



2022

MSA DOE Formula Vee National Challenge Sporting  
and Technical Regulations



Version 1

1 January 2022

162639

## REVIEW AND AMENDMENTS

Motorsport South Africa (MSA) will periodically review these rules and will present the revised version to all members for agreement to publish the updated version.

Amendments and updates to the rules will be recorded in the Amendment Record, detailing the updated version, date of approval of the amendment and a short summary of the amendment.

## AMENDMENT RECORD

<i>Modified SSR / ART</i>	<i>Date applicable</i>	<i>Date of Publication</i>	<i>Clarifications</i>

## INDEX TO SPECIFICATIONS AND REGULATIONS

### ART. SPECIFICATION

1. DEFINITION
2. DIMENSIONS
3. FRAME
4. BODY
5. DRIVERS COMPARTMENT
6. UNDERTRAY
7. FIRE EXTINGUISHER
8. FUEL TANK, FILTERS AND FUEL
9. FRONT SUSPENSION
10. STEERING
11. REAR SUSPENSION
12. TRANSMISSION & REAR AXLE
13. FLYWHEEL, CLUTCH, PRESSURE PLATE & ADAPTOR
14. BRAKES
15. WHEELS, HUBS AND TYRES
16. ENGINE & AUXILIARIES
17. EXCEPTIONS
18. FORMULA VEE DIMENSIONS – Drawing

### ART. CHAMPIONSHIP REGULATIONS

1. Controllers
2. Aim of the Championship
3. Rules and Regulations
4. Eligibility of Cars
5. Championship Series
6. Separation of Ties
7. Competition Numbers
8. Advertising
9. Post race scrutineering

## **ART.**

### **1. DEFINITION**

- 1.1 A Formula VEE is a single-seater racing car based on Volkswagen Type 1 front suspension, transmission, rear axle and a water-cooled VW "AGY" or "GY" engine with a nominal capacity of 1423cc.
- 1.2 All Formula VEE cars must be registered with the FVA. On registration, a chassis identification plate will be issued, which must be attached to the car using rivets or bolts. It must be attached inside the cockpit of the car so that it is visible at all times. No car will be allowed to compete without the identification plate attached as per the regulations.
- 1.3 The engine shall be fitted via an adaptor plate (see Article 13.4) directly to and ahead of the transmission.
- 1.4 No MODIFIED parts or COMPETITION parts are permitted, except where specifically stated.
- 1.5 The abbreviation "FVA" shall stand for "Formula VEE Association of South Africa".
- 1.6 For cars constructed and registered before the 31st January 2002, see Article 17 for possible exceptions.
- 1.7 Unless otherwise stated, the term "Welded" shall imply either Welding or High-tensile Alloy Brazing.
- 1.8 Unless otherwise stated, all suspension and harness bolts and cap screws used must be of at least Grade 8.8 High Tensile Steel.
- 1.9 Safety decals shall be applied to the car as per GCRs and SSRs.
- 1.10 Provision must be made for mounting a rear facing red warning light which must comply with the following:
  - 1.10.1 Must be permanently mounted not more than 600mm from the ground and be visible to cars approaching from the rear.
  - 1.10.2 Must be able to be switched on or off by the driver while he/she is fully strapped into the car.
  - 1.10.3 Must be operative at any stage of practice, qualifying or racing when visibility levels are low or when the Clerk of the Course or a FVA Committee member warrants its use on safety grounds.

### **2 DIMENSIONS**

- Refer to Article 18 for drawings
- 2.1 Overall length - from front of body to rear of transmission selector housing bush: Maximum 4000 mm Minimum 3100 mm
  - 2.2 Maximum front body overhang - measured from the front of the top tube of the axle beam: 1050 mm
  - 2.3 Wheelbase - from centre of front wheel to centre of rear wheel (with front wheels in the straight-ahead position): Maximum 2550 mm Minimum 2070 mm
  - 2.4 Track – measured from the centre line of one tyre to the centre line of the opposite side tyre (must be measured at the top most point of the tyres with the driver seated in the car): Front - Maximum: 1 380mm Rear - Maximum: 1 380mm
  - 2.5 Minimum Mass:
    - 2.5.1 Including ballast but without driver and helmet: 428kg
    - 2.5.2 With driver, helmet and ballast: 530kg
    - 2.5.3 Ballast must be permanently secured between the main roll-over bar and steering roll-over bar by either welding or bolting in such a manner as to be deemed safe by the FVA.
    - 2.5.4 The mass may be checked at the finish of a race or at any time during qualifying.
    - 2.5.5 The scales present on the day shall, be deemed correct, the calibration allowance shall be taken into effect, should there not be a calibration allowance available a deemed value of +/- 1kg will be used.
    - 2.5.6 No ballast, fuel, oil, brake fluid or coolant may be added prior to checking the mass. The driver may not consume and liquid or food before being weighed. Once the driver has left the weighing area the car may not be re-weighed. The car may be immediately rolled off and back onto the scale to be re-weighed if the car is underweight, the car may not be weighed more than 3 times.
    - 2.5.7 Only bodywork that has been displaced during a race / qualifying session may be retrieved and replaced prior to weighing. Only the actual displaced bodywork may be used for this purpose, not replacement parts

### 3 FRAME

On completion of the entire frame or replacement of any tubes in the frame, the frame must be inspected for compliance by the FVA Technical Committee. For inspection the frame shall: Have all welding completed and the cleaning up thereof shall be done. Have the seatbelt mountings, tube inserts, triangulation etc. completed. Not be sandblasted or painted. The frame design and construction is unrestricted except that:

