



Technical Car Construction Regulations

Changes for 2018 and Beyond

Version 1.1 (Published) – 9th October 2017

Summary

- Following extensive consultation with input from promoters, officials, drivers, car constructors, and engine builders, this document seeks to outline the changes to the BriSCA F2 Technical Car Construction Regulations for 2018 and beyond.
- The document is divided in to a number of sections as follows:
 - Changes to be implemented in 2018 (in green)
 - Clarifications of existing rules (in green)
 - Changes to be implemented in 2019 (in blue)
 - Deferred Rule Change Proposals (in purple)
 - Ongoing Engine Discussions/Issues (in black)
- The numbers in the document relate to the original proposal numbers published in July 2017.
- This document does NOT seek to supply the exact wording to each rule change, but at this stage is merely a guide to competitors as to what will require changing for 2018 (or beyond). More detailed wording will be provided in the near future.
- Consultation is still ongoing regarding a number of engine rules/issues and further details will be published as soon as practically possible (but well in advance of the 2018 season).

Rule Changes for 2018

The following rule changes will be implemented for the **2018** season, effective 1st January 2018:

Chassis

(1.) Chassis – Main Rails

- All cars **MUST** be constructed with two main chassis rails running longitudinally from the front to the rear of the car.
- The main rails **MUST** start/terminate forward of the front axle, and rearwards of the rear axle.
- Both main 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 at 45 deg.

Note: *From research, it is not believed that this affects any current cars, but this is a tidy-up for consistency (as a number of other rules assume/imply such) and to prevent any future excessively-complex chassis development.*

(2.) Chassis – Main Rails Height

- The vertical centreline along the entire length of the main chassis rails and the vertical centreline of all transverse cross-bracing between the two main chassis-rails **MUST NOT** be lower than the vertical centre of the bumpers
- In simple terms, the main chassis rails and transverse cross-bracing must be level with, or above the level of the bumpers at all points.

Note: *From research, it is not believed that this affects any current cars, but this is a tidy-up for consistency and to prevent any future excessively-complex chassis development with lowered chassis rails.*

(5.) Ballast (2)

- 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, will **NOT** be permitted.

Cab / Roll-Cage

(13.) Roll-cage Height

- The current rule 203.3.3 which states: *“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**, and back down to the chassis rails again.”* is **NOT** changing.
- However, additional wording will be added to the existing rule to ensure compliance and provide an easy method of checking.
- Therefore, a flat steel plate (e.g. a steel rule) **MUST** be able to pass straight through the cab from side to side, under the level of the roll-cage hoops **AND above the driver’s helmet** (when the driver is sat in the car in the racing position) without bending/deflection.

(14.) Roof Plate Construction

- The roof plate **MUST** be constructed from a single sheet steel plate only – curved, bent or folded as required, subject to other current roll-cage height and roof width rules.
- The welding together of multiple sections of plate will **NOT** be permitted.

Floor / Side-Pod / Sump-Guard

(21.) Side-pods / Floors

- The installation of any floor/side-pod section, outside of the main/lower chassis rails will ONLY be permitted for the purpose of mounting/protecting any fuel-tank and/or battery.
- The MAXIMUM permitted size of any floor/side-pod section outside of the main/lower chassis rails will be 300mm in width (i.e. a maximum of 300mm out from the main/lower chassis rail/frame where it attaches), and 1000mm in length (front to rear).
- Any side-pod/floor must ONLY sit between the front and rear wheels when viewed from the side/above.
- Any side-pod/floor section outside of the main/lower chassis rails...
 - MUST NOT be constructed any further forward than the vertical plane of the rear-most point of the front wheel/tyre (when pointed straight ahead).
 - MUST NOT be constructed any further rearward than the vertical plane of the front-most point of the rear wheel/tyre.
- Any side-pod/floor section outside the main/lower chassis rails must be constructed with no more than a SINGLE floor section, and no more than a SINGLE outer wall section.
- The zig-zagging or multiple folding of plate, or construction using multiple sections of plate, to form channels, “walls” or floor sections, or additional internal “wall” or floor sections, or any other sections not for the purpose of supporting or protecting the fuel tank and/or battery will NOT be permitted.

