

**ASSOCIATION OF
AUTHORISING
BODIES**



RULES & REGULATIONS

2019 EDITION

CLASS 1 - Mini



"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 2019
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 1 - Mini

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

VEHICLE SPECIFIC CONSTRUCTION RULES

CLASS 1 - Mini

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VEHICLE CONSTRUCTION RULES - CLASS 1 – Mini.**CLASS SPECIFICATION**

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.

Note.

The vehicle must be listed on the contents page of the relevant Technical Services Data manual, and the Data Sheet page MUST be headed with the vehicle title.

Specified vehicle. - Leyland/Austin Rover/Rover Mini 998cc A and A+ engine.

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

VEHICLE CONSTRUCTION RULES - GENERAL**1. 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.

1. 1. ENGINE and TRANSMISSION/GEARBOX

1.1 a). Standard production original manual transmission engine and gearbox components and certain NASA Scrutineers Committee permitted replacement engine/gearbox components only must be used and be correctly fitted.

b). The modification or alteration or interchanging of any unspecified part or component of the specified vehicle manufacturer’s engine & gearbox is prohibited. This includes prohibition of using any standard production parts to alter its working design.

c). All engine and gearbox mountings must be retained in their original positions, be of good order and be appropriate to that vehicle. 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.

1.2 Engine & Bodyshell combinations

Any Leyland/Austin Rover/Rover Mini 998cc manual transmission engine & gearbox may be used in any mark or year of Mini or Mini Clubman bodyshell.

1.3 Crankshaft Stroke.

The crankshaft stroke must remain as fitted as standard 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.

1.4 Cylinder Bore

A maximum of + 0.060” oversize bore is permitted.

The overbore or re-bore is on the original vehicle manufacturer’s original engine size as fitted to the make and model of the vehicle, and is NOT on the class cubic capacity limit.

Standard replacement pistons only are permitted.

1.5 Balancing.

The permitted engine’s original manufacture’s connecting rods, crankshaft, pistons, flywheel and clutch cover plate may be “Balanced”. Lightening of components is prohibited.

Note.

i. One assembly/set consisting of one connecting rod and big end cap from the same cylinder must remain as standard (not balanced or lightened). The remaining units and components may be balanced to match.

ii. Pistons: One Piston to remain as standard. The remaining pistons may be balanced to match. To be balanced by means of spot drilling only.

iii. Conrods: To be balanced to manufacturer’s standard only. Removal of metal by spot grinding or spot drilling for “balancing purposes” is permitted for “little end” and “big end cap” only. Removal of metal from “H” section part of conrod prohibited.

iv. The crankshaft, flywheel and clutch cover plate to be balanced by means of either or spot grinding or spot drilling.

Crankshaft webs: A minimum of one crankshaft web must remain as factory finish. Crankshaft webs must not be chamfered, radiused, narrowed, knife edged, or smoothed or polished. If, in the opinion of the scrutineer, the crankshaft has been modified during the balancing process to improve its performance in other areas then it will be deemed illegal.

v. Excessive “Balancing” including multiple hole drilling in any single component will be judged as lightening and deemed non-compliant.

- 1.6 Camshaft.
Valve & Cam Lift See “Check Sheet”.
Cam/Valve Timing See “Check Sheet”.
- 1.7 Ignition System.
 Ignition Leads & Spark Plugs & Coil – Free.
 The standard production distributor “contact breaker/points” system may be removed or retained.
 If removed it must be replaced with a NASA permitted contact-less ignition conversion only.
 NASA permitted conversion system: Aldon igniter packs – LU142/143/144.
- 1.8 Cylinder Head.
 The cylinder head MUST be the correct type for the engine concerned.
- 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. 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.
 - Cylinder Head Thickness - See “Check Sheet”.
 - Cleaning:
 Cleaning up or smoothing by removing metal or polishing of the original standard production finish is not permitted
 Chemical and or “Ultrasonic” clean only permitted. “Sodium Bicarbonate (Soda Blasting)” cleaning permitted.

Inlet & Exhaust Ports

The inlet port and exhaust port surfaces, within the cylinder head, must remain as manufacturers original standard production finish and dimensions (See drawing No. 3).

Replacement valve inserts permitted.

A “3 angle cut” to valve & valve seat permitted.

Note.

- The top face of any valve insert fitted must be below or in line with the combustion chamber face.
- The cylinder head valve throat must remain as standard production diameter and “As cast” finish.
- When fitting a replacement valve insert it is not permitted to machine the valve throat beyond the depth of the new valve insert.
 There must be a minimum of 1mm un-machined depth at the internal lowermost part or base of the insert.
- For both valve and insert “valve seat” the border line or edge between each individual “angle cut” must be clearly visible.
 The “merging” or “blending” and or joining together of the separate angle cut surfaces is prohibited.
- The valve seat profile must match the valve insert profile.

Valve Head Diameter

Maximum Valve Diameter shall be: Inlet: = 27.88mm. Exhaust: = 25.53mm.

