

# National Hot Rod



## Technical Specifications

**April 2020**

# NATIONAL HOT ROD TECHNICAL SPECIFICATIONS

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### **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 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, BMW Z4 and Mazda RX8.

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 cars are the Mercedes SLK and Ginetta G40R.

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.

The minimum length for a car, when originally manufactured, is 3505mm (138").

1. The maximum length for a car, when originally manufactured, is 4450mm (175.2").
2. The maximum width of any car shall not be more than 1854mm (73") when ready to race.
3. All cars must be rear wheel drive; front wheel drive cars must be converted.

### **NHR.2.1 ALLOWABLE ALTERATIONS**

In order to bring the formula up to date enabling more modern car models to fit into current rules, the following alterations may be made:

1. Oversized cars may be used by altering the bodies to fall within the existing length and width rules. They must have a minimum height from car floor to roof of 41 ¾" (1060mm).
2. The 'shell' must still resemble the manufactured shape so as to keep the car's identity.
3. The wheel base must be a maximum 99" (2515mm) and minimum 96" (2438mm).
4. The engine position will be calculated from the actual wheelbase, i.e. a minimum 31" (787.4mm) forward of centre line of front and rear axles.
5. Current rules are applicable to all other areas.
6. Any proposed new model must have drawings or photographs presented to the NHRPA for approval before permission is granted.
7. Current cars may also have a facelift, i.e. later grills, bonnets etc, but before production these must also be presented to the NHRPA for approval.

### **NHR.3 IMPORTANT PROHIBITIONS**

1. No fuel injection allowed.
2. No forced induction or nitrous oxide.
3. No traction control system(s).
4. No in-car adjusters other than bias braking.
5. No tyre softening.
6. No octane boost or upper cylinder lubricants.
7. Only steel rose (rod ends) joints or spherical bearings on suspension.
8. 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).

## **NHR.5 BODYWORK**

### **NHR.5.1 Body Panels**

1. Replacement of all body panels is permitted, provided that they retain the standard silhouette in side elevation (with the exception of spoilers). *If, when the rear screen is removed and the silhouette is sufficiently altered, (i.e. making the vehicle look similar to a 'pick up') the sides of the aperture may be filled or constructed as part of the boot lid/tailgate/roof.* The silhouette of both front doors must be visible, and the door sills must not protrude into silhouette, but may be reduced in depth by 1/3 of its original dimension, shape of replacement sill is free.
2. *When original body panels are replaced they must be to the following specification and must be identical on each side, in material content and gauge.*
  - a. *Bonnet and Tailgate: Minimum 1 layer of fibre glass only. 450g material.*
  - b. *Doors and Roof: Minimum 1 layer of 100g KEVLAR and 2 layers of 450g glass fibre.*
  - c. *Front wings, rear wings and door sills: Minimum 1 layer of 300g KEVLAR and 2 layers of 450g glass fibre to a minimum thickness of 4mm.*
  - d. *Front and rear bumpers same spec to a minimum thickness of 5mm.*
  - e. *The NHRPA retains the right to drill any panel/bumper to check the thickness.*
3. Front and rear silhouette must remain symmetrical.
4. Any replacement panel must resemble the same profile and style as the original fitting. The foam filling of any panels is prohibited.
5. No reinforcement is permitted, either structurally or on external panels, which, in the opinion of the Scrutineers, may be classed as armouring.
6. Wheels and tyres must not protrude further than the extreme width of the wings/arches.
7. Cooling holes may be drilled on forward edge only of the front and rear wheel arches, below a line drawn through the centre of the front and rear hubs.
8. All body panels must be obtained from the constructor who owns the rights to the relevant model that have been produced from an inspected plug and passed by Spedeworth and the NHRPA.
9. All NEW panels will be micro chipped for identification and the purchaser gives the right to any constructor to check the validity at any time.
10. Any existing panels can be micro chipped if checked and deemed legal by the relevant constructor. Any panels not chipped, or are not eligible to be chipped, will be deemed a copy and therefore illegal.
11. No panels will be deemed legal if they derive from an existing cloned panel kit then altered.
12. It is not permitted to put vents, scoops or holes in panels unless specific permission is set out within these rules.
13. **Driver-side, side view aperture.**

One round hole may be made in the B pillar on the driver's side of the car to aid the driver's vision. The hole must be no larger than 75mm and must be covered with clear Perspex. This must be fixed by rivets/nuts and bolts or bonded in place.

# Updated list of the ONLY car constructors sanctioned to build and supply new cars to race within the NHRPA series.

Simon Smith/Autocross Ltd

Contact: Simon Smith 0118 979 7999 01277 361 545 BMW Z4, VW Corrado, MK3 Ford Fiesta, Audi TT, Peugeot 206/206cc (Autocross versions). Fiesta ST MK7.5

Spedeworth Fabrications

Contact: Billy Wood 01252 322934 Vauxhall Tigra 'A', Mercedes SLK, Mazda MX5

A1 Performance Products

Contact: Micheal Smith 01429 869888 Vw Polo Mk6 2014-2018

Carl Boardley Motorsport

**Contact: Carl Boardley 01473 830272** Ginetta G40R

Final decisions with regard to panels will be in the control of Spedeworth/the NHRPA.

