



## **OUTLAW Formula 2 Stock Car Definition**

Formula Two Stock Car (referred to as the car in these regulations) MUST be:

- Open-wheel in design and construction around a basic steel ladder chassis under which a tubular space-frame undercarriage (lower-chassis) is constructed, and on top of which a roll-cage is mounted.
- Front-engined
- Rear-wheel drive
- A single seater car

The main centreline of the car is defined as a line running along the horizontal length of the car, equidistant between the two main chassis rails when viewed from above.

The engine, gearbox, and driver's seat, MUST all be fitted along the main centreline of the car within the tolerances quoted in the individual regulations below.

The front and rear axles MUST be fitted centrally in the car, relative to the car's centreline, within the tolerances quoted in the individual regulations below.

### **Weight and Ballast**

#### **Weight**

The MINIMUM permissible total weight of the car is 650Kg.

The MAXIMUM permissible total weight of the car is 750Kg.

Cars may be weighed at ANY time before, during, or after a meeting and MUST comply with the weight regulations at ALL times.

ALL weighing measurements are taken WITHOUT the driver in the car.

At shale tracks ONLY, excess shale may be removed from the car under supervision, and the car subsequently re-weighed if it is found to be outside the legal limits on first weighing after a race.

#### **Ballast**

Bolt-on ballast is NOT permitted.

The use of any solid steel bars and/or plate over 3mm in thickness in the construction of the chassis, bumpers, nerf-rails, or component parts, that may be construed as ballast, is NOT permitted. This includes, but is not limited to, radiator mounting frames, fuel-tank strapping, and gusseting

### **Technical Car Specification Regulations**

RHS Rectangular Hollow Section

SHS Square Hollow Section

CHS Circular Hollow Section

OHS Oval Hollow Section

Axle A solid axle with a wheel at each end (e.g. a front beam axle, or English rear axle), or both sides of an independent suspension arrangement taken as a pair (e.g. a wishbone/bottom arm front suspension design).

Car centre-line The main centre-line of the car is defined as a line running along the horizontal length of the car, equidistant between the two main chassis rails when viewed from above.

Engine centre-line The centre-line of the engine is defined as the rotational centre-line of the crankshaft, measured at the pulley securing bolt.

Front Edge of Driver's Seat The front edge of the driver's seat is defined as the transverse front edge of the seat, behind the driver's knees, not including any leg side-supports/bracing.

Standard Type/Size Component of a size, weight and material as originally manufactured. Details can normally be found in the appropriate Haynes manual.

Production Type/Size Component of a size, weight and material as originally manufactured. Details can normally be found in the appropriate Haynes manual.

Original Type/Size Component of a size, weight and material as originally manufactured. Details can normally be found in the appropriate Haynes manual.

TDC Top Dead Centre

ECU Electronic Control Unit

OEM Original Equipment Manufacturer

### **General Notes**

It is the driver's responsibility to present a safe and legal car at all times (including scrutineering, practise, and racing). This is stressed especially for such simple checks as front wishbone lengths, bumper heights, track width, and rear axle alignment.

The presentation of a car for scrutineering is a declaration by the driver that the car is eligible to race and complies with all technical and safety regulations.

Any necessary regulation changes during the course of a season (most likely to be safety related) will be notified to drivers through the official outlaw website Change advisories received from any other source should be checked against this official source for authenticity and accuracy.

Drivers are welcome to submit proposed changes to regulations, to outlaw committee, where the opportunity of a safety enhancement, cost reduction, parts-supply improvement, competitive levelling, or general benefit to the sport is identified.

### **General Regulations**

Any design, component, modification, or action taken, as permitted or required, must be carried out within the spirit of these regulations, namely...

- Safety
- Fair and level competition
- Control of cost
- Limited technical development
- General component availability
- Safeguarding the future of the sport

Outlaw f2 and its Officials reserve the right to require the removal, replacement, or modification of any part of the car, or component, which is deemed not to be within the spirit of these regulations, within an appropriate time frame.

### **Technical Regulations**

The drilling, lightening or other modification of any plates, bars or safety components is NOT permitted unless explicitly stated in these regulations.

Standard parts must NOT be changed or altered unless explicit permission is given in these regulations.

The use of ceramic bearings is NOT permitted anywhere on the car.

Unless a regulation explicitly states an action can be taken, a modification made, or a replacement part sourced/manufactured, then such actions/modifications/replacements are NOT permitted. This is the overriding principle for ALL technical regulations.

Unless these published regulations explicitly state something can be implemented, then it CANNOT.

Prior approval MUST be sought and received for any changes to the current published regulations or to allow the use of any non-standard or modified parts. Requests MUST be submitted to outlaws F2 and will be considered for the following year's regulations. Such parts or changes must NOT be implemented until approval has been granted as appropriate.

The deliberate tampering with, or modification of safety components, e.g. safety harnesses, and one-way fuel safety valves, in contravention of the regulations below and/or the component's intended design purpose, WILL lead to disciplinary proceedings which may result in disqualification, a fine, and/or a racing ban dependent on the circumstances.

Tolerances, where specified, are included to allow for manufacturing/installation variations and/or in-race damage. They are NOT a starting point for set-up, nor do they permit the machining of components where not expressly stated.

### **Safety**

**General** – Any driver safety equipment presented for a safety check (e.g., helmet, gloves, balaclava, or a race-suit), that does not conform to the current regulations, or is determined to be unsafe (e.g. gloves with holes in them) may be retained during the meeting by the scrutineer, promoter or appointed official.

**Race-suit-** A flame resistant race-suit/overall MUST be worn. Flame resistant race-suits/overalls MUST be manufactured from Proban, or material of a higher specification, e.g. Nomex. Flame resistant race suits/overalls MUST be clearly marked with the relevant SFI, FIA or equivalent Race-suits/overalls MUST be maintained in a clean and tidy condition.

**Helmets** – helmets must be of fibreglass, fibreglass composite or of carbon fibre construction NO polycarbonate/plastic helmets are permitted . Any helmet presented for a safety check that does not conform to the current standards will be labelled with an “Failed” sticker and only returned to the driver at the end of the meeting.

**Gloves** – Flame resistant gloves MUST be worn. Flame resistant gloves MUST be clearly marked with the relevant SFI, FIA or equivalent standard. Any gloves presented for a safety check, which are deemed beyond repair, will be retained by the promoter, senior outlaw F2 official, or their appointed representative. Any gloves that fail a safety check, but that are deemed repairable, will be returned to the driver at the end of the meeting.

**Fluid Leaks** – A meeting promoter, senior outlaw F2 Official, or their appointed representative, retains the right to disqualify a car during a race, or prevent a car from racing, due to excessive fluid leaks that may adversely impact competitors and/or track conditions, e.g. axle fluid leaking from a half-shaft seal.

**Wings/Aerofoils** – Tarmac wings/aerofoils are to have at least a 1” gap between the bottom edges of the wing/aerofoil and the top of the cab to allow a brush shaft to pass through, this is in case of the event of a roll over they don't fold over and still allow the driver to get out. Shale wings are fine

### **Car and Engine Components**

The meeting promoter or a senior outlaw F2 official will retain any component suspected of being illegal (E.g., an underweight flywheel, or an illegally modified engine component). The driver will be subject to a technical investigation/disciplinary process as appropriate in the case of engines, only the suspected component will generally be retained, however, should the allegation be sufficiently serious (e.g., the crank, rods and pistons), then the entire engine may be retained during the investigation/disciplinary process.

Any retained component deemed to be legal and within the regulations will be returned to the driver at the conclusion of any investigative/disciplinary process. Outlaw F2 will retain any component deemed illegal to the current regulations.

