



**2016
QUEENSLAND GEMINI RACING
VEHICLE REGULATIONS**



**Queensland
Government**

Document ID: 2016 Queensland Gemini Racing Vehicle Regulations - QSC15.7350

Date of Implementation: 1st January 2016

Authority

Resolved that the authority of the '2016 Queensland Gemini Racing Vehicle Regulations', be confirmed and that the document authority be identified as '2016 Queensland Gemini Racing Vehicle Regulations - QSC15.7350'

'2016 QUEENSLAND GEMINI RACING VEHICLE REGULATIONS'

1. ELIGIBLE AUTOMOBILES:

'Gemini' models manufactured by G.M.H in Australia from 1st January, 1975, for the model ranges of TX, TC, TD, TE, TF and TG and must comply with the G.M.H./Isuzu Factory Workshop Manuals for any model variation.

The Workshop Manuals referred to are identified by the following G.M.H. Part Numbers:

M38066	M37931	G161ZWE651	PFEW771
M37560	G161ZAE891	PFAE891	G161ZAE091
PFAE001	PRWEO91	G161ZWE021	PFEW131

and any other manuals subsequently issued by G.M.H. or Isuzu that are applicable to the above versions of the Australian built Geminis.

2. MECHANICAL COMPONENTS:

All mechanical specifications* must comply with the Workshop Manual and F.I.A. Recognition Document No. 5589 (CAMS H2-5 and Amendment A3/2E) except as elsewhere herein. (*Refer to Appendix A of this document)

- A** These specifications shall be deemed to include factory approved and recommended methods of assembly as well as specific component measurements for any Australian assembled Gemini.
- B** In particular, the size of the carburetor mounting flange on the inlet manifold will be no greater than that shown on page 15 of the F.I.A. Recognition Document No. 5589 (CAMS H2- 5 Amendment A3/2E), i.e. 31.8 mm - 35.05 mm.
- C** Finish of all mechanical components must be as per G.M.H. standard specifications e.g. no porting or polishing allowed of any parts, but it is permissible to balance reciprocating engine components.
- D** Engine blocks may be resleeved on all cylinders, and no bore size shall exceed 82.5 mm using stepped pistons: or 83.00mm using flat-top pistons.
- E** Cylinder head gasket must be produced by Payen – Part No. BC220.
- F** Pistons must be either stepped piston the equivalent of ACL part Nos 9090/ 2586 with a maximum step of 0.762mm (.030") - and a maximum bore of 82.5mm or a flat top piston - the equivalent of ACL Part No 2586 with a maximum bore of 83mm. Pistons must not protrude above the cylinder block face at the edge of the bore. The stepped piston may be machined to comply.



Queensland
Government



- G** The QGRA will supply a camshaft having been checked by Ivan Tighe Engineering and bear certification as matching a master camshaft as held by Ivan Tighe Engineering. No camshaft failing to match the above master camshaft and/or any uncertified camshaft may be installed in any engine at anytime.
- H** The specification of the top camshaft drive sprocket gear is free.
- I** The distributor mechanical advance mechanism may be modified or locked. Points and condenser configuration must be retained and no electronics are allowed.
- J** Air cleaners must be of an open element type and no greater in size than 300mm square. No ducting or snorkels are allowed.
- K** It is permissible to replace conrod connecting bolts and nuts with ARP 15-6003 bolts and nuts, or alternatively with ARP 254-6403 bolts and nuts. Only the minimum machining necessary to fit replacement bolts is permitted.
- L** Locked, Limited Slip and Over-tightened differentials are not permitted. (Refer Appendix B of these regulations for the approved method of testing differentials)
- M** It is permissible to remove material from the combustion side face of engine valves to maintain the minimum specified combustion chamber volume. (see Appendix A)
- N** The automatic choke mechanism, butterfly and shaft in the carburetor may be removed providing all holes thus created are permanently plugged.
- O** The contact breaker points in the distributor may be replaced by electronic ignition componentry Pertronix Ignitor II Part Number 91643.

3. SUSPENSION

- A** Suspensions may be modified so that all vehicles may take advantage of the "Radial Tuned Suspension" components as developed for the TD, TE, TF and TG series - such parts shall be as listed in the G.M.H./Isuzu Spare Parts Manuals for these models and applicable specification settings may be varied within those tolerances listed in the G.M.H. workshop manual. As G.M.H. parts department do not service rear anti-sway bar mounting brackets as a spare part for TX and TC series vehicles, it is permissible to fabricate these components provided they are the same size and mounted in the same position as the original factory items.
- B** The front lower control mounting holes may be changed to enable front end wheel alignment specifications to be achieved.
- C** Front wheel alignment settings may be altered from the manufacturers specifications for castor and/or camber provided that the camber adjustment does not exceed five (5) degrees negative with the driver seated in the driver's seat.
- D** Urethane suspension bushes may be fitted as an alternative to the genuine G.M.H./Isuzu fitted as original equipment.
- E** Ground clearance shall be a minimum of 110 mm, measured from the centre of the front cross-member with the driver seated in the driver's seat.
- F** It is permissible to fit an aftermarket polyurethane steering bush.