Any constructors (listed above or otherwise) currently manufacturing panels for a car/make/model not previously mentioned, or wishing to manufacture a new style of panel/Car/Frame/Chassis, will need to be sanctioned by Spedeworth/the NHRPA for production to continue.

## **NHR.5.2 FRONT PANELS, GRILLES**

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

## **NHR.5.3 BUMPERS**

1. No separate bumpers are allowed.
2. Up to two 100mm holes may be cut in the front ~~or rear~~ bumper on each side. The holes must be below the contact area of the bumper, under a line drawn through the centre of the front and rear hubs and outside of the chassis rails.  
Up to three 75mm holes may be cut in the rear bumper on each side. The holes must be below the contact area of the bumper, under a line drawn through the centre of the front and rear hubs and outside of the chassis rails to allow for brake cooling.
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.5.1.2b.
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 space frame members must be 38 X 2.0mm min.
2. The rear space frame members must be 38 X 1.5mm min.
3. The space frame 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 space frame. 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 2.0mm 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 tubes 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.
6. 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.
7. Rear axle links may have aluminium slider blocks on chassis.

#### **NHR.7 BULKHEAD**

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

#### **NHR.8 TRANSMISSION TUNNEL**

1. The gearbox and prop shaft must be covered by a steel, fibreglass, metal, Kevlar, or carbon-fibre tunnel.
2. Gearbox and prop tunnel must not be covered in from the underside of the car. If your car has a gearbox/prop tunnel already welded in from the underside, you must drill a minimum of 12 holes front to back at a minimum size of 40mm.
3. 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**

1. Safety belts must not pass through the firewall; all connection points must be visible.
2. Fuel tanks and dry sump tanks must be securely retained behind a metal firewall or a fire-proof metal compartment.
3. Batteries not fitted behind the rear firewall must be insulated by some form of cover (unless sealed type).
4. 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.10.4 if floor under tank).

#### **NHR.10 FLOOR**

1. When calculating original floor height, it may be taken from the highest point (if in doubt, check with the NHRPA).
2. 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 3. below).
3. 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.
4. Extra flooring/under-trays (in addition only to 2. 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.
5. Gearbox and prop tunnel must not be covered in from the underside of the car. If your car has a gearbox/prop tunnel already welded in from the underside, you MUST drill a minimum of 12 holes front to back at a minimum size of 40mm.
6. ~~Floor/under trays must be constructed of metal, fibreglass/Kevlar, or carbon fibre.~~ No other aerodynamic aids may be fitted to the underside of the vehicle.
7. 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**

1. A live rear axle only is permitted (see NHR.38).
2. Front suspension is free.
3. All suspension arms and links must be steel.
4. In-board suspension rocker ratios: Ratios must be the same from side to side and be symmetrical. Only one rocker per corner.
5. Any type of data logging equipment fitted to the suspension must not be functioning on the days of racing.
6. If Rod Ends (Rose Joints) or Spherical Bearings are used to connect suspension they must be of a steel type only.
7. Front suspension mounts to chassis may be adjustable but must be steel.
8. Steering rack casing, mounting blocks and extensions may be made of aluminium.

#### **NHR.12 SHOCK ABSORBERS**

1. Adjustable shock absorbers may be fitted at all four wheels.
2. Only one shock absorber per corner.
3. Adjustable spring platforms may also be fitted.
4. No active ride systems.
5. No shock absorbers fitted with separate reservoirs including those which form part of the exterior housing.
6. No shock absorbers that can be controlled from the driver's cockpit.
7. No shock absorbers costing in excess of £600+VAT each (price is fixed for the foreseeable future).
8. All shock absorbers must be freely available to anybody either direct from the manufacturer or their agents.

### NHR.13 WHEELBASE

The wheelbase of the car must remain standard  $\pm 50.8\text{mm}$ . \* 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	BMW Z4	2495mm	Peugeot 206/206cc	2442mm
Mercedes SLK	2400mm	Mitsubishi Colt	2415mm	VW Corrado	2475mm	Clio (2001—06)	2472mm
Mazda RX8	See Rule NHR.2.1	Ginetta G40R	See Rule NHR.2.1	Fiesta MK7.5	See Rule NHR.2.1		

### NHR.14 ROLL CAGE

The roll cage must be an integral part 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.

Minimum size: 38mm (1.5") x 2.5mm, alternatively the main hoop may be 50mm (2") x 2mm. Or RAC specification: Main roll bar 50mm (2") x 2mm, 45mm (1.75") x 2.5mm, other parts of roll cage 38mm (1.5") x 2.5mm, 40mm (1.6") x 2mm.

1. Alloy roll cages are not permitted.
2. A full roll cage (which must support both A & B pillars), consisting of a minimum of two hoops, either running from front-to-rear or side-to-side.
3. Two top hoop connecting bars.
4. One rear hoop cross bar at shoulder height to mount seat support, or a seat brace hoop to mount seat support (see NHR.55).
5. One lower bar, if cross bar at shoulder height is not fitted.
6. One dash cross bar.
7. Three driver's side door bars at least two of which must be shaped in to the door and all three must connect to the A and B pillars of the roll cage. The three bars must be joined by at least three connecting tubes using roll cage material between each bar.
8. 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 any point between the A and B pillar of the roll cage. Minimum height from the floor to the bottom face of the top door bar at the roll cage A post is 300mm (12 Inches)
9. Three passenger-side door bars using roll cage material at least one of which must be shaped into the door. The remaining two may be horizontal or cross.
10. 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.
11. All structural bars connecting to the cage/space frame must be steel, and terminate a minimum of 100mm (4") from the front and rear panel.
12. Any part of the roll cage that may come into direct contact with the driver's body must be suitably padded.
13. All joints must be welded over the complete surface area of the joint.



