SUPERCARS

SUPERCARS OPERATIONS MANUAL 2023

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SUPERCARS OPERATIONS MANUAL 2023

DIVISION "I" – DS3 BLUE PRINT CHASSIS TECHNICAL RULES

I1. GENERAL

I1.1 Preamble

1.1.1 This Division I applies only to the DS3 model eligibility specified in I1.2.

1.1.2 A Car must remain identical in all respects to the particular model of Car as defined in the relevant VSD and must be constructed in accordance with the Design supplied by Supercars for the Car except for the freedoms allowed, and to the extent permitted, by the Rules.

1.1.3 Any modification, component or configuration that is not in keeping with the spirit and intent of the Rules is not permitted and where necessary shall be banned without notice by Supercars.

1.1.4 In all circumstances the primary function of any component, even if all or part of its Design is free, is the overriding factor in determining its compliance with the Rules. Any secondary function/s, unless specifically permitted by the Rules, are not permitted.

1.1.5 No part of a Car may be modified and/or deleted and/or added to unless permitted by the Rules.

1.1.6 For clarification, in these Rules, unless it says that you can, then you cannot.

I1.2 Model Eligibility & VSD's

1.2.1 Only the makes and models of Cars, as detailed in the table below and for which a VSD is available, are eligible for Competition:

Eligible makes and models of Cars		
VSD Year	**Ford**	**Holden**
2017	**Falcon FG**	**Commodore VEII**

1.2.2 Supercars reserves the right to add and/or remove makes and models of Cars to the above table.

1.2.3 While it is permitted to update a model of a Car to a later model of the same Car, it is forbidden to back-date a model of a Car to any previous model of the same Car at any time unless otherwise approved by Supercars.

I1.3 Technical Definition and Class

1.3.1 The requirements of this Division I apply to Supercars, which are defined as large-scale Production Touring Cars comprising a specialised class of 5 litre, Australian produced, right-hand drive, four door Cars, fitted with pushrod two-valve normally-aspirated V8 engines.

1.3.2 There is only one class of Car, the Supercar with engines of up to 5000cc +25cc capacity fitted to Cars of which at least 25,000 examples, meeting the definition of Family of a Vehicle, must have been produced.

I1.4 Vehicle/ Component Approval

1.4.1 To be considered eligible for an Event, Cars, cylinder blocks, cylinder heads and aero kits must be as approved by Supercars and detailed in the relevant VSD.

1.4.2 All Cars must be constructed in accordance with the Manufacturer Supplied CAD and comply with all aspects of the relevant VSD and the requirements of this Division I.

1.4.3 Any manufacturer produced or supplied non catalogue components must be readily available for purchase by all Teams that compete using that manufacturer's model Car.

I1.5 Jurisdiction for Interpretation

1.5.1 Unless otherwise provided in these Rules, jurisdiction for the interpretation of the requirements in Division I lies entirely with the Stewards who, in cases where a technically complex issue arises, will refer the technical issue to the CTM who will determine the technical issue and any determination will be binding; and any question to be determined judicially will be determined by the judicial system as provided by these Rules.

I1.6 Responsibility for Safety

1.6.1 Each Competitor is responsible for all safety aspects of that Competitor's Car/s at all times.

I2. COMPLIANCE

I2.1 General

2.1.1 All Cars must comply with the relevant VSD and technical regulations of this Division I.

2.1.2 A Car must comply with the relevant sections of Article 277 of Appendix J Category II SH to the ISC of the FIA.

2.1.3 All Control Parts are listed in Schedule I1 and must always comply with the definition of a Control Part.

2.1.4 Subject to the approval of Supercars, to be considered eligible for a DS3 Event, a Car must use a body shell that has been used in no less than six (6) VCS Events.

2.1.5 Each Competitor is responsible for ensuring that their Car complies with the conditions of eligibility contained in the Rules throughout each Event and all Supercars authorised activities including all rides and at a Supercars Test Days as described in Rule D1, unless authorised by the CTM.

2.1.5.1 The testing of non-homologated parts must be requested in writing to the CTM for approval.

2.1.6 The acceptance of the targeted scrutiny declaration conditions will be deemed to be an implicit statement by the Competitor of conformity with the Rules.

2.1.7 It is the Competitor's responsibility to ensure all required Supercars seals are affixed prior to the first qualifying Session at an Event.

2.1.7.1 It is the Competitor's responsibility to ensure all Supercars seal affixed by any Supercars' official remains intact.

2.1.7.2 No Supercars seal may be removed at any time without prior written approval of the CTM.

I2.2 Examination for Eligibility

2.2.1 Should the CTM suspect at any time that a Car does not comply with the Rules, the Competitor, or Authorised Representative, must be so advised and given the opportunity to comment on the suspected or alleged ineligibility.

2.2.2 Any comment so made may be recorded by the CTM, and subsequently may be presented at any Stewards' Hearing.

2.2.3 Should the CTM fail to receive an adequate comment on the suspected or alleged ineligibility, which the CTM alone has sole discretion to consider as adequate or satisfactory, the CTM may require the Car or component to be impounded and examined, including such dismantling as may be necessary, to determine the points of eligibility in question.

2.2.4 At the direction of the Stewards, any components or parts of a Car may be sealed by the CTM for examination by the CTM.

2.2.4.1 For any item sealed and/or identified by any means by the CTM, it is the Competitors responsibility to ensure the item, which may include removable part/s, complies with all conditions of eligibility contained in the Rules.

2.2.4.2 With a view to facilitate scrutineering at the Race Track, each Team is required to:

a) Have available sufficient sets of long damper mounting bolts that have been drilled to facilitate the passage of 1.5mm diameter lock wire.

I2.3 Disputes

2.3.1 In the case of a dispute about a Car's compliance with any of the provisions of the Rules, such dispute will be referred to the Stewards by the RD or DRD for determination.

2.3.2 The Stewards will conduct a Hearing into the issue and may make any decision thereon.

2.3.3 If, during any such Hearing, the Stewards determine that the matter is of a technically complex nature the Stewards:

2.3.3.1 will refer only the technical issue to the CTM for a determination; and/or

2.3.3.2 may adjourn the Hearing until the determination of the CTM is received; and

2.3.3.3 subsequently resume and complete the Hearing and make a decision taking into account the determination of the CTM.

2.3.4 The determination of the CTM will be unconditionally binding on any Stewards' Hearing in regard to that issue.

2.3.5 Any dispute regarding the compliance of a Car with this Division I will be assessed, where appropriate, by the inspection of random samples of the relevant Family of a Vehicle and/or a Supercars identified sample Car and/or the manufacturer supplied CAD.

I2.4 Minor Non-Compliance

2.4.1 The CTM, having noted an area of minor non-compliance, may endorse the Car's Motorsport Australia log book with an entry regarding rectification of the non-compliance.

2.4.2 Having so endorsed the Car's Motorsport Australia log book, before the Car is permitted on to the Circuit, the CTM must send to the Stewards the Car's Motorsport Australia log book and a note in the following form:

2.4.2.1 "In my view, the minor non-compliance noted in the log book of this Car does not improve the performance to such an extent that the Car should be disqualified from this Event, and thus it may compete in this condition for this Event only."

2.4.3 Upon receipt of the note referred to in Rule I2.4.2, the Stewards may then permit the Car to participate in the Event subject to the endorsement being countersigned by the Stewards in the Car's Motorsport Australia log book.

2.4.4 If the Stewards have specifically approved the participation of a Car notwithstanding an endorsement in its Motorsport Australia log book pursuant to Rule I2.4.1, then no protest or appeal on that ground by any other person will be accepted in respect of that Event.

2.4.5 Where a question of eligibility is raised during or after Competition and that matter would have been treated as a "minor ineligibility" if raised at scrutiny the Stewards may treat the matter post event in the manner as determined above.

I2.5 Repairs

2.5.1 Any repairs or replacements must take full account of engineering integrity and safety.

2.5.2 The CTM has the right to consider the engineering integrity and safety of any modifications carried out and to require corrective action if appropriate.

2.5.2.1 Should the CTM deem it necessary to inspect any repairs, all costs incurred by Supercars to carry out required inspections must be met by the Competitor.

2.5.3 Restoration of Bodywork and Chassis geometry following accidental damage is permitted only using approved panels and parts or by the addition of materials necessary to affect the repairs (e.g.: body filler, weld metal).

2.5.4 Any repairs to the Chassis must respect the Design.

I3. SCRUTINEERING

I3.1 Targeted Scrutiny

3.1.1 In Australia, each Car will be subject to the provisions of the targeted scrutiny program for each Event. The targeted scrutiny program is an ongoing program which is based on a combination of routine and random audits of Cars and Driver's apparel to ensure that all equipment remains in compliance with the Rules. Routine audits will be conducted on a Car every 12 months or at every 4th Event, whichever comes first.

I3.2 Onus on Competitor

3.2.1 The onus is on the Competitor to ensure full compliance with all provisions of the targeted scrutiny program as follows:

3.2.1.1 by signing the Entry Registration Form and the Authorised Representatives Briefing attendance sheet for an Event, the Authorised Representative of a Car presented at an Event agrees to abide by the conditions described in the "Declaration of Conformity".

3.2.1.2 Each Car that is selected for an audit at an Event under the targeted scrutiny program must be presented in a complete and finished state at the time advised by the CTM.

3.2.1.3 Driver's apparel will be subject to random audits throughout the Event and must be made available for inspection at any time as requested by the CTM.

I3.3 Location of Targeted Scrutiny

3.3.1 Targeted scrutiny audits will be carried out at each Competitor's assigned Pit Garage or other area as determined by the CTM.

I3.4 Equipment to be Scrutineered

3.4.1 In addition to the audits carried out under the targeted scrutiny program, the following equipment must also be presented to the CTM for inspection and approval at each Event:

3.4.1.1 two (2) x 9 kg fire extinguishers, pressure vessel certification, all Driver's equipment including but not limited to: helmet, FHR device, overalls, underwear, balaclava, gloves, shoes; and,

3.4.1.2 for Events requiring refuelling during a race, all pit crew apparel and refuelling towers (including all components thereof).

I3.5 Additional Scrutineering

3.5.1 The CTM has unfettered discretion to carry out or require additional scrutineering.

3.5.2 The CTM may at any time:

3.5.2.1 check the eligibility of a Car; and

3.5.2.2 require a Car to be sealed and/or dismantled to ensure that the conditions of eligibility and/or safety are fully satisfied; and

3.5.2.3 require a Competitor to supply to the CTM or the Stewards such parts or samples as may be specified by the CTM; and

3.5.2.4 require that any components or parts of a Car be sealed for examination by the Stewards or by the CTM.

I3.6 Changes/Modifications to Cars

3.6.1 If at any time after the commencement of an Event, a Car has been dismantled or modified in any way which may affect the safety of the Car or which raises any question about its eligibility, or which is involved in an Incident which has similar results, it must be re-presented to the CTM for scrutineering approval prior to being permitted back on the Circuit.

I3.7 Prohibition of Unsafe Cars

3.7.1 Any Car may be prohibited by the CTM from participating in any Competition for safety reasons.

I3.8 On Track Incidents

3.8.1 The RD or the CTM may require any Car involved in an Incident to be stopped at its Pit Bay to be further examined and checked.

I3.9 No Replacement Cars

3.9.1 Replacement Cars are not permitted after the commencement of an Event.

I3.10 Prohibited Work

3.10.1 During any race, it is forbidden to change cylinder blocks (crankshaft case and cylinders) or the Chassis, under Penalty of exclusion.

I3.11 Delegation by CTM

3.11.1 References to the CTM in Division I automatically includes all nominees appointed by the HoM pursuant to Rule A9.4.

3.11.2 Checks, examinations and scrutineering will be carried out by duly appointed nominees responsible to the CTM, and such nominees will be responsible and authorised to give instructions to Competitors for the operation of the Parc Fermé.

I3.12 Accidents and Scrutineering

3.12.1 Damage incurred by a Car during any Competition may render it liable to being shown the black flag with orange disc and consequently requiring an immediate return to the Pit Lane for examination by the CTM.

3.12.2 Following any necessary rectification and subsequent to a satisfactory examination by the CTM, the Car may re-join the Circuit at the discretion of the RD.

3.12.3 A Car withdrawn from any Competition due to accident damage must be inspected by the CTM before it is permitted to continue to participate in the Event.

I4. CONSTRUCTION & MODIFICATION

I4.1 Minimum Weight

4.1.1 At no time may the Minimum Weight of an Automobile be less than 1350kg. This weight must be achieved without the Driver, fuel or Driver's equipment.

4.1.2 The minimum front axle weight of a Car is 750kg, and will be measured as follows:

4.1.2.1 at the front axle centreline; and

4.1.3 The minimum weights stated in Rules I4.1.1, and I4.1.2 must be achieved both during and immediately after any Competition at an Event, with the exception that during any Competition in which refuelling is permitted, the minimum weights must be achieved without fuel.

4.1.4 Supercars reserves the right at all times to amend the weights of Cars in the interests of equitable Competition.

I4.2 Freedoms Permitted

4.2.1 No modifications to a Car as described in the Design or relevant VSD will be permitted unless specifically permitted by the Rules and approved by the CTM:

4.2.1.1 holes providing minimal clearance are permitted to be drilled/made, solely to allow the passage or fixing of a component permitted by the Rules;

4.2.1.2 The minimum local modifications, solely for clearance or mounting purposes only, may be made in the surrounding area; and

4.2.1.3 If the permitted part requires modifications to be made to "mating" parts, then those modifications are authorised.

4.2.1.4 Such local modifications as permitted in accordance with these Rules must be submitted for approval to the CTM.

4.2.2 Throughout the Car, the use of any nut, bolt, screw, rivet, weld or adhesive is permitted. Where a method/type of attachment is specified in the Design the replacement method/type must be of equal or superior strength and approved by the CTM.

4.2.3 Modifications permitted by the Rules are allowed only on the condition that the weights and/or dimensions contained in the Rules, the Design and the relevant VSD are respected.

4.2.4 Where reinforcement is permitted by the Rules the material used must follow the original shape and be in contact with it. The reinforcements must not create hollow sections and must not allow two (2) separate parts to be joined together to form one (1).

4.2.5 The following areas are permitted to be reinforced:

4.2.5.1 the transmission tunnel at the point where the gear shift lever cradle mounts; and

4.2.5.2 both sides of the transmission tunnel at the centre bearing housing mounts.

4.2.6 It is permitted to join the body side inner at the B-Pillar to the ROPS by means of bracketry not covered in the relevant VSD. The design of these connections is free apart from they must be steel and comply with the following:

4.2.6.1 There must only be a maximum of two (2);

a) one (1) at the top of the B-Pillar (Z > 900mm); and

b) one (1) approximately in the middle of the B-Pillar (Z > 350mm); and

4.2.6.2 The X dimension must be no greater than 150mm and protrude no wider than the body side inner where they are connected; and

4.2.6.3 The Z dimension must be no greater than 100mm.

4.2.7 Where components, which are allowed in the Rules, require a hydraulic or pneumatic connection which is not specifically covered by the Design, hydraulic or pneumatic connections between these components are allowed provided the sole purpose is to allow the correct and normal primary functioning of the components they are connecting and do not require the modification of the components they connect to.

4.2.8 It is permissible to protect the fuel filler necks from flying debris (specifically a delaminating tyre) with a specific guard. This guard may take the form of a change in material and/or construction of the boot side infill panels or a specific shroud for the filler necks. Any such guard must have written approval of the CTM prior to being used in competition. Any such guard may be fitted to both sides regardless of which side the fillers are fitted.

4.2.9 It is permitted to brace between the base of the "C" pillar and the rear Chassis rail. Such brace must be constructed of material with a diameter of 25.4mm or less.

4.2.10 Any device or equipment with a mass of over 300g mounted inside the cockpit must be fastened in a manner such that it can withstand an impact of 25G.

4.2.10.1 If Dual Lock or equivalent is used to fasten the device or equipment, a secondary means of fastening must be used.

I4.3 Additional Accessories

4.3.1 Accessories which have no influence on a Car's behaviour are permitted. For example, equipment which improves the aesthetics or comfort of a Car's interior (lighting, heating/cooling, etc.). In no case may these accessories increase the engine power or influence the steering, transmission, brakes or road holding, either directly or indirectly.

4.3.2 Where the road going version of a model of Car has a display screen in the centre area of the dash, it is permitted to install a screen in that Car for the sole purpose of displaying sponsor logos. Its location and size must remain similar to the particular model, and its design must be approved by the CTM prior to construction and installation.

4.3.2.1 The screen may not, at any time, have an active wireless or Bluetooth connectivity, nor a sim card or eSIM functionality enabled.

I4.4 Damage Repairs

4.4.1 Restoration of body shape and Chassis geometry following accidental damage is permitted only using approved panels and parts or by the addition of materials necessary to affect the repairs (e.g. body filler, weld metal).

4.4.2 Other parts, which are worn or damaged, may not be repaired by the addition or attaching of material unless specifically allowed in these Rules.

I4.5 Composite Components

4.5.1 "Composite Material" is defined as being a blend of material reinforced with fibreglass, E Glass aramid fibres, polypropylene carbon fibre threads and/or a combination of any or all of these materials.

4.5.2 All external body panels which are manufactured from a composite material (front bumper, rear bumper, front wheel guards & side skirts), must be constructed in a way to ensure that any debris does not pose a risk of punctures to other Cars.

4.5.3 In addition to the approved components of the aero kit/Bodywork, as approved for use by

Supercars, the following items may be constructed from a composite material:

4.5.3.1 Driver's/passenger's seat
4.5.3.2 Intake trumpets (however not the inlet manifold)
4.5.3.3 Engine air box and inlet air ducting
4.5.3.4 Engine drive belt covers
4.5.3.5 Engine component heat shields
4.5.3.6 Cooling ducts
4.5.3.7 Fuel tank outer skin
4.5.3.8 Fuel tank outer skids
4.5.3.9 Door trims
4.5.3.10 Instrument fascia, gear box boot cover panel
4.5.3.11 Electrical isolation switch
4.5.3.12 Steering wheel switch mounts
4.5.3.13 Engine management system mounting plate
4.5.3.14 Data acquisition mounting plate
4.5.3.15 Dry break fuel receiver/vent covers
4.5.3.16 Dry break fuel fitting to Bodywork adaptor
4.5.3.17 False floor (Driver comfort)
4.5.3.18 Passenger floor (for Event Rides only)
4.5.3.19 Foot rest
4.5.3.20 External fresh air duct
4.5.3.21 Attachments to roll-over protection structure for anti-side intrusion purposes
4.5.3.22 Rocker covers
4.5.3.23 Rain light mount
4.5.3.24 Rear window brake light housing
4.5.3.25 Dashboard filler and airbag cover
4.5.3.26 Air conditioner mounts and covers
4.5.3.27 Driver Cooling Systems
4.5.3.28 Left hand mirror cover (where permitted)
4.5.3.29 bf1 systems TPMS trigger cover plate

NOTE: Where the layup of a particular component is specified as RA 175 T it is permitted to replace the specified material with Innegra® where appropriate.

I4.6 Exotic Materials

4.6.1 The following materials must not be used in the construction or modification of a Car, except as part of a Control Part or where specifically permitted by the Rules:

4.6.1.1 Titanium / Titanium alloy
4.6.1.2 Metal matrix composite (MMC) materials
4.6.1.3 Inter-metallic materials (Ti-Al, Fe-Al, Ni-Al, Ni-Co)
4.6.1.4 Iridium alloys (excluding spark plug electrodes)
4.6.1.5 Rhenium alloys
4.6.1.6 Alloys containing more than 5% Beryllium
4.6.1.7 Ceramic components and ceramic coatings – (excluding spark plugs, Bodywork insulation coatings, exhaust coatings, piston coatings, front bumper bar under trays, brake duct coatings).

I4.7 Manufacturing and Measuring Tolerances

4.7.1 When a Car is being examined, all measurements and tolerances will be those stated in the Rules, Design, the relevant VSD and ESD.

4.7.2 Where a measurement is specified as a maximum or a minimum value, this represents the limit of the permitted variation and no further tolerance will be applied.

