

PART B SCHEDULE TL

HOLDEN TECHNICAL REGULATIONS 2009/2010

Article	2.0 CAR MODEL ELIGIBILITY	Control Part Reference
2.1	General:	
Note 1	(1) All cars compliant to this schedule shall be known as category TLM2.	
	(2) TLM2 cars built to Schedule TL and issued with a MSNZ logbook will remain eligible for competition up to and including the 2009 / 2010 racing season save for 'Force Majeure' declared by MSNZ or subject to the V8's Teams agreement.	
	(3) The only model of car authorised under this Schedule is the Series Production Holden Commodore 4-door saloon of VT, VX or VY base model.	
	(4) VT and VX models shall be converted to replicate the appearance of the VY model - refer Part B article 5.1 (2) and Part H.	
	(5) An optional upgrade to VZ appearance is authorised. Refer article 5.1 (3).	
	(6) An optional upgrade to VE appearance is authorised. Refer article 5.1 (7).	
2.2	Parts – specific:	
	(1). Genuine parts, being the manufacturers genuine parts designated for the subject car shall be used unless specified otherwise.	
	(2) Non genuine parts, being parts that are sourced from another manufacturer to that of the subject car, that are direct replacement parts in level of duty, function and design to the manufacturers genuine part and do not result in any unauthorised modification to any other component, may be used where specified.	
	(3) Control parts, being parts that are fully controlled in respect to their specification and application. Where specified, control parts shall be fitted. Control parts may only be modified where specifically detailed within the article in question. The extent of the modification will be clearly stated. MSNZ may require proof of purchase of control parts by way of an invoice from the control supplier. All control parts are referenced in the right-hand column of the applicable article. Direct scrutineering by part comparison with parts obtained from the control parts supplier may be applied for compliance purposes.	
	(4) The official Holden parts catalogue and the workshop manual published by Holden specifically for the subject car may be referenced for compliance purposes.	
	(5) Direct scrutineering by part comparison with genuine Holden parts obtained from an authorised Holden dealer may be applied for compliance purposes.	
	(6) Throughout the vehicle all 'fasteners', may be freely sourced except where otherwise specified. They shall be of ferrous material. These may be made captive. Damaged threads may be reclaimed.	
	(7) The use of titanium / titanium alloy, metal matrix composite (MMC materials), inter-metallic materials (Ti-Al, Fe-Al, Ni-Al, Ni-Co), Iridium alloys (excluding spark plugs), alloys containing more than 5% beryllium, rhenium alloys and ceramic components / coatings (excluding spark plugs, pistons, valve lifters and brake pads) are specifically prohibited.	
	(8) Isotropic treatments, any form of performance enhancing coatings and other forms of surface alteration are prohibited unless specifically authorised within the text of this schedule.	
	(9) Bearings supplied with control parts may be replaced with non genuine parts that are a direct replacement in level of duty, function and design to the bearing supplied with the control part and do not result in any eccentricity or realignment.	

Article 2.0 - NOTES:

1. TLM2 is the category designation given to the fourth evolution of the NZV8 class.

Article	3.0 RACING WEIGHT	Control Part Reference
3.1	General:	
Note 1	(1) The minimum total racing weight is 1440kg. The minimum racing front axle weight, measured at the front axle centreline, is 800kg.	
	(2) The total racing weight is the weight of the car in 'race trim', which may be measured at any time during the competition, on the official weigh scales of the meeting. The racing front axle weight is the weight of the car in 'race trim', which may be measured at the end of any qualifying session or at the end of a race, on the official weigh scales of the meeting.	
	(3) Ballast may be used to achieve the racing weight requirement. All ballast shall be securely bolted to the floor of the cockpit or securely inside the front chassis rail.	

Article 3.0 - NOTES:

1. The competing car shall never weigh less than the minimum racing weight (when checked) at any Round.

Article	4.0 DATA LOGGING & INSTRUMENTATION	Control Part Reference
4.1	MSNZ systems:	
Note 1	(1) The MSNZ data logger shall be installed and be operational whilst in attendance at any Round. The data logger is leased as part of and upon entry in the Championship Series.	
Note 2	(2) The MSNZ data logger and <i>control part</i> wiring looms and sensors shall be installed and shall be the only looms fitted between the sensors and the data logger. They shall be fitted entirely separate to any of the car's wiring looms and located so that they are visible for their entire length.	4.1(2)
4.2	Competitor systems:	
	(1) The dashboard display shall be fitted into the aperture that housed the original manufacturers' display or the steering column directly in front of the driver.	
	(2) Impulse generators for lap timing are authorised, provided they are separate parts that have no connection with the control of the engine, and their sole purpose is for supplying lap times.	
Note 3	(3) Maximum number of sensors / inputs to dash / logging system: Engine sensors- Oil pressure - Oil temperature – Water temperature – Air temperature – Fuel pressure – 2 x Lambda – RPM (from MSD unit) - 1 x throttle position sensor – coolant level or coolant pressure. Other sensors – 1x lap beacon, 2x front wheel speed sensor, 1x G-force sensor, 1x steering angle sensor, 1x fuel level sensor, 1 x front brake pressure sensor and 1 x rear brake pressure sensor. These are the only other sensors that may be fitted. No global positioning system (GPS) may be fitted to the vehicle.	
Notes 4 & 5	(4) The Technical Department shall have access to any data logging system used by the Competitor – refer Schedule CH article 30. This shall include the ability to down-load data from any data logging device.	
Note 6	(5) The Championship Scrutineer shall have access to any data logging system used by the Competitor. This shall include the ability to down-load data from any data logging device. To facilitate comparison of data all cars shall use a standard wheel circumference of 1953mm in the data logging system.	

Article 4.0 - NOTES:

1. The sole function of the data logging system is to monitor and record information relative to specific technical eligibility regulations. All recorded data is used solely for ensuring technical integrity.
2. It is the Competitors responsibility to purchase and install the following mandatory wiring and sensors:
 - (i) A data logger wiring harness and plug – part # WH001.
 - (ii) A data logger spark sensor and extension lead – part # SS002.
 - (iii) A data logger crankshaft sensor and extension lead – part # CS003.
 - (iv) A data logger hub speed sensor and extension lead – part # HS004.
3. **Engine sensors;** These are the only sensors that may be fitted to the engine.
4. **Other sensors;** The steering angle sensor may be fitted to the steering column.
5. **Other sensors;** The wheel speed sensor may be mounted to the front brake caliper mounting bracket.
6. This data may be used for technical evaluation.

Article	5.0 BODYSHELL	Control Part Reference
5.1	General:	
	(1) Unless an allowance is specifically detailed within this schedule, modification to the Series Production bodyshell is prohibited.	
	(2) The bodyshell shall be a VY model or a VT / VX model converted to replicate the VY model. The conversion of the VT / VX model is detailed in Part H of this Schedule. The conversion shall be applied in its entirety.	
	(3) Optional upgrade to VZ appearance - (when adopted) shall be applied in its entirety; comprising the following <i>control parts</i> ; VZ nose-clip, VZ grille, VZ bonnet and VZ rear wing & brackets. As an alternative to the upgrade, solely the rear wing & brackets may be fitted - refer article 5.6 (7).	5.1(3)
	(4) The car shall always be presented for competition in a clean and tidy condition. All bodywork repairs shall be to a professional standard of presentation and safety.	
	(5) The cold air intake within the air/heater plenum of the bodyshell shall be permanently sealed with a metal plate.	
	(6) Additional welding may be applied to all the bodyshell and cross-member seams.	
Note 1	(7) An optional upgrade to VE appearance may be fitted. If fitted it shall be applied in its entirety comprising the <i>control parts</i> - VE style front guards (2 required) and a VE style nose clip.	5.1(7)
5.2	Bodyshell panels, exterior trim & door mirrors:	
	(1) The maximum bodyshell width measured on the front axle centre-line is 1830mm.	
	(2) The original rear guard fuel tank filler aperture shall be blanked off or the original flap fitted.	
	(3) The inner lip of the front and rear guard edges (wheel aperture) may be rolled back, however the external panel shape shall not be altered.	
Photo	(4) A minimum of two exposed steel locking pins shall be fitted near the front corners of the bonnet. These pins must be left exposed for marshals to open the bonnet. A minimum of two exposed steel locking pins shall be fitted to the boot lid. The original bonnet and boot lid catches and operating cables shall be removed.	
	(5) The front radiator support panel may be bolted (instead of welded as per original) for ease of maintenance.	
	(6) There shall be an effective seal between the underside of the bonnet and the top of the bulkhead excepting the airbox aperture.	
	(7) The original door mirrors shall be retained in their original position.	
	(8) The <i>control</i> headlight aperture covers shall be fitted when the headlight units have been removed. These may be painted.	5.2(8)