14. It is important there are no large gaps between any part of the cage and the body shell.
15. 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 its original position.

**NHR.15 '8 VALVE' ENGINES - SOHC TYPE**

1. All engines must conform to manufacturer's homologation specifications.
2. 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.
3. Engine and gearbox mounts must be constructed of steel.

**NHR.16 BORE / STROKE**

1. As produced with a maximum over bore of 1.5mm.
2. Sleaving is permitted, with 1.5mm over bore above standard.

**NHR.17 CARBURETTORS**

1. Up to 48 DCOE/SP Weber or Dellorto equivalent, with a maximum venturi size of 40mm (at the smallest point).
2. Exception: The Ford SOHC Pinto may use a maximum venturi of 42mm (at the smallest point).
3. 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.18 AIR FILTERS**

Free.

**NHR.19 FLYWHEEL/CLUTCH**

1. Flywheels are free, but a standard diameter ring gear must be retained.
2. Clutches are free, but carbon clutches are not permitted.

**NHR.20 CYLINDER HEAD/BLOCK**

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

**NHR.21 ENGINE POSITION**

All 8 valve and 16 valve engines: Front-to-Rear.

1. 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.
2. 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 *MINIMUM TOTAL*

195.58cm

#### **NHR.22 '16 VALVE' ENGINES — DOHC TYPE**

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

1. All engines must conform to manufacturer's homologation specifications.
2. 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).
3. Engine and gearbox mounts must be constructed of steel.
4. A wire mesh may be used between the front bumper and the front of the sump guard to help stop stone damage to the engine (also applies to '8 valve' engines).

	<i>DOHC TYPE</i>	<i>WITH A BORE OF:</i>	<i>WITH A STROKE OF:</i>
1.	Vauxhall X20XE; X20XEV 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.23 BORE/STROKE**

1. As produced with a maximum over bore of 1.5mm.
2. Sleeving is permitted, with 1.5mm over bore above standard.

#### **NHR.24 CARBURETTORS**

1. Up to 48 DCOE/SP Weber, or Dellorto equivalent, with a maximum venturi size of 38mm (at the smallest point).
2. All air which directly or indirectly affects air fuel mixture must pass through the venturi.
3. All carburettor fuel supply pipes must be drilled and lock-wired.

#### **NHR.25 AIR FILTERS**

Free.

#### **NHR.26 INLET MANIFOLD'S ARE FREE**

##### **Inlet Manifold Gasket**

1. All inlet manifold to cylinder head gaskets will be no thicker than 1.0mm and must be made from original gasket material or gasket paper.

#### **NHR.27 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 camshafts to rotate freely if necessary.

The drilling of extra or enlarging or reducing 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.

Cracked cylinder heads may be repaired with weld in two separate cylinders. The repair may be fettled but NOT polished.

#### **NHR.27.1 Head Bolts/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.27.2 Replacement Valves**

May be used. Shape may be changed. If a replacement valve is used it must be stainless steel with dimensions as listed within the following table:

		<b><i>X20XEV Vauxhall</i></b>	<b><i>X20XE Vauxhall</i></b>	<b><i>VW</i></b>	<b><i>Ford</i></b>	<b><i>Peugeot</i></b>	<b><i>Ford Duratec</i></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.	102mm minimum	104.5mm minimum	95mm minimum	96mm minimum	106mm minimum	103mm minimum
	Ex.	92mm minimum	104.5mm minimum	97.5mm minimum	96mm minimum	105.5mm minimum	104mm minimum
<b>Valve stem diameter</b>	In.	5.955 to 5.97mm	6.955/6.97mm	6.97mm	6.0mm	6 or 7mm	5.5mm
	Ex.	5.945 to 5.96mm	6.945/6.96mm	6.94mm	6.0mm	6 or 7mm	5.5mm

#### **NHR.27.3 Valve Springs/Top Caps/Collets**

Are free, and the spring seat may be machined.

#### **NHR.27.4 Valve Guides**

Must remain in the original position, but may be replaced (see Gas Flowing NHR.27.9 below). Bronze guides, or thin wall bronze guide inserts, are permitted.

#### **NHR.27.5 Head Gasket**

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

#### **NHR.27.6 Vernier Timing Wheels**

Are permitted and on the Ford Duratec camshafts and crankshaft pulleys may be pinned/keyed.

#### **NHR.27.7 Cam Shafts**

Are free.

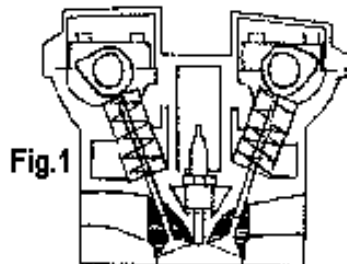
#### **NHR.27.8 Cam Followers**

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.27.9 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. Where there is a hole left by the injector, it can be blanked off and blended to the inlet port but NO material can be removed from the inlet port.



