

**ASSOCIATION OF
AUTHORISING
BODIES**



RULES & REGULATIONS

2020 EDITION

CLASS 2 – Toyota Yaris



"The Association reserve the right to alter/amend the Rule Book as required, and that the Association has the right to review and amend any Class or Construction Rules at the end of each racing year."

**VALID FROM JANUARY 2020
UNTIL FURTHER NOTICE**

ALL PREVIOUS EDITIONS ARE INVALID

IT IS THE RESPONSIBILITY OF THE DRIVER/CONSTRUCTOR TO ENSURE THAT ALL VEHICLES CONFORM FULLY TO THE REGULATIONS AND RULES CONTAINED WITHIN THIS RULEBOOK.

IF THE REGULATIONS AND RULES DO NOT STATE THAT "YOU CAN DO IT" THEN IT MUST BE PRESUMED THAT IT CANNOT BE DONE.

CLASS 2 – Toyota Yaris

**FOR GENERAL BASIC CONSTRUCTION RULES (i.e. Basic requirements for all class of saloon vehicle).
SEE SEPARATE RULE BOOK –SALOONS - GENERAL**

CLASS & VEHICLE SPECIFIC CONSTRUCTION RULES

CLASS 2 – Toyota Yaris

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VEHICLE CONSTRUCTION RULES - CLASS 2 – TOYOTA YARIS.**Must be a Front Wheel Drive Saloon of specified type and manufacture.**

Specified Vehicles – “Right Hand Drive” and “Manual” versions only.
 “Automatic” versions prohibited.
 All Light Van, Dual Purpose (Pick Up and Estate) models of vehicles are prohibited.

Specified vehicle.

Toyota Yaris 1299cc VVTi 16V (2SZ-FE – French) engine 3 or 5 door bodyshells.
 Excluding: 2NZ-FE engine model variants.

NASA reserves the right to amend the above list of vehicles giving 12 months notice regarding the addition or deletion of vehicles.

VEHICLE CONSTRUCTION RULES - GENERAL

- a. **STATEMENT of CONFORMITY.**
 Only methods of construction and modifications as listed are permitted. Any further modifications, other than those permitted, are prohibited. Any modifications other than those listed within the Vehicle Construction Rules are specifically excluded.
 i.e. If the rules do not “say” that a modification is permitted then it is not allowed.
- b. The vehicle Palgrave/Glasses Guide Technical Services Data Sheet will be used as a reference in conjunction with the “NASA Vehicle Check list” when checking the eligibility and legality of the vehicle and/or its components. See Section 20 CHECK SHEET.
 NASA reserves the right to amend the list and or reference of eligible vehicles giving 12 months notice regarding the addition or deletion of vehicles.
- c. For Front Wheel Drive vehicles only.
 Minimum wheelbase of vehicle = 2286mm (90”).
 The original vehicle manufacturer’s wheelbase for the particular make and model of specified vehicle must be retained.
- d. Component Type & Use & Modifications – Restricted.
 The interchanging and or use of any unspecified component(s) between different models of the same make is prohibited.
 Only parts and or components fitted to the standard production model of vehicle chosen by the competitor may be used.

1. ENGINE and TRANSMISSION/GEARBOX**1.1 Engine & Bodyshell combinations.**

Toyota Yaris 1299cc VVTi 16V (2SZ-FE - French) engine 3 or 5 door bodyshells.
 Excluding: 2NZ-FE engine model variants.

Note.

Any Toyota Yaris 1299cc 16valve (2SZ-FE - French), manual transmission engine & gearbox may be used in any 1999 to 2005 year of Toyota Yaris 1299cc 16v 3 or 5 door bodyshell.

The Donor car must be of a build date manufactured after 1st January 1999 and before 1st January 2006.

The use of a complete post 1st January 2006 engine and or components or parts from a post 1st January 2006 engine is prohibited.

Note.

- a.) The engine, engine ancillaries (See Definitions) and transmission and gearbox must remain as per the vehicle Manufacturer’s original specification.
- b) The engine must be normally aspirated as standard production. The use of turbochargers, superchargers and or any form of forced induction is NOT permitted.

1.2 Engine & Transmission/Gearbox Location – Restricted.

The engine and transmission must be as standard production and fitted in the original standard production location and position in the vehicle/chassis.

1.3 Engine & Transmission/Gearbox Mountings & Stabilisers – Restricted.

All engine and gearbox/transaxle mountings and stabilisers must be retained in their original positions, be of good order and be as standard production and appropriate to that vehicle make and model.

Standard production originals and NASA Scrutineers Committee permitted replacement engine/gearbox/axle “mountings” only must be used. Modification to and or of such mountings prohibited. The conversion of “flexible type” mountings to “solid type” mountings prohibited.

1.4 Pistons & Cylinder Overbore – Restricted.

Standard production pistons and bore and liner must be retained.

The standard production liners and pistons may be replaced; however they must be of original standard production sizes.

Note.

It is not permitted to overbore and or fit oversize standard replacement pistons and/or liners.

1.5 Crankshaft and Regrinding – Restricted.

The crankshaft and stroke must remain as standard production and as fitted to provide the original engine cubic capacity.

The crankshaft journals may be reground and or polished. The maximum permitted regrind is restricted to that for which standard replacement oversize bearings are readily available.

The standard production engine crankshaft pulley must be retained in its original standard production location and form.

