

# **NHRPA**

# **National Hot Rod**



# **Specifications**

# **June 2011**

# NATIONAL HOT ROD SPECIFICATIONS - 2011

## NATIONAL HOT ROD RULES

NHR.1	DEFINITION	NHR.36	ENGINE EXCEPTIONS
NHR.2	TYPE OF CAR	NHR.37	ENGINE POSITION
NHR.3	IMPORTANT PROHIBITIONS	NHR.38	OIL SYSTEM
NHR.4	PROTECTIVE CLOTHING	NHR.39	GEARBOX / FINAL DRIVE
NHR.5	BODYWORK	NHR.40	OIL COOLER
NHR.6	SPACEFRAME	NHR.41	VEHICLE WEIGHT / BALLAST
NHR.7	BULKHEAD	NHR.42	BRAKES
NHR.8	TRANSMISSION TUNNEL	NHR.43	AEROFOIL / REAR WING / ROOF SPOILER
NHR.9	REAR FIREWALL	NHR.44	WHEELS & TYRES
NHR.10	FLOOR	NHR.45	EXHAUST SYSTEMS
NHR.11	SUSPENSION	NHR.46	COOLING SYSTEM
NHR.12	SHOCK ABSORBERS	NHR.47	LIFTING EYES
NHR.13	GROUND CLEARANCE	NHR.48	WINDSCREEN/GLASS
NHR.14	WHEELBASE	NHR.49	STOP LIGHTS
NHR.15	ROLL CAGE	NHR.50	MIRRORS/GLASS
NHR.16	8 VALVE ENGINES — SOHC TYPE	NHR.51	CATCH TANK
NHR.17	BORE / STROKE	NHR.52	BATTERIES & ELECTRICAL SYSTEM
NHR.18	CARBURETTORS	NHR.53	FUEL TANK & SYSTEM
NHR.19	AIR FILTERS	NHR.54	RACING NUMBERS
NHR.20	FLYWHEEL / CLUTCH	NHR.55	DRIVERS / SPONSORS NAME
NHR.21	CYLINDER HEAD / BLOCK	NHR.56	DRIVERS SEAT
NHR.22	ENGINE POSITION	NHR.57	WINDOW NETS
NHR.23	16 VALVE ENGINES — DOHC TYPE	NHR.58	NECK SUPPORTS
NHR.24	BORE / STROKE	NHR.59	SEAT BELTS
NHR.25	CARBURETTORS	NHR.60	HELMETS/EYE PROTECTION
NHR.26	AIR FILTERS	NHR.61	CLOTHING
NHR.27	INLET MANIFOLD	NHR.62	FIRE EXTINGUISHER
NHR.28	CYLINDER HEAD	NHR.63	FINAL PREPARATIONS & COLOURS
NHR.29	CYLINDER BLOCK	NHR.64	VIOLATIONS
NHR.30	PISTONS	NHR.65	ENGINE SEALING
NHR.31	CON RODS	NHR.66	TIMING TRANSPONDER/RACECEIVERS
NHR.32	CRANKSHAFT	NHR.67	DATA LOGGING
NHR.33	BALANCING	NHR.68	SCRUTINEERING OF NEW CARS
NHR.34	FLYWHEEL / CLUTCH	NHR.69	RULE CHANGES
NHR.35	IGNITION SYSTEM	NHR.70	FUEL SPECIFICATION

## NHR.1 DEFINITION

**Racing is in a clockwise direction.** The object is to complete the specified number of laps in the shortest time. Baulking, pushing, or spinning another car is not permitted. The circuit is clearly marked, and you are not permitted to allow your wheels to pass over the demarcation line.

## NHR.2 TYPE OF CAR *(Full Space frame only)*

Only cars that are front-engined, saloon or hatchback, are permitted, based on a standard steel production shell. Coupés and certain sports cars may be used, but only with the permission of the NHRPA. The NHRPA's definition of a Coupé is as follows; any car with 2 doors and a boot lid, not a hatchback; The current approved Coupés are the Ford Puma, Peugeot 206cc, Vauxhall Tigra, Audi TT and BMW Z4.

The NHRPA's definition of a Sports Car is as follows: Any car with 2 doors and only originally constructed to carry two persons; The only currently approved Sports Car is the Mercedes SLK.

Any new car to be introduced into the formula, must have permission of the NHRPA before it is built, and once ready to race, must be scrutineered at a meeting prior to the first meeting where it is intended to be raced.

- A. The minimum length for a car, when originally manufactured, is 3505mm (138").
- B. The maximum length for a car, when originally manufactured, is 4450mm (175.2").
- C. The maximum width of any car shall not be more than 1854mm (73") when ready to race.
- D. All cars must be rear wheel drive; front wheel drive cars must be converted.

### NHR.2.1 Formula Update

It has been agreed that in order to bring the formula up to date and allow more modern models to fit into current rules, the following alterations may be made:

- A. Oversized cars may be used by shortening the bodies to fall within the existing length and width rules.
- B. Front doors must remain original size in length and height.
- C. The shell must still resemble the manufactured shape so as to keep the car's identity.
- D. The wheel base must be reduced to a maximum 99" (2515mm) and minimum 96" (2438mm).
- E. The engine position rule will be as in the current regulations and will be calculated from the actual wheelbase.

Current rules are applicable to all other areas.

Any proposed new model must have drawings or photographs presented to the NHRPA before permission is granted.

Current cars may also have a facelift, with later grills, bonnets etc., but these changes must also be presented to the NHRPA before production.

## NHR.3 IMPORTANT PROHIBITIONS

- A. No fuel injection allowed.
- B. No forced induction or nitrous oxide.
- C. No traction control system (s).
- D. No in-car adjusters other than bias braking.
- E. No tyre softening
- F. No Octane booster or upper cylinder lubricants.
- G. Only steel rose (rod ends) joints or spherical bearing on suspension.
- H. **Cars, engines and fuel will be checked on a random basis. Violations may result in an immediate suspension of all racing facilities and any refusal to have cars checked will result in an automatic 12 month ban.**

## NHR.4 PROTECTIVE CLOTHING

All Drivers will be required to wear fire-retardant gloves and balaclavas, in addition to existing rules on fire-retardant protective clothing, and all body parts must be entirely covered at all times (e.g. sleeves must not be rolled-up).



It is not permitted to put vents, scoops or holes in panels unless specific permission is set out within these rules.

#### **NHR.5.2 Front Panels / Grills**

1. Front panels/grills must retain the standard manufacturer's grill and headlamp apertures, albeit blanked-off and in replica form. Cooling holes may be drilled within the outline of the blanked-off headlamp where glass would have been.
2. The front panels must not be bonded together to form one unit (i.e. front panel wings/bonnet).
3. The front section of the bonnet may be incorporated into the grill/headlight panel.

#### **NHR.5.3 Bumpers**

1. No separate bumpers are allowed.
2. Three 50mm inspection holes should be drilled at the front and rear bumper levels. These must be equally spaced between the chassis rails. Any holes in the front or rear bumper must be below the contact area of the bumper and within the confines of the original body width.
3. Number plate location area may be removed or filled to contour of bumper.
4. All bumper fixings must be via separate brackets or sleeved tubes. They must not be welded or bolted directly to chassis. Securing bumpers on the contact area (where two cars touch) is not permitted. Reinforcing or armouring is not permitted.
5. The silhouette of the bumpers in the side elevation, below a line drawn through the centre of the front and rear hubs, is free.
6. A splitter or bib may be part of the lower spoiler, but no part of the lower splitter or bib may extend forward of the front bumper by more than 44mm at any point. It must have no metal or sharp edges.

#### **NHR.5.4 Bonnet/Doors/Boot Lid/Tailgate**

1. The boot lid/tailgate may split at the window level, or may include rear lights.
2. If doors are replaced, the replacement units must be as NHR.5.1 c).
3. Drivers are urged to securely fix bonnet and doors with over-lock clips, or similar, so that there is no possibility of them coming off during racing.
4. Any holes in the bonnet must be forward of the engine timing cover.
5. No mechanical components should be visible from the rear of the bonnet.
6. If there is a moulding between the rear edge of the bonnet and the windscreen scuttle panel, this may be incorporated in the bonnet or roof moulding.