Photo	(9) The lower scuttle trim panel (below the windscreen) may be modified by removing the centres of the grille openings provided that the main ribs remain intact. The upper deflector panel may be modified solely for the purpose of fitting a circuit breaker switch and, if fitted, a fire extinguisher switch.	
	(10) Ornamental decoration may be removed. All other exterior trim shall remain.	
Photo	(11) The panel behind the side of the front nose-clip may be removed as per photo.	
	(12) If the option in 11.12 (11) is adopted, it is permissible to remove the minimum of material from the under-bonnet cross-braces to provide air-box clearance.	
	(13) The front end of the chassis rail may be capped with a plate of maximum size 200mm high by 200mm wide and maximum thickness of 3mm steel or 5mm aluminium. The chassis rail may not be shortened.	
	(14) A NACA style ventilation duct may be installed in the roof. The duct may have additional ducting attached providing it is for the sole function of providing air for driver cooling. The duct may not be blanked off externally. The duct must be located on the vehicle centre line with the leading edge placed 170mm from the top of the windscreen.	5.2(14)
5.3	Front and rear doors:	
	(1) The original (manufacturer installed) door intrusion bars may be removed.	
Note 2	(2) The door inner frame may be lightened (only behind the original door trim panel) provided that all metal edges are turned away from the 'cockpit' space with the complete aperture covered with a rigid panel of uniform and finished appearance.	
	(3) The interior of the drivers' door may be foam filled.	
	(4) The removal of the locking mechanisms is permitted.	
	(5) The door aperture sealing rubbers as fitted to the bodyshell may be removed, but not those fitted to the doors.	
	(6) External door mouldings (in the centre of door) may be removed.	
5.4	Jacking sockets & Tow straps:	
Note 3	(1) A minimum of two (2) transverse jack sockets on each side shall be fitted in the bodyshell sills, finishing flush with the outer face of the sill. These must allow for a, 22mm minimum and a 35mm maximum diameter, round bar to be fitted at least 127mm into them.	
	(2) The <i>control</i> front and rear tow straps shall be fitted.	5.4(2)
5.5	Body-kit front:	
Note 4 Photo	(1) The <i>control</i> nose-clip shall be fitted. The identity label/s shall remain legible at all times.	5.5(1)
	(2) The lower lip inside recess may be foam filled for additional strength.	
	(3) Protection mesh may only be fitted to the rear of the nose-clip apertures.	
	(4) Four holes up to 10mm diameter may be drilled in the noseclip to provide fitment and a slot shall be cut solely to enable installation of the control tow strap	
	(5) Rubbing blocks may be fitted at the most rearward underside outer edges of the nose-clip for the sole purpose of preventing damage. A maximum thickness of 10mm. This will be measured in a vertical plane.	
Note 5	(6) Support braces may be fitted behind the sides of the nose-clip (under the front guards) to provide a secure side mounting. The guard may be locally modified to accommodate support braces.	
	(7) The original front transversal bumper mounting bar, may be lightened, but NOT removed.	
	(8) The front grille shall be attached to the <i>control</i> nose clip or to the bonnet.	
	(9) The nose-clip may be painted.	
	(10) The exterior shape of the nose-clip shall not be altered.	
	(11) The manufacturers' grille badge shall be fitted to the grille in the original position.	
5.6	Body-kit rear:	
Photo	(1) The <i>control</i> rear wing, end plates and mounting brackets shall be fitted. These may be painted.	5.6(1)
Photo	(2) The <i>control</i> mounting bracket rear flange shall butt against the rear of the boot-lid. Strengtheners may be added under the boot-lid to support the brackets. The brackets may have the fasteners countersunk for fitment to boot lid.	5.6(2)
Photo	(3) The brackets may be drilled (top rear) for the sole purpose of providing adjustment for the wings trailing edge. The wing's front pivot position shall not be altered.	
Note 6	(4) The <i>control</i> rear bumper assembly shall be fitted. This may be painted.	5.6(4)
	(5) A slot shall be cut, in the bumper cover, solely for installation of the <i>control</i> tow strap.	

Note 7	(6) Support braces may be fitted behind the sides of the rear bumper; they shall be either a metal straps (maximum 40mm x 2mm x 200mm) or aluminium bobbins (maximum size 100mm x 50mm) and maximum number of 4. Additionally, a single metal support brace may be fitted in the vertical position behind the rear of the bumper (between the bumper and bodyshell (maximum 300mm x 500mm x 3mm). To help secure the lower valance two (2) additional straps (30mm x 2mm x 200mm) may be fitted.	
Note 11	(7) Optionally, the VZ rear wing and brackets may be fitted instead of the rear wing and brackets as detailed in articles 5.6 (1), (2) and (3) above.	5.1(3)
5.7	Body-kit side:	
	(1) The <i>control</i> body-kit side sill covers shall be fitted. These may be painted and two 20mm diameter holes may be drilled to provide access to the front guard bolts	5.7(1)
	(2) The sill covers may be locally shaped to accommodate the jacking sockets and the exhaust tail pipe.	
5.8	Front undertray:	
	(1) The <i>control</i> undertray shall be fitted inside the lower lip of the nose-clip, in accordance with the fitting instructions, respecting the plan view of drawing 5.8(1), the maximum length being 500mm, measured from the front outside edge of the nose-clip to the rear of the under tray, on the centre-line of the car. Refer Part F - diagram 5.8(1). Two flat support brackets, of maximum dimensions 60mm wide by 6mm thick, may be fitted to the rear of the undertray but these may not be used to lift or extend the rear of the undertray.	5.8(1)
	(2) A rear 'under tray' is specifically NOT authorised.	
5.9	Glazing, wiper mechanism and window operating mechanisms:	
Note 8	(1) The windscreen shall be of laminated glass and may incorporate a heater element. The rear screen shall be fitted.	
	(2) The windscreen wiper mechanism may be modified provided one operational wiper arm/blade and its operating mechanism remains and adequate driver vision is maintained.	
Note 9	(3) The driver's door window glass may be removed. All other glass must remain in the doors as originally fitted.	
	(4) The door window operating mechanisms are free.	
Note 10	(5) Plastic film shall be fitted on the inside of all glass side windows and the rear screen. Any tint must ensure that the visible light transmittance (VLT) is not reduced below 35% for the side windows and rear screen.	
	(6) NACA style ventilation ducts may be installed in the rear door window apertures. The ducts shall have the sole function of providing air into the 'cockpit'.	

Article 5.0 - NOTES:

1. Existing nose clips may be converted to VE style by the *control* supplier.
2. The door inner frame is the part entirely contained behind the original door trim panel.
3. To allow for track rescue vehicles to pick the entire vehicle up.
4. The control supplier identity labels must not be covered, removed or obscured in any way. If repair of the bumper affects the identity label/s in any way, the bumper shall be replaced.
5. Nose clips must be able to be removed, using only a 5mm Allen Key.
6. The control rear bumper assembly (3-piece) is the original VY Holden SS model part and comprises the main bumper cover, the central cover and the tow-bar cover.
7. The bumper shall retain its original shape and shall not be 'pulled-in' at the sides.
8. Non genuine parts are authorised.
9. If removed, a flat Lexan window may be fitted. Holes may be introduced into the Lexan and/or a ventilation duct fitted for driver comfort. The front drivers door window insert must only be retained with the specified clips, as detailed in Part F diagrams, and must also have a handhole to allow the window insert to be removed by a track marshal.

10. This shall be fitted to the inside of the window glass.

11. The VZ rear wing and brackets shall be fitted in accordance with the approved 'fitting instructions'.

Article	6.0 BODYSHELL COCKPIT	Control Part Reference
6.1	Interior, trim & fittings:	
	(1) The VT, VX or VY dashboard is authorised, installed in its original position. It may be modified locally for safety cage installation.	
	(2) The steering column/ brake pedal support brackets may be modified locally for safety cage installation.	
	(3) The heater / AC unit and ancillary equipment may be removed provided an effective demister system is maintained.	
	(4) The original door trim panels may be substituted for rigid panels of uniform and finished appearance.	
	(5) Carpet and other fabric linings shall be removed.	
	(6) All original seating shall be removed.	
	(7) All original safety belt assemblies shall be removed.	
	(8) The brake and clutch pedals may be realigned transversely solely to facilitate their use. The accelerator pedal assembly may be freely modified or substituted by a fabricated mechanical replacement provided the pedal retains its original orientation i.e. pendulum unterhung. A driver's footrest may be fitted.	
6.2	Sealing of the cockpit and bulkheads:	
	(1) The cockpit shall be effectively sealed from the engine and boot compartments.	
Note 1	(2) A bulkhead shall be fabricated to create a sealed rear compartment. The vertical metalwork of the rear seat support may be removed to provide for the installation of the safety cage and this rear bulkhead.	
6.3	Bodyshell brackets:	
	(1) Unused brackets and supports may be removed solely from the interior and exterior of the cockpit floor.	
	(2) The roof lining central transverse brace may be removed.	
6.4	Occupant protection system (SRS airbag)	
	(1) The airbag system shall be removed including its operating system, all triggering sensors, and warning lights.	

Article 6.0 - NOTES:

- The rear parcel shelf metalwork shall remain fully intact including the transversely mounted shelf support box section.

Article	7.0 OCCUPANT SAFETY EQUIPMENT	Control Part Reference
7.1	Driver's equipment:	
Note 1	(1) All drivers competing under this technical schedule are required to wear 'protective clothing' complying with the current FIA standards.	
Note 2 Note 3	(2) All drivers competing under this technical schedule are required to wear a HANS® Device, together with a compatible protective helmet.	
7.2	Safety cage:	
Note 4	(1) A safety cage shall be constructed to the design prescriptions as detailed in Part L.	
	(2) The safety cage must be homologated by MSNZ.	
Note 4	(3) All safety cages homologated after 16 th June 2008 shall comply with the minimum material specifications as detailed in Part L.	
Note 5	(4) Where the occupant's bodies could come into contact with the safety cage, protective padding shall be used. It shall be non-flammable, high density, energy absorbing, closed cell foam with a minimum wall thickness facing the occupant of 15mm. Where the occupants crash helmet could come into contact with the safety cage, the padding shall comply with FIA standard 8857-2001. Refer Part F.	