- 1.6 Balancing.
After market balancing or reconditioning balancing and lightening /polishing of any components is not permitted.
- 1.7 Engine component treatment. - Shot peening or tuftriding of engine components prohibited.
- 1.8 Cylinder Head.
The cylinder head MUST be the correct type for the engine concerned.
- i. Reconditioning of the cylinder head and its associated components must be carried out in accordance with the original manufacturer's recommendations and accepted "reconditioning and repair" practice only. Excessive removal of metal or reconditioning and or chamber radiusing that is carried out to the extreme will result in the components etc; being deemed as outside the Class regulations and thus illegal.
 - ii. The cylinder head may be "re-faced" and or "skimmed".
 - iii. The inlet port and exhaust port surfaces, within the cylinder head, must remain as manufacturers original standard production finish and dimensions (See drawing No 1).
 - iv. Cleaning:
Cleaning up or smoothing by removing metal or polishing of the original standard production finish of the cylinder head inlet and exhaust ports is not permitted.
The use of wire brushes and or flap wheels and or grinding stones and or any other method, including refinishing a modified port, is not permitted.
Chemical and or "Ultrasonic" clean only permitted. "Sodium Bicarbonate (Soda Blasting)" cleaning permitted.
 - v. Valves and Valve Inserts.
As Standard Production OE type only is permitted.
'K-lined' valve guides not permitted.
Replacement valve seats are not permitted.
Valve seat and valve head must remain as original manufacture. Reconditioning and or alterations from standard production finish are prohibited.
- Valve Head Diameter - See Check Sheet.
- Cylinder Head Gasket.
Standard replacement types only permitted.
- Cylinder Head Cam Cover.
Standard replacement types only permitted.
The external surface may be cleaned and polished and or have free decoration by painting or powder coating.
- 1.9 Camshaft
A standard production or standard production replacement camshaft only is permitted. The camshaft must remain in its original standard production form. The camshaft identification reference or code number must remain.
- Note.
The production or adaptation or modification of a camshaft to provide T.S.D. Manual listed valve timing and/or valve lift, but non standard timing and/or valve lift at regular degrees of rotation is prohibited.
NASA reserves the right to have a camshaft removed from a competitor's vehicle and retain that camshaft for examination to ensure compliance with the original vehicle manufacturers standard production details. The use of a non-compliant camshaft is a disciplinary offence.
- Cam Lift - See "Check Sheet".
- Cam/Valve Timing - See "Check Sheet".
- 1.10 Rocker/Cam Cover – Restricted.
The standard production "cam" cover must be retained.
Polishing, paint and or decoration of external surfaces free.
- 1.11 Ignition System.
- a). The standard production Distributor less (DIS) system / Electronic Control Unit (ECU) shall be correct for the engine fitted and must be retained in its entirety and remain in its original standard production form. It must be complete with the correct engine system sensors. E.g. Engine RPM & TDC etc. Modification prohibited.
 - b). The standard production Distributor less (DIS) system / Electronic Control Unit (ECU) and associated sensors and Diagnostic "reader"/"interrogator" "plug in" connections must remain in their original standard production locations and must work. i.e. Be capable of operating when connected.
 - c). The ECU shall be marked with identification showing the vehicle club prefix and vehicle number.
 - d). The placing of or use of devices, whether within the wiring system or elsewhere, to provide false information to the ECU or any part of the fuel delivery control system is prohibited.
 - e). For ECU's that are fitted with a vehicle immobiliser facility, the particular ECU immobiliser function may be overridden or disconnected, provided no other function of the ECU is affected. ECU rewriting, remapping, chipping and or performance enhancing modification are not permitted. NASA shall not be held responsible for the performance or damage of the above unit.
 - f). Ignition Leads & Spark Plugs – Free.
 - g). Standard production ignition coils must be retained.
- Note.
NASA reserves the right to:
- i. Remove and or retain the ECU fitted to the competitor's vehicle and retain that unit for inspection.
 - ii. Remove the ECU and substitute it for NASA supplied unit for a set time period. e.g. the duration of a race meeting or a stated number of races.
 - iii. Remove the ECU and substitute it for a unit as used by another competitor.
 - iv. Place a "Scrutineers Seal" onto the ECU for a specified period of time chosen by the Chief Scrutineer.

- iv. Connect a “reader” to read and or check ECU settings.
- vi. NASA shall not be held responsible for the performance or damage of the above unit.

1.12 Air Box & Filter Box & Air Filter/Air Cleaner & Air Entry Ductwork.

The standard production air filter/cleaner “manual” model casing only is permitted.

The air filter/cleaner casing must be retained in its standard production form and fitted in its standard production location.

Modification of air filter/cleaner casing prohibited.

Note.

The use of an “Automatic” model casing and associated components is prohibited.

Air Entry Pipe/Ductwork.

The air intake/inlet pipe/ducts from the casing stub to its open air entry orifices must be retained in its standard production form and location.

A “mesh” or “lattice” may be fitted at or near the open air entry orifices minimise track debris entry.

Air Filter/Cleaner element type.

Free.

However an air filter must be fitted and secured within the standard production air filter casing in the standard production location.

All the air must enter the air filter/cleaner casing via the standard production entry orifice only.

1.13 Engine Fuel System

The standard production engine fuel system shall be retained and remain in its standard production form.

Fuel Injection Unit/Throttle Body.

The standard production Fuel Injection Unit/Injector/Throttle body must be retained in its standard production form. I.e. If a single-point fuel injection system is fitted, then it must be retained.

Modifications to Fuel Injection Unit/Injector/Throttle body prohibited.

The Fuel Injection Unit/Throttle body must be fitted with a throttle return spring of sufficient size, strength and movement such that the throttle closes once the ‘accelerator’ or ‘throttle’ pedal is released.

Fuel delivery control.

The standard production single “accelerator” or “Throttle” pedal, including “Accelerator/throttle cable” must be retained to control the operation of the fuel delivery system to the engine.

Note.