4.7.3 All measurements will be taken at ambient temperature except where specified.

4.7.4 Any dispute regarding the compliance of a Car with any measurements in the Rules will be assessed, where appropriate, by the inspection of samples either physical or electronic held by Supercars or the Rules.

I4.8 Vehicle Datums

4.8.1 All dimensions relating to the construction and or modification of a Car will be taken in race condition without the Driver on board and will be expressed, where appropriate, in terms of a distance from the fixed datum origins.

4.8.2 For all items that are duplicated symmetrically about the Car centreline, only the positive value has been stated.

4.8.3 **X or Longitudinal datum** – is located on a vertical plane, at right angles to the vehicle centreline, at a specified distance from tooling holes or fixed points in the production Bodyshell as determined by Supercars. This plane also passes through the specified upper and lower rear trailing arm pivot points. Forward is positive.

4.8.4 **Y or Lateral datum** – is the vertical plane which passes through, and is parallel to the longitudinal centreline of the production Bodyshell, with values on the right hand side of the Car, as viewed from the rear, being positive.

4.8.5 **Z or Vertical datum** –is the horizontal plane located at a specified vertical distance from tooling holes or fixed points in the production Bodyshell as determined by Supercars. Up is positive.

I4.9 Traction Control

4.9.1 Traction control is prohibited.

4.9.2 The CTM in his sole discretion, which will not be subject to any Protest or Appeal, has the right to deem any form of program, device, system, component(s), mechanism(s) as traction control.

I5. SAFETY EQUIPMENT

I5.1 Seats

5.1.1 The Driver's seat must be of a type homologated by the FIA to the 8862/2009 standard.

5.1.2 Any seat used by a passenger in any Rides session must be replaced by another of a type homologated by the FIA to the 8855/1999 standard or 8862/2009.

5.1.3 All seats must be fitted in accordance with the requirements of Article 16: Seats, Attachment and Supports Belts - Article 253 of Appendix J to the ISC of the FIA. The mounting of the seat/s directly to the ROPS or dedicated integral replacement seat anchorage points is highly recommended. All other seats must be removed.

5.1.4 The replacement Driver's seat must be located as specified in the relevant VSD.

5.1.5 Each seat must be mounted to the seat mounting structures designed for the purpose within the Chassis.

5.1.6 Each Competitor must have a Car which can be fitted with the required safety equipment to undertake passenger rides when required.

I5.2 Not in use

I5.3 Safety Harness

5.3.1 A Car must be fitted with a safety harness that complies with the requirements of FIA Standard 8853/98 or 8853-2016, for each seat fitted in the Car, and must be fitted and worn as required by the Rules.

5.3.2 The safety harness must be installed and used in compliance with Articles 6.2 and 6.3: Safety Belts - Article 253 of Appendix J to the ISC of the FIA.

5.3.3 It is not permitted to attach any type of elastic or other springing medium/device to the shoulder elements of the approved safety harness.

5.3.4 The safety harness of any Car involved in any accident must be inspected by the CTM at the relevant Event. If appropriate, the Motorsport Australia log book will be endorsed with a requirement by the CTM that the safety harness be replaced.

I5.4 Window/Racing Nets

5.4.1 Each Car is required to have fitted a Driver's side window net, and where any Car is used to carry a passenger while on the Circuit, the Car must also be fitted with a passenger's side window net. All window nets must comply with the requirements of Article 11: Window/Nets - Article 253 of Appendix J to the ISC of the FIA in addition to the following:

5.4.1.1 They must be permanently attached to the ROPS along the lower edge of the net; and

5.4.1.2 They must be affixed to the ROPS above the relevant window by means of a rapid release system so that, even when the Car is inverted, it must be possible to detach the window net with one (1) hand; and

5.4.1.3 The window net when released from its operational position must retract so as not to impinge on the door opening when the Car is inverted; and

5.4.1.4 It is highly recommended that FIA 8863 2013 Racing Net/s (FIA Technical List N° 48) be fitted to both the left- and right-hand sides of the Driver's seat. These nets must be fitted in accordance with the FIA and manufacturer instructions. In the case of a Car fitted with a right-hand racing net, it is not required to fit a Driver's side window net, however, the fitment of this window net is recommended.

I5.5 Roll Over Protection Structure "ROPS"

5.5.1 Approval applications for a ROPS must be made to Motorsport Australia with a copy provided to the CTM on the same date.

5.5.2 All Cars must be fitted with a ROPS which must comply with the requirements of Article 8: Rollover Structures – Article 253 of Appendix J to the ISC of the FIA in the year that the Car was first issued with a Motorsport Australia log book, or comply with the Homologation Roll Over Protection Document issued by Motorsport Australia in that year, except as follows:

5.5.2.1 No part of any ROPS is to extend more than 100 mm past the top front or the top rear shock absorber mounting point on any Car with a Motorsport Australia log book first issued after 1 April 1999; and

5.5.2.2 With the exception of a single diagonal member, extending from the top of the windscreen pillar on the right-hand side of a Car to the bottom of the windscreen pillar on the opposite side, all Cars must comply with the requirements of FIA drawing No. 253-48.

5.5.2.3 An additional vertical member must be fitted from the centre of the door cross to the sill or sill bar and suitably gusseted in line with FIA Article 253 of Appendix J to the ISC 8.2.14.

5.5.2.4 Where appropriate, Driver's side door cross joints must be gusseted in line with FIA Article 253 of Appendix J to the ISC 8.2.14.

5.5.3 All Cars with a Motorsport Australia log book first issued on or after the 01/01/2007 must comply with the following:

5.5.3.1 The basic design of the ROPS must comply with FIA Article 253 of Appendix J to the ISC Drawing No. 253-7.

5.5.3.2 The minimum tube sizes and thicknesses for the various members must comply with the following table:

Member	Metric Tube Minimum (mm)	Imperial Tube Minimum (inches)
Main hoop	50 x 1.5	2.000 x 0.065
Front leg	45 x 1.5	1.750 x 0.065
Door crosses	45 x 1.5	1.750 x 0.065

5.5.3.3 Dimension A on FIA Article 253 of Appendix J to the ISC Drawing No 253-49 must be a minimum of 255.0mm.

5.5.4 All Cars with a Motorsport Australia log book first issued on or after the 01/01/2008 must comply with the following:

5.5.4.1 The basic design of the ROPS must comply with FIA Article 253 of Appendix J to the ISC Drawing No. 253-7.

5.5.4.2 The door bar crosses must comply with FIA Article 253 of Appendix J to the ISC Drawing No. 253-9 as a minimum.

5.5.4.3 The minimum tube sizes and thicknesses for the various members must comply with the following table:

Member	Metric Tube Minimum (mm)	Imperial Tube Minimum (inches)
Main hoop	50 x 1.5	2.000 x 0.065
Front leg	45 x 1.5	1.750 x 0.065
Door crosses	45 x 1.5	1.750 x 0.065
Main hoop crosses	40 x 1.0	1.500 x 0.049
Roof Diagonals	40.x 1.0	1.500 x 0.049
Upper windscreen	40 x 1.0	1.500 x 0.049
Rear back stays	40 x 1.0	1.500 x 0.049

5.5.4.4 Dimension A on FIA Article 253 of Appendix J to the ISC Drawing No 253-49

must be a minimum of 255.0mm.
NOTE: For Cars log booked on or after 01/03/2009 it is not permitted to drill and insert any type of bobbin into the main structure of the ROPS. The main structure is defined as any tube that is of a specified size in the Supercars Operations Manual.

5.5.5 All Cars with a Motorsport Australia log book first issued on or after the 01/01/2011 must comply with the following:

5.5.5.1 The basic design of the ROPS must comply with FIA Article 253 of Appendix J to the ISC Drawing No. 253-7.

5.5.5.2 The door bar crosses must comply with FIA Article 253 of Appendix J to the ISC Drawing No. 253-9 as a minimum.

5.5.5.3 The minimum tube sizes and thicknesses for the various members must comply with the following table:

Member	Metric Tube Minimum (mm)	Imperial Tube Minimum (inches)
Main hoop	50 x 1.5	2.000 x 0.065
Front leg	45 x 1.5	1.750 x 0.065
Windscreen Pillar reinforcement	40 x 1.5	1.500 x 0.065
Door crosses	45 x 1.5	1.750 x 0.065
Main hoop crosses	40 x 1.5	1.500 x 0.065
Roof Diagonals	40.x 1.5	1.500 x 0.065
Upper windscreen	40 x 1.5	1.500 x 0.065
Rear back stays	40 x 1.5	1.500 x 0.065
Rear back stay diagonal	40 x 1.5	1.500 x 0.065

All other tubes have a minimum wall thickness of 1 mm.

5.5.5.4 Dimension A on FIA Article 253 of Appendix J to the ISC Drawing No 253-49 must be a minimum of 255.0mm.

I5.6 Fire Extinguisher Systems

5.6.1 Each Car must be fitted with a fire extinguisher system, which complies with the requirements of Article 7.2: Extinguisher Systems - Article 253 of Appendix J to the ISC of the FIA in addition to the following:

5.6.1.1 All fire extinguisher systems must be fitted as per the manufacturer's instructions.

5.6.1.2 Minimum of 4.0 litres in capacity or 2.25kg of gaseous extinguishant;

5.6.1.3 Mounted:

a) on the left-hand side of the rear passenger's seat floor.
b) between the tailshaft tunnel and the left hand rear upper trailing arm box.
c) no further forward than the start of the horizontal section of the rear passenger's seat floor.
d) with the height being determined by the location of the fire extinguisher on the unmodified original panel.

I5.7 Not in Use

I6. BODY REQUIREMENTS

I6.1 Bodywork - General

6.1.1 All Bodywork and Bodyshell panels/components must remain unmodified and must be of the same shape, material and thickness as the Family of a Vehicle on which the Supercar is based.

6.1.2 Specific modifications to the Bodyshell panels/components are allowed only to the extent permitted under these Rules.

6.1.3 In all cases where an area is designated or mounting points defined within the Design or the Rules, these areas or mounting points must be used exclusively for the designated purpose.

4.1.2.1 All external panels are required to be attached to the internal panels using a minimum of 4mm steel rivet or equivalent size nut and bolt.

4.1.2.2 In addition to the above, using sealant to bond panels together is permitted.

6.1.4 Only the parts listed in the Delete Panel List or the Replacement Panel List contained in the VSD for each Car may be removed from the production Bodyshell.

6.1.5 Any repair work must conform to all requirements of all Rules in this Division I.

6.1.6 Strengthening of the fully sprung components of the Chassis and Bodywork is allowed provided that the material used follows the original shape and is in contact with it. The reinforcements must not create hollow sections and must not allow two separate parts to be joined together to form one. Except as specifically permitted in these Rules, no body cavities may be filled with any substance that is deemed, by the CTM, to increase the rigidity of the Car.

6.1.7 Weld flanges may be removed from the front Chassis rails and the joint butt welded.

6.1.8 Any non-metallic insulating, sound deadening or sealing material may be removed.

6.1.9 It is permitted to make the minimum modifications to the production Bodyshell in and around the rear axle assembly only in order to provide sufficient clearance for the rear axle assembly to achieve maximum wheel travel.

6.1.10 It is permitted to reinforce each rear Chassis rail with a single tube of a maximum size of 30mm OD x 1.5mm wall thickness, extending from the Chassis rail to the roll cage, subject to no part of such reinforcement extending rearward of a plane located at X = -1450.0 mm.

6.1.11 Reinforcement of the front suspension pivot points to the Bodyshell may be installed, subject to:

6.1.11.1 No part of such reinforcement extending forward of a plane located at X = 2420.0 mm.

6.1.12 It is permitted to complete the weight of the Car by one or several units of ballast provided that they are strong and unitary blocks, fixed by means of tools with the possibility of affixing seals, and capable of being sealed by the CTM. The ballast must be attached to the Bodyshell via 8.8 class bolts, with a minimum diameter of 8mm for each fixing point. Ballast may be added to removable components that have a specified minimum weight. The maximum relative density of any material used as ballast is 12.

6.1.13 It is permitted to modify the front Chassis rails forward of a point X=2420.0 mm, and the rear Chassis rails rearward of a point X=- 1450.0 mm, solely to facilitate repairs to the Chassis rails in the event of an accident. The original Chassis rail sections must be retained in all respects forward and rearward of these points as appropriate.

6.1.14 It is permitted to remove the central locking component of the door locking mechanism.

6.1.15 It is permitted to remove a section of the front of the 100 x 100 box section sill to create an angle on the front face, the measurements on any such modification must not be more than 60 x 60 mm and must have prior written approval on the CTM.

I6.2 Bodywork – External

6.2.1 All approved aerodynamic aids and exterior components must be identical to the samples submitted by each manufacturer to Supercars and be used exclusively and in their entirety and are to be used only for authorised Supercars activities.

6.2.1.1 The front guards for all Cars must be identical in shape as those samples held by Supercars. The composition of the front guards must comply with Schedule I18.

6.2.1.2 It is permitted for all Cars to be fitted with rear quarter panels that must be identical in shape as those samples held by Supercars. The composition of the rear quarter panels must comply with Schedule I15.

6.2.2 For the purpose of providing clearance to front suspension components or the fuel tank, it is permissible to remove material from the front/rear under tray provided that the cut area is suitably reinforced.

6.2.3 For all Cars the rear wing must be fitted so that it complies with all dimensions contained in the relevant VSD. With the exception of any modifications required, solely to achieve the dimensions contained in the relevant VSD, the holes provided in the rear wing and the rear wing mounts to facilitate adjustment, must remain identical to those contained in the samples approved and retained by Supercars and must be used exclusively.

6.2.3.1 Each Car that utilises wing end plate mounting is permitted to brace between the edge of the boot gutter and the Chassis rail to support wing loadings. The use of any such brace is subject to the prior approval of the CTM.

6.2.4 The sealing of holes in the mudguards is permitted.

6.2.5 Windscreen wiper motors, their position and the blades and mechanism are free subject to there being at least 1 windscreen wiper provided in the Driver's line of vision. The windscreen washer device, the washer bottle and their location is free.

6.2.5.1 It will be permitted to locally modify the polycarbonate windscreen and/or plenum to allow fitment of the windscreen wiper mechanism.

6.2.6 Door protective moldings, front and rear windscreen sealing moldings and external decorative strips, the maximum vertical height of which is less than 25mm, may be removed. Other external moldings/trims that have no aerodynamic effect may be locally modified for aesthetic reasons.

6.2.7 The fitting and use of pneumatic jacks and the necessary modifications for their fitment is permitted, but no "compressed air" bottle can be carried on board.

6.2.8 All external air line fittings must be located in or rearward of the "B" pillar (but in the general vicinity of the B Pillar) and must be recessed so they are not likely to cause injury, and the air jacks must always be manually operated from the Pit Garage side of the Car during any pit stop.

6.2.9 Covering lights

6.2.9.1 All external lights with lenses made of glass must be covered by a transparent adhesive film applied to the glass which must effectively prevent any broken glass from being spread onto the race track.

6.2.9.2 Headlamp covers may be fitted solely to protect the headlamp glass, and must effect no improvement to the Car's aerodynamic efficiency.

6.2.10 The registration plate mountings may be removed.

6.2.11 Any components which act as vibration insulators (e.g. engine mounts, gearbox mounts, cross member mounts) may be replaced with components of similar dimensions and free material.

6.2.12 All original closing mechanisms on the bonnet and boot lid must be rendered inoperative and the fitting of at least 2 separate fasteners for the front bonnet and rear boot lid are compulsory, notwithstanding the hinging arrangements. The fasteners must be of adequate strength and limited extensibility which must simultaneously hold the bonnet and boot lid closed.

6.2.13 The fasteners for the bonnet and boot must comply with the following:

6.2.13.1 The bonnet fasteners used must be of the design under British Patent 2089877 and all bonnet pins must be made of steel.

6.2.13.2 The boot fasteners used must be of the design under British Patent 2089877 and may be modified to suit the application subject to the locking pin being retained on the boot lid catch whilst not engaged.

6.2.14 It is permitted to remove or modify the rear wheel mudguard sheet metal material along the edge of the rear screen so as to facilitate the removal of the rear mudguard without removing the rear windscreen.

6.2.15 The front windscreen must be either polycarbonate material or laminated glass. The rear windscreen must be either polycarbonate material or toughened glass.

6.2.15.1 if polycarbonate, the screen must be a thickness of 6mm +/- 5% (the measurement does not include any tear offs or base coat) and must conform to the shape of the make and model of Automobile on which the Car is based. The front and rear polycarbonate windscreen must be connected to the Chassis by a minimum of bonding using a suitable bonding agent with 4 M6 bolts, one in each corner of the windscreen, and a vertical brace in the centre of the front screen with tensioning capability.

6.2.15.2 if laminated glass, it must conform to the VSD and Rule I6.3.10.

6.2.15.3 it is permitted to fit tear offs to the front windscreen.

6.2.15.4 it is permitted to fit a brace to a rear polycarbonate screen.

6.2.16 If because of damage it is necessary to remove the front windscreen, a replacement front windscreen will be required to be fitted. The fitment and retention of the replacement windscreen must be inspected by the CTM prior to that Car being allowed to re-join the Circuit. Refer to Schedule I5 for the minimum requirements of this retention system.

6.2.17 Any window mounted “NACA” duct must only be used for cooling the Driver and must therefore only have the effect of circulating air within the cockpit.

6.2.18 The front bumper retaining bolts on the exposed face of the bumpers must be either button heads or recessed into a retaining washer and all fixings must be able to be removed with a 5mm Allen key only.

6.2.19 The original engine bay scuttle/plenum seal which seals the engine compartment must be used where possible. If it is not possible to use the original scuttle/plenum seal in its entirety, the Car must be fitted with a scuttle/plenum seal of a design as nominated by the Homologation Team for that model of Car and approved by Supercars.

6.2.20 Front Bumper Mounting

6.2.20.1 The front bumper shall be securely mounted to the Bodyshell and must remain in compliance with all dimensions detailed in the relevant VSD at all times. No system or device, the intention of which is to permit relative movement between the front bumper and the Bodyshell is permitted. It is permitted to support the rear of the under tray from the Bodyshell or cross member provided their sole

purpose is to support the under tray. The mounting system for the front bumper bar must consist of a horizontal beam constructed of a minimum of 1.6mm thick aluminium or 1.2 mm thick steel and be round, square or rectangular in section between the front Chassis rails and be designed in such a way in the event of a frontal impact the bar mount will make contact prior to the Chassis rails and provide reasonable load spreading characteristics. Systems must be approved by the CTM.

6.2.20.2 The minimum weight for any front bumper bar excluding its mounting system is 12.5kg.

6.2.21 Rear Bumper Mounting

6.2.21.1 The rear bumper mounting is free.

6.2.22 Front Bumper Bar Air Intakes

6.2.22.1 It is permitted for air intakes in the front bumper to be partially or completely blanked provided that any blanking complies with the following:

6.2.23 Radiator Intake and Brake Ducts:

6.2.23.1 Blanking must only be fitted behind the homologated trim line of the radiator intake or brake ducts and must be either flat sheet or tape.

6.2.24 Front Bumper Bar Grill/s:

6.2.24.1 Blanking must only be affixed to the rear face of such grill/s.

I6.3 Bodywork – Internal

6.3.1 All carpets, padding, insulation material and lining must be removed from the cockpit.

6.3.2 The original heater and/or air conditioning unit may be removed together with its associated equipment.

6.3.3 Pipes carrying fluid through the cockpit must be of adequate strength and quality and must have no connections other than those on the front and/or rear bulkhead. Pipes carrying fluids to authorised accessories, e.g. power steering, may have connections within the cabin.

6.3.4 The Driver's compartment must be:

6.3.4.1 sealed from both the engine and luggage compartments to prevent the passage of flame and/or fluids into the Driver's compartment in the event of any leakage. This sealing must include the Car's "C" pillars. The rear firewall from the parcel shelf to the floor pan must comply with these minimum material thicknesses and be fixed by either welding or a minimum of 5/32-inch steel rivets with a maximum spacing of 50mm between each rivet:

Material Type	Minimum Thickness
Aluminium	1.2mm
Steel	0.6mm

6.3.4.2 Any Driver's compartment vent ducting passing through the front or rear firewalls must comply with the material specifications in Rule I6.3.4.1 or be constructed of stainless steel and have a total effective area of no more than 315cm^2 in each fire wall.

