREA REQUIREMENTS.

The Competition Area for Drag racing is divided into four zones:

1. the acceleration zone
2. the deceleration zone
3. the retardation zone
4. the barrier or last line of containment

The following requirements have been formulated for venues and all events with acceleration zones of no greater than 200 metre or 220 yards from start line to finish line. Requirements for 400 metre or 440 yard (standard 1/4 mile) are available on request from admin@racers.world.

The Acceleration Zone: will be the length stated in the RACERS permit and the Event Providers sporting regulations for the event or the maximum length set out for the venue in the RACERS track licence document. This zone must be constructed to handle at least two times the maximum axle load that the venue will permit in the zone. Construction may

be of concrete or asphaltic concrete or both providing there is only one transition from concrete to the asphaltic concrete. The transition must be straight and perpendicular to the flow of traffic and there must be no discernible change in height anywhere along the transition line.

The use of Very High Traction (VHT) compounds in the Acceleration Zone is permitted but it must be deployed in accord with world's best practice available at the time the event or activity commences.

A 1% camber from the centre to the outside of the track for the purposes of surface drainage is highly desirable.

All patches must cover the full width of the track and the joint lines must be straight and perpendicular to the direction of traffic. There must be no potholes or longitudinal irregularities that are likely to cause a vehicle to deviate from a straight course. Ridges may be ground off on the proviso that there is still sufficient depth of concrete or asphaltic concrete to handle the shear loads being generated by the vehicles.

The Deceleration Zone: will be constructed from asphaltic cement or similar hard seal and, ideally, be twice the length of the acceleration zone or 2 metres in length for each 1 km/h that the fastest vehicle can achieve by the end of the Acceleration Zone. The length of the Deceleration Zone can be reduced by 1 metre for every metre of Retardation Zone but in no case can the Deceleration Zone be less than 1.5 times the length of the Acceleration Zone.

The Retardation Zone: is constructed of material which will act to retard the progress of a rolling vehicle. Ideally it will be constructed from gravel or sand which is regularly turned over. The fill material will be graded in the direction of travel with peaks that are 150 mm high. The principle of the retardation trap is that a competing vehicle which failed to stop in the Deceleration Zone will bottom out on the ridges and the wheels will run along the ridges thereby ensuring the longitudinal and directional stability of the vehicle whilst the underside drags through the material thereby exhausting the kinetic energy through the movement of the retardation material.

The Barrier: consists of an impenetrable wall cushioned by energy absorbing material or structures. Piles of loose tires are not recommended as the cushioning material due to the unpredictable trajectories that they are likely to follow which may cause them to land in a spectator area and they have been known to injure drivers. Wherever practical tires should be threaded on chains or a strong rope to ensure that individual tires will expend their energy by trying to drag other tires with it.

RACERS has designed a hinged barrier with excellent catch, cushion and drag characteristics which are durable, repairable and perform particularly well in this application. Drawings and details are available for no charge on request from admin@racers.world

Maximum length of the Acceleration Zone:

The maximum length of the Acceleration Zone is dictated by the total length of the Deceleration Zone and the Retardation Zone.

The maximum length of the Acceleration Zone can be calculated by using the following formula:

0.33 x (length of Deceleration Zone plus length of Retardation Zone)

Minimum length of the Deceleration Zone:

To accommodate the requirements of a vehicle with properly functioning brakes, the length of the Deceleration Zone should be no less than:

Length of Acceleration Zone X 1.5 (i.e. 200 metre Acceleration zone = 300 metre Deceleration Zone).

Minimum length of the Retardation Zone:

It is assumed that any vehicle which enters the retardation Zone has suffered a mechanical failure of its braking system and will have ~15% speed reduction in the Deceleration Zone. A level, properly filled and prepared retardation Zone will achieve approximately 1.2G of deceleration in ideal circumstances. This number is highly variable because the ability of the underside of the vehicle to catch and drag the retarding material has no constant. In addition, the driver turning the steering wheel causing the front wheels to plow into the material cannot be calculated either.

Much higher levels of retardation will be achieved if the Retardation Zone has an uphill aspect so an upward slope is highly desirable. The 1.2G is therefore a "Rule of Thumb".