The accelerator cable/connection system must be sufficiently routed, shielded from any heat source, and lubricated to minimise the risk of seizure.

Fuel Sensors.

Fuel Sensors shall be retained and remain in their standard production form.

Inlet and exhaust manifold(s) – Restricted.

The standard production inlet manifold and exhaust manifold must be retained in their standard production form and location & position. They must be complete with

standard production water hoses, sensors and connecting electrical wiring. The disconnecting or by-passing of the same is prohibited.

Carbon/Charcoal Canister.

The original vehicle manufacturers fitted “Evaporative carbon/charcoal canister” may be retained or removed.

If removed remaining hose connections must be blanked off with metal.

1.14 Gearbox/Transmission - Restricted.

The standard production gearbox/transmission, must be located such that it is connected to the engine as per original manufacturer’s specification.

- a). The complete transmission system including gearbox, gears, gear ratios, drive-shafts, drive shaft vibration dampers and wheel hubs shall be retained in their standard production location and shall remain in their standard production form.
- b). Standard production originals and NASA Scrutineers Committee permitted replacement transmission/gearbox drive-shaft and wheel hub components only must be used.
- c). The transmission or gearbox Gear Selector mechanism.
The standard production gear lever and gear selector system must be retained to control the operation of the transmission system “Gear change” mechanism.
Steering wheel mounted or operated gear change devices are prohibited.
“Quick Shift” gear lever or gear selector devices are prohibited.
- d). Gear Ratios- Restricted.
As listed on the Permitted vehicle’s Glasses Guide Technical Services Data Sheet.
Also see Section 20 – CHECK SHEET.
- e). Differential.
The correct differential CWP and ratio must be fitted in the correct gearbox.
The differential must be free revolving at all times.
- f). Differential Turning Torque.
See “Check Sheet”.
- g). Crownwheel & Pinion Ratio.
As listed on the NASA Check Sheet.
- h). Constant Velocity (C.V.) Joints.
The original standard production C.V. joints and flanges must be retained.

- 1.15 Clutch.
The 'Clutch' foot pedal assembly must be of standard production location, form and materials.
Standard production original and replacement clutch cover & plate only permitted.
The clutch cover plate may be balanced to the original manufacturer's standard only.
- 1.16 Drive Shafts & Hubs – Restricted.
The original standard production transmission including drive shafts and wheel hubs must remain as originally fitted by the original vehicle manufacturer.
- 1.17 Engine sealing:
All engines must have provision for the fitting of at least one readily accessible scrutineers wire seal. A minimum of two adjacent engine cylinder head retaining studs or bolts must have a single 1/16" (1.2mm) diameter hole pre-drilled in each of them.
- Where the method of cylinder head retention is by means of a stud & locking nut the hole must be located above a cylinder head retaining locknut but below the top surface of the stud. (See Fig.2a).
 - Where the method of cylinder head retention is by means of a bolt the hole must be located through two adjacent edges of the hexagon head of the bolt. (See Fig.2b).
 - Where cylinder head retaining studs or bolts are inaccessible then a single 1/16" (1.2mm) diameter hole must be pre-drilled in two adjacent parts or areas of the engine that are accessible.

2 CHASSIS BODYSHELL

- 2.1 The bodyshell must be complete in its ENTIRETY, including all inner and outer wings, bonnet/engine cover, luggage compartment lid (boot/tailgate), doors, door pockets, rear seat bulkhead & backrest panel, rear inner wheel arches, rear seat pan, rear parcel shelf, boot floor, battery box/tray, rear valance and seams fitted.
- Note.
- Replacement panels.
Standard production or NASA permitted proprietary manufactured replacement body panels only to be used
The removal of any vehicle panel including engine cover/bonnet/luggage compartment lid/boot lid and replacement of the same with non-proprietary replacement metal panels is prohibited.
 - Reinforcement of panels.
Reinforcement of panels is prohibited. Foam filling of panels is prohibited.
 - Drivers Compartment panels.
Protruding and or sharp brackets/tags may be removed.
 - Under seal & Seam sealer.
All under seal and seam sealer may be removed.
- 2.2 Bonnet & Tailgate.
- Bonnet.
This must be complete including of strengthening braces/ribs.
Bonnet hinges may be retained or removed.
- Tailgate.
Removal or "skinning" of strengthening braces/ribs permitted.
Tailgate hinges may be retained or removed.
- 2.3 Doors.
"Skinning" permitted. See Definitions.
- Door Hinges
Door hinges may be Retained or removed.
- 2.4 Bumpers.
The complete standard production original bumpers must be retained including associated metal components (bumper inner steel support), framework and brackets.
Removal of bumpers is prohibited.
- Note
Where a bumper inner steel support is fitted as standard production, it may be retained or substituted by means of a replacement steel tube support maximum 25mm box section with a length equal to original.
Failure to ensure that the bumper remains fitted during racing is a Black Flag (Race Disqualification) offence.
- 2.5 Wheel Arches.
Front and rear wheel arches must remain as standard production.
The wheel arch protrusion from the vehicle panel/wing must be no greater than that of the standard production wheel arch for the vehicle concerned.
- Note.
- The wheel and tyre assembly must not protrude more than **20mm** beyond the wheel arch.
 - Slight local modification to each front wheel arch is permitted to allow fitment of the specified replacement suspension unit/strut only.
- Wheel arch lip.
This may be have slight local trimming to suit wheel & tyre assembly, with the lip "bent" under to provide a "smooth" edge.
A steel wheel arch may be supported via a lip/edge/border metal bar maximum 8mm diameter.
The support bar or lip/edge/border may edge the wheel arch rim only.