6.3.5 Components of the dashboard below a horizontal plane at the top of the glovebox lid or as defined in the relevant VSD may be removed. Fascia panels containing instruments, switches, and controls may be replaced by others of free design.

6.3.6 The Centre Console may be removed.

6.3.7 Only the minimum modifications necessary may be made to the dashboard to facilitate the fitting of any data display devices.

6.3.8 With the exception of clutch fluid reservoirs, windscreen washer bottles, Driver drink bottles and Driver cool suit units, all fluid reservoirs must be mounted outside of the cockpit.

6.3.9 It is permitted to make the top of the radiator support panel removable solely to facilitate changing the engine.

6.3.10 It is permitted to fit a brace, extending from the lower edge to the upper edge of the front windscreen opening, the sole purpose of which is to support a laminated glass windscreen in the event of its breakage.

I6.4 Modification for Mufflers

6.4.1 On the Holden VE and the Ford Falcon FG it is permitted to remove material from the left-hand sill no higher than Z+35mm and with a forward dimension of X+600 on the inner side and X+500mm on the outer side of the rail. The resulting hole must be capped with steel no less than 2mm thick and must be used for tailpipe clearance only. This modification must in no way compromise where the main hoop of the ROPS mounts to the sill.

6.4.2 The area of the original floor on the FG Ford and VE Commodore between X 150 and X 700 and Y-150 and Y-600 must not be used for any purpose other than to allow the fitment of mufflers and no other components may impinge on the surface defined by these measurements.

I6.5 Windscreens

6.5.1 If, as a result of damage, it is necessary to remove the front windscreen a replacement front windscreen must be fitted. The fitment and retention of the replacement windscreen must be inspected by the CTM prior to that Car being allowed to re-join the Circuit.

6.5.2 Each Car windows must remain identical to those of the production Automobile upon which the Car is based.

6.5.3 It is permitted to fit a clear film to the outside surface rear toughened glass screen.

6.5.4 It is permitted to fit transparent anti-fog protection film to the inside surface of the windows.

I6.6 Doors

6.6.1 The side anti-intrusion bars may be removed from doors subject to the ROPS providing lateral protection in the same general area.

6.6.2 Each Car must be fitted with a side impact protection device in both the front and the rear doors located on the Driver's side as detailed in Schedule I4.

6.6.3 The window winder mechanism may be removed from all doors.

6.6.4 The sliding windows in all doors must be removed and replaced with the following:

6.6.4.1 A clear polycarbonate insert.

6.6.4.2 The polycarbonate insert fitted to the front doors and rear doors must be the same size, shape and follow the same contour as the production window that it replaces.

6.6.4.3 The Driver's and passenger's windows may be removed partially or completely.

6.6.4.4 All sliding door windows are permitted to be fitted with "NACA" ducts or ventilation holes.

6.6.4.5 Window mounted “NACA” ducts must only be used for demisting the windscreen or cooling the Driver and must either:
a) only have the effect of circulating air within or extracting air from the cockpit.
b) Directing air to or extracting air from a driver cooling system.

6.6.4.6 The front Driver’s and passenger’s door window inserts must only be retained with the specified Christmas tree clip as detailed in Schedule I6 and also must have a handle hole which is located in the poly carbonate insert that complies with the provisions of Schedule I6.

6.6.4.7 The Driver’s and passenger’s door window inserts must be able to be removed by an Official at any time if so required.

6.6.5 The inner door panels may be removed from all doors and the Driver’s door may be modified to accommodate the fitment of a side impact protection structure as detailed in Rule I6.6.2

6.6.6 The original interior door trim may be replaced with an alternative panel.

6.6.7 The rear doors only are permitted to be retained by elastic strap, for the purpose of aiding a door to remain closed.

6.6.8 It is permitted to replace the steel Holden Commodore VE/Ford FG rear and LH front door skin with a composite replacement as specified in Schedule I12.

6.6.9 It will be permitted to remove or replace the standard manufacturer supplied Chassis mounted door sealing rubber with an alternative aftermarket sealing rubber provided it is visually similar and performs the same function as the standard rubber.

I6.7 Rear Vision Mirrors

6.7.1 A Car must be fitted with an internal rear vision mirror which has a reflecting surface of at least 5000mm^2, and the mirror must provide an unobstructed view to the rear of the Car.

6.7.2 A Car must be fitted with both a left-hand and right-hand side external rear vision mirror.

6.7.2.1 except at Newcastle East, Reid Park and Surfers Paradise Street Circuits where if the left-hand side external rear vision mirror is removed, the opening must be covered. The use of “race tape” to cover the opening is permitted”.

6.7.3 Unless otherwise permitted by the Rules, all external mirrors must remain as homologated. It is permitted to remove the standard adjustment mechanism and replace it with a fixed support for the mirror.

I6.8 Tailshaft Loops

6.8.1 All Cars must be fitted with full circle tailshaft loops which must be constructed so that, in the event of tailshaft failure, the tailshaft, its components and mountings will be effectively prevented from contact with the ground.

6.8.2 The tailshaft loops must be made of steel strap of 30 x 5 mm minimum and be securely attached to a reinforced area of the Bodyshell.

I6.9 Tow Hooks and Vehicle Recovery

6.9.1 All tools necessary for the removal of the front and rear bumper bars must be securely attached to the passenger side anti intrusion bar and be clearly identifiable to any recovery crew members.

6.9.2 A Car must be equipped with at least one (1) front and one (1) rear external towing strap which must conform to the following:

6.9.2.1 be constructed of suitable webbing material with a minimum width of 50mm; and

6.9.2.2 permit the insertion of a round bar of 40mm diameter; and

6.9.2.3 be fitted forward of the front axle and rearwards of the rear axle; and

6.9.2.4 be clearly visible, including being of a colour in contrast to the colour of the Bodywork immediately adjacent to the towing straps; and
6.9.2.5 be constructed and fitted in such a way that they will not damage other Cars; and
6.9.2.6 are capable of withstanding the loads applied during a recovery.

6.9.3 In addition to the requirements of Rule I6.9.2 above, a Car must be fitted with secondary internal tow straps, located inside the boot and under the bonnet, which will be used in more difficult recoveries. These secondary internal tow straps must:
6.9.3.1 be located in the boot and be securely attached to the Bodyshell, adjacent to the rear shock absorber mounting points and form a V or Y configuration with a single connection point which extends past the extremities of the rear bumper bar and permits the insertion of a round bar of 40mm; and
6.9.3.2 be located under the bonnet with two (2) individual straps that are securely attached to the front shock mounting point or adjacent ROPS and be a minimum length of 200mm and permit the insertion of a round bar of diameter 40mm; and
6.9.3.3 have adequate clearance around all components located in the boot and under the bonnet when being used; and
6.9.3.4 be rated to a minimum load rating of 1500kg; and
6.9.3.5 have gas struts to hold the boot lid open or similar must be fitted and be fully operational.

I6.10 Aerodynamics

6.10.1 Other than the Bodywork, no part of a Car is permitted which actually or potentially increases downforce or reduces drag.

6.10.2 The CTM may at any time require:
6.10.2.1 any sensor/s to be fitted to a Car to measure the aerodynamic performance of a Car; and
6.10.2.2 any Car to be tested for aerodynamic performance by any means and at any location to ensure aerodynamic parity.

I6.11 Additional Accessories

6.11.1 All accessories which have no influence on the Car's behaviour are allowed, for example equipment which improves the aesthetics or comfort of the Car interior (lighting, heating etc.). In no case may these accessories increase the engine power or influence the steering, transmission, brakes, or road holding even in an indirect fashion.

6.11.2 The horn may be removed or replaced.

6.11.3 Other than the Bodywork, and the approved aerodynamic aids, no part of a Car is permitted which, in the opinion of the CTM, actually or potentially increases downforce or reduces drag; and no Appeal or Protest will lie against the written opinion of the CTM in this regard.

I6.12 Roof Duct

6.12.1 The fitment of the roof duct if fitted must be 100 mm +/- 10 from the upper edge of the windscreen aperture and in accordance with any instructions as advised by the CTM.

6.12.2 The attachment of additional ducting to the Supercars roof duct is permitted and the design of this ducting is free if it is being utilised for Driver cooling.

6.12.3 Supercars roof ducts are available from: Lightning Composites Ph. (07) 5571 7348.

I7. SUSPENSION

I7.1 General

7.1.1 The type of suspension and springing medium must always be as stated in the relevant VSD.

7.1.2 The number and position of the suspension pivot points, as detailed in the relevant VSD, must be used in their entirety and exclusively.

7.1.3 The lateral location of the rear axle may be by watts link only;

7.1.3.1 the mounting points for which are free all parts other than the adjusting mechanism must not be located forward of the rear axle centreline. Please refer to Schedule I3 for a schematic definition of a watts link.

7.1.3.2 the watts linkage mounting rail on both the VE Commodore and FG Falcon may be constructed using chrome molly with the following maximum dimensions: 2" square RHS with a maximum wall thickness of .065" as an alternative to the specifications currently detailed in the VSDs and CAD.

7.1.3.3 The position of the watts rail in the X dimension may be varied to suit the various watts pivot bracket designs and may be installed between Z 300mm and Z 315mm to the bottom face on both vehicles.

7.1.4 The detachable front suspension cross-member is free, on condition that:

7.1.4.1 It is possible to remove it from the Car (no attachment by welding); and

7.1.4.2 The suspension pivot points are not altered from the approved location, save for those freedoms allowed in Rule I7.2; and

7.1.4.3 It utilises the two (2) rear mounting points as provided for this purpose in the automobile from which the Car was derived. It is permissible to relocate these two (2) rearward mounting points forward so as the mounting hole centres are no further forward than 2085.0mm; and

7.1.4.4 It is not permitted to have additional mountings for the cross member rearward of the rear mounting points as defined in I7.1.4.3; and

7.1.4.5 It must not be constructed or modified in any way that in the opinion of the CTM improves its aerodynamic effect on the vehicle.

I7.2 Suspension Pivot Points

7.2.1 For all Cars the suspension pivot points on the body/Chassis may only be relocated up to 20mm vertically from the approved point. This point must be used as the pivot point for the suspension (e.g. no extension or relocation of this part of the suspension is permitted).

7.2.2 It is not permitted to use devices which vary the motion ratio on any suspension links unless specifically allowed by these Rules.

I7.3 Front Upright

7.3.1 The minimum weight of each front upright must be 10.5kg.

7.3.2 The weight of the upright will be determined after disconnecting the upright from the outer joints of the upper and lower wishbones and steering arm. The disc and caliper will be removed, and all the ducting and electrics will be disconnected at the closest joint to the upright. The upright weight will include all mounting bolts, nuts, washers, and spacers removed during disassembly of the upright from the Car.

I7.4 Anti-Roll Bars

7.4.1 Anti-roll bars must be of the same basic design as those fitted to the production Automobile on which the Car is based, except for the following:

7.4.1.1 Adjustment of the stiffness of the anti-roll bars from within the cockpit is permitted and is the only adjustment which can be made by the Driver to the roll bar mechanism. The adjustment of stiffness must only be achieved by the rotation of either 1 or 2 spring steel blades or telescopic arms attached directly to either end of the torsional tube/bar of the roll bar mechanism.

7.4.1.2 Anti-roll bars must only be mounted to the underside of the Bodyshell or to the rear axle housing. All links connecting the anti-roll bar to the suspension or the Bodyshell must be of a fixed length.

7.4.1.3 A rocker, which varies the motion ratio between the anti-roll bar and Bodyshell or suspension is permitted.

I7.5 Shock Absorbers

7.5.1 A Car must only be fitted with any of the dampers designated in the following table:

Brand	Model	
Ohlins	TTX 40*	TTX40* MkII
Sachs**	Formula Matrix	Formula Matrix TRD*
Supashock	S002-010 F/R	

NOTE: ** Shaft through design

** Teams using the Formula Matrix must utilise the adjuster block with Part No.001706999019 or Part No. 001706000309.

7.5.2 The dampers listed in Rule I7.5.1 must only be fitted with the pistons designated in the following table:

The pistons designated in the table below by part number are the only pistons allowed in the specified dampers and must function as the manufacturer intended.

OHLINS TTX 40 and TTX 40 MkII		SACHS Formula Matrix and Formula Matrix TRD	
06113-01	Mk1. And MkII	001706-999015	Digressive/digressive
06128-02	Blow off MkII w Bleed	001706-999016	Linear/digressive
06234-01	HF MkII	001706-999027	Linear/digressive
06234-10	Blow off MkII	001706-999056	Linear/Linear
06234-11	HF+ Blow off.MkII	001706-999057	Linear/Linear w Bleed
Supashock S002-010 F/R		001706-999073	Blow off
S002-001-226-0	Linear/linear		
S002-001-225-0	Linear/digressive		
S002-001-224-0	Digressive/digressive		

7.5.3 The dampers and their internal components as available and supplied by the manufacturer must be equally available to each Team. No modification is permitted to any catalogue part that may affect the passage of oil within the damper.

7.5.4 These will be identified by the means of detailed drawings, photographs, specifications, and samples held by Supercars.

7.5.5 The Shock Absorbers must comply with the following requirements:

7.5.5.1 Adjustment of any shock absorber from the cockpit is forbidden; and

7.5.5.2 All damper units must function independently of each other, i.e. no connections are permitted between units; and

7.5.5.3 The shock absorber mounts on the body/Chassis may be relocated within a 20 mm radius of the approved point; and

7.5.5.4 The use of electronically adjustable shock absorbers is forbidden; and

7.5.5.5 Only one (1) shock absorber per wheel is permitted; and

7.5.5.6 Only four (4) shock absorber characteristics that can be adjusted from the outside of each shock absorber are permitted, but this number does not include shock absorber gas pressure adjustment; and

7.5.5.7 The only form of droop control permitted is a solid spacer internal in the shock absorber, controlling the open length of the shock absorber.

7.5.6 For all Cars:

7.5.6.1 The shock absorbers will be deemed to pivot and mount to the body/Chassis at the same point. The location of this point must comply with all other parts of Rule I7.5.5.3, and

7.5.6.2 The coil springs fitted to the front and rear suspension must only be mounted on the shock absorber in a “coil over” configuration, and only a single linear coil spring per shock absorber will be permitted.

7.5.6.3 For the purposes of I7.5.6.2 above, a liner coil spring is defined as a spring that is wound from a nominally constant diameter wire with an inside diameter that is nominally constant for the length of the spring and, when tested, increases its load lineally.

7.5.6.4 The shock absorber/spring assembly fitted to the front suspension must be mounted to the body/Chassis as detailed in Rule I7.5.5.3 and must attach directly to the lower wishbone.

7.5.6.5 The shock absorber/spring assembly fitted to the rear suspension must be mounted to the body/Chassis as detailed in Rule I7.5.5.3 and must attach directly to the rear axle assembly.

I7.6 Suspension Adjustment

7.6.1 Where the Rules permit the adjustment of the suspension of a Car, the force required to make such an adjustment must only be generated and controlled as follows:

7.6.1.1 By a member of the Team permitted to work on the Car, while the Car is stationary; or

7.6.1.2 By the Driver, seated normally in the Car with the safety harness correctly fastened, when the Rules permit such an adjustment by the Driver from within the cockpit.

7.6.2 Any device which allows the front or rear roll centre of a Car to be altered or adjusted from the cockpit is forbidden.

7.6.3 Any device or system which does or has the capacity to adjust the ride height of a moving Car is forbidden.

I8. ENGINE

I8.1 General

8.1.1 Each make/model of Car must only be fitted with a cylinder block and cylinder heads as detailed in the relevant VSD.

8.1.1.1 All engines used during an Event must comply with all the dimensions in these Rules.

8.1.2 The maximum Engine Capacity permitted is 5000cc +25cc.

8.1.2.1 With prior express permission in writing and with all restrictions applied by the CTM a cylinder block may be bored to achieve a total capacity of 5025 cc. All other engine dimensions will still apply.

8.1.3 The compression ratio must not exceed 10.0:1.

8.1.4 The engine must not produce power above 7500 rpm.

8.1.5 All engines must have suitable provision for the cylinder heads, sump and distributor/water pump to be sealed to the cylinder block so that the cylinder heads, sump and camshaft are not able to be removed. Once an engine has been sealed by the CTM, the seals must remain intact and legible at all times. These seals must only be removed by the CTM or with the express prior approval of, and subject to the conditions of, the CTM.

8.1.6 The minimum engine component weights stated in Rules I8.7.2, I8.8.2 & I8.9.2 must be complied with at all times during any Event. It is permitted to use components which do not comply with these minimum weights during Rides and Testing.

8.1.7 All Ford engines fitted with D3 cylinder heads and all HMS Holden engines, must maintain the same positioning of the cylinder heads in relation to the cylinder bore centre line. The bore centre line must be in the same position as specified by the engine manufacturer and the sample cylinder blocks held by Supercars.

8.1.8 All Ford D3 and HMS Holden inlet and exhaust valve positions in the cylinder head must remain as specified by the engine manufacturer and the sample cylinder heads held by Supercars. NOTE: A radial tolerance of 1.0mm will be applied to both inlet and exhaust valve centre lines with this dimension being measured at the cylinder head face.

8.1.9 All Cars must only mount and locate the engine, bell housing and gearbox combination by means of the engine mounts and the rear gearbox cross member mount.

8.1.10 No engine component or accessory is permitted to be constructed of magnesium alloy.

I8.2 Other Engine Components

8.2.1 Subject to these Rules, all of the other components necessary for the functioning of the engine including exhaust systems, and the lubrication system are free.

8.2.2 Where a dry sump system is utilised, the engine oil pressure/scavenge pump assembly must be mounted at the front of the cylinder block (to either side) and be belt driven via an adaptor, off the nose of the crankshaft.

8.2.3 All Cars must be fitted with crankcase/oil tank breather/s discharging to the atmosphere and have fitted to such breather/s an oil-trap container (which must be empty at the start of Competition) of at least three (3) litres capacity.

8.2.4 Camshafts are free, but not their number and location, which must remain as approved, and any device which varies the valve timing whilst the engine is operating is prohibited.

8.2.5 The only camshaft and valve train components permitted to be used is the Supercars control camshaft and components as detailed in the ESD.

8.2.6 The flywheel must be made of steel.

8.2.7 The flywheel ring-gear must either be an integral part of the flywheel itself or must be attached to the flywheel in the same manner as in the original Automobile from which the Car has been derived.

8.2.8 The ignition distributor may be removed from its original location. The drive for the relocated distributor must be used exclusively by the distributor.

I8.3 Cooling System

8.3.1 Subject to the provisions of the Rules, the cooling system, including the water pump, fans, screens and catch tanks are free.

8.3.2 The water pump must be driven directly by the crankshaft via a belt and must be mounted in the same position as in the production Automobile from which the Car is derived.

8.3.3 The cooling system must be arranged so the general direction of flow of engine coolant is from the radiator to the cylinder block and then to the cylinder heads.

8.3.4 A replacement radiator may be fitted subject to:

8.3.4.1 There being no modification to the Bodywork; and

8.3.4.2 It being fitted in the same general location relative to the engine.

8.3.5 Ducting to the front face of the water radiator is permitted within the perimeter of the Bodywork but not lower than the lower edge of the front bumper.

8.3.6 Ducting of air from the rear of the water radiator is prohibited.

8.3.7 Engine oil radiators are free and ducting to them is permitted, subject to the radiator/s and associated ducting being located within the perimeter of the Bodywork and not lower than the lower edge of the front bumper.

8.3.8 No part of any ducting whatever the purpose of such ducting is permitted forward of a line drawn between the upper and lower edges of the rear opening in the approved front bumper.

I8.4 Exhaust System

8.4.1 All Cars must be fitted with an exhaust system, the outlet pipe/s of which must be directed either rearwards or sideways.

8.4.2 If directed rearwards, outlet pipe orifices must be between 100mm and 450mm above the ground and they must not protrude by more than 50mm beyond the rearmost portion of the Car.

8.4.3 If directed sideways, outlet pipe orifices must be located aft of a vertical plane passing through the midpoint of the wheelbase.