7.3	Safety harness:	
Note 6	(1) A five or six strap safety harness compliant with FIA standard 8853/98 is mandatory.	
Note 7	(2) The harness shoulder straps may be attached to a transverse bar homologated with the safety cage.	
7.4	Competition seat:	
	(1) A competition seat homologated on the basis of FIA standard 8855-1999 incorporating side head restraints (wings) is mandatory for the driver.	
Note 8	(2) The competition seat shall be fitted on a steel fabricated frame, ideally attached to the lower lateral sill bar of the safety cage.	
Note 9	(3) A steel fabricated frame shall be fitted solely for installation of a passenger seat.	
7.5	Window net:	
Note 10	(1) A window net shall be fitted compliant with a FIA Appendix J 253-11 or SFI standard. The net shall be in the operational position during competition.	
	(2) The window net shall be affixed to the safety cage along the lower edge of the net. The net must be affixed to the safety cage above the window by means of a rapid release system so that, even with the Car inverted, it must be possible to detach the window net with one hand.	
7.6	Fire extinguisher:	
Note 11	(1) A manual (hand-held) fire extinguisher shall be fitted. Additionally a mounted (plumbed-in) system may be fitted.	
	(2) A retaining system incorporating quick release metal fastenings / straps, secured to the structure of the cockpit by a minimum of two 6mm bolts with panel washers and locknuts.	
	(3) Hand-held extinguishers must be positioned within easy reach of the driver when normally seated.	
Note 12	(4) Plumbed-in systems, if fitted, shall have the triggering device accessible / operable by the driver whilst normally seated.	
7.7	Side impact protection:	
	(1) A side impact structure of aluminium honeycomb 785mm long by 395mm high by 50mm thick must be fitted into the driver's door. The material is to be Ayrlite 2022 with sheet faces of 0.5mm thick aluminium and a cell size of 6.3mm. The side impact structure must be edged prior to fitment and may be locally modified to accommodate the door handle and locking mechanism. Refer to diagram 7.7(1).	7.7(1)

Article 7.0 - NOTES:

- Protective clothing shall comply with FIA standard 8856-2000. Drivers must wear overalls, **underwear**, **balaclava**, footwear and gloves. Gloves shall comply with FIA standard 8856-2000, SFI 3.3 or ISO 6940.
- A 20° HANS® device is recommended. Check with your supplier as to which is best for you and your vehicle. Further information about the use of the HANS® System may be sourced at www.fia.com and follow path 'sport-regulations-drivers' equipment-HANS® guide'.
- It must only be worn with a compliant helmet as detailed in FIA Technical List No.29 or retro-fitted to a SA2000, SA2005 or BS6658-85 Type A/FR compliant helmet in strict conformance with the HANS® tether post fitting instructions.
- Part L - covers safety cage construction.
- FIA standard 8857-2001 type A or B. shaded area of drawing 7.2(4) shows contact area of the occupants' crash helmet, this area must be padded. Refer diagram 7.2(4).
- The shoulder straps shall be mounted on an angle of no more than 20° from the horizontal.
- This transverse harness mounting bar is in addition to the members shown in Part L - diagrams.
- Seat mounting plates shall have a minimum thickness of 3mm for steel or 5mm for aluminium. The seat mounting plates shall be attached to the fabricated steel frame at a minimum of 4 locations as close to their corner points as possible, using bolts of at least M8 / ISO 8.8.

9. A passenger seat may only be installed for the purpose of passenger rides in combination with a current standard and minimum 4 strap harness.
10. The net must be fitted as to close the window aperture to the centre of the steering wheel. SFI nets are valid for a maximum of 2 years.
11. The hand held shall be a minimum of 0.9 kgs BE or ABE powder or 1 litre AFFF (foam). There shall be a pressure gauge fitted.
12. The plumbed in system, if fitted, shall appear on FIA technical list 16, and shall be fitted as per the manufacturers' specifications.

Article	8.0 STEERING SYSTEM	Control Part Reference
8.1	General:	
	(1) The only permitted modifications authorised to the manufacturer's steering system are detailed in this schedule.	
8.2	Steering wheel and steering column shaft:	
Note 1	(1) The steering wheel may be freely sourced. To provide for fitment of a quick release steering wheel the upper end of the steering column shaft may be modified accordingly.	
Note 2	(2) Unused brackets shall be removed from the steering column.	
Note 3	(3) The vertical angle of the steering column may be adjusted.	
	(4) The steering column lock shall be removed.	
8.3	Power steering:	
	(1) The power steering pump may be substituted providing it remains 'V' or poly V belt driven from the front of the engine. The hydraulic lines may be replaced and a fluid reservoir may be freely sourced and located in the engine compartment.	
8.4	Steering link arms:	
Note 4	(1) The original link arms (between the steering rack and tie-rod end) may be replaced by arms of different length and/or a spacer fitted to the end of the steering rack. A <i>control</i> tie rod end with a longer shank may be fitted.	8.4(1)
8.5	Steering Rack:	
	(1) The left hand rack mount (rubber bush) may be substituted with a solid mounting bracket fitted to the steering rack.	
	(2) Steering lock stops may be fitted.	

Article 8.0 - NOTES:

1. The original column shaft/shafts must be retained.
2. Ensuring there are no sharp projections that can cause injury.
3. The original steering column mounting / vertical position adjuster may be strengthened and the achievable angle increased. Additionally the column may be moved up to 100mm transversely.
4. The link-arms may be replaced and/or spacers fitted to the end of the steering rack to provide for the authorised increase in front track, reduce bump steer and to ensure that sufficient length is available for the security of the tie rod ends. The longer tie rod end shank may be fitted to compensate for bump steer caused by the extended lower ball joint in the track control arm.

Article	9.0 SUSPENSION SYSTEM	Control Part Reference
9.1	General:	
Note 1	(1) The complete road wheel and tyre assembly shall be housed within the bodywork. This means the upper part of the wheel, including the tyre located vertically over the wheel hub centre must be covered by the bodywork when measured vertically.	
Note 6 Photo	(2) The front subframe position / installation shall be as per the original manufacturer. Spacers are not authorised between the subframe and the chassis rails. Additional location brackets are authorised being <i>control</i> parts.	9.1(2)
9.2	Front track:	
Note 1	(1) The maximum authorised front track is 1883mm when using ROH (Ref Part D 13.1(1)a) wheels or 1887mm when using Advanti (Ref Part D 13.1(1)b) wheels, measured outer rim to outer rim at the lowest point of the wheel rim on the axle centre-line. Refer diagram in Part F.	
9.3	Front track control arms:	
Note 2 Photo	(1) The subframe mounting point for the inner end of the track control arm (TCA) shall be repositioned horizontally 16mm +/- 2mm, centre of hole to centre of hole, equally each side. Refer diagram in Part F. The standard track control arm from the subject vehicle shall be used. The TCA inner bush may be substituted for a spherical bearing.	
Note 8 Photo	(2) It is permitted to replace the front bottom ball joint with a non genuine part, respecting the maximum dimensions in photo.	
9.4	Front radius rods (Z bars):	
	(1) The <i>control</i> front radius rod mount shall be fitted. The four mounting holes may be counter-sunk or enlarged solely to provide for adequate lock nut retention or the captive subframe studs may be substituted for longer items.	9.4(1)
	(2) Caster adjustment spacers may be fitted to the front of the radius rod.	
	(3) The radius rod rear mounting bush (connection to the track control arm) may be substituted for a solid mount.	
	(4) The radius rods may be realigned (bent) to maintain a parallel front pivot position and may be reinforced by adding bracing.	
9.5	Front spring platforms:	
Note 7	(1) The <i>control</i> front spring platforms shall be fitted, which may be modified solely to accommodate the installation of the suspension springs.	9.5(1)
9.6	Front strut legs:	
Note 3	(1) The <i>control</i> front strut legs, either option 9.6(1)a or 9.6(1)b, (shock absorber) shall be fitted. The standard sway bar link mounting bracket may be removed from the strut housing.	9.6(1)a 9.6(1)b
	(2) The bodyshell strut tower shall be relieved by up to 20mm (90° to the car's longitudinal centre-line) to provide for the positioning of the top mounting. Refer diagram in Part F.	
	(3) The original bodyshell strut tower location cup (welded in the tower) shall be removed.	
	(4) The <i>control</i> upper mount for the strut shall be fitted. This may be reduced by 20mm on one edge, to allow for fitment.	9.6(4)
	(5) Bump stop rubbers may be freely sourced.	
Photo	(6) A locking stirrup may be fitted.	
9.7	Front anti-roll bar:	
	(1) The original front anti-roll bar may be replaced and the mountings moved, replaced and/or reinforced subject to the provisions of this article.	
	(2) The anti-roll bar assembly shall consist of the following components; a single solid or hollow round steel bar. Attached directly to the bar by spline, keyway, welding or other fixed mechanical means shall be two (one per side) steel or aluminium arms (these may be a blade type arm), and two vertical links (one per side), which connect the arms to fabricated pick-up points on the lower suspension control arm and/or 'Z' bar. The links must be of a fixed length in operation (i.e. no sprung or hydraulic links are authorised).	