- 2.6 Air Cooling holes:
The cutting or forming of additional air cooling or air inlet/exit holes to supplement the existing front or other grilles etc; in any panel/area of the vehicle is prohibited.
- 2.7 Towing Eye.
The original standard production towing eye may be retained or removed and replaced.
- 3. WINDSCREEN / GLASS - As Saloons General.**
- 4 STEERING**
- 4.1 Steering System.
The steering system from the steering wheel to the front wheels must remain as originally fitted to the vehicle make and model by the original vehicle manufacturer. Standard production original and replacement steering components only permitted. (See rule 4.3).
- 4.2 Steering Column.
The steering column must remain as standard production however it may be retained in its original standard production location or be lowered by means of the fitting of a single NASA permitted proprietary manufactured "lowering bracket" system only.
If repositioned - The column must be mounted from the front roll cage cross bar.
Protruding and or sharp brackets/tags may be removed from the main column outer tubing.
Note.
The steering wheel height/angle adjustment bracket/lever must be securely fixed in its chosen height/angle location by welding or secondary fastening.
It is not permitted to shorten nor lengthen the original standard production steering column.
It is not permitted to remove the original standard production steering column and replace it with an alternative column.
- 4.3 Steering Rack.
The original standard production steering rack only may be removed and replaced with a proprietary "Quick" or "High ratio" steering rack.
The standard production original steering rack vehicle mountings must be retained in their original position and be appropriate to the vehicle make and model.
- 4.4 Power Steering.
The original standard production power steering may be retained or removed and replaced. i.e. rack and associated parts.
If removed the power steering rack may be replaced with a non-power steering rack from the same original standard production make and model of vehicle or be replaced with a proprietary "Quick" or "High ratio" steering rack.
For a non power steering model the replacement of the standard production steering rack with a power steering rack is permitted.
- 4.5 Tie Rod – Dust Boots.
The standard production tie rod dust boot(s) may be retained or replaced with uprated units.
Polyurethane, type or similar permitted.
However they must be fitted correctly onto the tie rod unit concerned.
- 5 SAFETY HARNESS - As Saloons General.**
- 5.1 Original manufacturer's seat belt anchorage reinforcing brackets must be retained.
Note.
For existing vehicles where brackets are already removed, then a 2mm thickness steel plate, of appropriate plan size, must be welded to the vehicle to cover each of the affected seat belt anchorage holes.
- 6 SEAT - As Saloons General.**
- 7 FIRE EXTINGUISHER - As Saloons General.**
- 8 IDENTIFICATION - As Saloons General.**
- 9 ELECTRICAL / INSTRUMENTS**
- 9.1 Wiring Harness & Charging system.
The standard production general wiring harness and the charging system. may be retained or removed and replaced provided the requirements of Saloons – General – Section 9 are complied with.
Note.
If the alternator is retained it must remain in its standard production location and position.
- 9.2 Instrumentation and Gauges
The use of an engine "Rev counter" and or "Speedometer" and their and tachometer associated drive mechanisms and or sensors permitted.
Original vehicle manufacturer standard production "Rev limiter" system may be retained or removed. If retained it must remain in the standard production location. The use of a single after-market engine "rev limiter" system consisting of a proprietary type 3 wire system only, being easily identifiable and mounted within the engine compartment adjacent to the electrical coil is permitted.
All other types of "Rev limiter" systems and mounting locations are prohibited.
The use of gear "Shift light" system(s) is prohibited.

9.3 Battery type – Restricted.

The standard production electrical battery may be retained or removed and replaced. A single 12 Volt electrical battery only must be used. Type and electrical capacity free.
Note.

Commercial and or agricultural vehicle battery prohibited.

The use of a "large" dimension size battery may be deemed as ballast and prohibited.

The suitability of the type of battery for use with or without a charging system and its ability to hold a sufficient electrical charge for the duration of a race and any required race re-runs must be borne in mind during battery type choices. See Rule 9.4.

9.4 Engine Starting system – Restricted.

The standard production starting system including "starter" must be retained and be appropriate to the vehicle make and model and be capable of starting the engine when operated.

10 FUEL**10.1 Fuel Pump.**

The original standard production fuel pump may be retained or removed and replaced.

Permitted alternative pump to original is Audi A3 1.6l pump.

Also the replacement fuel pump – Sytec FP604-15 (5 Bar).

Adjustable pressure type prohibited.

10.2 Fuel Regulator.

Original Toyota Yaris standard production Fuel-Regulator only is permitted.

11 COOLING SYSTEMS

11.1 The standard production cooling system shall be correct for the engine fitted and must be retained in its entirety and remain in its original standard production form.

11.2 Sealed Systems.

When sealed radiator systems are used, they must be of a permitted manufactured type, and be fitted with an approved pressure relief device, in good working order.

11.3 Radiator - Restricted.

The original standard production water-cooling radiator must be retained.

The water-cooling system radiator may remain in the original standard production location.

11.4 The radiator may be moved from the original position but must be fitted within the vehicle engine compartment.

11.5 Secondary Expansion Tank.

A secondary water-cooling system expansion tank may be fitted. Maximum capacity 1 Litre.

11.6 Water pipes/Hoses.

The standard production water pipes/hoses may be retained or replaced with equal pipes/hoses.

Water pipes/hoses must be of metal or proprietary flexible hose. Silicone hoses permitted.

11.7 Water Pump – Restricted.

Standard production original and replacement water pump only permitted.

Modifications to water pump or pump pulley and/or impeller prohibited.

11.8 Oil Cooler/radiator type – restricted.

The fitting and use of an oil cooler/radiator is permitted. If an oil cooler/radiator is used it must be of a proprietary manufactured type only and be securely fixed such that it is within the vehicle engine compartment.