- 3.1 It shall be constructed of mild steel tubing welded together. The only exception will be the main Roll Bar for which Chrome-Moly may be used instead.
- 3.2 It may be braced by panels which are welded, bolted or riveted to the frame. In this regard see also Article 4.3
- 3.3 All holes drilled through the frame tubes shall be fitted with inserts which must be welded in.
- 3.4 Chassis tubes may not be used as a means of ducting any liquid.
- 3.5 Where a roll-over bar, or a front or rear roll-over bar support is attached to an unsupported point on a longitudinal member of the frame, it must have additional supports from a point directly below the point of attachment back to the roll-over bar (in the instance of a support) or nearest bulkhead node point, in such a way that effective frame triangulation is achieved.
- 3.6 It shall have a main roll-over bar which must comply with one of the following specifications:
  - Conventional single roll-over bar (see 3.7);
  - Pyramid roll-over structure (see 3.8);
  - A roll-over bar conforming to FIA specifications (see 3.9).
- 3.7 Conventional single roll-over bar must meet the following criteria:
  - 3.7.1 Have the design approved by the FVA Technical Committee for compliance to the requirements of Article 3.7 only, before manufacture.
  - 3.7.2 Be of sufficient height that the top of the apex of the roll-over bar shall not be less than 50mm above the driver's helmet when seated in the car (See Article 18F).
  - 3.7.3 Be bent into an inverted "U" shape, with a rounded apex at the top of the roll-over bar.
  - 3.7.4 Be constructed of a continuous length round tubing, either:
    - 3.7.4.1 38mm outside diameter mild steel with a minimum wall thickness of 2mm or
    - 3.7.4.2 40mm outside diameter chrome-moly with a minimum wall thickness of 2mm
  - 3.7.5 Be at least 350mm wide at a point 350mm from the top of the apex.
  - 3.7.6 Must be welded to the frame.
  - 3.7.7 Be fitted with double front support tubes which shall:
    - 3.7.7.1 Be made of a straight length of at least 18mm diameter round steel tubing with a minimum wall thickness of 1.6mm.
    - 3.7.7.2 Be mounted not more than 200mm from the top of the apex of the roll-over bar.
  - 3.7.8 Be supported from the rear by supports taking the form of either an inverted "U" or two support tubes in such a way as to meet the following criteria:
    - 3.7.8.1 Where two supports are used:
      - 3.7.8.1.1 They must be made of at least 25mm diameter round steel tubing with a minimum wall thickness of 1.6mm.
      - 3.7.8.1.2 They must be mounted not more than 50mm from the top of the apex of the roll-over bar.
      - 3.7.8.1.3 They must be straight over their full, unsupported length.
    - 3.7.8.2 Where the support is in the form of an inverted "U":
      - 3.7.8.2.1 It must be made of at least 32mm diameter round steel tubing with a minimum wall thickness of 2mm.
    - 3.7.8.3 Must be welded to the frame.
    - 3.7.8.4 Must extend down on either side of the centre line of the frame.
    - 3.7.8.5 Where, for space reasons, it is impractical for a frame to comply with the above criteria a special dispensation can be applied for from the FVA Technical Committee. An official letter of authorization from the FVA must be kept with the car's logbook.
- 3.8 Pyramid roll-over structure must meet the following criteria:
  - 3.8.1 Have the design approved by the FVA Technical Committee for compliance to the requirements of Article 3.8 only, before manufacture.
  - 3.8.2 Be made up of two individual roll-over bars each constructed of a continuous length round tubing, either:
    - 3.8.2.1 38mm outside diameter mild steel with a minimum wall thickness of 2mm or
    - 3.8.2.2 40mm outside diameter chrome-moly with a minimum wall thickness of 2mm
  - 3.8.3 Have one roll-over bar at least 350mm wide at a point 350mm from the top of its apex.
  - 3.8.4 Be of sufficient height that the top of the apex of the roll-over structure shall not be less than 50mm above the driver's helmet when seated in the car (See Article 18F).

- 3.8.5 Have the top of the roll-over bars bent into inverted “U” shapes, with rounded apexes.
- 3.8.6 Have the apex of each roll-over bar abutting against the other, joined together by a welded steel plate of at least 1.5mm thickness. The steel plate shall cover at least 60% of the arc of the rounded shape of the roll-over bar apex.
- 3.8.7 Have an included angle between the individual roll-over bars of not less than 30 degrees and not greater than 45 degrees.
- 3.8.8 Must be welded to the frame.
- 3.9 FIA specification roll-over bar which must meet the following criteria:
  - 3.9.1 It must conform in all respects to the requirements of Article 227 - Appendix J of the FIA Yearbook.
  - 3.9.2 In the case of cars supplied by an official car manufacturer registered with MSA, conformance to the requirements of Article 3.9 will have to be submitted, in writing, in a form acceptable to MSA.
  - 3.9.3 Any cars designed and constructed by any party not registered as an official manufacturer with MSA and whose roll-over bar features require conformance to Article 3.9, will be required to submit written proof of such conformance in a manner acceptable to MSA. Such written proof shall furthermore be required to be counter-signed by a registered engineer in terms of Act 114 of the Republic of South Africa.
- 3.10 A Steering bulkhead roll-over bar shall be provided that must be welded in and comply with the following criteria: The top of the roll over bar shall be bent into an inverted “U” shape, with a rounded or flat apex. Be constructed of at least 32mm outside diameter mild steel tubing with a minimum wall thickness of 1.6mm.
  - 3.10.1 Must be fitted with a minimum of two front support tubes that must be welded in and meet with the following criteria: Must be made of at least 19mm outside diameter mild steel tubing with a minimum wall thickness of 1,6mm. The supports may not be attached more than 50mm from the top of the apex of the roll over bar. They must be straight over their full, unsupported length. Must be constructed so that, when a straight line is taken between the apexes of the main and steering bulkhead roll bars, crash helmet clearance is provided (see Article 18).
- 3.11 A metal heel support plate at least 150mm wide, and not less than 1mm thick, shall be fixed to the top or sides of the lower chassis tubes.

#### **4 BODY**

- The shape and design of the bodywork is unrestricted but shall incorporate the following requirements:
- 4.1 It shall encase the frame on all four sides from a plane ahead of the front suspension to the fire -wall, except for the driving compartment which shall be open at the top;
  - 4.2 It shall also provide cover for the engine and transmission from the fire-wall to at least the centre line of the rear axle tubes;
  - 4.3 It shall be constructed of metal, fibre-glass or other material acceptable to the FVA;
  - 4.4 Specifically, Kevlar or carbon fibre bodywork components are not permitted;
  - 4.5 Air ducting may be attached to or incorporated in the bodywork;
  - 4.6 No ground effect or downforce-enhancing front or rear aerofoil wings will be permitted;
  - 4.7 There may be no fixed or moveable appendages sealing the longitudinal apertures between the sprung part of the car and the track;
  - 4.8 Wheels shall remain external to the bodywork;
  - 4.9 The height of the nose of the body may not exceed 360mm when measured at the extreme front - most point to the ground directly below (at 90 degrees to the surface the car is standing on) on a level surface;

## **5 DRIVERS COMPARTMENT**

- 5.1 The driving compartment shall be so designed and constructed that the driver can get out of the safety belt and driving seat within 5 seconds without having to remove or manipulate any part of the car with the exception of a quick release steering wheel.
- 5.2 All cars shall be fitted with a seat mounted independently from, and not supported in any way, by the under-tray, approved by the FVA technical committee.
- 5.3 A metal or aluminium firewall shall be fitted between the driving compartment and the engine compartment which shall extend from the bottom of the frame to the top of the engine cover over the full width of the body. If the engine cover extends to the top of the roll bar the firewall shall have a minimum height of 590mm and shall not have a gap between the driver and the engine compartment through which flames could come into contact with the driver. No holes may be drilled in the firewall to duct air onto the heat exchangers.
- 5.4 Seat belts of the double shoulder full harness type incorporating crotch straps, shall be fitted and must have either four, five or six attachment points to the frame, and shall hold the driver firmly in place when seated in the car. Crotch straps shall be used at all times.
- 5.5 Engine oil or water tubes including radiators and oil coolers are permitted within the driver's compartment provided they are totally screened from the driver by aluminium or fibreglass.

## **6 UNDER TRAY**

- All cars must be fitted with a mild steel or Aluminium under tray, which shall meet the following criteria:
- 6.1 Must be riveted, bolted, welded or high-tensile alloy brazed to the frame, and may not extend outside the confines of the frame and radiator side pods
  - 6.2 Must cover the area from the steering bulkhead to the main rollover bar.
  - 6.3 A single ground effect floor tray may be fitted, provided it complies with the following criteria:
    - 6.3.1 Must be constructed of plywood with a minimum thickness of 3mm.
    - 6.3.2 May not extend further forward than the vertical plane of the front-most point of the front axle beam.
    - 6.3.3 May not extend further back than the vertical plane of the gearbox selector housing bush.
    - 6.3.4 Maximum width of 1200mm.
    - 6.3.5 Radius of curvature is allowed in one vertical plane only
    - 6.3.6 All mounting points must be substantially strong enough to withstand the pressures exerted. Mild Steel bolts are acceptable but cable ties are not permitted
    - 6.3.7 May not have apertures whose sole purpose is to enhance the aerodynamic performance of the car.
    - 6.3.8 The profile is free, within the above constraints.

