



### Wipac H3 Spot Lamp

These superb base mounting 5.5" clear lens driving lamps have plastic lens covers.

- (11) Wipac 5.5" Lamps (Pair) WPS6007
- H3 Replacement Bulb (Each) GLB453
- H3 Replacement Bulb 30% Brighter (Each) GLB453X

### Cibie Type 35

Cibie are one of the most respected names in vehicle lighting, with an established pedigree and many years experience in motor sport. Probably the most popular and widely used lamp there is, with over 18 million units supplied to car owners and manufacturers.

- (12) Cibie Type 35 Large Spot Lamp (Each) CB067570
- (13) Cibie Type 35 Small Fog Lamp (Each) CB067566

### Cibie Oscar

This large round spot lamp is legendary, hailed throughout the world of motor sport as one the very best night driving lamps. 6.75" x 4.65" deep.

- (14) Cibie Oscar Spot Lamp (Each) CB067681

### Cibie Tango

A smaller round lamp than the Oscar, but with up to a 40% greater light output than its nearest rival. With its compact and slim design, this lamp will compliment any vehicle. 5.25" x 2.4" deep.

- (15) Cibie Tango Spot Lamp (Each) CB068738
- (16) Cibie Tango Fog Lamp (Each) CB068730

#### Replacement Bulbs;

- H1 Halogen Bulb (Each) GLB448
- H1 Xenon Bulb (30% Brighter) (Each) GLB448X
- H2 Halogen Bulb (Each) GLB479

### Alloy Headlamp Rims

Give your classic that individual look with these superb alloy rims, available in anodised silver or gold.

- (17) Headlamp Rim - Silver (Each) 500929ALLOY
- Headlamp Rim - Gold (Each) 500929GOLD



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### Headlamp Relay Kits

Early electrical systems did not include relays in the headlamp dip or main beam circuits. The omission of relays from these circuits means that the high electrical currents required to power the lamps runs through the switchgear when the lamps are used. This is contributory to the burning and subsequent failure of light and dip switch contact points. This situation is aggravated if the original equipment headlamps are uprated to a higher wattage or supplemented with additional lights, as this increases the current load on the existing circuit. Another benefit to the installation of operating relays is that of brighter headlamps without uprating their wattage. All models easily lend themselves to the installation of relays to control headlamp operating power without having to do any butchery to the wiring loom that is non reversible. It also pays back by not involuntarily melting the dip, flash or main lighting switch. The additional wiring and relays can be easily tucked out of sight so as not to inflame the wrath of the purists.

- With 2 Square Lucas Relays Kit GAC40252
- (18) With 4 Square Lucas Relays Kit GAC40254
- With 2 Round Type Relays Kit GAC40262
- With 4 Round Type Relays Kit GAC40264

### Headlamp Stone Guards

Stone guards were originally developed for rallying, but are ideal for road use.

- (19) External Nut Type (Each) 000011
- Clip-On Type Standard Mesh (Pair) GAC8000X
- Clip-On Type Heavy Duty Mesh (Pair) HSG001

### Headlamp Covers

Protect your investment. Rigid clear plastic headlamp covers protect your 7" headlamps from rock damage.

- (20) Headlamp Covers GAC1076X

### Aerials

We supply a wing mounted manual aerial, a fully retractable electric aerial, and a roof mounted one.

- Manual Aerial AJM1112
- (21) Electric Aerial AJM1112X
- Roof Mounted EEP11



### Moss Hoods & Tonneau Covers

Moss Europe are committed to an intense programme of product development and re-manufacturing - one of those products is hoods and tonneaux.

#### Investing For The Future By Preserving Traditional Crafts, Methods And Skills.

The only way to ensure that a part is right for the job, is to manufacture it by the best possible means to the highest standards and, although modern production techniques have transformed the classic car industry, sometimes, the only way to do it is the traditional way.

#### The People.

Any product is only as good as the people who make it. At our own manufacturing plant in Shropshire, we have a hand picked team of craftsmen and women, who are all dedicated enthusiasts of vintage and classic cars. With a combined total of nearly 100 years experience, they produce hoods and tonneaux to the highest standards (some served their apprenticeship in the manufacturers trim shops - such as Austin Healey, MG and Triumph, whilst many served their apprenticeship with traditional independent coach trimmers).

#### The Very Best Materials.

Modern materials assist the craftsman to produce the best possible hood, but they must look right. Modern materials (due to their inherent strength) greatly assist traditional manufacturing methods by allowing the craftsman to fully use his or her skills to ensure that every section of a hood is cut to a precise pattern - every time. This assists the skilled machinists to ensure that every seam is perfectly formed and finished. No matter how well the product is made, it must look and feel right, as well as being durable. To this end, we source our material from two of the worlds leading fabric manufacturers. Sometimes you can't cut corners.

#### Design & Development.

Modern sports cars can sometimes benefit from their predecessors. As well as hoods (and tonneau covers) for classic sports cars, we also produce them for modern sports cars such as the MGF and Mazda MX-5. Our aim is to produce the best hoods by using our in-house skills and experience.

#### Quality Control.

Every hood is checked for fit by using trim bucks. Not only do we fit every hood and tonneau to a Trim Buck (A perfectly engineered O.E. specification test rig that checks fit), we also monitor each and every stage of production, from first cutting to final stitching.

*"When you buy a Moss hood or tonneau, you can be sure that you have the finest product available, produced by craftsmen."*

### Moss Quality Hoods For Triumph

As well as manufacturing quality hoods for Triumph, we probably carry the largest stocks in the U.K. To itemise every hood that we stock would take far more than this page, so for each individual model that we cater for, we have shown the standard hood specification (such as non-zip or zip out window) along with the type of material that we supply from stock, such as vinyl, double duck, mohair etc... Our vinyl hoods are made from a material of equal quality to that used during production.

All these listings are for black hoods and tonneau covers, though we can supply them in a full range of colours - some to special order only. Please state your full requirements when ordering.

Note; because we manufacture our own hoods, we may be able to match your own specification and requirements, please contact your local Moss branch for details.

### Moss Hoods For TR's

All these listings are for black hoods. Other colours are available.

#### TR5 & TR250;

Vinyl Hood	813451Z
Double Duck Hood	813451DD
Mohair Hood	813451MH

#### TR6;

Vinyl Hood With Zip Out Window	822021
Double Duck Hood With Zip Out Window	822021DD
(01) Mohair Hood With Zip Out Window	822021MH

### TR6 Black Happisch Hoods

These hoods are manufactured on O.E. jigs, and use a superior quality black mohair like fabric called happisch. The material, chosen as original equipment by Jaguar, Lotus - and used on the MG RV8, comprises of a spin died outer skin woven from polyester and polyacrylic fibres, with a middle layer of synthetic rubber and an abrasive resistant inner layer of cotton. Characteristics include a resistance to creasing and colour loss.

(02) Happisch Hood Cover	822021H
--------------------------	---------

# Exterior | 15

Happisch Hood | 02



Surrey Top | 04



Tonneau Cover | 03



Hardtop Storage System | 05



## Comprehensive Service

### To Fit Or Not To Fit.

Although our hoods can be fitted by a competent home mechanic, there are occasions when it is more convenient to have it fitted for you. For full details of the different options we can offer please contact your local Moss branch.

## Moss Hood Stowage Covers

All these listings are for black vinyl covers. Other colours are available. All the hood stowage covers include a fitting kit.

Vinyl Stowage Cover TR5/TR250 713461  
(Black with white piping).

### TR6 Models;

Vinyl Stowage Cover 726211  
Vinyl Stowage Cover Double Duck THC101

## Moss Tonneau Covers

All these listings are for black tonneau covers, though we can supply them in a range of colours - some to special order only. If your vehicle is non-standard, such as having a roll bar fitted, we can supply covers to your specification to special order.

### Models

#### TR5 & TR250 Tonneau Covers;

	RHD	LHD
Vinyl	822051	822061
Double Duck	TDT001	TDT004
Mohair	822051MH	N/A

#### TR6 Tonneau Covers;

Vinyl No Headrests	822051	822061
(03) Vinyl With Headrests	822091	822101
Double Duck No Headrests	TDT001	TDT004
Double Duck With Headrests	TDT002	TDT003
Mohair No Headrests	822051MH	N/A
Mohair With Headrests	TDT005	TDT006



06



07

## TR5 Surrey Tops

Our replacement high quality surrey tops are a must for all TR5 owners, choose between lightweight aluminium or GRP. For full details of surrey tops and replacement parts please refer to the Restoration section in this parts catalogue.

### Surrey Tops;

(04) Lightweight Aluminium	903979
GRP	566994X

### Replacement Parts For Surrey Tops;

Pop-In Type Headlining	713149X
(Not suitable for original roofs).	
Perspex Rear Window	902343X
Steel Reinforced GRP Rear Frame	566993X

## Hardtop Storage System

This hardtop storage system offers total protection for your hardtop when not in use. Designed to protect from dirt and scratches, it is ideal when you want to ensure safe storage for your hardtop. The system comprises of a fully padded, heavy duty, zip-up black pouch and comes complete with its own simple but effective wall hanging kit. It is fully padded with a soft internal lining, it has a tough high specification outer fabric, with a heavy duty zip-up closure for easy access and comes complete with a wall hanging kit.

(05) Hardtop Storage System	GAC1005
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## Detachable Bike Rack

Rack holds up to 3 bikes securely and adapts to different vehicles. Easy installation and removal.

