



# 750 Motor Club LOCOST Championship 2013



## Sporting & Technical Regulations

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### 1: SPORTING REGULATIONS - GENERAL

#### 1.1: TITLE & JURISDICTION:

The LOCOST CHAMPIONSHIP is organised and administered by the 750 Motor Club Ltd in accordance with the General Regulations of the Royal Automobile Club Motor Sports Association (incorporating the provisions of the International Sporting Code of the FIA) and these Championship Regulations.

1. MSA Championship Permit No: CH2013/R024.

2. MSA Championship Grade: D.

3. Race Status: Clubman/National B.

#### 1.2: OFFICIALS:

1. Co-Ordinator: Giles Groombridge, The Seven Fifty Motor Club, The Conservatory Suite, Donington Park, Castle Donington, Derbyshire. DE74 2RP (☎ 01379 741641; ✉ [Racing@750mc.co.uk](mailto:Racing@750mc.co.uk)).

2. Eligibility Scrutineers: A. Johnson.

3. Championship Stewards:

D.Wells.

B.Cottrell.

I.Watson.

#### 1.3: COMPETITOR ELIGIBILITY:

1. Entrants must be fully paid up valid membership card holding members of the 750 Motor Club Ltd and possess a valid current year's MSA Entrants Licence.

2. Drivers must be fully paid up valid membership card holding members of the 750 Motor Club Ltd, be registered for the Championship and hold a valid MSA National B (or higher grade) Race Licence or be a professional driver in possession of a valid Licence (featuring an E.U flag) & medical issued by the ASN of a member country of the European Union (MSA Regulation H26.2.1.)

3. All necessary documentation must be presented for checking at all rounds when signing-on.

#### 1.4: REGISTRATION:

1. All drivers must register for the championship by returning the Registration Form with the Registration Fee to the Coordinator prior to the Final Closing date for the first round being entered.

2. The Registration Fee is £130.00 payable to the 750 Motor Club upon registration.

3. Registrations will be accepted from 1<sup>st</sup> January 2013 until the closing date for the last round of the championship.

4. Registration numbers will be the permanent Competition number for the Championship.

5. If any competitor wishes to change to a different car from the one originally registered for the championship, a completed registration form with registration fee must be sent to the Co-ordinator.

**TEAM CHALLENGE:** Two drivers may register to compete in one car for the Team Challenge.

#### 1.5: CHAMPIONSHIP ROUNDS:

The LOCOST CHAMPIONSHIP will be contested over the following rounds:

Date	Circuit	Round/s
Apr 1	Mallory Park	2
May 6	Castle Combe	2
May 25	Snetterton 300	2
Jun 15/16	Pembrey	2
Aug 24/25	Silverstone	2
Sep 21/22	Donington	2
Oct 12	Cadwell	2

#### 1.6: SCORING:

1. Points will be awarded to Competitors listed in the Final Results as follows:- 25; 22; 20; 18; 16; 14; 12; 11; 10; 9; 8; 7; 6; 5; 4; 3. All other finishers 2. All starters who fail to finish 1. Fastest lap – 1 point.

2. The totals from all qualifying rounds run (excluding any races which are abandoned and which are not replaced) less 2 will determine the final championship points positions.

3. Ties for end-of-season award winning places shall be resolved, when more than one competitor have equal totals, by taking into account the highest number of 1<sup>st</sup> places, 2<sup>nd</sup> places etc from the races they are counting as their best total

(i.e. their finishing position in **dropped rounds** do not get taken into account). If that fails to find a winner their highest or subsequent highest dropped scores will be added to their existing total score until a conclusive result is found.

**TEAM CHALLENGE:** Where two drivers are registered in the Team Challenge and are sharing a car, their points scored (as per 1.6.1) will be combined and they will compete for the Team Challenge Awards as per 1.7. Each driver must compete in at least 5 of the 14 championship rounds.

#### 1.7: AWARDS:

1. All awards are to be provided by the Organising Club unless agreed otherwise.

2. Per Round: Trophies to 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup>.

3. Championship: Subject to a minimum of 5 race starts, trophies to:-

1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> & 6<sup>th</sup> overall.

Best Prepared car.

Highest placed novice.

Team Challenge Award: Trophies to 1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> subject to a minimum of 10 (combined) race starts.

4. Bonuses:

Per Round: not applicable.

Championship: not applicable

5. Presentations: Garlands and Trophies are to be provided for presentation at the end of each race.

6. Entertainment Tax Liability. Not applicable.

7. Title to all Trophies: In the event of any Provisional Results or Championship Tables being revised after any provisional presentations and such revisions affecting the distribution of any awards the Competitors concerned must return such awards to the 750 Motor Club Competitions Secretary in good condition within 7 days.

### 2: SPORTING REGULATIONS - JUDICIAL PROCEDURES

**Rounds & Championship:** In accordance with Section C of the current year's MSA Yearbook and 4.2. of these regulations.

### 3: SPORTING REGULATIONS –

#### CHAMPIONSHIP RACE MEETINGS & RACE PROCEDURES

#### 3.1: ENTRIES:

1. Competitors are responsible for sending in correct and complete entries with the correct entry fees prior to the close of entry dates as per the entry forms.

2. Incorrect or incomplete entries (including driver to be nominated entries) are to be held in abeyance until they are complete and correct and the date of receipt for acceptance of entry purposes shall be the date on which the Secretary of the Meeting receives the missing or corrected information or fee.

3. Any withdrawal of entry or driver/car changes made after acceptance of any entry must be notified to the Secretary of the Meeting in writing. If driver/vehicle changes are made after the publication of Entry Lists with Final Instructions, the Competitor concerned will be accepted in accordance with D25.1.12.

4. The entry fee for each round shall be as per the Supplementary Regulations.

5. In the event of any rounds being oversubscribed the Organising Club may, in liaison with the Championship Coordinator, at their discretion run Qualification races. For Qualification Race procedures see 3.13 of these regulations. **Alternatively at double header race meetings, should there be sufficient space within the timetable, the Organising Club may divide the grid after qualifying into 3 separate Groups. The Groups will then form 3 races whereby each competitor participates in two races. All 3 races will be eligible for full championship points.**

6. Reserves are to be nominated on the Final List of Entries published with the Final Instructions or Amendment Sheet Bulletins. Reserves will practice and replace non-qualified (including drivers practising out-of-session or qualifying by virtue of having raced at the circuit within the previous 12 months), withdrawn or retired entries in Reserve Number order. If reserves are given Grid Places prior to issue of the first Grid Sheets for any round, the times set in practice shall determine their grid positions. If Reserves are given places after publication of the grid sheet and prior to cars being collected in the Official "Assembly Area" they will be placed at the rear of the grid and be started without any



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time delay. Otherwise they will be held in the Pitlane and be released to start the race after the last car to start the Green Flag Lap or last car to take the start has passed the startline or pitlane exit whichever is the later. Such approval to start MUST be obtained from the Clerk of Course.

**7. Acceptance of Entries:** Up to Closing Day, Race meeting organisers may accept up to the maximum number of starters permitted on the Track Licence for the circuit ("the maximum"). If entries received by closing day exceed the maximum, selection will be made in order of receipt. Those in excess of the maximum and up to 20% more will be treated as 'reserves'. If the maximum has not been reached by closing day, entries received after that date will be accepted strictly in order of receipt until the maximum is reached.

### 3.2: BRIEFINGS:

Organisers must notify competitors of the times and locations for all briefings in the Final Instructions or Official Race Day Bulletins for the meetings. Competitors must attend all briefings.

### 3.3: PRACTICE:

Practice sessions will be as per MSA Regulation Q4.5. Should any practice session be disrupted, the Clerk of the Course shall not be obliged to resume the session or re-run sessions to achieve the championship criteria and the decision of the Clerk of the Course shall be final.

### 3.4: QUALIFICATION:

Each driver should complete a minimum of 3 laps practice in the car to be raced and in the correct session in order to qualify for selection and order of precedence as set out in MSA regulation Q4.5. Drivers practising out-of-session or qualifying by virtue of having raced at the circuit within the previous 12 months will be placed at the back of the grid. The Clerk of the Course and/or Stewards of the Meeting have the right to exclude any driver whose practice times or driving are considered to be unsatisfactory - as per MSA Regulation Q4.5.

### 3.5: RACES:

The standard minimum scheduled race distance shall be 13 minutes plus 1 lap but should any race distance be reduced at the discretion of the Clerk of the Course or Stewards of the Meeting, it shall still count as a full points-scoring round.

### 3.6: STARTS:

Unless modified by the Organising Club's Standing Regulations, the following regulations shall apply:-

1. There will be a minimum elapsed period of 3 minutes from cars being released from the Assembly Area to the start of the race or, if applicable, the green flag lap.
2. Start Procedure: In normal circumstances there will be no green flag lap. A 'two minute' board will be shown on the startline; engines should be started at this stage and the grid cleared of any pit crew. A 'one minute' board will be shown, followed by a '30 second' board; a '5 second' board will be displayed; approximately 5 seconds after this board is withdrawn the red lights will be switched on; after between 2 seconds and 7 seconds they will be switched off to start the race. In the event of the failure of these lights a National Flag will be used to start the race.

