

United Kingdom & International Timing Adjudication (UK&ITA).

(A business of Straightliners Ltd)

THRUST POWERED VEHICLES FOR Exhibition uses, Testing, Top speed & Land Speed Records – construction, driver licencing, test running & matters of safety.

1. Not all jet or rocket powered concepts will be accepted by Straightliners and UK&ITA for events open to the public or to other competitors. Private running time for top speed and land speed records can be made available to all types of safely constructed thrust powered vehicle. The Supplementary Regulations for an event will provide further information.

NO pulse jet power units. NO Solid fuel rockets. NO bi-propellant or hypergolic rocket fuels. NO passenger is to be carried in, or on, any thrust vehicle.

2. **ALL** thrust powered vehicle owner drivers will need to present to Straightliners and UK&ITA the following:
 - A vehicle concept & design review, with full written details
 - Allow a construction inspection, in a workshop or garage,
 - Make observed runs, on private time with increasing speeds planned;
 - Meet all costs involved (to be paid by the vehicle builder or rider or driver).

Straightliners with UK&ITA may adopt alternatives which will be considered appropriate to the vehicle that is planned by the owner/driver/rider.

3. **Drag Racing** event (1/4 or 1/8 mile) – demonstration runs (**terminal velocity maximum speeds may be applied to each rider or driver and their vehicle**). The rider/driver (or entrant) shall insure themselves and the vehicle. When requested they shall provide a copy of the certificate of insurance to the organisers in the sum of not less than £5 million. Insurance documents may have to provide specific written indemnification of either a named event organiser or a particular governing body. Proof of insurance premium payment may be required.
4. **Top Speed event**- demonstration runs with agreed increasing speeds. The rider/driver or entrant shall insure themselves and their vehicle. When requested provide a copy of the certificate of insurance to the organisers in the sum of £5 million, which may have to provide specific written indemnification of either the named event organiser or a governing body such as Guinness World Records. Proof of insurance premium payment may be required.
5. **Land Speed Records (LSR)** – at a Straightliners with UK&ITA two run average record event or at a single vehicle private meeting, including those with no public attendance: The rider/driver or entrant shall insure themselves and their vehicle. When requested provide a copy of the certificate of insurance to the organisers in the sum of £20 million, which may have to provide specific written indemnification of either the named event organiser or the governing body. Proof of insurance premium payment may be required.
6. **Land speed record (LSR) MSUK National British** two run speed record event(s). The rider/driver or entrant shall insure their vehicle. When requested provide a copy of the certificate of insurance to the organisers in the sum of £20 million, which may have to provide specific written indemnification of either the named event organiser or the governing body – Motorsport UK. Proof of insurance premium payment may be required.
7. **Rider and driver medical status** will be more rigorously checked than for those speed or record competitors with conventional wheeldriven roadgoing or special vehicles.

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8. **Four 4 (or more) Wheeled Jet vehicles – general rules**

The FIA and Motorsport UK accept that American race organisations, National Hot Rod Association (NHRA) and International Hot Rod Association (IHRA), have robust Construction Regulations, which can be applied:

- Vehicle types include: Dragsters, Funny Cars, Pick-up trucks, Trucks, LSR vehicles. Should an owner/driver construct any different type of vehicle, the construction will need to meet or exceed those stated by named organisations.
- Jet engine(s) limitations will be applied – makes, type and the number installed.
- FIA and Motorsport UK vehicle construction regulations (included in the ‘White Book’) (where applicable) will apply.
- Wheeldriven vehicles are allowed – turboshaft engine.

9. **Three 3 Wheeled Jet Vehicles**

- Jet engine limitations. Modified turboshaft type engines are allowed
- Power unit examples: Viper 500 (approved models, no short life), Gnome, Gem.
- FIM and ACU vehicle chassis, frame and construction regulations will apply.
- Wheeldriven vehicles are allowed - turboshaft

10. **Two 2 Wheeled Jet vehicles**

- Jet engine limitations. Modified turboshaft engines are allowed
- Examples: Viper 500 (approved models, no short life), Gnome, Gem, Palouste.
- FIM and ACU vehicle construction regulations will apply
- Wheeldriven solo and streamlined motorcycles are allowed – turboshaft
- DIY turbines – Turbocharger converted units

11. **Jet powered Kart**

- Jet engine limitations. Modified turboshaft engines are allowed
- DIY thrust turbines – Turbocharger converted units
- Kart Chassis regulations (short wheelbase, no suspension, no ROPS)

12. **Guinness World Record speed contender vehicles**

- Smaller turbine power units permitted, as appropriate to each vehicle.
- DIY thrust turbines – Turbocharger converted units

13. **Rocket vehicles**

Full sized vehicles only (2,3 or 4 wheeled) are allowed in this classification.