On this basis, if a vehicle enters the trap at 165KpH (200KpH – 15%) it is travelling at 150 feet/sec and will slow at a rate of ~40 feet/sec/sec it will require ~5 seconds and travel approximately 360' (110 metres) to come to a standstill.

This means for most tracks with a 200 metre Acceleration Zone with a Deceleration Zone of 300 metres a 150 metre Retardation Zone has sufficient length to bring a vehicle to rest prior to impacting the impenetrable arrestment barrier.

Arrestment Barrier:

The Retardation Zone must always finish with an Arrestment Barrier that is 50% wider than the Retardation Zone to allow for vehicles spearing off at an angle through the retardation material.

This barrier must provide a cushion at least 10 metres deep. For economy, old car tyres secured together are recommended for this application. There are other more sophisticated systems available that have SFI approval that will also meet the needs of this application. This cushion should be backed by a vertical earth wall 1.2metres high to ensure the vehicle does not leave the venue's grounds. Where additional run-off of more than 50 metres is available, this wall is not required.

Fencing & Barriers:

Definitions:

FENCING: primary purpose is to ensure that people who are not actively participating in the event are contained within areas that can be protected and will move them between areas along predefined traffic routes.

Suitable venue perimeter fencing is required at regional tracks where there is a likelihood of wildlife entering the property and/or the competition area.

BARRIERS: primary purpose is to protect the fenced off areas from incursion by vehicles that may or may not be competing. Barriers will be deployed and designed to minimise the likelihood of injury to the competitors in so far as is practical given budgets and frequency of use.

Spectators must be excluded from all areas of the venue where adequate protection in the form of both fencing and barriers has not, or cannot, be installed.

General Descriptions & Requirements:

Permanent Fencing:

If behind the start line by ≥3 metres it must be at least 3 metres from a Barrier
If abeam or ahead of the start line it must be at least 6 m from a Barrier
It should be constructed generally in accord with AS 1725.5.2010 or 1725.2003
It must be at least 1200 mm high with the chain wire finishing less than 100mm from the ground.
Stanchions must be secured to a top rail which secures the chain wire at the top.

Temporary Fencing:

Where available, temporary spectator fencing from a reputable hire company shall be deployed at least 10 metres from a barrier.

Alternatively, bright orange safety mesh may be deployed and secured to trees that are at least 25 metres from the competition area for a distance of up to 20 metres behind the start line and 100 metres in front of the start line. At the 100 metre mark the mesh will turn at right angles away from the track for a distance of 50 metres. No spectators will be permitted past that point and the mesh will be regularly inspected by the officials of the meeting to ensure it stays in place. A marshall shall be present at all times to ensure spectators do not breach this line.

Permanent Barriers:

Concrete:

Concrete barriers can be as low as 750 mm if they have a face which is perpendicular to the competition surface. An additional 50mm should be added for each 1° angle the face has from the vertical; away from the competition surface.

Each block must be robustly connected to its neighbour so that forces can be transmitted along the length of the entire wall. Typically, this means three substantial bolts either side of the join with a heavy steel plate on both sides where the two blocks are abutted to one another. As a minimum the bolts need be 16mm in diameter and the joining plates should be fabricated from FSB of 12mm thickness and 75mm width and 450mm long.

Augmented concrete barrier:

The height of the concrete wall can be extended by the attachment of a single continuous ribbon of ARMCO. The individual pieces of ARMCO forming the ribbon must be fully bolted together as per the manufacturers specifications. The ribbon is secured to the top of the wall by 50mm RHS posts 750mm long secured to the back of the concrete wall with either 3x 13mm x 75mm chem-sets or 3 x 13mm x 100mm galvanised loxins. This means the ARMCO has a slight lean in at the top to assist in the arrestment of the

upward movement of a vehicle. This arrangement is not 100% effective but it will achieve a safer environment for the spectators and drivers alike.

