SPECIFICATIONS OF AUTOMOBILES

All vehicles in races and other speed events must comply with the General Requirements of Automobiles (see "General Requirements for Cars and Drivers" in the CAMS Manual of Motor Sport).

3rd Category – Touring Cars
Group 3H – HQ Holden

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1. DEFINITION

This is a Formula based on HQ Holden Series Australian four-door, six-cylinder, 202 sedan and components from those vehicles marketed and manufactured in Australia during the period 1971 to 1974 and restricted in specification so as to emphasise driver ability rather than design and preparation of the vehicle.

The intention of these regulations is to provide a low cost point of entry for newcomers to the sport of motor racing. It is a simple formula with limited modifications permitted, all of which are designed to make the vehicles more suitable for competition use.

No component of the power train, front suspension, rear suspension or brakes may be altered, modified, or changed, nor be of other than General Motors-Holden's manufacture, unless specifically authorised in these regulations. The re-siting of components is considered to be a modification.

All modifications are strictly prohibited except as specifically authorised within these Regulations.

2. PREAMBLE

CAMS has adopted the HQ Holden category as an entry-level circuit racing sedan formula. CAMS is ultimately responsible for the approval of the present regulations or changes thereto, and is responsible for publishing the regulations via the CAMS Manual of Motor Sport and associated bulletins as necessary. HQ Racing Australia Incorporated (HQRA (Inc)) is recognised by CAMS as the sole entity representing competitors in this entry-level sedan formula. The HQRA (Inc) is made up of a representative from each of the CAMS and HQRA (Inc) affiliated state associations.

HQRA (Inc) is recognised by CAMS as the sole competitor entity that may make recommendations regarding the maintenance of and/or proposed changes to technical regulations for this entry-level category, and/or to sporting regulations for the conduct of competition activity for such vehicles.

CAMS will consult with HQRA (Inc) regarding the maintenance of and/or changes to the present Technical and/or sporting regulations. HQRA (Inc) will be responsible for consultation processes within its membership and with other interested parties as may be appropriate from time to time.

Vehicles shall conform to the General Requirements for Automobiles as laid down in "General Requirements for Cars and Drivers" in the CAMS Manual and the present regulations.

The HQRA Technical Manual, as published by CAMS from time to time, must be read in conjunction with the present regulations to ensure that cars are constructed and prepared in accordance with the regulations. The HQRA Technical Manual will be made available to all HQRA members or by contacting the HQRA National Administrator.

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3. ELIGIBILITY

3.1 Vehicles eligible are the six-cylinder "202" (red motor) HQ Holden, four-door sedans with front disc brakes described by the manufacturer for identification and ordering as a four-door sedan: HQ 80169, HQ 80269, HQ 80369, HQ 80469, HQ 81169, HQ 81269, HQ 8M69, HQ 8N69, HQ 8P69.

Scrutineers may refer to the workshop manual published by General Motors-Holden's, specifically for the six-cylinder, four-door HQ Holden, and to the General Motors-Holden's general catalogue in which all spare parts are listed.

Scrutineers may also carry out direct scrutiny by comparison with a genuine Holden part obtained from a recognised Holden's dealer.

Original equipment parts must be used unless specifically approved otherwise.

3.2 **Seals:** Power train components must be sealed as required in the HQ Technical Manual. The only seals that shall be recognised for this purpose are "Roto Seals" as specified by the HQRA. This shall not apply to seals applied by event scrutineers.

4. WEIGHTS AND DIMENSIONS

4.1	Minimum racing weight:		**1365kg**	
4.2	Overall length:		**4763mm ± 50mm**	
4.3	Overall width:	front	**1885mm ± 20mm**	(measured at the centre
		rear	**1868mm ± 20mm**	of the respective axle)
4.4	Wheelbase:		**2819mm ± 30mm**	
4.5	Track:	front, maximum	**1631mm**	
		rear, maximum	**1590mm**	

4.6 Ride height: at least 100mm ground clearance for any sprung component of the vehicle (excluding exhaust system).

4.7 Ballast may be used to achieve the minimum weight requirements, and, if used, shall comply with CAMS requirements (see "Definitions - Technical" – refer "General Requirements for Cars and Drivers").