#### **NHR.27.10 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.27.11 Timing Chain Tensioner**

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

#### **NHR.28 CYLINDER BLOCK**

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

#### **NHR.29 PISTONS**

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

#### **NHR.30 CON RODS**

1. Must be original standard part; exception the Ford Z-Tec may interchange con rods between engine type NGA and NGB/NGC engines.
2. Approved steel con rods are permitted for use in 16 valve engines and must be replicas of the original in dimension.
3. 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.

#### **NHR.31 CRANKSHAFT**

Must be original standard part.

#### **NHR.32 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.33 FLYWHEEL / CLUTCH**

1. This may be replaced with a lightweight steel version.
2. Standard diameter ring gear must be retained.
3. Any twin drive plate clutch may be used, minimum diameter 184mm (7.25") but carbon clutches are not permitted.

#### **NHR.34 IGNITION SYSTEM**

1. 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 Incarace 07736 805537.
2. The unit and wiring must be visible and accessible for removal. A Scrutineer, or NHRPA Race Director, can demand to check the unit and any hidden wiring before racing.

3. 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).
4. 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.
5. The 16v Vauxhall must use pickup sensor, Part N<sup>o</sup>: Vauxhall 90451441 or Bosch 026120030650. The Trigger Wheel may be replaced with an aftermarket part in the original position. The number and location of teeth in relation to mounting holes must be as original.
6. The Ford Duratec must use an original type Ford Pickup sensor. The crankshaft pulley may be replaced with an aftermarket part but must remain a 36-1 tooth disc. There must be provision to fit seals to securing bolts of sensor and disc, if adjustable, and must have a positive means of positioning to the crankshaft, by either a roll pin/dowel or keyway so a true TDC position can be achieved.
7. 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 Scrutineers, Mervyn Crawford or John Durrant, 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.35 ENGINE EXCEPTIONS**

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

#### **NHR.36 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.

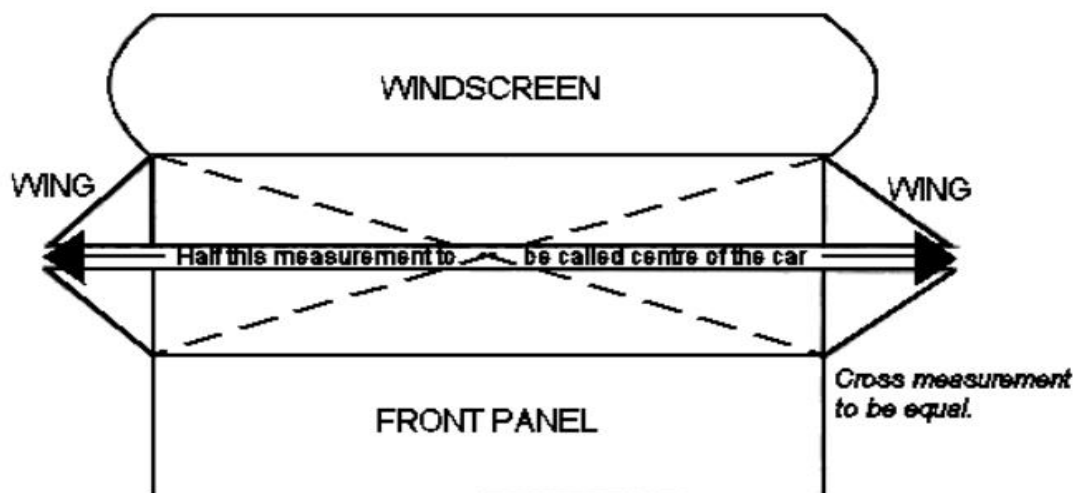
**N.B.** Provided an engine satisfies all existing engine position rules, silhouette confines, and ground clearance, it may be tilted by an angle not to exceed 20 degrees from vertical.

## ENGINE POSITION - ANY & ALL ENGINES

The centre crankshaft pulley bolt must be on the centre-line of the car.

This is a diagram showing how this will be measured.

There will be no  $\pm$  tolerance.



The centre crankshaft pulley bolt must be on the centre-line of the car.

There will be no  $\pm$  tolerance.

**NB: Both Wings must be the same width (i.e. no offset panels).**

### NHR.37 OIL SYSTEM

#### NHR.37.1 Wet Sump System: 16 or 8 Valve Engines

1. 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.
2. High pressure and/or high capacity oil pumps may be used.

#### NHR.37.2 Dry Sump System: 16 or 8 Valve Engines

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

### NHR.38 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. Propshafts must be made of steel and may not be perforated.
7. Differentials – locked or limited slip versions are permitted.
8. 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.
9. Alloy diff casings are NOT permitted.
10. NASCAR type drop gear or quick change axles are not permitted.
11. Independent and/or transaxles or De-Dion type, are not permitted.
12. Gear change must be manually operated (conventional H pattern stick change) not electronically or by any other method, including sequential shifters.
13. It is not permitted to fit any hydraulic unit similar to a shock absorber to the rear suspension links.

14. No transmission gearboxes may be used with cost in excess of £2300 + VAT, and all transmission gearboxes must be freely available to anybody, either direct from the manufacturer or their agents.
15. The only exception to this is the sequential gearbox supplied by Spedeworth Motorsport.