## **7 FIRE EXTINGUISHER**

- 7.1 A fire extinguisher or fire extinguishing system of at least one-kilogram extinguishing capacity shall be fitted within the bodywork of the car so that it can be operated by the driver when strapped into the seat.
- 7.2 A Firestryker may be used as a replacement for a fire extinguisher/extinguishing system or as an addition to fire extinguisher/extinguishing system.
  - 7.2.1 The firestryker has to be fastened by means of a thin cable tie(s) OR Velcro strips OR mounting brackets to the frame/chassis of the cockpit, clearly/easily accessible when strapped into the seat.
  - 7.2.2 The firestryker may NOT be mounted to the body work of the car.
- 7.3 No fire extinguisher containing carbon tetrachloride is allowed.
- 7.4 If a gauge is not fitted, evidence must be furnished to prove that the extinguisher was purchased new or serviced in the period prescribed in (see GCR 257)
- 7.5 If an on-board fire extinguishing system is used, it must comply with the following:
  - 7.5.1 All nozzles, pipes and bends shall be of fire resistant material;
  - 7.5.2 At least one nozzle must be aimed at the engine and at least one nozzle must be aimed at the fuel tank;
  - 7.5.3 The system must be capable of staying intact during the release of extinguishant;
  - 7.5.4 The system must have prior approval from the FVA Technical Representative.

## **8 FUEL TANK, FILTERS AND FUEL**

### **8.1 Fuel tanks**

The shape, position and installation of the fuel tank/s is unrestricted but the following shall apply:

- 8.1.1 Fuel tanks may not protrude beyond the confines of the chassis;
- 8.1.2 Shall be constructed of metal, or other material acceptable to the FVA.
- 8.1.3 Shall be securely fitted to the frame;
- 8.1.4 The filling port and its cap shall not protrude beyond the bodywork;

- 8.1.5 The filling port cap shall have an efficient locking action to reduce accidental opening on crash impact or incomplete locking after refuelling;
- 8.1.6 Tank/s must be fitted with fuel breather pipe/s of 4mm maximum bore. These must be routed from the tank/s to the highest convenient point in the car (must be higher than the top of the fuel tank/s) and return to a position external to the cockpit and below the level of the tank/s. A motocross style one way breather valve is permitted.

## **8.2 Fuel filters**

- 8.2.1 Fuel filters must be placed away from any point which is vulnerable in case of a crash.

## **8.3 Fuel**

- 8.3.1 Only commercial fuel as specified in GCR 240 shall be used.
- 8.3.2 The addition of any additive to either the fuel or air is prohibited.
  - 8.3.2.1 An additive is defined as any agent that improves the volumetric efficiency and/or heat of combustion.

## **9 FRONT SUSPENSION**

The standard Volkswagen Type 1 front suspension (Link and Kingpin type), conforming in all respects to Volkswagen specifications, shall be used, except for the following modifications:

- 9.1 The beam mounting brackets may be re-located in any position on the beam.
- 9.2 The original rubber bump stops, and metal supports may be removed.
- 9.3 The use of coil-over (shock absorber) springs is prohibited
- 9.4 Front shock absorber uprights may be removed, the cuts shall not be closer than 10mm from the upper torsion tube and they must be boxed and welded.
- 9.5 Any make or type of telescopic shock absorber(s) may be used and shall:
  - 9.5.1 Be mounted either directly to the chassis or through push or pull rods.
  - 9.5.2 Be a totally self-contained integral unit without any facility for varying pre-set damping and stroke parameters from within the drivers' cabin. Any adjustment mechanisms must be totally mechanical, not via an electronic interface.
  - 9.5.3 Not be adjustable by the driver when he/she is seated in the cockpit
- 9.6 The lower link arms may have:
  - 9.6.1 The shock absorber mounting may be removed or modified.
  - 9.6.2 A bracket may be welded on for mounting the shock absorber or push / pull rods used to activate the shock absorber.
- 9.7 Negative camber on each front wheel shall be unlimited.
- 9.8 To enable the adjustment of the ride height of the car, adjusting mechanisms may be fitted.
  - 9.8.1 These mechanisms must be of such a configuration that the ride height of the vehicle may be adjusted externally, with the vehicle stationary and without any dismantling of the front suspension components.
  - 9.8.2 The locating bush at the midpoint of the axle tubes cannot be wider than 35mm.
  - 9.8.3 Competitors may apply to the Formula Vee Technical Consultant/s for a ruling on any ride height adjustment mechanism they wish to use. Should there be any doubt on the technical conformance to the regulations of the mechanism, the controllers will act as sole arbitrators.
- 9.9 Anti-roll bars may be fitted.
- 9.10 To facilitate the fitting of an internal anti-roll bar, the locating bush at the midpoint of the axle tube may be removed.
- 9.11 Torsion Bars:
  - 9.11.1 One torsion bar may be removed and the other modified by removing or adding spring blades (half or full) as supplied standard by Volkswagen and specified by the manufacturer for this use only. The maximum number of leaves in a spring pack cannot exceed the number in a standard pack.
  - 9.11.2 Shortening of the torsion bar by any method is strictly forbidden.
  - 9.11.3 The ends of the torsion bar spring packs must be square with a suitable countersunk conical drilling which will ensure firm location and fixing inside the link arms by the standard grub screws as fitted by Volkswagen
  - 9.11.4 To increase the stiffness of the torsion bar system, mild steel or aluminium tube sleeves not greater than 3mm thick may be placed over the section of spring pack stretching between the end of the link arms and the central pivoting bush inside the carrier tubes. These sleeves cannot be fixed in any way to the link arms, the central pivot/locating bush or any other areas of the suspension tube internals.
- 9.12 External lateral locating bushes or bearings may be fitted.
- 9.13 Internal Bushes:
  - 9.13.1 The lateral location of the internal bushes by means of suitable fasteners will be allowed.

- 9.13.2 The internal bushes may be replaced but must be of the same configuration width and location as the original fibre bushes.
- 9.14 Link-pin shims may be cut for ease of adjustment.
- 9.15 Locating screws may be fitted to the uprights to keep the link pin bushes in place.
- 9.16 The link pin bushes may be machined with an angled centre hole to accommodate for camber changes.