## **NHR.6 SPACE FRAME**

1. Front spaceframe members must be 38 X 2.0mm min.
2. The rear spaceframe members must be 38 X 1.5mm min.
3. The spaceframe must be a minimum of 200mm (8") past the front and rear axle centre lines and not less than 102mm (4") from the bumper contact area front and rear.
4. The use of T45/Molychrome will not be permitted on main spaceframe. It may only be used on cross bracing and may be of any gauge.
5. The minimum required front tubes will be 2 x 38 X 2mm either side (four in total) of the engine block going 200mm (8") past the centre line with one cross member, joining two of the required four front tubes past the axle centre line. It will be the same for the rear with 2 x 38 X 1.5mm min gauge tube, four in total. The two tube's from the top of the roll hoop, if extended rearward for a minimum of 200mm (8") past the axle centre line, may be included as two of the four required rear tubes with one cross member joining two or four tubes past the axle centre line.

All fasteners used to retain the major components i.e. front and rear suspension, steering gear, engine and transmission, seat, pedals, fuel and oil tanks, radiator and batteries must be steel.

## **NHR.7 BULKHEAD**

- A. The front bulkhead must be made of steel.
- B. Apertures may be cut to accommodate engine and auxiliaries where necessary, but the bulkhead must be fire-proofed.

## NHR.8 TRANSMISSION TUNNEL

- A. The gearbox and prop shaft must be covered by either a steel, fibreglass, metal, Kevlar, or carbon-fibre tunnel. The bottom of the tunnel may be covered (see NHR.10).
- B. The prop shaft must have two steel reinforcing hoops over it, of sufficient strength to prevent it breaking into the car in the event of a prop shaft failure.

## NHR.9 REAR FIREWALL

- A. Safety belts must not pass through the firewall; all connection points must be visible.
- B. Fuel tanks and dry sump tanks must be securely retained behind a metal firewall or a fire-proof metal compartment.
- C. Batteries not fitted behind the rear firewall, must be insulated by some form of cover (unless sealed type).
- D. If the car is fitted with a metal firewall, it must be effective; i.e. all holes/gaps effectively filled or sealed. If the car is fitted with a firewall of any other material, a secondary metal enclosure must be constructed over the fuel tank, with its own filler cap, effectively enclosing the tank but open at the bottom (see NHR.10 D. if floor under tank).

## NHR.10 FLOOR

- A. When calculating original floor height, it may be taken from the highest point (if in doubt, check with the NHRPA).
- B. This must remain in its original plain,  $\pm 25\text{mm}$ , and must be made of steel. However, the floor, from the front of the rear seat squab to the rear panel, may be removed (see D. below).
- C. When rear floors are removed (in part or whole), cars must be fitted with a fully enclosed and effective rear firewall. If firewall is constructed of anything other than metal, check fuel tank spec.
- D. Extra flooring/under-trays (in addition only to B. above) are permitted (covering the underside of the vehicle, in part or in whole). If fitted under the fuel tank, four 50mm spillage holes must be made in the tray, directly under the tank, and extra holes anywhere that fuel or oil might lie.
- E. Floor/under-trays must be constructed of either metal, fibreglass/Kevlar, or carbon fibre. No other aerodynamic aids may be fitted to the underside of the vehicle
- F. The driver's side floor pan must be full length from the bulkhead to the rear hoop and from the outer rail to the transmission tunnel and must be minimum 1.5mm steel. The new pan may be fitted over or under the original floor pan, but must be minimum 1.5mm.

## NHR.11 SUSPENSION

- A. A live rear axle only is permitted (see NHR.39).
- B. Front suspension is free.
- C. All suspension arms and links must be steel.
- D. Any type of data logging equipment fitted to the suspension must not be functioning on the days of racing.
- E. If Rod Ends (Rose Joints) or Spherical bearings are used to connect suspension they must be of a steel type only.

## NHR.12 SHOCK ABSORBERS

- A. Adjustable shock absorbers may be fitted at all four wheels.
- B. Only one shock absorber per corner.
- C. Adjustable spring platforms may also be fitted.
- D. No active ride systems.
- E. No shock absorbers fitted with separate reservoirs, including those which form part of the exterior housing.
- F. No shock absorbers that can be controlled from the driver's cockpit.
- G. No shock absorbers which cost in excess of £500 plus VAT each.
- H. All shock absorbers must be freely available to anybody in the UK, either direct from the manufacturer or their agent (s).

## NHR.13 GROUND CLEARANCE

There must be 45mm ground clearance at any point of the car. The measurement will be checked by passing a block underneath the car. Tyres may be inflated to 20 psi when checked.

## NHR.14 WHEELBASE

The wheelbase of the car must remain standard  $\pm 50.8$ mm. \* If the wheelbase varies within the model range, the driver must identify the model they are racing and this must be registered in their logbook.

WHEELBASES							
Audi TT	2426mm	* Fiesta (1995—02)	2446mm	* Fiesta (2002—06)	2486mm	Focus (2001—05)	2615mm
Puma (1997—02)	2446mm	* Corsa B (97—00)	2443mm	* Corsa C (2000—06)	2491mm	* Tigra A (1994 - 96)	2443mm
* Tigra A (1997—00)	2429mm	* Tigra B (2004—06)	2491mm	206 (1998—06)	2442mm	206cc (2000—06)	2442mm
Civic Coupé	2620mm	Colt	2415mm	Corrado	2475mm	Clio (2001—06)	2472mm

## NHR.15 ROLL CAGE

The roll cage must be an integral part of the of the space frame. All cars must be inspected before racing and comply with the following specifications:

Safety cage material specification is CDS (Cold Drawn Seamless) or current equivalent.

- A. Minimum size: 38mm (1.5") x 2.5mm, alternatively the main hoop may be 50mm (2") x 2mm.
- B. Or RAC Specification:
  - Main Roll Bar      50mm (2") x 2mm  
                             45mm (1.75") x 2.5mm
  - Other parts of cage 38mm (1.5") x 2.5mm  
                             40mm (1.6") x 2mm
- C. Alloy roll cages are not permitted.
- D. A full roll cage (which must support both A & B pillars), consisting of a minimum of:
  - I. Two hoops, either running from front-to-rear or side-to-side.
  - II. Two top hoop connecting bars.
  - III. One rear hoop cross bar at shoulder height to mount seat support, or a seat brace hoop to mount seat support (see NHR.56).
  - IV. One lower bar, if cross bar at shoulder height is not fitted
  - V. One dash cross bar.
  - VI. Three driver's-side door bars, at least two of which must be shaped in to the door. These must be joined by at least three connecting tubes between each bar.  
Minimum height of bottom face of top door bar from floor 250mm (10") in front of main hoop must be 375mm (15") with a minimum gap between tubes of 75mm (3") at same point.
  - I. Three passenger-side door bars, at least one of which must be shaped in to the door. The remaining two may be cross or horizontal.
- E. If the roof panel is not steel, then two cross bars must be fitted above the drivers head a minimum 38mm X 2.5mm and must be not more than 152mm (6") from a welded joint by the 'A' and 'B' pillars forming a cross in the roof area.
  - I. All structural bars connecting to the cage/spaceframe must be steel, and terminate a minimum of 100mm (4") from the front and rear panel.
  - II. Any part of the roll cage that may come into direct contact with the driver's body must be suitably padded.
  - III. All joints must be welded over the complete surface area of the joint.
  - IV. It is important there are no large gaps between any part of the cage, and the body shell. Roll hoops and connecting bars must not be dropped from roof, and must support the A & B pillars. It is permitted to move the B pillar hoop rearwards to protect the drivers head, please bear in mind the seat should occupy it's original position.

## NHR.16 8 VALVE ENGINES — SOHC TYPE

- A. All engines must conform to manufacturer's homologation specifications.
- B. Any 8 valve engine may be used, when, in standard form, it does not exceed four cylinders and 2000cc, and is fitted to a model of car which is listed in the current Glass's Guide.
- C. Engine and gearbox mounts must be constructed of steel

## NHR.17 BORE / STROKE

- A. As produced with a maximum over bore of 1.5mm.
- B. Sleeving is permitted, with 1.5mm over bore above standard.