	(3) The anti-roll bar mountings may be replaced with a maximum of two (2) alternative mountings; these shall be constructed of steel or aluminium, and shall have a plastic liner / bush that act as the bearing for the bar. The mountings may be moved (from the production location) provided the bar is mounted forward of the front axle line. The mounting and any reinforcing shall be contained within a 180mm radius from the centreline of the bar in its new position, with a maximum width per mount / reinforcement of 100mm. All reinforcement to be contained to the subframe. Specifically prohibited are roller bearing and spherical bearing mountings, and any form of bracing or additional tubes from one mount to the other.	
	(4) The bar may be disconnected but not removed.	
	(5) A remote front anti-roll bar adjuster may be fitted but must be mounted in, and adjusted from, the boot area. No part of the adjustment mechanism shall pass through the interior of the cockpit. The roll-bar stiffness/blade position shall not be permitted to be altered by the driver or any other means except for manual adjustment from the boot compartment.	
9.8	Front hub/wheel bearing	
	(1) The <i>control</i> front hub unit shall be fitted.	9.9(1)
9.9	Rear track:	
Note 1	(1) The maximum authorised rear track is 1822mm when using ROH (Ref Part D 13.1(1)a) wheels or 1826mm when using Advanti (Ref Part D 13.1(1)b) wheels, measured outer rim to outer rim at the lowest point of the wheel rim on the axle centre-line. Refer drawing in Part F.	
9.10	Rear shock absorber units:	
Note 3 Photo	(1) The <i>control</i> rear shock absorber units shall be fitted. The lower rear mounting brackets, on the rear axle, shall be fitted in their original orientation as per photo A, with the original mounting holes aligned in the horizontal plane.	9.10(1)
	(2) The <i>control</i> (rear shock absorber) mounts shall be fitted. Holes shall be drilled for attachment.	9.10(2)
	(3) Bump stop rubbers may be freely sourced.	
	(4) The <i>control</i> rear spring platforms shall be fitted, which may be modified solely to accommodate the installation of the suspension springs	9.10(4)
9.11	Rear Watts linkage:	
	(1) A Watts linkage shall be installed utilising the original equipment BTR differential hat, pivot pin and crank sourced from an AU series Ford Falcon. The differential hat shall be Ford part number EL4033A with casting number 0578-039905 as per picture detailed in Park K of these regulations.	
	(2) The centre pivot pin bush may be substituted for another bearing type provided that it remains concentric with the crank and the pin. The pin may be supported by a single non adjustable support bracket up to 400mm long that connects to one side of the axle tube.	
	(3) The linkage rods and the rod ends may be freely sourced.	
9.12	Rear suspension bushes:	
	(1) The rear suspension arm control bushes shall be fitted as follows; <u>Option One</u> – The control nolathane bushes shall be fitted to the upper & lower suspension arms. No modification is permitted to these bushes except for tack welding into the suspension arms, Or <u>Option Two</u> – The control spherical bearings shall be fitted in the front of the upper & the lower suspension arms and the control nolathane or standard Holden bushes shall be fitted in the rear of the upper & lower suspension arms.	9.12(1) 9.12 (2)
	(2) All the bushes / spherical bearings are detailed in the control part list.	
9.13	Rear axle installation:	
	(1) The original rear axle assembly including all mounting arms / brackets shall be removed.	
Note 4	(2) The rear axle shall be installed using the <i>control</i> installation kit. The control mounting brackets may be locally reinforced.	12.5(2)
	(3) The upper and lower suspension arms shall be sourced from the VR or VS series Holden Commodore.	
9.14	Suspension springs:	
	(1) Suspension springs may be freely sourced provided they are of constant wire diameter. Only one (1) spring per shock absorber is permitted, total quantity of four (4).	

9.15	Rear anti-roll bar:	
	(1) The original anti-roll bar may be replaced by a single solid or hollow round steel bar subject to the provisions of this article.	
	(2) The material and diameter of the rear anti-roll bar is free.	
	(3) The rear anti-roll bar may use alternative bushes (maximum of two (2)). These shall be constructed of steel or aluminium and have a plastic liner/bush that acts as the bearing for the bar.	
	(4) The rear anti-rollbar shall be mounted to the rear axle housing using only the original anti-rollbar mounting points. The anti-rollbar may be mounted directly on these mounting points or on a bolted extension contained within a radius of 180mm in the longitudinal plane and a maximum lateral offset of 80mm, from the face of the existing mounting points.	
Note 5	(5) The rear anti-roll bar chassis attachment point mounting brackets are part of the control rear axle installation kit. The connector links may be freely sourced provided that no <i>control</i> part is modified to enable fitment and are of non-hydraulic operation.	
	(6) The anti-roll bar may be disconnected but not removed.	
	(7) A remote rear anti-roll bar adjuster is authorised provided that the adjustment is contained in and performed from the boot compartment. No part of the adjustment mechanism shall pass through the interior of the cabin.	

Article 9.0 - NOTES:

1. An official MSNZ checking tool will be used to check compliance. Refer Part F.
2. The standard holes shall not be used.
3. The front and rear shock absorber units shall be checked for compliance by the control supplier, prior to the start of each season. Tamper evident seals will be applied. Sealed shock absorbers are the only units that are permissible. It is a breach of these regulations to remove and/or damage the security seals. A revised shock absorber (option 9.6(1b)) is fitted with a larger diameter piston rod.
4. Information relative to the installation of the axle shall be referenced from the *control* part suppliers fitting instructions.
5. The installation position of these brackets is detailed in the *control* part suppliers fitting instructions.
6. The *control* brackets shall be installed as per the approved fitting instructions.
7. The *control* front spring platform has been superseded with an integral spacer and longer top collar.
8. The dimensions have been revised to raise the front roll centre.

Article	10.0 BRAKE SYSTEM	Control Part Reference
10.1	General:	
Note 1 Note 2	(1) The original metal brake lines and the original flexible brake lines may be replaced and in so doing may be re-routed.	
	(2) The original anti-lock braking system (ABS) shall be removed in its entirety including all wiring and all sensors.	
	(3) The brake pads (friction materials) may be freely sourced.	
	(4) The original handbrake assembly shall be removed.	
10.2	Series production pedal assembly and master cylinder:	
Note 3	(1) The brake master cylinder may be a direct replacement unit designated for the model. The master cylinder shall be modified by the <i>control</i> modifier.	10.2 (1)
	(2) The master cylinder reservoir may be remotely mounted, within the engine compartment.	
	(3) The master cylinder proportioning valve may be rendered inoperative.	
	(4) A brace may be added solely to stabilise the master cylinder / servo unit.	

	(5) A pad may be fitted to the foot contact surface of the brake pedal of 5mm maximum thickness.	
10.3	Pedal box and master cylinders:	
Note 4	(1) Optionally, the <i>control</i> pedal box assembly may be fitted instead of article 10.2. Brake master cylinders shall be AP or Alcon or Tilton or Wilwood. The brake light switch may be repositioned but respecting article 16.4 (2). The threaded brake balance bar shall be upgraded to Tilton part No:72/250 or the 7/16 equivalent and the master cylinder push rods shall be replaced by stronger components.	10.3(1)
	(2) The master cylinder reservoir/s may be remotely mounted, within the engine compartment.	
	(3) A brace may be added solely to stabilise the master cylinder unit.	
	(4) A pad may be fitted to the foot contact surface of the brake pedal of 5mm maximum thickness.	
10.4	Front brakes:	
Note 5	(1) The <i>control</i> front brake calipers shall be fitted. The aluminium washers under the cap screws bolting the caliper together shall be replaced with steel washers.	10.4(1)
	(2) The <i>control</i> front brake caliper mounting brackets shall be fitted. The hub/stub axle may require material to be relieved solely to enable fitment of the bracket. The <i>control</i> mounting bracket may be modified solely for the purpose of brake duct attachment.	10.4(2)
Note 7	(3) The <i>control</i> front brake rotor mounting hat shall be fitted. Mounting hat to hub flange attachment screws may be fitted.	10.4(3)
Note 8	(4) The <i>control</i> front brake rotors, either option 10.4(4)a or 10.4(4)b, shall be fitted	10.4(4)a 10.4(4)b
	(5) The rotors shall be attached by means of <i>control</i> bobbin kit.	10.4(5)
	(6) Brake components may be shimmed for alignment purposes only	
	(7) The <i>control</i> front brake pads shall be fitted.	10.4(7)
10.5	Rear brakes:	
	(1) The <i>control</i> rear brake calipers shall be fitted. The pad retaining pin holes in the caliper body may be enlarged to provide for a bridge-bolt kit.	10.5(1)
	(2) The <i>control</i> rear brake caliper mounting brackets shall be fitted. These shall be welded to the axle tube by the <i>control</i> axle modifier.	10.5(2)
	(3) The <i>control</i> rear brake rotor mounting hat shall be fitted. The wheel stud holes may be enlarged to provide for larger studs. Mounting hat to hub flange attachment screws may be fitted.	10.5(3)
	(4) The rear rotors may be freely sourced provided they are 310mm diameter (full circumference) x 21mm (total thickness) vented items of entirely ferrous material and of the correct fitment pattern for the <i>control</i> mounting hat. The rear rotors shall not be drilled. The <i>control</i> bolt kit (hat to rotor) shall be fitted.	10.5(4)
	(5) Brake components may be shimmed for alignment purposes only.	
Note 9	(6) A rear brake hydraulic pressure 'bias' valve may be installed in the front to rear brake line.	
	(7) The <i>control</i> rear brake pads, either option 10.5(7)a or 10.5(7)b shall be fitted.	10.5(7)a 10.5(7)b
10.6	Brake cooling:	
Note 6	(1) A single brake cooling duct may be installed for each wheel.	
Note 6	(2) All ducted air to the front brakes shall be supplied through the rear of the brake air-duct aperture in the front nose-clip. The rear of the aperture may be trimmed by a maximum of 150mm solely for the attachment of the ducting hose. The vertical part of the bodywork located immediately behind the front clip air-duct aperture may be relieved solely to provide for fitment of the brake duct.	
	(3) All ducted air to the rear brakes shall be supplied from underneath the vehicle.	
	(4) The original brake backing plates may be freely modified or removed.	
	(5) The <i>control</i> brake cooling water spray unit may be fitted with two spray nozzles fitted into each of the front brake ducts in accordance with the supplier instructions. The water spray shall be controlled with a driver operated on/off switch. The spray unit and water reservoir shall be mounted in the boot compartment. No cooling unit hose may pass through the engine compartment or the heater plenum. The cooling unit may only be used for spraying cooling water into the brake duct. The maximum reservoir capacity is 4 litres. The only fluid that may be used in this system is water with no additives.	10.6(5)