Valve Guides

A standard production OE or NASA Scrutineers Committee permitted reconditioned and or replacement type only is allowed.

‘K-lined’ valve guides permitted.

See Check sheet rules for location and depth from Cylinder Head Face to valve guide nose.

Cylinder Head Gasket.

Standard replacement types only permitted.

Note.

Standard replacement “Sandwich” types (metal/heat resistant material/metal) permitted.

Cylinder Head Rocker cover.

Standard replacement metal or alloy types only permitted.

The external surface may be cleaned and polished and or have free decoration by painting or powder coating.

- 1.9 Air Box & Filter Box & Air Filter/Air Cleaner.

The standard production air filter/cleaner casing must be retained.

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

Modification of air filter/cleaner casing prohibited.

Air Entry Pipe/Ductwork.

Air intake pipe/duct may be retained, modified/shortened or removed.

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.

- 1.10 Engine Fuel System

Carburettor – Restricted.

The standard production carburettor must be retained in its standard production form.

The carburettor 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.

Carburettor Needle:

A needle must be fitted and must be of standard production material.

Size and modification - Free.

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.

Inlet Manifold.

The standard production inlet manifold shall be retained and remain in its standard production form.

Fuel Pump.

Fuel pump and fuel regulator type and capacity free.

1.11 Engine Oil System.

- a). The standard production engine oil system shall be retained and remain in its standard production form.
- b). The engine oil pump may be uprated to increase flow capacity and pressure.
- c). The oil pick up pipe may be repositioned and/or modified to increase oil entry location and/or suction unit orifice diameter.
- d). Oil breather catch tank permitted.
- e). Oil Cooler/radiator is permitted. Type – restricted.
If an oil cooler radiator is used it must be of a proprietary manufactured type only.
- f). The fitting of an oil windage tray and or crankshaft scraper prohibited.

1.12 Component Sealing.

The engine cylinder head, camshaft/timing cover and clutch housing must have, available at all times, provision for the fitting of at least one readily accessible scrutineer’s wire seal/tag, such that the fitting of the wire seal/tag prevents access to internal engine components.

A minimum of two adjacent engine cylinder head retaining studs or bolts must have a single 1.2mm (1/16”) diameter hole pre-drilled in each of them.

A minimum of 1 fixing bolt on each of the camshaft/timing cover and the clutch housing must have a single 1.5mm (1/16”) diameter pre-drilled into it. See Fig. 2.

1.13 Transmission/gearbox.

- a). The standard production transmission/gearbox, 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.

1.14 Gearbox/Transmission.

The transmission or gearbox must remain as per the manufacturer’s original specification, complete with all gears including reverse gear and speedometer drives retained.

The ‘Clutch’ foot pedal assembly must be of standard production materials.

a). 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.

Mini 998cc - Rod Change Gearbox Gear Linkage: The Steady Shaft & Selector Rod must be steel. (Alloy prohibited).

Steering wheel mounted or operated gear change devices are prohibited.

“Quick Shift” gear lever or gear selector devices are prohibited.

b). Gear Ratios.

See “Check Sheet”.

c). Differential.

The differential must be free revolving at all times.

d). Differential Turning Torque.

See “Check Sheet”.

e). Crownwheel & Pinion Ratio.

As listed on the NASA Check Sheet.

The interchanging of CWP ratios is permitted. i.e. any listed permitted CWP ratio may be used with any listed permitted gearbox.

f). Oil Cooler - Transmission/gearbox.

Where a transmission/gearbox oil cooler is fitted as a standard production item it must be retained.

The fitting of a non-standard production or aftermarket type or fitting a cooler where one was not originally fitted is prohibited.

1.15 Transmission Location.

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

1.16 Clutch.

Standard production original and replacement clutch cover & plate only permitted.

1.23 Engine Stabilisers.

The standard production engine stabilisers shall be retained in their standard production location and shall remain in their standard production form.

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.i). 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.

ii). Reinforcement of panels.

Reinforcement of panels is prohibited. Foam filling of panels is prohibited.

iii). Removal of bodyshell panels (Part of) and fixings.

The following may be removed:

Rear side pockets part of - Protrusion above and forward of seat pan inc front “curve” only.

Rear seat pan part of - “front lip” only.

2.2 Vehicle Size & Dimensions – Restricted.

- i. Vehicle Wheelbase – See Check Sheet.
- ii. Vehicle Track. – See Check Sheet.

2.3 Bonnet.

Removal or “skinning” of strengthening braces/ribs prohibited.
Bonnet hinges may be retained or removed.

2.4 Bumpers.

The original standard production front and rear bumpers may be retained or removed. If they are removed the front bumper brackets and support lip ONLY may be removed. (See drawing 9). If the front bumper is removed and the support lip is retained or remains in place, then in order to minimise the risk from the sharp edge hazard, it must be bent and/or folded downwards at 90 degrees, for its whole length.

Note.

If bumpers are retained failure to ensure that the bumper remains fitted during racing is a Black Flag (Race Disqualification) offence.

2.5 Aerofoils/spoilers - Restricted.

Prohibited.