#### **NHR.39 OIL COOLERS**

Oil coolers are free.

#### **NHR.40 VEHICLE WEIGHT/BALLAST**

**IMPORTANT NOTE:** Cars may be checked at any time during a race meeting. They must 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 3kg. All weights exclude the 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 is 54%.

1. If you are checked and found to be up to 0.5% over this limit 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 this limit you will lose all points on the day and receive a one World Series meeting ban.
3. Anyone found to be over 0.5% over this limit will lose all points on the day and receive a one World Series meeting ban.
4. If a driver is found over on a second occasion the penalty will automatically double.

#### **NHR.41 BRAKES**

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

#### **NHR.42 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).

#### **AEROFOIL/REAR WING/SPOILER.**

Single or double wings permitted with a total front to rear measurement (single or double) 457mm (18"), not including fin plates. It cannot be fitted further forward than the 'B' pillar and must stay within the vertical confines of the original body (excluding wing mirrors).

The Nhrpa will monitor Aerofoils/Rear Wings/Roof Spoilers over the next six months and implement more control if necessary

#### **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) – **see NHR 53.4**. 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.43 WHEELS AND TYRES

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

Date	Tyre Model	Tyre Price (inc. VAT @ 20%)
January 2020	H10 - 9.0/20.0-13 Slick	via Hoosier
	<del>H12 - 9.0/20.0-13 Slick (can be used until end of 2019 season)</del>	
January 2020	H10 - 9.0/20.0-13 Wet	via Hoosier

(Prices may change if exchange rates fluctuate)

There is also a small fitting charge, per tyre, for swap-arounds and fitting of used tyres. There is no charge for fitting new tyres.

Only air to be used to inflate tyres. NO other gas may be used.

The NHRPA may at any time ask a driver to deflate any tyre and reflate the tyre with air supplied by the NHRPA.

Any type of wheel may be used, but may be no wider than 10" where the tyre sits.

1. Only 13" diameter wheels may be used.
2. Steel wheels must have rolled edges.
3. All wheels need to have conventional multi stud fixings.
4. Wheel studs must visibly protrude through all wheel nuts at all times.
5. Tyre buffing is permitted.
6. Blow off valves are NOT permitted.

#### NHR.43.1 TYRES FOR WORLD SERIES QUALIFYING ROUNDS

Five (5) slick tyres are permitted one (1) of which may be new (driver's choice). Unlimited wet tyres are permitted one (1) of which may be new (driver's choice).

Only ONE (1) new tyre may be registered at each meeting Slick or Wet (except specified championship meetings\*).

**New tyre** - it will be the driver's decision whether they use the new tyre at the meeting it is registered or whether they carry forward use at a future meeting.

At least four slick and four wet tyres that a driver intends to use must be logged before the first National Hot Rod race at any meeting for pre meeting scrutiny. Any driver not logging wet tyres will not be permitted to use them. Any spare tyres used must be logged on the driver's tyre sheet and an NHRPA Scrutineer/Official notified before they are raced with.

All tyre numbers must be accurately recorded on your tyre record sheet – failure to do so will carry the same punishment as any other wrongly declared tyre (i.e. Loaded and banned from One subsequent World Qualifying Round in the driver's chosen series) although ten penalty points does not apply for tyre infringements. No points will be awarded for the loaded round.

Wet tyres will only be recorded on a driver's history when a round is declared wet by the NHRPA. If a round starts dry and is declared wet at any point after the first heat then slick and wet tyres will both be recorded on a driver's history. If a driver logs a new wet instead of a slick at a dry meeting this tyre will be added to the history

All tyres that are logged on the driver's tyre sheet must be present and available for inspection at any time during the relevant meeting.



### **Damaged or Punctured New Tyres**

If any New tyres are damaged or punctured at the meeting they are first logged at the driver with the Scrutineers/Nhrpa Officials permission may remove the damaged/punctured tyre from the log sheet and replace it with another New tyre at the scrutineer's discretion.

### **NHR.43.2 TYRES FOR MAJOR CHAMPIONSHIPS**

All tyre numbers must be accurately recorded on your tyre record sheet – failure to do so will carry the same punishment as any other wrongly declared tyre (i.e. Loaded and banned from One subsequent World Qualifying Round in the driver's chosen series) although ten penalty points does not apply for tyre infringements.

Four **new** slick tyres and four **new** wet tyres will apply only at the WORLD, NATIONAL, EUROPEAN and BRITISH championships. All other championships will only have one new tyre.

Four **new** wet tyres do not need to be logged should the meeting start dry, however, should the meeting be declared 'wet' by the NHRPA the driver **must** log and inform an NHRPA Scrutineer/Official of any new wet tyres which are intended for use **before they are raced with.**

Wet tyres will only be entered on a driver's tyre history when the meeting has been declared wet by the NHRPA. All wet tyres must be raced on the day to be entered on a driver's history. The scrutineer will check that any new wet tyre on a driver's tyre log sheet has been raced with by the end of the meeting.

### **NHR.43.3 TYRES FOR WORLD SERIES 'JOKER' ROUND**

A World Series 'joker' round for new tyres will be chosen by each driver where drivers can declare up to 4 new tyres to be added to their allocation – there will only be one 'joker' round for each nation per year. The 4 new tyres cannot be added to your allocation at any other round – you must be racing at the designated 'joker' round.