5. COACHWORK

5.1 All bodywork including any subsequent repair of race day damage shall be to a tradesman-like standard and must permit the vehicle to be presented in as near to original condition as is possible. Presentation of race cars is to be of a standard acceptable to the Chief Scrutineer.

5.2 External body trim decoration (excluding gutter, side window and windscreen trim) of less than 25mm width may be removed.

5.3 It is not permitted to weld roll over bars to the bodyshell. The safety cage must be located entirely within the habitacle. Bolts securing the safety cage to the floor must be attached only to that floor and any reinforcing plates; and must not pass through or be attached to any chassis rails.

5.4 The edges of mudguard panels may be folded back if they protrude inside the wheel housing.

5.5 Exterior appearance and dimensions must be as originally manufactured. All lenses and lamps must be of original type and appearance.

5.6 The interior must be complete as manufactured save that:

- floor coverings may be removed
- seats may be removed and the driver's seat replaced with another in compliance with Schedule C (refer "General Requirements for Cars and Drivers")
- hood lining may be removed
- door arm rests may be removed
- the steering wheel may be replaced
- the jack and spare wheel may be removed
- the kick panels, pillar linings, sun visors, rear parcel shelf covering and boot floor covering may be removed
- door trims may be replaced by others of similar materials and appearance to the original.

5.7 A footrest may be fitted to the left of the clutch pedal. A floor covering of antislip style, eg, checker plate, may be bolted to the driver's side floor of the habitacle, forward of the driver's seat.

5.8 The chassis rails and floor pan may not be modified in any way other than as provided for above, save for the fitment of a floor type gearshift. Seam welding of the body, or the attachment of any additional strengthening is prohibited.

5.9 Four retaining tabs (two upper and two lower) may be fitted to retain the rear window, subject to their not being greater than 50mm in length, 25mm in width and 3mm thick.

5.10 It is permitted to cut a hole in the passenger floor well for the fitment of a Dorian transmitter holder. This must be between the floor drain plug and the gearbox cross-member.

5.11 The primary bonnet catch must be disabled. The bonnet release cable must be removed.

5.12 The use of later model (HJ-X-Z) door assemblies is permitted.

5.13 The use of fluted front guards as used on production SS and GTS models is not permitted.

5.14 A safety harness with at least five straps in contact with the driver's body will be mandatory for all National level events from 1 January 2009 and for all events from 1 January 2010.

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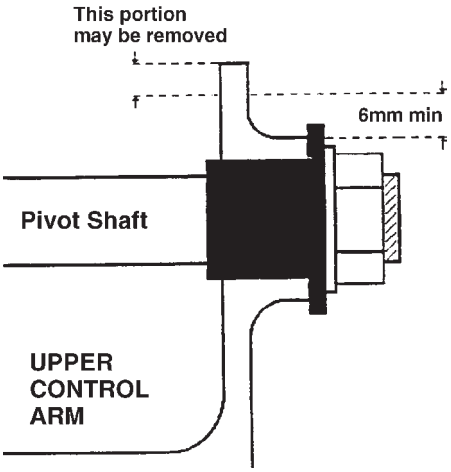
6. SUSPENSION

6.1 The front and rear suspension and steering arms shall be standard HQ Holden as defined in Regulation 3.

The upper control arm adjusting/retaining bolts are free save that they must be of the same stress grading and not be longer than 70mm, measured from the shoulder. A self-locking type nut must be fitted.

The minimum amount of material may be removed from the right hand upper control arm in the area adjacent to the steering shaft, to prevent fouling. An explanatory diagram follows.