In circumstances where a green flag is used, it will be waved from the startline to commence the green flag lap. The pole position driver should set a reasonable pace during this lap and slow down on approaching the startline to allow the grid to close up. Drivers should resume their correct grid positions with the minimum of delay. Any drivers unable to start the green flag lap or start the race are required to indicate their situation as per MSA regulation Q12.13.2. Drivers may make up any lost grid position during this green flag lap, BUT any drivers unable to maintain grid position to the extent that ALL other cars are ahead of them, may complete the green flag lap but MUST remain at the rear of the last row of the grid but ahead of any cars to be started with a time delay.

A '5 second' board will be displayed when the grid is stationary. Approximately 5 seconds after this board is withdrawn the red lights will be switched on; after between 2 seconds and 7 seconds they will be switched off to start the race. In the event of the failure of these lights a National Flag will be used to start the race.

3. Any car removed from the grid or driven into the pits after leaving the Assembly Area shall be held in the pitlane and may start the race after the last car to take the start from the grid has passed the startline or pit exit lane whichever is the later.

4. Excessive weaving to warm-up tyres - using more than 50% of the track width - and falling back in order to accelerate and practice starts, is prohibited.

### 3.7: RACE STOPS:

As per MSA Regulation Q5.4. to 5.4.3 of the current MSA Yearbook.

### 3.8: RE-SCRUTINY:

All vehicles reported involved in contact incidents during races or practice must be re-presented to the Scrutineers before continuing in the races or practice.

### 3.9: PITS AND PITLANE SAFETY:

1. Pits: Entrants must ensure that the MSA, Circuit Management and Organising Club Safety Regulations are complied with at all times.
2. Pitlane: The outer lane or lanes are to be kept unobstructed to allow safe passage of cars at all times. The onus shall be on all drivers to take all due care and drive at minimum speeds in pit lanes.
3. Refuelling may only be carried out in accordance with the MSA Regulation Q13, Circuit Management regulations and the SRs or Final Instructions issued for each Circuit/Meeting.

### 3.10: RACE FINISHES:

After taking the chequered flag drivers are required to: - Progressively and safely slow down, remain behind any competitors ahead of them, return to the pitlane entrance as instructed, comply with any directions given by Marshals or Officials and to keep their helmets on and harnesses done up while on the circuit or in the pitlane.

### 3.11: RESULTS:

All Practice timesheets, grid sheets and Race Results are to be deemed PROVISIONAL until all vehicles are released by Scrutineers after post-practice/race scrutineering and/or after completion of any judicial or technical procedures.

### 3.12: TIMING MODULES:

The 750 Motor Club utilises AMB transponder-based timing and competitors **must** have a compatible transponder fitted and working and advise the race organisers of its number prior to the event. The transponder is a TRANX 260 Direct Powered and is available from HS Sports Ltd - 01260 275708.

### 3.13: QUALIFICATION RACES:

If on closing date the number of entries received is appreciably more than the maximum number of starters permitted, the race meeting organisers will endeavour if feasible within the timetable, to run practice sessions and races to accommodate all entries, but are not obliged to do so. The grid for the heat will be filled by the slowest drivers from practice/s, the remainder forming the front part of the grid for the final. Spaces on the back of the grid for the final will be filled by the top classified finishers in the heat. If there are two practice sessions and the track conditions for them are significantly different, the grid for the heat will be filled by taking alternately from each session the slowest drivers until the grid is full.

### 3.14: CANCELLED/ABANDONED RACES:

There may be occasions when, due to circumstances on the day, a scheduled race is not run, a race meeting is abandoned or the circuit curfew is reached. The 750 Motor Club will use its best endeavours to find space in another race meeting in the same season in order to run a replacement championship round; preference will be given to a race meeting where the affected formula is already scheduled to race. No change of vehicle will be permitted without the permission of the Championship Stewards and then only in exceptional circumstances.

#### A: The qualifying session for a race/s does not take place.

Entry for the replacement race will be restricted to those who were 'signed on' for the race which is being replaced. A separate qualifying session will normally be held. If no space can be found for a replacement race, the number of championship scoring rounds will be adjusted accordingly.



### **B: The qualifying session for a race/s has taken place, but the race did not come under starters orders.**

Entry for the replacement race will be restricted to those who were qualified for the race which is being replaced; the grid for the cancelled race will be used for the replacement race. If no space can be found for a replacement race, the number of championship scoring rounds will be adjusted accordingly.

### **C: A race is 'red flagged' before the leader has completed two laps, but there is no time available to restart the race.**

Entry for the replacement race will be restricted to those who would have been able to restart the race which is being replaced; the grid for the cancelled race will be used for the replacement race. If no space can be found for a replacement race, the number of championship scoring rounds will be adjusted accordingly.

### **D: A race is 'red flagged' after the leader has completed two laps but less than 75% of its duration, but there is no time available to implement MSA regulation Q5.4.2.**

If the Clerk of Course decides that a replacement race should be run it will be in accordance with MSA regulation Q5.4.2. If no space can be found for a replacement race, a result will be declared retrospectively based on the order of crossing the finish line at one lap less than at the first time of the showing of the red flag and only cars which were under their own power at the showing of the red flag will be classified.

**If a race is 'red flagged' twice** and the second red flag is before the leader has completed two laps, the Clerk of Course may decide to rerun the race on the same day subject to circuit curfew but is not obliged to do so. If the decision is taken that it should not be rerun on the day or it cannot be because of circuit curfew, it will be considered an abandoned race and the number of championship scoring rounds will be adjusted accordingly.

### **3.15: Additional Sporting Regulations issued for the Championship.**

1. Any driver competing in the Championship may be called before a meeting of the Championship Stewards who, at their discretion, may take further action that could include exclusion from part or all of the Championship.
2. The Organisers will use any evidence available to them to request that the Championship Stewards investigate any drivers who are deemed to show poor driving standards or bring the championship into disrepute in any such manner through on and / or off track incidents. This will include any complaints made officially by registered competitors.
3. Championship Stewards are also empowered to consider any request from the Championship co-ordinator to penalise any Competitor for any breach of Championship regulations and, after holding a formal hearing if they deem it necessary, to impose a penalty in accordance with MSA Regulation C.2.1.1 (subject to the rights of appeal provided for in Section C).
4. One or more of the following may be imposed by the Championship Stewards as appropriate:
  - a) Reprimand.
  - b) Fine. This may be also applied in the case of a driver receiving three reprimands from the Championship Stewards in one season.
  - c) Time Penalty.
  - d) Suspension from all or part of the Championship. This may also be applied in the case of a driver receiving two fines from the Championship Stewards in one season.
  - e) Disqualification.

### **4: CHAMPIONSHIP RACE PENALTIES:**

#### **4.1: INFRINGEMENT OF TECHNICAL REGULATIONS:**

1. Arising from post-practice scrutineering or judicial action: Should a vehicle be found ineligible, the Clerk of Course will impose the penalty set out in MSA Regulation C3.3.
2. Arising from post-race scrutineering or judicial action: Should a vehicle be found ineligible, the Clerk of Course will impose the penalties set out in MSA Regulation C3.5.1 a & b and may impose the

penalty set out in MSA Regulation C3.5.1 c. Technical infringements may be referred to the Championship Stewards for further action/penalties.

#### **4.2: INFRINGEMENT OF NON-TECHNICAL MSA REGULATIONS and the Sporting Regulations issued for the Championship:**

1. In the case of a driver being excluded from a race, the Clerk of Course will impose the penalties set out in MSA Regulation C3.5.1 a & b and may impose the penalty set out in MSA Regulation C3.5.1 c.
2. In order to maintain standards of conduct, the Championship Organisers will monitor all Officials/Observers reports of adverse behaviour at race meetings. If any individual is included on two such reports during one racing season the Championship Organisers will request the Clerk of Course at future race meetings to consider specific observation of that driver's conduct.
3. The Clerk of Course may impose a 'Stop-Go' or 'Drive through' penalty during a race, in accordance with MSA Regulation Q12.6.
4. Any Competitor who is penalised under the Championship Sporting Regulations at any stage of a Championship event and receives an allocation of penalty points on their race licence in accordance with MSA regulations, will receive a grid slot penalty at the next round in which they compete following the allocation of penalty points, equal to the number of penalty points which were allocated. Double headers will be considered as two separate rounds; however if the decision to allocate penalty points is delayed such that further round/s of the Championship have taken place since the offence, the grid slot penalty will be implemented at the next round in which they compete after the allocation of the penalty points.  
The penalty will mean that a Competitor will be moved back grid slot places from their grid position (e.g. if a Competitor with a three grid slot penalty had a qualifying time that was good enough for pole position then the Competitor will start fourth on the grid). If for any reason the imposition of this grid penalty is impractical (such as the competitor's qualifying time, starting from the pitlane etc) or the offence occurs at the final meeting of the season, a time penalty of 5 seconds will be added to the elapsed race time of the competitor.
5. Additional specific Championship penalties as per 3.15 of these regulations.