## **10 STEERING**

- The steering mechanism shall either be of rack and pinion type or standard Volkswagen Type 1 system.
- 10.1 The castor angle and toe in/out settings are free.
  - 10.2 The steering column is unrestricted
  - 10.3 Any steering wheel may be used.
  - 10.4 The tie rod ends may be replaced with:
    - 10.4.1 Aircraft or racing type spherical joints not less than 10mm (or the imperial equivalent) in diameter
    - 10.4.2 Industrial type spherical joints not less than 12 mm in diameter.
  - 10.5 The hub steering arms may be re-drilled to mount the tie rod ends below the arms.
  - 10.6 Any spacer used between the steering arm and the tie rod end must not be thicker than 15mm unless the steering arm encases the tie rod end.
  - 10.7 To permit the mounting of steering mechanisms in front of the axle beams, front wheel hubs may be interchanged and mounted so that the hub steering arms are orientated towards the front of the car.
  - 10.8 To permit commercially available rack and pinion assemblies to be used, it will be permissible to shorten the horizontal distance (nominally 130mm) between the tie rod end hole centre in the steering arm and the centreline of the kingpin housing to a minimum of 80mm. This may be achieved by either:
    - 10.8.1 Fitting a bracket mounted onto the front wheel assembly using both the brake backing plate mounting bolt holes and the existing hole in the steering arm, or
    - 10.8.2 Using an assembly that allows the existing steering arm to be removed. In either case, the system used must be approved by the FVA Technical Representative prior to it being fitted or used. Photographic evidence may be taken, and written confirmation of the approval given will be provided to the driver, with a copy being retained by the FVA committee.

## **11 REAR SUSPENSION**

- 11.1 Coil spring(s) surrounding telescopic shock absorber(s) or torsion bars shall provide the main springing medium. Only a 'mono-shock' system is permitted. The original mounting points on the axle bearing housing may be removed;
- 11.2 Fore and aft location of the suspension may be provided by a single or twin radius arm/s on each side, the mounting points for these being unrestricted.
- 11.3 Metal, rubber or fabric devices may be used to control the suspension travel;
- 11.4 An Anti-Roll device may be fitted to the rear suspension.
- 11.5 Camber and toe-in/out settings are free.
- 11.6 Shock absorbers may not be computer controlled, nor may they be adjustable by the driver when he/she is seated in the cockpit.

## **12 TRANSMISSION AND REAR AXLE**

- 12.1 The standard Volkswagen Type 1 transmission and swing axle assembly conforming in all respects to Volkswagen specifications shall be used, except for the modifications listed below.
- 12.2 The ratios shall be:
- |                    |                  |
|--------------------|------------------|
| Final drive ratio: | 4,125:1          |
| Fourth gear ratio: | 0,93:1           |
| Third gear ratio:  | 1,26:1           |
| Second gear ratio: | 2,06:1           |
| First gear ratio:  | 3,78:1 or 3,80:1 |
- 12.3 Only components from Volkswagen gear sets listed in Article 12.2 may be used or unless otherwise stated in Article 12.4. They may only be used if they can be fitted without any modification to any of the components in the transmission or in the gear set itself with the exceptions listed below.
- 12.4 Gear types allowed:
- Standard VW Beetle Gears
  - Imported Weddle gears
  - Locally manufactured straight cut gears (as approved by the FVA in accordance with Article 12.2)
- 12.5 Modifications are permitted, if necessary, to accept the 0,93:1 fourth gear and 1,26:1 third gear ratios respectively.
- 12.6 The third and fourth gears may be welded and/or pinned (a hole spark eroded, and a pin inserted) to aid reliability of the gears.
- 12.7 The worn helixed teeth on any gear where the sliding hub connects may be removed to prevent the sliding hub jumping out of the gear.
- 12.8 The drive pinion shaft and clutch gear may be machined, if necessary, to accept the third gear ratio sets mentioned in Art. 12.2.
- 12.9 All synchromesh components must be in place and operating.
- 12.10 Any rear bearing housing may be used with suitable bearing spacers.
- 12.11 The crown wheel must be transposed to provide the required direction of side shaft rotation. The transmission may not be inverted.
- 12.12 For the purpose of re-adjusting selector fork positions on selector shafts without dismantling the gearbox, two holes not larger than 20mm in diameter may be drilled in the side of the gearbox housing. The openings must be properly tapped and plugged to avoid oil leaks. The selector fork locking bolts may be substituted with cap screws.
- 12.13 The use of locked or limited-slip differentials/final drives is prohibited.
- 12.14 It is not required for the vehicle to be able to select reverse gear and the reverse gear can be removed from the gearbox. This includes all the gears and mechanisms involved that can be removed for reverse gear.
- 12.15 The gearbox shall be ventilated to the engine oil catch tank or a separate container of no less than 50ml capacity.
- 12.16 Any make or type of lubricant commercially available through a recognised South African stockist may be used.
- 12.17 Any bearing, nuts, bolts, screws, gaskets and oil seals may be used provided these are supplied as normal replacement parts in place of Volkswagen components and that they are freely available.
- 12.18 Any replacement gear set maybe used also long as the ratio confirms to the rules and the gear has a helical pattern.
- 12.19 Aftermarket replacement bearings may be used.
- 12.20 A bearing retainer plate as supplied by the FVA maybe fitted in between the nosecone and bearing carrier.

## **13 FLYWHEEL, CLUTCH, PRESSURE PLATE AND ADAPTOR**

- 13.1 **Flywheel:** The flywheel may be obtained from any source but must be able to accept the standard type VW Type 1 180mm or 200mm clutch plate and pressure plate. It must have a ring gear that can be driven by a 6-volt or 12-volt Type 1 starter motor. The air-cooled engine flywheel may be altered so that it can bolt onto the AGY or GY crankshaft.
- 13.1.1 The minimum mass of the 180mm flywheel shall not be less than 4.8 kg, excluding all flywheel retaining bolts.
- 13.1.2 The minimum mass of the 200mm flywheel shall not be less than 4.37 kg, excluding all flywheel retaining bolts.
- 13.2 **Clutch:** The clutch mechanism may be either cable or hydraulically operated.
- 13.2.1 Any clutch plate, pressure plate and thrust bearing may be used provided they are supplied as normal replacement parts in place of the Volkswagen components and that they are freely available in South Africa through a recognised local stockist.
- 13.2.2 A FVA approved and supplied clutch plate may be used and must, at all times, conform to the following specifications:

- 13.2.2.1 Must be a 3 or 4 button sintered clutch plate;
- 13.2.2.2 Ceramic Copper pad type sintered buttons shall be used;
- 13.2.2.3 The minimum mass shall not be less than: 550 grams for the 180mm diameter clutch; or 580 grams for the 200mm diameter clutch plate.

**13.3 Pressure plate:**

The minimum mass of the pressure plate shall be not less than 2,7kg for the 180mm diameter; or 3,1kg for the 200mm diameter.

**13.4 Adaptor Plate:**

The adaptor plate is free but the thickness thereof may not be less than 15mm or greater than 25mm.

**14 BRAKES**

14.1 The braking system shall consist of a double circuit, one controlling the front wheels and the other controlling the back wheels, operated by a single pedal.

14.1.1 In the case of a failure or leakage in either of the braking circuits, the pedal shall still control two wheels, i.e. either the front brakes or back brakes.

14.1.2 Disc brakes shall be utilised on all four wheels as per Article 14.2 below.

**14.2 Disc brakes**

14.2.1 The brake calliper and disc will be as used Volkswagen Chico Golf.

14.2.2 Callipers are to be fixed with high tensile bolts to a suitable mounting bracket. The mounting bracket must in turn be fixed with high tensile bolts to the existing backing-plate mounting points.

14.2.3 The disc assembly must be mounted onto the existing hub carriers and splined shafts in such a way that the stress pattern onto the carriers is similar to the drum brake configuration.

14.2.4 Prior to any non-approved disc brake system being fitted, a drawing showing the details of such a system must be submitted to the FVA Technical Committee for approval.