6.2 All road springs (front and rear), must be control units as specified, viz:

front:	Pedders Part No. 5608
rear:	Pedders Part No. 5609

The springs must be used on the relevant end of the car. They may not be further modified.

The springs must be attached to the original mounting points. Ride height may be adjusted by the fitment of solid spacers, of uniform section, between the springs and their unmodified mounting points to achieve desired ride height. The maximum combined spacer thickness of any one spring is 20mm. It is permitted to extend the rear spring seat upper and lower retaining sleeve, by a maximum of 50mm.

6.3 The shock absorbers (dampers) must be control units as specified, viz:

front:	Pedders Part No. GSR 9033
rear:	Pedders Part No. GSR 9067

The hole in the lower control arm for the shock absorber may be enlarged to permit the fitting of the specified shock absorbers. The length
of the bolts used to secure the shock absorbers and their fastening devices are free.

6.4 Front wheel alignment settings are free within the range of adjustment provided originally by the manufacturer.

It is permitted to replace the shim stacks in the front suspension by solid spacers made of ferrous material.

6.5 The camber on each front wheel must not exceed 3° negative. The rear wheel camber must not exceed 0° ±1° negative.

6.6 It is permitted to remove material from or remove (but not replace) the bump stop rubbers.

6.7 It is permitted to use and fit front wheel bearing pre-load spacers.

7. BRAKES

7.1 (i) Front brakes: The friction material of pads is free. The method of attachment of the friction material to the backing plate is free. The area of the rubbing surface of the friction material and that of the backing plate may be smaller but not greater than the area as noted in the HQ Holden Recognition document.

The maximum permitted thickness of the backing plate is 6mm. The retention of the pad assembly in the calliper must be by the method prescribed by the manufacturer of the pad assembly.

Under no circumstances are modifications to the calliper permitted.

(ii) Rear brakes: Brake linings are free, as is the method of attachment to the brake shoe. It is permitted to cut two (2) 40mm diameter holes in each backing plate as per illustration in the Technical Manual.

7.2 The internal diameter of the rear wheel cylinders is free, providing that it is one of uniform size.

7.3 It is permissible to add one flexible pipe (maximum outside diameter 75mm) to carry air to the brakes of each wheel. An entry scoop (maximum external size 250mm x 65mm) may be fitted to each pipe. All brake entry scoops must remain within the perimeter of the car. It is permitted to fit a simple retaining bracket to the exit of the brake duct hose. It must not perform any function other than to locate the hose.

7.4 The original brake pressure limiting valve spring may be modified or replaced.

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7.5 Original brake flexible hoses may be replaced by others of aeronautic quality.

7.6 The self-adjusting mechanism may be removed from the rear brakes.

7.7 It is permitted to strengthen the brake booster mounting by the addition of a bracket between the booster diaphragm body and the body of the car. The recommended method may be found in the HQ Technical Manual.

8. WHEELS AND TYRES

8.1 Diameter: front and rear **14"**
Width: front and rear **7" or 8"**

8.2 **Wheels** are otherwise free, subject to their compliance with Schedule E (refer "General Requirements for Cars and Drivers").

8.3 **Tyres** shall be Kumho Powermax 769, size 225/65 x 14. All tyres must be marked by one of the state HQ Racing Associations. At any time during practice, qualifying or racing the depth of tread, when measured at any point other than the shoulder of the tyre, shall be not less than 1.5mm.

9. ENGINES

It is permitted to use any Holden 202 or 3.3 red motor, six-cylinder in-line engine block. The use of titanium components is prohibited from the engine assembly.

9.1 Replacement **pistons** of non-forged construction are permitted. They must have a flat or concave top. Pistons must have three ring grooves, each of which must be fitted with piston rings as supplied by the ring manufacturer and shown in a widely distributed catalogue. The piston crown may be machined for the purpose of reducing compression. The piston machining must be perpendicular to the cylinder bore, save for the wall created to achieve the desired depth.