The 'NHRPA year' for joker rounds starts at round one of the World Series and ends at the last round.

If a round is declared wet from the start jokers are **void** and the driver may pick another round to play his/her joker within the 'NHRPA year'. If New wets are logged at a joker round the joker will not be void

If a round starts dry and then is declared wet after the first heat the joker driver must have used at least three new slicks i.e. only one new slick can be carried forward/banked.

New wet tyres can be logged when a driver plays their joker round.

All tyre numbers must be accurately recorded on your tyre record sheet – failure to do so will carry the same punishment as any other wrongly declared tyre (i.e. banned from two subsequent World Qualifying Rounds in the driver's chosen series) although ten penalty points does not apply for tyre infringements.

The 4 new tyres for the 'joker' round applies only to one date for each driver and cannot be used on any other date i.e. if any driver misses the 'joker' round meeting within their World Series, they are not entitled to 4 new tyres at their next race meeting.

Also, any driver who uses 4 new tyres at the 'joker' round within their nominated World Series cannot have a further 4 new tyres, or nominate a 'joker' round, within a different nation.

Any new/returning drivers who use 4 new tyres will by default have this counted as their 'joker' round.

**New Drivers/Returning Drivers**

Returning drivers must have not raced for twenty-four months. For a New or Returning driver to race on any more than one new slick tyre the driver would need to run his Joker this would allow the driver up to four new slick tyres. New or Returning drivers can log up to four new wet tyres at their first wet meeting only.

Non provisional new/returning licensed drivers will be seeded until the driver has completed three meetings. The Nhrpa/steward may reseed a driver at any point.

After the first three meetings the driver will be graded using the average system.

**New/Returning Driver’s tyres**

If a new/returning driver plays his joker at their first round and the round starts wet they will still be allowed to log four new slicks if the round dries for either the remaining heats or final any new slicks logged must be used at the joker meeting or they will not be entered on the drivers history.

**NHR.43.4 Example of Tyre Log**



**National Hot Rod Tyre Log Sheet**

Drivers Name.....Car Number..... English/Scottish/Irish/Northern Irish/Continental

Slick			Wets	
New			New	
Used			Used	
Used			Used	
Used			Used	
Spare			Used	

**This form must be handed to the NHRPA scrutineer prior to the start first National Hot Rod race of the meeting. Any car found on the track (or at post-race checks) with an unlogged slick or wet tyre will receive an automatic load up and ban from the next ~~two~~ World Series round in his/her designated series.**

**If any driver needs to change a tyre due to damage or wheel offset you must find the NHRPA scrutineer/Official to log the used tyre before the car is on track.**

Please log any additional wets on the back of this sheet.

Reverse of Sheet

Wets			Wets	
Used			Used	
Used			Used	
Used			Used	
Used			Used	
Used			Used	

#### NHR.44 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 technical disqualification flag, but you will automatically be removed from any result. Silencers must be effective in reducing noise.

1. Exhaust manifolds are free.
2. Any exhaust system passing through the driver's cockpit must be fully covered by a metal shield.
3. There must be a maximum of 254mm (10") of tail pipe on the silencer and must terminate rearwards or down under the vehicle. **As supplied from the manufacturer.**
4. Exhausts terminating at the side of the vehicle are no longer permitted.

**The NHR500 manufactured by Simpson race exhausts and the EDW63hr manufactured by Edwards motorsport are the only current permitted silencer. The silencers must be fitted as supplied with no modification in any way.** These are considered the most effective in reducing noise. No form of exhaust gas/temperature sensor is permitted.

#### NHR.45 COOLING SYSTEMS

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

#### NHR.46 LIFTING EYES

To aid track officials, recovery staff and prevent vehicle damage all cars must have 2 x front and 2 x rear lifting straps.

Front straps are to be mounted to the frame in either side of the front bumper aperture, must be folded back up to the chassis and cable tied so they do not trail on the track during racing.

Rear straps are to be mounted to the frame, must be folded back up to the chassis and cable tied so they do not trail on the track during racing but are long enough so they come 'out and up' from the rear bumper. The rear wing / spoiler must be quick release or pivot forward to prevent damage.

#### NHR.47 WINDSCREENS/GLASS

1. A front windscreen may be fitted but must be of laminated glass, Makrolon, Perspex, Lexan or similar material.
2. Windscreen bar or bars must remain.
3. A rear screen/quarters may be fitted but must be made out of Makrolon, Perspex, Lexan or similar material.
4. A windscreen wiper or wipers may be fitted.

5. You may not fit glass, Makrolon, 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/exit front the vehicle.
6. 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 equi-distantly in the front windscreen aperture.
7. A wire mesh panel covering the driver's side of the screen is not permitted.
8. The fitting of temporary Makrolon, 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.48 STOP LIGHTS**

1. At least one centrally fitted single **RED** stop/brake light no wider than 400mm must be fitted. If two **RED** lights are fitted, they must be a minimum of 706mm apart. All brake lights must face rearward and be visible at the rear of the car.
2. Lamps must be operated by the standard switch, as fitted to the car. No other switches or modifications are allowed.
3. Lamps must be a minimum of 76mm (3"), and a maximum of 127mm (5"), diameter square/rectangle.
4. Lamps must be 21 watt intensity.