Article 10.0 - NOTES:

1. The solid metal brake lines shall comply with a recognised standard for solid brake line tubing. Where the brake line is completely replaced with a flexible line it shall comply with a recognised standard for flexible brake line.
2. The flexible brake lines shall comply with a recognised standard.
3. The *control* modifier will increase the cylinder bore size.
4. The brake pedal and mounting bracket are a *control* part assembly. These are available on an exchange basis from the *control* part supplier. Either article 10.2 or 10.3 is authorised, not a combination.
5. This is a 6-piston caliper.
6. No reinforcement of the chassis rail or subframe as part of the cooling duct or cooling duct attachment is permitted.
7. A brake pressure dampening device is not permitted.

Article	11.0 ENGINE	Control Part Reference
11.1	General:	
Note 1	(1) Engine speed: A maximum engine speed of 6400rpm applies and it is the competitor's responsibility to ensure that this maximum is not exceeded at any time when the vehicle is accelerating.	
	(2) Engine Balancing: Rotating and reciprocating components may only be balanced in accordance with the approved method as specifically detailed within the applicable Article for the component in question.	
Note 2	(3) Compression ratio: The maximum compression ratio is 10.0 to 1.	
	(4) Crankcase ventilation: An oil/vapour catch tank shall be fitted of 2 litre minimum capacity. At no time shall a vacuum be drawn from the engine crankcase.	
	(5) Engine gaskets and oil seals are free except where specified otherwise in this schedule.	
	(6) The engine as specified in Part C Article 11.0 may be fitted as an option in place of the engine specified in Part B Article 11.0. The <i>control</i> engine conversion parts must be used with this engine option comprising the following items: Engine mounts Bell housing Exhaust headers, Y pipe. The <i>control</i> Holden airbox & air cleaner specified in Part B 11.14 shall be used with this option but the optional spacer specified in Part B 11.12(11) may not be fitted.	11.1(6)a 11.1(6)b 11.1(6)c
11.2	Engine block	
	(1) The engine block shall comply with option (a) or option (b): (a) Holden standard series production 5-litre or 308 engine block with 2 bolt or 4 bolt cast main bearing caps, or (b) the replacement aluminium alloy <i>control</i> block is authorised. Standard bore size of 4.000" (101.59mm). The maximum oversize permissible is 4.068" (103.33mm).	11.2(1)
	(2) Two bolt main bearing cap blocks may be machined on bearing caps 2, 3 & 4 to allow a 4 bolt cap to be used.	
	(3) The main bearing cap bolts may be replaced with studs/nuts.	
	(4) The engine block may be machined for deck height, provided that during 1 complete crankshaft revolution any part of the piston does not protrude above the deck face.	
	(5) A maximum of 2 sleeves may be fitted to the engine block to reclaim cylinders.	
	(6) The Holden engine block may be painted but the replacement aluminium alloy block (11.2(1)(b)) may only be painted externally.	

Note 3	(7) It is permitted to 'grout' the engine block	
	(8) If the optional aluminium alloy block specified in Article 11.2(1)(b) is installed then a 10 kilogram <i>control</i> weight must be securely fitted on top of the chassis rails on each side of the engine between the front and rear of the engine block. These weights must be removable for checking.	11.2(8)
11.3	Crankshaft:	
	(1) Holden standard series production 304 cu in cast iron crankshaft or the <i>control</i> steel crankshaft is authorised. The crankshaft stroke is 3.030" (76.96mm).	11.3(1)
Note 4	(2) The crankshaft may have metal added or removed in order to balance, and achieve the minimum weight. The basic shape may not be altered. Knife edging is not permitted. Drilling of the crank pins is not permitted. The minimum weight shall be respected.	
Note 4	(3) The minimum weight of the crankshaft is 21,500 grams.	
11.4	Pistons:	
	(1) Pistons may be sourced freely provided that a minimum of 2 compression rings and 1 oil control ring are fitted.	
	(2) The piston crown may be reshaped to achieve the compression ratio.	
Note 5	(3) The minimum weight of the piston is 480 grams.	
11.5	Connecting rods:	
	(1) Holden 304 standard series production connecting rods identified by 'GM' or 'X' on the beam or the <i>control</i> rods are authorised.	11.5(1)
	(2) The connecting rod small end may be honed and/or bushed for piston fitment. Additionally, the side faces of the small end may be machined, respecting the minimum weight.	
	(3) Connecting rods may be 'shot-peened'.	
	(4) Direct replacement connecting rod studs and nuts are authorised.	
	(5) The Connecting rods may be balanced by end for end balancing only.	
Note 6	(6) The minimum weight of the 'GM' connecting rod or the 'X' rod can be reduced to 560 grams. The minimum weight of the <i>control</i> connecting rod, is 600 grams.	
	(7) The big end side faces may be machined for clearance purposes, respecting the minimum weight	
11.6	Flywheel:	
	(1) The <i>control</i> flywheel shall be fitted.	11.6(1)
	(2) The flywheel may be balanced solely by the removal of material, respecting the minimum weight. Refer article 11.6 (3).	
	(3) The flywheel is part of the 'clutch assembly' which has a defined minimum weight; refer Part B, Article 12.2 (3) or 12.2 (4).	
11.7	Camshaft:	
Notes 7 & 8	(1) Either of the <i>control</i> camshafts shall be fitted: (a) Part number HVT to specification card 122238 or / (b) Part number HVT-F13 to specification card 122239	11.7(1)a 11.7(1)b
	(2) A longer sprocket retaining bolt / stud may be fitted by drilling and tapping the standard hole deeper.	
	(3) An indicative valve lift of 0.500" may be utilised to check compliance of the valve operating mechanism for camshaft 11.7(1)(a). An indicative valve lift of 0.515" may be utilised to check compliance of the inlet valve operating mechanism and a valve lift of 0.505" may be utilised to check compliance of the exhaust valve operating mechanism for camshaft 11.7(1)(b). Measurement to be taken on the valve spring retainer.	
11.8	Timing chain and sprockets:	
	(1) A 62-link simplex or duplex timing chain and gear sprockets only are authorised which may be freely sourced. Gears, adjustable vernier sprocket, variable valve timing and belt drives are specifically prohibited. No tensioners or guides are permitted.	
11.9	Cylinder heads:	
Note 9 Photo	(1) Holden 304 standard series production cylinder heads part number 92060019 is the only cylinder head authorised. Refer diagram in Part F.	
	(2) The cylinder head (to block) face may be surface planed parallel to the original face.	
	(3) The cylinder head (to inlet manifold) face may be surface planed parallel to the original face provided a minimum distance of 1.500" between the cylinder head stud hole edge (at water jacket end), to the inlet manifold gasket face is maintained.	
	(4) The combustion chamber and ports shall remain 'as cast' except as specified in Article 11.9(8).	
	(5) Valve seats may be reclaimed by installing inserts. No 'hand finishing' is authorised.	