## NHR.18 CARBURETTORS

- A. Up to 48 DCOE/SP Weber, or Dellorto equivalent, with a maximum venturi size of 40mm (at the smallest point).  
Exception: The Ford SOHC Pinto may use a maximum venturi of 42mm (at the smallest point).
- B. All air which directly or indirectly affects air fuel mixture must pass through the venturi. All carburettor fuel supply pipes must be drilled and lock-wired.

## NHR.19 AIR FILTERS

Free.

## NHR.20 FLYWHEEL / CLUTCH

- A. Flywheels are free, but a standard diameter ring gear must be retained.
- B. Clutches are free.

## NHR.21 CYLINDER HEAD / BLOCK

The original production cylinder head and block must be used. All other parts may be modified or replaced.

## NHR.22 ENGINE POSITION

All 8 valve and 16 Valve Engines: Front-to-Rear.

- A. Engines must be a minimum of 78.74cm (31") forward of the centre-line between the front and rear axles, measured from the rear face of the engine block when viewed vertically.
- B. Due to the difficulty in establishing a true front to rear centre-line due to the wheelbase tolerance, the engine position will be calculated from the rear axle centre-line to the lower bell-housing face (see Example Calculation below). Because of the advantage gained by the engine movement, only 25.4mm will be deducted for wheelbase tolerance from the bell housing to axle centre-line measurement.

<i>EXAMPLE CALCULATION</i>		
Standard Fiesta wheel base	=	238.76cm
Therefore, 50% of wheel base	=	119.38cm
Engine position forward of centre-line	=	78.74cm
<i>Sub Total</i>	=	<i>198.12cm</i>
Deduction for wheel base tolerance	=	-2.54cm
Distance between the bell housing & the axle centre-line will be a <i>MINIMUM TOTAL</i>		<b>195.58cm</b>

## NHR.23 16 VALVE ENGINES - DOHC TYPE

All engine components must be original to the engine used, unless specified below.

- A. All engines must conform to manufacturer's homologation specifications.
- B. Those 16 valve engine's listed below may be used, when, in standard form, do not exceed four cylinders and 2000cc, and is fitted to a model of car which is listed in the current Glass's Guide .
- C. Only the following DOHC 16 valve engines are permitted for use (permission must be sought from the NHRPA in order to use any other multi-valve engines):
- D. Engine and gearbox mounts must be constructed of steel

	<i>DOHC TYPE</i>	<i>WITH A BORE OF:</i>	<i>WITH A STROKE OF:</i>
1.	Vauxhall C20XE; C20XEV 2.0 litre 16 valve	86mm	86mm
2.	VW ABF 2.0 litre 16 valve	82.5mm	92.8mm
3.	Ford Z Tec NGA; NGB & NGC 2.0 litre 16 valve	84.8mm	88mm
4.	Peugeot XU10J4 RS/L/NZ 2.0 litre 16 valve	86mm	86mm
5.	Ford Duratec IS7G or 4M5G	87.5mm	83mm

## NHR.24 BORE / STROKE

As produced, with a maximum overbore of 1.5mm. Sleeving is permitted, with 1.5mm overbore above standard.

## NHR.25 CARBURETTORS

Up to 48 DCOE/SP Weber, or Dellorto equivalent, with a maximum venturi size 38mm, measured at the smallest point.

- A. All air that directly or indirectly effects air fuel mixture must pass through the venturies.
- B. All carburettor fuel supply pipes must be drilled and lock-wired.

## NHR.26 AIR FILTERS

Free.

## NHR.27 INLET MANIFOLD

Free.

## NHR.28 CYLINDER HEAD

There must be no other fettling or machining to any part of the cylinder head, other than that specified within these Rules. When competition CAMSHAFTS are used the area either side of the CAM follower may be fettled only to allow CAM Shaft to rotate freely if necessary. The drilling of extra or enlarging or reducing existing water ways is not permitted in the block/head or gasket. On 16 valve cylinder heads, the obsolete distributor housing may be reduced and blanked, if applicable.

### NHR.28.1 Headbolts/Studs/Fasteners

All internal and external fasteners are free, with the exception of the cylinder head-to-block fixings, which must remain as original.

### NHR.28.2 Replacement Valves

May be used. Shape may be changed. If a replacement valve is used, it must be stainless steel, with dimensions as listed below:

		<b>C20XEV Vauxhall</b>	<b>C20XE Vauxhall</b>	<b>VW</b>	<b>Ford</b>	<b>Peugeot</b>	<b>Ford Duratec</b>
<b>Valve head diameter</b>	In.	33.0mm	33.0mm	33.0mm	33.0mm	34.65mm	35mm
	Ex.	29.0mm	29.0mm	29.0mm	29.0mm	29.55mm	30mm
<b>Total valve length</b>	In.	102.1mm ± 0.1	104.8mm	95.5mm	96.5mm	106.35mm	103.4mm
	Ex.	92.25mm ± 0.1	105.0mm	98.0mm	96.5mm	105.75mm	104.6mm
<b>Valve stem diameter</b>	In.	5.955 to 5.97mm	6.955/6970mm	6.97mm	6.0mm	6 or 7mm	5.5mm
	Ex.	5.945 to 5.96mm	6.945/6960mm	6.94mm	6.0mm	6 or 7mm	5.5mm

**NHR.28.3 Valve Springs/Top Caps/Collets**

Are free, and the spring seat may be machined.

**NHR.28.4 Valve Guides**

Must remain in the original position, but may be replaced (see Gas Flowing NHR.29.9 below). Bronze guides, or thin wall bronze guide inserts, are permitted.

**NHR.28.5 Head Gasket**

The original production gasket only must be used, unmodified, with no other sealing aids. Head gasket surface only may be machined.

**NHR.28.6 Vernier Timing Wheels**

Are permitted.

**NHR.28.7 Cam Shafts**

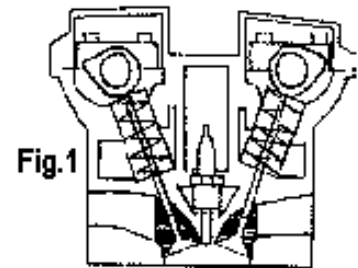
Are free.

**NHR.28.8 Cam Followers**

Either standard hydraulic or solid. If using the Z-TEC Ford, Vauxhall XE solid lifters may be used. Machining to accommodate the lifters is permitted.

**NHR.28.9 Gas Flowing**

No porting or gas flowing work outside the shaded area is permitted (see diagram Fig.1). Metal must not be added to or removed from the combustion chamber or ports. The end of the valve guide in the shaded area may be fettled.



**NHR.28.10 Spark Plugs**

The Z-TEC Ford may have the spark plug threads counter-sunk in cylinder head to enable the use of conventional plugs with a wider heat range.

**NHR. 28. 11 Timing Chain Tensioner**

On the Duratec 16-valve engine, it is permitted to modify the timing chain tensioner.

## **NHR.29 CYLINDER BLOCK**

May be machined on head gasket surface only. Machining to accommodate dry sump system is permitted.

## **NHR.30 PISTONS**

May be replaced with any forged type. Machining of valve pockets is permitted.

## **NHR.31 CON RODS**

- A. Must be original standard part; exception the Ford Z-Tec may interchange con rods between engine type NGA and NGB/NGC engines.
- B. Approved steel con rods are permitted for use in 16 valve engines and must be replicas of the original in dimension.
- C. On original or steel replicas the big end bolts may be replaced and con rods may be machined to accommodate them. Gudgeon pins may be press fit or floating. Con Rods must not be lightened.

Current manufacturers are Arrow, Farndon, or Baines

## **NHR.32 CRANKSHAFT**

Must be original standard part.

## **NHR.33 BALANCING**

The balancing of pistons, con rods, crankshaft, flywheel and clutch assembly is permitted. This may be achieved by Spot Machining, either hand grind, drill or machine. Crankshafts and con rods must not be lightened.

## **NHR.34 FLYWHEEL / CLUTCH**

- A. This may be replaced with a light-weight steel version.
- B. Standard diameter ring gear must be retained.
- C. Any twin drive plate clutch may be used, minimum diameter 184mm (7.25").