(22.) Additional Floor Sections

- The construction/installation of any floor section outside of the footprint of the main/lower chassis rails and cross-members, other than as specified above (see 21.), will NOT be permitted. For example, steel plate around the left-front wheel area.

Bumpers / Nerf-Rails

(24.) Bumper Blades

- Bumper blades (front and rear) MUST be constructed from material with a MINIMUM wall thickness of 2.5mm, e.g. 50mm x 25mm x 2.5mm RHS, or 25mm x 25mm x 2.5mm SHS.

(25.) Rear Bumper Hoops

- Optional hoops will be permitted on the rear bumper for the purpose of protecting the rear of the roll-cage, and/or preventing another car from riding up and over the rear wheel(s).

Note: Such a practice is currently accepted, however, there is no specific provision for it in the current rulebook. Hoops over the rear and/or left-front wheels are NOT permitted.

(26.) All Bumper Hoops/Supports

- All bumper hoops, bracing and support struts MUST be constructed from a MINIMUM material specification of 25mm CHS/SHS x 2.5mm wall thickness.

(28.) Nerf-Rails Outer Section (2)

- The outer section of BOTH nerf rails must be constructed from a MINIMUM of two lengths of 50mm x 25mm x 2.5mm wall RHS welded together vertically (forming a 100mm deep rail), running for a MINIMUM length of 1100mm from front to rear (thus replicating the front and rear bumper blades).
- Any brackets required for the mandated wheel-guard MUST be in addition to the mandated minimum material dimensions above.
- The requirement for an additional under hoop at the rear of the nerf-rail will be removed.
- The ends of the nerf rail blades must be capped as per existing rules.
- The nerf rails and bracing (see 29. and 30. below) MUST be symmetrical in appearance when viewed from above and in front of the car.

(29.) Nerf-Rail Bracing To Main Chassis

- The nerf rails MUST be connected/braced to the main chassis rails, in the horizontal plane, by a MINIMUM of 4 braces on each side of the car, with a MINIMUM material specification of 25mm CHS/SHS x 2.5mm wall thickness.

(30.) Nerf-Rail Bracing To Under Chassis

- The nerf rails MUST be connected/braced to the lower under-chassis rails, diagonally, by a MINIMUM of 2 braces on each side of the car, with a MINIMUM material specification of 25mm CHS/SHS x 2.5mm wall thickness.

(31.) Nerf-Rail Width

- Rule 205.10 will be changed to state that nerf rails must not extend past the wheels, on the axle with the widest track width, by more than 50mm.

Note: This is purely a clarification and will not require any currently legal car to be changed to comply.

(New) Bolt-On Bumpers

- Bolt-on bumpers MUST be bolted to the chassis by a MINIMUM of 4 in number (2 on each side of the chassis), 12mm diameter high-tensile bolts with lock-nuts.

Axles / Transmission

(33.) Anti-Roll Bars

- The use of Anti-Roll bars anywhere on the car will be PROHIBITED.

Wheels / Tyres

(42.) Tyres (1)

- Shale tracks – NO change to existing rules.
- Tarmac tracks – A specified, commonly available, “inferior performance” tyre (in comparison to the Yokohama A021R tyre) MUST be used on the right-rear wheel of the car.
- BriSCA F2 reserves the right to mandate a change to the location (on the car) of the “inferior” tyre during the course of the season, with an appropriate notice period of at least 14 days.

Note: Yokohama has expressed an interest in producing/supplying such an “inferior performance” tyre.

Electrical

(50.) Electric Cut-off Pull-cord

- A mechanical electric cut-off pull-cord, as currently required in all formulas at all tracks in the Netherlands, MUST be installed in ALL BriSCA F2 cars. (Details can currently be found on the briscaf2.com website in the technical statement published on 10th March 2017.)

(51.) Battery

- The use of a single “075” battery (245mm x 175mm x 175mm), as an alternative to one or two “063” batteries will be permitted.

(52.) Battery Mounting (2018)

- As an augmentation to the current rule 220.9, where the battery is fitted outside of the main chassis rail, then one side of the battery MUST be parallel with the main chassis rail. If two batteries are fitted, then this applies to both of them. Existing rules about placement still apply.

Note: The existing rule implies this to be the case, but this is not explicitly stated.