4. TYRES:

All competing cars are to be fitted with Yokohama Advan A048 185/60HR13 tyres. These tyres must be fitted for all rounds of any '**GEMINI SERIES RACES**'; all timed practice sessions counting for grid positions in '**GEMINI SERIES RACES**'; and all races where Geminis compete as '**QUEENSLAND GEMINI RACING VEHICLES**'.

5. WHEELS

Wheels are free, save that:

- Only 13" wheels with a maximum rim width of 5½" are permitted; if a non-ferrous material, they must be a production (i.e. mass produced) type of a one piece construction. Composite wheels are not permitted.
- The front track must not exceed 1375mm maximum and the rear track must not exceed 1350mm maximum, measured at the middle of the tread at road level - as described in *Definitions - Technical*. (Refer to the current CAMS Manual of Motor Sport)
- Encased wheel nuts as supplied on SLX must not be used.
- It is permissible to use wheel spacers.

6. COACHWORK:

All items of coachwork must be as per workshop manual specifications with the following variations permitted:

- The following items and trim may be removed: passenger seat, rear seat, rear side trim, headlining, carpet, underfelt, all heater components and radio.
- Door trims may be removed provided a replacement panel of non-flammable material is fitted with provision for operable door handles and window winders.
- A metal firewall must be fitted between the fuel tank and the habitacle to effectively prevent the passage of fuel or flame. Such metal firewall is to be located on the same plane and in the same location as the rear of the rear seat back, and as to be attached by screws or fasteners to allow for easy removal.
- Vehicles must be presented with clean and tidy bodywork – any previous damage to panels, paintwork and signage must be properly rectified. Any vehicle not complying with this requirement will be denied permission to compete.
- Interior trim shall be maintained in a tidy condition and any interior metal exposed by removal of trim shall be painted.
- An ADR approved High Mounted Stop Light must be centrally mounted in either the upper or lower level of the rear window.
- Fuel filler cover cap and corresponding decorative panel may be replaced with mesh or metal material to cover the aperture.
- The radiator grille may be replaced with steel or alloy mesh.
- Front guards may be replaced with Fibreglass equivalents which must be manufactured from the moulds owned by the QGRA, and must bear their identifying mark.

Competition numbers must comply with Schedule K of the current CAMS Manual

7. Additional instruments and supplementary gauges may be fitted within the cabin.

8. Spare wheel, tools and jack, may be removed from the boot prior to racing.

9. Fuel used must be 'Pump Fuel' as defined at Schedule G - Fuel, Article 2 Commercial Fuel, 2.1 Pump Fuel, in the current CAMS Manual of Motor Sport.
10. Pedal settings may be modified for position but the original mounting fixture must not be interfered with.
11. **VEHICLE WEIGHT:**
- A** *"THE MINIMUM RACING WEIGHT OF ALL MODELS SHALL BE NINE HUNDRED AND FIFTY KILOGRAMS (950 KG); VEHICLES MUST BE AT LEAST THIS WEIGHT AT ANYTIME, INCLUDING AT THE FINISH OF A RACE AND DURING PRACTICE FOR A RACE".*
- B BALLAST:**
Any necessary ballast must be securely attached to the floor of the vehicle upon the rear passenger foot space.
- C WEIGHING:**
At the time of weighing a vehicle the following shall apply:
- DRIVER:** Driver's body-weight is included in the figure 950kg.
- SPARE WHEEL:** Removed from vehicle; not included in the figure 950kg.
- JACK & TOOLS:** Removed from vehicle; not included in the figure 950kg.
- LIQUIDS:** Shall be at the levels as presented, no topping up of same is permitted prior to vehicle weighing.
- Scales as provided by the promoter will be deemed to be accurate (with no allowance for tolerances) and the weight as indicated shall be accepted by the competitor and officials as the true weight of the said vehicle at the time of weighing.
12. The fitting of CAMS approved replacement seats is permitted.
13. The fitment of an alternative steering wheel of smaller dimensions is acceptable, subject to the said steering wheel being of satisfactory commercial construction to the standards as applied by CAMS to steering wheels for other categories.
14. **COMPONENT SPECIFICATIONS**
- A THE FOLLOWING COMPONENTS ARE FREE:**
- (a) Engine gaskets – other than cylinder head gasket
 - (b) Spark plug brand
 - (c) Ignition coil
 - (d) Wiring harness including high tension leads
 - (e) Carburetor jets
 - (f) Fuel pump, tank pick-up, and fuel lines
 - (g) Springs and shock absorbers, BUT NOT mounting points or method of attachment.
 - (h) Rear brake friction material, BUT front brake pads must be Bendix Ultima Part No. DB1026ULT.
 - (i) Flexible brake lines
 - (j) Wheel studs
 - (k) Exhaust system from exhaust manifold