## **NHR.35 IGNITION SYSTEM**

- A. This must be a system supplied by MBE Systems Ltd (Tel. 01285 883030). The unit for the above engines has a fixed advance curve, and a limiter set at 8000 rpm. Order MBE boxes through Inca-race 0773 6805537.
- B. The unit and wiring must be visible and accessible for removal. A Scrutineer, or NHRPA Director, can demand to check the unit and any hidden wiring before racing.
- C. All engines must have a fixed TDC mark on the front of the engine, for the purpose of carrying out ignition advance curve checks (actual TDC will be checked against your marks).
- D. The Peugeot and the Z-TEC Ford may fit a timing disc and sensor to the crankshaft pulley in place of the original flywheel pickup. Both engines must use a 36-1 tooth disc with the Z-TEC sensor and advance curve. The static position of the tooth disc must be as the original flywheel, and must have provision to fit seals to securing bolts of sensor and tooth disc, if adjustable.
- E. The 16v Vauxhall must use pickup sensor, Part N<sup>o</sup>: Vauxhall 90451441 or Bosch 026120030650.
- F. The Ford Duratec must use the original Ford Pickup sensor with the crankshaft pulley, and the toothed disc must have a positive means of positioning the pulley and disc to the crankshaft; by either a roll pin/dowel or key way, so a true TDC position can be achieved. A 36-1 tooth disc must be used and must have provision to fit seals to securing bolts of sensor and tooth disc, if adjustable.

All ignition modules must be dual sealed. They must have the original MBE seal, plus an NHRPA seal and both numbers must be registered in your log book. If you carry a spare box the same rule applies. Any driver that carries a spare box must give one to the NHRPA Scrutineer, Dave Longhurst, who will have the ignition map checked and returned to you.

If you do not have two seals on your module you will lose all points and risk suspension. Please ask the Scrutineers to seal your box ASAP. As long as the Scrutineers have been informed you may continue to race until they have sealed your units.

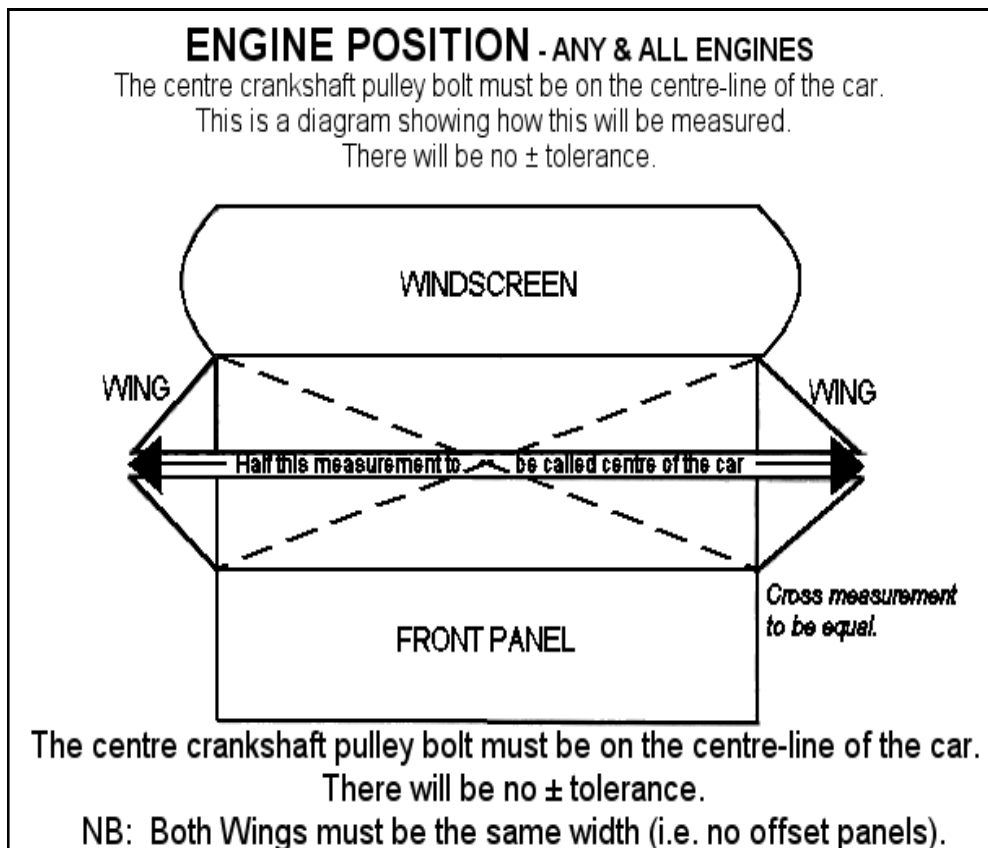
## NHR.36 ENGINE EXCEPTIONS

The Ford 1600cc Kent engine is subject to a 1700cc absolute maximum. Stroke and carburettor venturi sizes are free.

## NHR.37 ENGINE POSITION

All Engines — Side-to-Side. The centre crankshaft pulley bolt must be on the centre-line of the car. A diagram showing how this will be measured is shown below. There will be no  $\pm$  tolerance.

NB: Provided an engine satisfies all existing engine position rules, silhouette confines, and ground clearance, it may be tilted by an angle (not to exceed 20 degrees from vertical).



## NHR.38 OIL SYSTEM

### NHR.38.1 Wet Sump System: 16 or 8 Valve Engines

- Sump pan may be modified to hold more or less oil, and may be baffled.
- Oil pick up may be modified, but must terminate within the sump.
- High pressure and/or high capacity oil pumps may be used.

### NHR. 38.2 Dry Sump System: 16 or 8 Valve Engines

- Original sump may be replaced with a dry sump.
- Oil galleries may be modified to accept a dry sump system.
- All breather pipes must return to the dry sump tank.
- All hoses on the pressure side must be of the correct type, and fitted with high pressure connectors.
- All oil pipes running through the car must be effectively covered.

## NHR. 39 GEARBOX/FINAL DRIVE

1. Live rear axle only is permitted, based on the English Ford concept as fitted to the Escort or Capri etc. (See NHR.11).
2. Axle may be modified.
3. Half shafts are free.
4. Axle may be offset either in the car or in construction.
5. All axle casings must be steel.
6. Differentials - locked or limited slip versions are permitted.
7. The crown wheel and pinion must be as per the original Ford concept, i.e. A screw drive pinion, not a centre drive type. Ratios are free.
8. NASCAR type drop gear or quick change axles are not permitted.
9. Independent and/or transaxles or De-Dion type are not permitted.
10. Gear change must be manually operated, (conventional H pattern stick change), not electronically or by any other method, including sequential shifters.
11. It is not permitted to fit any hydraulic unit similar to a shock absorber to the rear suspension links.
12. No transmission/gearboxes may be used with cost in excess of £2,000 + vat, and all transmission/gearboxes must be freely available to anyone in the UK, either direct from the manufacturer or their agents.

## NHR. 40 OIL COOLERS

Oil coolers are free.

## NHR. 41 VEHICLE WEIGHT/BALLAST

IMPORTANT NOTE: Cars may be checked at any time. They must, once the race meeting has started, meet the minimum and/or maximum permitted weights as listed below. Drivers should allow for wear of brakes, tyres, and use of fluids during a race which, depending on the length of a race, can be in excess of 3+kg. Infringement of this rule, in most formulas, carries a statutory race ban. All weights exclude driver.

The minimum weight for a National Hot Rod is 700kg at any time. Underweight vehicles will carry a two World Series meeting ban which will include any other domestic or other meetings which may fall between these two meetings, and a loss of all points at the meeting where they are deemed to be underweight.

A maximum of 20kg of ballast is permitted, which must be securely bolted or welded in place.

Right Side Percentage Weight - The maximum right side weight will be 54%.

Rear Weight Percentage—The maximum rear weight will be 45%

1. If you are checked and found to be up to 0.5% over either of these weights you will lose all points on the day and receive a final warning.
2. If you are found on a second occasion to be up to 0.5% over either of these weights you will lose the points for the meeting where the car is deemed to be over the side or rear weight and receive a one meeting ban from your next World Qualifying Round
3. Anyone found to be over 0.5% above either of the maximum weights will lose the points from the meeting where the car is deemed to be over the side or rear weight and receive a one meeting ban from your next World Qualifying Round
4. If a driver is found over on a second occasion, the penalty will automatically be doubled.

