

## **Excel Rally Car- National Vehicle Eligibility Requirements- 2008**

Vehicles competing in rallies nominated as rounds of the state based EXCEL RALLY SERIES must conform to the following National Excel Rally Car specifications:

Models eligible are all X3 models manufactured by **Hyundai** from July 1994 to June 2000. All GX, GL & GLX, Sprint, 3, 4 and 5 door models are eligible. Both the 1495cc DOHC (74kw) & SOHC (66kw) engines are eligible. All vehicles must be standard & comply with the Excel Factory Workshop Manuals for any variations. Parts from any X3 model may be used upon another vehicle, as long as the part(s) can be clearly identified as a standard Excel replacement part.

The following components are free or may be modified from standard, as described in the eligibility requirements and or build manual:

### **1. ENGINE**

- a. Spark Plugs & High Tension Leads.
- b. A replacement fuel regulator may be installed to allow better control of fuel supply.
- c. Gear selector mechanism may be modified to remove free play and improve gear selection.
- d. The Exhaust System after the exit from the Exhaust Manifold is free. The exhaust manifold **MUST** remain standard, no machining, adding or removing of material is permitted. Exhaust must comply with the CAMS PRC regulations. Catalytic converters and emission system components must be retained in states where these are required by the vehicle registration authority.
- e. The original fuel pump may be replaced with an external electric type. The fuel lines, fuel pump wiring and relay system may also be replaced or relocated. An additional fuel pump and/or surge tank may be added.
- f. The only modification of the standard cam shaft(s) is to permit the installation of offset bushes to the Camshaft Pulley to allow adjustment of cam shaft timing, or the fitment of "vernier Camshaft

Pulley". The timing of Camshafts relative to each other and the camshaft profile (lobes and their position) must remain Standard.

- g. Engine and/or Gearbox oil coolers may be installed.
- h. Cylinders may be bored to a maximum +0.6mm (+0.5mm oversize plus clearance) oversize, and any replacement pistons must be standard configuration (ie: compression height, crown design, etc) no machining of the pistons is permitted (ie: valve relief). The **standard bore is 75.5mm**, maximum Bore will therefore be 76.1mm.
- i. No freedoms are granted to the 12v SOHC Engines. No "performance Parity" changes are allowed for in the regulations.
- j. Undersized crankshaft bearings may be used. Crankshaft Stroke must remain standard (83.5mm).
- k. The radiator and its method of fixing are free provided that the original radiator fittings on the car are utilized. (per PRC regulations) . Radiator hoses are free. A radiator screen may be fitted.
- l. The fitment of an additional THERMOSTATIC fan is permitted. The operation of the fan can be by manual switch or automatic control.
- m. The cylinder head mounting face may be machined. No MODIFICATIONS, MACHINING, ADDING OR REMOVING of material from the cylinder head combustion chamber, inlet ports, exhaust ports or any other parts (except for the cylinder head face and valve seats) of the cylinder head is permitted.
- n. The air filter and induction system BEFORE the throttle body is free and may be removed and replaced by any suitable aftermarket system. E.g. "POD" styles as per CAMS regulations. No modifications are permitted to the throttle body or inlet manifold.  
**Any Type of forced induction is strictly forbidden.**
- o. FUEL MUST BE **Commercial "Pump" fuel as specified in Schedule G of the 2007 CAMS Manual of Motor Sport.** eg. UNLEADED or PREMIUM UNLEADED. No leaded fuels, avgas or racing fuels.

- p. Fuel injectors, ignition computers and electronics must be original Hyundai Excel parts for the models listed and as sold in Australia. No Piggyback ECUs or modifications to ECU wiring harnesses or sensors are permitted.

**It may be a requirement that competitors take part in a ballot for ECU's prior to each round of the series. Any competitor may request a Ballot, which will take place after the completion of scrutineering and prior to the Drivers Briefing.**

- q. ALL COMPETITORS within the Excel Rally Series must present their vehicles for scrutineering with the engine "sealed" and Vehicle Log Book endorsed "Engine Sealed" to be eligible to score points in the Excel Rally Series.

- r. Procedure for engine sealing;

The vehicle and or engine is to be presented at a nominated examiner in a condition that will allow the bore and stroke of the engine to be measured. The cylinder head must be present to allow inspection of the combustion chamber, ***including valve size***, inlet port and exhaust port size. The competitor must also be prepared to install the cylinder head and sump at this time so the engine seal can be installed.

**Bore- 75.5mm Std - 76.1 maximum**

**Stroke- 83.5mm**

**Valve sizes are;**

***DOHC- inlet 28.21mm & exhaust 25.00mm.***

***SOHC- inlet 27.33mm & exhaust 32.00mm.***

The competitor will need to provide a hole of 3/16" diameter between the flange of the cylinder block and the engine sump, located on the exhaust side of the engine between the oil filter and dipstick tube, on the front of the cylinder head and casting of the cylinder block adjacent to the first inlet port. Once the engine has been found to comply with the National Excel Vehicle Eligibility requirements a CAMS approved seal will be attached to the engine via the holes provided. Completed Engine sealing form must be returned to the State Series Organising committee.

(List of nominated examiners on last page).

Alternatively a competitor may elect to have an engine sealed without measurement and sign a waiver which allows all series points to be stripped if an engine is subsequently found not to comply with the requirements.