(06) Detachable Bike Rack	900-310
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## Twin Air Horns

Our twin air horn set includes two tuned horns, heavy duty die cast compressor, air hose, mounting hardware and installation instructions.

(07) Twin Air Horns	GAC9978X
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# 16 Exterior

Loose Fitting Indoor Storage Cover | 01

TR6 Ultralon Outdoor Storage Cover | 02



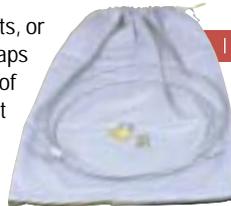
Heavy Duty Outdoor Storage Cover | 03



## Car Covers

### Should I Invest In A Car Cover?

Whether your car is outside exposed to the elements, or kept in the garage - where those little annoying mishaps can occur - a car cover will help to extend the life of your classics paint, hood, trim etc. Consider the cost to replace even one of those items and a car cover seems a very smart investment. Depending on your requirements, we have a cover to help protect your classic.



04

## Indoor Covers

### Semi-Fitted Indoor Dust Cover.

These natural, off-white, calico dust covers are ideal for protecting your classic in dry conditions.

TR5, TR250 & TR6

GAC6061X

### Universal Indoor Cover.

This cover is also ideal if you store your car outside under a car porch or similar. Features include sewn-in elastic around the base for a snug fit.

TR5, TR250 & TR6

236-445

### Loose Fitting Indoor Storage Cover.

Our Indoor car storage covers are made from a soft, non-scratch, blue poly-cotton/polyester mix material that is scotchguarded, making it damp and drip proof. The hems are elasticated front and rear and, to help prevent paintwork marks, the door access areas have zips.

(01) TR5, TR250 & TR6

GAC9501

### Tailored-Premium Flannel Indoor Storage Covers.

This is the upper end of the car cover spectrum for indoor use only. Feature include double-stitched seams with neoprene elastic sewn in the front and rear bases for a snug fit, and scratch proof grommets for locking or tying down your cover. This cover has a body specific fit for easy installation and carries a 2 year warranty. Suitable for garaged areas only.

TR5, TR250 & TR6 To 1973

GAC1077X

TR6 Only 1974-76

238-480

## Outdoor Covers

### Universal Indoor Cover.

This cover is also ideal if you store your car outside under a car porch or similar. Features include sewn-in elastic around the base for a snug fit.

TR5, TR250 & TR6

236-445

### Universal Casual Outdoor Shower Cover.

Our non-abrasive polypropylene showerproof outdoor covers are ideal for casual use. There is a built-in air vent that allows air flow, and all the seams are ultra-sonically welded.

TR5, TR250 & TR6

GAC9531X

### Tailored Short-Term Duravent Outdoor Storage Covers.

These tailored waterproof covers are ideal for short term outdoor storage, though they can be used indoors. They are fully breathable with double stitched seams. The front and rear hems are elasticated, and have scratch proof grommets that allow you to tie the cover down.

TR5, TR250 & TR6 To 1973

237-420

TR6 Only 1974-76

237-480

### Tailored Medium-Term Ultralon Outdoor Storage Covers.

Maximum protection for your classic. Three layers of fabric offer excellent protection from dust and moisture, yet allows condensation to evaporate. Lightweight, compact and fast drying for easy storage. This cover has an embroidered Union Jack.

TR5, TR250 & TR6 To 1973

GAC1070X

(02) TR6 Only 1974-76

237-485

### Loose Fit Medium/Long-Term Heavy Duty Outdoor Storage Covers.

The waterproof outdoor cover that we supply is suitable for medium to long term storage. Manufactured from frost and U.V. resistant grey vinyl, with a soft cotton inner lining. Welded seams eliminate water penetration whilst a fitted air vent minimises moisture build-up between cover and body. Front and rear hems are elasticated and there are rubber bungies for attaching to the wheels. They come in a zipped handled bag.

(03) TR5, TR250 & TR6 To 1973

GAC9504

(04) Universal Stowage Bag

GAC2013X

Cable Lock With 2 Keys

GAC2022X




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### What Can I Do To Make My TR Go Faster?

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There really isn't a simple answer to this question...

- Do you want higher speeds on the motorway or more mid-range torque?
- Do you drive your car fairly hard on a daily basis, or just use it on weekends?
- Would you like that little bit more power, or do you want maximum BHP?
- Do you just want the car to be quicker through bends?
- Then we could ask, have you, or are you going to, upgrade the brakes?
- Are your suspension and/or steering bushes/components OK?
- Will your transmission and drive train handle more power/speed?
- Is your car standard, or has it been previously overhauled/upgraded?

On the following pages, you will find a range of quality components that will improve engine performance, braking, steering and the handling of your classic and, if you want to make it a real head turner, complete the transformation by fitting a set of wide section alloy wheels. Please don't forget, before increasing the power output and speed of any vehicle, you should ensure that your brakes, steering, chassis etc... can cope with the modifications, and, a roll bar is a very sensible investment... for all open top sports cars.

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### Body Panels

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We supply a range of replacement aluminium and fibre-glass panels. For full details please refer to page 28.

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### Cooling

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#### Water Cooling.

Although the standard radiator is adequate in cooling the TR engine in traffic, the fitting of a Kenlowe electric fan has been found to be very worthwhile, not only to improve cooling but unlike the standard fan it does not absorb energy (approx. 3bhp) from the engine.

#### Engine Oil Cooling.

The Triumph 6 cylinder always requires a oil cooler especially in modern day traffic, where the speeds are much higher for longer periods than were to be expected when the car was designed. We offer a full range of options that allow you to fit the oil cooler/filter of your choice. The kits are supplied with ready assembled hoses and mounting brackets.

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### Cooling cont...

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The installation kit can be supplied with a thermostatic controlled adaptor plate for road cars which can give you the best control of the oil temperature. The use of the larger diameter hoses (5/8") gives less pressure drop across the radiator, so it can be beneficial for competition use.

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### Oil System

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#### Engine Oil Filter.

The standard oil filter system is okay, but it does have one major fault - once the engine is stopped all the oil drains back into the sump. Therefore, the filter must be refilled on start-up before oil is supplied to the crankshaft etc... this causes the usual bearing rattle on initial starting in the mornings. The fitting of a spin-on oil filter prevents oil drain and helps prolong bearing life.

#### Oil Pump.

The standard pump - if in good condition, is more than adequate for most uses. The later type pump, all aluminium body, can be used for all applications. For fast road or racing use, get the end float reduced to around 0.001/2" as this will reduce the pressure leakage. See also; General Engine Preparation at the end of this section.

#### Oil Pressure Relief Valve And Spring.

On these engines the oil pressure is a little low especially when hot. We recommend that the spring is replaced and, when building a hot engine, replace the valve as well. When re building it can be a good idea to ensure that the valve is seated correctly by lapping in, wash out fully afterwards, though. Do not use any extra washers when reassembling.

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### Ignition System

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Note; It is necessary for the car to be set-up on a rolling road to ascertain the required static timing to obtain the maximum power at the top end of the rev range.

#### Standard Distributor.

The standard distributor when in good condition, will work perfectly for all but the race camshaft profile. We also supply uprated contact points, GCS111, for fast road/sprint work.

Continued...

# 18 Performance & TUNING

## Ignition System cont...

### TR5 & Early TR6.

For the 150BHP motors (CP engine number) the distributor unit has the best advance curve of all the production units, especially when being used on road engines. These units use a 6 degree base plate as well as lighter weights. This unit can also be improved for competition engines.

### Late TR6 Models.

These units use a 12 degree base plate. There are many different settings but all of them can be adapted to a usable specification by either fitting the exchange distributor or by using the set of advance springs, TT1903.

### U.S.A. Models.

With these models, the fitting of a set of advance springs, TT1903, can sometimes be adequate, but, it may well be necessary to amend the base plate to limit the curve and adjust the settings to suit your new requirements. This can be done using the special distributor setting machines, now available in the States. New Lucas units can only be supplied without cable tacho drive.

### Lucas Advance Springs.

For Lucas distributors, we are able to supply a set of five advance springs, so that the advance curve can be tailored to suit your own requirements. These are used to restrict the low speed advance curve to reduce the pinking problem.

### Electronic Ignition.

If you are tired of setting the points, then electronic ignition is the answer, refer to page 32 for full details of the different ignition systems we supply.

### Mallory Distributors.

If your vehicle was originally fitted with a Lucas distributor, then you can fit the track proven twin point Mallory distributor. Note; if you fit a Mallory twin point distributor, you will need to fit an electric rev counter.

### Performance HT Ignition Leads.

Whether you fit high performance silicone or competition plug leads, they are essential. If you have fitted a sports coil, uprated distributor and NGK spark plugs.

## Brake System

This is a very important area that must be attended to when carrying out any conversion work. We will continue on the assumption that the braking system is in a working condition and that the brake discs/drums are not worn or badly scored, both of which will affect the possible braking efficiency.

### General Brake Information.

When fitting new pads/linings it is essential that they are bedded in correctly for them to work efficiently and give the best results. Remember, some, but not all brake pads (and linings) are still made from asbestos; for personal safety do not use a brush or air line to remove brake dust, but instead use a vacuum cleaner or a damp cloth together with a can of brake cleaner. Make sure the dust and/or cloths are disposed of properly. Brake drums and discs also need bedding in on low speed gentle braking for about 10 miles; gradually raise the speeds, but maintain the gentle braking application. Then make 2 to 3 heavy braking applications, which should complete the bedding in.

We also recommend the fitting of Aeroquip, stainless steel, braided hoses that give a firmer brake pedal and less pressure drop through hose expansion. Complete brake pipe sets are also available and are supplied complete, ready assembled with unions for easy installation.