## NHR.42 BRAKES

- Brakes must be effective and in good working order on all four wheels.
- No ABS or similar systems.
- Steel discs only

# NHR.43 AEROFOIL/REAR WING/ROOF SPOILER

These are permitted within the following confines:

Only one of the following may be fitted: aerofoil, or roof spoiler (not including boot or tailgate spoiler, if they are originally fitted and are below the rear window aperture).

- A. AEROFOIL (*above roof line*). Single or double wings permitted with a total front to rear measurement (single or double) 457mm (18"), not including FIN plates. If fitted above the roof, at least 50% of the aerofoil must be over the roof (the top of the tailgate to the edge of the rear windscreen aperture may be classed as part of the roof). It cannot be fitted further forward than the 'B' pillar, and must stay within the vertical confines of the original body (excluding wing mirrors).
- B. REAR WING (*below roof line* single or double wings permitted with a total front to rear measurement (single or double) 457mm (18"), not including FIN plates. If 50% is not over the roof, it must stay within the horizontal and vertical confines of the vehicle rearwards, and the vertical confines of the original body width (excluding wing mirrors).
- C. Any SPOILER fitted to the roof must not exceed 152mm (6") above the highest point of the roof and must stay within the vertical confines of the vehicle (including arches) and must not be fitted further forward than the 'B' pillar.
- D. FIN PLATES: Two fin plates must be fitted, of equal size and position, and large enough to accommodate regulation numbers (the numbers must be a minimum of 229mm (9") high by 38mm (1.5") stroke), black on white. They may be fitted to aerofoil, rear wing, roof spoiler, or roof line. Maximum height above roof is 305mm (12"); maximum length of fin plates 559mm (22").

# NHR.44 WHEELS & TYRES

The only tyre permitted is the Hoosier. The use of tyre warmers and/or tyre softener is not permitted to be used at any race meeting.

<i>Date</i>	<i>Tyre Model</i>	<i>Tyre Price (inc. VAT @ 20%)</i>
<i>January 2011</i>	H12 - 9.0/20.0-13 Slick	<b>£119.40</b>
<i>January 2011</i>	H10 - 9.0/20.0-13 Wet	<b>£131.40</b>

There is also a fitting charge of £4 incl. Vat, per tyre, for swap rounds and fitting of used tyres. There is no charge for fitting new tyres.

Any type of wheel may be used, but may be no wider than 10" where the tyre sits. Only 13" diameter wheels may be used. Steel wheels must have rolled edges.

Tyre buffing is permitted.

## Slicks

A maximum of 5 tyres can be used at each World Qualifying round, only one of which may be new. Used tyres must have been registered at a previous NHRPA meeting.

The barcode numbers from all five tyres must be entered on a tyre registration form, which has to handed to the appointed NHRPA Scrutineer prior to the start of the meeting. (The appointed NHRPA Scrutineer will be the person who scrutineers the cars at the meeting). The only exception to this is if a driver needs to run different offset wheels and then, if no decision as to the fifth tyre is made before the first race of the meeting, it must be given in writing to either the appointed NHRPA Scrutineer or an NHRPA official before it is used on track.

Care must be taken when entering the numbers - no allowances will be made for incorrectly entered numbers, whether through transposition of digits or any other reason. If it is difficult to read the numbers, it is suggested that those on the reverse side of the tyre be inspected. If there is still doubt (for example, between a 6 and an 8) then the opinion of the scrutineer must be sought.

Tyres may not be bought and sold, given, exchanged or otherwise “traded” between drivers at a meeting if the tyres are to be used at the meeting, unless such trading takes place prior to the logging process. Drivers will not be allowed to gain any significant advantage in this manner and the scrutineer’s decision shall be final in this matter.

The use of any tyre that has not been registered with either the appointed NHRPA Scrutineer or an NHRPA official at that meeting will result in the driver receiving a two World Qualifying meeting ban.

In the event of a driver sustaining more than one puncture, he may use a replacement tyre at the discretion of the NHRPA scrutineer but this barcode number MUST be registered in writing and given to either the appointed NHRPA Scrutineer or an NHRPA official before the car goes on track.

**Wets**

At the first declared wet meeting, four new wet tyres may be used. The barcode number from these new tyres must be entered on a tyre registration form, which must be handed to an NHRPA Scrutineer, or an NHRPA official, prior to the start of the meeting. At all subsequent meetings, only one new wet tyre is permitted and the barcode number must be registered. Unlimited used wets may be fitted as long as previously registered at an NHRPA meeting when new.

Old wet tyres do not need to be entered on the tyre registration form.

Any driver found running a new, unregistered wet tyre will receive a two World Qualifying meeting ban.

**Mixing of Tyres**

Where meetings feature both wet and dry conditions, one of the slick tyres used may still be new but the tyre must be logged and used at that meeting.

N.B. There are separate rules for championship meetings.

**New Drivers**

New drivers to the formula (drivers who have never previously raced), can use four new tyres at their first meeting. After their first meeting, and at the next and subsequent meetings, he must use tyres which have been previously marked, other than their one new tyre, if they choose to use one!

**Example of Tyre Log**

NHRPA NATIONAL HOT ROD TYRE LOG

Driver Name ..... Car Number .....

<b>SLICKS</b>		<b>WETS</b>	
New	No.	New	No.
Old	No.	New	No.
Old	No.	New	No.
Old	No.	New	No.
Old	No.		

Date ..... Venue .....

This form must be handed to the scrutineer prior to the start of the meeting. Any driver found attempting to race, or racing with an unlogged slick or new wet tyre, will receive an automatic two World Qualifying meeting ban.

## NHR.45 EXHAUST SYSTEMS

If a silencer becomes ineffective or insecure during racing, the driver should automatically pull off. If the exhaust becomes ineffective within the last five laps, it may not be possible for the Start Marshal to issue a Black Flag, but you will automatically be removed from any result. Silencers must be effective in reducing noise.

- a) Exhaust manifolds are free.
- b) Any exhaust system passing through the driver's cockpit must be fully covered by a metal shield.
- c) There must be a maximum of 254mm (10") of tail pipe on the silencer, and must terminate rearwards or down under the vehicle. Exhausts terminating at the side of the vehicle are no longer permitted.

The MS500 is the current permitted silencer. The MS500 is longer in body and more effective in reducing noise. No form of exhaust gas/temperature sensor is permitted.

## NHR.46 COOLING SYSTEMS

- Radiators are free, but must be fitted forward of the engine.
- A single overflow pipe must be fitted to terminate within 152mm of the ground.
- All cooling systems are to be fitted with a pressure cap.

## NHR.47 LIFTING EYES

All cars must be fitted with two lifting eyes under the bonnet, near turret tops or shock absorbers. Also, two lifting eyes must be fitted at the rear, in the boot area. If your vehicle has a chassis or roll cage member which can be utilised in these areas, the lifting eyes do not have to be fitted but damage may occur to tubes or panels if not.

Towing eyes at the front and rear are permitted, but must not protrude from the front or rear panel.

## NHR.48 WINDSCREENS / GLASS

- a) No windscreens of any type (safety glass, laminated, Perspex, or lexan) are permitted.
- b) No rear screens of any type (safety glass, laminated, Perspex, or lexan) are permitted.
- c) You may not fit glass, Perspex or lexan into the driver's side or passenger's side, front or rear door window apertures, or anything which may restrict access to the vehicle.
- d) A metal upright, to a maximum 38mm, minimum 19mm, box or tube section, must be welded or bolted to the centre of the front windscreen aperture, or multiples equidistantly in the front windscreen aperture.
- e) A wire mesh panel covering the driver's side of the screen is not permitted.
- f) The fitting of temporary Perspex or lexan shields to protect the driver in either inclement weather or dirty track conditions **only**, is permitted. Such shields may be attached to the bonnet or within the windscreen aperture, or both, and must not be of excessive size. The Scrutineer's decision regarding what constitutes excessive shall be final.

## NHR.49 STOP LIGHTS

Either two stop/brake lights, or a centrally-fitted single stop/brake strip-light (no wider than 406mm (16")), must be fitted onto the parcel shelf, or hung from the roof in the case of hatchbacks. If two lights are fitted, they must be a minimum of 762mm (30") apart, facing rearward. Lamps must be operated by the standard switch, as fitted to the car. No other switches or modifications are allowed. Lamps must be a minimum of 76mm (3"), and a maximum of 127mm (5"), diameter square/rectangle. Lamps must be a 21 watt intensity.