14.2.5 Minimum disc thickness to be 7mm.

14.2.6 Any brake pad not manufactured specifically for motorsport application may be used provided they are normal replacement parts supplied by a recognised stockist in place of genuine Volkswagen components.

14.2.7 Not more than two (2) holes with a maximum diameter of 10mm may be drilled through the rear brake discs for the sole purpose of accessing the bearing housing retaining bolts or cap screws.

**14.3 General – Brakes**

Standard Volkswagen components need not be used in the braking systems except as specified in Article 14.2 above.

**15 WHEELS, HUBS AND TYRES**

**15.1 Wheels and Hubs**

15.1.1 Wheels shall be 15-inch diameter with a maximum rim width of 7J and a minimum mass of 6kg. Wheels may be either pressed steel or aluminium alloys. No machining is permitted for the purpose of removing weight.

15.1.2 Wheel spacers may be used to widen the track up to the maximum allowed in the regulations (see Article 2.4)

15.1.3 Bolts or screw in Studs used to secure the wheels must be flush with or protrude through the rear face of the hub when screwed in.

15.1.4 Where studs and nuts are used to secure the wheels, the nuts must be open on the outer end. The stud must be flush with, or protrude through, the nut when tightened up. The length of thread in the nuts may not be less than 20mm. It is recommended that the studs be made out of at least Grade 8.8 high tensile steel.

15.1.5 Wheel bolts or nuts must match the type of wheels used.

15.1.6 Rear hubs may not be reversed when fitted.

15.1.7 The rear hub profile may not be altered and must remain a uniform circle.

15.1.8 Not more than two (2) holes with a maximum diameter of 17mm may be drilled in the hub for the sole purpose of accessing the bearing housing retaining bolts or cap screws.

**15.2 Tyres**

15.2.1 Tyres will be registered to a competitor and not to a car.

15.2.2 Three (3) sets of tyres will be allowed per driver during a racing season.

15.2.3 All tyres used for qualifying and racing shall be registered by the competitor with the FVA and controlled in accordance with procedures from time to time advised by the FVA.

- 15.2.4 Competitors must ensure that their tyres are registered with the FVA prior to the commencement of a race meeting.
- 15.2.5 Only tyres that are marked and registered may be used for the duration of any qualifying or race session having National, Regional and/or Club status counting towards any Formula Vee championship or point's log.
- 15.2.6 A tyre's identification may be checked at any time during a race meeting.
- 15.2.7 Any tyre rendered unusable in the opinion of the FVA Committee may, at the latter's discretion, be replaced by the competitor without affecting his/her allocation.
- 15.2.8 Competitors have the choice of the following tyres, although availability is not guaranteed:
  - 15.2.8.1 Supplied by 1<sup>st</sup> Race:
    - 15.2.8.1.1 Bridgestone Potenza RE11 Front 195/50/15
    - 15.2.8.1.2 Bridgestone Potenza RE11 Rear 195/55/15
- 15.2.9 The FVA Committee may allow older sets of tyres used in previous years at its discretion.
- 15.3 The use of tyre warmers is prohibited.

## **16 ENGINE AND AUXILIARIES**

### **16.1 Specifications**

- 16.1.1 The engine shall be naturally aspirated, shall have a nominal capacity of 1423cc, shall be the GY or AGY range as fitted in the VW Citi Golf or Polo and shall have the following dimensions: Bore: 76,5mm with a tolerance of – 0.005mm and + 0.2554mm Stroke: 77,4mm
- 16.1.2 Engine components shall be assembled in the standard configuration and shall comply in all respects with the VW AGY or GY specifications except for the modifications listed below. Unless otherwise stated, all tolerances or nominal dimensions listed in Section 16 will be in accordance with Volkswagen works specification.
- 16.1.3 The engine shall be mounted in the upright position.
- 16.1.4 The cylinder head gasket may be the standard part supplied by VWSA part no 056/103/383J, 056/103/383L, 026/103/383P or FSU 103383, or the equivalent replacement part. In this regard see Articles 16.3.2 and 16.3.3.
- 16.1.5 The following components, emanating from sources other than Volkswagen SA, may be used, provided that they are recognised standard replacements (and not especially made for racing), that they do not require any unauthorised modification thereto (or of any other component) in order to fit them, and that they are freely available in South Africa through a recognised local stockist.
  - 16.1.5.1 Nuts, bolts, screws, etc. The threads of bolts and studs must protrude fully through Nyloc 'y' type nuts.
  - 16.1.5.2 Electric wiring.
  - 16.1.5.3 Gaskets and seals.
  - 16.1.5.4 Spark plugs. Any heat range in the standard long reach (14mm dia) plug may be used and double washers or spacers may be used to eliminate thread exposure.
  - 16.1.5.5 Connecting rod bearings, camshaft bearings and crankshaft bearings.
  - 16.1.5.6 Pistons & Piston Rings.
  - 16.1.5.7 Valves of the same profile as standard valves.
  - 16.1.5.8 Mechanical fuel pump.
  - 16.1.5.9 Water Pump
  - 16.1.5.10 Any conrod and head bolts may be used
- 16.1.6 Components may not be strengthened, reinforced or hardened either structurally or by any type of treatment which inherently increases their strength or hardness other than as specified in 16.8.5.
- 16.1.7 The fitting of heli-coils, plugs, inserts, stud inserts, carburettor bushes, oil seals, etc., the welding of any cracks and the re-sizing of worn parts constitutes a repair and is acceptable providing no other regulations are contravened in so doing.
- 16.1.8 For the purpose of sealing the engine by the scrutineers or FVA technical representatives using locking wire, it is recommended that a hole 2mm in diameter be drilled through a sump bolt head on each side of the engine. It is further recommended that two cam cover studs be cross drilled on either side of the cylinder head.

### **16.2 Balancing**

- 16.2.1 The following moving parts may be balanced: crankshaft, flywheel, pressure plate, front pulley, pistons, valve spring tension, connecting rods and the layshaft. Refer to the respective articles regarding restrictions.

### 16.3 Volumes

The total volume shall not be less than 45.5cc.

16.3.1 Volumes must be measured using a grade "A" burette filled with paraffin. Total volume shall be obtained by measuring the volume in the cylinder (16.3.3) plus the volume in the combustion chamber in the cylinder head, plus the volume in the gasket (16.3.2).

16.3.2 Volume of the cylinder head gasket:

16.3.2.1 If a standard VW supplied 1400cc (Part no. 17S 103 383A) or 1600cc (Part no.17S 103 383B) cylinder head gasket is used and the gasket has not been altered in any respect, a volume of 8.00cc for the 1400cc and 8.40cc for the 1600cc gasket must be used.

16.3.2.2 For non-standard gaskets, the volume will be arrived at by measuring the metal ring thickness in four different places as well as measuring the metal ring inside diameter in four different places and obtaining an average measurement.

16.3.3 The volume in the cylinder is measured with the piston wound down 2mm from TDC. As the volume between the top of the piston and the first compression ring will not be included in this calculation the gap between the outer diameter of the piston and the cylinder wall must be plugged with a film of grease or petroleum jelly.