#### **NHR.49 MIRRORS/GLASS**

1. A driver's side external door mirror must be fitted and must not protrude beyond the extreme body width of the car.
2. A passenger side exterior mirror is optional.
3. A rear-view interior mirror must be fitted.
4. 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.50 CATCH TANK**

1. 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 one breather pipe connecting it to the engine. If the catch tank becomes ineffective during racing or practice, the car will be withdrawn from the event.
2. 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.51 BATTERIES & ELECTRICAL SYSTEM**

1. Batteries must be securely fixed and covered with a rot-proof material if 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.52 FUEL TANKS & SYSTEMS**

1. All fuel tanks must have a positive means of fixing (metal straps or bolted).
2. Filler caps must not be prone to spillage - no push-on caps. Caps must be metal and secure, or a screw-on type.

3. Fuel tanks, including filler caps, must be covered by a metal firewall.
4. Fuel outlet must be from top of tank.
5. All fuel tanks must have a breather pipe with a one-way valve fitted within it ~~or a vent pipe~~.  
Contravention of this rule will result in an automatic mandatory load up from the meeting for the first offence. Second offence will result in a load up and a ban of 6 months. This applies to any driver not having a fully working non-return valve fitted and/or it being tampered with in any way.
6. All fuel pipes must be inside vehicle.
7. Only road-side fuel can be used (Shell Optimax, BP Ultimate or Esso Supreme). No additives permitted i.e. upper cylinder lubricants or Octane booster. For full specification see NHR.69.  
**BP Ultimate 102 is not a permitted fuel.**
8. If there is a floor under the tank, there must be four 50mm holes in the floor, in case of spillage.
9. A fuel shut-off tap must be fitted within easy reach of driver (suitably indicated by way of a sign).
10. Fuel lines must be metal, or metal covered.
11. A single electric pump may be used in place of original.
12. Fuel tanks must be metal only, or FIA approved.
13. Fuel regulators are permitted.

#### **NHR.52.1 SIZE AND POSITION OF FUEL TANK**

1. We recommend a fuel tank/s with a maximum total capacity of 18 litres at all meetings, except for long distance races.
2. The fuel tank must be fitted behind the driver.
3. 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.
4. 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 its own filler cap), effectively enclosing the tank, but must be open at the bottom.

#### **5. NHR.53 RACING NUMBERS**

1. **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(s).
2. **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, fitted on, or above the roof-line, but must not be higher than 305mm (12") in total, and 559mm (22") in length.
3. **AEROFOIL/FIN PLATES.** Numbers must be a minimum of 229mm (9") high by 38mm (1.5") stroke on each side fin. The numbers should be spaced and visible from both sides of the car. **NO** other writing or shading is allowed on fin plates.
4. **FIN PLATE COLOURS.** All drivers are required to have two fin plates of each colour background (defined below), with their number clearly displayed. Colours are as follows:

- Black on White
- Black on Yellow
- White on Dark Blue
- White on Red

The fin plates need to be fastened in such a way that they can be changed at short notice. At each meeting the driver will be informed which colour fin plate they need to display. At World Series rounds the cars will be lined up in average points order within their grade. Failure to comply will result in the driver starting from the rear of the grid. The visible reverse of all fin plates must be white.

#### NHR.54 DRIVER'S/SPONSOR'S NAME

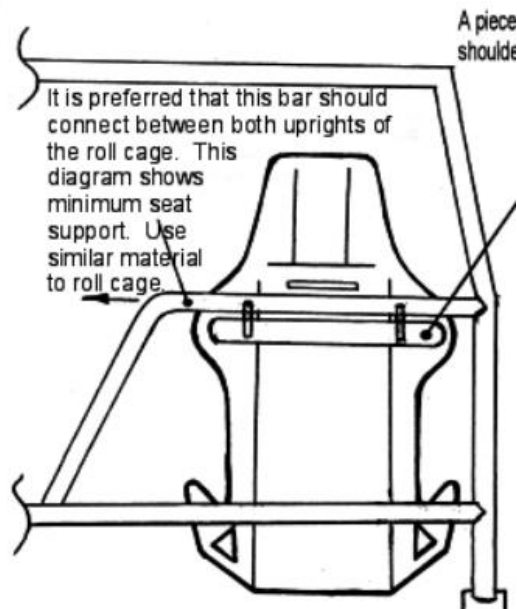
1. A sunvisor, to an approximate depth of 152mm (6") must be fitted.
2. The driver's name must be clearly displayed on all cars; the sun visor is the preferred location. The sun visor must be made available if the NHRPA require it for promotional or sponsorship wording.
3. All sign-writing must be approved by the Promotion; other names permitted are those of sponsors and mechanics only.
4. The sun visor or a designated area on the vehicle may be required by the NHRPA if a promotional deal is secured.

#### NHR.55 DRIVER'S SEAT

See diagram for fitting instructions.

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

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/she will be involved in a serious incident, and he/she also believes that, if he is involved in a collision, the impact on their 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).



If any part of the seat sits behind the B-pillar hoop a secondary support to the cage must be added. An example of this is shown in the diagrams within this section of the document. This new section must be constructed in a way that the driver's crash helmet cannot make contact with it. Material od and thickness as rest of roll cage.