## NHR.50 MIRRORS / GLASS

- a) Driver's side external door mirror must be fitted, and must not protrude beyond the extreme body width of the car. It should be of a spring-loaded or sheer type.
- b) A passenger side exterior mirror is recommended - it should be of a spring-loaded or sheer type.
- c) A rear-view interior mirror must be fitted.
- d) The size of the mirror should be approximately 152 x 100mm (6" x 4") maximum, and, if glass, should be covered with a clear plastic to prevent the glass from fragmenting.

## NHR.51 CATCH TANK

A **wet sump** oil catch tank, with a minimum capacity of 1 litre, must be fitted in the engine bay, and must have a minimum of two breather pipes connecting to it, one from the rocker box and one from the crank case. If the catch tank becomes ineffective during racing or practice, the car will be withdrawn from the event.

A **dry sump** system must have all breathers returning to the dry sump tank, and a catch tank is required, with a minimum of 1 litre capacity, and may be fitted near the dry sump tank.

## NHR.52 BATTERIES & ELECTRICAL SYSTEM

1. Batteries must be securely fixed and covered with a rot-proof material if they are not of a sealed type.
2. Contact between the safety harness and battery must not be possible.
3. Battery must be a minimum of 152mm (6") from the fuel tank.
4. The battery position is free and a maximum of two batteries are allowed. Oversized batteries being used as ballast are not permitted.
5. A battery master switch must be fitted in the area of the rear left-hand window, and must be clearly marked "ON/OFF", or have an Electricity Danger Decal.
6. If an electric fuel pump is fitted, a switch must be fitted within easy reach of the driver.
7. A self-starter motor must be fitted, and in working order at all times.

# NHR.53 FUEL TANKS & SYSTEMS

## NHR.53.1

- a) All fuel tanks must have a positive means of fixing (metal straps or bolted).
- b) Filler caps must not be prone to spillage - no push-on caps. Caps must be metal and secure, or a screw-on type.
- c) Fuel tanks, including filler caps, must be covered by a metal firewall.
- d) Fuel outlet must be from top of tank.
- e) A breather pipe, which must incorporate a one-way valve, or a vent pipe, must terminate below the tank, so it would prevent spillage if inverted.
- f) All fuel pipes must be inside vehicle.
- g) Only road-side fuel can be used (either Shell Optimax, BP Ultimate or Esso Supreme). No additives permitted i.e. Upper cylinder lubricants or Octane booster. For full specification please see NHR.70. BP Ultimate 102 is not a permitted fuel.
- h) If there is a floor under the tank, there must be four 50mm holes in the floor, in case of spillage.
- i) A fuel shut-off tap must be fitted within easy reach of driver (must be suitably indicated by way of a sign).
- j) Fuel lines must be metal, or metal covered.
- k) A single electric pump may be used in place of the original.
- l) Fuel tanks must be metal only, or FIA approved.
- m) Fuel regulators are permitted.

## NHR.53.2 Size and Position of fuel tank

- a) We recommend a fuel tank with a maximum total capacity of 18 litres at all meetings, except for long distance races.
- b) The fuel tank must be fitted behind the driver.
- c) If the fuel tank is behind the rear axle, a minimum of two horizontal steel tubes (minimum diameter 38 x 1.5mm) must be fitted between the chassis rails to protect the tank.
- d) It is recommended that the formula moves towards the use of ATL fuel cells, or bag tanks.
- e) If the car is fitted with a metal firewall, it must be effective, i.e. all holes/gaps, etc., must be filled/sealed. If the car is fitted with a firewall of any other material, a secondary metal enclosure must be constructed around the fuel tank (with it's own filler cap), effectively enclosing the tank, but must be open at the bottom.

# NHR.54 RACING NUMBERS

- a) SIDE OF CAR. The driver's racing number must appear on both sides of the car. Preferably, these should be in large, American-style numbers on a contrasting background. Background must extend a minimum of 50mm (2") beyond the outline of the number.
- b) FIN PLATES. Must be used if aerofoil is not applicable, and the numbers must be a minimum of 229mm (9") high by 38mm (1.5") stroke, black on white background, fitted on, or above the roof-line, but must not be higher than 305mm (12") in total, and 559mm (22") in length.
- c) AEROFOIL/FIN PLATES. Numbers should be a minimum of 229mm (9") high by 38mm (1.5") stroke (black on white background), on each side fin so visible from both sides of the car.

## NHR.55 DRIVER'S/SPONSOR'S NAME

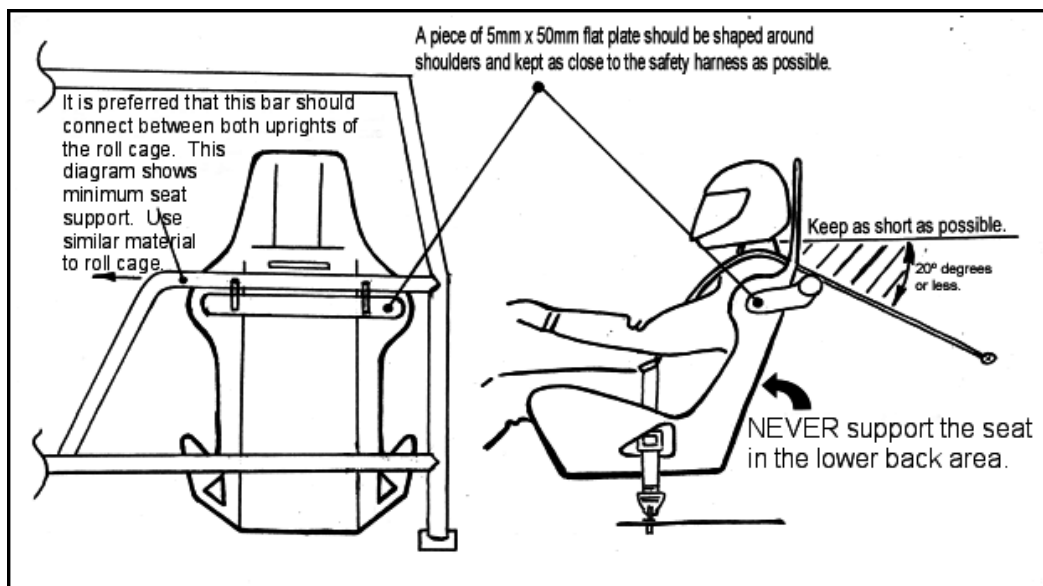
- A. A sun visor, to an approximate depth of 152mm (6"), with your name or nickname clearly sign-written, must be fitted.
- B. All sign-writing must be approved by the Promotion; other names permitted are those of sponsors and mechanics only.
- C. The sun visor or a designated area on the vehicle may be required by the NHRPA if a promotional deal is secured.

## NHR.56 DRIVER'S SEAT

See diagram for fitting instructions.

- a) Seats should occupy original position, where applicable.
- b) Seats must be of competition type and adequately supported at shoulder height (see roll cage spec for material, size and position).
- c) If a seat does not have structural stiffeners at sides and back, a framework must be made to strengthen seat.
- d) Seats must be securely fitted and provide a strong head restraint; otherwise, the head restraint must be an integral part of the roll cage.
- e) If you have an integral head restraint, it must be fixed top and bottom to avoid your head being forced under or over.
- f) Driver must sit on the offside of the centre-line of the vehicle.
- g) The measurement from the vertical centre line of the axle to the nearest part of the seat back, must be a minimum of 15" (37.5cm).

Over the years, we have had many unnecessary injuries due to badly fitted seats. They frequently occur in Non-contact Formulas, when perhaps a driver believes it is more unlikely that he will be involved in a serious incident, and he also believes that, if he is involved in a collision, the impact on his car will be from the front. However, this is often not the case. It is, therefore, imperative that you ensure your seat is really well supported, especially where the shoulder straps go through. You must also ensure that your seat cannot move sideways. The safety of your seat will be judged by the Scrutineers, and you will only be permitted to race when they are satisfied that you will be as safe as possible in any event. See diagram.



## NHR.57 WINDOW NETS

A quick release cloth window net must be fitted to driver's door window aperture. Net spacing must be 76mm x 76mm maximum and must be positioned to stop the drivers head and arms from being thrown outside the vehicle in case of an incident.