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The use of solid steel bar and/or plate, exceeding the maximum 3mm permitted thickness stated above, is explicitly permitted for the following purposes:

Mounting steering components

Mounting suspension components, including leaf-springs.

Mounting bolt-on bumpers

Mounting wheel-guards

Mounting brake master-cylinders

Front uprights / stub-axles

Engine mounts

Seat mounts, protection plate and headrest plate

Prop-shaft hoops Roof plate and wing mounts

Nerf-rail to chassis mounting sacrifice plates (to prevent chassis leg damage when cutting off / welding-on nerf-rails)

The lamination of steel plates in the construction of ANY part of the car, or the installation/construction of multiple steel plates in close proximity to each other which can be construed as ballast, is NOT permitted.

Tubular bars or box section must NOT be filled with ANYTHING that will increase their weight.

The adjacent placement of three or more lengths of tube (e.g. RHS, SHS, CHS), in parallel and any orientation, thus forming a wall or stack, is NOT permitted, except where explicitly required, e.g. in the construction of nerf-rail and bumper blades. Where three or more lengths of tube are used in parallel to construct part of the chassis, e.g. a protective side-pod wall, then a MINIMUM gap between each tube, equal to twice the larger width/diameter of the tube MUST be maintained. E.g. a 50mm gap must be maintained between multiple lengths of 25mm CHS, or 100mm between multiple lengths of 25x50mm RHS. Chassis Construction

## **General**

The car MUST have a steel chassis and roll-cage of welded construction.

Brazing is NOT permitted on the chassis or roll-cage.

All joints of the chassis rails, cross-members, undercarriage, and roll-cage MUST be fully welded.

The chassis cab floor, main rails, bumpers, nerf-rails, and roof-plate MUST ALL be in the same horizontal plane when the chassis is placed on a level surface and viewed from the front and rear.

## **Main Chassis Design**

The chassis must be constructed with two separate main chassis rails running longitudinally from the front to the rear of the car.

The chassis rails MUST measure at least a MINIMUM of 450mm apart at all points along their length.

The main chassis rails MUST start/terminate forward of the line of the front axle, and rear ward of the rotational centre of the rear axle.

The main chassis rails may be constructed in a traditional flat ladder-chassis type design, or alternatively they are permitted to rise and fall up to a MAXIMUM of 100mm over their length if a triangulated or non-flat design is preferred.

A MAXIMUM of two bends in each chassis rail in the horizontal plane, and a MAXIMUM of two bends in each chassis rail in the vertical plane, along their length are permitted. Example uses for such bends include a raised main rail, or a wider driver's cab area.

Both main chassis rails MUST be installed in the same symmetrical orientation when viewed from the front/rear. E.g. Both with edges parallel/perpendicular to the ground, or with edges at 45° to the ground.

The centreline of the chassis MUST be perpendicular to the front and rear bumpers, with the main rails equidistant from it at all points along its length.

The main chassis rails MUST be joined to each other at the rear by a transverse cross member. This cross-member will form one of the sides to which the rear-plate MUST be welded.

The vertical centre at all points along the entire length of the main chassis rails, and across any transverse cross-members joining them together, MUST be level with or above the centreline of the bumpers when viewed from the side.

### **Main Chassis Materials**

The main chassis rails and rear cross-member MUST be constructed of RHS or SHS with at Least a MINIMUM size of 40mm x 40mm, and at most a MAXIMUM size of 70mm x 70mm or CHS 60mm outside diameter

The main chassis rails and rear cross-member MUST be constructed of RHS or SHS with a MINIMUM wall thickness of at least 3mm.

### **Undercarriage/Lower-Chassis**

An undercarriage/lower chassis in a tubular space-frame design may be constructed underneath the main chassis rails for the purpose of mounting suspension components, installing floor sections, mounting the engine and transmission, and/or protecting the driver.

The undercarriage/lower chassis MUST be constructed from steel hollow section (CHS, SHS, RHS or OHS) and be fully welded to the main chassis rails. The construction of the undercarriage/lower chassis from steel plate is not permitted.

Any lower chassis rails/undercarriage must NOT extend beyond the footprint of the main chassis rails and their cross-members when viewed from above.

The distance between the main chassis rails and the undercarriage/lower chassis rails MUST be equal on BOTH sides of the car.

The undercarriage/lower-chassis MUST be symmetrical about the centreline of the car when viewed from the front and rear.

Additional metal panel-work, where required, e.g. to form a firewall, or prevent the ingress of shale/water, is permitted.

## Roll-Cage



f2-rollcage (1).pdf

### Primary 7-Pillar Roll-Cage Structure Design

The car **MUST** have an integral 7-pillar roll-cage, welded on top of the main chassis rails, to protect the driver.

ALL joints of the roll-cage structure, and any other integral components connected to it, e.g. seat mounting bars (see below), **MUST** be fully welded.

The roll-cage **MUST** be constructed from two main hoops running up from the main chassis rails, over the height of the driver's head & helmet, and back down to the chassis rails again.

The two main hoops **MUST** run either front to back along the line of the main chassis rails, or side to side between the two chassis rails, thus forming the 4 corner pillars (pillars 1-4) of the required 7-pillar roll cage.

The two main roll-cage hoops **MUST** be connected to each other at the top by two roof bars:

- One front and one rear running transversely in the case of front-to-back main hoops,

OR

- One at each side running longitudinally in the case of side-to-side main hoops.

Two additional side pillars (pillars 5 & 6) **MUST** also directly connect the main chassis rails to the roll hoop(s) above the driver's head (one pillar on each side of the car between the front and rear pillars) forming a continuous structure. These pillars **MUST** be welded directly to the main chassis rails at the bottom, and the roll hoops at the top, and must **NOT** rely on any other component as part of their construction, e.g. a suspension mount.

The top and bottom sections of the middle pillars must **NOT** be offset from each other where they intersect any side or other protection bars (see below).

One additional rear pillar (pillar 7) **MUST** directly connect the centre of the rear transverse roof bar/roll-hoop (that joins the two rear roll-cage corner pillars together at the top of the rear window aperture) to the centre of the rear roll-cage lower transverse cross member (that joins the two rear corner roll-cage pillars together at the base of the rear window aperture). This lower cross-member, to which the 7th pillar is connected, is the same cross member to which the rear steel plate must be welded.

The 7th pillar **MUST** be vertical when viewed from the front or rear of the car, **MUST** be installed midway between the left and right rear corner pillars of the roll-cage, and **MUST** be constructed using a single length of material. There is no mandatory requirement for this pillar to extend all the way down to the main chassis; however, it may be installed in this way if a driver/constructor so desires (subject to roll-cage plating regulations – see below).

When viewed from the side, the 7th pillar **MUST** follow the same profile as the two rear corner pillars, such that it sits inside of, or level with, a straight-edge butted up against them at any point along their length. Where the centre of the roof and/or rear-window cross-member(s) protrude



beyond the profile of the two rear corner pillars, e.g. a curved-out rear-window crossmember, or curved up/out rear roof bar, a MAXIMUM distance of 75mm from the rearmost edge of the 7th pillar's side-profile to the rearmost edge of the corner pillars' side-profile is permitted.

In order to ensure compliance with the above specification, a flat bar, MINIMUM 2mm in thickness (e.g. a steel or aluminium rule) MUST be able to pass straight through the cab/roll cage structure, under the level of the roll-cage hoops, and above the driver's helmet (when the driver is strapped in the car in the normal racing position), without bending/deflection, thus demonstrating that the roll-cage hoops do indeed run over the height of the driver's head/helmet.

### **Primary 7-Pillar Roll-Cage Structure Materials**

The main hoops (pillars 1-4), their connecting bars, and additional pillars (5, 6 & 7) MUST be constructed of seamless tube SHS or CHS with a MINIMUM wall thickness of 3mm. (seek advice on technical spec).