11.9 Oil Sump & Pick Up Pipe.

Modifications to the oil sump and oil pick up pipe may be carried out enable the oil system to function in the event of oil surge.

12 BRAKES

12.1 The standard production braking system must be retained, be correctly installed/fitted and be in good working order. Standard production original and replacement brakes and brake components only permitted.

The 'Brake' foot pedal assembly must be of standard production materials.

Brakes may be subject to random spot checks of foot pedal operation whilst on the starting line.

Note.

The rear brake compensator may be removed.

Other modification of brake discs or drums or other braking components is prohibited.

12.2 The original vehicle handbrake and or parking brake, including the cables and its associated components may be retained or removed.

13 WHEELS**13.1 Wheels – Restricted.**

i. The wheels must be standard production or NASA permitted proprietary replacement wheel.

Minimum diameter 13". Maximum diameter 15". See ii.

ii. Width/Offset/Inset is restricted.

See Check Sheet.

- The wheel rim including tyre must not protrude more than 20mm beyond the original wheel arch.
- iii. The use of wheel spacers permitted. (See Rule 13.2)
- iv. "Beadlock" and/or Beadlock type wheels are prohibited.
- v. The use and or fitment of a wheel adaptor and or combined adaptor and spacer to fit wheels of a different PCD from standard prohibited.

Wheel fitment

- i. All axles/hubs on the vehicle must be fitted with wheels that are of the same diameter.
- ii. It is permitted to mix types (Steel/Alloy) of wheels on a vehicle, provided the same type of wheel is fitted on each pair of axles.

- 13.2 Wheel Spacers – Type restricted.
The fitting of wheel spacers is permitted. Maximum width 3mm.

14 TYRES

- 14.1. Permitted sizes.
Size = Free, provided the wheel and tyre assembly does not protrude beyond 15mm from original wheel arch side surface.

15 EXHAUSTS

- 15.1 Exhaust System – Restricted.
The standard production original exhaust manifold must be as standard production complete with all sensors including Lambda (Oxygen) connected as standard production.
Exhaust system must remain as standard production from the manifold connection to the rear of the gear linkage point. Thereafter it is free. - However the exhaust must exit and terminate at the vehicle rear at a point to the rear of the rear axle.
Note.
Any device(s) that acts as a valve and or regulator, whether adjustable or not, upon the exhaust gas flow within the exhaust system is/are prohibited.
- 15.2 Lambda Sensor.
The Exhaust Lambda (Oxygen) Sensors shall be retained in their standard production location and remain in their standard production form.
- 15.3 Catalytic Converters.
Where they are fitted as a standard production item may be retained or removed.
- 15.4 Exhaust Route.
The engine exhaust system outlet must end at the rear bodyline of the vehicle, and not protrude beyond 50mm of the vehicle bodyline. The outlet must be at a point that is easily accessible for the taking of noise level test measurement readings.
Note:
The outlet pipe must exit the vehicle at a height not more than 2'9" (33") (838mm) from ground level, and point either horizontally or downward at an angle of not more than 30° from the horizontal.
- 15.5 A hole may be cut into the internal and external bodywork of the vehicle to allow the exhaust pipe to pass through and or exit. The hole size is limited to 1" (25mm) clearance around the single exhaust pipe or around the total diameter of multiple exhaust pipes (Not 1" around each pipe). Where multiple exhaust pipes are fitted if they pass through and or exit through the bodywork they must do so at a single point.
Exhaust pipe(s), which may be regarded as being of excessive diameter, are prohibited

16 SAFETY SHIELDS - As Saloons General.

17 SUSPENSION

- 17.1 Suspension type is restricted.
The suspension system must remain as originally fitted to the vehicle make and model by the original vehicle manufacturer. It is not permitted to modify any suspension component unless the alteration of the component concerned is specified within the rules.
- 17.2 All bodyshell suspension system component mountings must be retained in their original positions and be appropriate to that vehicle make and model. i.e. The modification or re-positioning or replacing of original suspension mountings is prohibited.
- 17.3 Wheel Camber & Wheel Castor
As Palgrave/Glasses Guide Technical Services Manual Data Sheet for the vehicle concerned.
It is not permitted to alter the camber / geometry of the suspension.
See Check Sheet.
Modification of suspension components, suspension leg and or hub to suspension leg mounting brackets prohibited.

Note.

Slight deviation from standard as a result of race track conditions is acceptable. Excessive deviation of the camber angle from standard prohibited.

NASA reserves the right via an appointed Official and or Scrutineer to inspect and or subject the suspension to measurement for compliance with the regulations. NASA reserves the right to designate the information reference source and the method of component checking.

- 17.4 Suspension Dampers – Restricted.
Standard production original and standard replacement front and rear dampers that are of specified type only are permitted.
Specified Gaz shocks set of "coil overs" only permitted.
Fronts GHA5468A. – Approx cost £135 each excluding VAT.
Rear GP8-5469. – Approx cost £70 each excluding VAT.
Example of cost for complete car including springs £502 excluding VAT.
Note.
i. Slight local modification to each front wheel arch is permitted to allow fitment of the specified replacement suspension unit/strut only.
ii. NASA reserves the right to have the units removed from the vehicle for inspection to ensure that the units concerned remain in their standard production set form.
- 17.5 Front and Rear Suspension Springs.
The standard production suspension springs may be retained or replaced with uprated units.
However they must be fitted correctly onto the suspension unit concerned.
- 17.6 Front & Rear Suspension Bushes & Bump Stops.
The standard production suspension bushes and bump stops must be retained and fitted correctly onto the suspension unit concerned.
- 17.7 Strut Brace.
A proprietary manufactured "Strut Brace" may be fitted transversely between the engine compartment suspension top turret housings.
The Strut Brace may, via the Top Turret Housing, be connected (bolted or welded) to the front roll cage upright.
See Fig 1.
- 17.8 Anti tramp bars & pan-hard rods.
Anti tramp bars and pan-hard rods are allowed only where fitted as original vehicle manufacturer's standard production equipment.
- 17.9 Vehicle ride height.
Any car where the ride height is felt to be high or to low to enhance the cars performance will be ordered and required to alter its ride height in respect of safety. Failure to comply will result in disqualification and disciplinary action.
No minimum or maximum ride heights will be given, except for specified vehicles. The ride height will be compared to cars in full road spec trim.