**NHR.56 WINDOW NETS**

A quick release cloth window net must be fitted to driver's door window aperture between the B post and the steering wheel.

**NHR.57 NECK SUPPORTS**

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



## NHR.58 SEAT BELTS

It is mandatory that 3" wide safety belts are used with 2" crotch straps. **A 2"- 3" HNR/Hans harness is permitted if the drivers is using a HNR/Hans device.** 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 information given by your seatbelt manufacture when fitting the seatbelt.

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 drivers 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 the NHRPA, 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.59 HELMETS/EYE PROTECTION

### CRASH HELMET

Helmets must be of a minimum standard as directed by British Oval Racing Safety Executive (B.O.R.S.E). These are FIA8860-2004, FIA8860-2010, Snell SA2005, Snell SA2010, Snell SA2015, SFI Foundation 31.1A, SFI Foundation 31.2A. The E2205 European standard helmet may be used in Fibreglass, Carbon or Tri-Composite form only i.e. 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 (ORC15) sticker.~~

All helmets MUST display **a new green "ORC20 Approved"** serial numbered helmet sticker, as per Illustration 01. Older **blue 2015, and red 2010** stickers are NOT valid (Illustrations 02 and 03).



Illustration 01



Illustration 02



Illustration 03

**(Note: A programme of re-validation and issuing of the new green stickers will be undertaken by ORCi appointed officials during the 2020 season. This programme will take some time to implement, and therefore the blue ORC15 Approved sticker will remain temporarily accepted until the programme has been completed. Helmets to the SA2005 and FIA 8860-2004 standards must NOT be used/presented, as they are no longer permitted.)**

#### **NHR.60 CLOTHING**

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

#### **NHR.61 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 body) type extinguishers are not permitted. 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 re-fuelling.

#### **NHR.62 FINAL PREPARATIONS & COLOURS**

1. 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).
2. The external painting of the car must, at all times, be of professional appearance — preferably in bright colours, although any colour scheme is permitted.
3. 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.
4. No on-board cameras are permitted without permission from the NHRPA.

#### **NHR.63 VIOLATIONS**

When referring to the engine, gearbox, differential, mechanical, or construction Rules & Regulations, the principle will always be:

1. 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.
2. 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(s) in question will be deemed to be illegal, resulting in immediate suspension from racing and referral for disciplinary action.
3. Presentation of a vehicle for Scrutineering is a declaration by the entrant that the vehicle is eligible for that event.
4. 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.
5. 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.
6. Clarification on any item may be sought from the NHRPA.

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

#### **NHR.64 ENGINE SEALING**

1. 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).

2. 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.
3. 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.65 TIMING TRANSPONDERS & RACECEIVERS**

1. A timing transponder must be fitted, positioned 1.8 metres from the furthest forward point of the car, with a 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.
2. 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/warnings are heard by every driver at the same time. The system has proved invaluable since introduced and the NHRPA believes it improves safety and the co-ordination of events. It is mandatory for drivers to purchase their own RACEceiver unit from Hoosier.

#### **NHR.66 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.67 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 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.68 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.69 FUEL SPECIFICATION

**All Oval Racing Formulae:** Permitted fuel specification from 1<sup>st</sup> January 2008 (this specification supersedes all previous specs).

1. All cars must only use fuel from roadside pumps as defined below.  
Petrol (Motor Gasoline of the type on sale to the general public from roadside filling stations) BS 4040 (Leaded) Subject to a valid permit for use. LRG (Unleaded), BS EN 228 (Unleaded), BS7800 (Super Unleaded).
2. 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.
3. 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.
4. 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.**
5. We 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.

### Roadside fuel consistency when testing fuel samples.

	BS EN 228	BS 7800	BS 4040	LRG/LRP	Test Standard
Motor Oct No (max)	89.0	89.0	89.0	89.0	ASTM D2700/86
Mon (min)	85.0	86.0	86.0	86.0	ASTM D2700/86
Research Oct No (max)	100.0	100.0	100.0	100.0	ASTM D2699/86
Ron (min)	95.0	97.0	97.0	97.0	ASTM D2699/86
Lead (max)	0.005	0.005	0.15		ASTM D3341 / IP362
Lead (min)	ASTM D3237	ASTM D3237		0.005	ASTM D3237 / D3341 / IP362
Density @ 15°	0.720 - 0.775	0.720 - 0.775	0.720 - 0.775	0.720 - 0.775	ASTM D1298/ D4052
Oxygen % max	2.7% w/w	2.7% w/w	2.7% w/w	2.7% w/w	Elemental
Nitrogen % max	0.1% w/w	0.1% w/w	0.1% w/w	0.1% w/w	ASTM D4629/ IP379
Benzene % max	1.0% v/v	1.0% v/v	1.0% v/v	1.0% v/v	EN238
Sulphur	150mg/kg	150mg/kg	150mg/kg	150mg/kg	EN ISO 14596 / ASTM D2622
Olefins*	18% v/v	18% v/v	18% v/v	18% v/v	ASTM D1319
Aromatics*	42% v/v	42% v/v	42% v/v	42% v/v	ASTM D1319

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

Please note that all of the above rules are subject to change in respect of Health & Safety requirements.

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