8.4.4 In any case, outlet pipe orifices must neither project in any way beyond the maximum width of the Bodywork, nor terminate at a point more than 20mm outside the adjacent Bodywork.

8.4.5 All exhaust pipes must be adequately protected in order to prevent burns.

8.4.6 The exhaust system must be a complete and contiguous unit and exhaust gas may exit only at the end of the system.

8.4.7 No component of the Chassis may be used to evacuate exhaust gases.

8.4.8 All Cars must be fitted with effective mufflers which diminish the sound of the engine exhaust so that the maximum exhaust noise does not exceed 95dB(A) measured at 30 metres from the side of the Circuit by approved measuring equipment.

8.4.9 The exhaust primary headers on all Cars must have a minimum wall thickness of 1.2mm (18 gauge).

I8.5 Inlet System

The inlet/induction system is free, except that:

8.5.1 The engine must be normally aspirated.

8.5.2 With the exception of ambient atmospheric air and the specified control fuel approved for use in the Category by Supercars, no other substance may be added to the intake charge of the engine.

8.5.3 Any device which alters the configuration of the inlet manifold, induction system (e.g., moveable inlet rams) or exhaust while the engine is operating is prohibited.

8.5.4 Throttle actuation must be exclusively by “butterfly” for all Cars.

8.5.5 There must be a direct mechanical connection from the accelerator pedal to the throttle/s of the engine, so the energy used to activate the throttle/s must be exclusively generated and controlled by the Driver’s foot. This mechanical link must maintain a fixed relationship between the throttle pedal and the butterfly.

8.5.6 With the exception of the full throttle stop and idle adjuster, any device which allows the throttle to be artificially positioned by resisting the force of either the Driver's foot or the throttle return mechanism is prohibited.

8.5.7 The throttle linkages must be fitted with suitable return springs, which in the event of a failure in the throttle linkage, will return each throttle bank to the closed position.

8.5.8 The maximum fuel pressure permitted at any time is 5.5 bar.

8.5.9 Only one fuel injector per cylinder is permitted which must inject fuel directly into the side or the top of the manifold or trumpet only.

I8.6 Cylinder Block

The following conditions apply to the approved cylinder block:

8.6.1 The bore size must be 101.473mm or greater; and

8.6.2 The fitment of sleeves to the cylinders is permitted; and

8.6.3 The nominal section of each cylinder must be circular; and

8.6.4 The location of the cylinder block within the Bodyshell, as measured from the front edge of the oil pan mounting flange must be as stated in the relevant VSD; and

8.6.5 The axis of the crankshaft (the pitch angle of the engine) must be a minimum of two (2) degrees and a maximum of four (4) degrees downwards to the rear with respect to the Supercars “Z” datum.

8.6.6 The engine mounts are free but not their number nor position.

8.6.6.1 It is permitted on the Ford cylinder block to utilise additional engine block mounting points. The additional engine block mounting points must be placed in the pan rail and must not be located past the 2nd and 3rd main bearing journals on either side of the cylinder block.

8.6.6.2 It is permitted to mount the engine by the sump to the front suspension cross member complying with Schedule I7. All designs of this type are required to be submitted to the CTM prior to being implemented by a Team.

8.6.6.3 No other component or accessory is permitted to locate or mount the engine to the Chassis.

8.6.7 The cylinder head face must remain at 90° to the cylinder bore centreline.

8.6.8 It is permitted to add or remove material to or from the cylinder block, subject to:

8.6.8.1 the integrity of the original casting of the cylinder block being respected; and

8.6.8.2 that no attempt is made to vary the basic Design of the cylinder block beyond modifications permitted in these Rules.

8.6.9 It must always be possible for the cylinder block to be identified as the approved cylinder block.

8.6.10 The minimum deck height of all Ford and Holden motorsport cylinder blocks is 207.0mm. It is permitted to use components that do not comply with this dimension during Rides and Testing only.

8.6.11 The camshaft lifter bores must remain in the same location as specified by the manufacturer and the samples held by Supercars on the Ford M 6010 Boss 302 and the Holden Motor Sport 22534350 cylinder blocks.

8.6.12 Cylinder Block Weight

8.6.12.1 The minimum weight of any cylinder block used will be 70kg. The weight of the block will include any core/oil gallery and rear cam tunnel plugs, cam bearings and any internal oil feed or scavenge lines and removable rear main seal carrier.

8.6.12.2 A block that is less than 70kg is permitted to have ballast weight to bring it up to 70kg placed on either:

a) the Chassis rail no further rearward than X+1855, no lower than the underside of the front Chassis rail and must not protrude more than 25mm from the inner face of the front Chassis rail and be equally distributed side to side of the vehicle; or

b) the block itself in a position approved by the CTM that does not lower the centre of gravity of the block.

8.6.12.3 The maximum relative density of any material used as ballast is twelve (12).

I8.7 Cylinder Head

Subject to the Rules contained in Division I and the dimensions contained in the relevant VSD.

8.7.1 Modifications to the cylinder head are free, save for the following:

8.7.1.1 It is permitted to add material to the cylinder head provided that the integrity of the original casting is respected and that no attempt is made to vary the basic Design of the approved component beyond the permitted modifications and that it must always be possible for the cylinder head to be identified as the approved part.

8.7.1.2 The original spark plug location must be retained in all respects.

8.7.1.3 It is permitted to use valves, valve spring retainers and collets manufactured from Titanium alloy.

8.7.1.4 Valves must only be opened by mechanical action and closed by means of coil springs.

8.7.1.5 For all Ford and Holden motorsport engines, the maximum inlet valve diameter is 53.97mm (2.125 inches).

8.7.1.6 The minimum inlet and exhaust valve stem diameter is 7.0mm.

8.7.1.7 The inlet and exhaust valve heads and stems must be solid.

8.7.2 Cylinder Head Weight

8.7.2.1 The minimum weight of any plain bare cylinder head used will be 12.5 kg. The weight of the head will include valve seats, valve guides and rocker cover studs.

8.7.2.2 A head that is less than 12.5kg is permitted to have ballast weight to bring it up to 12.5kg placed at the rear of that head attached by bolts or studs.

8.7.2.3 The maximum relative density of any material used as ballast is 12.

I8.8 Pistons

8.8.1 No part of the piston may protrude beyond the cylinder head face of the cylinder block when the piston is at TDC.

8.8.2 The minimum weight of each piston including the piston pin, but not including the piston rings or retainers is 500 grams.

I8.9 Connecting Rods

8.9.1 Connecting rods must only be made of Ferrous Material.

8.9.2 The minimum weight of each connecting rod including the connecting rod bolts, nuts and washers but not including the 'big end' bearings is 500 grams.

I8.10 Crankshaft

8.10.1 The crankshaft must respect the approved crankpin phasing and throw angles as detailed in the relevant VSD.

8.10.2 The stroke of the crankshaft must be a maximum of 77.22 mm and a minimum of 75.18mm.

8.10.3 The minimum crankshaft 'big end' journal diameter is 47.45 mm.

8.10.4 The minimum crankshaft 'main' journal diameter is 56.65 mm.

8.10.5 The minimum weight of any crankshaft is 16.5kg including the spigot bearing/bush, but not including any keys, bolts or other external drive components.

I9. FUEL SYSTEM

I9.1 Fuel Tank Requirements - General

9.1.1 All Cars must be fitted with a fuel tank conforming to the FIA specification FT3, FT3 - 1999, FT3.5-1999 or FT5 and be ethanol compatible.
NOTE: The validity of these tanks expires five (5) years from the date of manufacture shown on the tank. An additional 2-year waiver may be granted provided the tank is returned to the fuel tank manufacturer for inspection.

9.1.2 Fuel tanks must be mounted inside, under or through the floor of the luggage compartment.

9.1.3 No part of the fuel tank may be situated forward of the rear axle centreline.

9.1.4 All openings in the fuel tank bladder must only be located in the top surface of the tank.

9.1.5 Cars must have a fuel tank which is rectangular in section in all planes with minimum inside corner radii and which must not exceed 115 litres capacity except where Rule I9.1.7 applies.

9.1.6 Cars must have a fuel bladder with the following nominal dimensions - Width: 850mm x Length: 430mm x Height: 315mm except where Rule I9.1.7 applies.

9.1.7 If using the Supercars “Control Sprint” fuel cell, it must be fitted symmetrically about the Y axis and with the filler/vent orifices to the rear of the Car. When this fuel cell is fitted it is mandatory to fit false sides within the fuel tank housing to the specifications listed in Rule I9.2.1.1 and comply with requirements of Schedule I16.

9.1.8 The total capacity of the entire fuel system must not exceed the marked volume of the Supercars fuel tank capacity checking vessel which is approximately:

9.1.8.1 120 Litres

I9.2 Fuel Tank Housing

9.2.1 For all Cars the fuel tank must be mounted in a metal container of which each of the 4 sides and the base conforms to one of the following specifications;

9.2.1.1 if made of aluminium, a minimum thickness of 2.0mm or 1.6 mm. Each fuel tank mounting container must be wrapped in kevlar with a minimum layup as detailed in Schedule I16; or

9.2.1.2 if made of steel, a minimum thickness of 1.2 mm.

9.2.2 Any gap between the fuel bladder and its housing must be filled with semi rigid energy absorbing material such as polyurethane foam.

9.2.3 The underside of the fuel tank housing must not be any higher than Z=15.0mm and remain parallel to the “Z” datum (+/- 2.0 degrees). The front face of the fuel tank housing must be no further forward than X-930.

9.2.4 It is permitted to fit a crushable structure to the rear of the fuel tank housing. The sole purpose of this crushable structure is to provide additional protection to the fuel tank in the event of a collision. Any such structure must be housed within the homologated rear diffuser.

9.2.5 There must be a vertical step from the underside of the fuel tank housing to the start of the crushable structure of at least 10.0mm on the rear face of the fuel tank housing.

9.2.6 The fuel tank housing will be nominally 855 +/-5 mm wide and 435 =+/- 5 mm long.

9.2.7 It is strongly recommended that the fuel tank housing utilise a top cover constructed of either aluminium or composite material with a sandwich construction minimum of 19mm thick total to stiffen the top face of the fuel tank housing.

I9.3 Fuel Lines

9.3.1 All Cars must be fitted with fuel lines made of suitable material which is of adequate strength and durability, e.g. metal tube or braided hose.

I9.4 Fuel Tank Vent

9.4.1 The fuel tank must be vented externally of the Bodywork and include a suitable roll over valve.

I9.5 Filler / Vent Units

9.5.1 It is strongly recommended that Cars not be fitted with FIA style dry break systems and that all refuelling procedures must conform to Rule D26- Fuel and Refuelling.

9.5.2 The position of the filler/vent unit may be changed so long as the new installation does not protrude beyond the Bodywork and ensures that no fuel will leak into any of the interior compartments of the Car.

I9.6 Fuel Collector Pot

9.6.1 A fuel collector pot of free design and material with a maximum capacity of 8 litres is permitted.

I9.7 Fuel Cooling

9.7.1 The use of any device or substance to decrease the temperature of the fuel at any time during an Event is forbidden.

9.7.2 It will be permitted to insulate the fuel system on the Car with heat barrier insulating materials.

I10. TRANSMISSION / DRIVELINE

I10.1 General

10.1.1 With the exception of those matters contained in Schedule I1, the final drive ratios listed in Rule I10.6.10 and the following matters listed in this Rule, all other components of the drive train, including the axles are free.

10.1.2 Additional oil radiators and pumps for the gearbox and final drive assembly are allowed within the external perimeter of the Bodywork, and air may be ducted to them but no aerodynamic benefit may be derived from such ducting and the external appearance of the Car must remain unchanged.

I10.2 Flywheel

10.2.1 Each Car must be fitted with a steel flywheel.

10.2.2 The minimum weight of the flywheel including clutch cushioning buttons and crank trigger teeth attached will be 2.0kg.

I10.3 Clutch

10.3.1 The clutch must only have three (3) driven plates that transmit torque directly to the input shaft of the gearbox.

10.3.2 The clutch must be controlled exclusively by the Driver's foot via a mechanical and/or hydraulic actuation system. Systems other than this may be approved by Supercars under exceptional circumstances.

10.3.3 The clamping force which acts on the friction surfaces must be derived solely from a diaphragm spring.

10.3.4 With the exception of the fixed pedal stops, any device which allows the clutch to be artificially positioned, or its speed of engagement to be varied by resisting the force of either the Driver's foot or the diaphragm spring, is prohibited.

10.3.5 The clutch driven plate/s must be of at least 180mm diameter.

10.3.6 The use of titanium and carbon fibre components within the clutch is permitted.

10.3.7 Any device which allows or facilitates any aspect of clutch operation to be monitored in any way is forbidden.

10.3.8 The force required to disengage the clutch must only be applied towards the flywheel.

10.3.9 The machining of surfaces for the purpose of achieving clutch plate preload is permitted.

I10.4 Gearbox

10.4.1 All Cars are only permitted to be fitted with the Holinger RD6S gearbox.

10.4.1.1 The Holinger RD6S is to be used in its entirety and the only modifications permitted are industry accepted polishing and detailing which must not change the basic Design or operation of the component being detailed and the items listed in Rule I10.4.1.12.

10.4.1.2 It is permitted to use gears and dogs of a different manufacturer subject to them being identically similar to the original components and complying with the samples held by Supercars.

10.4.1.3 All replacement parts (other than gears, dog rings, bearings and gear position sensor) will be required to be purchased through Holinger Engineering and conform to the parts listed in the gearbox drawing exploded view titled RD6-SF which is held by Supercars.

10.4.1.4 The internal gearbox pump is the only pump allowed to be used for the purposes of lubrication and the transfer of fluid to and from a gearbox cooler.

10.4.1.5 There must be six (6) forward gears, the ratios of which must be those listed in the following table:

Gear	Ratio	Tooth Count
1st	2.57:1	14/33
2nd	1.99:1	17/31
3rd	1.60:1	19/28
4th	1.35:1	21/26
5th	1.14:1	23/24
6th	1.00:1	Constant Mesh 22/24

10.4.1.6 The maximum dimension from the cylinder block/timing cover face to the rear of the gearbox casing (excluding the extension housing) being 1291.5mm.

10.4.1.7 All gears must be selected by the Driver exclusively via a sequential mechanism.

10.4.1.8 The use of any electronic, hydraulic or pneumatic gear selection device or assistance is prohibited with the exception of the switch permitted in Rule I10.4.1.10.

10.4.1.9 The rear gearbox to Chassis cross members and mountings are free; subject to the rear mounting attaching to the gearbox intermediate or rear casings mounting areas supplied by the manufacturer.

10.4.1.10 A gear lever mounted switch, which must only provide a gear shift cut signal to the ECU may be fitted. This gear shift cut must only operate above an engine speed of 6800 rpm.

10.4.1.11 It is permitted change the tailshaft drive output flange of the gearbox.

10.4.1.12 Permitted modifications to the RD6S gearbox:

a) use another type of gear position sensor provided it can be fitted to the gearbox in the same position with no modification to the gearbox casings or internals.
b) add a magnet to the drain plug.
c) use double roll pins on the selector forks.
d) use lock wire, locktite, vibration proof washers.
e) change casing nuts.
f) modify the ratchet pawl spring retention plug from slot drive to hex drive.
g) modify gearshift lever to suit Driver position/comfort and accommodate the various gear cut activation switches available.
h) repair any damaged threads.
i) it will be permitted to modify the gearbox in the area where the shift mechanism mounts to the rear of the gearbox casing provided any such modification has no effect other than to strengthen the mounting of the shift mechanism. Any such modification must have prior written permission from the CTM.
j) non-standard drain plug.

I10.5 Tailshaft

10.5.1 The tailshaft must be made of Ferrous Material.

10.5.2 It must have a minimum weight (not including the centre bearing mounting system) of 9.7kg.

10.5.3 The minimum tube size of the tailshaft will be 2.25” (nominal).

10.5.4 Universal (Cardan Joints) or CV joints (Rzeppa CV Joints) are the only joints permitted to be used in the tailshaft assembly.

I10.6 Rear Axle Assembly

The rear axle assembly is free except for the following matters:

10.6.1 The minimum weight of the rear axle assembly is 115 kg, which is the unsprung weight of the unit as it would be used in practice, qualifying and racing, with the complete rear wheels removed and with all ancillary components disconnected (e.g. shock absorbers, lateral suspension and anti-sway bar links, brake lines, electrical wiring, lubrication hoses etcetera).

10.6.1.1 The components referred to in Rule I10.6.1 must be disconnected at the joint nearest the rear axle housing; and

10.6.1.2 The longitudinal suspension trailing arms must be attached at both the body/Chassis unit and the rear axle housing, and all pivot arrangements must move freely; and

10.6.1.3 The tailshaft must remain connected at both ends.

10.6.2 The final drive must contain a spool made of Ferrous Material and the complete rear axle assembly must not incorporate any differential action.

10.6.3 The crown wheel and pinion must be of hypoid design and must conform to the requirements of the final drive specification contained in Schedule I1.

10.6.4 The minimum pinion bearing surface diameters must be:

Front bearing surface diameter	28.14 mm nominal
Rear bearing surface diameter	33.35 mm nominal

10.6.5 The crown wheel and pinion must have a minimum weight as stipulated in the following table. The addition of ballast to the pinion is strictly prohibited:

Ratio	Combined Weight CWP
3.70 : 1	7.9 kg
3.50 : 1	8.0 kg
3.25 : 1	7.5 kg
3.15 : 1	7.9 kg

10.6.6 The rear axles (drive shafts) must be co-axial to each other and be parallel to the ground for a distance of 600mm each side of the longitudinal centre line of the Car.

10.6.7 The minimum weight for a pair (right hand and left hand) of axles must be 7.0kg.

10.6.8 The rear axles will be permitted to be either hollow or solid.

10.6.9 The use of drop gears are not permitted anywhere in the rear axle assembly.

10.6.10 Only the following listed final drive ratios will be permitted at the following Circuits:

Circuit	Final Drive Ratio	Teeth
Adelaide Parklands 2 Circuit	3.7:1	37/10
Hidden Valley Raceway	3.5:1	35/10
Mount Panorama Circuit	3.15:1	41/13
Newcastle East Street Circuit	3.7:1	37/10
Queensland Raceway	3.5:1	35/10
Phillip Island Grand Prix Circuit	3.25:1	39/12
Sandown International Raceway	3.5:1	35/10
Surfers Paradise Street Circuit	3.5:1	35/10
Sydney Motorsport Park	3.25:1	39/12
Symmons Plains International Raceway	3.5:1	35/10
The Bend Motorsport Park	3.25:1	39/12
Townsville Street Circuit	3.5:1	35/10
Wanneroo Raceway	3.5:1	35/10
Winton Motor Raceway	3.7:1	37/10

NOTE: The ratios nominated above may be varied with other ratios from the above table at a Team Supercars Test day for running in purposes only.

I10.7 Not in use

I11. BRAKES

I11.1 General

11.1.1 All Cars must be fitted with a dual circuit braking system operated by the same pedal. The pedal shall normally control all the wheels. In the case of leakage at any point of the brake system, its pipes or any kind of failure in the brake system, the pedal must still control at least 2 wheels.

11.1.2 Pedals and pedal boxes are free, and the firewall and/or floorpan may be locally modified only to the extent required to facilitate the fitment of master cylinders and/or pedal boxes.

11.1.3 The complete brake hydraulic system (including calipers, lines and hydraulic cylinders) is free except for the following restrictions:

11.1.3.1 The maximum number of pistons in each caliper is restricted to six (6); and

11.1.3.2 Only one (1) brake caliper and two (2) brake pads per wheel are permitted; and

11.1.3.3 No system will be permitted on a Car which can retract the caliper pistons for the purpose of a pad change; and

11.1.3.4 During a brake pad change, all displaced fluid must return to the master cylinder reservoir through the master cylinder.

11.1.4 Brake caliper bodies must only be made of aluminium materials with a modulus of elasticity no greater than 80 GPa.

11.1.5 The brake caliper pistons may be made of titanium alloy.

11.1.6 Brake discs must be made of Ferrous Material and conform to the following specifications:

11.1.6.1 the maximum brake disc diameter must not exceed 376 mm; and

11.1.6.2 the maximum brake disc thickness must not exceed 35.56 mm.