- The rocket class shall include: solo motorcycles, three wheelers and single seater special vehicles, dragsters and funny cars,
- All power units (also known as ‘engines’) shall be of a variable thrust type and have multiple (two or more) thrust shut-off mechanisms or methods.

14. **PARACHUTES (chutes) for thrust powered vehicles.**

- i. The use of **pack parachutes** may not be appropriate to jet or rocket vehicles. Parachutes housed within metallic tubes are recommended. Two (2) No. chutes are required – dual release levers; safety pedals; lanyard & rider ‘buttons’ required for release actuation to suit the vehicle.
- ii. An exception is permitted for solo ‘sit-on’ unfaired or partially streamlined bikes (two wheelers), where the fitting of one (1) parachute alone is allowed.

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- iii Any chassis or bodywork to the rear of the chute tubes will need protecting to prevent entanglement.
- iv MSUK Drag Racing parachute rules will apply to ALL vehicles fitted with (a) parachute(s) to supplement wheel braking. The event organisers will require the parachute canopy, drogue chute, canopy lines, attachment main tether and attachment position(s) on the chassis to be shown to the scrutineer. The organisers may require the vehicle entrant or driver to demonstrate the packing of the parachute(s). Vehicles requiring to use parachutes may be prevented from running if the cross winds are considered too strong by the event organisers.
- v Supervised single vehicle test passes are to be made by any type of vehicle fitted with one or more parachutes.

15. **FUEL OR PROPELLANT - *Shut Off Timed Device.***

- i Moving of the throttle to the maximum position shall 'arm' an automatic shutoff device installed, such that the release of a driver actuated momentary switch will shut off all fuel to the engine (including the afterburner).
The *only* automatic device permitted on a jet or rocket powered vehicle will be a fuel or propellant shut off valve, activated by a timer.
- ii A timer, set at 0.2 seconds above the normal or expected elapsed time of the participating car at 1/4mile or 1/8mile events or 1 second for top speed events. The shut off timer will be 'armed' by going to a maximum throttle setting or by a rocket control.
- iii The timer will be started or triggered to activation by either the operation of the 'hot streak' and/or by the release of the brake pedal/ brake handle. Once activated and 'timed out', the system shall shut off all fuel to the engine (including the afterburner) or all of the propellant delivery system.
- iv The system may be electrically and/or pneumatically operated. In the absence of either electrical power or pneumatic pressure to the system, the system will prevent the engine from running. The loss of either electric power or pneumatic pressure to the system during operation of the vehicle on the track will shut off all fuel to the engine (including the afterburner).
- v Absolutely no delays, overrides, or bypasses of any description are permitted in any part of the shutdown device/system.

16. **FIRE EXTINGUISHANT**

The vehicle owner/driver shall ensure that the safety response team(s) are aware of the extinguishant type(s) (liquid, gaseous or foam) which can be used on a vehicle fire, or during any release of fuel or propellant.

If there is a requirement for any exceptional volumes, then the vehicle operator shall make all arrangements with the organisers ahead of any meeting and shall meet the cost involved.

17. **MOTORSPORT UK - CAR & BIKE DRAG RACING YEARBOOK (The "white book")**

- i For any Technical Construction or Safety criteria not provided for by the Specific Regulations of Motorsport UK in the UK Drag Racing Yearbook (also known as the 'White book') then current NHRA Exhibition Vehicle Rulebook Supplement or the

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FIA Appendix D, Rules; or the ACU rule book, shall be deemed to be the source of reference.

18. DRIVER OR RIDER LICENSING - Jet or rocket vehicle – Car or Motorcycle, as applicable.

Motorsport UK	Drag Racing Exhibition Jet Vehicle
Auto Cycle Union	Category IV – Group Y1 or Z2
FIA	Appendix L 'LSR A'
FIM	Category IV – Group Y

- i. Before jet or rocket cars are allowed to run within a permitted event, the following test passes or runs will have to be completed in the presence of one licensed driver and the race director or by two licenced drivers (each with at least three years driving experience). These sessions and passes shall be made over a quarter mile track or ¼ mile course length when an appropriate airfield is used.