3. WINDSCREEN / GLASS - As Saloons General.**4 STEERING**

4.1 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.

4.2 Steering Wheel – Restricted.

As Saloons General - Rule 4.4.

4.3 Steering Column – Restricted.

The steering column must be as standard production and of correct standard production material.
The steering column may be retained in its original standard production location or be lowered by means of the fitting of a single NASA Scrutineers Committee permitted proprietary manufactured “lowering bracket” only.
It is not permitted to shorten nor lengthen the original standard production steering column.

5 SAFETY HARNESS - As Saloons General.**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 battery charging system, including Dynamo and or Alternator may be retained or removed.

9.2 Instrumentation and Gauges

The speedometer and associated speedometer cable up to the external gearbox connection point may be retained or removed.

The use of an engine/fuel system “Rev limiter” and/or gear “Shift light” system prohibited.

9.3 Battery type – Restricted.

A single 12 Volt electrical battery only must be used. - Type and electrical capacity free.

10 FUEL10.1 Inlet manifold.

The standard production inlet manifold shall be retained and remain in its standard production form.

10.2 Fuel Pump/Regulator.

Fuel pump and fuel regulator type and capacity free.

11 COOLING SYSTEMS

- 11.1 The standard production cooling system shall be correct for the engine fitted, be in good working order, and must be retained in its entirety and remain in its original standard production form.
- 11.2 Radiator - Restricted.
The use of 2 Core and or 3 Core radiator types is permitted. 4 Core radiator types prohibited.
- 11.3 Secondary Expansion Tank.
A secondary water-cooling system expansion tank may be fitted. Maximum capacity 1 Litre.
- 11.4 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.
- 11.5 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. Oil/water fluid to fluid cooler/heat exchanger prohibited.
- 11.6 Oil Sump.
Modifications to the oil pick up pipe may be carried out for it 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. Brakes may be subject to random spot checks of foot pedal operation whilst on the starting line.
Note.
i. The braking system must be as listed in the T.S.D. Manual for the vehicle used. Where a vehicle is listed as having “drum” brakes, then it is not permitted to fit “disc” brakes and vice-versa.
ii. The rear brake compensator may be removed.
iii. Aftermarket proprietary brake hose, including braided type permitted.
iv. The practice of “Thinning” or lightening brake discs or drums or other braking components by “Thinning” and or “Diameter reduction” and or “Grooving”, “Slotting” or “Drilling” and or other machining is prohibited.
v. After market “Minifin” or similar type brake drums prohibited.
- 12.2 Handbrake.
The original vehicle handbrake and or parking brake, including the cable and its associated components may be retained or removed.
Note.
If retained the handbrake/parking brake components must remain as original manufacture and operate the rear wheels braking system only.
The conversion of a cable system to hydraulic prohibited.

13 WHEELS

- 13.1 Wheels – Restricted.
i. The wheels must be standard production or NASA permitted proprietary replacement wheel of a maximum of 5” (5J) width. Alloy wheels permitted. It is permitted to mix types (Steel/Alloy) of wheels on a vehicle.
ii. The diameter of the wheel must be as standard production. – Either 10” or 12”.
Mini Clubman vehicles must use 10” diameter wheels only.
All axles/hubs on the vehicle must be fitted with wheels that are of the same diameter. The use of different wheel diameter sizes on the offside and nearside and or the front and rear hubs/axles of the vehicle is prohibited.
iii. Offset/Inset is restricted. The wheel rim must not protrude more than 15mm beyond the original wheel arch.
iv. The use of wheel adaptors and or combined adaptor and spacer to fit wheels of a different PCD from standard is not permitted.
v. “Beadlock” and/or Beadlock type wheels are prohibited.
- 13.2 Wheel Spacers – Restricted.
For vehicles fitted with 10” wheels the standard production original 1/8” (3mm) thickness Leyland rear wheel steel spacer or aftermarket solid one-piece type complete with integral backing plate 3mm thickness alloy spacer is permitted. It is permitted to be fitted on all wheels (a single spacer per wheel).
For vehicles fitted with 12” wheels the standard production original integral wheel mounted spacer only are permitted. They are permitted to be fitted on all wheels. (a single spacer per wheel).

14 TYRES

- 14.1 Tyre Size - Restricted.
145 x 10.
145/70 x 12.
155/70 x 12.

15 EXHAUSTS

- 15.1 Exhaust System – Restricted.
The standard production original exhaust manifold and system must be retained in their entirety and remain in their original standard production location/position and form.

Note.

- a). Standard production original and replacement system components only permitted.
- b) "Single" (One) or "dual" (Two) silencer box replacement exhaust systems permitted.
- c). The fitting and/or use of any non standard production material or covering or coating or device that controls exhaust temperatures or affects exhaust scavenging is prohibited.
- d). Exhaust mounting rubbers may be modified to retain vehicle exhaust system.

15.3 Catalytic Converters

Catalytic Converters may be retained or removed. If removed the space remaining in the exhaust system pipe-work, following removal of the catalytic converter must be filled in with a piece of exhaust pipe that is of round circular section of a diameter that is the same as or not greater than the remaining standard production exhaust pipe-work.