The main hoops (pillars 1-4), their connecting bars, and additional pillars (5, 6 & 7) MUST be at least a MINIMUM size of 30mm x 30mm (SHS), or 30mm diameter (CHS).

### **Additional Roll-Cage Structure Design**

#### **Sidebars**

Sidebars running longitudinally between the front and rear roll-cage pillars MUST be installed on both sides of the car at approximately elbow height.

The sidebars MUST abut, or be abutted by, the middle roll-cage pillars on each side of the car, and all joints to the roll-cage pillars MUST be fully welded.

The sidebars MUST be equal heights from the chassis rails on both sides of the car.

At all points along their length, the sidebars MUST measure at least a MINIMUM height of 300mm vertically from the top of the bar (excluding bodywork panels) to the point at which the **optional** steel side-plates are welded to the main chassis rails.

In the case of cars with a "diamond chassis" type design, the measurement will be taken vertically from the top of the sidebar (excluding bodywork panels) to the point at which the vertical would intersect with a flat main chassis rail were the car to have been constructed with a traditional flat ladder-chassis type design. Cars employing the "diamond chassis" type design will already be carrying larger foot protection side-plates than cars with a traditional flat ladder-chassis, and therefore this method of measurement will ensure competitive parity of plating weights.

It is NOT permitted to roll the mandated steel side plates (see below) up and over the sidebars in order to gain additional height in cars where the sidebars are currently installed too low down to conform to these regulations.

The sidebars MUST measure at least a MINIMUM of 750mm apart from inside edge to inside edge at the driver's seat.

#### **Down-Bars**

At least two separate down-bars MUST be installed on each side of the car within the area bordered by the front and middle roll-cage pillars, the main chassis rail and the sidebar, primarily designed to provide protection for the driver from intrusion into the cab area from bumpers (through the side panel).

At least 1 down-bar MUST connect the sidebar to the main chassis rail, whilst a second down-bar MUST connect either the sidebar or the front rollcage pillar to the main chassis rail. The down-bars MUST be welded at both ends (to the chassis rails and sidebars/roll-cage pillars), and be equally spaced (as far as practically possible, and with the safety of the driver in mind) so as to divide the area (between the front and middle roll-cage pillars, main chassis rails, and sidebars) in to equal size apertures.

The use of non-vertical down-bars is permitted to allow triangulation for improved strength, subject to the regulations above.

The middle roll-cage pillar on each side of the car (pillars 5 & 6) does NOT count as one of the two down-bars, which MUST be in addition to the 3 roll-cage pillars mandated on each side of the car (see above).

### **Cross-Members**

The rear roll-cage pillar on both sides of the chassis MUST be joined to the other by a transverse horizontal cross-member. This cross-member will form one of the sides to which the rear plate MUST be welded (see below), and the base to which the 7th pillar (see above) MUST be welded. The front roll-cage pillar on both sides of the chassis MUST be joined to the other by a transverse horizontal cross-member at the base of the windscreen aperture at approximately elbow height.

The joints of the front and rear cross-members to the respective roll-cage pillars MUST be fully welded, thus completing an integral structural ring around the roll-cage/driver at approximately elbow height.

### **Additional Roll-Cage Structure Materials (Side/Down-Bars, Cross-members)**

With the exception of the 7 main roll-cage pillars and two roof bars as specified earlier all other parts of the roll-cage specified above MUST be constructed of SHS or CHS with a MINIMUM wall thickness of 2.5mm, and at least a MINIMUM size of 25mm x 25mm (SHS) or 25mm diameter (CHS).

### **Roll-Cage Plating – Roof**

A single steel sheet plate of MINIMUM 3mm thickness MUST be welded to the top of the rollcage along the full length of all 4 sides (the two main roll-cage hoops and the two connecting bars) to form a protective roof plate over the driver's head.

The roof plate MUST measure at least a MINIMUM of 560mm in length across its entire width, and at least a MINIMUM of 400mm in width along the mandated MINIMUM 560mm length.

These dimensions include the diameter of the roll-cage tube to which the plate is welded.

The 400mm width measurement is taken in the transverse horizontal plane, parallel to the ground, between two vertical straightedges butting against the outsides of the roll cage tube.

The 560mm length measurement is taken parallel to the longitudinal plane of the roof, between two straight edges perpendicular to the front and rear of the roof.

The use of a non-rectangular roof plate is permitted, if so designed, but it must conform to the above specification, i.e. be a MINIMUM of 560mm in length at all points, not just the centre, and a MINIMUM of 400mm in width for the MINIMUM 560mm mandated length.

The welding together of multiple sections of plate to form a roof plate is NOT permitted.

The roof plate must NOT be drilled or lightened in any way, except for the fitting of a roof fin or superstar lights.

There MUST be a clearance between the driver's helmet and the roof plate (in addition to the roll-cage clearance detailed above), such that the helmet cannot strike the roof during an impact when the driver is strapped in the racing position. (The human neck and body have a natural tendency to move and stretch during a violent impact, while safety harnesses are designed with a degree of stretch capability in order to potentially reduce injury).

### **Roll-Cage Plating – Rear**

The rear of the roll-cage MUST be panelled with a steel sheet plate of at least 2mm. MINIMUM thickness, and to a MINIMUM height of at least 300mm above the level of the main chassis rails along its entire length.

The rear plate MUST be FULLY welded along all sides (to the two roll-cage pillars, the chassis cross-member, and the mandated roll-cage cross-member to which the 7th pillar is also welded).

The rear plate must NOT be drilled or lightened in any way.

### **General**

ALL panels/body-work, where fitted, MUST be constructed of metal, unless specified below.

The use of fibreglass, carbon-fibre, Kevlar, or other material(s) is NOT permitted.

### **Roll-Cage**

The roll-cage MUST be enclosed with metal panel-work, up to the level of the sidebars, on both sides of the car, and the rear.

The area between the middle and rear roll-cage pillars, above the sidebar may be panelled if so desired, but any panel MUST be metal if fitted.

Equal apertures MUST be left on BOTH sides of the roll-cage for driver entry/exit.

A rear "window" MUST be left open to allow access for scrutineering checks.

### **Engine Cover**

The engine cover is defined as the primary single removable section of body-work/panelling enclosing the top of the engine.

The use of metal, Kevlar, and/or fibreglass in the construction of the engine cover is permitted. The use of carbon-fibre is NOT permitted.

The engine compartment MUST be FULLY enclosed above the main chassis rails by the engine cover and any additional panel-work as necessary. The cover and any additional panel-work MUST be securely fitted.

The use of open ventilation holes cut in the cover, side panels, and/or top panelling covering the engine (above the main chassis rails), and/or enlarged holes around the exhaust/inlet manifolds, is NOT permitted.

The use of ventilation holes at the rear sides of the engine cover, above the main chassis rails ONLY, to allow sufficient airflow through the engine compartment to provide adequate engine cooling, especially on shale, is permitted. The side of the engine cover MUST overlap with the cab side-panel behind it by at least a MINIMUM of 50mm at the point of the ventilation opening.

A front grille in the engine cover design, to allow cooling airflow to the radiator/engine, is permitted.

### **Windscreen**

The windscreen aperture(s) must be covered with a steel mesh to protect the driver from projectiles.

The steel mesh MUST be no more than a MAXIMUM 40mm matrix, and MUST be a MINIMUM 2.4mm thickness.

The steel mesh MUST be securely fitted to the car by welding, or through the use of a MINIMUM of 4 metal fixings (1 per corner) including, but not limited to, nuts and bolts, "U"-bolts, or "Jubilee" clamps. The use of cable-ties, whether metal or plastic, is NOT permitted.

It is NOT permitted to drill holes in ANY roll-cage tube/bar for the purpose of mounting the steel mesh.