All passes shall be recorded in a log book for the driver/rider and vehicle.

Session 1: Three 3 full distance passes, **no reheat or afterburner** to be used. The first two 2 passes are to be at 80% of maximum rpm. A third pass at 100%rpm to obtain a feel of holding the vehicle on a starting line. A fourth pass to be a moderate launch to the 60foot line, using re heat/afterburner.

Session 2: Four moderate half pass (to the eighth mile) using re heat/afterburner.

Session 3: One moderate full ¼ mile pass using re-heat/afterburner, three full ¼ mile passes using re-heat/afterburner.

The three 'sessions' shall take place over a period of two calendar days, although these need not be consecutive.

For non-exhibition use vehicles, of any vehicle style, an alternative test programme may be agreed in advance of running the vehicle with Straightliners with UK&ITA.

19. MOTORCYCLE RIDER (thrust vehicle with less than four wheels)

The National Sporting Code of the Auto Cycle Union (incorporating the provisions of the International Sporting Code of the FIM) and any subsequent amendments officially promulgated and issued shall apply as well as these Specific Regulations.

20. ALL DRIVERS and RIDERS:

A Valid Straightliners Thrust Vehicle License (two, three or four wheels) or a Motorsport UK Jet vehicle exhibition Licence will be mandatory.

Applicant must be minimum 18 years of age. Licensing is on an individual basis, through Straightliners and testing of driver or rider skills will be made.

21. LICENSED DRIVER WITH A NEW VEHICLE

Any current Straightliners licenced jet car driver may 'cross-grade' to another exhibition-jet vehicle category. They must make passes witnessed by two currently licensed jet drivers (each with a minimum of three years' jet-driving experience). Runs may be made at an open track session.

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Jet car drivers who plan to move to a rocket powered vehicle or a rocket driver moving to a jet car of any type, should make contact with Straightliners to plan a particular testing procedure.

22. LICENSE, NEW DRIVER

A new driver must notify Straightliners of intention to obtain a license and confirm that they have received any required forms and read the rules for the category. An applicant must be a minimum 18 years of age. All new drivers will pay a licence application fee with the submission of a medical examination document. Proof of vehicle construction methods and driver capability must be submitted. An inspection and observation of driver skill will be performed prior to licencing.

Each new driver (or a driver cross grading from say a Funny Car to a dragster) will be given a cockpit-orientation (blindfold) test and must be watched and timed in a Bail out test wearing fully secured safety equipment.

A new driver must make a minimum of 12 test runs over a two-day (minimum) period (see para. 18 above). All of these runs must be made at a closed session. Blindfold cockpit test, bail out procedure and test runs must be witnessed by two currently licensed jet exhibition drivers, each with at least three years' experience, or one licenced driver with a Straightliners senior event official.

23. UK&ITA TOP SPEED EVENTS.

Before qualification for attendance at top speed events over the Standing Mile (or further distances if made on sand), three practice runs shall be carried out:

- A 100m run into a full flying start ¼ mile
- A 500m run into a full flying start ¼ mile
- A 1 kilometre run into a full flying start ¼ mile

The driver or rider shall maintain a log book for the particular vehicle being used in which a written record of all power unit, engine or vehicle running information is to be maintained.

24. LAND SPEED RECORD ATTEMPT

National British Land Speed Records can be governed in Britain by Motorsport UK or the Auto Cycle Union or by UK&ITA. The driver regulations of either the FIA and the FIM may be applicable for attempts on World Land Speed records. The *short distance records* are those flying start speed records up to 1 mile as timed in the UK. For qualification based on gradual increases in speed, multiple gradually increasing speed runs shall be made and logged, including:

One successful, complete pass timed at the Standing mile position between 50% and 60% of the maximum anticipated speed or the speed record if one exists or 180mph to 220mph

One successful pass timed at the Standing Mile position between 65% and 75% of the maximum anticipated speed or any current speed record or 235mph to 270mph

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One successful pass timed at the Standing Mile position between 75% and 85% of the maximum anticipated speed or any current speed record if one exists or 270mph to 310mph.

For qualification based on prior thrust powered driving experience

Three passes between 75% and 85% of the maximum anticipated speed or any current speed record if one exists or 270mph to 310mph.