- (l) In the interests of safety, fitment of an auxiliary power wire to the existing manufacturer's fuel pump is permissible.
 - (m) Timing Chain tensioner
- B** In the event of genuine replacement parts being unavailable, it shall be permissible to use non-genuine replacement parts, provided these parts comply with the specification detailed in the Recognition Documents, and do not in any way contribute to improved performance. Competitors are required to advise QGRA of such supply situations, and the QGRA is to seek approval from the Queensland State Council for use of these replacement parts.
- C** Due to difficulty in obtaining some body parts, it shall be permissible to use front panel, including grille, and rear panel including tail lights from TE, TF and TG models on TX, TC and TD models.
- 15.** Competitors are reminded that all vehicles must comply with NCR Section 6 Schedules A, B, C, G, J & K of the current CAMS Manual of Motor Sport.
- 16.** To allow for the provision of sealing of engines and gearboxes, the following bolts shall be drilled through the head with a 2mm diameter hole:-
2 x rocker cover bolts
2 x sump bolts
2 x gearbox extension housing bolts
- 17.** It is permitted to fit to the fuel tank anti-spray foam as specified in Schedule N of the current CAMS Manual of Motor Sport.
- 18.** The Log Book Category is Category 3 – Group 3J – Improved Production Touring Cars. Only vehicles issued with a log book as above and which comply with the regulations identified in this document may compete in 'Gemini' competitions.
- 19.** Points and Awards in any 'Queensland Gemini Racing Association Series or Championship' will only be awarded to competitors who are current members of the Q.G.R.A.
- 20.** Any alterations to these rules shall be advised to CAMS Queensland State Council: ***SUCH ALTERATIONS TO THESE RULES SHALL NOT TAKE EFFECT UNTIL THE QUEENSLAND STATE COUNCIL HAS EFFECTED ENDORSEMENT OF SAME.***
- 21.** ***ALL MODIFICATIONS ARE FORBIDDEN UNLESS EXPRESSLY AUTHORISED BY THESE REGULATIONS.***

Appendix A

Q.G.R.A Measurements to be read with Q.G.R.A Regulations and F.I.A Documents

1	Bore	Refer Para 2F
2	Stroke	75mm
3	Piston above Block	Nil at edge of bore
4	Block Thickness Limit for correction of cylinder block upper face distortion	205.5 0.4mm
5	Piston Step	Refer Para 2F
6	Inlet Valve Insert max.	38mm at base
7	No machining within 11.50mm of valve guide tip	
8	Valves may have back cut 3 angle	
9	Height of valve guide from cylinder head	16.2mm
10	Valve Stem diameter	8mm
11	Inner Valve Springs	At 38.5mm 9.74kg
12	Outer Valve Springs	At 41mm 16.6kg
13	Inlet Valve	42.4mm
14	Inlet Port	34mm
15	Inlet Manifold	32mm
16	Inlet Manifold Throats	P.31.8mm, S. 35.05mm
17	Exhaust Valve	34mm
18	Exhaust Valve Insert max.	31.5mm at base
19	Exhaust Port	31mm x 33.5mm
20	Exhaust Manifold	35mm x 35.5mm
21	Exhaust Manifold Outlet	39mm
22	Deleted 2015	
23	Valve Springs	As per factory
24	Valve Springs set height	40mm min.
25	Carburetor throttle body	P. 28mm x S. 32mm P. 30mm x S. 34mm
26	Cylinder head combustion chamber capacity *	44.4cc per chamber
27	Camshaft	Grind by Ivan Tighe
28	Flywheel thickness	32mm
29	Flywheel weight inc. clutch & disc & bolts	13.7 kilo min.
30	Gearbox ratios	As listed in Homologation No. 5589
31	Weight piston with pin & rings	400 gram min.
32	Crank pin diameter	Min. 48.425mm
33	Crank journal diameter	Min. 55.420mm
34	Spark plug	14mm diameter ¾" Reach
35	Crank Shaft Weight	14.5kg
36	Conrod weight includes piston, rings, pin, conrod with bolts and nuts)	1100 gram min.

Note *:- Refer to "Mechanical Components Item M" on Page 3 of these regulations

APPENDIX B

TESTING OF DIFFERENTIALS

The initial method of checking that differentials comply with "Mechanical Items - Item L" on page 3 of 8 of these regulations shall be as follows:-

The engine of the car is to be turned off and the gearbox placed in neutral and the handbrake fully off.

The car will be jacked up so both rear wheels are clear of the ground and each spins freely.

One rear wheel will be rotated by hand, and the rear wheel on the other side of the car will be observed.

Should the observed wheel rotate in the same direction to the wheel being rotated by hand, then the differential will be deemed to have failed this test.

Additional tests may still be required to determine eligibility at the scrutineer's discretion.

Further action as described in the NCR of CAMS shall then follow.

End of Document



**Queensland
Government**