An additional solid screen may be fitted if required (e.g. for racing in the rain or on shale), but it MUST be made of a material that will not shatter if impacted.

The steering wheel MUST be positioned well inside the cab, such that the driver's fingers are not at risk of catching in the windscreen mesh under normal racing conditions.

### **Mud-Guards/Wheel-Arches**

#### **Front Wheels**

Mud-guards/wheel-arches are NOT permitted over/around the front wheels of the car.

Attachment of a mud-guard/splash-guard to the front part of the nerf-rail(s), to protect the driver from water/shale being flicked up from the front tyre(s), is permitted. Any such device MUST be securely attached, and must NOT extend any further forward than the rear-most point of the tyre (with the wheels facing straight forward).

#### **Rear Wheels**

Integral "retro-style" mud-guards/wheel-arches over the rear wheels are permitted, if desired, but they must NOT cover any more than one-quarter of the wheel when viewed from the side in order to maintain the spirit of an open-wheel stock car.

If fitted, a rear wheel mud-guard/wheel-arch MUST be present on BOTH sides of the car, and they MUST be symmetrical in design/appearance.

Any mud-guard/wheel-arch must NOT extend below the level of the main chassis rail.

Any mud-guard/wheel-arch must NOT extend rearwards beyond the vertical plane through the rotational centre of the wheel.

Any mud-guard/wheel-arch must NOT extend outwards from the chassis rail beyond the outer edge of normal dry-running wheels.

Any mud-guard/wheel-arch must NOT extend outwards from the chassis rail beyond the outer edge of the nerf-rail (excluding any wheel-guards).

### **Front Bumper**

There must be a min 5" crumple zone included in the construction of the front bumper.

The front bumper blade MUST be constructed with a flat face surface 100mm (4in) deep long its entire length.

The top and bottom edges of the front bumper MUST remain in the same parallel horizontal plane at all points along the entire length. The dropping of bumper ends is not permitted.

### **Rear Bumper**

The rear bumper blade MUST be constructed with a flat face surface 100mm (4in) deep along its entire length, except as noted below.

The top and bottom edges of the rear bumper MUST remain in the same parallel horizontal plane at all points along its entire length, except as noted below. The dropping of bumper ends is NOT permitted.

ONLY where a wheel-guard is installed, and ONLY for the purpose of mounting the wheelguard and/or its brackets, a MAXIMUM of 100mm from the end of the bumper face is permitted to be deeper than the 100mm (4in) mandated above through the addition of material underneath the bumper. The MAXIMUM permitted depth of the bumper face in this area is 152mm (6in). This measurement is taken in the vertical plane.

Nipping off one or more corners of either bumper is NOT permitted.

The front and rear bumper blades MUST be constructed from material with a MINIMUM wall thickness of 2.5mm.

The MAXIMUM permitted bumper blade thickness is 30mm (13/16in).

The MAXIMUM permitted bumper blade width is 70" wide. The bumper width is defined as the bumper face, whether flat or angled towards the wheels, and includes any additional bumper hoop ironwork that can be construed as forming part of the face.

Wheel-guard mount plates on the rear bumper may extend beyond the 70" MAXIMUM width; however they MUST be constructed so as to only protrude forward from the rear bumper and NOT create any additional face area to that permitted above.

Bumpers are NOT permitted to protrude beyond the outside edge of the nerf-rails on either side of the car.

Front Bumper Mounting – A MINIMUM of four angled mounting bars/brackets MUST be fitted to connect the front bumper blade to the main chassis (via bolt-on brackets, or directly welded), with two on each side of the chassis. These mandated bars/brackets MUST be constructed from a MINIMUM material specification of 30mm SHS, 30mm CHS, or 25mm x 50mm RHS, all with a MINIMUM wall thickness of 2.5mm. Additional bracing/mounting bars are free.

Rear Bumper Mounting – The mounting brackets/bracing for the rear bumper blade are free in quantity and material specification.

The welding of additional transverse material, including, but not limited to SHS or RHS, to the inside of bumper blade faces (for strengthening or any other purpose) is NOT permitted.

A MINIMUM gap of 30mm MUST be maintained between the inner face of a bumper blade and any additional transverse bracing.

Outer Face Plating – The use of small pieces of steel plate, welded to the outer face of a bumper blade, to effect repair or provide strengthening for bends is permitted, subject to the following:

A MAXIMUM of 4 plates are permitted.

The MAXIMUM permitted plate size is 100mm x 100mm.

The MAXIMUM permitted plate thickness is 5mm.

It is NOT permitted to double-stack, overlap, or join plates together.

Plates are NOT included in the total overall thickness measurement (see above).

Inner Face Plating – The use of small pieces of steel plate, welded to the inner face of a bumper blade, into which the diagonal mounting brackets are run, or used to provide strengthening/support for diagonal bracing, is permitted, subject to the following:

The MAXIMUM permitted plate size is 100mm x 100mm.

The MAXIMUM permitted plate thickness is 5mm.

It is NOT permitted to double-stack, overlap, or join plates together.

Plate may ONLY be used where a brace runs in to the bumper blade.

Plates are NOT included in the total overall thickness measurement (see above).

Front AND rear bumpers MUST measure between 400mm and 450 mm from the ground to the vertical centre of the bumper face, mid-way between the main chassis rails.

Bumpers MUST be smooth on ALL extremities.

The front bumper MUST be 250mm or LESS from the front tyres in the horizontal plane. This measurement is taken horizontally from the rear of the bumper face at the point closest to the tyre (excluding any bracing or other constructional parts) to the point at which that horizontal plane intersects the tyre).

The rear bumper MUST be 300mm or LESS from the rear tyres in the horizontal plane. This measurement is taken horizontally from the rear of the bumper face at the point closest to the tyre

(excluding any bracing or other constructional parts) to the point at which that horizontal plane intersects the tyre)

### **Bolt-On Bumper Fixings**

Bolt-on bumpers MUST be bolted to the chassis by a MINIMUM of four (in number), two on each side of the chassis, high-tensile bolts AND locking nuts with a MINIMUM bolt diameter of m12 (10.9 strength)

Bolt-on bumpers MUST have a MINIMUM of TWO secondary fixings to prevent the bumper leaving the car should the mounting bolts break in an impact.

Each secondary fixing MUST comprise of a steel chain made of MINIMUM 8mm thick diameter links, with ends joined together by a MINIMUM 8mm thick diameter steel shackle/link encompassing a threaded securing mechanism. The threaded securing mechanism MUST be fastened tightly.

The use of locking-wire, or similar, to prevent the threaded securing mechanism from unscrewing, is permitted.

The use of nuts, bolts and washers to join the ends of the chain is NOT permitted.

Each secondary fixing chain MUST be wrapped around BOTH the chassis and suitable section of the bumper.

### **Bumper Hoops**

ALL bumper hoops, front and rear, and any mandated support/bracing for them, MUST be constructed from steel with a MINIMUM material specification of 25mm CHS/SHS, and a MINIMUM wall thickness of 2.5mm.

The front bumper MUST be fitted with a central lower hoop to help prevent the car riding up over other cars. This hoop MUST have a horizontal centre section a MINIMUM of 304mm (12in) wide and be a MINIMUM of 152mm (6in) deep from the underside of the bumper along the entire horizontal section length. The bottom of this hoop MUST be braced to the rear by 2 support struts.

The front bumper MUST be fitted with a fence-side lower hoop to help prevent intrusion of the bumper end in to another car's driver's compartment. This hoop MUST be a MINIMUM of 102mm (4in) deep from the underside of the bumper, and smooth on all edges. The bottom of any tube used in the construction of this hoop MUST be capped with a fully welded, closed, steel cap. Sharp angles, or tapers, of less than 90 degrees that may cause tyre damage are NOT permitted on the bottom of the hoop.