Experience should be gained with the vehicle that will be used in the record attempt (or a very similar vehicle) and all qualification passes shall be performed within a 12-month period prior to any record attempt.

The event Clerk of the Course and Event Steward will give the final approval of the licence.

To qualify for World Land Speed Record licence a car driver must provide evidence in the form of time slips from land speed record attempts sanctioned by the FIA or other organisations, or proof of currently or previously held National land speed records. British Riders shall hold a valid FIM licence issued by the Auto Cycle Union, or Scottish ACU. Riders from overseas will need to show a licence from their own National Motorcycle Federation.

Other documentation may be considered at the discretion of the event Steward. Where a new rider/driver is competing with a 'new vehicle' the more onerous requirements may be imposed for each and every observed pass.

25. TECHNICAL BRIEFING OF SAFETY PERSONNEL.

Before the start of *each event or meeting*, without fail, the vehicle Owner/Driver/Crew Chief shall brief the members of the safety crew, fire vehicle and first response vehicle team members. This briefing will be at the vehicle and is to include identifying and demonstrating all safety features as well as the actual positions of any pressurised tanks; fire extinguisher openings in bodywork; fuel valves; fuel tanks; electrical disconnect switches.

26. EXPIRED LICENSE

Should a driver or rider let their license expire by one year, or more, they will become a 'new applicant' and must meet all of the new-driver requirements in these regulations.

27. DRIVER LOCATION AND PROTECTION

Driver must be sealed off from intake by firewall of at least shoulder height. If located next to the jet compressor section, driver must be totally isolated from compressor by 3/8-inch 7075-T6 aluminium shield. J-85 Funny Cars must be additionally equipped with a minimum 360-degree .050-inch stainless steel shield encompassing combustor and combustion can. If driver is located near hot section, insulation must be used to protect driver from engine heat. Riders of jet powered streamliner motorcycles shall be protected in the same manner.

28. DRIVER RESTRAINT SYSTEM

A quick-release driver restraint system, with a 3-inch shoulder and lap belts and 2-inch crotch straps, meeting SFI Spec 16.1 or 16.5 is mandatory in all cars. Driver restraint system must be clearly labelled as meeting SFI Spec 16.1 or SFI Spec 16.5 and be dated by manufacturer. SFI 16.1 or 16.5 3-inch wide shoulder harness straps folded over and sewn to be 2-inches

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wide by the original manufacturer in order to fit onto the head and neck restraint lips/channels are acceptable. Arm restraints are mandatory in open cockpit vehicles and are recommended in all vehicles.

29. HEAD AND NECK RESTRAINT DEVICE/SYSTEM (FHR)

At all times that the driver is in the race vehicle, from the ready line until the vehicle is on the return road, driver must properly utilize an SFI/FIA approved head and neck restraint device/system. [These may also be known as forward head restraint (FHR) systems]. The rules are to ensure that the connections to the rider/driver crash helmet is completed and in use, which is required for full functionality of the device.

The head and neck restraint device/system, when connected, must conform to the manufacturer's mounting instructions, and it must be configured, maintained, and used in accordance with the manufacturer's instructions.

30. HELMET

For all riders and drivers, a full-face and approved crash helmet shall be worn. With open vehicles and on bikes, an attached visor/shield is mandatory (**goggles are prohibited**).

31. PROTECTIVE CLOTHING

Drivers of dragsters must wear a suit meeting SFI Spec 3.2A/15 with SFI 3.3/15 gloves and SFI 3.3/15 boots. Drivers of Funny Cars and dragsters with canopies must wear a suit meeting SFI Spec 3.2A/20 with SFI 3.3/20 gloves and SFI 3.3/20 boots. Head sock 3.3 mandatory. A head sock is not mandatory when helmet is manufactured with a skirt and labelled as meeting SFI Spec. 3.3.

Motorcycle riders and three-wheeler riders (where the riders are not restrained) and kart drivers who are not restrained (harnessed within ROPS) shall use the approved protective clothing and equipment for the discipline described in governing body Standing Regulations, which may be enhanced by any event Supplementary Regulations.

Owners, drivers and riders are urged and invited to always discuss plans in strict confidence with senior personnel within Straightliners. Contact should be made through the main office because written records will need to be maintained (within GDPR requirements) of any advice or explanations that are given