- s. Failure to have the "seal" attached will result in a competitor failing to score any points for that round of the Series.
- t. Only normal engine reconditioning procedures are permitted within the mechanical specifications and compliance of the workshop manual and the F.I.A. Recognition Document No 5589 CAMS H2-5 (e). These specifications shall be deemed to include factory approved and recommended methods of assembly as well as specific component measurements and finish standard.
- u. Power steering or air conditioning equipment may be added or removed.
- v. Engine mounting bushes are free, however the location and number of engine mounts is not.
- w. The lowest final drive ratio used is 3.842, which is standard in the DOHC. **Limited slip and locked differentials are not permitted.** Gearbox ratios are to remain standard.
- x. The clutch assembly may be replaced with a 'heavy duty' alternative of the standard design. The clutch & pressure plate assembly should weigh not less than 85% of the original Hyundai component. The Flywheel weight must be standard.

**Clutch component weights;**

**Clutch Plate 1.06Kg Std - 0.901Kg Minimum**

**Clutch Pressure Plate 3.70Kg Std – 3.145Kg Minimum**

**Flywheel 6.4Kg Std**

**SPECIAL NOTE.**

Any item not listed or mentioned above must comply with the workshop manual or the item or items must remain unaltered from standard.

It is the intention of the rules that the engine be in STANDARD CONDITION in order to contain cost. Latitude in regards to machining dimensions must not be interpreted as a means of enhancing engine performance. Where a dimension is shown that dimension MUST be observed eg; cylinder bore.

**2. BRAKES**

- a. Brake friction material and the flexible brake lines are free.
- b. A hydraulic or mechanical fly-off hand brake may be fitted. A suitable parking brake mechanism needs to be retained to meet CAMS and State Vehicle Registration Authority Requirements.
- c. An adjustable brake-proportioning valve may be used in the rear brake circuit/s to allow adjustment of rear wheel braking bias.
- d. Disc brake backing plate may be removed.
- e. Cross-drilled or slotted disc rotors are not permitted. The disc rotor specifications must be as per the workshop manual.
- f. The installation of brake pad knock off springs is allowed.

### 3. SUSPENSION

- a. Springs are free provided their type and location are unchanged. (by type is meant coil). "Coil-over" design permitting the adjustment of ride height are permitted.
- b. Shock absorbers must not be of the external reservoir design, and shall not be externally adjusted for bump or rebound. This is to contain costs. Their number and location must remain standard.
- c. Bumpstops are free.
- d. Bushes used at suspension pivot points may be replaced. The use of urethane is permitted. Spherical joints are not permitted, except in the top strut mount.
- e. Suspensions may be modified so that Camber and Caster may be adjusted *through* the use of eccentric camber pins or washers and caster bush kits.
- f. The use of replacement adjustable strut tops is permitted, providing that they utilise the standard body shell mounting facilities. The removal of metal from the suspension tower is forbidden. **Except**

**that the hole in rear strut towers may be enlarged to a maximum of 60mm diameter and must remain circular.**

- g. Anti-roll bars may be upgraded or swapped for aftermarket items provided original sway bar mountings to the chassis are used. Sway bar links are free.
- h. A strut brace may be fitted between the front suspension towers provided it only links the towers. The rear suspension towers may be braced by either the roll cage or a strut brace.
- i. Suspension components may be strengthened in accordance with CAMS PRC regulations; some modifications are allowable to suspension components. Refer to CAMS manual for full details.  
The origin of all standard parts must remain clear.

#### **4 BODY & COACHWORK**

- a. There is no control Tyre, competitors are free to use any suitable 13 inch tyres.
- b. Wheels are free, provided that they can be housed within the original bodywork.
- c. Wheel diameter must be 13".
- d. Coachwork must be as per the workshop Manual Specifications except that carpet, underfelt, hood lining, rear seat, radio, console and rear parcel shelf may be removed.
- e. Supplementary gauges may be fitted within the cabin.
- f. Pedal settings may be modified for position but the original mounting fixture must not be changed.
- g. CAMS mandatory safety equipment must be fitted as per the NCR's and includes Roll Cage, complying with Schedule J of the CAMS Manual of Motor Sport, Fire Extinguisher, Bonnet Pins, Towing Hooks, First Aid Kit, Triangles and Mudflaps.

- h. An air vent/scoop may be fitted in the roof of the vehicle.
- i. Seam welding is permitted. Strengthening/plating of the shell can only be carried out as per PRC regulations or build manual.
- j. Any rubber bush may be changed for a bush made of another material as long as the new bush has dimensions the same as the original.
- k. The use of Chrome Molly 4130 for the construction of the roll over protection is not permitted.
- l. Vehicle weight must be 960kg minimum weight
- m. Fuel tank must be maintained in standard location, suitable damage protection may be installed.

#### SPECIAL NOTE

Any item not specifically listed or mentioned above must comply with the CAMS PRC regulations and if not mentioned or listed in the CAMS regulations the item or items must remain unaltered from standard.

#### **NOMINATED EXAMINERS**

Any CAMS Licensed Scrutineer (Bronze or higher)

Engine Seal location guide & Engine Measurement form may be downloaded from [www.excelrally.com.au](http://www.excelrally.com.au)