18 PROTECTION

- 18.1 Rear protection prohibited.
- 18.2 Distributor protection prohibited.

19 BALLAST – All Vehicles

- 19.1 The fitting of and or use of ballast is prohibited.
Note. The use of over large or inappropriate components or structures may be deemed as ballast and prohibited.

20 VEHICLE CHECK SHEETS – CLASS 2.

NASA reserves the right to designate the information reference source and the method of component checking.

Note.

The 'Vehicle Check Sheet' data and other designated information source will be used in conjunction with the particular vehicle Palgrave / Glasses Guide Technical Services Data Sheet as a reference when checking the eligibility and legality of the vehicle and or any of its components.

Components used must be NASA Scrutineers Committee permitted "Standard production" or "Standard production replacement" items.

Components specifically manufactured for and or fitted to "Rally", "Homologation" "Motorsport", and "Competition" including low volume/number (e.g. less than 5,000) "Limited edition" and or "Special" type models or variants of vehicle by the original vehicle manufacturer or manufacturer appointed organisation or company are prohibited.

The replacing of any steel component with a steel or non-steel lightweight material component is prohibited.

In the event of any doubt a Scrutineer must be contacted for clarification before using the component concerned.

In order that an engine, engine ancillaries, and gearbox may be checked to ensure standard components have been used, given below are a set of dimensions and details.

All dimensions given, either maximum or minimum, include tolerances to cover all manufacturing deviations.

Any standard component checked will be within the dimensions given, hence any deviation at all above a maximum or below a minimum shows an ILLEGAL COMPONENT.

As all dimensions given include a tolerance for manufacturing deviations, where an engine is checked and found to have 10% of dimensions, to the absolute limit given, this unit will be deemed ILLEGAL.

The suspension dimensions have been given so that if it is felt a vehicle may be outside variations through normal wear and tear, a check may be carried out to ensure standard components have been used and correctly fitted.

DIMENSIONS AND DETAILS ARE GIVEN IN ORDER OF AN ENGINE STRIP and or VEHICLE CHECK.

VEHICLE CHECK SHEET CLASS 2 - TOYOTA YARIS 1299cc 16V.

THE PURPOSE OF THE INFORMATION GIVEN IS ONLY TO CHECK THE LEGALITY OF THE VEHICLE, ENGINE, ENGINE ANCILLARIES, AND GEARBOX.

ENGINE: 2SZ-FE - (French Built).

CYLINDER HEAD.

Head Thickness - Free.

VALVE LIFT & VALVE TIMING.

The following valve lift & valve timing combinations only are permitted. without all valve operating components.

VALVE TIMING.

VVT – As Standard Production.

VALVE GUIDES.

A standard production OE or NASA permitted reconditioned and or replacement type only is permitted. ‘

VALVE SPRINGS.

Valve Spring Free Length = 55.4mm

VALVE HEAD DIAMETER.

Inlet valve head diameter (Max) = 26mm

Exhaust valve head diameter (Max) = 22.6mm

CAMSHAFT.

A standard production OE replacement camshaft only is permitted. The camshaft must remain in its original standard production form and be complete with identifying rings and or markings.

The production or adaptation or modification of a camshaft to provide the listed valve timing and/or valve lift, but non standard timing and/or valve lift at regular degrees of rotation is prohibited.

Camshaft VVT Controller & System must be as standard production.

CAM HEIGHT.

Maximum Inlet = As Std Production – TBC.

Maximum Exhaust = As Std Production – TBC.

PISTONS.

Bore = 72mm.

Piston Diameter = 71.96mm.

No of Piston rings = 3.

Pistons to be as standard production original and replacement complete with identification marks.

Piston Crown must remain as standard complete with ‘Fitment Dot’.

Pistons must be correct for 1999 to 2006 engine.

Piston skirts must not be modified or shortened.

Piston Rings.

The omission of any piston ring is prohibited.

Where 3 ring pistons are used, 3 rings MUST be fitted.

CRANKSHAFT.

Crankshaft Stroke = As Std Production – TBC.

FUEL INJECTORS.

Fuel Injection Multiple Point = Toyota L type.

Injectors must be standard and correct for engine.

Injectors from other models and or vehicles prohibited.

REV LIMIT.

“Rev Limiters” must operate at standard production rpm maximum = **6750** rpm.

AIR INTAKE DUCTS.

Check for holes drilled and slits cut into air box & duct air intake system.

FLYWHEEL AND CLUTCH.

The starter ring gear must be the correct type for the flywheel used.

Standard production original and replacement clutch only permitted.

MAIN BEARINGS.

Standard production original and replacement types for the particular engine block used only permitted.

GEARING FULL STRIP CHECK.

During a full strip, given below are the numbers of teeth in gearbox.

5 speed gearboxes as fitted to 2SZ-FE - (French Built) models only permitted.

C154 - 5 Speed.

	Input gear	Output gear
1st	As Std Production.	
2nd	As Std Production.	
3rd	As Std Production.	
4th	As Std Production.	
5th	As Std Production.	
Rev	As Std Production.	