16.3.4 Material may be removed from the centre of the top of the piston for the sole purpose of equalising volumes and maintaining the required volume specified provided:

16.3.4.1 The indentation made is within a maximum diameter of 63mm.

16.3.4.2 The lowest point of the indentation shall be in approximately the centre of the piston.

### 16.4 Camshaft

16.4.1 Camshafts will only be supplied by the Formula Vee Association or its approved supplier.

16.4.2 Cam timing may only be altered by means of an adjustable camshaft pulley.

16.4.2.1 The duration between cam lobes may not be altered in any way.

16.4.3 Cam measurement

#### **Intake / Exhaust common measurements:**

Dimension "A": 48.50 mm maximum

Dimension "B": 37.65 mm maximum

Maximum Lobe centre separation: 111.0 cam degrees  $\pm$  1 degree

#### **Intake train measurements:**

Duration: 253.00 crank degrees  $\pm$  2 degrees

Maximum cam lift: 11.20  $\pm$  0.10mm Net valve lift: 10.95  $\pm$  0.10mm

#### **Exhaust train measurements:**

Duration: 253.00 crank degrees  $\pm$  2 degrees

Maximum cam lift: 11.20  $\pm$  0.10mm

Net valve lift: 10.90  $\pm$  0.10mm

16.4.3.1 All camshaft measurements to be done using a Cam Doctor Analysis System (except common measurements "A" and "B" where a micrometre is to be used).

16.4.3.2 Camshaft checking height set at 1mm.

16.4.3.3 Camshaft indexed using split lobe centrelines measurements with lash settings as follows:

Intake valve: 0.25mm

Exhaust valve: 0.30mm

16.4.3.4 All other dimensions (journal thickness etc.) to remain as per VW camshaft

Part no: 049 109 101K or 049 109 101W.

16.4.3.5 All components in the operating train gear, their dimensions, tolerances, quality and design must be standard production, especially in regard to their operating geometry relative to each other.

16.4.4 The cam followers may not be modified in any respect.

16.4.5 Holes may not be drilled in the tappet adjustment shims.

### 16.5 Cylinder Head and Block

16.5.1 No polishing of ports or combustion chambers is allowed. Furthermore, no material may be added to, or removed from within the confines of the combustion chambers and ports.

16.5.2 The cylinder head may be skimmed. In this regard see Article 16.3.

16.5.3 The location of the inlet and exhaust port holes may not be altered.

16.5.4 The valve head protrusion into the combustion chamber shall not be less than 0,20mm and not more than 1,5mm when measured from the valve head face to the combustion chamber face. This measurement shall be taken between the inlet and exhaust valve heads with valves fully closed.

- 16.5.5 Damaged or worn valve guides and valve seat inserts may be replaced or relined with any material, provided that the dimensions comply with the original parts except for the valve guide length. The maximum protrusion of the valve guide from the spring boss - 9,0mm. Minimum length of the valve guides – 36.0mm. Guide lengths may modified, but may not be shorter than 36mm.guides may only be machined 90 degrees to the guide length. Maximum guide protrusion from spring seat is 9mm.
- 16.5.6 Maximum inlet valve seat insert throat diameter measured at the apex of the 45° seat angle, and the 70° throat angle shall not be greater than 30,5mm and when measured at the apex of the 70° and 90° throat angles shall not exceed 29,2mm. Width of inlet valve seat must not be less than 1mm.Valve seat insert diameter must be the same throughout its cylindrical length and must conform to Volkswagen specifications in all respects.
- 16.5.7 Maximum exhaust valve seat insert - throat diameter measured at the apex of the 45° seat angle and the 90° throat angle shall not be greater than 27,8mm. Width of exhaust valve seat must not be less than 1,5mm. Valve seat insert diameter must be the same throughout its cylindrical length and must conform to Volkswagen specifications in all respects.
- 16.5.8 Inlet and exhaust port sizes shall not exceed the maximum dimension shown in Art 16.5.17. The foundry casting ridges may not be removed.
- 16.5.9 All valves may have material added/welded up to be lengthened to run a minimum size shim of 3.5mm per valve bucket. However, to allow for grinding, the minimum height of the vertical face of the valve head, measured from the apex of the 45° seat angle to the top of the valve head must not be less than 1.0mm.
- 16.5.10 Exhaust valve head diameter (maximum): 31.4mm
- 16.5.11 Inlet valve head diameter (maximum): 34.3mm
- 16.5.12 Valve springs and their retainers must be standard VW GY components. Spacers may be fitted under all valve springs to equalise spring pressure.
- 16.5.13 Non-standard camshaft covers are permitted provided that they do not improve the performance of the engine and are first approved by the FVA prior to fitting.
- 16.5.14 The oil orifice on the front camshaft bearing saddle may be elongated in the direction or rotation of the camshaft, to improve lubrication.
- 16.5.15 An additional tapped hole and corresponding stud may be fitted on the manifold side of the cylinder head for the purpose of securing the VW or DAW inlet manifold in position.
- 16.5.16 Re-shaping of the cylinder head combustion chamber is not permitted.
- 16.5.17 Port Measurements**  
Four measurements to be taken in exhaust and inlet port in position as indicated above and when added together and divided by 4 the average measurement for exhaust port must not exceed 30,6mm and inlet port must not exceed 33mm.
- 16.5.18 The dimensions of the standard block from the crankshaft centre line to the top face of the block must be 220.0mm ± 0.1mm.

## 16.6 Pistons and Rings

- 16.6.1 Only standard VW pistons, part no. 6KS 107 065B or their equivalents (subject to their approval by the FVA technical committee) with a maximum diameter of 76.49mm (as way, except to balance and equalise volumes).
- 16.6.2 For the purposes of balancing, material may only be removed from the following internal surfaces of the piston:
  - Below the lowest point of the gudgeon pin housing;
  - From the underside of the piston crown.
 One piston must remain untouched for balancing purposes.
- 16.6.3 See Art. 16.3.4 for equalising of volumes.
- 16.6.4 The measurement of the highest squish landing protrusion of the cylinder block, with the piston at TDC, must not be greater than 0.5mm ± 0.3mm.  
This measurement may be taken in either of the following ways:
  - 16.6.4.1 The mean of two measurements taken at the widest point of one landing. The piston may be rocked for sequential measurement.
  - 16.6.4.2 By placing a flat bar with a machined surface over the landings of the piston and then winding the piston down until the bar is resting on the cylinder block. Then place a dial gauge in the centre of the bar, zero the gauge and wind the piston up to TDC.
- 16.6.5 The outer profile of the piston may not be altered in any way.
- 16.6.6 Gudgeon pins may be fixed in position by either circlips or Teflon buttons.