### Uprated Brake Components.

As well as uprated brake pads that can be used with standard calipers and discs, we also supply complete uprated and ventilated brake kits, and, finned/alloy rear brake drums. Note; race regulation may not permit ventilated discs.



## Brake System cont...

### Ventilated Discs.

This TriumphTune conversion utilises the standard calipers, with a spacer that enables the thicker ventilated discs to be installed. The fitment normally does not require any other modifications, as long as clearance inside the wheel is fully checked on installation. The substantial improvement in the braking makes this conversion highly recommended for all cars. We also offer a four pot brake conversion that has alloy calipers. Ideal for all applications and where regulations allow full race cars.

### Rear Brakes.

Here the road car does not require any special work although for race use hard linings are essential, and the rear brake cylinder should be changed for one with a smaller bore.

## Steering

It goes without saying that all steering components/bushes must be thoroughly inspected and replaced as a matter of course if suspect. For pin point steering, we recommend you fit one of our quick racks (that utilise solid alloy mounts), that have a high ratio pinion giving you lock-to-lock in only 2.5 turns, compared to the standard 3.5.

Note; If you have solid (alloy) steering rack mounts - which are essential for race conditions because they minimise rack movement, they do not compensate (unlike rubber bushes) if the car is heavily kerbed.

## Suspension Tuning

When rebuilding or modifying the suspension make sure you check all components for wear.

The order of priority for suspension tuning for TR5/TR6 models is;

- |                                |                              |
|--------------------------------|------------------------------|
| 1. Front Anti-Roll Bar         | 5. Front Shock Absorbers     |
| 2. Rear Springs                | 6. Rear Anti-Roll Bar        |
| 3. Rear Shocks (or conversion) | 7. Uprated Suspension Bushes |
| 4. Front Springs               |                              |



## Front Suspension

### Front Anti Roll Bar.

The TR suspension design needs the assistance of the front anti-roll bar to maintain the inner front wheel in contact with the ground road when cornering with any verve.

TR5/TR250 models were not fitted with a front anti-roll bar as standard, so an installation kit is required. The diameter of the bars may be larger than was originally listed for the car, this is because we are using the inner wishbone bolt for the mounting position to allow clearance for larger tyres.

For the TR6, the bars are the same shape only larger diameter than standard, this is recommended for fast road cars where larger tyres/wheels have been fitted. The outer mounting point rubbers can be changed for stronger rubber or solid nylatron. These are usually only required for competition use, where the fine adjustment of anti-roll bar tension can set-up the car correctly for the best roadholding.

### Front Shock Absorbers.

When you fit uprated springs it is essential that you also fit uprated dampers. We also supply uprated top shock absorber bushes, order part number TT30161. Refer to page 42 For full details of uprated shock absorbers.

### Front Springs.

The standard specification springs were designed primarily for the U.S.A. market. For the average enthusiast the rate needs to be increased to stop front end floating at modern day speeds and the height may need to be reduced to improve the roll centre of the car.

Before altering the car, measure the fitted height both front and rear. This will allow you to make the right choice for the height of the new springs. Remember that a change of tyre size (185/70 to 195/60 etc...) and wheel width will also change the ground clearance. If you are still unsure please write/phone for assistance, quoting your standard fitted heights.

## Front Suspension cont...

For all applications we recommend that the car is set-up so that it is level, both for appearance and for road holding.

**RACING.** Here the front springs are in two basic rates, for the TR5/TR250 models we prefer to recommend the TT4102/TT4201. The TR6 models can take the higher rate TT4207 spring units. We have remanufactured the special Churchill spring compressor tool, GAC5076, it can also be used for fitting new cam bearings.

### Front Chassis Strengtheners.

The inner front mounting bracket tends to be a weak point on the suspension design. We have therefore produced supporting brackets for welding into position. Order part numbers TT3259R & TT3259L. These were fitted as standard on late '73 TR6 models. For racing use, the actual brackets must also be checked over regularly for fracturing and replaced, this also is necessary if a road car is heavily kerbed.

### Inner Fulcrum.

The inner pivot bracket on most cars, uses only one stud for attachment to the chassis mounting bracket. This is adequate for a road car but if large tyre/wheels are being used, then it is recommended that the extra bolt is fitted to the pivot bracket. When fitting make sure that the new bolt head will clear the wishbone arm when installed.

### Bushes.

For all fast road or competition cars the inner bushes should ideally be replaced with the nylatron bush kit, as these give improved suspension action as well as vastly improved location. The bush set allows easier vertical movement which will improve suspension action whilst eliminating fore-aft float, that occurs with the standard rubber set-up. The suspension will be a little noisier in it's operation.

### Top Wishbone.

This can be shortened for competition use, so as to induce more negative camber, depending on the type of front springs used. The fitted height of the spring will also affect the amount of camber, so this can only be adjusted once the car is back on it's wheels and fully loaded, the camber is then measured and adjusted as necessary. The optimum for racing use is 0-1 degree negative.

## Rear Suspension

### Rear Anti Roll Bar.

The rear roll bar is recommended for all fast road cars, where the action will improve the road holding substantially. The design allows the bar to operate progressively, so that it does not make the car twitchy.

For racing the use of the bar will depend on your own set-up and may need experiments to be carried out, to determine the right combination to suit your own driving. Variations include the use of outer locator cones, TT3906, which improve the fitting to the rear trailing arm and also harder bushes.

### Lever Arm Rear Shock Absorbers.

The lever arm unit can be supplied in two forms for road and racing. The 25% road uprated units are supplied on exchange. The racing units have the damper setting increased by 50% and are usually based on new units, although they are supplied on an exchange basis, as we always require the old units to maintain this service.

### Telescopic Conversion Rear Shock Absorbers.

These specially designed conversion kits enable modern adjustable telescopic units to be easily installed on the car. This conversion not only gives you a much smoother ride, but also allows far better location for fast road - and racing where rules allow its use.



# 20 Performance & Tuning

## Rear Suspension cont...

### Rear Coil Springs.

Here we have a mine field there are so many variables. The standard range of springs is listed on page 43 but most owners will know that there are very few TR's that end up at the same fitted height. The standard springs tend to sag very easily, so again it is essential for you to measure the spring when it is fitted on the car, ie: car in normal running condition as on the road/track. For our full range of uprated springs and fitting recommendations please refer to pages 41-43.

### Mounting Brackets.

The trailing arm is mounted via four brackets to the chassis, these are in pairs, inner and outer. The fitment on the model range is listed here, identified by the notches in the bracket:

Model;	Inner	Outer
TR5/TR250 & Early TR6	1	2
TR6 Late Models	3	1

The late models had the 3 notch bracket fitted so that the camber can be maintained at 0 degrees, with the longer standard springs. When fitting the shorter springs it is possible to alter the brackets so as to maintain the camber angle at 0-2 degrees negative. The actual combination may vary from above, so it may require you to install the rear spring first, check camber and then adjust if necessary. Normally this is not essential for road cars, unless using the low race springs. It is important that these brackets are fitted the correct way onto the car as this will alter the camber and drive-ability of the car.

### Trailing Arm Bushes.

The rubber bush fitted to the trailing arm needs to be stronger - to cope with the improved power, without excessive rear end steerage. We have had the TT3265 specially manufactured in 70 shore material with a stepped centre sleeve so as to stop the bush splitting when under extreme loads.

## Wheels And Tyres

These can obviously alter the overall gearing considerably, so it is an important feature of any intended conversion. Again some applied thought before you start may save you time and money later on. Here we show the normal recommendations/combinations for fitting larger wheels and tyres. This is not a definitive list as your particular requirements may include major suspension/body modifications.

### Wheels.

Model/Wheel Size;	Standard	Road/Sprint	Racing
TR5/TR250	4 Or 4.5"	4 To 4.5"	5.5 To 6"
TR6	5.5"	5.5 To 6"	6 To 7"

### Tyres.

The range of tyres available now is considerable, so we are not in a position to recommend any particular brand over another. However, the size that you use is also important not only as it alters the overall gearing but also the ride height and weight of the steering. This chart can be used a rough guide for virtually any car.

Size/Profile;	80	70	60
13"	155	165	185
14"	165	185	205
15"	165	185	205

## Transmission

### Clutch System.

The standard cover is adequate for a road modified car but if the car is required for mild competition work, then the uprated road cover is ideal. This is slightly stronger to operate, but still enables the clutch to be held for road use. For full competition work the race cover is essential, but this is strictly an in/out operation, unless you have very strong leg muscles!

## Transmission cont...

### Uprated Clutch.

These components are built specially for fast road/sport, for both standard and close ratio gear sets, or full competition use. For full details refer to page 44.

### Clutch Plate.

All six cylinder Triumph models are fitted with an 8" diameter clutch. The only difference with the plates is the manufacturer, Borg & Beck or Laycock, and the diameter of the Input shaft, TR models = 1.25" / others = 1.00". The uprated plates we supply are available in different specifications depending on your requirements/expectations. The fast road units are made from stronger steel reinforcing plate as well as using stronger damper springs and facing material, the race units have stronger springs and facing material. When choosing the clutch, be careful to check the input diameter and that the recommended application is correct for your car/use.

### Clutch Release Bearing.

This is only required to be standard, but in good condition. The release bearing carrier should always be checked and replaced if any wear is shown. The replacements can be either standard steel or in brass.