Final Drive CWP Ratio - As Std Production.

Note

The correct standard production differential must be fitted in the correct gearbox.

Interchanging of differentials prohibited.

Use of other differentials including 3.25:1. and or "automatic model" types Prohibited.

DIFFERENTIAL TURNING TORQUE.

The differential must have a turning torque of a maximum of 3 lbf/ft (36 lbf/in) (4 Nm) at all times, when measured at the wheel hub. i.e. When the transmission is set to neutral and the nearside wheel and tyre raised off the ground whilst the offside wheel and tyre assembly remains on the ground, and vice-versa, then when a torque wrench is applied onto the wheel hub nut the maximum turning torque of the differential and driveshaft assembly must not exceed the stated maximum regardless of the temperature of the unit.

BRAKES.

Front Brake Disc - Vented:- Standard production diameter = 235mm.

Front Brake Disc - Vented:- Standard production thickness = 18.0mm Maximum. 16.0mm Minimum.

Rear Brake Drum - Standard production diameter = 200mm minimum. 201mm Maximum.

SUSPENSION.

Front Wheel Camber = -0° 35' -/+45' Max.

Rear Wheel Camber = -1° 00' -/+ 45' Max.

WHEELBASE.

2370mm (93.3")

WHEELS.

Check correct wheels fitted.

Diameter = 13" or 14" or 15".

Width = Size 13" x 5.5" (5.5J) maximum.

Size 14" x 5.5" (5.5J) maximum.

Size 15" x 6.5" (6.5J) maximum.

TYRES

Check correct tyres fitted.

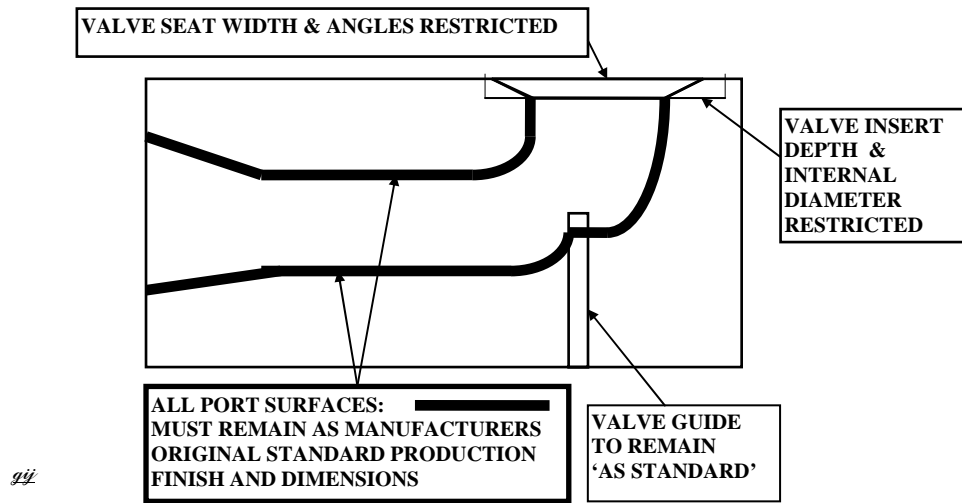
Protrusion beyond wheel arch – Maximum 15mm.

i.e. The wheel rim including tyre must not protrude more than 15mm beyond the original wheel arch.

See T.S.D Manual Sheet for other measurements.

NASA RULE BOOKS DRAWINGS – CLASS 2 - YARIS

DRAWING 1 CLASS 2 - CYLINDER HEAD INLET & EXHAUST PORTS.