## 16.7 Connecting Rods

- 16.7.1 Connecting rods shall be standard VW components, Part No. 053 105 401C.
- 16.7.2 Minimum mass of a connecting rod assembly, including bolts, nuts and small end bearing but excluding big end bearing shells shall not be less than 627 grams for a machined assembly.
- 16.7.3 Machining of a connecting rod assembly will only be allowed on the circumference of the small end and off the big end cap. No metal may be removed from the shank of the connecting rod. Polishing is prohibited.
- 16.8 Crankshaft**
  - 16.8.1 The crankshaft shall be the standard VW component, Part No. 0261051013.
  - 16.8.2 The profile may not be altered except for spot machining to achieve balancing. No polishing or deburring is allowed, other than of the bearing journals.
  - 16.8.3 The width of the connecting rod bearing journals cannot be altered.
  - 16.8.4 The groove type main bearing shell halves are permitted on both upper and lower bearing saddles.
  - 16.8.5 The crankshaft journals may be hard chromed or nitrided to improve wear characteristics.
- 16.9 Lubricating System**
  - 16.9.1 The standard GY or AGY oil pump must be used and may not be modified, except that the relief valve springs may be modified to change oil pressure and the fixing of the retaining plate is free.
  - 16.9.2 The oil pump pick-up may be changed or modified.
  - 16.9.3 Baffles and a windage tray may be fitted.
  - 16.9.4 An external oil cooling system may be fitted where convenient. Any suitable fittings may be used to house the oil filter and the external oil cooling system.
  - 16.9.5 An additional oil drain plug may be fitted to the sump.
  - 16.9.6 The fitting of an oil temperature-sensing device is free.
  - 16.9.7 The crankcase breather pipe may be altered but shall be connected to an oil catch tank of at least one litre capacity. The catch tank shall be clearly visible and easily accessible to be checked for oil content and firmly secured. This catch tank must be made of Aluminium or Mild Steel.
  - 16.9.8 Any make or type of lubricant commercially available in South Africa through a recognised stockist may be used.
  - 16.9.9 The use of high-pressure oil hoses and fittings is compulsory.
  - 16.9.10 Oil filter bodies shall be locked or clamped to prevent them coming loose.
  - 16.9.11 Sump plugs must be wire-locked.
  - 16.9.12 The larger capacity standard sump off current model VW Golfs, Polos and Jettas, is permitted.
- 16.10 Electrical**
  - 16.10.1 The alternator may be removed.
  - 16.10.2 The ignition system shall comprise any single coil with either a contact breaker system as found on the VW Golf range, the Passat, Jetta or the standard electronic ignition system as used on the GY motor.
  - 16.10.3 On the distributor for the GY motor, or its equivalent, the vacuum advance mechanism may be removed, and the advance springs and weights may be modified.
  - 16.10.4 The VW Polo solid shaft-type distributor, or its equivalent, may be used.
  - 16.10.5 The Hall sender unit and the TCI-H, or their equivalents, may only be used with the standard electronic ignition system and may not be changed in any way.
  - 16.10.6 A 6- or 12-volt battery system shall be used.
  - 16.10.7 A Circuit Breaker Master switch shall be installed in the main positive battery lead as per SSR 2 vii a.
  - 16.10.8 The battery must be secured in a fixed and firm manner.
  - 16.10.9 Any form of non-standard engine electronic management system is prohibited and no form of electronic pit to car, or car to pit, communication will be permitted while the car is on track.
- 16.11 Carburettors**
  - 16.11.1 Only Weber 40 DCOE side-draught carburettors may be used. They may not be modified in any respect, except as stated below.
  - 16.11.2 Only 34mm choke tubes may be used, and must remain standard as supplied by the manufacturer (with a variable of +- 0.2mm). If 34mm choke tubes are unobtainable then a set of choke tubes may be submitted to the FVA Technical representative for machining out to 34mm. If a set of smaller choke tubes have already been opened out to 34mm they must be submitted to the FVA. Technical Committee for approval prior to being installed. All machined choke tubes must comply with the profile gauge held by the FVA, if not they shall be deemed to be illegal.
  - 16.11.3 Only F9 or F16 emulsion tubes may be used, and they must remain standard as supplied by the manufacturer.

- 16.11.4 Only 4.5 auxiliary venturis may be fitted, and they must remain standard as supplied by the manufacturer, excepting that the external flanging may be machined for the purpose of fitting the ram tubes. Grub screws may be used to secure the auxiliary venturis.
- 16.11.5 Air cleaners and air boxes are unrestricted.
- 16.11.6 For the purpose of controlling carburettor bowl ambient pressure, any system may be used, which does not require the carburettor body to be modified in any way other than blocking or obstructing the existing bowl vent.
- 16.11.7 The throttle spindle may be shortened externally to accommodate the gap between the two carburettors when mounted on the manifold.
- 16.11.8 The choke mechanism (starting device) may be rendered inoperative or removed.
- 16.11.9 The vibration mountings used between the carburettor and inlet manifold may not be thicker than 10mm.

#### **16.12 Inlet Manifold**

Only the following cast alloy manifolds shall be allowed:

- i) The original DAW Racing.
  - ii) The VW locally manufactured.
  - iii) The Formula Vee Association Manifold.
  - iv) Any manifold manufactured with similar measurements to the manifolds above.
- 16.12.1 The inlet manifold ports may be re-profiled to match the cylinder head ports, and the carburettor throats.
  - 16.12.2 Dowel pins may be used, or bushes may be counter sunk in the manifold to accurately match manifold and cylinder ports. Carburettor or manifold support brackets may be fitted.
  - 16.12.3 The length of the manifold when measured externally from the top of the carburettor flange side to a plane parallel to the cylinder head flange side shall be:
    - 16.12.3.1 DAW racing manifold: 65mm ± 4mm.
    - 16.12.3.2 VW manifold: 76.5mm ± 4mm.
    - 16.12.3.3 FVA manifold: 86mm ± 4mm.
  - 16.12.4 Only the FVA Manifold may be mounted with a spacer plate which fits between the manifold and cylinder head. The thickness of the spacer plate must be 15mm ± 2mm. The spacer plate may be machined to accept "O" rings for the purpose of sealing against the head and manifold.

#### **16.13 Cooling System**

- 16.13.1 Heat exchangers (Radiators) are unrestricted.
- 16.13.2 The overflow pipe from the cooling system must be directed into a separate catch tank of at least one litre capacity.
- 16.13.3 Fenner or equivalent tooth belt taper lock couplings and pulleys may be used to drive the water pump from the crankshaft and the standard "V" belt pulleys may be removed.
- 16.13.4 If "V" belt pulleys are retained, Jockey pulleys may be fitted to tension the "V" belt. Any "V" belt and pulley combination may be utilised.
- 16.13.5 Coolant / water tubes including radiators are permitted within the driver's compartment, provided they are totally screened from the driver by aluminium or fibreglass.
- 16.13.6 Chassis tubes may NOT be used as a means of ducting coolant / water.

#### **16.14 Exhaust System**

- 16.14.1 Any exhaust system may be fitted, but the following shall apply. The lower edge of the outlet orifice/s of the exhaust pipes shall not be less than 10cm nor more than 60cm from the ground.
- 16.14.2 The outlet orifice/s shall not protrude more than 25cm beyond the rear of the transmission selector housing bush and may not deviate more than 22 degrees from the horizontal axis.
- 16.14.3 Must comply with GCR 245 "Silencing of Vehicles".

#### **17 EXCEPTIONS**

Only for cars constructed and registered before 31st January 2002, the article number referred to shall read as follows:

- 17.1 On cars constructed and registered before 1st January 2001, a continuous length of at least 35mm outside diameter round mild steel tubing with a minimum wall thickness of 2mm is permitted.
- 17.2 Must be welded, high- tensile alloy brazed or bolted in. Where a support is bolted in, the bolts or cap screws used must be at least 10mm in diameter and be high-tensile (minimum grade 8.8). If a hole is drilled through a tube it must have an insert welded or high-tensile alloy brazed into it to prevent the tube distorting when bolted up. Holes may NOT be made in the roll-over bar. It is preferred that tags (one each side of the support tube in order to put the bolt into double shear) be utilized. The tags shall be made of at least 3mm thick steel plate, a minimum of 30mm x 30mm in size. Where a support is attached to the engine the following will apply: A steel

plate not less than 5mm thick must be secured by two or more 8mm (minimum) high tensile minimum Grade 8.8) bolts / cap screws. There are 8mm tapped holes on the right hand side and the front face of the block and 10mm tapped holes on both sides of the block that may be utilized.