Brakes

(New) Master Cylinder

- Only a SINGLE braking system master cylinder will be permitted.
- The use of multiple master cylinders will NOT be permitted.

(New) Brakes – Bias Valves/Levers/Reducers

- Only a SINGLE brake-bias/pressure/reducer adjustment device, valve, or lever will be permitted.
- The use of multiple reducers, bias adjusters, or other in-car brake performance altering devices will NOT be permitted.

Fuel

(55.) Fuel Tank Mounting

- As an augmentation to the current rule 222.2.11, where the fuel tank is fitted outside of the main chassis rail, then one side of the fuel tank MUST be parallel to the main chassis rail. Existing gap/measurement rules still apply.

Note: *The existing rule implies this to be the case, but this is not explicitly stated. It is expected that this additional wording will not affect any current cars.*

(56.) Fuel Supply

- Where BriSCA F2 or a promotion exercises the right to supply fuel to a driver for a race or meeting (as per current rule 222.4.3) then, if required/requested to, the driver MUST pay for the fuel to be used PRIOR to racing at the meeting (or the individual race).
 - The initial fee WITHOUT CVL will be set at £20 for an entire “normal” format meeting, or £10 for a single race (as the entire tank will be drained and completely refilled)
 - The initial fee WITH CVL will be set at £30 and £15 respectively.
 - These figures will be reviewed regularly to ensure the driver is paying only to cover the cost of the fuel/CVL fuel supplied and nothing more.
 - Where a driver suffers early race damage and is unable to compete in more than half his/her scheduled races at an event then an appropriate partial refund may be made at the conclusion of the meeting.
 - Any refusal to pay for the fuel, or use the fuel provided, will be treated as a refusal of a technical check, resulting in an immediate suspension and a technical disciplinary process being invoked (a process that could lead to a racing ban).

Bodywork

(57.) Engine Cover (2018)

- The use of ventilation holes at the rear sides of the engine cover ONLY (above the main chassis rails), to allow sufficient air-flow through the engine compartment to provide adequate engine cooling will be formally permitted.
- The use of open holes drilled in the sides or top of the engine cover will NOT be permitted.
- Where a ventilation hole is employed, the engine cover/side MUST overlap with subsequent panel-work.
- Ventilation holes on the top of the engine cover will NOT be permitted.

Note: *Many existing shale car examples of such ventilation holes are already compliant and will not require modification. In some cases, illegal holes will require sealing up or modification.*

Engine – Duratec

(63.) Duratec Permitted Use (1)

- Permitted use of the 1.8-litre Duratec engine will be restricted, with only drivers currently using such an engine on a regular basis being permitted to continue to run it. In 2017 there is only 1 such engine in regular use.
- Use of the 2.0-litre Duratec engine will be withdrawn after the end of the 2017 season, as per the current rulebook.

Engine – All Engine Types

(58.) Rev. Limit

- ALL engines MUST run with an ECU/rev-limiter, set to a hard-cut limit determined by BriSCA F2.
- All rev limiters/ECUs, for ALL engine types will be supplied through BriSCA F2 by OMEX Technology Systems Ltd.

(65.) Alternator

- The use of a single standard alternator, driven from the front of the engine as per the original production cars to which the engine was fitted, will be formally permitted.

Exhaust – All Engine Types

(66.) Prohibit 4-to-2-to-1 and Multi-Collector Exhaust Systems

- As per the note on page 56 of the 2017 rulebook, the use of “multi-collector” and “4-to-2-to-1” exhaust systems will NOT be permitted.
- ALL exhaust systems MUST be constructed to a “4 in to 1” design with only a single collector permitted to merge the header pipes in to a single main pipe.

Bell-Housing – All Engine Types

(68.) Specification (1)

- Original Ford specification bell-housings, or commercially available after-market direct replacements will be permitted, in their original manufactured specification, subject to any other permitted modification specified in the rulebook (e.g. the mandated 25mm inspection hole) and coverage rules below.

(69.) Specification (2)

- The bell-housing MUST fully enclose the clutch/flywheel assembly around its entire circumference, from the vertical plane of the rear of the engine block to the face of the gearbox, subject to any other permitted modification specified in the rulebook (e.g. the mandated 25mm inspection hole, or clutch cable access).
- The use of “open-bottomed” bell-housings that do not completely encircle/enclose the flywheel/clutch (e.g. to allow the engine to be mounted lower in the chassis) will NOT be permitted.