9.2 **Engine block:** The engine block must be a Holden "red motor" block bearing the casting mark "202" or "3.3". It is permitted to machine the cylinder block face, but angle planing is prohibited. It is permitted to re-sleeve two cylinders only. Core hole covers in the block may be mechanically fastened.

9.3 **Cylinder head:** The cylinder head must be of the large combustion chamber type, using bridge type rocker gear. Casting numbers are: 2811930 / 9937262. Facing or shimming of the rocker bridges is permitted. Six-cylinder rocker arms (PN 2811931 or 92018908) must be used. Adjustable push rods are permitted. The use of a decompression plate is permitted.

For all National meetings from 1 March 2009 and for all other meetings from 1 January 2010, the minimum unswept volume achieved by the sum total of combustion chamber, piston bowl and any positive deck volumes measured at top dead centre shall be 45cc per cylinder. Any machining of the piston bowl is to be of concave shape, concentric to the centre of the piston and perpendicular to the cylinder bore, save for the walls of the bowl formed.

Valve springs are free subject to there being only one single spring per valve. It is permitted to fit shims under the valve springs. Valve spring shrouds may be removed. It is permitted to machine the valve spring seats to obtain correct installed height. The method of valve retention must be as envisaged by General Motors Holden in this application. Planing of the cylinder head face is permitted subject to angle planing being prohibited. The rocker cover is free.

9.4 **Valves:** It is permitted to reclaim inlet and exhaust valve seats. Valves are free, subject to the maximum head size for the exhaust being 34.9mm (1.375") and inlet being 42.6mm (1.675"). It is permitted to machine the ports from the valve seats to the valve guide boss providing a minimum valve guide boss length of 2.0" (50.8mm) is maintained, using a parallel and/or tapered cutter, with the largest diameter of any taper at the valve seat. The centre line of the valve guide must be the axis of rotation of the cutter. It is permitted to machine the combustion chamber locally in the area of the valve head, provided always that the edge of the valve head is within 3.2mm (0.125") of the vertical wall of the combustion chamber. Hand or mechanical finishing of the head ports or guide bosses is not permitted.

9.5 **Camshaft:** It is permitted to fit an alloy or steel timing gear with spur or helical teeth.

Alternative locking of the timing gear to the camshaft is permitted: a bolt of maximum size 4" x 3/8" UNC socket head cap screw may be fitted down the centre of the camshaft from the front. An offset key on the camshaft is permitted. Camshaft timing is free.

All engines must use the camshaft profile number 933, supplied by Wade Engineering.

Valve lifters are free, save that they must be of hydraulic operation and have a maximum diameter of 21.41mm.

9.6 **Crankshaft and connecting rods:** It is permitted to heat treat or chemically treat the crankshaft. The crankshaft must be 202 Holden red engine.

The connecting rods and bolts (and nuts to retain same) must be original. It is permitted to shot-peen the connecting rods.

9.7 **Lubrication:** Baffle plates may be added to the removable section of the oil pan. The capacity may not be increased.

The oil strainer is free. The oil pump is free. Oil coolers are not permitted.

9.8 **Flywheel:** Doweling the flywheel to the crankshaft is permitted. Only six-cylinder retaining bolts must be used. Machining of the flywheel is allowed, but on the clutch face only.

9.9 **Balancing:** All rotating and reciprocating parts may be balanced by normal automotive methods. The harmonic balancer may be bolted to the crankshaft. If a washer is used it must be no greater in diameter than the balancer and no thicker than 3.2mm.

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The harmonic balancer may be from any source provided that it is not fluid-filled. The harmonic balancer must be used in such a way that no component can become detached from the engine whilst running. Any non-standard configuration harmonic balancer must be securely fixed to the crankshaft by a bolt of minimum diameter of 7/16".

9.10 **Exhaust:** The exhaust system is free from the exit of the cylinder head save that it must be for the purpose of exhaust function only. Any heat shielding must be of a wrap or coating method to a maximum thickness of 10mm.