Note. The use of a proprietary replacement system from the exhaust manifold connection through to the rear incorporating the standard silencer but without a catalytic converter is permitted. Such a system must match the standard production exhaust system in pipe internal diameter and shape/profile including twists and turns.

- 15.4 The exhaust system must not protrude beyond the vehicle bodyline. The rear tailpipe may be shortened / cut, at any point after the standard production rearmost support bracket, to prevent it protruding beyond the vehicle bodyline.

16 SAFETY SHIELDS**16.1 Sump Guard Shape/Dimensions - Restricted.**

There shall be no vertical surface extending above the base of the front sub frame.

17 SUSPENSION**17.1 Suspension type is restricted.**

The original manufacturer's standard production suspension system must be retained in its original standard production location/position and form.

17.2 Wheel Camber & Wheel Castor

It is not permitted to alter the camber / geometry of the suspension.

See Check Sheet.

Note.

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

Wheel Alignment (Toe in/out). – Restricted.

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

17.3 Suspension Dampers – Restricted.

Standard production original and standard replacement front and rear dampers that are of the oil and/or gas filled type only are permitted.

17.4 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 – Restricted.**

Size and material shall be one 25mm x 25mm (1" x 1") steel tube box section bar fitted either inside of the rear panel, or bolted flush to the outside of the panel. The width to be not more than to the centre line of the rear wheels. (See Fig.1.). It is not permitted to connect the protection bar to the roll cage or brace bars.

18.2 Distributor Protection – Restricted.

Restricted to one 25mm x 25mm (1" x 1") maximum steel tube box section bar fitted in the local distributor area. The top of the bar to be bolted to the engine, the bottom to be sub-frame or lower chassis.

Note.

The use of non steel bar material, or other forms of construction 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 1.

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.

TECHNICAL SERVICES DATA MANUAL – PALGRAVE 1970 to 1985.
TECHNICAL SERVICES DATA MANUAL – GLASS'S GUIDE 1986 to 2000.

All parts and or 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.

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 1 - MINI 998cc

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

CYLINDER HEAD.

Permissible casting numbers: 12A1456 or CAM4810 (Mini type only).
The cylinder head MUST be complete with standard by-pass hose fittings.
Head Thickness Minimum 2.7".

CAMSHAFT.

A standard production OE (BL and/or Rover) or NASA authorised 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.

NASA Authorised and permitted camshaft.
'NASA 1' or "NASA 1 99" as manufactured by 'Kent Cams'.
Allitt Class 1 Camshaft as supplied by Allitt Motorsport.

VALVE LIFT & VALVE TIMING.

The following valve lift & valve timing combinations only are permitted. A camshaft that complies with the stated later A+ Series engine Valve Lift and Timing details may be used in an earlier A series engine and vies-versa.
The timing for cam full lift and opening & closing figures must be within.
+/- 5 degrees of stated figures below when measured at rocker. i.e. camshaft fitted within engine complete with all valve operating components.
+/- 2 degrees of stated figures below when measured direct off cam lobe. i.e. camshaft without all valve operating components.

Either:

VALVE LIFT- At "as raced" valve clearance.
Maximum Inlet Valve Lift = 7.24mm (0.285").
Maximum Exhaust Valve Lift = 7.24mm (0.285").

VALVE TIMING.

At 0.021" tappet clearance.
5° BTDC - 45° ABDC - 40° BBDC - 10° ATDC.
(As originally fitted to the A series engines and early A+ Series engines).

Or

VALVE LIFT - At "As raced" valve clearance.
Maximum Inlet Valve Lift = 8.08mm (0.318").
Maximum Exhaust Valve Lift = 7.62mm (0.300").

VALVE TIMING.

At the 0.019" tappet clearance.

9° BTDC - 41° ABDC - 49° BBDC - 11° ATDC.

(As originally fitted to the later A+ Series engines).

VALVE GUIDES.

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

'K-lined' valve guides permitted.

Bronze valve guides not permitted.

CARBURETTOR – Must remain as standard production.

Drawing no. 1, check sharp corners, undercuts, machined bore, butterfly for smoothing or thinning and butterfly screws for shortening or smoothing.

'J' CARBURETTOR JET DIA.	'J'	0.090" MAX.
'C' CARBURETTOR BORE	'C'	1.502" MAX.
'U' BUTTERFLY THICKNESS	'U'	0.060" MIN.

CARBURETTOR NEEDLE.

A carburettor needle must be fitted.

Material = As standard production.

Size/Shape (Length & Diameter) = FREE.

CARBURETTOR SPACER (1 ¼" & 1 ½").

Alloy & Polypropylene types permitted.

Check all internal surfaces of spacer, must be as original standard production finish. Must not be bored out, or polished, or reshaped, or formed.

The 1 ½" version must retain the internal lip.

INLET/EXHAUST MANIFOLD.

Check all internal surfaces of inlet and exhaust manifold, should be rough as cast with exception of localised machining.