	(6) Valve guides may be reclaimed to standard dimensions, the maximum being OD 0.503" (12.78mm).	
	(7) The cylinder head area directly under the valve spring seat may be machined only to obtain the required valve spring installed height.	
	(8) The ports, from the valve seats to the untouched valve guide boss casting, may be machined on the valve guide centre-line. Any taper may only be diminishing on a fixed radius from the valve seat to the valve guide boss casting. The inlet port area on the short turn directly under the valve seat may be relieved over a maximum arc of 180 degrees for a maximum developed length of 20mm from the bottom of the valve seat. No material shall be added. The bottom of the valve seat is to be determined by 'blueing' the valve and seat. Refer to diagram 11.9(8).	
	(9) The cylinder head to cylinder block attachment bolts may be directly substituted for studs & nuts.	
	(10) The external surfaces of the cylinder heads may be painted. This specifically excludes the inlet & exhaust ports and the combustion chamber.	
11.10	Valves / Springs / Retainers	
	(1) Inlet and exhaust valves may be sourced freely provided that the stem diameter is 11/32" and the material is steel or stainless steel. The valve head size shall comply with: <ul style="list-style-type: none"> ▪ maximum inlet valve head diameter is 1.950" (49.53mm). ▪ maximum exhaust valve head diameter is 1.600" (40.64mm). 	
	(2) Valve springs may be freely sourced.	
	(3) Shimming of the spring seat is authorised.	
	(4) Spring retainers and collets may be freely sourced provided not of titanium material.	
	(5) Valve stem seals may be fitted.	
11.11	Valve lifters / Pushrods / Rockers:	
	(1) Valve lifters shall be of mechanical design/operation and may be freely sourced. Roller or mushroom type lifters are specifically not authorised.	
	(2) The valve lifter bores (in the cylinder block) may be reclaimed with sleeves respecting the original alignment. Bore size shall be 0.845" maximum.	
	(3) Pushrods may be freely sourced. Titanium, composites or ceramic materials are prohibited.	
	(4) The <i>control</i> rocker assembly shall be fitted. Shims may be added between the rocker pedestal and cylinder head.	11.11(4)
	(5) The rocker covers may be freely sourced provided that they are made of steel or Aluminium alloy and the original mountings are used.	
11.12	Carburettor:	
Note 10	(1) The <i>control</i> carburettor shall be fitted. The only permitted modifications are detailed in this schedule. The main carburettor body is identified by a unique numbered seal which may not be removed. The base plate, metering blocks and float bowls may only be replaced with parts supplied by the control part supplier	11.12(1)
	(2) An insulating plate may be fitted between the carburettor base and the inlet manifold mounting faces being a maximum thickness of 8mm (0.315") to include any gaskets applied.	
	(3) The throttle shafts and butterflies shall remain standard.	
	(4) The accelerator pump discharge nozzle and mounting screw may be changed with direct replacements under Holley part #121. Modification to enable fitment is prohibited.	
	(5) The accelerator pump actuation cam may be changed with any under Holley part # 20-12.	
	(6) The primary and secondary main jets, air bleed jets and power valve may be freely changed with others of the same type as supplied standard with the carburettor. Slosh tubes, jet extensions and "Max" jets are prohibited.	
	(7) A fail-safe throttle mechanism shall be used, so that a failure in any part of the mechanism results in immediate throttle closure.	
	(8) The floats may be freely sourced. No modifications to enable fitment is authorised.	
	(9) The throttle shaft lever may have extra holes drilled for the attachment of the accelerator cable. The cable may be run over an arc shaped throttle linkage provided that this bolts onto the carburettor without modification of the carburettor. The cable may be freely sourced provided it is of mechanical operation.	
	(10) The baffle plate in front of the needle and seat inside the float bowl may be removed or modified.	

	(11) Optionally, a commercially available 1" (25.4mm) open centre spacer (refer to Photo 11.12(11) showing open centre spacer) may be installed between the carburettor and inlet manifold mounting faces. The maximum distance between the carburettor and manifold mounting faces is 34mm. This measurement includes the spacer and insulator plate/gaskets. Two and four hole spacers are specifically prohibited.	
11.13	Inlet manifold:	
Note 11	(1) The <i>control</i> inlet manifold shall be fitted. The only permitted modifications are detailed in this article.	11.13(1)
	(2) The manifold port faces (to cylinder head) and valley faces (to cylinder block) may be machined solely to compensate for changes in the cylinder block deck height. The manifold shall be completely sealed to the cylinder block at the front and rear valley faces.	
	(3) The manifold to cylinder head mounting bolt holes may be elongated solely to enable fitment.	
	(4) The maximum (compressed) gasket thickness (manifold to cylinder head) is 3.5mm (0.138").	
	(5) Air bleed nipples may be fitted in the water jacket of the manifold forward of the rearmost mounting bolts to bleed directly to atmosphere. No hoses may be fitted to the bleeds.	
11.14	Air-cleaner / Cold-air box:	
	(1) The <i>control</i> air-cleaner shall be fitted. The only permitted modifications are detailed in this article. If the spacer option (refer 11.12(11)) is used, the new air-cleaner top together with the <i>control</i> base and <i>control</i> filter shall be fitted. Refer Part D – control parts list.	11.14(1)
	(2) The <i>control</i> cold-air box shall be fitted. The only permitted modifications are detailed in this article.	11.14(2)
Note 12	(3) The cold-air box may be trimmed along the top and the rear to suit individual bonnet/panel fit with a rubber seal added to the top and rear lips. Holes shall be introduced into the base solely to enable installation onto the carburettor.	
	(4) The air-cleaner shall be positioned centrally to the front of the cold air box. The air cleaner base may be secured to the cold - air box by means of rivets and/or sealing compound. Refer Part F – diagram.	
	(5) A flat plate may be affixed to the underside of the bonnet for the sole purpose of providing an effective seal for the top of the cold-air box.	
	(6) A hole may be introduced at the front of the cold-air box for the sole purpose of installing an air temperature sensor. Refer article 4.2(4).	
11.15	Cooling system:	
	(1) A replacement water radiator is authorised provided it is mounted in the same position and plane as the standard radiator. New mounts may be fabricated although the original lower support crossmember shall be retained.	
	(2) Deflector plates may be fitted to direct air from the nose-clip apertures to the radiator.	
	(3) The radiator cooling fan may be removed or substituted with a freely sourced replacement. The fan shroud may be removed or substituted with a freely sourced replacement, provided its sole purpose is that of shrouding the fan.	
	(4) The water pump may be a commercially available direct replacement which bolts directly to the original mounts and must be belt driven by the crankshaft. The water pump drive pulley may be substituted for another diameter but shall be of single 'V' belt design. Electric pumps are prohibited.	
	(5) The thermostat may be removed or directly replaced with a restrictor plate.	
	(6) The standard coolant expansion tank may be moved or replaced with another tank that provides the same function.	
	(7) Heater hoses shall be removed.	
	(8) Radiator hoses may be freely sourced.	
	(9) A sediment filter may be fitted.	

11.16	Exhaust system:	
Photo	<p>(1) The exhaust system shall comply with option (a) or (b). The only permitted modifications are detailed in this article.</p> <p>(a) The <i>control</i> exhaust system with a 2.25" diameter Y pipe shall be fitted. Or</p> <p>(b) The optional <i>control</i> exhaust system with a 2.5" diameter Y pipe shall be fitted. If the optional 2.5" diameter Y pipe exhaust is fitted then the original 2.25" diameter Y pipe must be carried to, and be made available at, all circuits as the Championship Scrutineer, for reasons of parity, may determine that the original 2.25" Y pipe must be used.</p>	11.16(1)a 11.16(1)b
	(2) Brackets may be added for the sole purpose of mounting the system.	
	(3) The manifold (to cylinder head) flange mounting holes may be elongated to facilitate alignment and spot facing of the flange is permitted within a radius of 15mm from the centre of the elongated hole.	
Note 13	(4) The tail-pipe down-stream of the muffler is free provided it exits to the left-side of the car.	
	(5) Holes may be drilled in each pipe of the manifold (for temperature pyrometers during tuning) provided the pyrometers are removed and the holes resealed during competitions.	
	(6) Threaded plugs solely for a Lambda sensor may be fitted.	
	(7) No additional coating may be applied to the exhaust system.	
	(8) The left-hand rear floor pan may be modified solely to accommodate the muffler.	
	(9) The inlet and outlet pipes of the muffler may be trimmed for fitment. Both the inlet and outlet pipes must retain a minimum length of 15mm measured from the external factory weld of muffler.	
	(10) An ignition system, consisting of a spark plug, coil and associated wiring, may be fitted to the exhaust system tailpipe for the purposes of igniting unburnt fuel. Spark may only be supplied to the exhaust spark plug when the carburettor throttle is closed and the vehicle is moving.	
11.17	Lubrication system:	
Note 14	(1) An entirely steel oil sump pan shall be fitted. It may be modified to increase the capacity using only steel components. No part of the pan shall extend forward of the crankshaft damper.	
	(2) Internal engine baffles, gates and windage trays are authorised.	
	(3) The oil pump and the oil pump pick-up may be freely sourced providing the pump is of single chamber design and is mounted and driven as per the original pump.	
	(4) External drain-back pipes from the cylinder heads/rocker covers are authorised. Additionally, internal drain-back holes may be introduced in the front of the engine block valley.	
	(5) Lubrication oil ways may be enlarged or restricted.	
	(6) Oil coolers are authorised provided they are fully contained within the bodyshell.	

Article 11.0 - NOTES:

1. MSNZ reserves the right to review the maximum engine speed at any time.
2. The combustion chamber in the cylinder head may not be modified in any way to achieve the stated compression ratio.

The compression ratio shall be measured using the following method: (All measurements to be mm.)

Equipment to be used; Class A or B type burette, checking fluid (a 50/50 mix of kerosene and ATF) and a flat transparent plate with filling and air bleed holes no larger than 6.5mm, an internal micrometer or telescoping gauge for measuring bore and stroke and a dial indicator.

Piston Volume - Measurement shall be performed at ambient temperature and in as run condition. Unburnt fuel deposits may be removed. With the piston at BDC, apply a smear of general purpose grease, around the cylinder wall, rotate the engine in a clockwise direction until the piston reaches TDC; remove the excess grease. Then seal the flat plate to the head gasket face of the cylinder, with the same grease. Fill the piston cavity from the burette to establish volume. An allowance of 1cc (=1000 cubic mm), for volume above top ring is to be added to the calculation of piston volume.

Cylinder Head gasket volume – calculated from the compressed thickness.

$$B \times B \times 3.1416 \times \text{gasket thickness} \div 4 = \text{volume}$$

Where **B** = The internal diameter of the fire ring of the head gasket **in mm**.