9.11 **Cooling:** A replacement water radiator is permitted subject to there being no modification to the original bodywork, it being contiguous with the original radiator support panel and it utilising the original mounting points. Its design, construction and fitment must serve no purpose other than to cool the engine coolant. It is permitted to remove the original radiator fan and aluminium spacer in which case a replacement electric radiator fan is permitted.

The heater hoses and manifold heating hoses may be removed and the resulting holes may be plugged. A water filter may be fitted in the top radiator hose.

10. INDUCTION SYSTEM

10.1 **Carburettor jets** are free. An adjustable carburettor main jet may be fitted. In order to fit the jet, the minimum modification may be made to the carburettor and under no circumstances may any component associated with the adjustable jet extend beyond 50mm from the original carburettor casing.

It is permitted to remove the choke butterfly and associated linkages from the carburettor. The resultant apertures must be mechanically plugged.

An air cleaner (part number HQ900AL) as supplied by Speco Thomas must be used exclusively. The air filter element is free save that the element to be used must be circular with a diameter of 225mm and a height of 50mm, commercially available , unmodified from the manufacturer's specification and fits the current control air cleaner body.

It is permitted to use a HQ Holden V8 carburettor float, needle and seat.

10.2 **The inlet manifold** must bear casting numbers 2820781 (early) or 2825951 (late).

10.3 **An in-line fuel filter** may be fitted in the fuel line provided that the filter is within 300mm of the fuel pump.

10.4 The carburettor float bowl may be baffled.

10.5 The PCV system must be removed and the resultant hole in the inlet manifold mechanically sealed. A catch tank complying with the requirements of Schedule B (refer "General Requirements for Cars and Drivers") must be fitted. The internal diameter of all hoses between the rocker cover and catch tank must be at least 19mm.

10.6 It is permitted to block off the air horn vacuum passage.

10.7 It is permitted to add insulation material to the original fuel pipe, from the fuel pump to the carburettor. The addition of such insulation must be carried out in such a manner that the maximum diameter of the insulated portion of the fuel pipe is no more than 19mm.

10.8 **Fuel pump:** A 12 volt push type solid state electronic fuel pump with an in-built pressure regulator may be fitted in place of the original mechanical fuel pump. The electronic fuel pump will have a maximum manufacturer specification of 7psi at the pump outlet. The fuel pump is to be fitted within 500mm of the existing fuel tank outlet within the confines of the boot compartment. Approved fuel line is to be used for the fitment of the pump utilising as much as practical of the existing standard fuel line. The existing fuel pump mount on the block must be blanked off using an after market fuel pump blanking plate. The fuel line to the carburettor will be by means of an approved fuel hose from the existing fuel outlet at the chassis rail to the fuel line from the existing fuel pump to carburettor fuel line. Wiring of the fuel pump will be in line with current electric fuel pump requirements Schedule C, article 10 (refer "General Requirements for Cars and Drivers").

11. IGNITION

11.1 Any Lucas or Bosch ignition coil may be used.

11.2 The mechanical advance curve of the distributor may be modified and the vacuum advance mechanism may be disconnected or removed.

11.3 A single point Bosch distributor must be used.

12. ELECTRICAL SYSTEM

12.1 The location of the **battery** is free, save that it may not be located in the habitacle.

The maximum battery size must be that size battery that can fit the standard HQ Holden battery tray.

12.2 The **electrical system** must be complete as manufactured with all components in the original location, save for the addition of supplementary switches, gauges and electric fan (if fitted). Supplementary gauges may only consist of the following: tachometer, oil pressure and oil temperature gauge, water pressure and water temperature gauge, amp or voltmeter, air/fuel ratio monitor of non-logging type with a single sensor and a fuel pressure gauge. Any dash mounted fuel pressure gauge is not to introduce fuel and or fuel lines into the cock pit of the race car.