The front bumper MUST be fitted with a fence-side upper hoop to help prevent intrusion of the bumper end in to another car's driver's compartment, and reduce the risk of entanglement with post and rope fences. This hoop MUST be a MINIMUM of 152mm (6in) and a MAXIMUM of 304mm (12in) high from the topside of the bumper, and smooth on all edges.

The installation of one or more hoops on the rear bumper, for the purpose of protecting the roll-cage and/or preventing another car from riding up and over the rear wheels, is optional.

The joining of front bumper hoops, or use of material to create additional hoops not mandated in these regulations, creating “saloon stock-car” style bumpers is NOT permitted. This includes, but is not limited to:

- Joining the central lower hoop to the right-hand, fence-end, lower hoop
- Adding material joining the central lower hoop up to the left-hand, “infield” end, of the bumper flat
- Adding other hoops above and/or below the main bumper blade/face

The use of a SINGLE bar to connect the top of the mandated front bumper, fence-end, upper hoop (on the right hand side of the car), over the right-front wheel, and back to the nerf-rail or main chassis rail on the right-hand side of the car IS permitted, but is optional.

The installation of any protection bars over or around the left-front wheel, and/or the rear wheels (with the exception of the mandated right-rear and optional left-rear wheel-guard) is NOT permitted

## **Nerf-Rails**

### General Requirements

Nerf-rails MUST be fitted to BOTH sides of the car and made of steel.

The nerf-rails and their bracing MUST be symmetrical in appearance, both in design and external material dimensions, on BOTH sides of the car when viewed from above.

The ends of ALL hollow section material used in the construction of the nerf-rails MUST be capped with a fully welded, closed, steel cap.

The lightening or drilling of any mandated specification material in the construction of the nerf-rails and their brackets/bracing, unless explicitly detailed below, is NOT permitted.

### Nerf-Rail Blades Construction Specification

The nerf-rails MUST be constructed with an outer “blade” configuration **similar in appearance** to the front and rear bumpers.

Lengths of SHS/RHS must be welded together to form a vertical “blade” with a flat outer face. Example 2 Nerf-rail blades MUST be no smaller than a MINIMUM of 25mm in thickness, and 100mm in depth.

Nerf-rail blades MUST be no larger than a MAXIMUM of 50mm in thickness, and 150mm in depth.

Nerf-rail blades MUST run for a MINIMUM straight length of 1,100mm, front to rear, at the minimum 100mm depth or greater.

Tapering the ends of the nerf-rail blades in depth is permitted, however any tapering below the minimum 100mm depth is not included as part of the minimum 1,100mm length specification.

Tapering the ends of the nerf rails in or out, e.g. to help prevent hooking up on fence-posts, is permitted, however any such tapered sections are not included as part of the minimum 1,100mm straight length requirement.



### **Nerf-Rail Blade Position**

The nerf-rail blades must run longitudinally, from front to rear, between the wheels, and parallel to the ground.

The nerf-rail blades must be broadly in line with the bumper blades.

The vertical centre of the nerf-rail blade MUST be level with, or lower, than the vertical centre of the main chassis rail.

The top edge of the nerf-rail blade MUST be level with, or within 25mm below, the level of the top of the front and rear bumpers.

### **Nerf-Rail Blade Mounting/Bracing**

The nerf-rail blade MUST be connected/braced to the main chassis rail, by a MINIMUM of four (in number) braces on each side of the car.

The nerf-rail blade MUST be connected/braced to the lower under-chassis rail, by a MINIMUM of two (in number) diagonal braces on each side of the car.

The 6 mandated braces MUST be constructed from a MINIMUM material specification of 25mm CHS/SHS, with a MINIMUM wall thickness of 2.5mm.

The crossing of braces is permitted.

Where a side-pod is installed, it IS permitted to brace the nerf-rail to the side-pod construction material, rather than directly to the lower chassis rail on that side of the car.

Additional bracing (over and above the 6 mandated braces above) is free in both quantity and material specification.

### **Miscellaneous**

Any additional brackets required for mounting the mandated wheel-guard MUST be in addition to the mandated minimum material dimensions above.

The drilling and sleeving of a single circular hole at the rear of the nerf-rail, with a MAXIMUM diameter of 35mm, for the express purpose of socket access to a wheel-guard mounting bolt is permitted.

The cutting and sleeving of a square/rectangular hole within the nerf-rail blade face, for the purpose of mounting the wheel-guard through, is permitted. Any such hole must NOT be larger than a MAXIMUM of 75mm in height and 100mm in length.

Any additional optional material attached to the nerf-rail, e.g. a fuel tank protection plate, or protection bars, must only be constructed within an area bordered by the main/lower chassis rails, the side-pod, the nerf-rail, the nerf-rail bracing to the main chassis, and a straight line connecting the lower outermost point of the side-pod to the lower innermost point of the nerf-rail

### **Wheel-Guards**

A single solid steel wheel-guard MUST be fitted around the offside (right) rear wheel, from the rear bumper to the nerf-rail.

The wheel-guard MUST be similar in dimensions to the Ford Transit or Ford Escort rear leaf spring with a MAXIMUM permitted height of 3in (75mm).

The wheel-guard MUST be bolted to its mounts at BOTH ends using high-tensile nuts and bolts of a MINIMUM M16mm bolt and nyloc nut.

where an original leaf spring incorporating a rubber/polyurethane bush at one end is used as a wheel-guard and a mounting bolt runs vertically through the bush, a MINIMUM M12mm 10.9 bolt and nyloc nut.

Incorporating an element of protection for protruding bolt heads, with the aim of preventing them from being sheared off, is permitted.

The drilling and/or lightening of the wheel-guard, except for mounting-bolt holes, is NOT permitted.

Where an original leaf-spring is used to form a wheel-guard, then any original mounting/location hole(s) in the leaf spring are permitted and should NOT be welded up (due to the heat of the welding process having a potentially adverse effect on the strength of the sprung-steel material).

The use of a single wheel-guard on the nearside (left) rear wheel is optional, but if fitted it MUST conform.

### **Engine Firewall**

A complete firewall MUST be installed between the engine and the driver's compartment to help protect the driver from the possibility of burns from fire, fuel, oil or water.

The firewall MUST be made of metal.

The firewall MUST be complete except for minimal sized holes through which essential cables, pipes or Foot Protection Plating.

Where ANY part of the driver's legs or feet are located below the bottom of the main (top) chassis rail a vertical side protection plate of 3mm thickness steel MUST be welded between the main (top) and lower chassis rails to cover the entire side area of the driver foot-well on both sides of the car.

Where a driver's legs and feet are located entirely above the bottom of the main (top) chassis rails a vertical side protection plate of 2mm MINIMUM thickness steel MUST be welded between the main (top) chassis rail and the level of the main cab window sidebars to cover the entire side-area of the driver's legs/feet position.

Where a driver's feet are located such that they are both above and below the main (top) chassis rails then steel vertical side protection plates MUST be mounted BOTH between the main (top) and lower chassis rails, AND between the main (top) chassis rail and the level of the main cab window side bars. These protection plates MUST conform to the individual plate regulations above.

In all cases, the side protection plate MUST extend rearwards from the engine bulkhead firewall in front of the driver's feet for a MINIMUM distance of 500mm over its entire height.

In all cases, the side protection plate MUST extend rearwards to a point such that its ENTIRE rear edge is located level with or behind the vertical plane from the front edge of the driver's seat.

The side protection plates must NOT be drilled or lightened in any way, except for minimal sized holes through which essential electrical cables or fuel pipes are required to pass.

### **Driver's Seating & Harness**

The driver MUST be seated along the centre-line of the car.