### **4: CHAMPIONSHIP RACE PENALTIES:**

#### **4.1: INFRINGEMENT OF TECHNICAL REGULATIONS:**

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2. Arising from post-race scrutineering or judicial action: Should a vehicle be found ineligible, the Clerk of Course will impose the penalties set out in MSA Regulation C3.5.1 a & b and may impose the penalty set out in MSA Regulation C3.5.1 c. Technical infringements may be referred to the Championship Stewards for further action/penalties.

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## 5: TECHNICAL REGULATIONS

### 5.1: INTRODUCTION:

The following Technical Regulations are set out in accordance with the MSA specified format and it should be clearly understood that if the following texts do not clearly specify that you can do it, you must work on the principle that you cannot. The fact that some modifications are mentioned as prohibited does not imply that others are allowed. **The Locost Championship is not a Development Formula.**

**A) STANDARD:** The word 'standard' used within these technical regulations as a description of components is to be interpreted as per 'Standard Part' defined in Section B – Nomenclature & definitions in the MSA Blue Book. Checking will be by comparison to spare parts supplied by the manufacturer's official agent or by any other means necessary to ensure compliance.

**B) STANDARD PATTERN:** The phrase 'standard pattern' used within these technical regulations as a description of components is to be interpreted as per 'Standard Part' defined in Section B – Nomenclature & definitions in the MSA Blue Book. Checking will be by comparison to spare parts supplied by the manufacturer's official agent or by any other means necessary to ensure compliance.

### 5.2: GENERAL DESCRIPTION:

The **LOCOST CHAMPIONSHIP** is for Competitors participating in cars built to **these regulations and** specifications outlined in the book "Build Your Own Sports Car" written by Ron Champion. All cars will run in one class.

### 5.3: SAFETY REQUIREMENTS:

All cars must comply with the technical regulations listed in the MSA Year Book sections J & Q, and with the safety requirements listed in section K. Rollcage: A six-point cage as per Diagram 1 in appendix 6 of these regulations, with reference to K1.6.1, is compulsory; optional reinforcing members such as those detailed in MSA Year Book section K Drawing 12 may be fitted but none may extend forward of the front roll hoop; a diagonal brace/s within the top of the rollcage as per section K drawing 10 is recommended. Side-intrusion bars are strongly recommended to be fitted external to the chassis but may not extend further forward than the front of the driver footwell; they should be constructed using tubes of the same material and dimensions as the main cage and should be fitted by a roll cage manufacturer. Particular care should be taken in selecting the mounting positions for the 'feet' of the cage, with reference to MSA Year Book section K drawings 13 to 20. It is important that the roll cage is attached to the vehicle in such a way as to distribute the forces over the largest possible surface. It is not sufficient to attach the cage to a tube which is not supported vertically. Cages should be designed to form extensions to the chassis itself and not merely as attached components. Extinguishers must comply with MSA regulation K 3.1.2 a). Seat belts must be FIA homologated and as per K2.1.2 , 2.1.3. or 2.1.4. Further reference should be made to K5 – K6 and K8 – K14.

### 5.4: GENERAL TECHNICAL REQUIREMENTS & EXCEPTIONS:

All cars must comply with the requirements of sections J and Q19 of the current MSA Yearbook. All vehicles must comply with MOT requirements (with the exception of front headlights, front side lights and front indicators, emissions & rear fog light), be of sound construction and mechanical condition and be well maintained. There is no requirement for an MOT Certificate, Road Tax or Insurance. As a minimum, two mirrors must be fitted, each with a minimum surface area of 50 sq cms and giving a clear view to the rear, one on each side of the centreline of the vehicle.

### 5.5: CHASSIS:

Chassis must remain identical to original in terms of material construction and dimensions. However, it is permitted to add an engine bay diagonal (line A) to mirror that on the driver's side and two bracing bars (lines B & C) between the cockpit sides and the junction of the dashboard top/transmission tunnel as per the drawings in Appendix 6 of these regulations; a permitted alternative rear bulkhead drawing is also shown in Appendix 6. It is also permitted to add a transverse bracing tube to the lower chassis in the footwell area as per the drawings in Appendix 6. **It is also permitted to retain chassis members C & B1 uncut as per the drawings in Appendix 6.** Towing Eyes with a minimum internal diameter of 60mm, as detailed in Q19.1.3 must be fitted, front & rear, no higher than 18" from ground level; any metal portion of the towing eyes must be within the overall periphery of the vehicle and may be extended by means of a suitable flexible strap. A propshaft restraint must be fitted in accordance with MSA regulation K12. The area below the cockpit must have a steel floor of at least 18swg/1.2mm. The area immediately beneath the fuel tank may be under-skinned with aluminium. Aluminium under-skinning of the sides of the engine bay as shown in the drawings in Appendix 6 is permitted within the plan profile of the chassis and may not be extended beyond that profile. There must be drainage holes to prevent the accumulation of liquids. No edges of any part of any under-skinning may extend downwards beyond the silhouette of the chassis.

It is permitted to strengthen the steering rack mounts.

It is recommended that all tube ends are sealed to prevent corrosion.

**MATERIALS:** Minimum thickness of:- chassis tubing = 16swg/1.5mm; steel floor = 18swg/1.2mm; aluminium panelling = 18swg/1.2mm. It is permitted to panel the transmission tunnel in 16/18 swg aluminium as an alternative to steel. Spacing of rivets is free.

### 5.6: BODYWORK:

**Front and Rear Wings Material:** Fibreglass traditional style as shown in photo in section 6 of these regulations. **Solid Surface with no aerodynamic devices either attached or moulded in.** **Rear Panel Material:** Aluminium or glass fibre with solid surface. **Scuttle Material:** Fibreglass or steel. **Bonnet Material:** Aluminium or fibreglass. **Nose cone Material:** Fibreglass. **Side Panels Material:** Aluminium. **The side panels must be fitted directly on to the chassis top and bottom side rails. From the 1<sup>st</sup> of January 2014, the surface rearward of vertical chassis members FU1 and FU2 must have a solid surface.**

### 1. Modifications Permitted:

- 1. General:** Bodywork must remain unaltered in silhouette and plan views, subject to 5.6.1.4
- 2. Interior:** Only a fire extinguisher, a battery and any rollbar bracing may impinge upon passenger space. It is permissible to remove interior trim and passenger seat. **There must be a removable panel in the top of the driver's footwell which permits access for inspection of the brake pedal to master cylinder linkage.**
- 3. Exterior:** The engine and transmission must be fully enclosed. Air filters may protrude through the bonnet without the need for any cover but must have an effective seal between them and the bonnet; any other holes in the upper surface of the bodywork forward of the steering wheel plus any holes in the side surfaces of the bodywork forward of the steering wheel above a longitudinal line joining the top of the front and rear wheel rims, must be covered with solid bodywork having only a forward facing opening, forward facing louvers or with a metallic gauze with a maximum hole size of 1mm; holes solely for the exhaust system do not require any cover/gauze but must be a reasonably close fit. All vehicles must be fitted with a windscreen or an aeroscreen of minimum vertical height, measured at its attachment to the bodywork, of 75mm and a minimum width of 250mm. The passenger space may be covered by a removable tonneau of soft flexible material, fitted no higher than the top edge of the bodywork. Soft-tops/hoods do not have to comply with silhouette ruling (4). Any car fitted with a soft-top or hardtop will be considered to be a closed car and must be fitted with a full width and height windscreen and rear screen.



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A front number plate or a solid mounting plate 525mm wide by 115mm high ( $\pm 5$ mm on both dimensions) mounted securely & permanently vertical at all times, under the front of the nosecone and complying with ride-height regulations is mandatory; competitors will be issued with championship decals to be affixed to the plate.

For clarification of MSA regulation J5.2.6, mudguards must present no sharp edges and cover the complete wheel (flange, tyre and rim) around a minimum arc of  $120^\circ$  measured from hub centre and must be a continuous surface of rigid material with no gaps holes slots or vents. The front edge of the mudguard must be ahead of the vertical hub centreline. The rear edge of the mudguard may not be more than 75mm above the hub horizontal centreline.

**4. Silhouette:** Must remain unaltered with the exception of height of the scuttle and any "power bulge" fitted.

**5. Ground Clearance:** Under no circumstance can any part of the bodywork, or of the suspended part of the car with the exception of the exhaust system, the sump and the bellhousing, be below a horizontal plane passing 75mm (50mm for the exhaust system, the sump and the bellhousing) above the ground, the car being in normal racing trim with the driver aboard. A gauge of 75mm or 50mm may be used by Scrutineers before or after races or practice to check the ground clearance. It is permitted to add shims to or modify the engine mountings in order to comply with these minimum heights. There is no minus tolerance to these measurements.