Cylinder Head Volume – Measurement shall be performed at ambient temperature and in as-run condition. Any unburnt fuel deposits may be removed. The spark plugs, as used in the competition, must remain in the cylinder head. With general purpose grease, seal the flat plate to the chamber. Fill the chamber cavity from the burette to establish volume.

Stroke – Using a dial indicator on top of the piston, bring the piston to TDC and then measure the deck height using a depth micrometer or vernier. Using a dial indicator or vernier, take the piston to BDC and measure the piston to deck height. Calculate the stroke dimension using the difference between the deck height at TDC and the deck height at BDC

Bore – Measure the diameter of the bore well down in the cylinder to avoid any piston ring wear or ridge.

Calculations:

$$SV + CV = \text{Total Volume (TV)}, \text{ then } TV \div CV = \text{Compression Ratio}$$

$$\text{Where } SV = \text{Bore} \times \text{Bore} \times \pi \times \text{Stroke} \div 4 \\ \text{and } CV = \text{Head Gasket Volume} + \text{Piston Volume} + \text{Cylinder Head Volume} + 1000$$

3. The grout is to help eliminate cylinder bore cracking.
4. This weight includes Spigot bearing/bush, crankshaft timing gear and key.
5. This weight includes piston, pin, locks and rings.
6. This weight includes little end bush and connecting rod bolts.
7. The engine firing order is 1-2-7-8-4-5-6-3.
8. The control camshaft is identified by the unique number engraved on the sprocket boss that references the logged 'foot-print' of each individual unit.
9. Specifically prohibited are VT model cylinder heads with heart shape combustion chambers, VN GpA cylinder heads with 'D' shape exhaust ports, and VL Walkinshaw cylinder heads. Original numbers cast on the cylinder head shall be either 92060019 or 019.
10. Either genuine Holley manufactured service parts for an 1850 or genuine Barry Grant manufactured service parts for a Speed Demon 575 are authorised. Specifications and part numbers shall be referenced from the current official Holley or Speed Demon catalogues. Service Parts are defined as: needle and seat, gaskets, accelerator pump diaphragm, O rings, idle mixture screws.
The Championship Scrutineer and/or MSNZ Technical Officials reserve the right to substitute the metering blocks with another as required from time to time.
11. The inlet manifold surface finish shall remain 'as cast' and shall not be altered in any way including any pretence such as cleaning.
12. The bodyshell firewall may be modified and the wiper mechanism may be relocated if necessary for the sole purpose of installing the cold air box.
13. The bodyshell and side-skirt may be locally reshaped to accommodate the muffler and tailpipe.
14. Dry-sump lubrication systems are specifically prohibited. The oil cooling system must be solely fed by the engine oil pump (i.e. no additional pumps or reservoirs)

Article	12.0 TRANSMISSION	Control Part Reference
12.1	General:	
	(1) The only permitted modifications to the transmission are those specifically detailed in this article.	
12.2	Clutch:	
Note 1	(1) The <i>control</i> clutch assembly shall be fitted. The only permitted modifications are detailed in this article.	12.2(1)
Note 2	(2) The <i>control</i> clutch plates being part of the clutch assembly, either a solid or a sprung centre option.	12.2(2)
	(3) The minimum weight of the clutch assembly, with solid centre clutch plates, is 13950 grams.	
	(4) The minimum weight of the clutch assembly, with sprung centre clutch plates, is 14400 grams.	
	(5) The control clutch assembly may be balanced by removal of material only respecting minimum weight.	
	(6) The clutch actuation method is free provided it is solely operated by the original foot pedal. The clutch pedal may be realigned transversely and a pad may be fitted to the foot contact surface of 5mm maximum thickness.	
	(7) A foot rest may be fitted to the left of the clutch pedal.	
12.3	Bellhousing:	
	(1) The bellhousing may be freely sourced provided that it is of aluminium material, has a maximum length of 175mm (measured between engine and gearbox faces) and serves no other function than that of an engine to gearbox adaptor.	
	(2) An inspection hole of 100mm x 40mm minimum shall be positioned at the bottom of the housing for inspection purposes.	
12.4	Gearbox:	
	(1) The gearbox shall comply with option (a) or option (b) or option (c):	
	(a) The <i>control</i> gearbox shall be fitted. The only permitted modifications to the <i>control</i> gearbox are detailed in Article 12.4, Or	12.4(1)(a)
	(b) The Richmond or Borg Warner T-10 gearbox case, sandwich plate and tail-shaft housing shall be used together with their selector mechanisms. The only permitted modifications are detailed in article 12.4. Or	12.4(1)(b)
	(c) The <i>control</i> Jerico WC4-4 gearbox shall be fitted. The only permitted modifications to the <i>control</i> gearbox are detailed in Article 12.4. The <i>control</i> gearbox is supplied by the manufacturer with isotropic surface treatment of the internal components. (d) The gearbox shall have an operational reverse gear.	12.4(1)(c)
Note 4(a)	(2)(a) The <i>control</i> gear kit must be used with option 12.4(1)(b) - (this is a Pfitzner kit). The gear ratios are: 1 st = 2.43 / 2 nd = 1.61 / 3 rd = 1.23 / 4 th = 1.00 (direct).	12.4(2)
Note 4(b)	(b) The only gear ratios used with option 12.4(1)(c) are: 1 st = 2.402 / 2 nd = 1.583 / 3 rd = 1.229 / 4 th = 1.00 (direct).	
	(3) The layshaft gear thrust bearings may be replaced with 'Torrington' type bearings.	
Note 9	(4) Direct replacement selector forks may be used, this being a <i>control</i> part.	12.4(4)
	(5) The casing sandwich plate may be doweled to provide positive location.	
	(6) The side cover selector pin bushes may be reclaimed.	
	(7) The main gearbox housing may have bearing bores reclaimed by fitting a sleeve to restore the bores back to the original manufacturer dimensions.	
	(8) Any 'H' pattern gear-change remote mechanism is authorised.	
	(9) The bodyshell floor pan may be modified for the sole purpose of installing the gearbox/remote change mechanism. The original gearbox cross member mounting brace, welded to the transmission tunnel, may be moved or removed.	
	(10) The gearbox rear mount/cross-member may be freely sourced.	
	(11) An extension hose and catch tank may be fitted to the original breather outlet.	
	(12) A gearbox oil cooler and electrically driven oil pump may be fitted.	
	(13) Worn gearbox dog rings and worn mating dogs on the slider may be reclaimed by machining the face of the ring, the slider and the engagement dogs to provide positive engagement.	12.4(13)

	(14) Direct replacement Jerico parts may be used with gearbox option 12.4(1)(c) these being <i>control</i> parts	12.4(14)
12.5	Rear axle:	
Note 5	(1) The rear axle assembly shall be GMH original equipment as originally fitted to live-axle Commodore VN or VS models.	
	(2) The <i>control</i> axle installation kit shall be used to install the rear axle assembly.	12.5(2)
	(3) The <i>control</i> floating hubs shall be fitted by the <i>control</i> axle modifier.	12.5(3)
	(4) The axle width shall be either 1566mm +/- 5mm or 1626mm +/-5mm. The measurement shall be taken between the axle shaft hub flanges (with rotors removed).	
Note 6	(5) The maximum camber authorised on either rear wheel is 1° negative.	
	(6) The only final-drive ratio authorised is 3.08:1.	
	(7) The differential shall be 100% permanently locked to both axles and shall be entirely of ferrous material.	
	(8) Axle shafts of either 28 or 31 splines (inner end) are authorised.	
	(9) An extension hose and catch tank may be fitted to the original breather outlet.	
	(10) The crown-wheel and pinion may be shot-peened.	
12.6	Driveshaft:	
Note 7	(1) The driveshaft may be freely sourced provided that the material is steel.	
Note 8	(2) Steel safety hoops shall be installed in the transmission tunnel for the front and rear sections of the driveshaft, designed to retain the driveshaft in the event of a failure.	

Article 12.0 - NOTES:

- The clutch assembly is defined as 'all the rotating components affixed to the rear of the crankshaft excepting the spigot bush/bearing and flywheel to crankshaft mounting bolts/washers.
- Either two sprung or two solid plates shall be used, not a combination.
- Option (a) refers to the Richmond T-10 complete gearbox part #7021510 as supplied complete by Richmond. Option (b) refers to the Richmond or Borg Warner gearbox case, sandwich plate, tail-shaft housing and side-plate incorporating the selector mechanism. An alternative sandwich plate, being a control part is authorised – refer Part D.

Option (c) refers to the Jerico WC4-4 complete gearbox as supplied complete by Jerico.

- (a) The Richmond, Borg Warner or Pfitzner mainshaft is authorised. The control gear-kit is a Pfitzner kit. The tooth count of the gears is as follows:

		1 st	2 nd	3 rd
Mainshaft	21	34	25	22
Layshaft	27	18	20	23

- (b) The tooth count of the gears in the Jerico WC4-4 gearbox is as follows:

		1 st	2 nd	3 rd
Mainshaft	23	34	28	25
Layshaft	26	16	20	23

- The rear axle assembly includes the crown-wheel and pinion, the differential assembly, the axle shafts, the final drive housing and axle tubes. A Holden or Ford pinion flange may be used.
- This is measured on the wheel rim.
- It is highly recommended to upgrade the size of the centre bearing.
- The steel material used shall be a minimum of 3mm x 20mm. It must also encircle the driveshaft. It shall extend no more than 200mm in a lateral direction.
- The selector fork contact faces (to the hub) may be relieved.