11.1.7 At any Event, all Cars must only be fitted with front brake rotors listed in the table below and complying with Schedule I10:

Disc	Left	Right
Front	CP5772-1076GC:V8SC LH	CP5772-1077GC:V8SC RH

11.1.8 At any Event, all Cars competing must only be fitted with rear brake rotors listed in the table below and complying with Schedule I11:

Disc	Left	Right
Rear	CP3581-1578GE:V8SC LH	CP3581-1578GE:V8SC RH

11.1.9 Machining of the brake rotor surface to extend the usable life of the rotor is permitted provided that the disc groove design remains identical to the original rotor as supplied by the manufacturer.

11.1.10 At any Event all Cars must only be fitted with the front and rear brake calipers designated in the following table:

Front		Rear	
Left	Right	Left	Right
CAR9529ZG51NSLT	CAR9529ZG51NSRT	CAR4940AE50DSLT	CAR4940AE50DSRT
		CAR4940AE50NSLT	CAR4940AE50NSRT

NOTES:

Both the billet and forged calipers designated by the above part numbers are acceptable.

The only modifications allowed to the Alcon calipers listed in the above table are:

a) anti-knock back springs may be deleted.

b) bleed nipple guard may be fitted.

c) drilling and tapping to fit brake duct. Any drilling must be approved by the CTM.

11.1.11 At any Event, all Cars must only be fitted with any of the brake pads designated in the following table:

Front
PFC01
Project Mu H16-03
Rear
PFC97

NOTE: it will only be permitted to modify the brake pad backing plate for ease of extraction and replacement. Care should be taken not to remove the Supercars identification.

11.1.12 The specified brake rotors, and calipers will be identified by the means of detailed drawings, photographs and specifications held by Supercars.

11.1.13 In order to provide air for the cooling of the brakes of each wheel, it is permitted to fit a duct to each wheel which must comply with the following:

11.1.13.1 the intake for the front brake ducts must only be the brake duct opening in the approved front bumper.

11.1.13.2 the intake for the rear brake ducts must be situated wholly within the perimeter of the Bodywork and not below any point on the lower edge of the front bumper.

11.1.13.3 forced induction or extraction systems are not permitted.

11.1.13.4 any system or device which varies the air flow in such brake ducts is not permitted.

11.1.14 Brake calipers incorporating liquid cooling/recirculating systems are prohibited.

11.1.15 The fitment of a handbrake/brake lock valve is optional, however the operation of the handbrake/brake lock valve if located on the steering wheel must only be operated by an on/off switch. If cable or hydraulic in operation, must only be located and operated by a lever located on either side of the Driver's seat. The handbrake/brake lock mechanism must not be used for any other purpose than to stop the vehicle rolling from a standing start.

11.1.16 Brake anti-lock systems are prohibited.

11.1.17 Maximum brake pad thickness must not exceed 30 mm.

11.1.18 The braking system pressure in both front calipers must remain equal at all times.

11.1.19 A system, which allows the brake balance of a Car to be adjusted manually by the Driver, is permitted only if the force required to make such an adjustment is generated and controlled by the Driver, seated normally in the Car with the safety harness correctly fastened.

11.1.20 Any system which adjusts the brake balance whilst the brakes are being operated is not permitted.

I12. STEERING

I12.1 General

12.1.1 The steering is free including the steering wheel, column, tie rods, rack, etc., save that the original mechanical principal (e.g. rack and pinion, recirculating ball) must be retained.

12.1.2 If the original steering column is utilised, the steering locking device must be removed.

12.1.3 Power steering may be added or deleted but must only be hydraulic in its operation and control.

12.1.4 Four-wheel steering is prohibited.

I13. WHEELS/ WHEEL NUTS

I13.1 Control Wheel

13.1.1 A Car must only use the Supercars Control wheel as detailed in the Design.

13.1.2 All Cars are required to have a minimum of twelve (12) wheels, four (4) for permanently mounted wet control tyres and eight (8) for dry control tyres.

I13.2 Centre Lock Spindles and Wheel Nuts

13.2.1 Centre-lock spindles must be fitted with a safety clip/spring which must effectively prevent the wheel nut from coming loose at any time. This safety clip/spring must:

13.2.1.1 be engaged with the wheel nut at all times while a Car is on the Circuit; and

13.2.1.2 be replaced/reset after each wheel change; and

13.2.1.3 not protrude past the sidewall of the tyre in the horizontal plane in ready to race condition.

13.2.1.4 the safety clip/spring must be coloured red or orange where appropriate.

13.2.1.5 The wheel nut breaking torque must be greater than 650Nm.

13.2.2 A Car that participates in a race at an Event must only be fitted with wheel nuts that conform entirely to the requirements of the Supercars wheel nut specification as contained in Schedule I.9.

I13.3 Wheel Coatings

13.3.1 It will be permitted to paint and/or powder coat the Supercars Control wheel.

13.3.2 Any markings on the Supercars Control wheel must remain legible regardless of any coatings.

I14. ELECTRICAL SYSTEM

I14.1 General

14.1.1 Each Car must be wired only in accordance with the Supercars Control pinout document.

14.1.2 No part or component, however described, is permitted to influence the operation of the electrical system unless specifically permitted by the Rules.

14.1.3 The wiring loom must be visible along its entire length when mounted in a Car.

14.1.4 The wiring loom must be easily removable from a Car within a reasonable time period at the request of the CTM.

14.1.5 Any wiring that is required to go through the engine and/or rear firewalls, unless specified otherwise, must use a pin to pin connector or use a wiring grommet for sealing.

14.1.6 All Control wiring connectors must have a red heat shrink band within 100mm of the back of the connector for ease of identification.

14.1.7 Switches to operate the electrical system may be fitted to a Car. Where permitted by the Rules, these switches must be mounted in a location able to be operated by the Driver seated normally in the Car with the safety harness correctly fastened.

14.1.8 These switches may either be electromechanical or electronic in operation.

I14.2 Master Isolation Switch

14.2.1 A battery master isolation switch is mandatory and must:

- 14.2.1.1 disconnect the battery from the alternator and all electrical circuits; and
- 14.2.1.2 stop the engine; and
- 14.2.1.3 be spark proof; and
- 14.2.1.4 be able to be triggered from inside and outside a Car.

14.2.2 The external trigger must be:

- 14.2.2.1 situated near the lower part of the windscreen, on the Driver's side; and
- 14.2.2.2 marked by a red spark in a white edged blue triangle with a base of at least 120mm.

I14.3 Battery

14.3.1 The battery and its location are free save that it must not be placed in the passenger compartment.

I14.4 Alternator

14.4.1 The alternator is free except that it must be mounted at the front of the engine, to either side, and be belt driven.

I14.5 Lights

14.5.1 All lighting and signalling devices must remain operational and as originally provided in the production Automobile from which the Car is derived, save that it is permitted to:

14.5.2 Disconnect and remove the rear number plate lights, side indicator lights, reversing lights and all interior lights.

14.5.3 The hazard function of the indicator lights may be removed.

14.5.4 Coloured or sign written headlights are permitted.

14.5.5 Coloured or sign written headlights must have either the main beam or high beam, operational and are not permitted to be coloured any shade of the colour red except where specific permission has been granted by Supercars.

I14.6 Starter Motor

14.6.1 The starter motor is free except that it must:

14.6.1.1 be exclusively electrically powered, and

14.6.1.2 engage directly with the flywheel as in the original Automobile from which the Car was derived; and

14.6.1.3 be capable of starting the engine at all times.

14.6.2 The starter motor may be mounted in front or behind the flywheel ring-gear, of which must comply with Rule I8.2.7.

14.6.3 At all times the Driver, when seated and secured in the Car as for Competition, must be able to activate the starter motor without outside or external assistance.

I14.7 Fuel Pump Power Supply

14.7.1 All Cars must be fitted with a system that cuts off the power supply to all fuel pumps after a maximum of 2 seconds absence of crankshaft revolution.

I14.8 Circuits

14.8.1 With the exception of the requirements of the control ECU, the electrical circuits including cables, fuses and relays are free.

14.8.2 Cars may only be fitted with one power control module to perform the circuit switching and protection functions in place of cables, fuses and relays. Only the following power control modules are permitted:

Brand	Model
Motec	Motec PDM
ADD	IPU Motorsport
PI Research	PCM Hyllus

Note; the maximum amount of outputs for any one or combined units is 32

14.8.3 Power control module system configurations may be requested by the CTM at any time and this request will not be subject to Protest or Appeal.

I14.9 In Car Camera System

14.9.1 A Car must have the ability to be fitted with an in-Car camera system for use by the broadcaster.

14.9.2 The in-Car camera system must be located in the position detailed in the Design.

14.9.3 The in-Car camera system must be mounted securely and to the satisfaction of the CTM.

I14.10 Electrically Heated Windscreen

14.10.1 It is permitted to replace a laminated front windscreen with a laminated front windscreen incorporating a heating element.

I15. ECU & DATA SYSTEMS

I15.1 General

15.1.1 The control ECU is the Motec M800 control ECU ("Control ECU"). No other ECU or system is defined as a Control ECU.

15.1.2 For a Car log booked prior to January 2009, it will be permitted to utilise the minimal update specification with CTM approval.

I15.2 Engine Control

15.2.1 A Car must only be fitted with one (1) Control ECU at all times.

15.2.1.1 It is not permitted to swap ECU's between Cars without written approval from the CTM.

15.2.2 The Control ECU must, at all times:

15.2.2.1 not be disassembled or modified in any way and seals and markings must remain intact and legible; and

15.2.2.2 run only the approved version of firmware and software as loaded into the Control ECU; and

15.2.2.3 exclusively control the spark and fuel settings of the engine; and

15.2.2.4 only be connected to the loom as specified in the requirements for the Control ECU loom.

15.2.3 The control ECU must only be used for Supercars authorised activities.

15.2.4 The ignition timing of any engine must not vary by more than six (6) degrees while the engine is above 4,000 rpm and above ten (10) percent throttle opening and while the Gear Shift State is not in "Shift" or "Recovery".

15.2.5 All parameters measured and controlled by the Control ECU will be made available via the CAN connector to the data recording system of Rule I15.6 with the exception of wheel speed rear, Aux1, Aux2, spark sensor and RS232 GPS input and their derivatives.

I15.3 Control Actuators and Sensors

15.3.1 The component required to perform each function must be as designated in the table. If the table does not specify a component for a particular function, then that component is free so long as its sole purpose is to perform the required function.

ECU Function	Qty	Manufacturer	Part number
Crankshaft position	1	Honeywell	IGT101DC
		Delco	10456555 (Note 1)
		Motec	59110
Camshaft position	1	Honeywell	2AV Series
		Honeywell	4AV series
		Siemens	HKZ101 / HKZ121 (Note 2)
		Nanjing Huamin Electronics Co Ltd	HME 101 / HME 301 (Note 3)
		Motec	59110
Throttle position*	1	Novatechnic	RSC 2800 - 600
		Penny and Giles	SRH 280P
		Novatechnic	SP2841S0002/SP28411002001
		Variohm	Euro X 28
Engine air temperature	1	Keystone Thermometrics	25037334
		Keystone Thermometrics	25037388
		Delco	2503 7388

Manifold air pressure	1	Delphi	12219931
Engine coolant temperature	1	Bosch	028 013 0026
		Bosch	028 013 0023
Aux1	1	See rule I15.3.2	
Aux2	1	See rule I15.3.2	
Rain Light	1 or 2	MSE	MSE-A04-02
Spark Sensor	1	MSE	MSE-S01-01
Ignition Module	1	M&W Bosch	CDI 010/M BIM 124
Ignition Coil	1	Crane Cams Bosch	PS 92 MEC 718
Injectors	8	Bosch	0280 150 351 / 0280 150 363 (Note 4)
		Siemens	F111405
Rear wheel speed		Honeywell	IGT101DC

NOTE:
It is permitted to permanently attach the wiring to this sensor subject to it being fitted with a DTM 04 3P connector.
Siemens Part No. HKZ121 supersedes HKZ101
Nanjing Huamin Electronics Co Ltd Part No. HME 301 supersedes HME 101
Bosch Part No. 0280 150 363 supersedes 0280 150 351
*All throttle position sensors are permitted to have a maximum of 3 wires.

15.3.2 The Aux1 and Aux2 inputs to the Control ECU are scrutineering specific inputs. The CTM in his sole discretion reserves the right to electronically monitor any device, system, component(s), mechanism(s) and this request will not be subject to Protest or Appeal.

15.3.3 All permitted sensors and actuators must remain identifiable and unmodified, except as required to solely facilitate mounting.

15.3.3.1 It is permitted to enlarge the mounting hole of a coil unit for the sole purpose of mounting using a proprietary anti-vibration mount.

15.3.4 All permitted sensors and actuators may be subjected to destructive testing.

I15.4 Pit Lane Speed Limiter

15.4.1 The Control ECU has an in-built Pit Lane speed limiter ("Limiter"), which must only operate as follows:

15.4.1.1 The Limiter function of the ECU must be configured the same as the final drive ratio being used in the Car and must only be activated by a switch operated by the Driver.

15.4.1.2 The switch that is used to activate the Limiter must be connected exclusively to the pit limit switch input of the Control ECU and a fixed zero-volt reference.

15.4.1.3 The Limiter must be activated at all times while the Car is moving in Pit Lane.

15.4.1.4 The Car must be in 1st gear while moving in Pit Lane.

Note: Regardless of the Limiter, each Team always remains responsible for ensuring that the Pit Lane speed limit is respected; the Limiter does not use a road speed input for any part of its operation.

I15.5 Rain Light

15.5.1 The rain light must be fitted into the highest part of the rearward face of the boot lid so that its face is at 90 degrees to the road surface.

15.5.2 The Control ECU performs a rain light function. A dual position “Rain Light” switch must be fitted to select either the Rain Light output or the pit limit light output from the Control ECU, which will ensure that the rain light flashes at all times when the Pit Lane Speed Limiter is activated.

I15.6 Electronic Data – Logging, Display & Telemetry

15.6.1 Each Car must only be fitted with one (1) control data logger in addition to the data recording capacity of any unit specifically required or approved by the CTM. The data recording unit must be one of the following:

Brand	Model
MoTeC	ADL/ADL 2/ADL3
MoTeC	ACL/EDL
PI Research	Sigma
MoTeC	C125/C185

15.6.2 The following sensors and systems are permitted to be connected by the means of hard wiring only to the electronic data systems listed in Rule I15.6.1. The sensors and systems must only perform the function stated in these Rules. No other sensor or systems are permitted, unless otherwise allowed:

Sensor	Quantity
Anti-roll bar position (front & rear)	2
bf1 systems TPMS ECU	1
Brake balance bar position	1
Brake disc temperature	2
Brake light	1
Brake line pressure (front & rear)	2
Brake master cylinders travel (external linear or rotary sensors only)	2
Cockpit temperature/Driver cooling systems	2
Coolant level	1
Coolant pressure	1
Crankshaft position	1
Crankcase pressure	1
Diff oil temperature	1
Fuel usage	2
Front wheel speed (see Note 1)	2
G – Force – Triple Axis (see Note 2)	1
Gearbox oil temperature	1
Gear cut strain gauge	1
Oil pressure	1
Oil temperature	1
Power steering temperature	1
Power steering pressure	1
Suspension position (external linear or rotary sensors only)	4
Throttle position	1
TPMS – Wheel Speed Trigger’s	4
TPMS- Antenna	2
TPMS- Tyre Pressure Sensors	4

NOTE 1: In order to provide wheel speed information for the exclusive use of display and data acquisition instruments it is permitted to fit two (2) of the non-driven wheel hub assemblies with the necessary equipment.

NOTE 2: If the data recording unit listed in Rule I15.6.1 has an internal G - Force sensor, then that sensor may be used instead of an external sensor. In all cases the G – Force sensor is only permitted to measure Bodyshell acceleration.

NOTE 3: The bf1 systems TPMS is optional.

15.6.3 It is permitted to log the following functions of the systems listed below:

System	Functionality permitted to be logged
Power control modules (see Note 4)	Voltage, current draw temperature & diagnostics
Pit stop light function (dual pole switch)	Status
Driver cooling system operation	Status

NOTE 4: It is not permitted to use any information available from the power control module as a sensor. The information is for diagnostic and protection functions only.

15.6.4 The sensors listed in Rule I15.6.2 are in addition to any switches, carrier detect signal for telemetry or any sensors specifically required or approved by the CTM.

15.6.5 The sensors listed in Rule I15.6.2 are in addition to the sensors permitted solely as inputs to the Control ECU.

15.6.6 The data gathered from the sensors listed in Rule I15.6.2 and from the control ECU in the Teams logging section may then be recorded, displayed or transmitted by any means permitted by the Rules.

15.6.7 Heads up dash displays are not permitted.

15.6.8 Data and system configurations may be requested by the CTM at any time and this request will not be subject to protest or Appeal.

15.6.8.1 If MoTeC Display Creator is being used, the display project must be retrievable from the device.

I15.7 Signals to/from Cars

15.7.1 At any time only the following signals may be sent to or from a Car:

Signal	Send to Car	Send from Car
Any signal exclusively for television	Yes	Yes
Driver voice communication	Yes	Yes
Driver visual communication	Yes	Yes
Lap Beacon	Yes	No
Telemetry (transmission of data)	No	Yes

15.7.2 Channels Listed In Schedule I14. are the only Channels allowed to be transmitted via Telemetry.

I15.8 Control ECU Loom (“Loom” for this section)

15.8.1 The wiring loom connected to the Control ECU must conform to the Loom schematic as contained in Schedule I13.

15.8.2 Except for connectors which are only connected “pin to pin”, the Loom must not contain any additional wiring, circuitry, connectors, break outs or components except as detailed in the Loom schematic.

15.8.3 The Loom must remain visible along its length, be separate from all other wiring and be easily removed from the Car.

15.8.4 Any sensors connected to the Loom:

15.8.4.1 Must be powered from the Loom if the sensor/actuator is shown in the Loom schematic.

15.8.4.2 May be powered from a power source that is not directly derived from the Loom for sensors/actuators not shown in the Loom schematic.

15.8.5 Must be exclusively connected to the Loom with the exception of wheel speed front, brake pressure, steering angle and gear position which may also be connected to the data recording unit specified in Rule I15.6.1.

I16. CAR EQUIPMENT

I16.1 Airjack

16.1.1 It is permitted to use a spacer of free design the sole purpose of which is to aid in the securing of the airjack into the Chassis.

16.1.2 It is permitted to replace the airjack lower nut with a nut of an alternate design provided that its sole purpose is to secure the airjack and/or protect the airjack thread.