### 2. Modifications Prohibited:

**1. General:** Kevlar, carbonfibre and titanium materials are not permitted.

**2. Interior:** It is not permitted to mount the fuel tank/s within the passenger space.

**3. Exterior:** Aerofoils, spoilers and side pods are not permitted. No adjustable aerodynamic devices are permitted. Wheel arch extensions are not permitted. 'Under-skinning' of the chassis is prohibited with the exception of the cockpit area as per the plans and 5.5, and the area immediately beneath the fuel tank, fuel pump & fuel lines within the 'boot' space.

**4. Silhouette:**

**5. Ground Clearance:** Side skirts or bridging devices are not permitted.

### 5.7: ENGINE:

#### Engine Sealing

All engines must have provision for scrutineer's wire seals. 1/16<sup>th</sup> " diameter holes pre-drilled in readily accessible locations on installed engines must be available.

- A) Sump to Block: Two adjacent retaining bolts on each side of the engine must be cross drilled.
- B) Rocker Cover: One retaining screw on each side of the engine must be cross drilled.
- C) Timing Cover to Block: Two adjacent retaining bolts must be cross drilled.
- D) Inlet Manifold to Head: Two adjacent retaining bolts must be cross drilled.
- E) Bellhousing to Block: Two adjacent retaining bolts must be cross drilled to enable the clutch and flywheel to be adequately sealed. **OR** Competitors must be prepared to remove either engine or transmission to enable sealing of clutch and flywheel in which case two adjacent clutch cover retaining bolts must be cross drilled.

Failure to comply renders the engine Ineligible.

#### Specification of Main Components:

Unless stated to the contrary within this section, all parts used must comply with the definition of Standard or Standard Pattern (5.1.A or B of these regulations).

**Cylinder block:** Only a FoMoCo (Ford Motor Company) cast iron 1300 X flow cylinder block may be used; cast iron bearing caps must be retained; standard bolts must be used. AX type blocks are not permitted.

**Pistons:** Pistons must be AE Part No: AE18647 (up to + 0.090") to either of the forms and dimensions shown in the illustrations in section 6 of these regulations. Whichever form is used, all the dimensions must be from the same illustration. **Later type Nural pistons Part No's: (+0.020") 87-780607/00, (+0.030") 87-**

**780609/00, (+0.060) 87-780614/00, (+0.090") 87-780617/00** may also be used. The dimensions of Nural pistons must be checked using the left hand column of the figures in section 6 of these regulations. Depth of bowl at centre is 13.87mm +/- 0.1mm. **NOTE** Piston Dimensions must be checked because of variations in batch production. Machining of the combustion chamber may be required to comply with the dimensions in section 6. Any sharp edges in the piston combustion chamber may be deburred to help prevent detonation/ preignition. Piston rings and gudgeon pin must be standard for those pistons. All rings must be fitted and the gudgeon pin may not be modified. Pistons may not protrude above block face. **Crankshaft:** A FoMoCo 1300 Xflow 5-bearing crankshaft must be used.

**Connecting rods:** FoMoCo 1300 Xflow conrods must be used.

**Cylinder head:** A FoMoCo 1300 Xflow cylinder head casting (as illustrated in section 6) must be used.

**Valves & valve train:** Standard or standard pattern valves with 3 collet grooves must be fitted; valves may not protrude more than 1.2mm above the head face. Maximum valve sizes are Inlet 1.506", Exhaust 1.24". The underhead radius of the inlet valve must be a minimum of 11.5mm; a radius checking gauge will be used which must only contact the valve at one point. The combustion chamber face of the valve heads may be flat or concave only. Valve seat angle must remain at  $45^\circ$  and be at least 0.060" wide. Overall length: inlet 110.92  $\pm$  0.5mm; exhaust 110.61  $\pm$  0.5mm. Valve stem oil seals are optional. Standard length 1100 or 1300 Xflow pushrods must be used. Valve springs are free but must be of single coil type. Spring caps must be the standard FoMoCo items. FoMoCo collets must be used.

**Gasket:** The cylinder head gasket must have a minimum compressed thickness of 0.85mm and a minimum cylinder aperture of 82.5mm.

**Rocker assembly:** Standard FoMoCo rocker pillars, rockers and rocker shaft must be used.

**Camshaft:** The only permitted camshafts are the Kent P103/104 and Sky Ford Formula Ford. They must remain entirely unmodified. It is not permitted to re-profile, re-grind or re-manufacture the camshafts. The camshafts must be purchased from Kent Cams or Sky Ford. Kent Cams will supply a 'kit' comprising of camshaft and followers.

Camshaft ID is marked on the fuel pump lobe. Sky Ford will supply a Formula Ford camshaft with individual recorded ID markings on the rear end face (It is recommended that followers are purchased at the same time). The 750 Motor Club reserves the right to remove the camshaft from any competitor's engine for the purposes of checking its authenticity. From 1<sup>st</sup> January 2014 only the Sky Ford Formula Ford cam may be used and is mandatory. Dimensions for the Formula Ford Cam can be found in section 6 of these regulations.

**Sump & oil pump:** Sump design is free and oil pick-up pipe may be modified. Dry sump lubrication is prohibited. A modified oil pump may be used but it must be mounted and operated as per the standard Ford fitment.

**Flywheel & clutch:** A FoMoCo 1100 or 1300 Xflow flywheel and ring-gear must be utilised. The minimum weight of flywheel and clutch assembly including flywheel and crankshaft mountings bolts is 10.5kg. Clutch driven plate must be a conventional single diaphragm spring type with shock absorber springs; friction material must be organic. A heavy-duty clutch cover may be used but must be the same configuration as the standard item.

### 1. Modifications Permitted:

It is the competitor's responsibility to ensure that no prohibited modifications have been carried out, if they are using an engine not assembled by them.

Unless stated to the contrary within this section, all parts and/or replacement parts used must comply with the definition of Standard or Standard Pattern (5.1.A or B of these regulations).

**Cylinder block:** Maximum rebore is standard +0.090" using only the pistons detailed in 5.7 of these regulations.

**Pistons:** Balancing of pistons may only be carried out by removal of material below the gudgeon pin centreline and only 3 pistons may be adjusted.

**Crankshaft:** Balancing of the crankshaft is permitted by removal of material only from those areas specified for the purpose by FoMoCo. Tuftriding and shot peening is permitted.



**Connecting rods:** Balancing of conrods is permitted by removal of material only from those areas specified for the purpose by FoMoCo (i.e. the bosses on the big-end cap and on the little end); a maximum of three rods may be adjusted. Little end bushes may be replaced. Tufftriding and shot peening is permitted. Rod end bolts are free.

**Cylinder head:** It is permitted to fit valve seat inserts to allow the use of unleaded fuel. 3 angle valve seats are permitted; the 45° portion must be at least 0.060" width; maximum inside diameter on the port side of the inserts to be 33.5mm inlet and 28.09mm exhaust. Replacement valve guides may be fitted and may be **either bronze** or cast iron. Other than these modifications no material may be added to or removed from the cylinder head. Inlet and exhaust ports may not be modified in any way and must remain as cast.

**Valves & valve train:** It is permitted to fit shims below the valve springs.

**Rocker assembly:** Standard FoMoCo Xflow rockers may be refaced on their contact-pad but the radius must remain standard and the ratio must not exceed 1.54:1. Rocker spacing springs are free, but solid spacers are not permitted.

**Camshaft:** No modifications are permitted. The use of offset dowels is permitted.

**Sump & oil pump:** Sump design is free and oil pick-up pipe may be modified. Dry sump lubrication is prohibited. A modified oil pump may be used but it must be mounted and operated as per the standard FoMoCo fitment.

**Flywheel & clutch:** A FoMoCo 1100 or 1300 Xflow flywheel and ring-gear must be utilised; to achieve balance and minimum weight material may be removed from the originally machined surfaces or the rim/flange only. The minimum weight of flywheel and clutch assembly including flywheel and crankshaft mountings bolts shall be 10.5kg. A heavy-duty clutch cover may be used but must be the same configuration as the standard item.

**Ancillaries:** Thermostat may be removed or, if used, must be of standard type. Crankshaft front pulley may be either standard FoMoCo pressed steel, standard Lotus twincam cast (Part No XO26E0331Y) or 4" steel.

## 2. Modifications Prohibited:

Any modifications other than those specifically permitted within 5.7 or 5.7.1 is prohibited.

The fact that some modifications are mentioned as prohibited does not imply that others are allowed.

It is specifically prohibited:-

- to add any material to the crankshaft by any means
- to modify inlet or exhaust valves in any way
- ceramic or anti-friction coatings are prohibited
- Vernier timing gears **and duplex chains** are prohibited

Data-logging which requires the fitment or use of any additional sensors is prohibited; for the purposes of this regulation, GPS is not considered to be data-logging.

## 3. Location:

Front engine as detailed in original drawings. Relocation of the engine within the recognised engine bay is permitted provided no modifications are required to the original chassis or bulkhead. The engine must be mounted vertically in the chassis.

## 4. Oil/Water cooling:

Any system may be used for oil cooling provided radiators are within the periphery of the vehicle. Water must be cooled using a radiator from a series production car positioned at the front of the chassis as detailed in the original drawings. Radiators constructed solely of aluminium are prohibited. It is permitted to change the number of cores/rows in the radiator. **The standard water pump and drive pulley must be retained;** electric pumps are not permitted.