## NHR.58 NECK SUPPORTS

A Neck Brace or the HANNS Head Restraint (or similar device) is highly recommended.

## NHR.59 SEAT BELTS

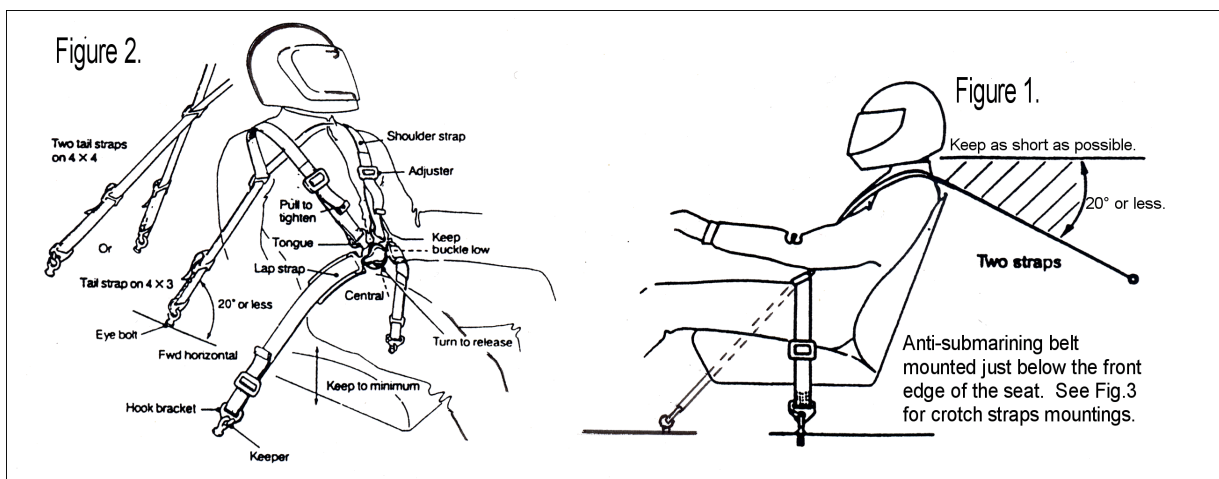
It is mandatory that 3" wide safety belts are used with 2" crotch straps. A full five point buckle release harness (including NASCAR type) with crotch straps must be fitted and bolted to the floor and/or the roll cage. Shoulder belts with a sternum protection latch are highly recommended.

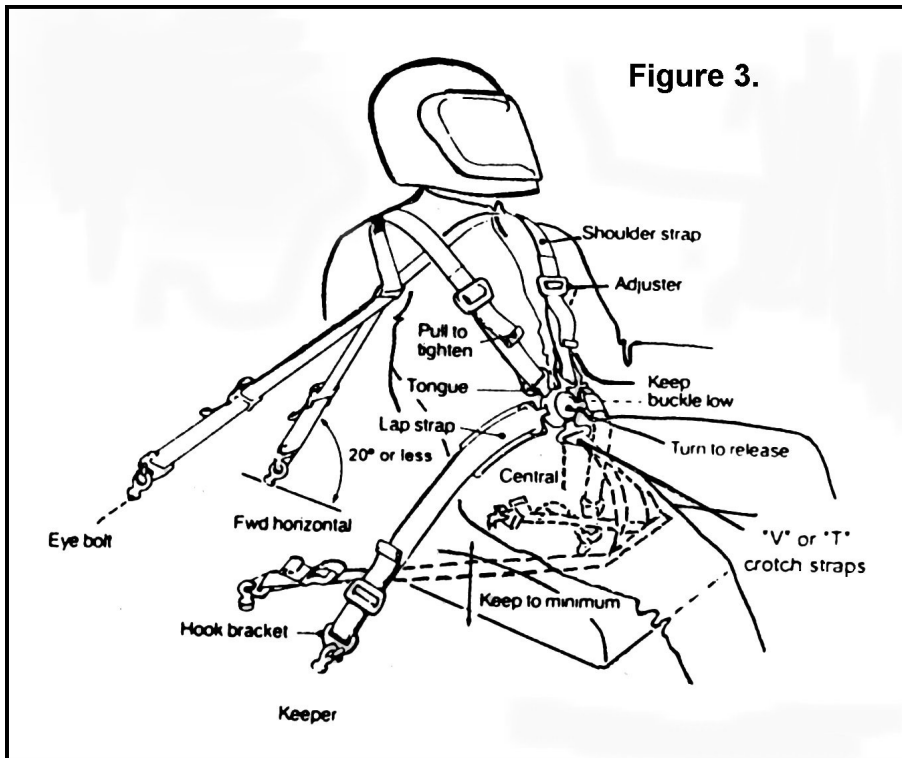
Following recent research made by leading safety harness manufacturers, new information has been made available with regard to the best way to fit your safety harness, which will further ensure your safety. Please study the diagrams below to ensure your safety harness is fitted correctly.

The lap belt/straps and crotch straps should not pass over the sides of the seat, but through it in order to wrap and hold the pelvic region over the greatest possible surface, the lap belt crossing it below the anterior-superior iliac spines (bony part of the hip). Under no circumstances should it be worn over the region of the abdomen. Lap belt/straps must terminate vertically downwards, and not forwards or rearwards of the hip joint. Lap straps should terminate symmetrically about the wearer on either side of the seat, about 500mm (20") apart. The distance between the seating surface and the anchorage point should be kept to a minimum to prevent submarining. The location of the crotch strap mounting should be to the rear of the driver, and 250mm (10") to 300mm (12") apart. Fig. 2 shows the location for the tail straps, which should be horizontal to 20° below horizontal, and as close to the shoulder as is practical for optimum restraint.

Only safety belts comprising of separate shoulder, lap, and sub-straps will be permitted. The sub-strap must be used at all times, and all belts must connect to the quick release buckle. The abdominal strap fixing point must be on the chassis, roll cage, or floor (for vehicles with no chassis), either side of the driver.

The shoulder straps must be supported at shoulder height. NASCAR type buckles must be fitted with lever on the right side of the driver. It is advisable to fit a secondary means of detent to prevent overall sleeves accidentally unhooking buckles during racing. A small section of tube grip elasticated bandage, slid over the hooked buckle, serves the purpose. Special attention must be paid to the condition of seat belt fixings once fitted. Information is available, from your Promotion, on the correct procedure to follow when fitting seat belts. Remember - your life depends on them, and belts, once involved in a severe accident, should be discarded and replaced. Safety belts must not pass through the firewall - all connection points must be visible.





## NHR.60 HELMETS / EYE PROTECTION

Helmets must be of a minimum standard as directed by British Oval Racing Safety Executive (B.O.R.S.E).

These are:

FIA8860-2004

Snell SA2005

Snell SA2010

SFI Foundation 31.1A

SFI Foundation 31.2A

The E2205 European standard helmet may be used in Fibreglass, Carbon or Tri-Composite form only

NO POLYCARBONATE helmets are allowed.

It is important that the helmet fits the driver correctly.

Shatterproof goggles/visors must be worn although tinted visors are not advisable.

Your helmet must display the current ORCi (ORC10) sticker.

It will be a requirement in the near future for drivers to wear a device such as the HANNS (Head Restraint) or similar device. This will require helmets with the restraint fixings on the side of the helmet. If your helmet is due for replacement please keep this in mind.

## NHR.61 CLOTHING

- a) Drivers must wear racing overalls of fire-retardant Proban, or higher specification material.
- b) Drivers and mechanics must wear bright-coloured racing overalls, and these must be maintained in a clean and tidy condition when in public view.
- c) Wet weather clothing must be worn in addition to, not instead of, racing overalls.
- d) Fire retardant gloves and balaclavas are compulsory.

## NHR.62 FIRE EXTINGUISHERS

Fire extinguishers are no longer compulsory, but if preferred, a 1kg Dry Powder Gauge Fire Extinguisher is highly recommended. This should be fitted in a tube with a spring top and should be within easy reach of the driver. Old type BCF (green) type extinguishers are not allowed. All tow vehicles must carry a minimum of a 2kg fire extinguisher, dry powder or gas, which must be within easy reach of the driver and mechanics at all times, especially when refuelling.