ROCKER ARM – Type Restricted.

All engines must be fitted with the CAM289 sintered rocker arm.

ROCKER SHAFT – Type Restricted.

Rocker Shaft – Standard production replacement "thin" or "thick" wall shaft permitted. "thick" wall shaft (Part No. C-AEG399) or equal prohibited.

CYLINDER HEAD AND VALVES.

All port and combustion chamber surfaces to be rough 'as cast' with the exception of localised machining shown in Drawings 2, 3, 4 & 5.

Cylinder head 'lead free conversion' permitted.

A '3 angle cut' to valve and valve seat permitted.

N.B. - The top face of any valve insert must be fitted below or in line with the combustion chamber face.

'HT'	Head Thickness	'HT'	2.7" MIN
'V'	Length of Taper	'V'	7/16" MAX
'X'	Diameter of Inlet Port Entry	'X'	1.190 MAX
'F'	Diameter Of Inlet Port	'F'	0.950" MAX
'EG'	Depth of Exhaust Valve Guide	'EG'	1.150" MAX
	(From Cylinder Head Face to valve guide nose)		
'EGB'	Exhaust Guide Boss	'EGB'	1.187" MAX
'IG'	Depth of Inlet Valve Guide	'IG'	1.150" MAX
	(From Cylinder Head Face to valve guide nose).		
'ET'	Diameter of Exhaust Throat	'ET'	0.920" MAX
'IT'	Diameter of Inlet Throat	'IT'	1.013" MAX
'EW'	Exhaust Seat Width	'EW'	0.070" MIN
'IW'	Inlet Seat Width	'IW'	0.050" MIN
'EV'	Exhaust Valve Thickness	'EV'	0.055" MAX
'IV'	Inlet Valve Thickness	'IV'	0.065" MAX
'EX'	Exhaust Valve Head Diameter		AS T.S.D. MANUAL
'IN'	Inlet Valve Head Diameter		AS T.S.D. MANUAL
	VALVE SEAT ANGLE		AS T.S.D. MANUAL
	VALVE SPRING FREE LENGTH		2.080" MAX
	ENGINE BORE		2.608" MAX
	ENGINE STROKE		3.005" MAX

PISTONS.

Standard production original and replacement pistons only permitted. The piston must not protrude above the top of the cylinder block top face.

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

Where 4 ring pistons are used, 4 rings MUST be fitted.

Piston skirts must not be modified or shortened.

The replacing of the original manufacturers phosphor bronze conrod bush and replacing it with a steel bush to convert from 'circlip' to 'press fit' gudgeon pins in pistons is permitted.

The fitting of 'Teflon buttons' is not allowed.

DISTRIBUTOR.

The standard production original distributor must be retained in its entirety and remain in its original standard production form. Modification including disconnection and or removal and or sealing to prevent or enhance operation prohibited. Check for vacuum system & base-plate modifications.

Contact points OK.

NASA permitted Contact-less Ignition. - Aldon igniter packs – LU142/143/144.

FLYWHEEL AND CLUTCH.

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

Standard production original and replacement clutch only permitted

System wholly "Verto" or "Non-Verto".

Plate diameter correct – Verto 180mm/190mm. Pre-Verto 180mm.

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.

4 speed Synchro gearboxes only permitted.

	1970 to 1981		1981 to 1983		1984 to 1992	
	Lay gear	gear	Lay gear	gear	Lay gear	gear
1st	15	31	15	31	15	31
2nd	20	26	21	26	21	25
3rd	25	21	26	21	27	20
4th	29	17	30	17	31	16
1st motion shaft gear	29 or 24 teeth					
Idle gear	37 or 31 teeth					
Primary gear	29 or 24 teeth					

"Overall "drop gear" ratio must be as standard production, i.e. 1:1".

The input and output gear must have the same number of teeth.

Input Gear & Output gears are available with either 28 or 27 teeth.

Standard production original and replacement bearings only permitted.

Rod Change Gearbox Gear Linkage: – Steady Shaft & Selector Rod must be steel.

DIFFERENTIAL RATIO.

The following ratios only may be fitted. 2.95:1 3.105:1 3.44:1 3.765:1

DIFFERENTIAL FULL STRIP CHECK.

During a full strip, given below are the numbers of teeth on the Crown Wheel and Pinion.

Ratio	2.95:1	3.105:1	3.44:1	3.765:1
Crown Wheel Teeth	59	59	62	64
Pinion Teeth	20	19	18	17

Standard production original and replacement bearings only permitted.

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.

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

SUB-FRAMES

The front and rear sub-frames must remain in their standard production form.

All connections, fittings and brackets must remain.

The cutting and modification of the sub-frame under the guise of "Repairs" and or "Replacing rusted areas" is prohibited.

The use of an 'Automatic Mini' sub-frames is prohibited.

SUSPENSION – CAMBER

Front Wheel Camber = 2°' -/+1° Max.

Rear Wheel Camber = 1°' +1.5°/-0.5° Max.