## 5. Induction Systems:

The inlet manifold must be as fitted as standard equipment by FoMoCo to any 1300 Kent engine. It must remain standard in every way shape and form, except for the matching of the inlet manifold port faces to the standard port faces of the cylinder head with a maximum intrusion into the manifold of 10mm. Any twin choke downdraught carburettor with one maximum 23mm choke and one maximum 24mm choke venturi may be used; the size of the

carburettor jets are free. Simultaneously opening twin chokes are not permitted. Venturis must be integral to the carburettor; choke flaps and mechanisms may be removed. Carburettors may not be modified by the removal or addition of material. Press-fit fuel unions on the carburettor body must be replaced with screw-in unions. The carburettor must be fixed to the manifold using only the original fixings in their original positions. Air filters are free.

## 6. Exhaust systems:

Design and type of exhaust system including manifold and silencer is free, but must comply with MSA noise restrictions as per MSA yearbook J5.16.5 & J5.17. or as specified for any individual venue in the final instructions. All vehicles constructed after 31/12/99 must be fitted with a catalytic converter in the exhaust system.

## 7. Ignition systems:

Ignition mapping is prohibited. Spark plugs and leads are free. The distributor must be the sole means of initiating the LT current to the coil and distributing the HT current and no additional electronic system or systems are permitted. The distributor body is free and may contain either a contact breaker type system or a single pick-up housed within the body and amplifier.

## 8. Fuel delivery systems:

An electric fuel pump must be fitted. A fuel filter and/or pressure regulator may be fitted.

## 5.8: SUSPENSIONS:

### 1. Permitted modifications:

The original type of suspension system must be retained and should be:-

**Front:** Unequal length wishbones with suspension pick-up points to the dimensions in Diagram 3, Appendix 6 of these regulations. The bushes for the inboard end of the wishbone must be either bonded rubber (Metalastic type), or 'plastic' non metallic. Springing may be only by coil spring damper units (coil over dampers). No additional springing medium is permitted. Only dampers constructed of steel (including the mounting eyes) with internal reservoirs may be used and if adjustable, only have a single adjustment. The longitudinal positioning of either the top or bottom front suspension pick-up points on the chassis may be adjusted to provide the correct caster, if required. Also the wishbone chassis brackets may be wider to allow caster adjustment. The upright and hubs must be from Ford Cortina Mk III, IV or V. An anti-roll bar may be fitted but must be one-piece and use only one link at either end to connect to the suspension.

**Rear:** Escort Mk1 or 2 live rear axle located by upper and lower trailing arms each side combined with a 'Panhard' rod. The chassis pick up points for the rear radius rods must retain the longitudinal position specified in the book but may be moved vertically to either 4.3" or 5.75" apart; it is recommended that the radius rods should be kept parallel. The bushes for the ends of the trailing arms must be either bonded rubber (Metalastic type) or plastic.

Springing may be only by coil spring damper units (coil over dampers). No additional springing medium is permitted. Only dampers constructed of steel (including the mounting eyes) with internal reservoirs may be used and if adjustable, only have a single adjustment. For the Panhard Rod one "Rose-joint" may be used but only at one end. 'Plastic non metallic' suspension bushes may be used.

**The chassis bracket for the panhard rod may have an alternative vertical pick-up point. This is to allow the panhard rod to be parallel with the ground.** An anti-roll bar may be fitted but must be one-piece and use only one link at either end to connect to the suspension.

### 2. Prohibited modifications:

No controls which could allow adjustment of anti-roll bars by the driver whilst normally seated are permitted. The use of spherical rod ends and rose joints is prohibited other than for one end of the 'Panhard' Rod and the anti-roll bar links. The use of anti-roll bars consisting of more than one torsion element is prohibited. Modifications to suspension pickup points other than those permitted in 5.8.1 are prohibited.



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### 3. Wheelbase/track:

Wheelbase must be to the original dimensions.

### 5.9: TRANSMISSIONS:

(Refer to 5.1 A & B) The gearbox must be of the 4-speed integral bellhousing type as used in the 1300cc rear wheel drive Escort, or any standard production gearbox as used in the Cortina Mk3, 4 or 5 range, or the 4 or 5 speed Ford Sierra Type 9 gearbox. Material may not be removed from the bellhousing, with the exception of the mandatory removal of the casting lump at the bottom front edge of the bellhousing. The differential must be from the Ford Cortina, Escort or Capri range of cars. The bellhousing and differential housing must be cast iron.

#### 1. Permitted modifications:

A 'quick shift' gear linkage may be fitted.

#### 2. Prohibited modifications:

Four wheel drive is not permitted. Rose joints or spherical rod ends are not permitted in any transmission locating linkages with the exception of that detailed in 5.8.1.

#### 3. Transmissions & Drive ratios:

The gearbox and final drive ratios are free, but the gears must be genuine series-production FoMoCo parts; optional Ford Motorsport gear / final drive ratios or specialist competition transmissions including straight cut gears are not permitted and synchronesh must be retained. Maximum number of ratios 5, plus mandatory reverse. Autoselect gearboxes are not permitted. Limited slip, locked, torque-biasing differentials or similar are not permitted. (Refer also to 5.9 above).

It is not permitted to change any of the ratios from those originally fitted; it is not permitted to fit a non-standard set of ratios, even if all the ratios are taken from within the range of permitted gearboxes. A list of the gear ratios fitted to the permitted range of gearboxes is in Appendix 6.

### 5.10: ELECTRICS

**1. Exterior Lighting:** All exterior lighting including headlights (main & dip), side, brake, tail and indicators must be fitted and functioning to full MOT requirements. Headlights must be a minimum diameter of 5¾". Alternatively the front headlights, front side lights and front indicators may be removed as per MSA J 5.14.3 & J 5.14.4.

**2. Rear Warning Light:** An LED rear fog light to EU regulation 7, an FIA homologated LED rear warning light, or an LED stop light to EU regulation 38 is mandatory and must be mounted directly to the rear or the underside of the rear roll hoop, within 10cms of the centreline of the vehicle. Any manufacturer fitted rear fog light must not be switched on unless it complies fully with this regulation.

**3. Batteries:** A battery and starter motor capable of repetitive starts must be fitted and operable by the driver whilst normally seated.

**4. Generators:** A fully working alternator/generator must be fitted and electrically connected so that the standard battery charging function is providing a charge to the onboard battery. **The alternator/generator must be located in the standard position. Alternative mounting brackets may be used. The drive pulley must be steel.**

### 5.11: BRAKES

**A:** Rear brakes must be FoMoCo drum brakes from a 'Kent' engined Cortina, Capri or Escort - disc brakes are prohibited. Brake lining material is free.

**B:** Front brakes must be standard Cortina cast iron callipers and solid (not ventilated) discs from a 'Kent' engined Escort, Cortina, Capri. Discs may not be cross-drilled, grooved or lightened in any way apart from resurfacing the friction face subject to a minimum thickness that must not be less than 11.0 mm. Pad material free, but carbon-fibre is prohibited. Brake hoses are free.

**1. Permitted Modifications:** The friction faces of the disc may be reclaimed by simple machining maintaining a minimum disc thickness of 11.00 mm. The friction face of the brake drum may be reclaimed by simple machining within manufacturer's repair tolerances. Pedal box and master cylinder/s are free. Adjustable bias valve may be fitted,

provided it is located outside the cockpit. Brake bias adjuster may not be within the reach of the driver whilst normally seated.

**2. Prohibited Modifications:** ABS systems are prohibited. An hydraulically-operated handbrake is not permitted in that it does not comply with MOT requirements. The use of discs which are grooved, cross-drilled, radially drilled or modified in any other way is not permitted, except for the machining of the friction faces as specified in 5.11.1. No modification may be made to the non-friction area of the disc/bell. The use of brake drums which are modified in any way other than that permitted in 5.11.1 is prohibited.

### 5.12: WHEELS / STEERING

**1. Permitted Options:** Steering rack must be from a Ford Escort Mk2; ratio of the rack is free. Steering rack mounts may be strengthened and rubber bushes replaced with different materials.

**2. Prohibited Options.** No other modifications are permitted including the fitment of any 'wheel trims' or similar air deflectors.

**3. Construction & Materials:** WHEELS: Steel or **one piece** aluminium-alloy.

**4. Dimensions:** Maximum width 6". Diameter 13".

### 5.13: TYRES

**1. Specifications:** **The only permitted tyre is the Yokohama A539 sized at 185/60 x 13.** No alteration to the tyre from the manufacturer's specification is permitted. Re-cutting, re-grooving or in any other way modifying the tread pattern is not permitted. All the manufacturer's data must be clearly visible. Buffing of sidewalls to remove data is prohibited. Tyres must be to MOT requirements in every respect. The use of tyre heating/heat retention devices, tyre treatments and compounds is prohibited.

**2. Nominated Manufacturers:** Yokohama

### 5.14: VEHICLE WEIGHT:

Minimum weight including driver and race overalls, helmet etc. is 615 kilos.