### Dog Clutch.

We supply a set of gears and hubs to convert your TR4 gearbox to dog engagement, that permits clutch-less fast gear changes. If you have to ask what a dog clutch gearbox is, you probably don't need one. See page 45 for details.

### Standard Flywheel.

Lightening of the flywheel to reduce the rotating weight will enable the engine to pick up and rev easier. This work is usually carried out to your own unit at the same time as balancing. The amount of weight saving will depend on the actual flywheel design but it is normally between 5-9lbs. Alternatively you could fit one of our brand new lightweight flywheels - see lightened flywheel.

### Lightened Flywheel.

In the past, when engine tuning, the cast iron flywheel came in for some serious attention. As much material would be removed as deemed safe. Years of stress caused by engine revs, heat and clutch abuse, may well have pushed this hard-worked part into an unsafe condition. Flywheels (and clutches) have been known to fail catastrophically.

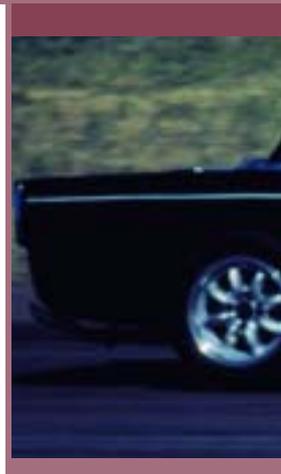
Now though, with our steel, and alloy flywheels, you are spoiled for choice. If your TR is to be used for FIA competition the all steel unit is required, though rules may change! For alloy flywheels, the ring gear must be also be pinned once it has been shrunk on. Because the TR 6 cylinder engine has two different types of crankshaft, crankshafts/flywheels can only be interchanged as matched pairs.

## Gearbox

### Ratios.

The input shaft on TR 4A/5/6 gearboxes is 10 spline x 1.25". The input shaft on 2000 Saloons and Sprints gearboxes is 10 spline x 1.00". Gear ratios are as follows.

Model;	1st	2nd	3rd	4th	O/Drive
TR4A,TR5 & Early					
TR6 Standard.	3.14	2.10	1.39	1.00	0.797
Late TR6 Standard.	2.99	2.10	1.39	1.00	
Close Ratio All Models TT210 Set.	2.19	1.57	1.23 (0.98)	1.00	






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### Gearbox cont...

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And just in case you have one of these models...

2000/2500 Saloon and Dolomite Sprint, Standard, models use the same ratios as listed for TR 'boxes, depending on the year of manufacture of the individual gearbox.

#### Close Ratio Gear Sets.

We stock close ratio gear sets that are suitable for all Triumph gearboxes with needle roller constant pinion bearings, including 2000 but not Stag or Sprint. If you want to keep the engine on cam then this gear set is the answer. See page 46.

#### Wide Ratio Gear Sets.

Unfortunately, due to manufacturing restrictions, we are unable to supply this product.

#### Upgraded Lay Gears.

Since its introduction in 1961, the Achilles heel of the 4 speed synchromesh gearbox - as fitted to TR4/6, Dolomite Sprints and the big Triumph saloons, was the laygear and layshaft. Moss upgraded laygears come with bearings pre-fitted, ready to install, with no modifications needed. See page 46 for details.

#### 5-Speed Gearbox Conversion.

Our precision engineered 5 speed gearbox conversion kits include everything you need (including a gearbox unit) to convert your classic to 5 speed.

#### Upgraded Overdrive.

We may be able to uprate your own overdrive if the unit is in good condition. Please ask your local Moss branch for full details.

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### Axle Ratios

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The easiest way of altering the acceleration or cruising speed, is to change the axle ratio, either as a unit or crown wheel and pinion. Due to the many production variations on the same model range some of these ratios cannot be fitted directly.

The higher the numeric value of the ratio - the lower the gearing, ie: lower top speed for the same RPM. The chart here covers the range of ratios that have been available to suit the TR5/TR6.

When changing the diff' ratio, please think of the overall effect to your cars performance, including the selection of the road wheel and tyres, especially regarding 50/55/60 aspect tyres, and the ability of your engine to pull maximum rev's is also an important factor.

#### Diff Ratios.

3.45:1 | 3.70:1 | 4.1:1 | 4.3:1\* | 4.55:1\* | 4.875:1\*

(\*These ratios are virtually impossible to obtain).

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### Axle Ratios cont...

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#### Limited Slip Diff Unit (LSD).

Limited slip differentials allow maximum drive to the wheels giving more grip under hard acceleration and cornering. Safety with performance.

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### Engine Variations

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On any engine conversion, it is essential to consider very carefully the suspension and braking systems. We list here some of the sensible and possible engine transplant conversions. There are many more combinations which will depend on your own ingenuity and engineering capabilities. Purists are warned not to read this section, it may be bad for your health.

We know of some owners who have fitted the Rover 3.5 V8 in without too many problems. The TR axle and gearbox are able to take up to 250bhp, without too many problems, although it may be better to use a 5 speed box and/or Jaguar rear end.

Probably it would be better to use the 2.5 litre engine and increase the cc by over boring or stroking. Please don't forget, before increasing the power output and speed of any vehicle, you should ensure that your brakes, steering, chassis etc can cope with the modifications, and, a roll bar is a very sensible investment... for all open top sports cars.

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### General Guides To Engine Tuning

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#### Tuning the TR Engine.

The TR engine can be made to produce good reliable power for a road car without excessive amounts being spent on the engine unit.

#### Engine Balancing.

With all Triumph engines this is very worthwhile both in general rebuild or competition use. The rotating components are all balanced to reduce any engine vibrations in two operations. The crankshaft, front pulley/extension, flywheel, and clutch cover are all bolted together and spun-up to find, and remove, the in-balance point. The connecting rods are balanced end-to-end and the pistons are then balanced to each other. The end result is that the vibration point usually felt at 2500 - 3400 rpm is removed or reduced to insignificant levels.

#### The Stages Of Tuning.

The correct order for engine performance improvement is as follows, which is not the same for all other engine designs. Later in the performance section we have laid out the order of our PlusPac conversion suggestions that give you value for money steps, they are all designed for installation as a bolt on kit to an otherwise standard engine in good condition. PlusPacs are not mandatory steps, but they are the most logical way of obtaining improved performance without wasting money. The order can be amended as to your final stage required, as long as you are prepared to accept varying degrees of improvement if the whole conversion is not being fitted at one time.

- A : Extractor manifold and Sports Exhaust system
- B : Sports Air Filters
- C : Pi system renovated or fit carburettors, as required
- C : Modified Cylinder head
- D : Performance profile camshaft

If you prefer to install the camshaft or cylinder head in a different order, then the power increase will be altered and the full potential of the component may not be realised until it's associated component is installed. On some models the installation of Weber or Dellorto carbs at an early stage can be very worthwhile if you are contemplating carrying out a full conversion later.

Continued...



# 22 Performance & TUNING

## General Guides To Engine Tuning cont...

We list the recommended sizes to be used for each model, there is not normally any benefit in going larger than this unless the car is used for outright competition use where the top-end power can be improved with the obvious loss of low speed tractability.

The engine can be improved easily, but do not forget to also look at the rest of the car to make sure that the road holding/braking is going to be adequate to cope with the new performance.

## Exhaust System

### Sports Exhaust Manifolds.

The fitting of an extractor manifold is the first step to improve power output on these models. They improve exhaust gas flow allowing the engine to breathe far more efficiently - unlike the restrictive basic unit. Our extractor tubular manifolds are produced using mandrill bending equipment to give full diameter pipe bends.

### Road Manifold.

The TriumphTune road manifold, part number TT1200, is specially designed to give major benefit in the mid range of the power band, which is the most important area for a road car. The manifold is a 6 into 2 design. The lengths of the primary pipes are designed to be as long as practical, whilst retaining equality so as to spread overall power increase.

### Sports Manifolds.

We offer two stainless steel manifolds for this specification.

The first is a 6 into 2' long branch design, part number TT1230S1, is suitable for all models from 1973 with carbs, all Pi's and Weber conversions and, it can be used on fast road cars. The second option, part number PXT605, is a 6-3-1 pulse design that has short secondary pipes for easy fitment. Suitable for all TR5/TR250/TR6 with carbs, all Pi's and Weber conversions. This manifold is suitable for mild competition engines.

### Race Manifold.

This is a 6 into 3 Pulse type manifold, part number TT1740X, with long branch pipes and slip joints. It is designed for maximum power with a wide power range for fully modified engines. Can be coupled to twin or single systems.

### Sports Exhaust System.

All our TriumphTune exhaust systems are of the straight through design for the efficient extraction of gases with optimum back pressure for maximum performance. Most systems are supplied with a fitting kit.

We offer three different exhaust systems in mild and stainless steel, depending on your requirements - and sound level! Our sports twin pipe systems have either 18" or 24" silencers to suit all road applications. The world famous TriumphTune GT twin pipe systems, which have large bore tail pipes are suitable for both fast road/competition. Choose from high or low level exit tailpipes. The full race single pipe systems are suitable for fully modified engines, the large bore single rear silencer have rolled lip tailpipes. Choose from high or low level exit tailpipes.

## Sports Air Filters

Because these engines need large amounts of air, it makes sense to fit sports air filters.

### K&N Filters.

K&N filters - with their advanced filtration system, are acknowledged as being one of the most efficient air filters in production, and are essential for fast road and competition work. They use the suspended oil system of filtering that allows the engine to breathe properly. The elements must be cleaned and re-oiled (normally after approx. 12 to 15000 miles) using the correct fluids or they will clog up impairing breathing.