SUSPENSION – REAR RADIUS ARMS

The rear radius arm assembly must remain in its standard production form.

Lightening or thinning of shaft and or stub axle prohibited.

SUSPENSION – RIDE HEIGHT

Front and rear "cones/trumpets" to be checked for use of non-standard components.

Also non-standard machining including removal of material to shorten and or fitting and or insertion of non-standard items including "spacers/washers" to lengthen.

Any car where the ride height is felt to be high or to low to enhance the cars performance will be ordered to alter its ride height in respect of safety.

WHEELBASE.

2037mm (80.2).

VEHICLE TRACK.

As manufacturers original specifications + 6.0mm. (3mm each side).

WHEELS.

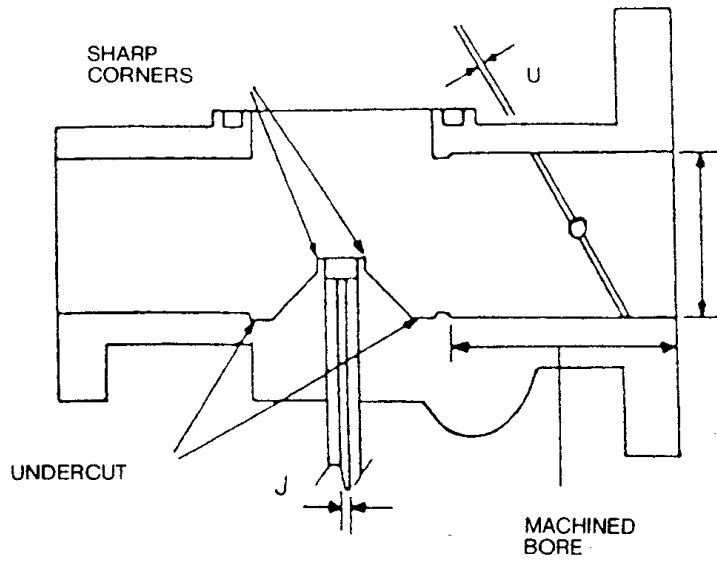
Mini = 10" or 12".

Mini Clubman = 10".

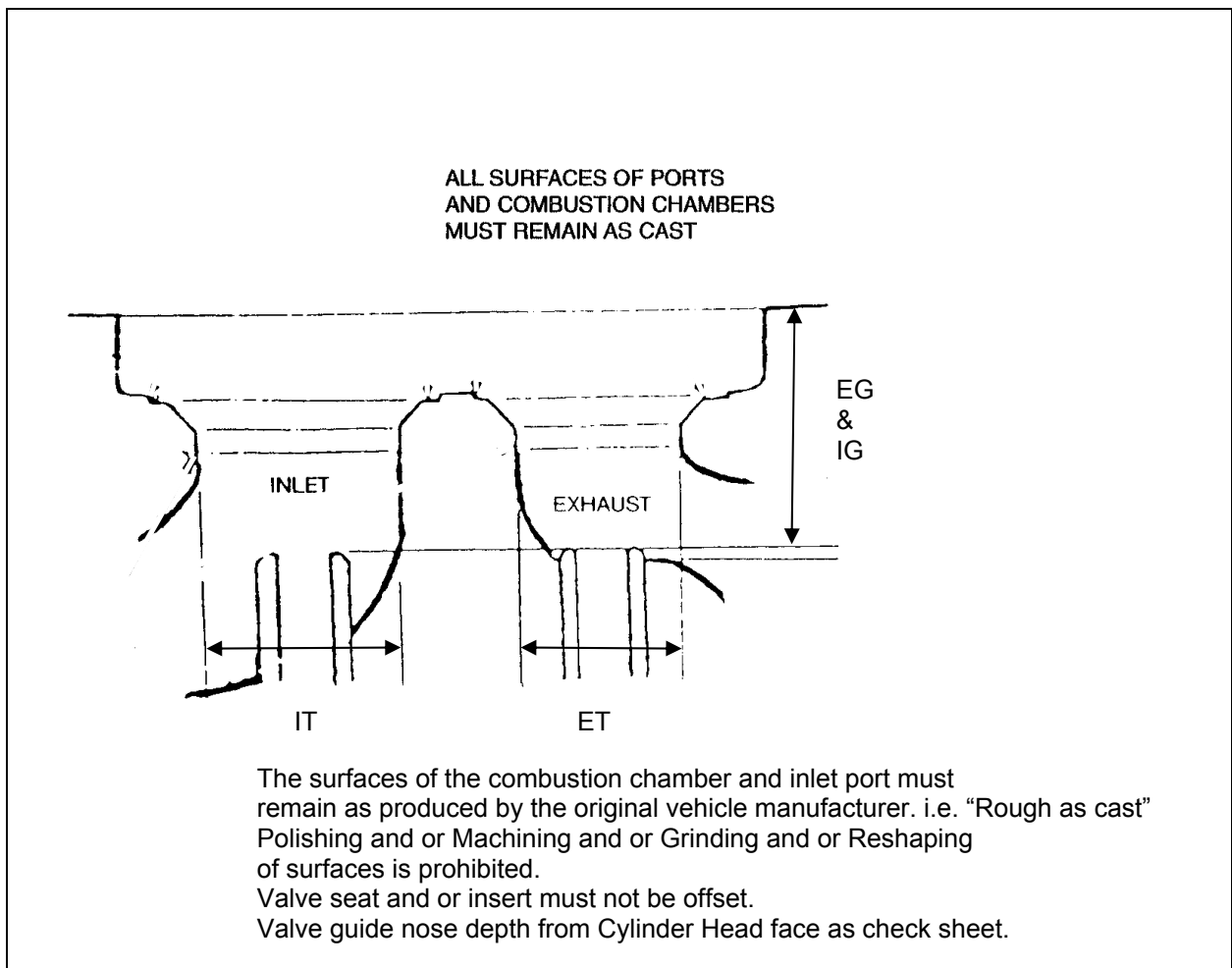
Max Width = 5" (5J).