Article	13.0 WHEELS & TYRES	Control Part Reference
13.1	Road wheels:	
Note 1	(1) The current Advanti <i>control</i> road wheels, as a complete set of four, shall be fitted when using the Dry tyre. The previous ROH <i>control</i> road wheel may be fitted for the 2009 / 2010 season when using Wet tyres. Only one wheel option may be used at any time with the exception that if a wheel or tyre is damaged during a race or qualifying session then either option wheel may be used to complete that race or qualifying session.	13.1(1)
Note 2	(2) The competition number shall be indelibly marked on the outer rim face.	
	(3) The wheels may be painted, polished or powder coated.	
	(4) Alternative fixation studs and nuts may be fitted provided they are entirely of ferrous material and respect the original thread diameter, pitch and number.	
Photo	(5) The outer circumference of the wheel centre shall be machined to a maximum diameter of 71mm. Refer photo 13.1(6).	
	(6) The only repair permitted to wheels is the removal of material in a localised area for the purposes of blending in surface damage to the outer bead of the rim or spokes.	
13.2	Tyres:	
	(1) The current <i>control</i> Dry tyre is as specified in the Control Parts List.	13.2(1)
	(2) The current <i>control</i> Wet tyre is as specified in the Control Parts List.	13.2(2)

Article 13.0 - NOTES:

1. The *current* control road wheel is manufactured by Advanti. The previous control road wheel was manufactured by ROH Australia.
2. The road wheels shall be marked with the car's competition number to enable identification at all times particularly during tyre fitting and marking.
3. Polishing means rubbing or buffing of the surface only for the purpose of improving the appearance of the rim. Polishing must not be used to change the shape or thickness of the rim.

Article	14.0 IGNITION SYSTEM	Control Part Reference
14.1	General:	
Notes 1, 2, 3, 4 & 5	(1) The <i>control</i> MSD ignition unit shall be mounted in the passenger foot-well area. The only permitted modifications to the <i>control</i> ignition unit are detailed in this article.	14.1(1)
Note 6	(2) The <i>control</i> harness plug shall be fitted, and wired according to diagram in Part M.	14.1(2)
	(3). A MSD extension harness from the distributor to the ignition unit shall be the only loom fitted between the two units. It shall be fitted entirely separate to the car's wiring looms.	14.1(3)
Note 7	(4) The <i>control</i> distributor shall be fitted. The distributor must be mounted in the original position and the ignition triggering and advance systems are fully contained within the distributor body. The ignition advance system shall be either mechanical by 2 springs and 2 weights or/ the advance can be rendered inoperative using the locking pin supplied with the distributor.	14.1(4)
	(5) Distributor cap, high tension leads and spark plugs may be freely sourced. Only one ignition coil is authorised which may be freely sourced.	
	(6) A pit lane speed limiting device may be fitted using the MSD 2 Step Module (Part Number 8739).	

Article 14.0 - NOTES:

1. The *control* MSD ignition unit part # 6420, incorporating a rev limiter is the only authorised ignition unit.
2. It is the competitor's responsibility to ensure that the correct 'plug-in module' is used to ensure that the maximum rpm is not exceeded at any point in time.
3. The Championship Scrutineer reserves the right to substitute the MSD ignition unit with another as required from time to time.
4. Any form of 'Traction Control System' is specifically prohibited.
5. Triggering of the MSD ignition unit shall only be performed from within the distributor.
6. Refer to Part M for detail of fitment.
7. It is permitted to shorten the housing / shaft to enable fitment.

Article	15.0 FUEL SYSTEM	Control Part Reference
15.1	General:	
Note 1	(1) The <i>control</i> coupling shall be installed for the purpose of taking fuel samples.	15.1(1)
	(2) Fuel coolers are not authorised. No artificial cooling of fuel is permitted.	
15.2	Fuel tank:	
Note 2	(1) The fuel tank shall be a commercially available item complying with an international standard. It shall be installed in the boot compartment between the rear longitudinal chassis rails within the area defined – refer Part F diagram 15.2(1).	
	(2) The maximum boot floor area that may be removed is detailed in diagram – refer Part F diagram 15.2(1). The resultant opening shall be covered with a flat metal plate into which the box (as detailed in (3) below) shall be fitted. Mounting / strengthening ribs may be added to support the plate and box.	
Notes 3 & 7	(3) A four sided open top fabricated metal box with a flat horizontal base of maximum dimension 900mm x 500mm, shall be installed in the cut out area as defined in diagram – refer Part F diagram 15.2(1). The vertical sides of the box shall be at 90° to the horizontal base. The box shall be positioned at least 250mm forward (crumple zone) of the rearward face of the rear bumper measured on the cars centre-line. No components are to protrude lower than the horizontal base of the tank box.	
	(4) If other equipment (i.e. fuel pumps, filters, swirl-pot) are to be installed in the box, a vertical metal dividing wall (same vertical height as the box) shall be fitted to separate the fuel tank.	
	(5) The fuel tank shall be retained in the box by a minimum of two (2) metal straps.	
	(6) The fuel tank shall have a one way (roll over) valve fitted to the vent system.	
	(7) A drained spill collar shall be fitted around the filler neck and a secure filler cap fitted.	
Notes 3 & 7	(8) An additional box (to the fuel tank box) may be fitted in the cut out area as defined in diagram – refer Part F diagram 15.2(1), to house fuel pumps, filters, swirl-pot & battery. It shall be an open top four sided, fabricated metal box with flat horizontal base of maximum dimension 300mm x 200mm. The vertical sides of this box shall be at 90° to the horizontal base. The box shall be positioned at least 250mm forward (crumple zone) of the rearward face of the rear bumper measured on the cars centre-line. No components are to protrude lower than the horizontal base of the box.	
Note 3	(9) A fuel filter and swirl-pot are authorised provided their maximum combined capacity does not exceed 6 litres in total.	
15.3	Fuel pump/s:	
Notes 3, 4 & 5	(1) The fuel pump/s and their location, excepting within the cockpit space, is free.	
15.4	Fuel lines (solid) and hoses:	
Note 6	(1) The fuel lines may be re-routed and/or substituted for another type.	

Article 15.0 - NOTES:

1. The *control* female coupling shall be 'T'ed into the fuel line as close as possible to the carburettor, provided easy access for the scrutineer is maintained. The maximum length of line from the Tee to the coupling shall be 150mm.
2. Fuel tanks shall comply with either:
 - The FIA FT3 1999, the FT3.5 or the FT5 standards. Note: These tanks have five year validity.
 - The SFI specification 28.1 being foam filled fuel tanks of polymer material.
3. No tank, pumps, filters, swirl-pot, lines, batteries or any other components / fittings may be fitted in the defined crumple zone.
4. No fuel pumps, filters or swirl pot shall be fitted inside the cockpit.
5. Recommendation: The fuel pump should be switched via an oil pressure sensor able to cut the electrical supply to the pump/s when the oil pressure drops below a predetermined level.
6. Fuel lines routed through the cockpit space shall be metal or metal braided and where flexible shall have threaded connectors.
7. If the battery is installed in either of the boxes, a vertical metal dividing wall (same vertical height as the box) shall be fitted to isolate the battery from the fuel components.

Article	16.0 ELECTRICAL SYSTEM	Control Part Reference
16.1	General:	
Notes 1, 2, 3, 4 & 5	(1) The battery type and its location are free provided that it is 12 volt and not located in or accessed from the cockpit. When relocated the original battery mounting tray may be removed. An internal and external circuit breaker is mandatory – refer notes 16.1 (1) below and diagram in Part F.	
	(2) The original wiring loom may be freely modified or replaced provided all the mandatory requirements of this schedule are covered.	
16.2	Starter Motor:	
	(1) A 12 volt starter motor capable of starting the engine shall be fitted.	
16.3	Alternator:	
	(1) The alternator shall be fitted and operational; type and size is free. The alternator must be mounted to the engine and driven by the crankshaft pulley with a single 'V' belt.	
16.4	Lights:	
	(1) The original headlight units may be removed in which case the <i>control</i> headlight covers shall be fitted. Refer article 5.2 (8).	
	(2) The original production brake lights shall be fully operational at all times. They must operate within 13 mm of pedal travel. The original rear high-stop brake light may be removed.	
	(3) The <i>control</i> rear LED rain light shall be fitted to the top rear of the boot lid on the vertical plane either in place of the boot badge or to the right of the badge. The light shall be wired to operate together with the production rear/tail lights.	16.4(3)
	(4) The original front guard side indicator lamps may be removed.	
16.5	Switches and Controls	
	(1) Indicator stalk, wiper and headlight switches may be removed from the steering column.	
	(2) The position of any electrical operating switches must be within reach of the driver, while in their normally seated position.	

Article 16.0 - NOTES:

1. The battery shall be securely mounted and have the positive terminal covered.
2. A spark proof ignition switch / circuit breaker shall be positioned within easy reach of the driver while in their normally seated position.
3. An external method of triggering the ignition switch / circuit breaker shall be positioned within 150mm of the bottom of the right-hand side of the front windscreen.
4. An identification marking shall be present next to the external trigger.
5. The ignition switch / circuit breaker shall be capable of breaking all circuits that keep the engine running.

END OF PART B