### 5.15: FUEL TANK / FUEL

**1. Types:** Fuel tanks are free but safety tanks are recommended. A non-return valve must be incorporated in the vent system.

**2. Locations:** Free within the area behind the rear bulkhead. Chassis or bulkhead may not be modified to allow fitment of the tank. On safety grounds none of the fuel filler pipework, the filler cap or associated fittings may be attached to the external bodywork.

**3. Fuel:** Only petrol as defined in Section B Nomenclature & Definitions, Pump Fuel a) section of the MSA Yearbook for the current year and complying with BS4040, BSEN228 or BS7800 may be used; fuel which exceeds the stated RON (max) levels in Appendix 1 of Section B Nomenclature & Definitions is prohibited even if it is sold/promoted as being legal for UK Competition and/or obtainable from 'roadside' pumps. The use of additives by competitors which boost the octane rating (RON) in any petrol is prohibited. At the end of practice and the race at least 3 litres of petrol from the tank of the competing car must be available to the scrutineers for analysis. Compliance with minimum weight for the car will be taken before the petrol is removed.

### 5.16: SILENCING:

All vehicles must comply with the relevant maximum noise limits set out in MSA Blue Book regulation J. Chart 5.18.

### 5.17: NUMBERS & CHAMPIONSHIP DECALS

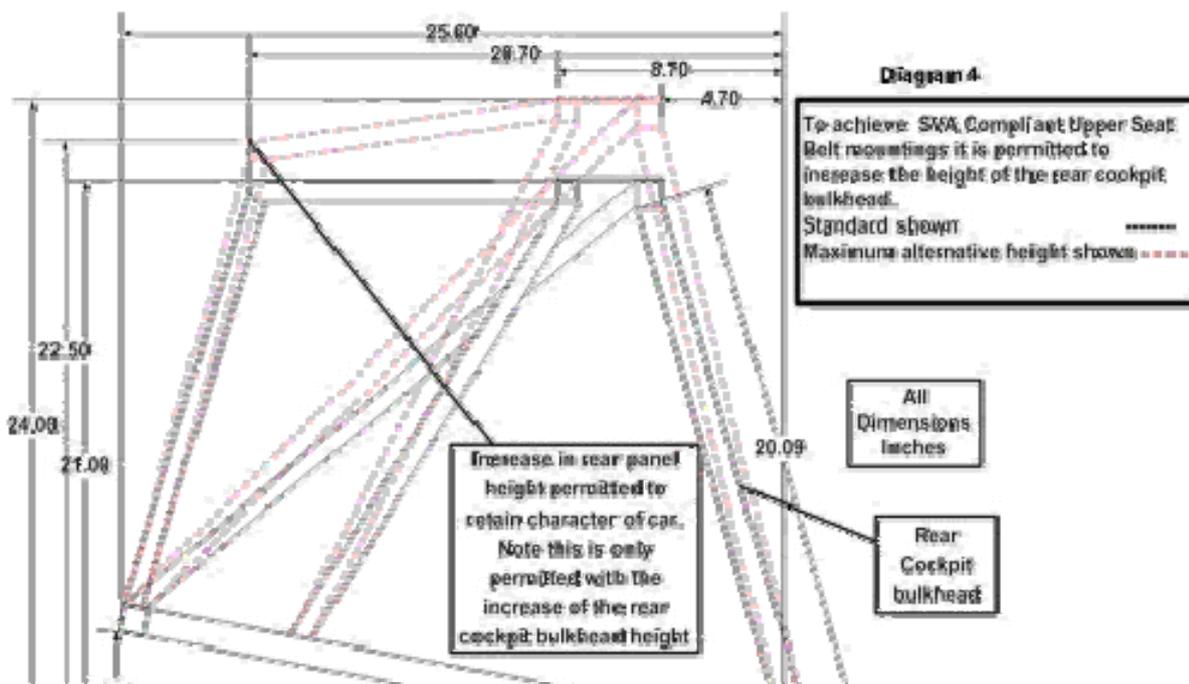
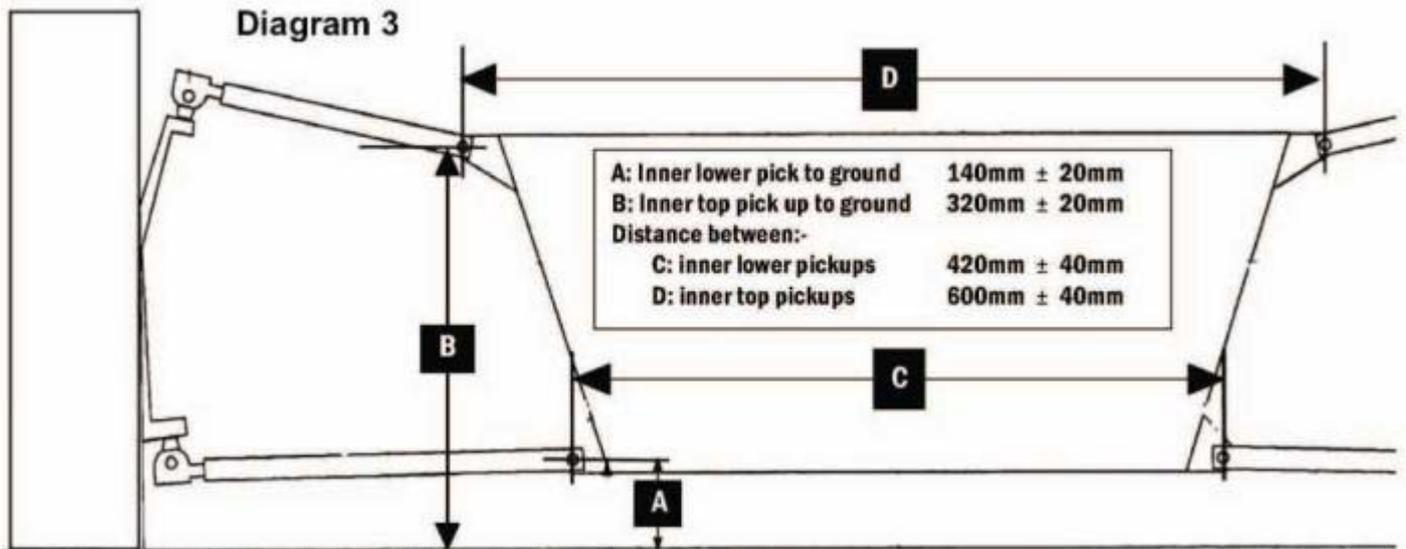
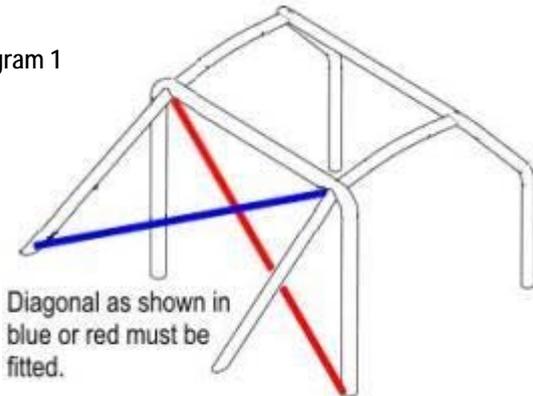
**1. Positions:** Race numbers must be displayed on each side of the vehicle alongside the cockpit/driver and as far forward on the front of the vehicle as possible. 750 Motor Club decals must be affixed prominently near all number backgrounds. Championship Sponsor's decals (where applicable) must be affixed in or near the positions detailed on any diagram supplied with those decals. No decals may be affixed to the aeroscreen. 750 Motor Club and Championship Sponsor's decals must take preference to any other decals. Failure to comply will render the vehicle and driver ineligible to race.

**2. Suppliers:** Sponsors and Club decals will be available at the first championship race in which the vehicle is entered.