DRAWINGS

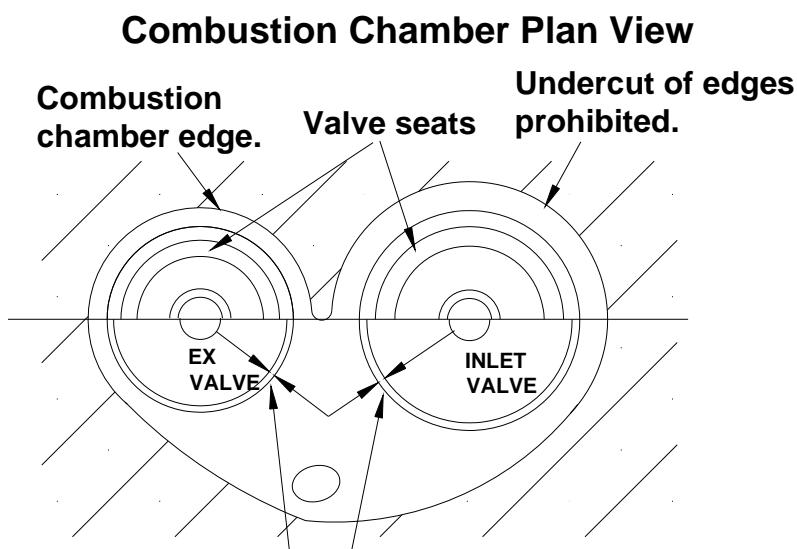
No. 1 CLASS 1 - MINI: CARBURETTOR.



DRAWING No. 2 CYLINDER HEAD INLET & EXHAUST PORTS.



DRAWING No. 3 CYLINDER HEAD COMBUSTION CHAMBER.

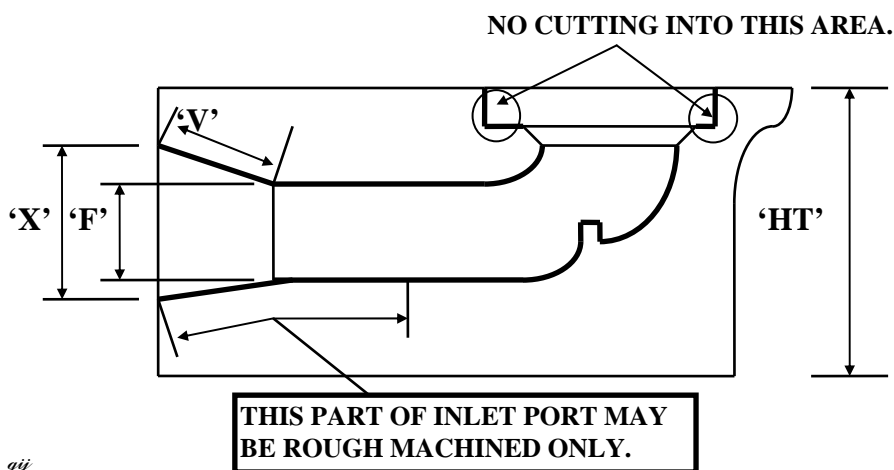


**Valve to Valve seat edge distance
Maximum 1.14mm (0.045")**

The surfaces of the combustion chamber must remain as produced by the original vehicle manufacturer. i.e. "Rough as cast".
 Polishing and or Machining and or Grinding and or Reshaping and or cutting of surfaces is prohibited.
 Reshaping and or cutting into the combustion chamber base and or sides adjacent to a valve insert is prohibited.