The driver MUST be seated in front of the rear axle.

ALL parts of the driver's body MUST be entirely behind the rear of the engine cylinder block.

The driver MUST be able to exit the car through BOTH sides of the cab whilst wearing all safety equipment used for racing (e.g. Helmet, overalls, gloves, head/neck restraint).

### **Seat**

The seat MUST be of a bucket type design, incorporating a base, back, and side-support for the driver's body. The use of appropriate padding, moulded inserts, or other fitting materials, to ensure a good fit to the driver, is permitted. It is the driver's responsibility to ensure the seat is an appropriate fit.

The seat MUST be upright when viewed from the front/rear of the car.

The seat MUST be securely fitted to the car along the car's centre-line to a tolerance of +/-5mm either side from centre.

Central fitment is measured by taking the distance from the transverse horizontal centre of the seat to the inside edge of the main chassis rail on each side of the car. This distance MUST be equal on both sides of the car to within +/-10mm of each other, i.e. the two measurements MUST be within 10mm of each other, thus giving a MAXIMUM tolerance of central fitment of +/-5mm from the centre-line of the car. BOTH the front and rear edges of the seat MUST be within the stated tolerances.

The seat MUST be securely fitted to the car using high-tensile bolts of a MINIMUM 8mm in diameter.

The seat MUST be supported/protected at the base, back and any integral headrest to prevent major deformation and/or movement in a high-energy impact.

Any cross-member(s)/support-bar(s) for mounting/supporting/protecting the seat MUST be integral to the chassis/roll-cage structure and be fully welded at all joints.

Any lower cross-member installed for the purpose of mounting the seat is permitted to drop down below the level of the main chassis rails or be profiled to the seat to allow for correct fitment.

The seat MUST be fitted to the car with reference to the individual seat manufacturer's/supplier's information, and particular attention MUST be paid to key items such as the fittings used, the seat angle, the layback, safety harness strap placement, etc.

### **Seat Protection Plate**

A rectangular steel protection plate MUST be bolted to the base of the seat, or welded to the chassis directly under the seat to protect the driver from the rear-axle, differential, and propshaft. The mandated protection plate MUST be in ADDITION to the base of the seat, thus providing a double layer of protection.

The protection plate MUST be a MINIMUM of 3mm in thickness and measure a MINIMUM of 350mm wide along its entire length, and a MINIMUM of 250mm front to back across its entire width.

The protection plate must NOT be drilled, lightened, or modified in any way other than to mount it to the seat/chassis.

### **Headrest**

Two “headrest” bars MUST be installed behind the driver’s head/helmet to either support and protect the headrest of a fully integral racing seat, or allow the mounting of a mandatory headrest plate in cases where the seat does not incorporate a headrest. These headrest bars MUST be symmetrical and run in a top to bottom orientation when viewed from the rear. Care should be taken to ensure they do not impede the safe installation of the driver’s safety harness.

The headrest bars MUST be constructed of steel, be an integral part of the roll-cage construction and be fully welded to cross-members at the top and bottom.

The headrest bars must NOT protrude from the main roll-cage in side-profile (pillars 3 & 4).

If the driver’s seat does not incorporate an integral headrest, then a steel headrest plate MUST be fitted.

The headrest plate MUST be welded along its left and right vertical edges to the two headrest bars located behind the driver’s head/helmet (specified above).

The headrest plate MUST be a MINIMUM of 3mm thick steel plate.

The headrest plate MUST measure between 150mm and 200mm square.

The headrest plate must NOT be drilled, lightened, or modified in any way.

The headrest bars and any headrest plate MUST be located within the roll-cage profile such that a horizontal straight-edge can be simultaneously butted up against the left rear and right rear roll-cage corner pillars (pillars 3 & 4) at any point along their profile length, from where they meet the main chassis at their base, to the roof-bars at the top. Any headrest bar and/or headrest plate preventing a horizontal straightedge from contacting the left and right rear roll cage pillars simultaneously is NOT permitted.

### **Safety Harness**

The car MUST be fitted with a quick-release motorsport type safety harness to hold the driver into the seat.

The safety harness MUST be worn at all times when on track, racing or practising.

It’s the driver’s responsibility making sure their helmet and harness is fastened and tightened before racing or practicing

Regulations regarding the correct specification, fitment, and use of the safety harness are produced by the manufacturer to ensure consistency and best practice across all oval formulas.

The safety harness MUST consist of a MINIMUM of two separate shoulder straps, two separate lap straps, and an “anti-submarine” crotch strap (sometimes referred to as a substrap). The safety harness MUST be of either a 5-point or 6-point design.

The safety harness MUST be anchored to the car’s chassis by one of the following methods:

- Attached to bolt-on or weld-on purpose-made ringed harness eyelets using the harness manufacturer's original components, and to their specification.
- Securely buckled around integral roll-cage or chassis cross-members using the harness manufacturer's original components, and to their specification. Any such crossmember(s) MUST be welded to other fixed chassis/roll-cage bars at both ends such that the safety harness cannot become detached and MUST conform to the MINIMUM roll-cage material specifications.
- Attached as per original installation instructions provided by the harness manufacturer with split pin in the eyelets to stop them being tampered with

The driver MUST be able to demonstrate installation conformance to manufacturer's instructions outlaws F2 and/or to its appointed officials.

The harness must NOT be mounted or attached to the seat protection plate.

The safety harness MUST be installed using standard original manufactured hardware designed for this purpose, e.g. mounting eyes and buckles. The use of chain, D-links, karabiners, or other non-approved components not originally designed for harness installation is NOT permitted.

A MAXIMUM of one strap attachment is permitted to any single bolted mount point or bolt/weld-on ringed harness eyelet, e.g. separate lap and anti-submarine straps must NOT be mounted to the same eyelet. It is permitted to mount multiple straps around a single integral cross-member, e.g. the shoulder straps to a cross-bar.

The shoulder straps MUST be supported at shoulder level to prevent deformation/compression of the seat and driver injury in a high-energy impact.

All anchorage points MUST be easily accessible for scrutineering purposes.

### **Driver Protection**

All chassis cross-members located between the engine firewall and the front edge of the driver's seat, which may be impacted by the driver's legs (and especially the shins) during an impact, MUST be protected by high-density foam with the intention of preventing leg injuries. The steering column are required to pass Solid Beam Axle

Beam axles MUST be centrally fitted transversely in the chassis to a tolerance of +/-5mm either side from the centre.

Central fitment will be measured using the distance from the rotational centre at the top of the kingpins to the outside edge of the main chassis rails on each side of the car when viewing the car from the front. This distance MUST be equal on both sides of the car to within +/-10mm of each other, i.e. the two measurements MUST be within 10mm of each other, thus giving a MAXIMUM tolerance of central fitment of +/-5mm from the centre-line of the car.

The alteration of camber angles is permitted.

The use of a 2-piece beam axle is permitted, but the 2 sections MUST be securely fastened together to prevent them coming apart.

Radius arms mounting the beam axle to the chassis must NOT cross the centre-line of the chassis.

### **Hubs**

Front hubs MUST be made of a ferrous material.

### **Rear Axle/Suspension**

#### **DIFFERENCIAL limited slip diff off any kind not permitted**

The rear axle MUST be of rigid normal production type (similar in pattern to the Ford Escort Mk1/2). Volvo etc.

The rear axle must NOT be wider than the Ford Cortina Mk3/4/5 axle when measured from the outside of wheel flange to wheel flange.

Max width has to be a live axle & configuration is free can run torque arm, A frame or 4 link etc

The axle tubes (between the differential carrier and the end flanges) MUST be of equal length.

The rear wheels must NOT be cambered in any way.

#### **Axle Alignment**

The rear axle MUST be centrally fitted transversely in the car. A tolerance of +/-5mm either side from centre is permitted to account for race damage.