(70.) Specification (3)

- The removal of material from the bottom of any bell-housing in order to lower the bell-housing/engine in the car, or the removal of any material for any other purpose (other than the mandated 25mm inspection hole, and/or clutch cable access, as separately specified), is NOT be permitted. This is NOT a change to current rules, merely a re-emphasis.

Grading Colours

(72.) Roof Colours – Silver/Grey/Gold

- The use of ANY shade of grey, silver, or gold for the roll-cage and/or “ear” panels above the waistline of the car will NOT be permitted, other than by the National Series Champion (Silver), or World Champion (Gold).

Note: All other roof colour rules remain the same. Grey will NOT be classed as a neutral colour.

Illegal Components

(75.) Component Retention Car Components

- Any suspected illegal component (for example, an underweight flywheel, or an illegally modified engine component) will be retained by the meeting promoter or a senior BriSCA F2 official, and the driver subject to a technical investigation/disciplinary process as appropriate.
- Should any component be deemed illegal then it will be permanently retained by BriSCA F2.
- Any retained component deemed to be legal and within the rules will be returned to the driver.

Personal Safety Equipment

- Any personal safety equipment presented for a safety check (e.g. helmet, gloves, balaclava or race-suit), that does not conform to the current rules, 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.

Helmets

- Any helmet presented for a safety check that does not conform to the current standards will be labelled with an ORCi “Failed” sticker and only returned to the driver at the end of the meeting.

Gloves

- Any gloves presented for a safety check, which are deemed beyond repair, will be permanently retained by the promoter, senior BriSCA 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.

Clarifications

The following clarifications will be added to existing rules in the current rulebook for the avoidance of any doubt.

- 208.4 Floor**
- A floor which folds or curves up at the rear, e.g. to meet the seat-mounting or another cross-member is permitted.
 - Any such floor **MUST** meet the mandated 600mm length in the horizontal plane (i.e. from the vertical plane of the firewall to the vertical plane at the rear-most point of any such a floor where it meets the cross-member).
- 219.5.1/2 Floor**
- A folded-up/curved-up floor, that comes up to meet the seat-mounting or another cross-member, does **NOT** count as a mandated prop-shaft hoop.
- 213.1.6 Shock Absorber Mounting**
- Each individual shock absorber must be predominantly mounted below the level of the main chassis rail.
 - At least half the length of each shock absorber (measured between the centre of the top and bottom mounting bolts/bearings), when the car is at rest, must be below the top of the main chassis rail adjacent to where the shock absorber is mounted.
- 220.1 Battery**
- The use of AGM (Absorbed Glass Mat) type batteries, which are often mistakenly referred to as gel-type batteries, e.g. Varley Red-Top, and Odyssey Extreme, is permitted.
- 222.2.10 Fuel Tank Protection**
- The current rule specifies a minimum thickness for the fuel tank protection plate/bars, but not a minimum tube size.
 - A **MINIMUM** tube size of 25mm CHS/SHS x 2mm wall thickness **MUST** be used in the construction of any fuel-tank protection bars.
- 231.15.3 Pinto Flywheel**
- The bare flywheel weight rule (minimum 6.2Kg) includes the ring-gear.
- 233.9.7 Zetec Front Pulley**
- The crankshaft pulley and damper is a single unit.
- New Update Pinto Cylinder-Head Bolts**
- The rulebook will be updated to reflect the accepted practice of shortening standard original cylinder-head bolts, use of a spacer washer, or deepening the threaded hole in the block, when both the head and block are skimmed as per existing rules.
 - The use of 2 studs, of equal or lower tensile strength than the original Ford cylinder-head bolts, to replace the two centre cylinder-head bolts to facilitate the use of a bolted-on strap over the camshaft centre-post, will be explicitly permitted. The other 8 cylinder-head bolts **MUST** be standard (as above/below).
 - The original Ford pattern cylinder-head bolts (6-point Torx late stretch type, or 12-point spline early non-stretch type) **MUST** be used (subject to the two permitted studs as above). There is **NO** provision in the current rulebook for the use of non-standard/non-original cylinder head bolts, but this clarification will explicitly state that.
- New Update Pinto Camshaft Follower Springs**
- Heavy-duty camshaft follower retaining springs are **NOT** permitted.
 - There is no provision in the current rulebook for such items (they are non-standard), and therefore an update for 2018 will explicitly state this.

