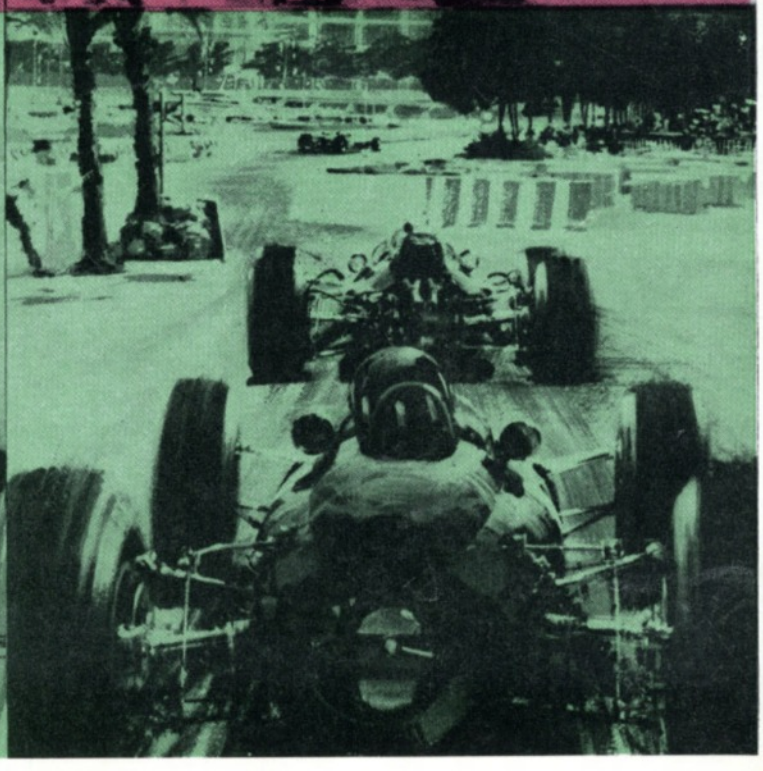
Roadholder

Price 1 shilling









Suspension Tuning Equipment

contents

3 Suspension Tuning and Choosing the Degree

4 What a Shock Absorber Does

5 Work Diagrams

6-7 The Roadholder Range of Suspension Tuning Equipment

8 Fulford—Research and Development

9 "Improving the Breed" by Alan Platt

10 Racing and Rally Successes

11 "Practice for Perfection" by Graham Hill

12 "Rally with Care" by John Miles

13-22 Catalogue Section and Rally Check Points

23 Selectaview Dashboard Adjustable Wing Mirrors

Cover pictures are from original paintings by Michael Turner.

Roadholder SUSPENSION TUNING EQUIPMENT

Armstrong Patents Company Limited, manufacture the world's widest range of shock absorbers and suspension control equipment. This range includes Telescopic Shock Absorbers, Lever type Shock Absorbers, Suspension Struts and Telescopic Suspension Units with integral coil springs, many of which are available either manually adjustable or electrically adjustable from a switch convenient to the driver.

For many years Armstrong units have been fitted to the majority of British cars as initial equipment and used by most Works rally teams and almost all British and European racing cars.

The experience and know-how gained over the years has resulted in the development of the Roadholder range of Suspension Tuning Equipment for the motoring enthusiast, race and rally driver.

The purpose of this publication is to assist the driver in understanding the importance of Suspension Tuning and the part it plays in the handling and roadholding characteristics of his vehicle. It is also a catalogue from which can be chosen the equipment to suit his particular requirements.

NOW AVAILABLE FROM

ARMSTRONG Roadholder

SUSPENSION TUNING SPECIALIST



Paddy Hopkirk and Henry Liddon (Mini-Cooper 'S') winners of the 1964 Monte Carlo Rally.

Suspension Tuning for

Improved roadholding
Better steering response
Improved straight line stability
Freedom from wheel tramp and patter

When a motor car is being developed, the Designers and Engineers produce a specification which is suitable for a range of operating conditions and customer requirements. Climatic conditions from the sub-zero of the Arctic to the equitorial regions of Africa, and roads from smooth motor-way tarmac to the boulders and potholes of the Australian bush country have to be taken into account. Our manufacturers must indeed earn credit for the remarkable success they achieve in giving the best possible vehicle to cover the requirements of the majority.