### Speedograph Filters.

We can also supply the chrome pancake type Speedograph filter for those who prefer the classic style filter and are not worried too much about efficiency.



## Carburation

### SU & Stromberg Carburetors - Note For SU Carburetors.

If maximum power from SU's is required, there have been a number of articles, see Books & Manuals, about how to flow these carburetors and, if followed carefully, will allow them to perform much better at high RPM.

### Note For Stromberg Carburetors.

Due to the demise of the Zenith factory in England, spares availability is getting more difficult, so the chance of maintaining these in serviceable condition is very small. Therefore, we would recommend that you convert to the SU HS6 carburetors.

TR250/TR6 USA models use a full emission type of carburetor which means that the amount of modifications available for normal use is very limited. For cars which need to retain the emission settings there are no legal types of modifications for road use. For competition use the carburetors can be extensively reworked internally which can also entail the changing of the needle holders so that a reasonable amount of mixture adjustment can be available.

Where it is not essential for emission controls to be retained, then the change to normal type SU HS6 carburetors will release a reasonable amount of power without any difficulty and can be very worthwhile. The carburetors only need to be changed, as the linkage can be retained, as can the standard air filter, or change to K&N type.

### SU Carburetor Needles.

For specific use of alternative needles please refer to Page 51 in this tuning section.

### SU Carburetor Grose Jets.

Grose-Jets with their modern technology don't stick open like the old needle and valve units. Jets are sold individually.

### SU Carburetor Waxstat Jets.

If you have a vehicle fitted with SU carbs that use the Waxstat jets, then here is the answer to your prayers. Waxstat jets can give problems in hot weather/town use as they tend to weaken off the mixture too much when hot and don't allow a good idle, this can be corrected in two ways; new waxstat jets or, our conversion kit, TT1459, to normal fixed jets that will cure the problem.

### Weber & Dellorto Carburetors.

This conversion is available for triple carburetors only and is suitable for all 2.5 models. We recommend that this conversion is used when at least PlusPac B is being carried out, as the main benefit with these carburetors is the improvement in top end breathing, whilst when set up properly they will extend the lower power bands as well.

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### Carburation cont...

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**Inlet Manifolds.**

The TriumphTune manifolds are cast with linkage pedestals that use a single cross bar with separate operating levers to each carb. The linkage kit includes all the necessary fittings for easy installation. Fuel pipes are not included as these vary depending on carbs being used. We can supply all parts necessary separately.

**Do You Fit 40's Or 45's?**

The recommended size of carburettors is for the 40's to be used, though for full race use and ultimate top end power the 45's can be fitted. For a road car the chokes should be 28/30 to give the best all-round power, the choke size will alter the drive-ability considerably of any conversion. The 45's jet setting will depend on application and can only be set-up on the car on a rolling road. For listings and jet settings please refer to page 52.

**Weber/Dellorto v Fuel Injection - Pi.**

The Pi system can be made to produce slightly more BHP when everything is in A1 condition, but if the reliability of your system has been variable then the triple carb set-up may well prove to be a viable alternative, as once they have been jetted correctly there is only the normal idle settings to be adjusted.

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### Fuel Injection

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The Pi system can be retained for all applications, with suitable modifications. The power output from the Pi engine, as detailed in the PlusPacs pages, may vary according to the way the engine is built.

**Metering Unit.**

The metering unit if it is in good set-up condition will not require readjustment for road use. However, for competition use the top end setting will normally need attention when being set up on a rolling road. The type of metering unit used will not matter as they can be adjusted to suit.

**Pre 1972 TR5/6 Models.**

On these models the metering unit does not normally require any alteration up to PlusPac C, after which the fuel settings may need correcting to suit, on the car on a rolling road.

**Late TR6 And Saloons.**

For these models the fuel supply will require attention after PlusPac B. This can sometimes mean only the substitution of the springs, S1873, and the advancing of the metering unit timing by 5 degrees.

**Sprint/Race.**

For all models where the car is used for sprint/racing use, then we can offer a specially reset unit to suit the TT10405/TT1706 camshafts. These units may not always be completely correct in the fuel settings for your car to produce maximum power, but will be close to it.

**Airbox.**

You can improve air flow by adding two 3" diameter holes to the outer casing and use the K&N, KNE87, element, this will then flow enough to suit most uses. The airbox can be removed and replaced by separate ram pipes and/or separate K&N elements. These are available to special order and would entail the complete re-adjustment of the metering unit to suit. The cost of the ram pipe conversion is not cheap.

**Inlet Manifolds.**

Although there are a number of types the overall effect is not so important, as the mixture can be adjusted to suit. For converting late '72 on Pi models to 150bhp specification, we recommend the use of the PlusPac B and the metering unit adjusted to suit, rather than trying to install early specification parts, cam and head, to the late injection, as this never works well. Although only the camshaft, head, metering unit and inlets were changed, it is not easy to try to retro fit the conversion, even when installed the power is not as much as the PlusPac B.

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### Fuel Injection cont...

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**Injectors/Pressure Relief Valve (PRV).**

These do not need any special attention for road/competition use, other than being in good condition. The injector must give a good cone spray when tried out of the manifold. The pressure relief valve only needs to be to the correct setting to suit the type of fuel pump being used.

**Fuel Pipes.**

These are all as standard, although the injector pipes can be supplied in Aeroquip stainless Steel for improved appearance. All the standard flexible pipes are available separately.

**Fuel Pump.**

The standard Lucas fuel pump can still be repaired and retained, although this is now becoming more difficult due to the close tolerances that the pump section must run under. We can offer an alternative pump which uses the fuel as a coolant as well, this does not run at the top pressure of 95lbs but at 85 lbs. This also requires the changing of the PRV settings to suit, or replacing with a new one to the lower setting.

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### Engine Modifications

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See also: General Engine Preparation at the end of this section.

**Cylinder Block.**

For full race engines, camshaft bearings can be fitted as they can save scrapping a block if excess wear is found on cam bearing surfaces. Use 3 x 142647 plus 2 x 142648 bearings. The bearings will require to be reamed to size after installation. The front bearing retainer must also be checked and replaced. We have a special tool, GAC5076, that can be used for fitting the cam bearings.

**Cylinder Liners.**

If you are modifying your engine, then you really ought to think long and hard about fitting brand new liners - whether or not you intend to fit oversize pistons.

**Pistons.**

Standard pistons are available up to plus +0.060 and we recommend that only the 'three ring' type are used as these are far more reliable a unit. General preparation modifications include the radiusing of the lower piston edges and of the ring ends. Clearances are to be as per piston manufacturers specifications, settings for race spec' can be up to 0.004/5" extra. Set the piston ring gaps to 0.012". We also supply forged aluminium pistons for outright competition use, which are available in standard, +1mm and +2mm

**Con Rods.**

As well as lightweight con rods, in forged steel, we also supply a competition con rod bolt kit, which are made from a high grade material that gives greater control of clamping pressure. Always use Loctite when assembling.

**Main Bearing Caps.**

The standard caps do not normally require any special work, although it is essential to ensure that the markings are noted and that the caps are re-fitted in the correct position. We recommend that you fit TriumphTune high grade bolts, BH607241X, for extra reliability.

Special Note: A factory modification in 1971 deleted the use of locking washers on main bearing cap bolts, shorter bolts (2 3/4" long) were introduced at this time. Bolts measuring 3" from under the head to the end should be used with locking washers, whereas the less desirable shorter bolts should not be used.

**Thrust Washers.**

These require to be installed at the correct clearances and then silver pinned or doweled into position to ensure they cannot drop out.



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## Engine Modifications cont...

### Crankshaft.

No special work is required, apart from careful balancing of the rotating assembly, crankshaft, flywheel, clutch cover and pulley. The tuftride hardening process is recommended for extra safety. Shot peening is also worthwhile when available.

For racing applications, the crankshaft can be micro polished an extra 0.001" under size for more clearance to assist in extra oil supply to surfaces. The main bearing oil supply holes can be tear drop shaped in direction of rotation, again to assist in oil supply, only really needed for sprint/race engines.

### Sump.

As well as standard sumps, we also supply aluminium and magnesium sumps for those who want that little bit extra. For fast road use baffling is very worthwhile, see General Engine Preparation. For racing use we can also supply a slightly larger sump, remember also to extend the oil pickup.

### Cylinder Head.

These heads do not require much work to the ports, but it is still an important part of improving the flow through the engine for the head to be gas flowed correctly.

The important area is the valve seat/throat area with general cleaning of the rest of the ports. The shape and size of the throats is very important to mid/top end power. All of this work can only be carried out by careful hand operation to match the throat shape to our template design.

Note: The compression ratio will require to be increased slightly to 9.65:1 for UK road use. For European use, 9.5 or lower depending on which is preferred.

### Modified Heads.

Stage II modifications normally include the reshaping of standard valves, flowing the ports, throats and slight reshaping of the chamber, uprated springs and standard guides are also fitted. Can also be supplied with bronze valve guides.

Stage III uses large inlet valves, much more work to valve throats and chambers. Supplied with new valves, alloy valve caps, uprated springs and bronze guides. This head is suitable for fast road, sprint and competition use. Compression ratio is to your own requirements depending on the country and the application.

We normally suggest for the UK that a 9.65:1 ratio is used for road type cars and, for competition use, up to 11.0:1 may be required. For Europe a ratio of 9.5:1 (or lower) is normally recommended. All work is now carried out to your own unit and the modification will depend on the condition of the component when we inspect it at our works.