## NHR.63 FINAL PREPARATIONS & COLOURS

- A. Make sure that, in the construction of your car, you have not included any flammable material; all original interior and exterior trim, mouldings, and wiring, must be removed (unless stated otherwise).
- B. The external painting of the car must, at all times, be of professional appearance — preferably in bright colours, although any colour scheme is permitted.
- C. A maximum of two cars may be painted in team colours, or painted to look similar to another car, unless it is required and specifically stated by the Promotion (i.e. Team Events). All sign-writing must be of a professional nature. Scrutineers are instructed to refuse any car which they consider unsafe, unsightly, or in any way offensive.
- D. No on-board cameras are permitted without prior permission from the NHRPA.

## NHR.64 VIOLATIONS

- A. When referring to the engine, gearbox, differential, mechanical, or construction Rules & Regulations, the principle will always be:
  - I. Unless permission is specifically granted to make modifications (or any variation), nothing may be done to alter or change the Standard Parts in any way.
  - II. It is the responsibility of the driver to prove to the Promotion that the part is legal, by way of written proof of where the part originated. This must be undertaken within seven days, otherwise the part in question will be deemed to be illegal, resulting in immediate suspension from racing and referral for disciplinary action.

Unless these Rules state you can do it, you CANNOT DO IT.

- B. Presentation of a vehicle for Scrutineering is a declaration by the entrant that the vehicle is eligible for that event.
- C. Car, engines, and fuel will be checked on a random basis. Violations, or refusal to allow an engine check, will result in an immediate suspension of all racing facilities.
- D. All car and engine specifications will be taken from either the manufacturer's Technical Specification Books, or the Technical Service Data Books for cars, as published by Glass's Guide Service Limited. If there are any discrepancies occurring between books, the Promotion will exercise its judgement, which will be final in any dispute.
- E. Clarification on any item may be sought from the NHRPA.

## **NHR.65 ENGINE SEALING**

- A) The NHRPA may at any time require your engine, or other parts, to be checked or sealed. This may or may not mean your engine/parts will automatically be checked. It could be that we wish to monitor your performance or seek clarification on any item. It is normal to strip engines/parts at all major championships unless they run consecutively in which case with agreement of NHRPA stripping may be postponed (see below).
- B) Drivers wishing to have their engine sealed at build stage may do so. It will require two people (one should be an official, the other a Scrutineer) to be present at the final stages of build and will incur a charge based on the time and distance travelled. If this option is taken at major championships your engine will not require stripping, unless seals are not intact. Seals can only be removed by NHRPA officials and if removed without permission the engine/parts will be deemed illegal and the driver suspended pending Board of Control. If any engine/parts are sealed because Championship events are within a period, which may exclude that driver due to the rebuild time. A driver may, with the NHRPA's agreement, postpone stripping for three meetings maximum.
- C) Provision for sealing must be made on either side of the sump, two head bolts (if not covered, in part or wholly, by rocker cover), two inlet manifold bolts, and two rocker cover bolts. If this is not done, you will lose the opportunity to have your engine sealed.

## **NHR.66 TIMING TRANSPONDERS & RACECEIVERS**

A timing transponder must be fitted with direct line of sight to the track. The beam is projected at an angle, so the further you fit the transponder away from the floor the larger the hole will need to be. Transponders must be securely fitted and must have a permanent feed only being disabled by the master isolator. It would take a number of weeks to flatten a battery with the small current these units draw. You will be informed after practice if your module is not functioning, but following that if your transponder is still not working then you will not be lap scored electronically. Transponders must be positioned 1.8 metres from the furthest forward point of the car.

A Raceceiver is a communication system which has been widely used in the USA for some time. It is a one way communication link from the Steward to the drivers on track. The system enables the Steward to give instructions or warnings to a specific driver, or to all drivers warning of possible track hazards etc. When the Steward transmits via this system, his instructions/warning are heard by every driver at the same time. The system has proved invaluable to those that have already installed it, and we believe it will improve both safety and the co-ordination of events. It is mandatory for drivers to purchase their own RACEceiver unit from Hoosier.

## **NHR.67 DATA LOGGING**

Rev counters are mandatory as they are required for the conducting of noise tests. Other than lap times and engine rpm, no other downloadable data is permitted.

## **NHR.68 SCRUTINEERING OF NEW CARS**

A new car to be introduced into the formula, must have permission from the NHRPA before it is built, and once ready to race, must be scrutineered at a meeting prior to the first meeting where it is intended to be raced. It is requested that drivers wishing to have pre-race Scrutineering carried out on their car should contact the NHRPA prior to that event, so that the NHRPA officials can ensure Scrutineers are expecting them.

## **NHR.69 RULE CHANGES**

The Promotion may, at any time, make amendments to the specifications, in the interests of safety. It may make amendments in the interest of expense to the driver; or in areas that are determined to be detrimental to the future of the formula; or if unnecessary advantage has been deemed; or if it is felt the formula is drifting away from its original concept. Current registered drivers will be notified automatically, but if you are building a new car from these specifications, please check with the NHRPA, who will advise of any amendments.

# NHR.70 FUEL SPECIFICATION

Permitted fuel specification from 1<sup>st</sup> January 2007 (this specification supersedes all previous specs).

- All cars must only use fuel from road-side pumps (either BP Ultimate (not 102) or Shell V Power or Esso Supreme ). (no additives are permitted i.e. Upper cylinder lubricants, Octane booster). As defined below.  
Petrol (Motor Gasoline of the type on sale to the general public from roadside filling stations— see *NHR 53*)  
BS 4040 (Leaded) Subject to a valid permit for use.  
LRG (Unleaded)  
BS EN 228 (Unleaded)  
BS7800 (Super Unleaded)
- Petrol is a product refined from crude oil that contains a large number of identifiable compounds that can typically be 250 in number. These compounds can be identified and compared to the available petrol from major oil companies and suppliers.
- Unless otherwise stated, or the distinction is made between leaded and unleaded petrol, major gasoline fuel shall meet the following; Acceptance levels for Octane numbers will be determined at 95% confidence level. Only additives to this motor gasoline fuel solely for the purpose of lead replacement are allowed.  
Lead Replacement Gasoline, LRG, also known as LRP.  
Only additives from Sodium, Phosphorous, Potassium, or Manganese according to manufacturers recommendations are allowed. Note; Manganese can enhance octane values in any petrol. Under no circumstances will values in excess of 0.005 grams/litre be permitted.
- Lead in excess of EU directive 98/70EC requirements is illegal.

NHRPA reserve the right to amend the detail of the above specification to reflect any change occurring in the quality of the fuel on sale to the general public at any time.

	BSEN 228	BS7800			BS4040	LRG/LRP	Test
Mon (max)	89.0	89.0		Mon (max)	89.0	89.0	ASTM D2700/86
Mon (min)	85.0	86.0		Mon (min)	86.0	86.0	ASTM D2700/86
Ron (max)	100.0	100.0		Ron (max)	100.0	100.0	ASTM D2699/86
Ron (min)	95.0	97.0		Ron (min)	97.0	97.0	ASTM D2699/86
Lead (max)	0.005 Test ASTM D3237	0.005 Test ASTM D3237		Lead (max) Lead (min)	0.15 -	- 0.005	ASTM D3341 / IP362 ASTM D3237 / D3341 / IP362
Density 15°	0.720- 0.775	0.720- 0.775		Density 15°	0.720 – 0.775	0.720 – 0.775	ASTM D1298 / D4052
Oxygen % max	2.7% w/w	2.7% w/w		Oxygen % max	2.7% w/w	2.7% w/w	Elemental
Nitrogen % max	0.1% w/w	0.1% w/w		Nitrogen % max	0.1% w/w	0.1% w/w	ASTM D4629 / IP379
Benzene % max	1.0% v/v	1.0% v/v		Benzene % max	1.0% v/v	1.0% v/v	EN238
Sulphur	150mg/kg	150mg/kg		Sulphur	150mg/kg	150mg/kg	EN ISO 14596 / ASTM D2622
Olefins*	18% v/v	18% v/v		Olefins*	18% v/v	18% v/v	ASTM D1319
Aromatics*	42% v/v	42% v/v		Aromatics*	42% v/v	42% v/v	ASTM D1319

\* Olefins and Aromatics values are expressed as a percentage of total fuel