New Update Pinto Valve Springs

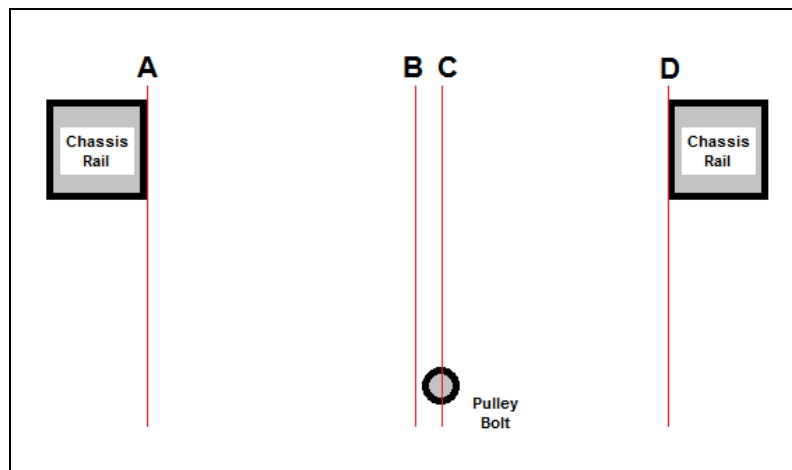
- The rulebook will be updated to reflect the accepted/permitted use of competition valve-springs, subject to existing valve-spring rules.

New Update Pinto Sump

- The rulebook wording will be updated to reflect the accepted/permitted use of modified/enlarged sumps.

New Update Engine Offset

- A diagram will be included in the rulebook to clarify the method of measurement for engine offset (similar to below).
- The existing wording will be updated to specify that...
 - Measurement is to be taken horizontally from the vertical plane of the centre of the crank pulley bolt (C) to the vertical plane of the inner edge of each chassis rail (A) and (D) when the chassis is sat level. *[These planes will only be vertical if the chassis is sat level, so raising up one side of the chassis to make the chassis rails level may be required. Alternatively measurements can be taken using a square/straight-edge, from a straight-edge place across the chassis rails, thus removing the effect of the ground/surface not being level.]*
 - The two measurements (C to D, and C to A, in the example diagram below) MUST NOT differ by more than 50mm.
 - Halving the difference between the two measurements (C to D, and C to A in the diagram below) will give the offset from the vertical plane of the centreline of the chassis (C to B).
 - The distance from the centreline of the chassis MUST NOT be more than 25mm.



Changes for 2019

The following rule changes will be implemented for the **2019** season, effective 1st January 2019:

(4.) Ballast (1)

- The **MAXIMUM** permitted steel plate thickness, in **ANY** part of the car, will be reduced to a **MAXIMUM of 3mm**.
- This change will cover plate such as the floors, side-pods, fuel protection, cab sides/rear.
- This change will **NOT** include plate used in the construction of items such as wishbone brackets or rear-axle link bar mounting brackets.

(10.) 30mm Minimum Roll-cage Material

- All external sections of the protective roll-cage **MUST** be constructed from a **MINIMUM** tube specification of 30mm CHS/SHS x 3mm wall thickness. This includes, but is not limited to:
 - Main hoops (No change from current spec.)
 - Additional 5th/6th pillars (middle pillar on each side) (No change from current spec.)
 - 7th pillar (in the rear window) (No change from current spec.)
 - Roof cross-members (No change from current spec.)
 - Cross-member at the base of the rear window aperture (Currently 25 x 2.5mm min spec.)
 - Cross-member at the base of the front windscreen aperture (Currently 25 x 2.5mm min spec.)
 - Side window bars (sometimes referred to as “chicken-bars”) (Currently 25 x 2.5mm min spec.)
 - Down-bars (from the side-window bars to the main chassis) (Currently 25 x 2.5mm min spec.)
 - **ANY** and **ALL** other parts of the outer roll-cage that could be impacted by another car.