### Valves.

The standard shape of the valve restricts the flow through the seat area substantially, especially if fitted low in the head - due to previous repairs, out of necessity. TriumphTune competition valves use a much slimmer design for vastly improved flow and extended life. The material we use, EN21-4, is one of the hardest available for valve application.

There are two shapes for the inlet valves one for 2.0 Litre models with a flat rear shape to the head for higher revving engines and, the 2.5 Litre design which is for power up to 6000rpm.

Standard Valves;	Inlet	Exhaust
2.0 Mkl	1.31"	1.19"
2.0 MKII & 2.5 Early	1.44"	1.25"
2.5 1972 On	1.44"	1.19"
TriumphTune Valves		
2.0 MKII	1.45"	
2.5	1.45"	1.28"

### Head Gaskets.

There are two main types of standard gasket used on this range:

**Early Type Heads - No Tag.** These are for the flat engine block.

**Late Type Heads - With Tag.** These heads have a tag on the rear edge, that

## Engine Modifications cont...

protrudes from block at the rear of cylinder head, these are only used with a cylinder block that has a recessed lip around the bores.

### Shim Steel Head Gasket.

The shim steel type is for higher compression engines, 0.020" in thickness, it also enables the size of the bores to be opened out to suit race type cylinder head modifications with increased chamber sizes.

### Bronze Valve Guides.

Our bronze alloy valve guides are for improved reliability and longer life, especially when being used under duress. Highly recommended for all heads and especially for any competition engine. Specially shortened and reshaped for improved flow.

### Valve Springs.

The special TriumphTune road uprated springs that we have been supplying for many years, are still the best units for a road based car that give excellent valve control without excessive loading on the camshaft. Remove lower spring collars if TriumphTune springs are used, as they are no longer required.

Note; if fitting a roller rocker conversion it is essential for the valve lift to be checked carefully to ensure that there is at least a total of 0.040" clearance between the valve spring coils, at full lift.

### Alloy Valve Spring Caps.

Standard caps are adequate in strength for all applications - including competition, but our TriumphTune Light alloy caps reduce valve loading, and therefore wear on cam lobes. Although stronger, weight saving is approximately 25% - allowing the engine to rev more freely.

### Rocker Shaft.

Although the standard rocker shaft is strong enough for most applications, the Tuftride hardening process will provide improved reliability as well as being more resistant to wear. Before installation clear the internal bore of any residual material and install new end caps.

### Rocker Gear.

The basic rocker assembly does not require extensive modifications, though the use of our rocker arm spacer set can allow the engine to rev more freely.

Check the rocker geometry after fitting an uprated camshaft and/or modified cylinder head. See also; General Engine Preparation - Rocker Arm Action at the end of this section.

### Rocker Arm Spacers.

These spacers replace the standard springs between the rocker arms on the shaft. The springs exert substantial side loading on the rockers to ensure they are correctly positioned to the valves. The spacers are designed so that the rockers can revolve without any side loading and therefore less restrictions. The spacers can require some machining work to ensure that the positions are correct.

### Rocker Arms.

For a road car there is no need to carry out any big changes to the rocker arm. For racing the shape can be amended slightly, and the whole unit can be polished for extra strength.

See also; General Engine Preparation - Rocker Arm Lightening at the end of this section.

### Rocker Pedestal Shims - TT1910.

These are available at a set depth to allow for a nominal skim of the cylinder head. The shim is specially designed to allow for the oil supply to the rear rocker pedestal. Use also when fitting a performance high lift camshaft.





## Engine Modifications cont...

### Roller Rocker Conversion.

This specially manufactured assembly is designed to operate valves with less resistance and with more efficiency. The power increase with the use of these rockers is approximately an extra 10bhp, and the power band can also be extended.

The steel rockers are made with needle roller inserts and have solid spacers already fitted. The end roller tips are specially made in high quality steel for long life. The roller rockers are also designed to give a higher lift ratio of 1.65:1 against the standard of 1.5:1. The design is also specially strengthened so as not to deflect at any time through the operating sequence.

This conversion requires the use of the high pressure external rocker oil feed kit. When fitting this conversion it is essential for the valve lift to be checked carefully, to ensure that there is at least a total of 0.040" clearance between the valve spring coils, at full lift.

1. On installation check maximum valve lift to ensure adequate clearance of valve springs.
2. Before starting the engine, the clearance of the rocker cover must also be checked.
3. Check the push-rods for flexing and replace with tubular type if necessary.
4. Use with uprated valve springs.

### High Pressure External Rocker Oil Feed Kit.

The cause of most failures in the rocker gear is the lack of oil, this kit will overcome the problem for all cars, road or race. This specially designed high pressure external rocker oil feed kit improves oil pressure at the rocker shaft by giving a constant oil supply directly from the cylinder head oil passage.

### Push Rods.

The standard push rods are adequate for all but full race applications, although the length may not be correct when a modified cylinder head is used, we have therefore made the tubular type in various lengths to suit most requirements, though these may be adjusted to suit your application by machining. On fitting check the rocker geometry, see General Engine Preparation - Rocker Gear.

Model;	Length (ins.)	Part No.
2.5 Pre 1972	8.11"	TT1233
2.5 1972 On	8.25"	TT10433
2L MkII	7.98"	TT1633

For those wishing to experiment, we also list on page 55 a range of solid pushrods.

### Camshafts.

For detailed listings and specification/use, please refer to page 57.

## Engine Modifications cont...

### Lightened & Hardened Cam Followers.

When changing the camshaft, you must fit new cam followers, otherwise your new cam will not last very long. The amount of weight that the camshaft has to lift each time restricts the revving capabilities of the engine, therefore the use of our lighter cam follower, TT1209, is strongly recommended. The lighter variety will also reduce loading on the camshaft lobes for extended life.

## General Engine Preparation

When carrying out any engine rebuild, it is very important to use an accurate workshop manual, this should be a genuine version as these tend to give the various model changes and the correct torque settings.

When building any engine, the only correct way is to make sure that the area being used for assembly is clean, not to mention the components themselves prior to assembly, so that there is no chance of unwanted bits getting into the engine. If you are not sure of the correct assembly procedure, follow the workshop manual closely. Full engine preparation will include some or all of the following modifications, depending on your own requirements.

Here we shown some formulae which are useful when modifying an engine.

Swept Volume =  $\pi r^2 h = 3.142 \times (1/2 \text{ bore diameter})^2 \times \text{stroke}$ .

Cubic Capacity = swept volume  $\times$  no. of cylinders.

Compression Ratio = swept volume + chamber volume.

(Chamber volume where chamber volume includes gasket, piston, if dished, and amount of deck height).

All dimensions should be in centimetres, though of course inches are a more popular measurement in the U.S.A.

## Cylinder Block & Components

The block must be cleaned thoroughly before any machining work is carried out and then again afterwards. The cleaning should cover the oilways and waterways to make sure that the fluids will flow correctly.

### Oilways.

The cleaning of the oilways will require the removal of the screwed plugs in the engine block and when re-assembling use a suitable thread sealant. The machining left-overs or fazes, need to be removed whilst this work is carried out.

### Waterways.

Make sure that all deposits are removed to ensure adequate water flow, this is essential if a larger capacity is being used.

### Cylinder Bores.

When carrying out re-boring work make sure that the piston supplier's recommendations are complied with.

### Thrust Washers.

These can be normally doweled into position once the required size has been found. This ensures that the washers cannot revolve or move during arduous applications.

### Main Bearing Caps.

The standard cap does not normally require any change although the smoothing of the surface will tend to strengthen the unit. Polish, smooth and shot-peen the caps to relieve surface stress and reshape to give a uniform cross section.

It is possible - especially for racing use, to increase the oil supply to the centre main as this in turn supplies the con-rods. Drill out the feed hole to 5/16", entry is made from oil gallery end. The distributor bush will also require removal.



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## Cylinder Block & Components

### Oil Pump.

Always use a new oil pump and preferably improve its capacity - especially for competition work, by carrying out the following: Reduce the end float of the spindle/base plate, this will then restrict pressure loss.

Make sure that the rotor clearances are as small as possible, as again this will improve the pumps performance.

Always check that the rotor edges are smooth to reduce the chances of them picking up on the top or bottom plates.

Check that the new pump outlet aligns with the cylinder block inlet aperture, amend as necessary.

### Oil Pressure Relief Valve.

The valve itself is recommended to be seated into the block, so that the oil will not leak past easily. The pressure spring can be increased to improve the overall oil pressure, especially when an oil cooler is being used. If the TriumphTune uprated spring is fitted make sure that there are no extra washers also installed.

### Crankshaft.

If you are re-using your old crankshaft it is recommended for the oilways to be cleaned out properly - a pipe cleaner is very good for this. If the plugs are removed use a thread sealant when refitting. Tuftride hardening of the crankshaft is highly recommended to improve the life of the unit at a reasonable cost, this can be for road or competition use. When tuftriding is carried out, the crankshaft must then be re-machined or polished back to the correct journal size. Normally the journals are micro polished to give a good oil surface.