## 6. APPENDICES:

Diagram 1

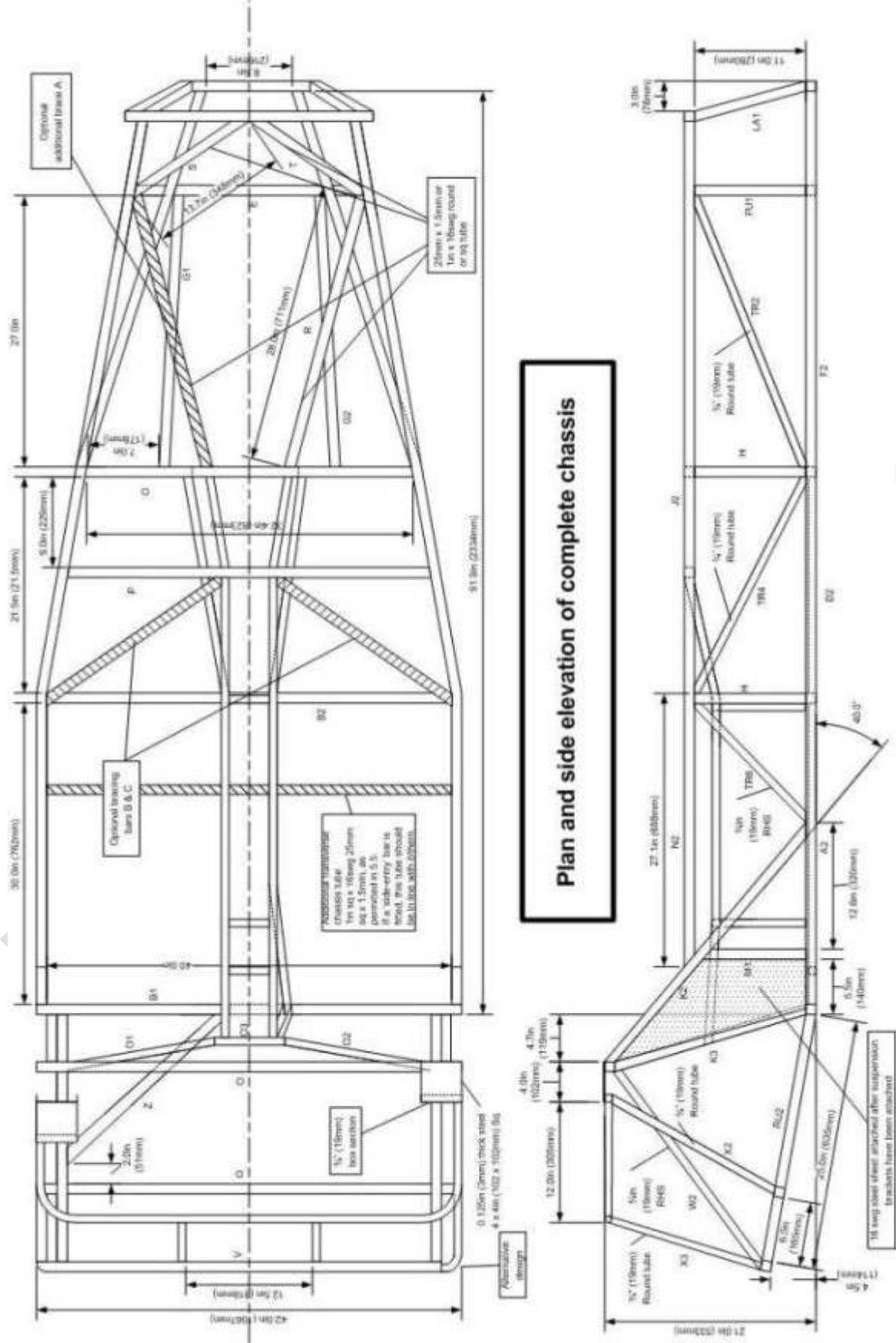


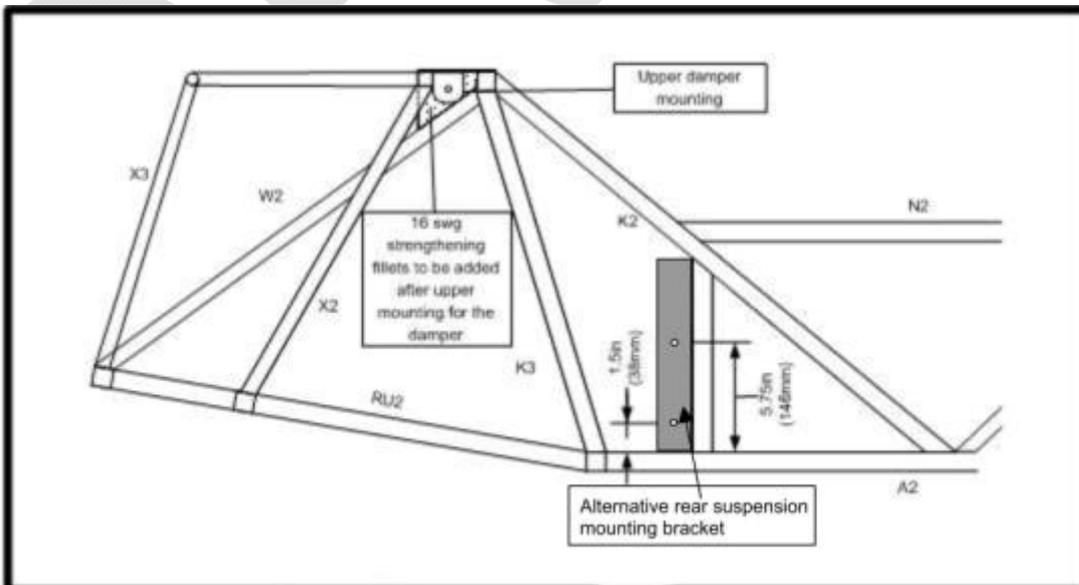
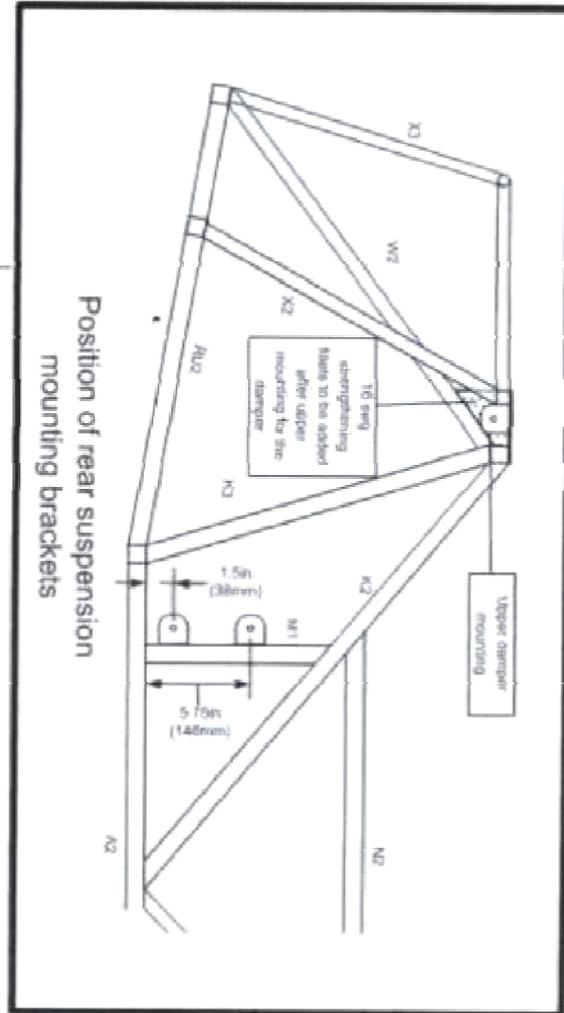
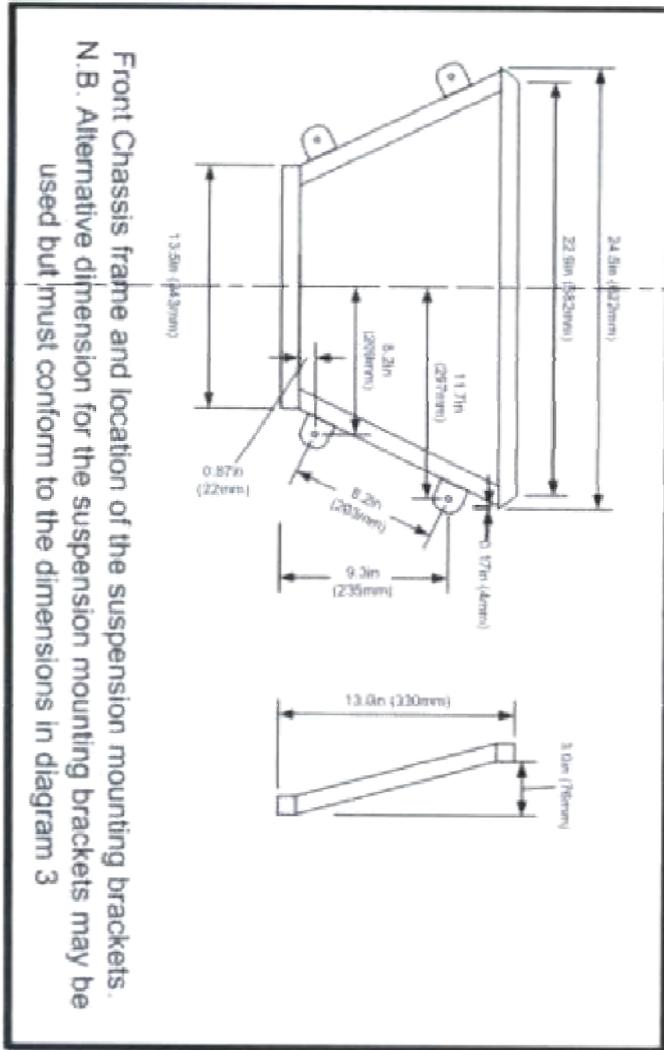