Central fitment is measured by taking the distance from the inner edge of the rear wheel rim to the outside edge of the main chassis rail on each side of the car. This distance MUST be equal on both sides of the car to within +/-10mm of each other, i.e. the two measurements MUST be within 10mm of each other, thus giving a MAXIMUM tolerance for central fitment of +/-5mm from the centre-line of the car.

Lateral location of the rear axle may be achieved by the use of a watts linkage or panhard rod, any panhard rod or watts linkage must be fitted behind the axle casing or below the main chassis.

Steering of the rear axle by lengthening or shortening the wheelbase is permitted.

Anti roll bars are NOT permitted for use .

#### **Half-Shafts**

The half-shafts MUST be of equal length.

The bearing retaining collar on the nearside (left) MUST be tack welded to the half-shaft, if it is only a press fit, to prevent the half-shaft from pulling out.

#### **Strengthening**

The rear axle casing may be strengthened through the use of welded or bolted-on bracing.

The use of adjustable bracing is permitted.

The use of links incorporating rose-joints or other threaded/adjustable bearings/fixings/fittings is permitted for the purpose of strengthening the casing, and/or adjusting out race-damage and the effects of heat from welding brackets etc.

The use of rubber/poly bushes in a bolted brace, to allow a small amount of flex under shock load, is permitted.

## **Brakes**

A working brake system **MUST** be fitted. Any braking system may be used, it **MUST** be in working order and min 3 callipers

## **Fuel and Fuel System**

Pressurized fuel systems are **NOT** permitted.

Fuel Tank Only one fuel tank is permitted.

The **MAXIMUM** permitted fuel tank capacity is 3 gallons (13.64 litres).

The fuel tank **MUST** be constructed of steel with a **MINIMUM** 2mm wall thickness. The use of an alloy fuel tank must be of race spec.

The filler cap **MUST** be of a metal threaded screw type.

The fuel feed pipe **MUST** enter the fuel tank at or near the top.

The fuel tank **MUST** have a breather pipe to prevent spillage in case of inversion and fitted with a one way valve.

The fuel line and breather pipe **MUST** be constructed of metal pipe, or steel braided fuel hose.<sup>8</sup>

The use of plastic pipes, and/or non-steel braided fuel hoses in the construction of fuel lines and/or breather pipe is **NOT** permitted.

A fuel shut-off tap **MUST** be fitted in the fuel line.

The fuel shut-off tap **MUST** be either:

- Positioned within easy reach of the driver.

OR

- Remotely operated by means of a steel cable with the handle positioned within easy reach of the driver.

The fuel shut-off tap **MUST** be operable by the driver when strapped in their seat, and the driver **MUST** be able to demonstrate this when requested by an appointed official.

The location of the fuel shut-off tap **MUST** be clearly marked on the outside of the car where it can be seen by track marshals.

The use of a fuel pressure regulator is permitted.

Consideration should be given during car construction to the routing of the fuel line, keeping it away from hot exhausts, battery terminals, and other components likely to produce heat or a spark.

**Exhaust System and Silencer – All Engine Types All cars **MUST** be fitted with the approved F2 stainless-steel silencer,**

## **TYRES**

**Dmack 205 /195/185 13**

### **” Ford 1.8 zetec engine**

The ford 1.8l zetec engine in its standard form is permitted

### **Engines – Ford 2.0 Litre 16v Zetec Specification**

Permitted Engine – The 136PS or lower form of the Ford 2.0-litre 16v Zetec petrol engine is permitted, in

the following specification only. This engine has a nominal bore of 84.80mm and a stroke of 88.00mm.

The UK specification Ford Zetec 1988cc 16v petrol engine (commonly referred to as the “black-top” engine due to its black plastic camshaft cover) is permitted. (This is additionally referred to as the phase/series 3 engine).

Only the 136PS or lower forms of the engine with a nominal bore of 84.80mm and stroke of 88.00mm are permitted.

A new standard un-coded Ford replacement engine to the above and below specification is permitted.

In ALL cases the engine MUST remain in its standard form.

All other forms of the engine, not specified here, are NOT permitted.6 The engine block MUST have one of the following codes stamped on it:

- NGB, NGC, NGD (from the Ford Mondeo Mk2 16v 1996-2000)
- EDDB, EDDC, EDDD, EDDF (from the Ford Focus Mk1 16v 1998-2004)
- EBBC, EBBD, EDDB, EDBB (from the Ford Cougar 1998-2001)

The engine code is located on the exhaust side of the cylinder block, i.e. the left side when viewed from the driving position.

ALL codes and/or ID numbers MUST be visible and untouched.

Production tolerances are permitted, but the total swept volume must NOT exceed a MAXIMUM of 1989cc.

### **General Principles**

The overriding principle of these specifications for the 2.0-litre Zetec engine is that unless it is stated that an action may be taken then a driver MUST work on the principle that it cannot.

The emphasis of these specifications is that the 2.0-litre Zetec engine is an engine that MUST remain in its standard form.



Stringent technical checks WILL be carried out on a regular basis, and any contravention of the regulations will result in disciplinary action.

The engine mount MUST be constructed so as to allow the insertion of a crankshaft-locking pin into the block as part of the technical inspection process

Only Ford standard parts, manufactured by Ford Motor Company Ltd. or an authorised subcontractor, specifically for the permitted 2.0-litre Zetec engine types detailed above are permitted.

### **Engine Block**

Machining of the cylinder block is NOT permitted, unless allowed by the regulations below.

The block height, measured from the lower mating face of the main bearing caps (on the block) to the top face of the cylinder block, MUST meet the Ford specification of a MINIMUM of 212.8mm (8.378in) in height.

The use of standard pistons and con rods, as per these regulations, in conjunction with the above cylinder block measurement, will result in a MINIMUM clearance from the top of the piston to the top face of the cylinder block of 0.46mm (0.018in) with the piston at TDC.

Any engine where the clearance measures at least a minimum of 0.018in (0.46mm), the Ford specification, will be deemed to be within specification.

Any engine where the clearance measures less than the minimum 0.018in (0.46mm), as per the Ford specification, will be required to be removed from the car for additional inspection in order to accurately check that it conforms to the original Ford specification above.

The drilling and tapping of blank casting-lugs on the block, only for use as additional engine mounting points is permitted.

Removal of the extended casting blank below the dipstick, only to facilitate the fitment of a simple flat engine mounting plate, is permitted.

Repair of bell-housing mounting bolt locations and engine mounting bolt locations, on the cylinder block, is permitted, but their designed use and/or location must NOT be altered.

Line-boring of the crankshaft housings is NOT permitted.

Repairing damaged cylinder bores with cylinder liners is NOT permitted.

Honing/glaze-busting of the cylinder bores is permitted.

Modification of the standard crank-case breather tank, including its removal, is permitted, however, air and/or oil must NOT escape from this area other than through pipework to a catch-tank.

The flywheel/crankshaft sensor and its associated housing on the cylinder block must NOT be modified in any way.

### **Crankshaft**

A standard crankshaft MUST be used, with standard bearing shells unless explicitly detailed below.

Post-manufacture balancing of the crankshaft is NOT permitted. The original factory balancing must remain standard.

Polishing of the nine crankshaft bearing surfaces is permitted.

Polishing of ANY other section(s) of the crankshaft, other than the nine bearing surfaces as detailed above, is NOT permitted.

The re-grinding of crankshaft journals for reclaim is permitted, up to a MAXIMUM of a 0.25mm grind from the original standard diameter.

Crankshaft journals MUST remain within Ford positional tolerances if a repair re-grind is carried out.

The crankshaft pulley/damper unit MUST be retained.