### Flywheel.

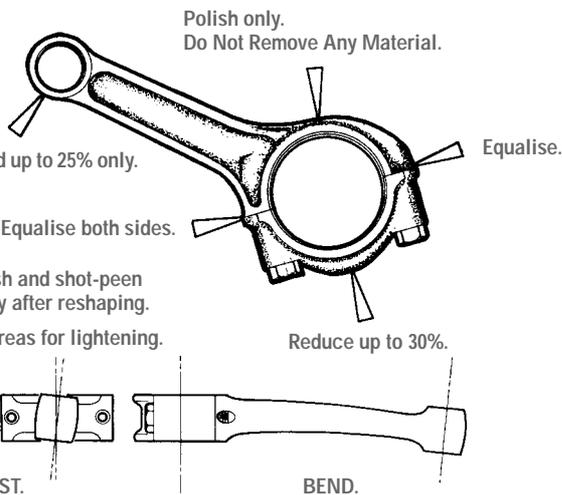
Lightening of the flywheel, to reduce the rotating weight will enable the engine to pick up and rev easier which is highly recommended for all fast road cars. This work is usually carried out to your own unit at the same time as balancing. Alternatively you can fit one of our lightweight steel flywheels.

### Con Rods.

When rebuilding an engine always use new con rod bolts, replace the little end bushes and ream to size.

For normal use, the standard con-rods are maintained, although they can be lightened to improve the strength, as illustrated. Unfortunately, the cost of us carrying out this modification is prohibitive as a service because of the labour time required.

- A. Check the rod for twist and bend defects, and also the big end for an out-of-round condition, replace any that are faulty.
- B. Check the overall length to make sure they are all equal.
- C. Check the little end bushes and replace, line bore to size.



## Cylinder Block & Components cont...

### Pistons.

For a road car the standard piston is perfectly okay as long as a solid skirt type is used. We would not recommend the use of a race piston for road use, unless it was originally designed for both applications.

### Piston Rings.

Before final installation check that the width of ring is correct for your piston. Modify the ring ends after the gaps have been set, so that the edges do not dig into the bores.

### Oil Seals.

The standard oil seals, front and rear, should be replaced at any rebuild. The rear unit should be centralised carefully to stop oil leaks at high engine speeds.

### Crankshaft & Camshaft Timing Chain & Gears.

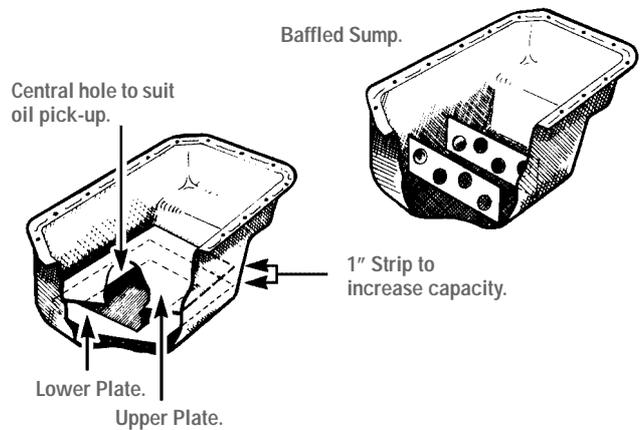
If a performance camshaft profile is being used, we recommend that you fit a new timing chain and check the gears.

### Tensioner.

The standard tensioner needs to be replaced if a new chain or gear set is being fitted.

### Sump.

For a road car it is not essential to carry out any changes, but for competition use the sump must be baffled to stop the oil surging away from the oil pump when cornering. Details as per the diagrams, if the capacity is increased, then extend the oil pickup pipe to suit.



## General Rocker Gear

By reducing the weight of the moving components in the rocker gear, followers, valves, caps etc... and also the resistance of the rockers, the rev range can be improved without increasing the loading on the camshaft.

### Rocker Arm Action.

The rocker arm is designed to move across the valve tip in a wiping motion, this leaves a witness mark on the stem top. To be certain your engine geometry is correct, remove the rocker arm and apply some engineers blue to the valve tip and rotate the engine through one revolution with the rockers correctly adjusted and the engine in its final specification. Remove the rockers and the valve tip will show the offset of the rocker geometry.

### Centre.

This is correct equally offset, so no excessive wear on either side of the guide will be found.

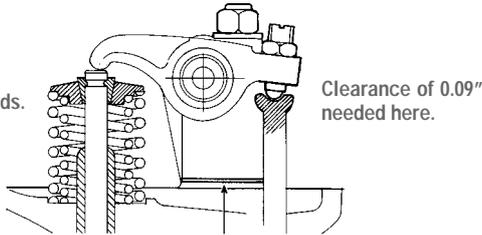
### Manifold Side.

If the mark is predominantly on this side, then the push rods and/or the pedestals must be shortened to correct this. With the wear on this side there will be excessive loading on the valve guide that will cause premature failure.

### Rocker Side.

If it is to this side slightly, then this is no problem. But, if it is a long way off, then you can fit a pedestal spacer shim, TT1910, to compensate, or alternatively, fit longer push rods.

Alternatively use TriumphTune (shortened) push rods.



Pedestal Shim - TT1910.

Note: Do Not use lower spring collars with the inner springs when fitting TriumphTune valve springs.

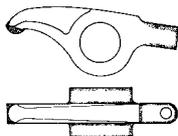
### Pedestal Rocker Shims (TT1910).

These are available at a set depth to allow for a nominal skim of the cylinder head. The shim is specially designed to allow for the oil supply to the rear rocker pedestal. Use also when fitting performance high lift camshaft.

### Lightening Rocker Arm.

For race engines, these can be reshaped as illustrated to improve the strength and reduce the weight. As this work is very labour intensive we would suggest that you carry out these alterations yourself.

Remove the shaded areas to lighten standard rockers, its also useful to polish them.



### Valve Springs.

It is essential to check the springs for coil binding or being solid at maximum lift. Our TriumphTune valve springs are specially made for our high-lift cams.



## Performance & Tuning

On the following pages, you will find a range of quality components that will generally improve the performance and handling of your classic. Please don't forget, before increasing the power output and speed of any vehicle, you should ensure that your brakes, steering, chassis etc... can cope with the modifications.

## Fire Extinguisher

### Fights A, B & C Fires\* - Better To Be Safe Than Sorry!

Keep one of these compact fire extinguishers in the garage, or even in the cockpit, it may just save your car, or a life. It has an easy to read pressure gauge and comes with mounting bracket. Not FIA/competition legal.

\*Class A: Combustible fire, wood, paper, textiles. Class B: Fuel fire, petrol, paint, grease, oil. Class C: Gaseous and electrical fire.



01 |

- |                            |         |
|----------------------------|---------|
| (01) Chrome Finish 1kg     | MXV9002 |
| Carbon Effect Finish 600gm | MXV9001 |

## Seat Harnesses

Securon 4 point harness kits do not include crotch, shoulder strap pads, or eye bolts (4 bolts per harness), all these items must be ordered separately.

### Race Harness Kits;

- |   |             |
|---|-------------|
| 4 Point Harness Kit* - Red  | TT7965      |
| (*Suitable for national and general purpose motorsport use only, and is not FIA approved. If you wish to use this harness for general road use you must also fit the crotch strap, TT7966). |             |
| 3 Point Harness Kit** - Black   | SBH605BLACK |
| 3 Point Harness Kit** - Blue  | SBH605BLUE  |
| 3 Point Harness Kit** - Red   | SBH605RED   |
| 4 Point Harness Kit** - Black   | SBH655BLACK |
| 4 Point Harness Kit** - Blue  | SBH655BLUE  |
| (02) 4 Point Harness Kit** - Red  | SBH655RED   |
| (**Suitable for national, general purpose motorsport and general road use).   |             |
| 4 Point Harness Kit*** - Black  | SBH692BLACK |
| 4 Point Harness Kit*** - Blue   | SBH692BLUE  |
| 4 Point Harness Kit*** - Red  | SBH692RED   |
| (***)Suitable for national and general purpose motorsport and are FIA approved for international use. They are not suitable for general road use).  |             |

## Seat Harness Fittings

### Race Harness Fittings;

- |                                   |         |
|-----------------------------------|---------|
| Crotch Strap                      | TT7966  |
| Shoulder Strap Pad - Red (Pair)   | TT7970  |
| Shoulder Strap Pad - Black (Pair) | TT79702 |
| Eye Bolts (Pair)                  | TT7967  |
| Reinforcing Plates (Pair)         | TT7968  |



# 28 Performance & TUNING

## Roll Bars (Road Use Only)

Roll bars not only look good, they are a vital piece of safety equipment for all convertibles. Our high quality roll bars come with all necessary fittings and full installation/fitting instructions.

Narrow fitment bars mount neatly on the differential cover area between the wheel arches. Wide fitment roll bars are mounted on the main floor and on top of the wheel arches. Note: Wide fitting bars reduce rearward seat movement by approx. 2.5" (50mm).

Choose between the aero or national style bars.

## Aero Style Roll Bar (Road Use Only)

The aero style roll bar is manufactured from high quality tubular steel and is vinyl covered for that luxurious appearance.

(01) TR5/TR6 Narrow Fitting	TT7151
TR5 Wide Fitting/Surrey Top	TT7251A
TR5/TR6 Wide Fitting	TT7251

## National Style Roll Bar (Road Use Only)

Our national style roll bar is of the single hoop design with twin back-stays. Manufactured from high quality tubular steel, they are painted black to give that true sports car look.

(02) TR5/TR6 Narrow Fitting	TT7150
TR5 Wide Fitting/Surrey Top	TT7250A
TR5/TR6 Wide Fitting	TT7250

## Roll Bar/Cage Competition (Not For Road Use)

These high quality bars are jig built in 1.5" CDS (Cold Drawn Seamless) tubular steel, they are made to MSA/FIA specification. Finished in black, they are supplied with the necessary fittings. Our FIA competition roll bars are similar in style and finish to our national style road bars. They also have an extra diagonal brace towards the driver for further strength and integrity.