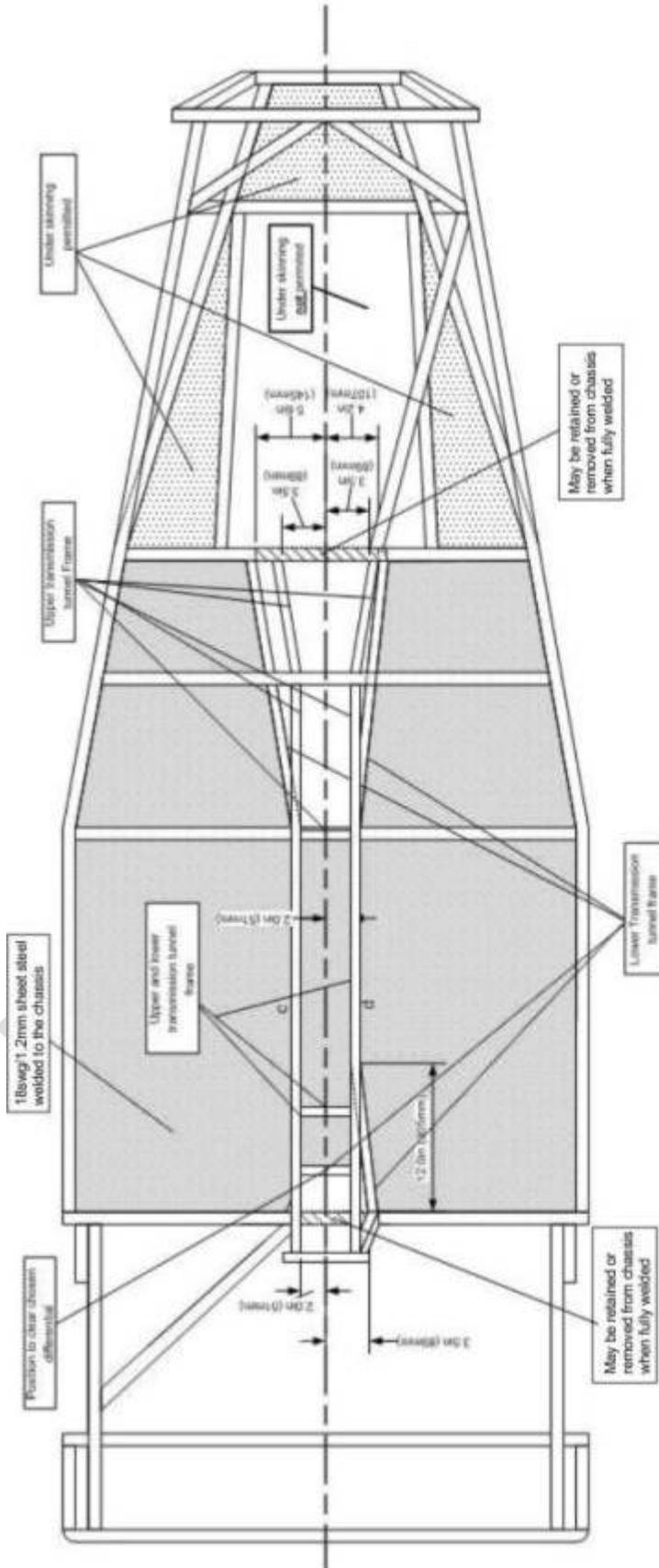
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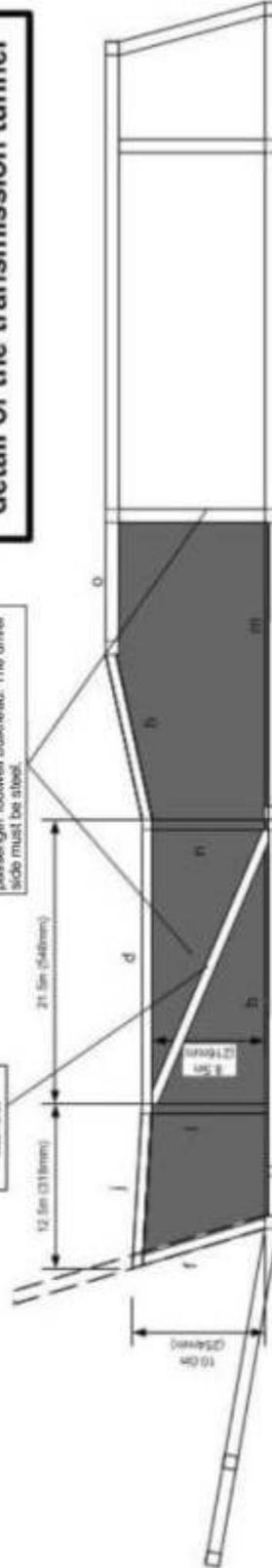




**Plan and side elevation showing detail of the transmission tunnel**

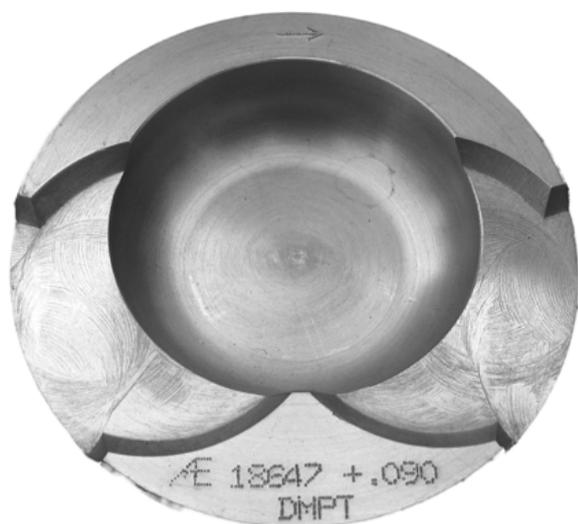
180wp/1.2mm aluminium or steel cladding to both sides of the transmission tunnel and the front of the passenger/footwell bulkhead. The driver side must be sloped.

Opposite 180wp round or sq tube each side



Alternative Piston forms and dimensions – all dimensions are in mm.		
Marking on top of Piston	Æ18647 (+ rebore)	Æ18647 + .090" 83.206
Gudgeon Pin to Top of Piston (Compression height)	44.08	44.25
Depth of Bowl at start of outer radius	14.48	To be machined to 13.87±0.1
Depth of Bowl at Centre	13.87	13.87±0.1
Corner Radius	R9.5 – 9.75	R9.5 – 9.75
Valve pocket depth	2.84	2.84
Overall piston height	83.80	83.82
Diameter of Bowl	53.80	53.80

Æ18647 + rebore



Æ18647 + .090" 83.206



Cylinder Head





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TABLE OF PERMITTED GEARBOXES AND GEAR RATIOS			
Fitted to	Escort Mk 1 & 2		
		Standard	Heavy Duty (GT)
		Cortina Mk3 1300 (OHC)	
		Early Sierra 1300 (OHC)	Early Sierra 1600 (OHC)
	Ratios		
Type 2	1st	3.656	3.337
	2nd	2.185	1.995
	3rd	1.425	1.418
	4th	1	1
	5th	N/A	N/A
	Rev	4.235	3.867

Fitted to	Cortina Mk2 & 3 1300, 1600 & 1600GT (OHV)		Early Sierra 2000 (OHC) & 2.3 V6
		Dash Change	
	Ratios		
Type 3	1st	2.97	3.54
	2nd	2.01	2.4
	3rd	1.41	1.41
	4th	1	1
	5th	N/A	N/A
	Rev	3.32	3.96

Fitted to	Cortina Mk3, 4 & 5 1600, 1600GT & 2000 (GT) (OHC)		
	Sierra 2000 (OHC) & 2.3 V6		
	Ratios		
Type E	1st	3.65	
	2nd	1.97	
	3rd	1.37	
	4th	1	
	5th	N/A	
	Rev	3.32	

Fitted to	Sierra 1600,1800, 2000 (OHC) & 2.3 V6	Sierra 2.8 V6	Sierra 2.3 Diesel
	Ratios		
Type 9	1st	3.65	3.91
	2nd	1.97	2.32
	3rd	1.37	1.4
	4th	1	1
	5th	0.82	0.82
	Rev	3.66	3.36

### Front and Rear Wings



The cam profile is defined by determination of lift (L-l) against a flat footed follower at various angles ( $\theta$ ). Maximum lift at all points on the camshaft must not be exceeded.

Standard Ford tolerances apply to the following camshaft drawing.

Dimension	Symmetrical	
	Inlet	Exhaust
DM (max)	33.60mm	33.65mm
Dm	27.78mm	28.15mm
Lift at 0°	5.37mm	5.89mm
Lift at 5°	5.81mm	5.85mm
Lift at 10°	5.64mm	5.67mm
Lift at 15°	5.38mm	5.41mm
Lift at 20°	5.00mm	5.03mm
Lift at 30°	4.01mm	4.04mm
Lift at 40°	2.69mm	2.77mm
Lift at 60°	0.46mm	0.61mm
Lift at 90°	0.05mm	0.20mm

Angle between major axes of inlet and exhaust cams: 109°.