As a minimum, the following items must be operational: windscreen wipers, head lights, stop lights, tail lights and the alternator. No supplementary gauge, performance monitoring instrument or sensor with the capacity to hold data in memory or to transmit information outside the vehicle is permitted. The carriage of electronic voice communication devices within the car is prohibited.

12.3 No **switches** or other mechanisms are permitted which prevent the standard operation of the generator.

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12.4 Any Holden 12 volt starter motor may be fitted. It must be capable of starting the engine at the start of the event. None of its parts may be removed during the event.

12.5 The fitment of a high level **brake lamp** is mandatory. This lamp must be retained by mechanical fasteners – not exclusively by adhesives.

12.6 The pulley on the alternator is free, save that its diameter may not exceed 100mm overall. The mounting brackets are free.

13. TRANSMISSION

13.1 **Clutch:** It is permitted to replace the clutch assembly with one designed and sold for installation as a replacement part for a Holden one tonne truck. It is permitted to modify the method of actuation, ie, cable, rod or hydraulic save that clutch fork part no's either HQ 7448624 or HX-Z 9945714 is utilised.

A replacement bell housing part no.92002426, as fitted to HZ series cars, may be used.

13.2 **Gearbox:** Only the original three-speed manual gearbox may be used. The extension housing may be replaced by an extension housing sourced from a four-speed M20 or M21 gearbox. **Local modification is permitted for the purpose of the retention of the rear main gear box bearing only.** The steering column gear linkage may be replaced by a floor shift mechanism, in which case it is permitted to modify the bodywork only as necessary for the fitment of the shift mechanism.

13.3 **Differential:** The non limited-slip differential as fitted to the six-cylinder or V8 HQ Holden must be used. Later H-series fine-spline rear axle shafts are permitted and the appropriate differential gears to suit these shafts may be used. Baffling of the differential housing is permitted. It is permitted to modify the differential breather by the addition of suitable tubing.

13.4 The only final drive ratio which may be used is 3.55:1 (number of teeth 39/11), Banjo or Salisbury type (limited slip prohibited).

13.5 It is prohibited to shim the differential beyond manufacturer's specifications. At all times the suspended wheel must rotate freely.

13.6 **Tailshaft:** The tailshaft is free save that it must be of one piece and of single tube steel construction. The use of the tailshaft yoke, pinion flange and universal joints from V8 Holdens is permitted.

14. FUEL

14.1 Only Pump Fuel as defined in Schedule G, Article 2.1 (refer "General Requirements for Cars and Drivers"), may be used. The original fuel tank may be filled with anti-spray foam.

14.2 It is permitted to modify the fuel tank breathers with the addition of suitable tubing. **The fuel sender float arm on the sender unit/fuel pick-up assembly may be removed.**

15. NON-GENUINE PARTS

The use of non-genuine GMH replacement parts as specified herein is permitted. The parts must be standard replacement parts in terms of configuration and functional dimensions and similar material, and shall not result in any unauthorised modifications to any other component: gaskets and seals, bearings, water pump, brake discs and brake drums, carburettor repair kits, throttle bodies, fuel pump and/or repair kits, thermostat, ignition components, fan belt, voltage regulator, water hoses and clamps, suspension bushes (McKay bushes part numbers A1121, A1202 and A1203 and GMH part numbers 2807098, 2805098 and 9942588 only), ball joints and tie rod ends, brake cylinders and repair kits, universal joints, window glass, filters, transmission components, bodywork components, body panels, pinion spacers.

16. AUTHORISED PARTS

The following parts may be from any source provided that their use does not result in unauthorised modification of any other component:

fasteners, nuts, bolts, screws etc	camshaft gear (including multiple offset keyway gears)
lamps	gudgeon pins
auxiliary gauges	camshaft (thrust washer) retaining plate
rocker cover and side covers	horn
oil filler caps	piston rings
washer bottles	auxiliary bonnet fasteners
water radiator	external door mirrors
battery clamp and leads	hydraulic valve lifters
spark plugs and/or leads	harmonic balancer
battery	

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