Note: Front cage, due to the forever changing safety regulations controlled by the RAC, we are re-developing our front cage system, for latest information please call your local Moss branch.

**TR5 & TR6 Rear Roll Bars;**

Narrow Fitting Bar	TT7153
Wide Fitting Bar	TT7253

## Door Bars

We also supply door bars for extra protection, that also link the front cage and rear bar at low level.

Door Bars (Cut to Fit)	ADB112
Door Bars (Universal)	TMG70756

## (03) Lightened Body Panels

Jim Clark was probably the quickest Grand Prix driver of the early 1960s. Allegedly a shy person, on the rare occasions he was interviewed, everyone listened. When asked how he drove so quickly, one word was adequate... concentration. His boss, Colin Chapman might have hoped it was something to do with his Lotus F1 cars. He is one of several people credited with saying a variation on the add lightness theme. He certainly did that.

The harder any vehicle is driven, the faster parts wear out. A reduction in all-up weight will slow this process. Let's start the lightening though, where it doesn't cost anything, by emptying the car of all unnecessary bric-a-brac, back onto the garage shelves.

Lightweight outer body panels will give you an appreciable saving in weight, and they don't have to be fitted in pairs or sets, merely as required. By the time the panel(s) are fitted and painted the material cost is not significant.

## (GRP) Fibreglass Body Panels For TR5 & TR250

This range of products are made from good quality fire retardant fibreglass to original patterns. The stocked range is all in road weight specification. Race weight panels may be available to special order.

Bonnet Assembly	TT7107
Bonnet Shell Only (Race Use)	TT7107A
Upper Valance	TT7101
Lower valance	TT7102
Front Wing (RH)	TT7106
Front Wing (LH)	TT7105
Gearbox Cover	713569FG
Plastic Gearbox Cover	713569SAP
Tunnel Cover	809046FG
Rear Wing (RH)	TT7111
Rear Wing (LH)	TT7110
Boot Lid	TT7113
Rear Valance Assembly	TT7114
Backlight Frame	566993X
Perspex Backlight	802343X
Surrey Top Roof	566994X

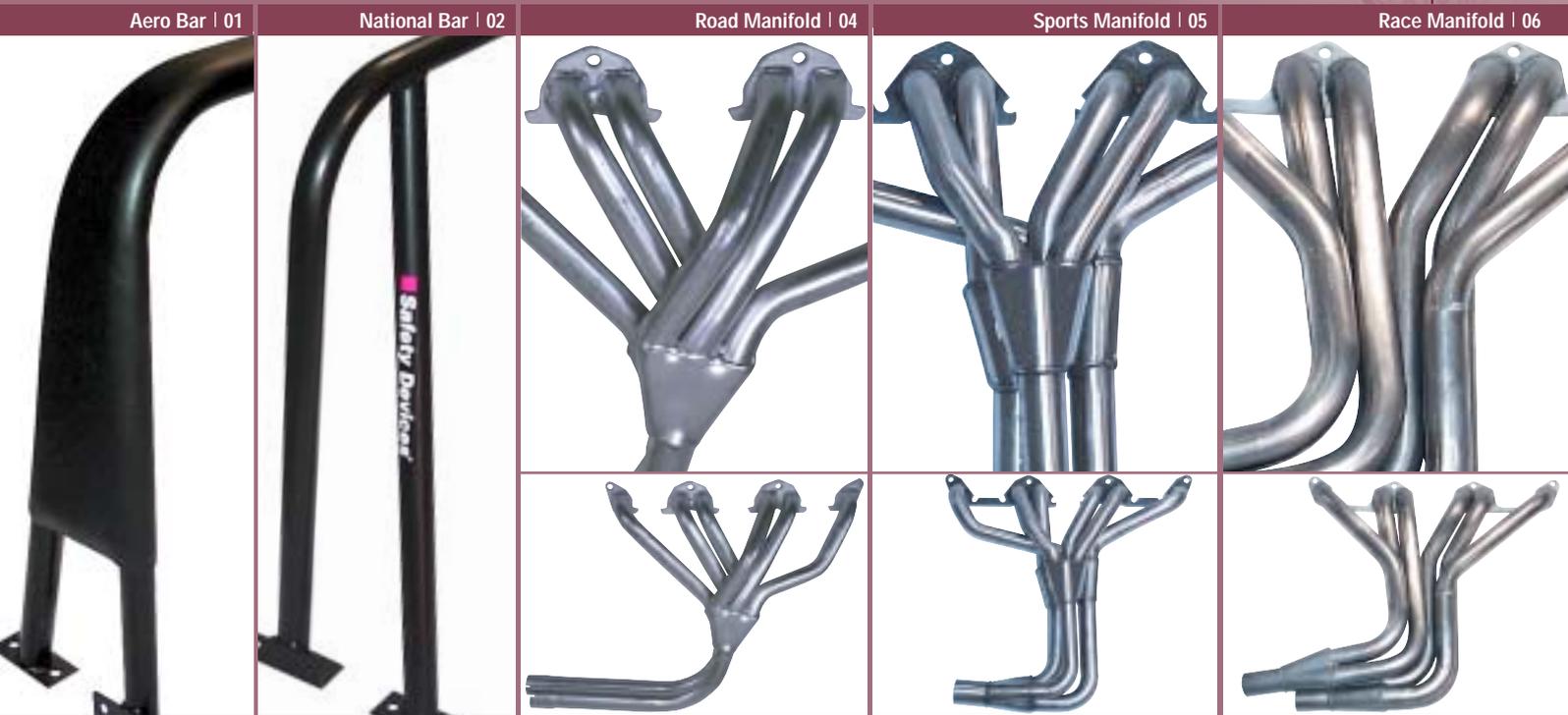
## Aluminium Body Panels For TR5 & TR250

Aluminium panels will give you even more weight savings.

Front Wing (RH)	950110AL
Front Wing (LH)	950109AL
Door Skin (RH)	812776AL
Door Skin (LH)	812775AL
Rear Wing (RH)	850476AL
Rear Wing (LH)	850475AL
Boot Lid	813650A
Surrey Top Roof	903979



Lightened Body Panels Sold Individually.



## Aluminium & (GRP) Fibreglass Body Panels For TR6

Our range of (GRP) fibreglass products are made from good quality fire retardant fibreglass to original patterns. The stocked range is all in road weight specification. Race weight panels can be made to special order. Our aluminium panels will give you even more weight savings.

### Aluminium Panels;

Door Skin (RH)	812776AL
Door Skin (LH)	812775AL

### Fibreglass Panels;

Bonnet Assembly With Hinge Mountings	TT7207
Bonnet Shell Only (Race Use)	TT7207A
Front Valance	TT7201
Front Wing (RH)	TT7206
Front Wing (LH)	TT7205
Gearbox Cover	713569FG
Plastic Gearbox Cover	713569SAP
Tunnel Cover	809046FG
Rear Wing (RH)	TT7211
Rear Wing (LH)	TT7210
Boot Lid Assembly	TT7213
Boot Lid Shell	TT7213A

## Moss TriumphTune Extractor Sports Manifolds

Tubular exhaust manifolds are the first step to improve power output. They improve exhaust gas flow allowing the engine to breathe far more efficiently - unlike the restrictive basic unit. Our tubular manifolds are produced using mandrill bending equipment to give full diameter pipe bends.

### We Offer 3 Types Of Manifold:

Road	: Improves mid range power.
Sports	: improves mid to top end power.
Race	: wide power band for maximum power.

### Road Manifold

This very popular and easy to fit 6-2 mild steel tubular manifold is for use with all our standard and twin sports exhaust systems. Suitable for Pi's, SU and Weber carb systems, it is a direct replacement for the standard manifold.

(04) Road Manifold (Pair)	TT1200
(Note: For '73 on Pi's, spacer TT9220, is required to clear the throttle linkage).	

## Sports Manifolds

We offer 2 stainless steel sports manifolds, both with fully welded joints.

### Type 1 Long Branch Type Sports Manifold.

Our 6 into 2 long branch manifold, TT1230S1 is suitable for 1973 on models with carbs, all Pi's, and Weber conversions. Ideal for modified road cars. If fitting to twin sports exhaust, special front pipes are required. For single pipe system we supply a Y piece.

Type 1 Sports Manifold (Pair)	TT1230S1
Y Adaptor For Single Exhaust	TH6003

### Front Pipes For Twin System;

Right Hand	FSTH604
Left Hand	FSTH603

### Type 2 Pulse Type Sports Manifold With Short Pipes.

The 6-3-1 manifold, PXTH604, is of the pulse design, with short secondary pipes for easy fit. Suitable for TR5/6 with carbs, all Pi's, or our TWM0080 Weber conversion. Ideal for mild competition engines.

Designed for single pipe exhaust system, but can be adapted to fit both standard and sports twin systems by using adaptor PXTH605.

(05) Type 2 Pulse Type Sports Manifold	PXTH604
Adaptor For Twin Exhaust	PXTH605

## Full Race Manifold

This is a 6 into 3 Pulse type manifold with long branch pipes and slip joints. Specially designed for maximum power with wide power band for fully modified engines. This full race manifold is designed to couple directly to our competition exhausts.

Note: The end joints are racing slip joints, so, if fitted to a road going car, they must be sealed for the MOT.

(06) Pulse Type Full Race Manifold (Pair)	TT1740X
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### Junction Pipe;

For Twin Sports Exhaust	TT5222
For Single Exhaust	TT52221

### Adaptor Sleeve;

For Single Bore 3.1 (2.25")	TT5219
For Single Bore 3.1 (2.375")	TT5219X