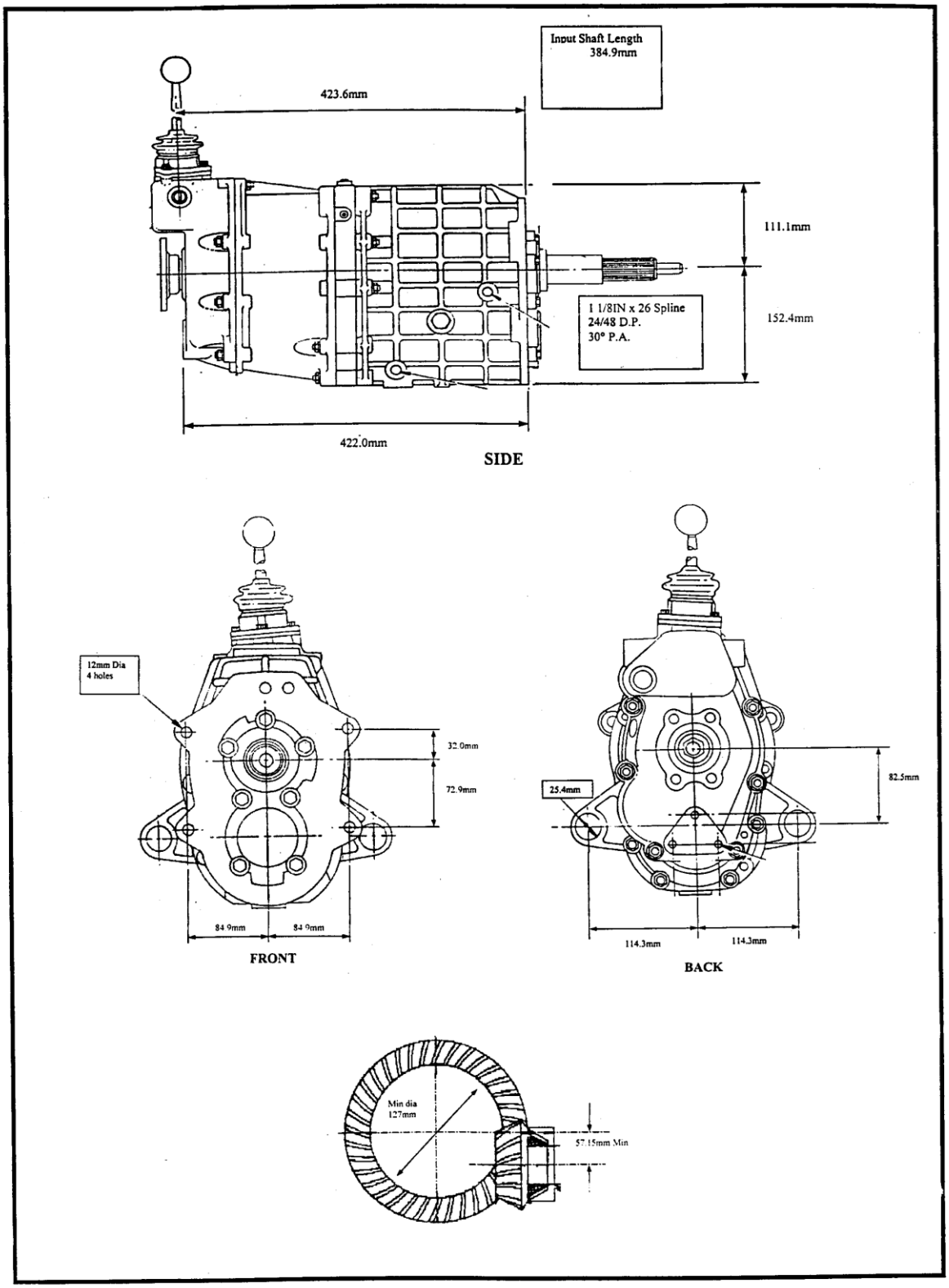
I16.2 Driver Cooling System

16.2.1 Any Driver cooling systems that contain a cooling medium in race ready condition must be:

16.2.1.1 mounted within the cockpit utilising the mounting points designated in the Design for the passenger seat; and

16.2.1.2 constructed in a manner which to the satisfaction of the CTM, has been designed to ensure the safe containment of the whole system during reasonably foreseeable loading condition.

SCHEDULE I1. GEARBOX & FINAL DRIVE SPECIFICATIONS



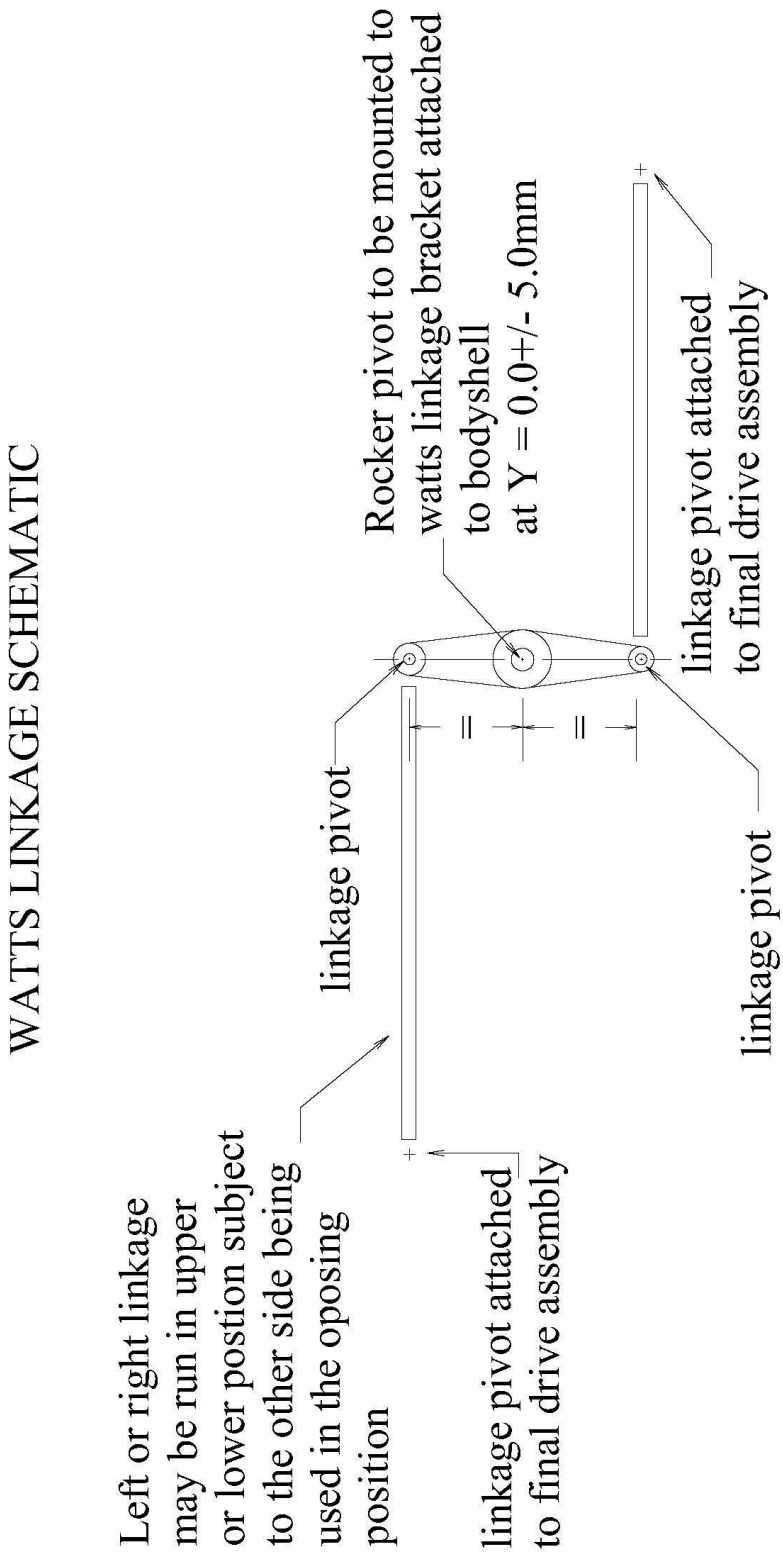
Please note that this drawing is a graphical representation of a typical gearbox only to clearly demonstrate the dimensions contained in this Schedule I1.

SCHEDULE I2. CONTROL PARTS

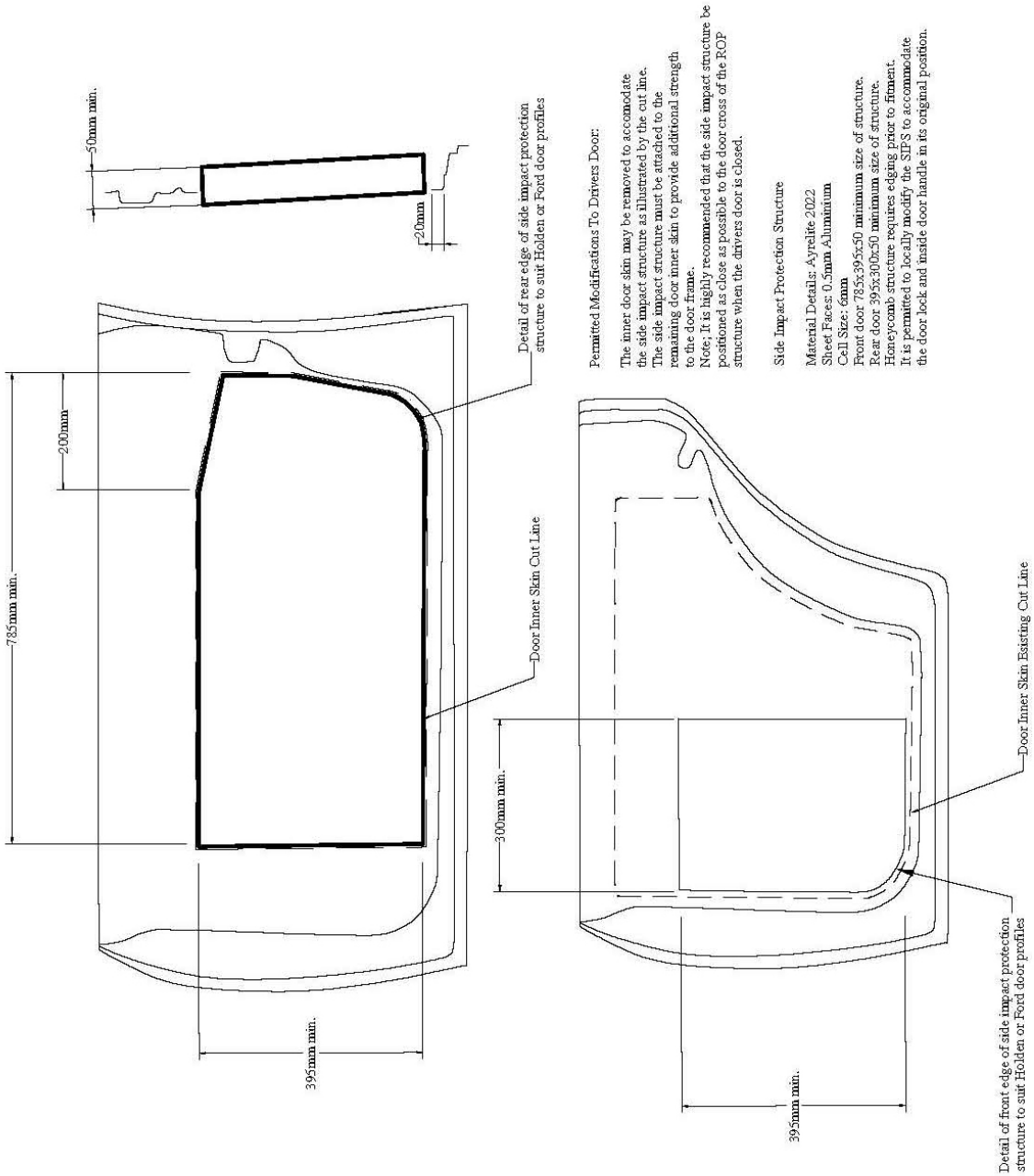
The following parts are covered by the definition of Control Part in Division A of the Supercars Operations Manual:

a) Front Brake Rotors
b) Rear Brake Rotors
c) Engine ECU and wiring loom
d) Supercars Control Camshaft

SCHEDULE I3. SCHEMATIC DEFINITION OF WATTS LINKAGE



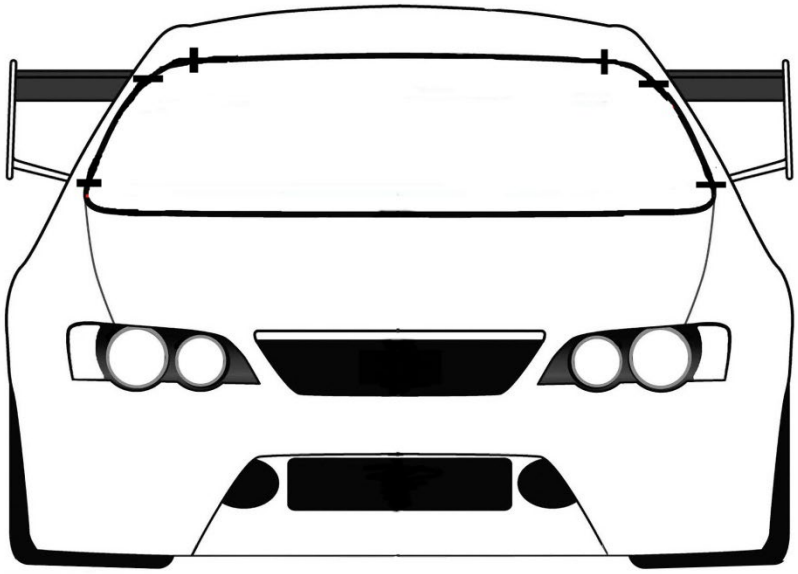
SCHEDULE I4. DRIVERS SIDE IMPACT PROTECTION – FRONT & REAR DOOR



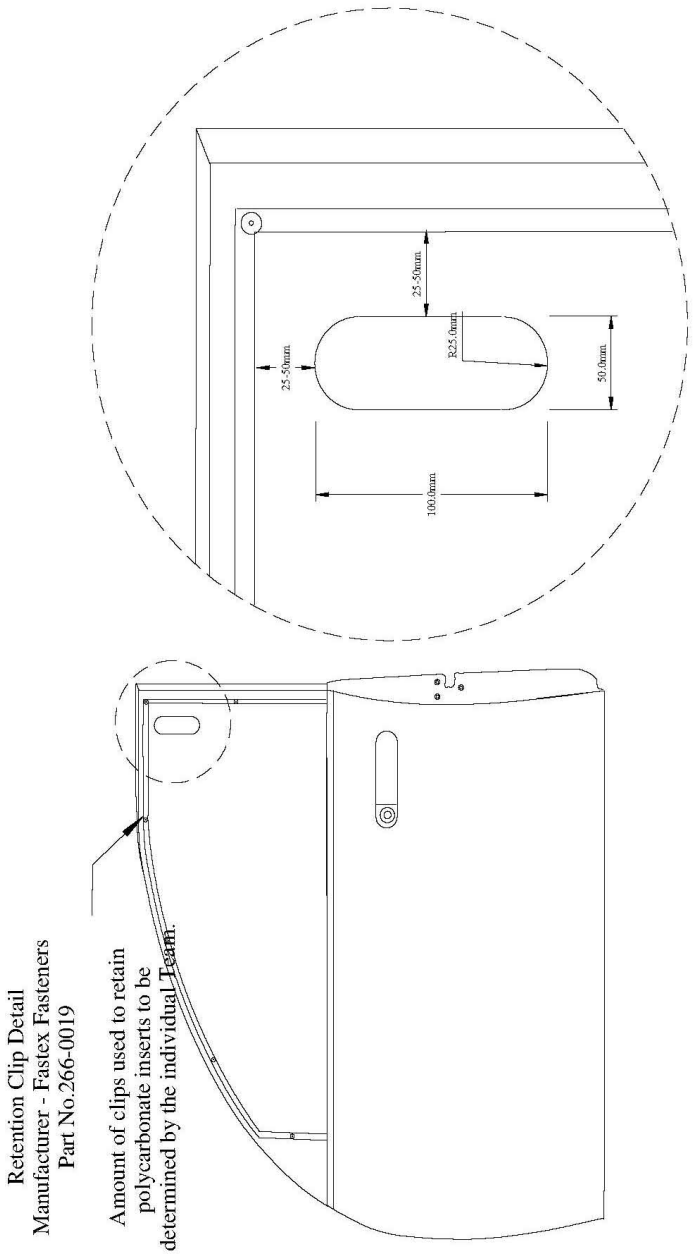
SCHEDULE I5. FRONT WINDSCREEN RETENTION

The permitted modification to Cars for the front window retention system will be the fixture of flush mounted M5 (minimum size) rivnuts inserted in the A pillars and leading edge of the roof or predrilled holes where retention brackets could be either bolted or riveted in place when the screen is required to be changed.
The minimum number of retention brackets would be 6 and these would be required to be made from aluminium strap 25 x 3mm (minimum) and overlap the windscreen by a minimum of 25mm.

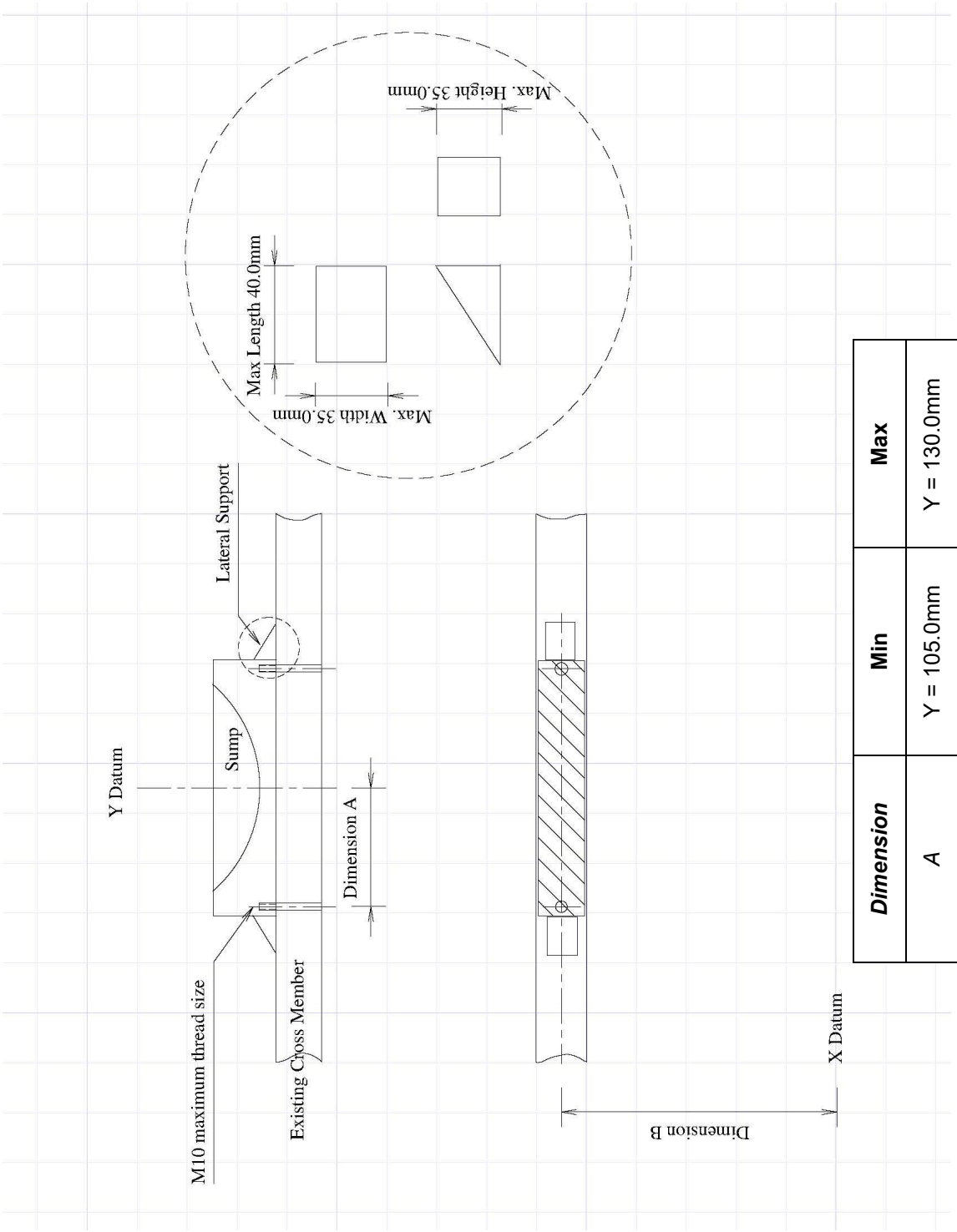
See diagram below:



SCHEDULE I6. FRONT WINDOW POLYCARBONATE INSERT RETENTION & HANDLE HOLE DIMENSIONS

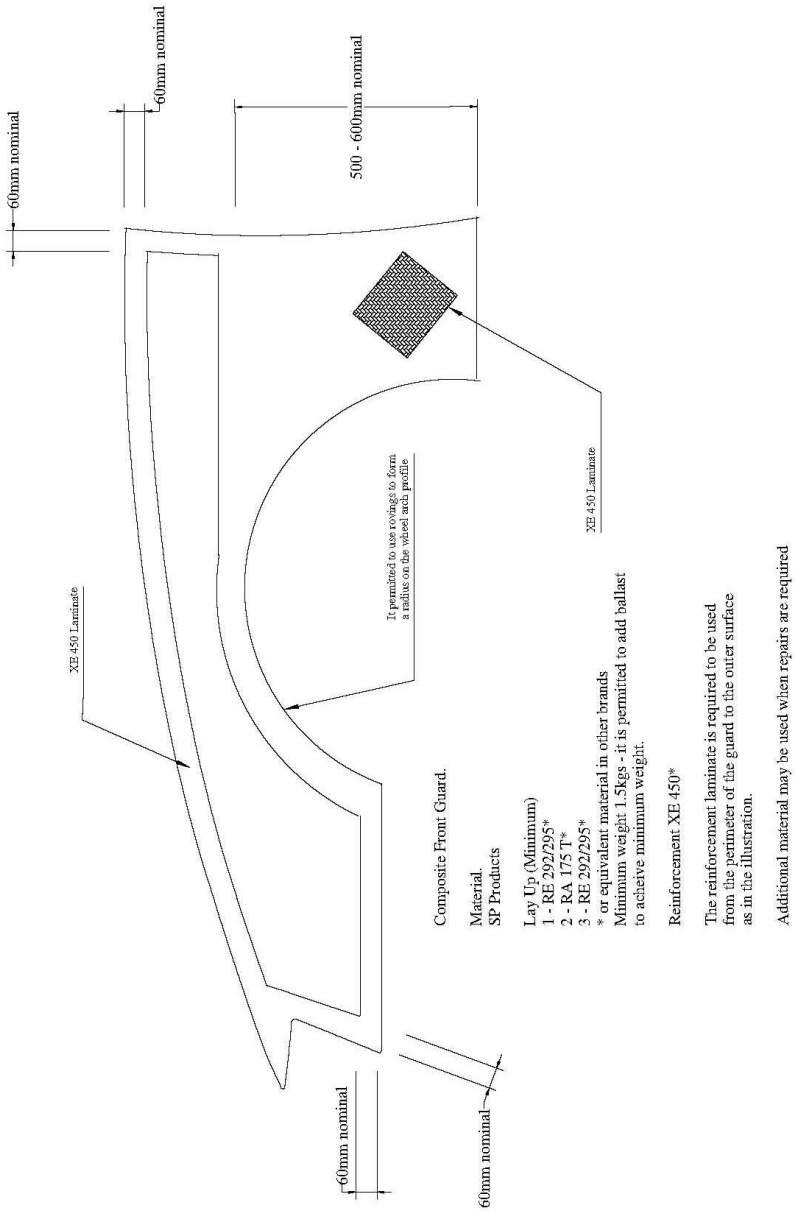


SCHEDULE I7. ENGINE SUMP MOUNT

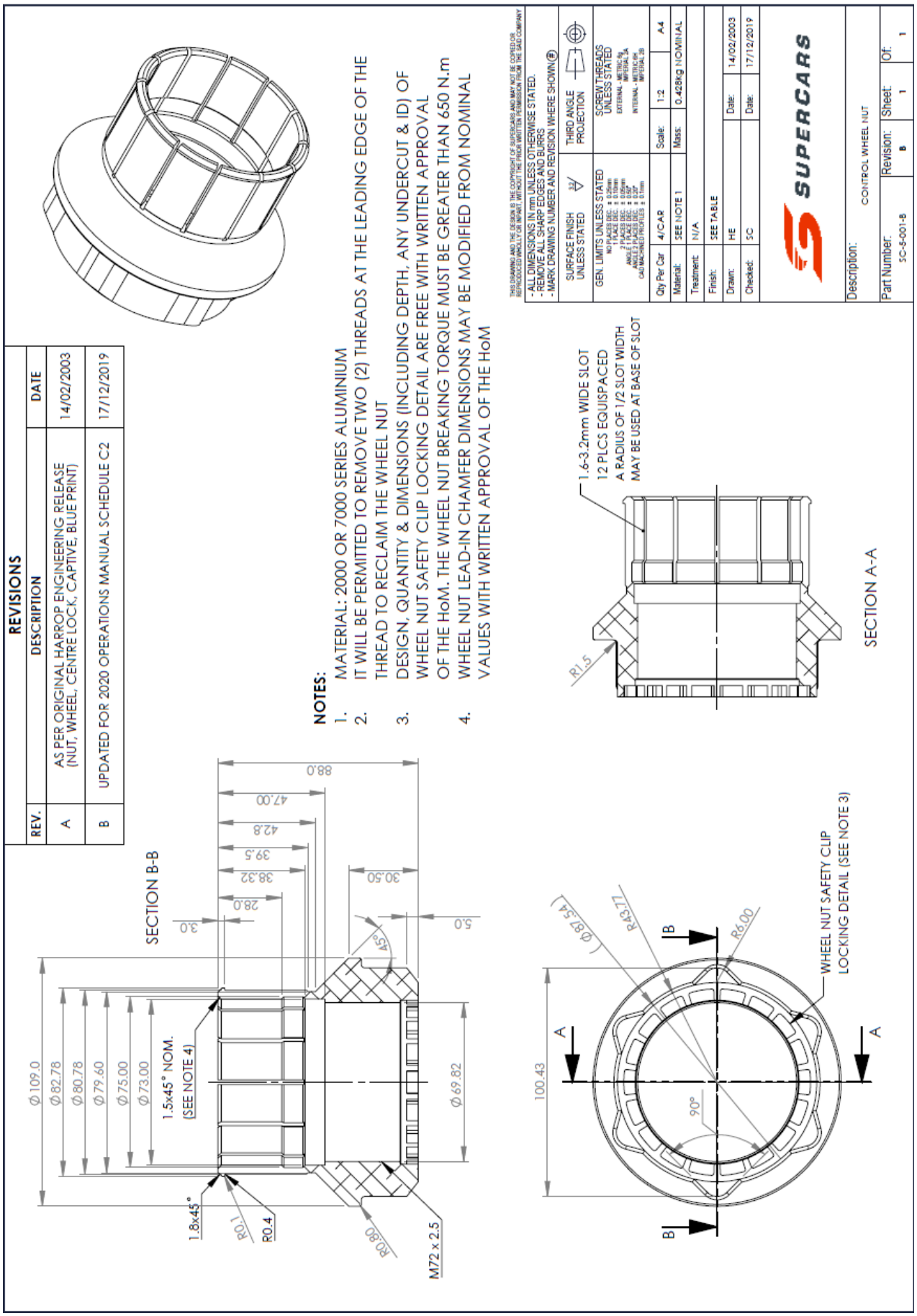


Dimension	Min	Max		
A	Y = 105.0mm	Y = 130.0mm		*Width 280.0mm*
B	X = 2080.0mm	X = 2090.0mm		*Length 55.0mm*
				Hatched Area Of Sump Mounting