- 17.3 On cars constructed and registered before the 1st January 2001, can be made up of two individual rollover bars each made out of a continuous length of at least 35mm outside diameter round mild steel tubing with a minimum wall thickness of 2mm.
- 17.4 On cars constructed and registered before the 31st January 1999, the supports shall be mounted not more than 1/3 of the roll bar height from the top of the apex.
- 17.5 Front shock absorber uprights may only be removed if a steering bulkhead roll-over bar is fitted, which complies with Art. 3.10.

## **18 FORMULA VEE DIMENSIONS – DRAWINGS**

- A) Overall length – see Art. 2.1  
Wheelbase – see Art. 2.3  
Front body overhang – see Art. 2.2
- B) Front track – see Art. 2.4
- C) Rear track – see Art. 2.4
- D) Roll - over bar clearance to driver's helmet – see Art. 3.7.2 and 3.8.4
- E) Exhaust length – see Art. 16.14.2

## 2022 FORMULA VEE NATIONAL CHALLENGE CHAMPIONSHIP REGULATIONS

### ART

#### 1. CONTROLLERS

MSA shall have overriding authority in respect of all aspects of the championship series. The Formula Vee Association shall be responsible for the normal administration of the series, subject to the aforementioned and specifically subject thereto that each competitor shall take part in any competition voluntarily and at his/her own risk, acknowledging the risks, dangers and perils attendant upon motor racing, its rules and the technical specifications for competition vehicles.

#### 2. AIM OF THE CHAMPIONSHIP

To declare a 2022 SA Formula Vee National Challenge Champion.

#### 3. RULES AND REGULATIONS

- 3.1. All qualifying races will be held under the General Competition Rules and Standing Supplementary Regulations of Motorsport SA, these standing regulations, and the supplementary regulations issued by the promoters.
- 3.2. The GCR's and SSR's must be read and understood in addition to these regulations and specifications.
- 3.3. All competitors must be in possession of an MSA Regional Circuit Car licence.

#### 4. ELIGIBILITY OF CARS

- 4.1. The championship will be open to cars complying with the 2022 Regulations and Specifications for Formula Vee cars. Organisers may not accept any car that does not comply with these specifications.
- 4.2. All Formula Vee cars must be registered with the Formula Vee Association. On registration a chassis plate will be issued, which must be attached to the car with rivets or bolts and must be mounted inside the cockpit of the car so that it is always visible. No car will be allowed to compete without the registration plate attached as per the regulations.

#### 5. CHAMPIONSHIP SERIES

- 5.1. The 2022 Motorsport Calendar is available from MSA and gives details of all championship event dates.
- 5.2. There will be two races for Formula Vee cars at all race meetings excepting where an organiser has obtained special permission from MSA to run a single longer race, or in cases of "force majeure", race heats will consist of 12 laps.
- 5.3. Coastal races will consist of 3 heat races. Racetracks that are eligible: Dezzi Raceway/East London/Port Elizabeth & Killarney.
- 5.4. Refer SSR 82 (i) in connection with the minimum number of starters required.
- 5.5. Points will be scored in each race as follows:

1st	- 20 points	7th	- 11 points	13th	- 5 points
2nd	- 17 points	8th	- 10 points	14th	- 4 points
3rd	- 15 points	9th	- 9 point	15th	- 3 points
4th	- 14 points	10th	- 8 points	16th	- 2 points
5th	- 13 points	11th	- 7 points	17th	- 1 point
6th	- 12 points	12th	- 6 point		

An additional bonus point will be awarded to the competitor setting the fastest lap time at each race meeting.
- 5.6. Starting grid positions will be determined as per SSR XII 26 iii) & v) : Grid positions shall be determined by qualifying times. Top 6 drivers to lot/draw to determine top 6 starting positions in heat 1 only. Heat 2/3 starting positions shall be determined by finishing order in previous heat.
- 5.7. An additional bonus point will be awarded to the competitor obtaining the overall fastest lap during official qualifying.
- 5.8. Where only one race of longer duration is scheduled in the SR's, then double the number of points listed above will be scored.
- 5.9. All races will be scored towards the National Challenge Championship series.

#### 6. SEPARATION OF TIES

The competitor with the greatest number of first place points in all championship races (not race meetings) will be declared the series winner. If this does not resolve the tie, then the greater number of seconds, failing these thirds and so on will be used to resolve the tie. If a tie still remains, then MSA will declare a champion on such basis as it deems fit.

## **7. COMPETITION NUMBERS**

- 7.1. Competition numbers shall comply with SSR 4, with the exception that the width and height of the numbers may have a minimum size of 40mm x 230mm x 160mm respectively.
- 7.2. Number "1" shall be reserved for the current Formula Vee champion, but should the current champion not be competing, then this number will not be allocated.
- 7.3. Before a number is allocated to a competitor campaigning a newly constructed or rebuilt car, the car shall be inspected by a competent person/s appointed by the Association to examine the car for good engineering practice and general compliance with the specifications. The Association reserves the right to request that a car be presented for inspection at any time.
- 7.4. Cars not meeting the safety and aesthetic standards as judged by the Formula Vee Association will not be allowed to compete.

## **8. ADVERTISING**

- 8.1. Where applicable, series sponsor decals must be prominently displayed on the car - one on the nose cone and one on each side of the car, above the wheel centre line and on the airbox or where the sponsor dictates.
- 8.2. Any competitor failing to display these decals in an approved position on the car, or displaying decals conflicting with the agreements reached between the Association and the sponsor/s shall be precluded from receiving any benefits and prize or traveling monies paid out by those sponsors (see GCR 246).
- 8.3. A competitor not registered as a bona-fide member of the Formula Vee Association, irrespective of him/her displaying decals in compliance with this Article, shall be precluded from receiving any benefits, prize or traveling monies paid out by the sponsors.
- 8.4. These decals shall be supplied by the Formula Vee Association.
- 8.5. At the request of the FVA Committee, a FVA decal must be prominently displayed on the front of the car.

## **9. POST RACE SCRUTENEERING**

- 9.1. Post-race scruteneering/stripping
  - 9.1.1. Each race meeting shall have post-race checks/stripping done after heat 2 of the day. (see GCR 252 & 254)
  - 9.1.2. To ensure randomness and fairness there will be draws done for vehicles and for specific parts to be checked. The draw shall consist of two separate boxes:
    - 9.1.2.1. Balls will be numbered and drawn; the number drawn shall represent the vehicle in finishing position (finishing positions in the last heat of the day shall be used)
    - 9.1.2.2. Balls will be numbered and drawn; the number draw shall represent the FVA technical regulation to be checked.
    - 9.1.2.3. The draw shall be done by the chief/club scrutineer on the day whilst drivers are still in post-race paddock.