All ARMCO barrier:

ARMCO or similar steel barrier should be installed in accord with one of the three methods described NSW RTA drawing MD.R132.F06.A which is available on the internet at the following page.

http://www.rms.nsw.gov.au/cgi-bin/doingbusinesswithus/designdocuments/index.cgi?md_r132_f06_a.pdf

The barrier needs to be installed two high with a gap of no more than 50mm between the plates and the bottom of the bottom plate should be no more than 150mm above the surface of the competition area.

Where budget permits the ARMCO barrier will be three sections high with no gaps and less than 100mm from the ground.

Height extension:

If the minimum barrier height of 750mm is not available, and the height cannot be augmented; the fencing that contains the people must be no more than 100 metres long and erected further away from the barrier on a ratio of two metres for each 25mm the barrier is under 750mm and the public will not be permitted to stand closer than this distance. The fencing must meet the AS 1725.5.2010 or 1725.2003 and be at least 1200mm high.

Non-Permanent Barriers:

Barriers of the "Ironman" type and water barriers that are at least 75% full may be used up to 3 metres behind the start line. Ironman barrier may be used to separate the lanes for upto 30 metres after the start line. Two lengths of "Ironman" may be used to create the island for the starter provided they are fixed to the ground and bridged together by steel brackets.

Spectator Area Protection:

All public areas should be adequately and appropriately maintained.

All spectator areas, including the pit area, must be separated from the restricted area by fencing (minimum 1200mm in height).

All spectator areas (including the pit area) which are located more than 200 metres down track from the starting line must be a minimum of 15metres from positive barriers. If such spectator areas are not a minimum of 15 metres from positive barriers, the track must have a debris fence in this area. The top of the debris fence must be a minimum of 2500mm in height from track surface and must incorporate at least 2 strands of 3/8" steel cable evenly spaced and securely anchored at each end.

All grandstands must be in compliance with applicable State and Federal codes and/or regulations, and any additional requirements promulgated by the underwriter and/or RACERS.

Facilities are urged to make public address system announcements during all events which encourage parents to monitor their children at all times and to not place or allow children to sit on walls or lie in the foot traffic areas.

Technical Inspections:

All racing vehicles must be inspected in accordance with the rules and regulations of RACERS and those OF the applicable sports group or category specifications prior to participation in any racing event

Emergency Response Requirements:

Each facility must have a suitable ambulance manned by two paramedics or EMT's or applicable equivalents at the venue during all track activities. A commercial or state-certified ambulance or a track owned ambulance which meets those requirements is acceptable.

Each ambulance must meet the following minimum specifications:

1. The ambulance must be manned by two certified paramedics or EMT's at all times during scheduled events, including day prior and tuning and testing.
2. Each non-transporting ambulance must contain the minimum medical equipment for Basic Life Support (or the state's equivalent classification) as required by state certification standards.
3. In cases of track owned ambulances, the insured shall keep the following items on record:
    a. Copies of the state's required medical equipment.
    b. Signed statement by the insured confirming each ambulance is so equipped.
    c. Supporting photos of ambulance and equipment.

Each facility must have a dedicated fire/rescue type vehicle (generally equipped as outlined above with at least an certified advanced first aid trained operator) present and operational at all racing events (recommended but not required at tuning and testing and grudge/day prior activities).

Exemptions may be granted at any time at RACERS' discretion for tracks utilizing public fire department or privately contracted fire/rescue response services.

Event Delivery Teams
Personnel - Roles & Responsibilities

It should be noted that an individual may fill a number of the roles denoted below during an event. It is expected that the three executive roles i.e. Event Secretary, Incident Manager and Race Manager will be solely in that role for the entire event.

Meeting Director/Event Secretary (MD):

Role: the executive in charge of all documentation, managers and the schedule for the event

Responsibility: to apply for, collect, collate, authorise and file all documentation pertaining to an event and to forward to RACERS all signed applications for Contract to Participate and Incident Reports. The Event Secretary coordinates with the various managers for the rostering and appointment of people to fill the various roles required to deliver the event.

The following management roles report directly to the MD:

Technical Compliance and Safety Scrutineering Manager:
The person in this role is responsible for:

- the inspection of the competition zones to ensure that they are as stipulated in the RACERS Venue Requirements for the venue being used and the type of event being delivered.