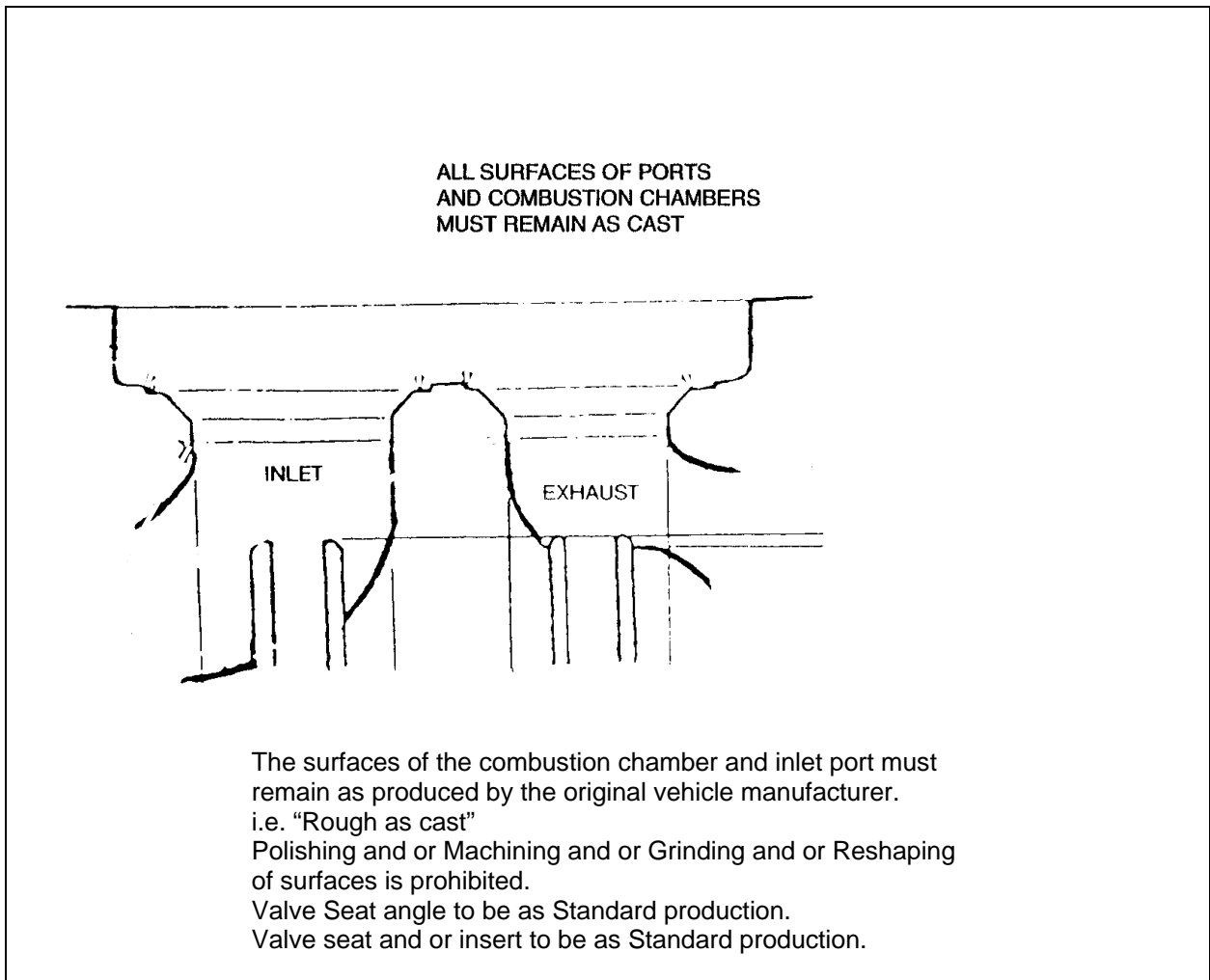


The surfaces of the combustion chamber and inlet port must remain as produced by the original vehicle manufacturer. i.e. "Rough as cast".

Polishing and or Machining and or Grinding and or Reshaping of surfaces is prohibited.

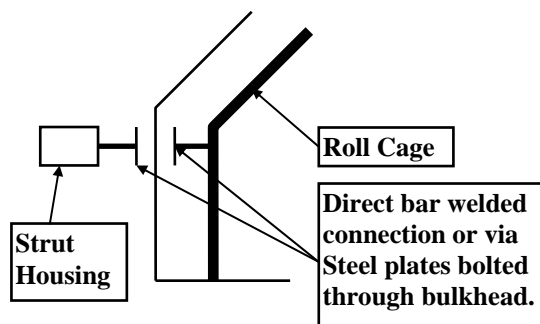
Valve insert must not protrude above head surface - See Check sheet for maximum depth & internal diameter.

DRAWING No. 2 CYLINDER HEAD INLET & EXHAUST PORTS



FIGURES

FIGURE 1 PERMITTED FRONT SUSPENSION
STRUT BRACE BAR MOUNTING.

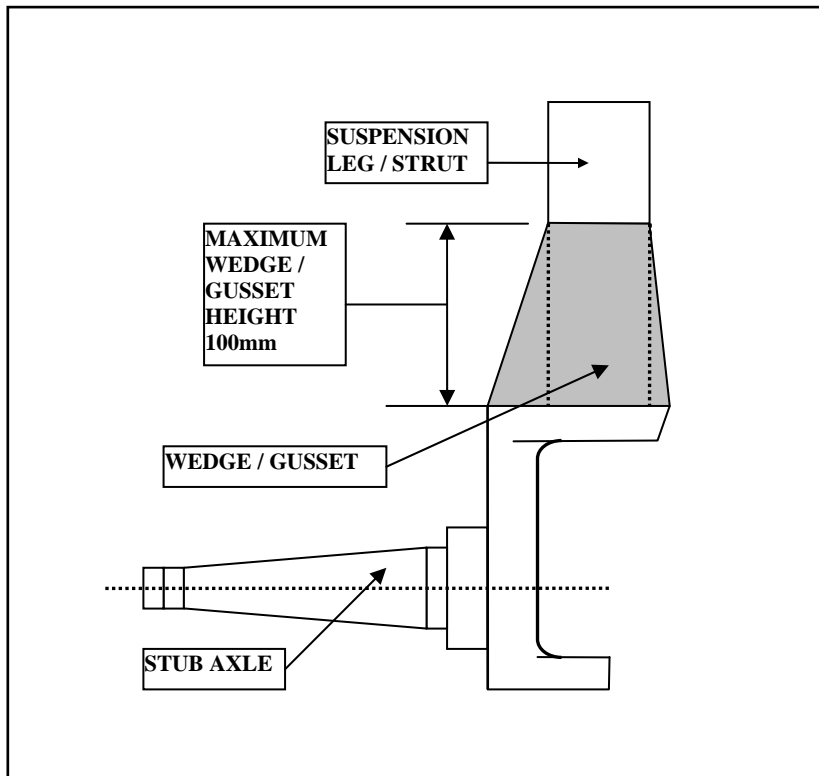


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FIGURE 2a – ENGINE SEALING – As Fig 12a – Saloons General.

FIGURE 2b – ENGINE SEALING - As Fig 12b – Saloons General.

FIGURE 3 SUSPENSION LEG/STRUT “WEDGING”



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The construction rules in this book are intended for use by Autograss cars taking part in Autograss events as defined by the NATIONAL AUTOGRASS SPORT ASSOCIATION on a natural surface and are not necessarily considered safe for other forms of motor sport.

Drivers are advised that if they intend using their cars at events, other than events as defined by the NATIONAL AUTOGRASS SPORT ASSOCIATION They should ensure that their cars comply with the organiser's construction rules.

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