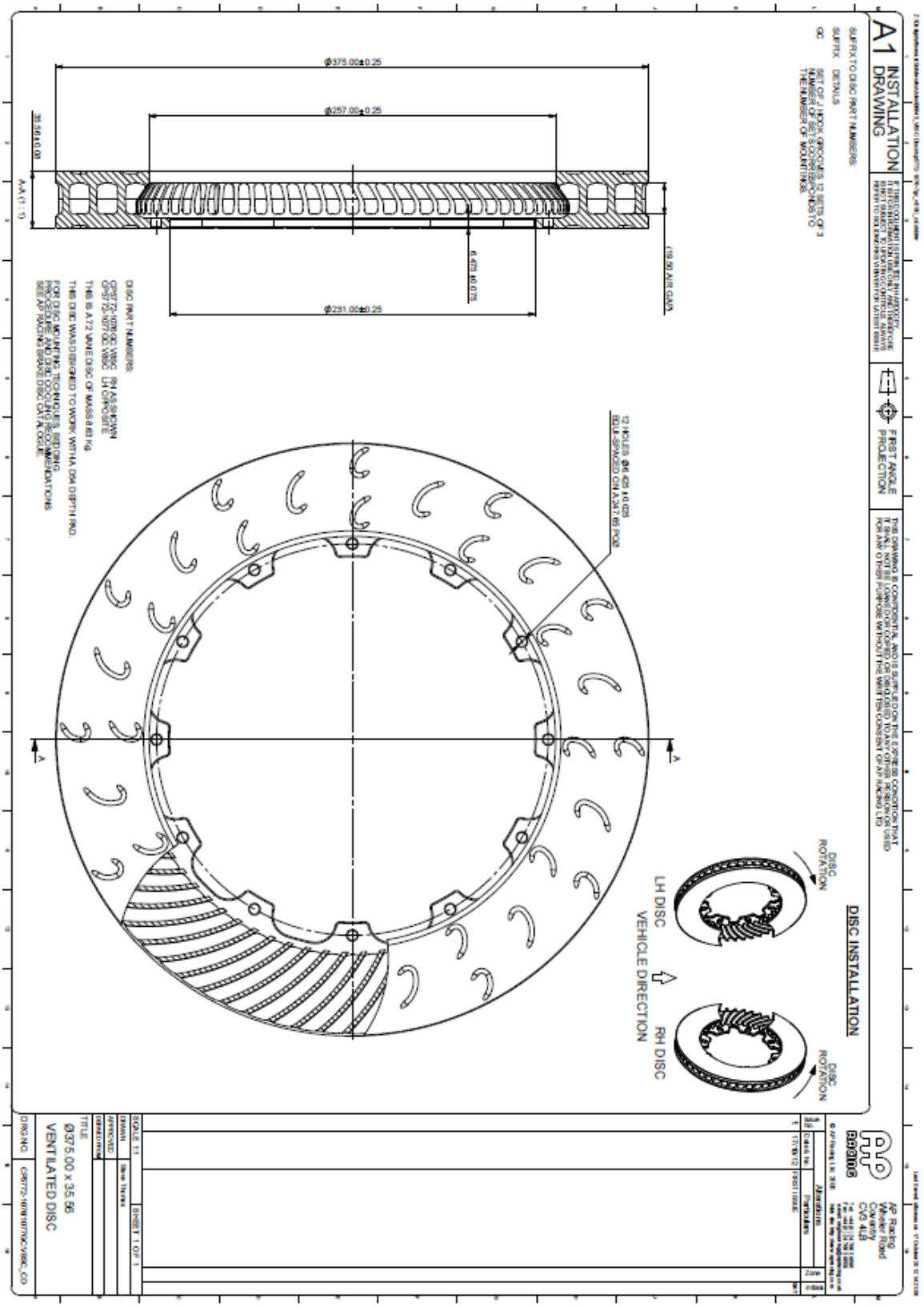
SCHEDULE I8. FRONT GUARD



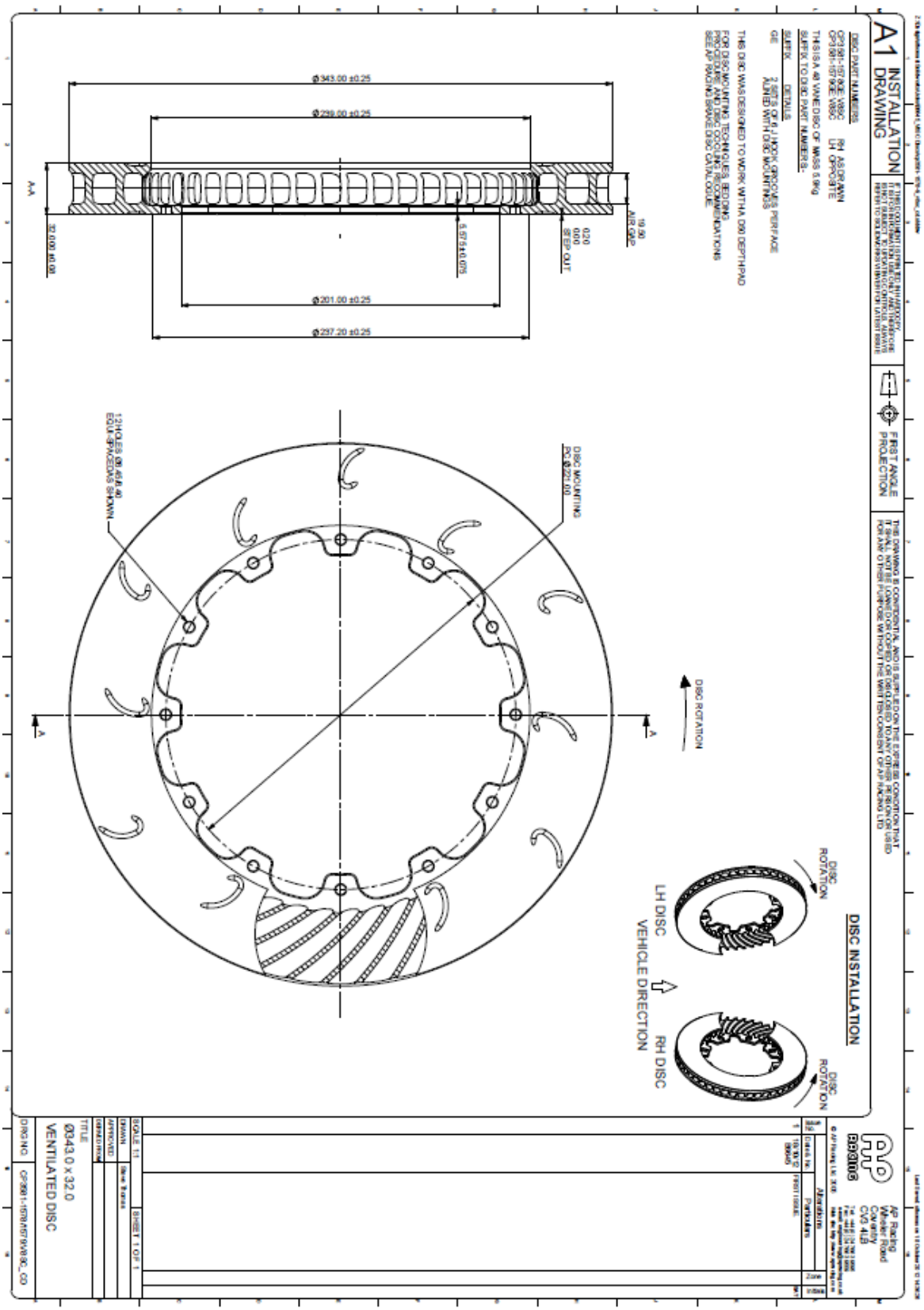
SCHEDULE I9. CONTROL WHEEL NUT



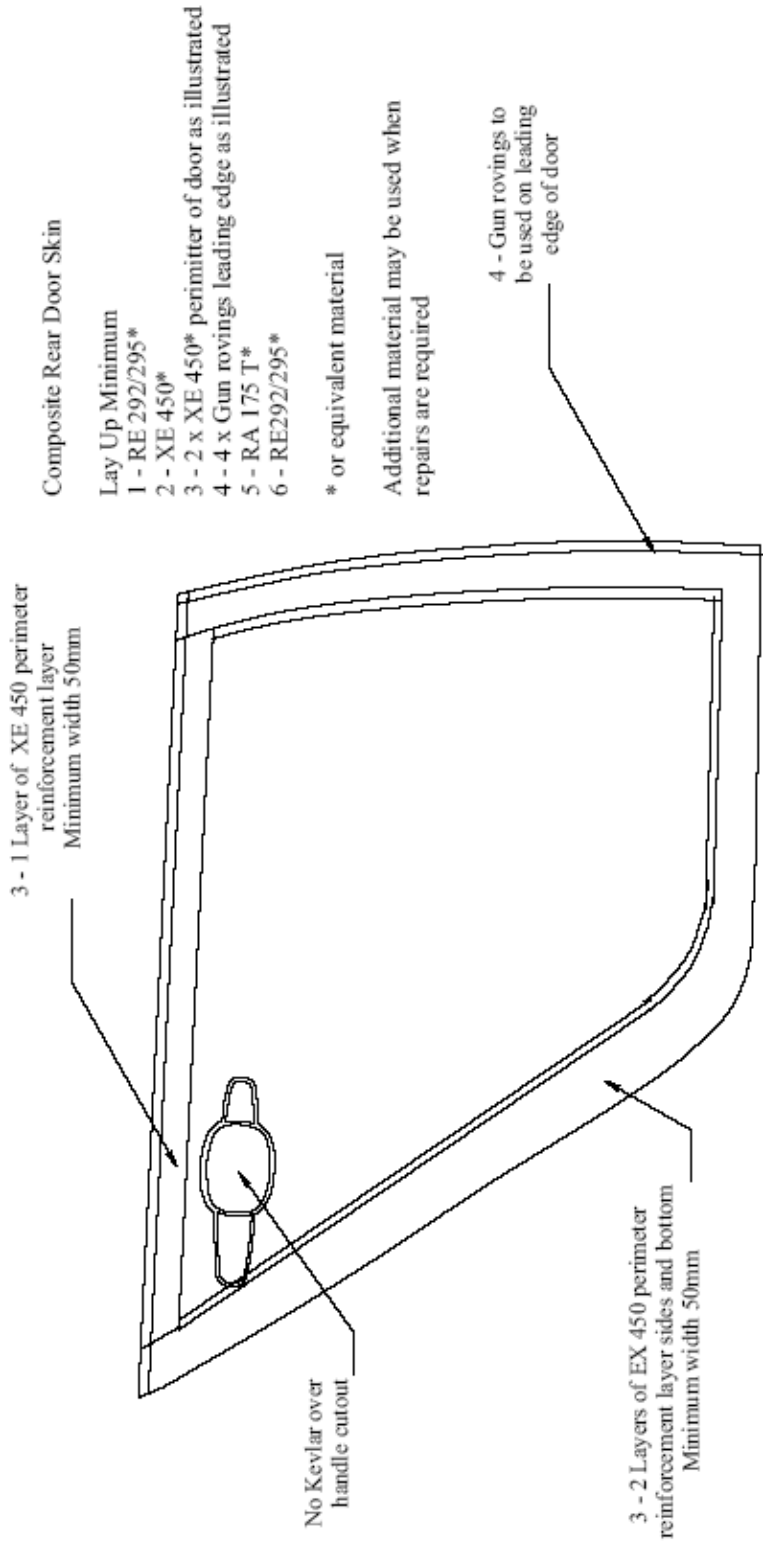
SCHEDULE I10. AP FRONT CONTROL BRAKE ROTOR



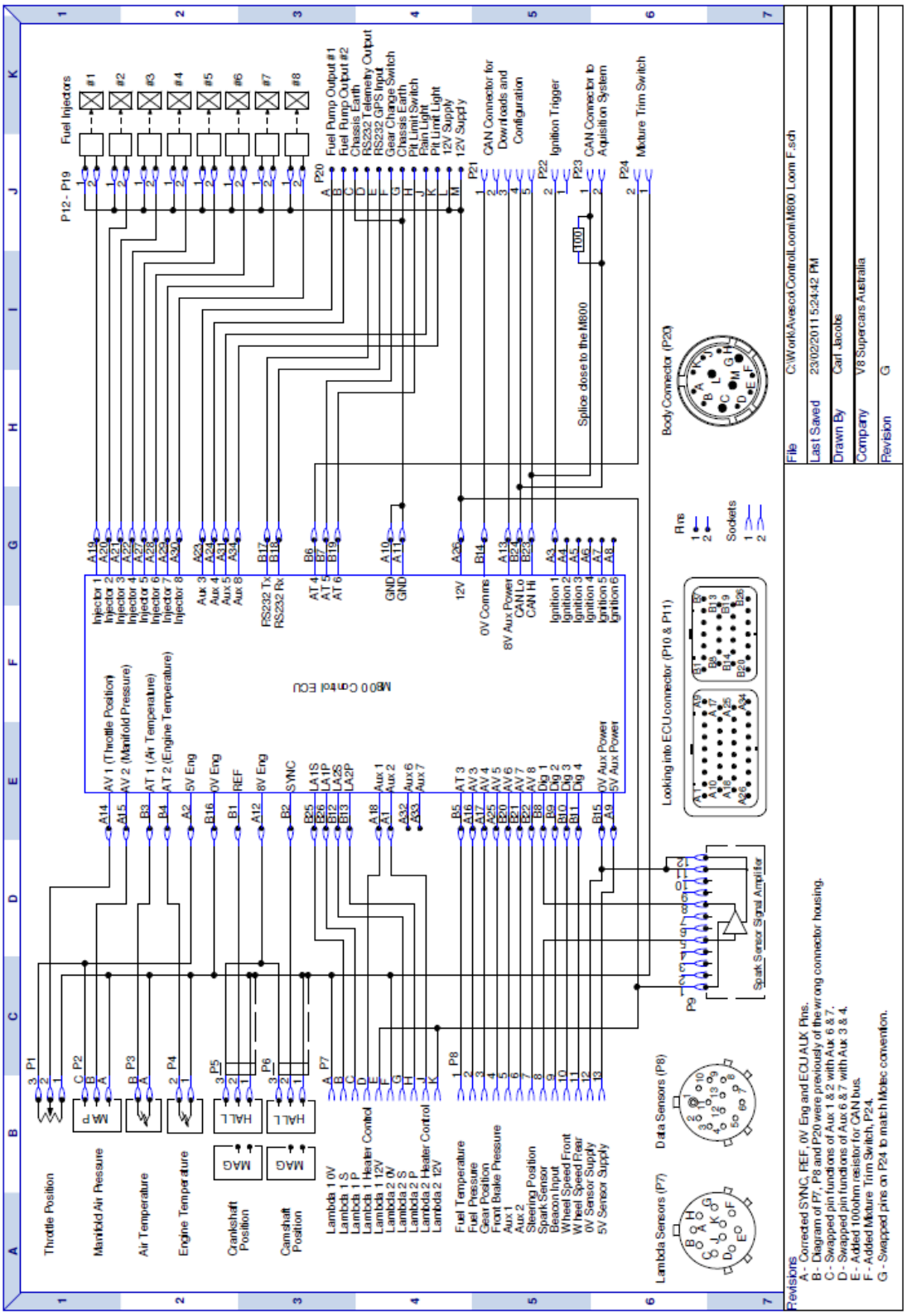
SCHEDULE I11. AP CONTROL REAR BRAKE ROTORS



SCHEDULE I12. REAR DOOR SKIN



SCHEDULE I13. CONTROL ECU LOOM



Supercars Control ECU Loom Schematic Material List

Connector	Description	Qty	Manufacturer/ Supplier	Part No. Housing	Part No. Pins/Contacts
P1	Throttle position*	1	AMP / AMG	1-827578-1	0-925590-2
			-or-		
			Deutsch	DTM06-3S-E007	0462-201-2031
P2	Manifold air pressure	1	Carrol	1201-5793	
P3	Engine air temp	1	Delphi	12162197	12161184
P4	Engine coolant temp	1	AMP / AMG	0-827551-3	2-925590-2
P5	Camshaft position*	1	Deutsch	DTM06-3S-E007	0462-201-2031
P6	Crankshaft position*	1	Deutsch	DTM06-3S-E007	0462-201-2031
P7	Lambda Sensors	1	Deutsch	AS0-12-98SN AS1-12-98SN	
			-or-		
			Souriau	8STA0-1298SN	
P8	Data Sensors	1	Deutsch	AS0-10-35SN AS1-10-35SN	
			-or-		
			Souriau	8STA0-1035SN	
P9	Spark Sensor Circuit	1			
P10	ECU Connector A	1	Tyco	4-1437290-0	
P11	ECU Connector B	1	Tyco	3-1437290-7	
P12 - 19	Injectors	8	AMP / AMG	0-827551-3	2-925590-2
			-or-		
			Bosch	9112-067-011	
P20	Body Connector	1	Deutsch	AS6-14-97PN	
			-or-		
			Souriau	8STA-1497PN	
P21	CAN Connector	1	Deltron	716-0-0501	
P22	Ignition signal	1	Deutsch (male)	DTM04-2P	0460-202-2031
			-and-		
			Deutsch (female)	DTM06-2SE007	0462-201-2031
P23	CAN Telemetry	1	Deutsch	TBC	TBC
P24	Fuel Trim		Deutsch	ASU-103-03SN or DTM 06-3S	

SCHEDULE I14. ALLOWED TELEMETRY CHANNELS

Channel Name (Alias)	Units		Transmit Rate (Hz)Max
ADR Status			1
Air Jack Switch Timer			10
Alarms			10
Airbox Pressure	Millibar	mbar	50
Airbox Temperature	Celsius	°C	20
Battery Voltage ‖	Volt	V	10
Battery Voltage Data Logger	Volt	V	10
Bit Combine 1			10
Bit Combine 2			10
Bit Combine 3			10
Bit Combine 4			10
Bit Combine PDM to L180			10
BR2 Lap Beacon Number			20
Brake MC Travel Front	Millimetre	mm	20
Brake MC Travel Rear	Millimetre	mm	20
Brake Pressure Front	PSI	psi	50
Brake Pressure Rear	PSI	psi	50
Cabin Temp*	Celsius	°C	1
CAN 1 Bus Utilization			10
CAN 1 Receive Error Count			10
CAN 1 Transmit Error Count			10
CAN 2 Bus Utilization			10
CAN 2 Receive Error Count			10
CAN 2 Transmit Error Count			10
CAN 3 Bus Utilization			10
CAN 3 Receive Error Count			10
CAN 3 Transmit Error Count			10
Car Number			1
Co-driver Light			1
Coolant Temp Run Limit 1 Time	Second	s	1
Coolant Temp Run Limit 2 Time	Second	s	1
Coolant Temp Running Max	Celsius	°C	1
Corrected Lap Distance	metre	m	10
Corrected Lap Distance State			10
Data Logger Supply 5V	Volt	V	10
Data Logger Supply 8V	Volt	V	10
Driver Cool Suit	Celsius	°C	1

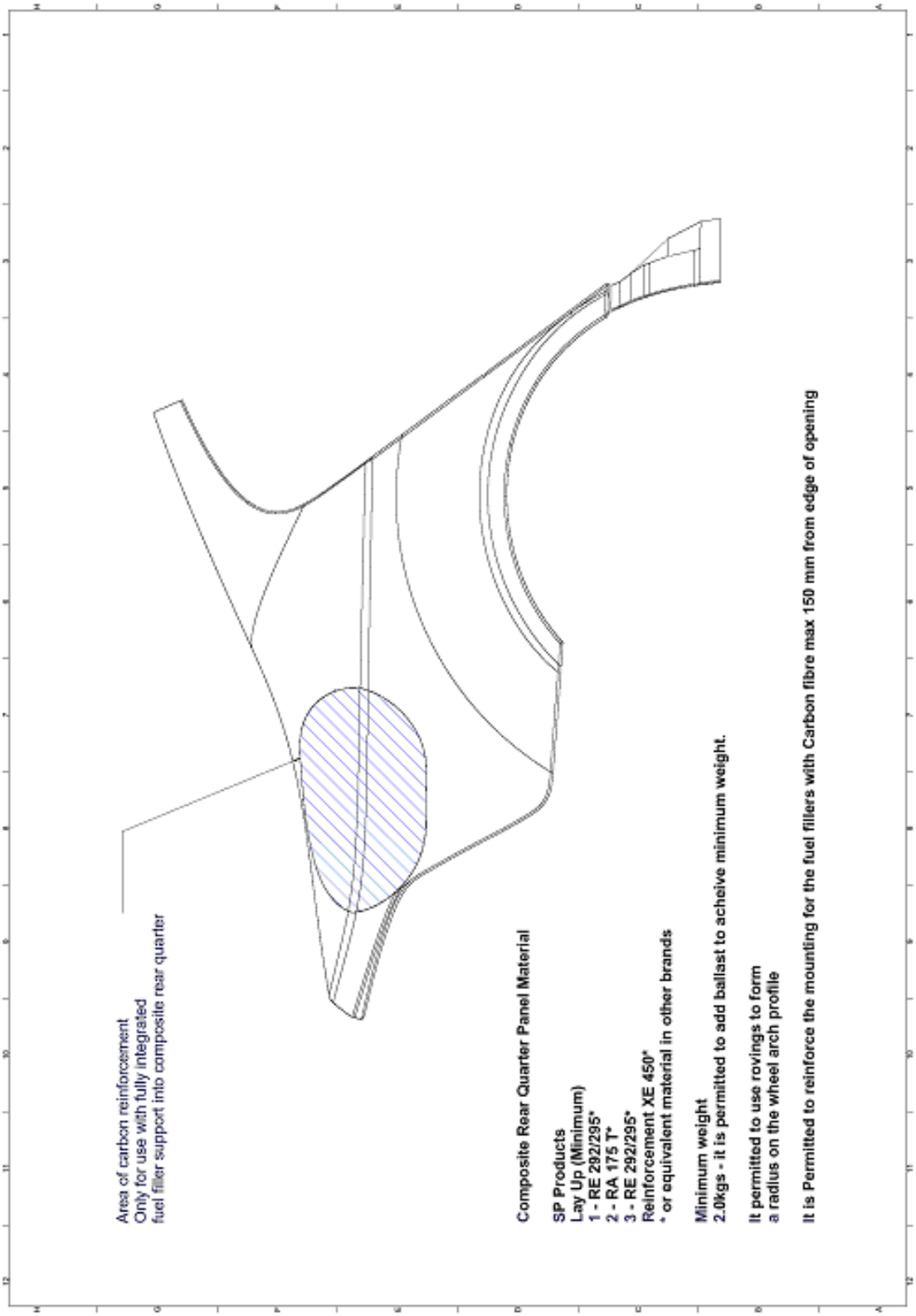
Channel Name (Alias)	Units		Transmit Rate (Hz)Max
Driver Fuel Mix Aim Trim Sw			5
Driver Pit Switch			20
Driver Trim Switch Keypad			5
Drop Gear Value			1
ECU Sensor 5V0 A Volts	Volt	V	10
ECU Sensor 5V0 B Volts	Volt	V	10
ECU Sensor 5V0 C Volts	Volt	V	10
Eng Oil Temp Run Limit Time 1	Second	s	1
Eng Oil Temp Run Limit Time 2	Second	s	1
Eng Oil Temp Running Enable			1
Eng Oil Temp Running Max	Celsius	°C	1
Engine Coolant Pressure	PSI	psi	5
Engine Coolant Temperature	Celsius	°C	1
Engine Crankcase Pressure	kPa absolute	kPa a	20
Engine Oil Pressure			20
Engine Oil Temperature	Celsius	°C	1
Engine RPM	rev/min	rpm	100
Engine Run Time	Second	s	1
Engine Run Time Hours Total			1
Engine Speed Limit State			20
Engine Speed Pin Diag			10
Engine Speed Ref Diag			10
Engine Speed Run Limit 1 Time	Second	s	1
Engine Speed Run Limit 2 Time	Second	s	1
Engine Speed Running Maximum	Rev/min	rpm	1
Engine Sync Pin Diag			10
Engine Sync Pos Diag			10
Engine Sync Position			20
Fuel Closed Loop Control Aim	Lambda	LA	50
Fuel Closed Loop Control Bank 1 Trim	Percent	%	50
Fuel Closed Loop Control Bank 2 Trim	Percent	%	50
Fuel Closed Loop Control Trim Max	Percent	%	1
Fuel Closed Loop Control Trim Min	Percent	%	1
Fuel Closed Loop Diagnostic			50
Fuel Closed Loop State			50
Fuel Mix Aim Driver Trim State			10
Fuel Mixture Aim Driver Trim††††	Percent	%	1
Fuel Mixture Aim State			20

Channel Name (Alias)	Units		Transmit Rate (Hz)Max
Fuel Mixture Aim***	Lambda	LA	20
Fuel Output Cut Average	Percent	%	50
Fuel Output Cut Count			50
Fuel Pot Level	Litre	l	10
Fuel Pressure	Bar	bar	20
Fuel Temperature	Celsius	°C	1
Fuel Used	Litre	l	5
Fuel Used ECU	Litre	l	1
Fuel Used per Lap	Litre	l	1
Fuel Used Target†††	Litre	l	1
Fuel Used Total	Litre	l	1
G Lat*			10
G Long*			10
G Vert*			10
Gear			50
Gear Estimate			50
Gear Lever	Newton	N	50
Gear Position Sensor Diagnostic			50
Gear Position Sensor Voltage	Volt	V	50
Gear Position Tracking Voltage	Volt	V	50
Gear Shift Diagnostic			20
Gear Shift Ign Cut	Percent	%	50
Gear Source			50
GPS Date			1
GPS Diagnostic			1
GPS Time			1
Ground Speed	Kilometre/hour	km/h	50
Helmet Temp**	Celsius	°C	1
Ignition Output Cut Average	Percent	%	50
Ignition Output Cut Count			50
Ignition Timing	Degree	°	50
Lambda 1	Lambda	LA	50
Lambda 1 Norm	Lambda	LA	50
Lambda 2	Lambda	LA	50
Lambda 2 Norm	Lambda	LA	50
Lap Beacon			1
Lap Distance	metre	m	10
Lap Number			1
Lap Time	Second	s	1

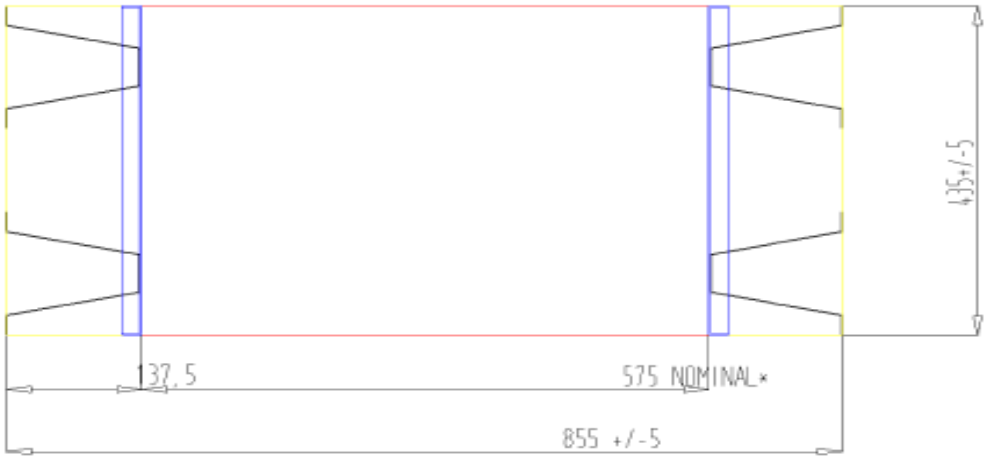
Channel Name (Alias)	Units		Transmit Rate (Hz)Max
Lap Time Gain/Loss	Second	s	10
Lap Time Gain/Loss Final	Second	s	1
Lap Time Predicted	Second	s	10
Lap Time Reference	Second	s	1
Lap Time Running	Second	s	10
LTC 1 Diag			20
LTC 1 Firmware Version Letter			1
LTC 1 Firmware Version Number			1
LTC 1 Serial Number			1
LTC 1 State			20
LTC 2 Diag			20
LTC 2 Firmware Version Letter			1
LTC 2 Firmware Version Number			1
LTC 2 Serial Number			1
LTC 2 State			20
Mode Switch			1
PDM Current 1 Main Pump 1‡	Amp	A	5
PDM Current 11 Radio	Amp	A	5
PDM Current 12 MoTeC Devices	Amp	A	5
PDM Current 13 Tail Lights	Amp	A	5
PDM Total Current‡	Amp	A	50
Multiple PDM Voltages			1
Multiple PDM Status			1
Multiple PDM Current			1
Power Steering Pressure	PSI	psi	100
Power Steering Temperature	Celsius	°C	1
Sensor ID FL			1
Sensor ID FR			1
Sensor ID RL			1
Sensor ID RR			1
Soft Tyre			1
Speed FL	Kilometre/hour	km/h	20
Speed FR	Kilometre/hour	km/h	20
Speed RL	Kilometre/hour	km/h	20
Speed RL Calculated	Kilometre/hour	km/h	20
State Gear Shift			50
State Ignition Cut			50
State Ignition Timing			50
Steered Angle	Degree	°	50

Channel Name (Alias)	Units		Transmit Rate (Hz)Max
Suspension (Damper) Position FL			20
Suspension (Damper) Position FR			20
Suspension (Damper) Position RL			20
Suspension (Damper) Position RR			20
Throttle Pos	Percent	%	50
Throttle Pos Fuel Mix Aim	Lambda	LA	20
TPMS WD Counter FL			1
TPMS WD Counter FR			1
TPMS WD Counter RL			1
TPMS WD Counter RR			1
Track State			10
Trans Temp Run Limit Time 1	Second	s	1
Trans Temp Run Limit Time 2	Second	s	1
Trans Temp Running Enable			1
Trans Temp Running Max	Celsius	°C	1
Transaxle Pressure	PSI	psi	20
Transaxle Temperature	Celsius	°C	1
Tyre Pressure FL	PSI	psi	5
Tyre Pressure FR	PSI	psi	5
Tyre Pressure RL	PSI	psi	5
Tyre Pressure RR	PSI	psi	5
Tyre Temperature FL	Celsius	°C	1
Tyre Temperature FR	Celsius	°C	1
Tyre Temperature RL	Celsius	°C	1
Tyre Temperature RR	Celsius	°C	1
Vehicle Odometer	Kilometre	km	1
Vehicle State			10
Wet Tyre			1

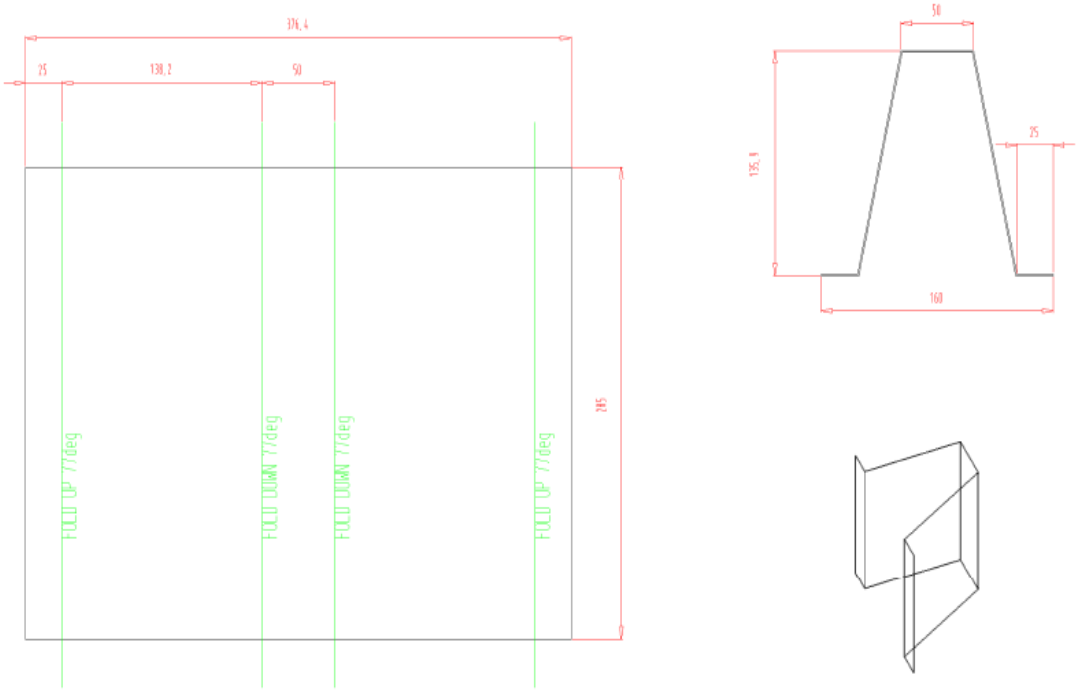
SCHEDULE I15. COMPOSITE REAR QUARTER PANEL



SCHEDULE I16. FUEL TANK HOUSING



Fuel cell support



Material minimum 1 mm aluminium sheet.
All dimensions of the fuel cell support may be varied slightly to suit individual applications.
Composite Wrap Kevlar material Minimum Specification.
3 x Layers 170 Gram Kevlar in one continuous piece with Epoxy resin wet layup. For 2.0mm box
And 6 x layers for 1.6 mm tank box.