gij

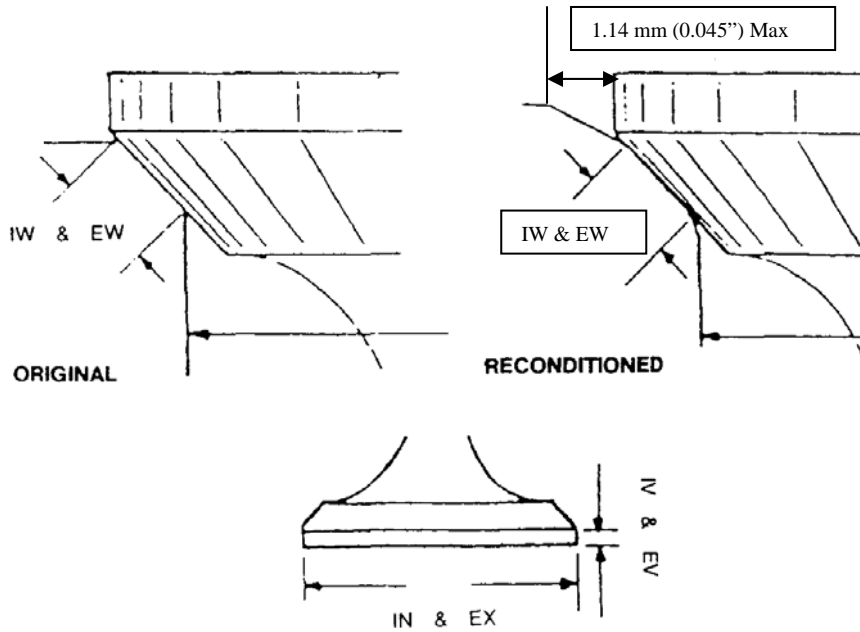
DRAWING No. 4 CLASS 1 - CYLINDER HEAD INLET & EXHAUST PORTS.



gij

The surfaces of the inlet and exhaust ports 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 other than shown is prohibited.
 "3 Angle cut" to valve and valve seat permitted.
 Reshaping and or cutting into the combustion chamber base adjacent to a valve insert as part of the "3 Angle Cut" process is prohibited.

DRAWING No. 5 VALVE & VALVE SEATS.

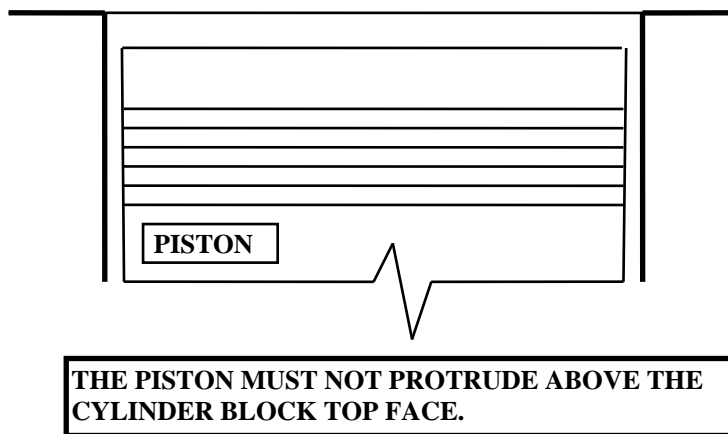


Valve Insert top face must be below or In Line with Combustion Chamber Face.
 "3 Angle cut" to valve and valve seat permitted.
 (Top cut max =1.5mm beyond valve rim).
 Reshaping and or cutting into the combustion chamber base and or sides adjacent to a valve insert as part of the "3 Angle Cut" process is prohibited.

DRAWING No. 6 PISTON IN CYLINDER BORE.

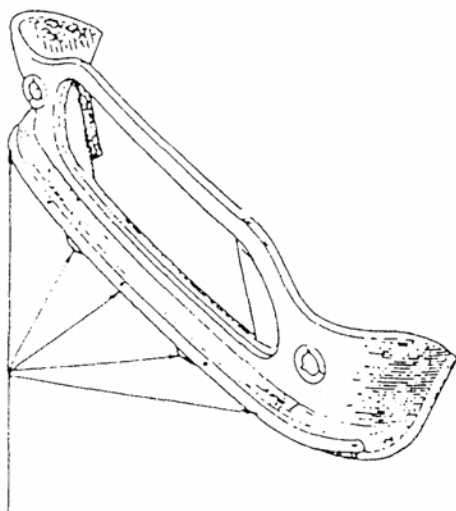
Pistons to be as standard production original and replacement complete with identification marks.
 Piston skirts must not be modified or shortened.

Piston Rings.
 The omission of any piston ring is prohibited.
 Where 3 ring pistons are used, 3 rings MUST be fitted.
 Where 4 ring pistons are used, 4 rings MUST be fitted.



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DRAWING No. 7 CLASS 1 - MINI: FRONT PANEL.

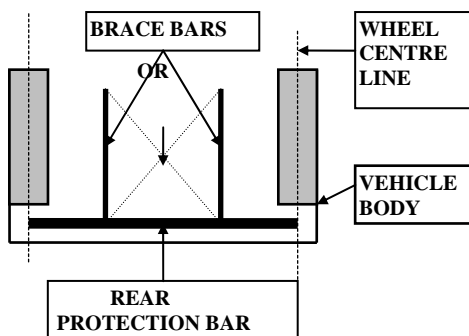


The front bumper brackets and Support lip ONLY may be removed.

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FIGURES.

FIGURE 1. PERMITTED REAR PROTECTION.



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

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

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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