(11.) Side-Window Bar Minimum Height – (in conjunction with 15. below)

- Side window bars **MUST** be mounted a **MINIMUM** height above the main chassis rail, at all points along their length, from the front roll-cage pillar to the rear roll-cage pillar.
- This measurement will be taken from the top of the chassis rail to the top of the side-window bar. The height will be confirmed shortly, but is expected to be in the region of 315mm to account for the 300mm height plate and half the diameter of the window-bar tube.

(15.) Roll-cage Plating – (in conjunction with 11. above)

- **BOTH** sides of the roll-cage **MUST** be plated in steel plate (**MINIMUM** thickness of 2mm) to fully enclose the area bordered by the main chassis rail, the rear roll-cage pillar, the side window bar, and the front roll-cage pillar or additional down-bar.
- The plate **MUST** be a minimum height of 300mm along its entire length, a minimum length of 1200mm, and be fully seam-welded along all 4 sides.

(20.) Cab Floor (2) – (in conjunction with 4. above)

- The **MAXIMUM** permitted thickness of the cab floor will be 3mm.

(21.) Side-Pod – (in conjunction with 4. above)

- The **MAXIMUM** permitted thickness of the side-pod floor/wall will be 3mm.

(22.) Additional Floor Sections

- The construction/installation of any steel floor section between the main chassis rails forward of the driver/engine firewall or reward of the driver’s seat, will **NOT** be permitted.
- The use of thin aluminium plates (on the sides, or underneath the chassis) to prevent ingress of shale/dirt in to the engine bay that may clog up the radiator or other moving components will still be permitted.

(23.) Sump-Guard (in conjunction with 4. above)

- The **MAXIMUM** permitted thickness of any sump guard will be 3mm (steel plate), or 5mm (aluminium chequer-plate). A **MAXIMUM** width may also be specified.

(67.) Exhausts - Standardised Rules

- Exhaust rules will be standardised for **ALL** engine types, and based on the current Zetec rules (tube size, header length, collector length, etc.).

Deferred Rule Change Proposals

The following change proposals have been deferred, either to permit more time for research, or to monitor the effects of the 2018/2019 changes before making a decision.

(3.) Ground Clearance

- Introduce a MINIMUM ground clearance (e.g. 50mm, 75mm, 100mm) at all points under the chassis and any side pod(s).

(19.) Cab Floor (1)

- Restrict the length of the cab/driver-compartment floor.
- The floor should not be permitted to extend rearwards of the front edge of the driver's seat by any more than a fixed distance (e.g. 50mm, 75mm, 100mm), while still conforming to the minimum 600mm length from the firewall.
- Alternatively, mandate a maximum floor length (e.g. 750mm), so long as the rear edge is level with, or behind the front edge of the driver's seat.

(53.) Fuel Cut-off (Further research required)

- Mandate a single fixed location for the mandatory fuel cut-off switch/tap/pull-cord.

(54.) Electric Fuel Pump (Further research required)

- Mandate that electric fuel pumps MUST cut out, if the engine stops running.

(64.) Duratec Permitted Use (2)

- Withdraw the permitted use of the Duratec engine, from the start of the 2019 season (or maybe 2020), for those already running such an engine on a regular basis.

Ongoing Engine Discussions/Issues

A number of rules regarding Pinto engines are still being discussed.

It is expected that interested parties will conclude discussions in the near future, with any changes notified to drivers/engine-builders shortly thereafter.

Engine – Pinto

(59.) Water Pump Pulleys

Proposal: Mandate that the water pump pulleys (on the crankshaft and the water pump) must be a standard original size.

Reason(s):

- **Performance** – To avoid performance gains from experimenting with speeding-up/slowing down the water pump to minimise loss of horsepower.

(61.) Ignition Module

Proposal: Mandate the use of the standard Ford/Motorcraft ignition module, designed for the Pinto engine, only. Smaller ignition modules bolted to distributors, or those manufactured for other makes, e.g. Peugeot should not be permitted.

Reason(s):

- **Standard Ford Components.**

(New) Ignition

- Coils
- Lumenition devices

(New) Carburettor

- Gaskets
- Modifications

(New) Cylinder-head gaskets

(New) Lubrication

(New) Plastic Fuel Pumps