Chief Documentation & Certification Clerk:
The person in this role is responsible for:

- ensuring that all customers have filled in entry forms correctly
- view lawful visual identification that unequivocally that identifies the customer
- sign as witness that they saw the customer sign the form(s)
- issue wristbands specific to the activity(s) lawfully entered by the customer

Assisting personnel for these managers must be appointed and/or approved by the MD and no person without the approval of the MD may assist in these crucial roles.

Safety Manager (SM):

Role: The Safety Manager is in charge of all of the resources required to minimise the harm caused by, and to resume operations as quickly as possible after, an incident.

Responsibilities: the effective management and a high level of teamwork between the various functions that must work together to effectively reduce the effects of trauma in the event of a serious incident. The SM must be aware at all times of the responsibility to the customers to ensure they are kept as safe as possible whilst enjoying an exciting and potentially harmful activity.

- **Medical:** The SM will appoint a Chief Medical Officer (CMO) for the event from the personnel qualified for the role. The Chief Medical Officer will ensure that there is sufficient medical apparatus and skilled personnel to minimise the trauma suffered by a customer in the event of an incident. Because each venue poses different challenges and opportunities a Medical Emergency Plan will be formulated for each

venue and level of competition. It is the SM's responsibility to ensure that the Venue Operator and/or Event Provider has provided the resources stipulated in the Medical Emergency Plan.

Fire & Rescue Marshalls: The SM will appoint a Chief Fire and Extrication Officer (CFEO) for the duration of the event. Any fire marshal who is operating in a solo position must be trained in the use of the different types of fire extinguishers to be deployed at their position and the correct way to use them. Fire Marshalls must wear flame resistant apparel, including gloves, balaclavas and footwear, at all times they are on duty.

Extrication equipment available to the Fire Marshalls will include such items as Port-a-powers, jaws of life and a water tanker for sluicing fire extinguisher residues from the competition zones.

When attending an incident where there is an injury the CFEO will take direction from the CMO.

The number of Fire Marshalls and assistants, their deployment, the skills required, and the equipment to be provided, is defined in the Whole of Venue Fire & Recovery Plan and the SM will ensure that the CFEO checks the suitability, availability and condition of all equipment and personnel prior to the commencement of activities.

Safety Observer (SO): the SM may denote a person to act as their delegate at an incident site. This person will not take an active role in the remediation of the incident as their sole purpose is to communicate to the SM what is actually happening at the site of the incident. The SM may send instructions to the SO to be communicated to the senior medical and rescue personnel when it is responsible to do so.

Clean-up crew (CC): the SM will deploy clean-up crew when and where requested to do so by the RM. It is expected that they will be deployed by the SM whenever there is a report of contamination or debris anywhere in the Competition Zones. The CC may also be deployed to assist in the paddock and staging areas when they can be spared from their primary responsibility of maintaining the Competition Zones.

Race Manager:

Role: the Race Manager (RM) controls the assembling, marshalling and starting of each run for each customer. They also deliver the Drivers' Briefings and administer the Code of Conduct during the event.

Responsibilities: This is the most important role for the delivery of customer satisfaction. Enjoying a smooth flow from the paddock areas to the staging lanes and then down the strip is the most likely attribute to sell the event as the "must do again" product. This is also one of the most complex jobs in a dynamic and constantly changing environment which requires total concentration over an extended period of time.

To assist the RM in the discharge of his duties the following positions need to be filled:

Starter: actively and energetically assist the customers to stage their cars in the minimum possible length of time to minimise delays and potential damage due to overheating et cetera

Staging Manager: must ensure that the correct groups and categories are assembled in the staging area in the correct order ready to be dispatched to the start of the acceleration zone.

Bracket Marshalls: collect and assemble the groups and categories from the paddock area and directs them to the staging area.

Track Observers; report any breaches of the Code of Conduct to the RM as well as any contamination of the surface of the Competition Zones which might affect the safe handling of the vehicles or the fairness of competition.

Timing Manager: checks that all timing equipment is working and deployed correctly prior to the commencement of the competitive activities and then manages the timing crew throughout the event. The TM is responsible to the RM for the speedy production of time slips.