Modification of the crankshaft pulley/damper unit is NOT permitted.

Use of the crankshaft pulley to drive the water-pump is permitted.

Alteration of the number of crankshaft bearings is NOT permitted.

The fitment of bearings of less than standard production width is NOT permitted.

The use of standard undersize bearings is permitted, up to a MAXIMUM of 0.25mm.

The following aftermarket bearings only are permitted as replacements for the original Ford components:

#### **Main Bearings**

Manufacturer Size Part Number

King Standard MB5008SI STD

King 0.25mm MB5008SI 0.25

KS Standard 77786600

KS 0.25mm 77786610

Mahle Standard 014HS20669000

Mahle 0.25mm 014HS20669025

Con-Rod Big-End Bearings

Manufacturer Size Part Number

King Standard CR4150SI STD

King 0.25mm CR4150SI 0.25

KS Standard 77785600

KS 0.25mm 77785610

Mahle Standard 014PS20662000

Mahle 0.25mm 014PS20662025

## **Con-Rods**

Con-rods MUST be standard

APR bolts ARE permitted.

Pistons MUST be standard unmodified in the original unmodified form.

## **Standard Pistons**

All three piston rings MUST be fitted on each piston, as originally designed/intended.

Piston rings MUST be standard production components, or replacement components to Ford Motor Company Ltd. Specification

The addition, removal, replacement and/or transfer of material on the cylinder head is NOT permitted, unless stated below.

Line-boring of the camshaft housings is NOT permitted.

Simple cleaning of the cylinder head, which does not alter the shape of the component in any way is permitted.

Minimal material removal from the cylinder head face to correct combustion chamber volume, and/or reclaim head flatness, is permitted.

The cylinder head MUST achieve at least a MINIMUM thickness of 132.6mm

Camshaft timing MUST remain in the standard Ford position within a tolerance of 0.010" (0.254mm) advance or retard measured on the pistons' position from TDC.

The timing of the two camshafts must NOT be altered independently of each other. A standard Ford locking/timing bar (nominal thickness 5mm), or aftermarket equivalent, MUST be able to simultaneously pass through the slots in the back of the two camshafts when in TDC position. Failure to comply will result in immediate disciplinary action.

## **Vernier pulley *not permitted***

Locking of timing pulleys to the camshafts through the use of grub screws tapped in to the pulleys and the ends of the camshafts is permitted, subject to the following:

- A MAXIMUM of 2 grub screws is permitted per camshaft.
- The grub screw(s) MUST be concealed behind the head of the standard flange-headed bolt used to secure the pulley to the camshaft.
- The standard flange-headed bolt used to secure the pulley to the camshaft MUST be retained.

A MAXIMUM of 2 tapped holes in each timing pulley are permitted.

A MAXIMUM of 4 tapped holes in the end of each camshaft are permitted, to allow for the resetting of the timing to the correct position following any permitted skimming of the cylinder head.

A profile-checking gauge will be used by outlaw F2 personnel to check that camshafts are standard.

## **Gaskets and Seals**

Cylinder Head – The cylinder head gasket MUST be a Ford original component, or one of the following approved aftermarket replacements. Gaskets MUST retain their original part number markings. Removal of the part number is NOT permitted.

Manufacturer Part Number Manufacturer Part Number

Victor Reinz 61-34340-00

61-34440-00

Goetze

(ceased prod.)

30-029870-00

30-028827-00

Elring 123.483

468.860

Glaser H80058-00

H80422-00

Payen AE5320

BZ490

Athena 101511-5250

Elwis Royal 0026588

Inlet Manifold – The use of an aftermarket gasket, or silicone-based sealer, to seal the inlet manifold to the cylinder head is permitted.

Inlet Manifold – The inlet manifold gasket, or silicone-based sealer, sealing the inlet manifold to the cylinder head, must NOT exceed a MAXIMUM thickness of 5mm.

Carburettor – Gaskets MUST be of the original type, as used on the original Ford Pinto application.

Other – All other gaskets are free.

## **Carburettor**

The standard Weber 32/36 DGV or Weber 32/36 DGAV carburettor MUST be used.

The MAXIMUM permitted size of the chokes is 26mm diameter for the smaller, and 27mm diameter for the larger, at any time, whether hot or cold.

Polishing and/or re-profiling is NOT permitted.

Modifications to the carburettor body and/or original design are NOT permitted.

The interchanging of tops from other Weber carburettor models is NOT permitted.

All gaskets MUST remain standard and original in design and manufacture.

A single original specification insulator block with two gaskets, as fitted in the Ford Pinto application, MUST be fitted between the carburettor and the inlet manifold (the combined total thickness is approximately 5mm depending on the compression of the gaskets).

The insulator block and gaskets MUST be of the "single unequal oval hole" design. Use of the rare "twin hole" RS Mexico insulator block is NOT permitted.

Changing the main jets, primary and secondary jets, auxiliary venturis, emulsion tubes, and/or accelerator pump jets for alternative standard parts is permitted.

The auxiliary venturis MUST face downwards towards the butterflies.

Reaming/enlarging the auxiliary venturis is NOT permitted.

The modification of chokes to open together is permitted. The fitting of replacement spindles with standard screws is permitted.

The removal of cold-starting devices is permitted. Blanking off the retaining lugs and subsequent holes is also permitted.

Enlarging and/or modifying the air and fuel galleries is NOT permitted. Fuel may enter on either side of the float chamber.

The modification and/or weighting of floats is NOT permitted. The floats MUST control the fuel flow.

The enlargement and/or modification of needle valves is NOT permitted.

Needle valves MUST be no larger than a MAXIMUM of size "250", subject to manufacturing tolerances.

The power valve MUST be present and fitted in the base of the fuel bowl. Sealing off the power valve and/or removing the diaphragm is permitted.

Trumpets are NOT permitted.

The use of a grub-screw or similar device to secure the auxiliary venturis to the carburettor body is permitted.

The blanking off and/or modification of top end enrichment devices is permitted.

A secondary fixing MUST be used on the fuel feed inlet pipe connection to the carburettor

NOT olive or nut fixing .

The secondary fixing MUST be completely independent of the primary fixing for the fuel feed inlet pipe, and is designed to prevent the inlet tube (with the fuel pipe still attached to it) from parting company with the carburettor body.

### **Inlet Manifold**

Internal modification of the inlet manifold in any way, including but not limited to shot-blasting is NOT permitted.

External modification of the inlet manifold in any way is NOT permitted.

The angle of relationship between the carburettor mounting face and the cylinder head mounting face must NOT be altered in any way. Blanking off the brake servo take-off is permitted, but any blanking device must NOT penetrate the manifold runner or plenum.

The fitment of a steel support to stabilise the inlet manifold is permitted, but any fastening must NOT penetrate the manifold runner or plenum. The drilling of holes, or other modification of the inlet manifold to facilitate the fitting of a support, is NOT permitted.

Welded repairs to cracked manifolds are permitted, but subsequent internal finishing MUST be consistent with the original and NOT be deemed to have affected manifold performance.

Painting, coating, or other protection of the inlet manifold is NOT permitted.

Repair of the threads, e.g. through the use of heli-coils, for the studs/bolts used to attach the carburettor to the manifold is permitted. The stud/bolt thread holes MUST remain in their original location.

Performance of the 2.0-litre Zetec engine in relation to other permitted engines will be closely monitored by all parties within outlaws

### **Proposal**

Any driver wishing to vary from the specification in the above rules may approach the committee for approval to trial of any components in trust of cost saving, performance leveling or Safety and put to the drivers for trials

**ANY UNAPPROVED TRIALS OR MODIFCATIONS WILL BE TAKEN AS BREAKING THE RULES AND DISAPLINARY ACTION WILL BE TAKEN BY THE COMMITTEE**