However, getting that "little bit extra" performance from the Standard, G.T., and Sports car is taken for granted nowadays by the majority of motoring enthusiasts the world over. Indeed, there is now an industry of many firms making or modifying the necessary parts to improve performance for most popular models.

It used to be generally accepted that "tuning" was applied to the engine and power unit, but in recent years, there has been such an advance in this field that it has become increasingly obvious that the same degree of specialization and attention must be applied to the chassis, suspension, steering, brakes, tyres and indeed to almost every other aspect of the car.

It will be appreciated that of the whole suspension, the shock absorber probably provides the easiest and simplest source of adjustment, thereby giving the means whereby ride, handling and stability can be adjusted to suit individual requirements.

CHOOSING THE DEGREE OF SUSPENSION TUNING

The Roadholder range offers the enthusiast motorist the means of personalizing his car, increasing the pleasure of motoring and at the same time, making the car easier and safer to drive. Any engine modifications which have been made to improve performance should be complemented by standard or adjustable units from the Roadholder range, which allow the increased performance to be safely utilized. Additionally, the rally and speed event enthusiasts have available a range of shock absorbers, off the shelf, which offer a combination of various degrees of suspension tuning. Fully descriptive details of the units concerned are given on pages six and seven, and the following are suggested stages of suspension tuning, which can be considered.

STAGE	FRONT	REAR	REMARKS
1	FIRMARIDE	FIRMARIDE	Units with increased settings and/or capacity over conventional shock absorbers.
2	FIRMARIDE	ADJUSTARIDE	Rear units would be Adjustaride 8 or Adjustaride 22, depending on application and availability. See catalogue section.
3	FIRMARIDE	SELECTARIDE	
	In some cases, Adjustaride 8 or Adjustaride 22 units are available for front applications. This gives two more stages of Suspension Tuning. It is not recommended that Adjustaride be used only on the front.		
4	ADJUSTARIDE	ADJUSTARIDE	See catalogue section for details of Adjustaride units for front application.
5	ADJUSTARIDE	SELECTARIDE	

Not all stages are available for every car. In some cases, clearance prohibits the installation of some adjustable units. To check available stages for any particular car, it is necessary to refer to the respective model in the catalogue section of this booklet.

EXAMPLES:

Ford Cortina:- Stages 1, 2 and 3 are available.

Jaguar 2.4:- As adjustable units can be fitted to the front, all 5 stages of suspension-tuning are available.



What a Shock Absorber does

The range of suspension tuning equipment offered in this publication comprises the following shock absorbers :

FIRMARIDE Units with fixed increased settings.

ADJUSTARIDE Units manually adjustable with either 8 or 22 different settings.

SELECTARIDE Units electrically adjustable, from switch convenient to the driver, with 4 different settings.

Before looking at this range in detail, it is perhaps important for the function of the Shock Absorber in a suspension system to be understood, as there are many misapprehensions as to its purpose and action.

The role of the shock absorber can be summarised as follows :—

1. To control the oscillations of the sprung mass.
2. To smooth the oscillations of the unsprung mass.
3. To reduce suspension crash-through under extreme conditions.

The way in which a shock absorber performs this function is to transform the kinetic energy of the masses involved into heat by means of the hydraulic valving.

The valves and hydraulic oil in the shock absorber offer resistance to spring movement and in doing so, absorb the energy created and damp the vibrations of the spring. The effectiveness of a shock absorber is determined by the amount of energy it can absorb and it follows, therefore, that one of its prime requirements is to be able to quickly dissipate the heat generated to the surrounding atmosphere or metal-work, otherwise the function of the unit would be adversely affected.
Any reduction in efficiency (known as "Fade") is minimised by the Armstrong system of "one way" oil circulation which moves all the oil all the time and thus utilises all the available surface area for heat dissipation purposes.

Adjustment of Bump and Rebound Setting

Spring vibration is controlled and energy dissipated on both bump and rebound suspension strokes and the proportion of the work done by the damper and matching of the settings to the requirements of the suspension affect the efficiency of the resulting system. Thus, it is most important when a damper setting change is made that both bump and rebound settings are altered.

work diagrams

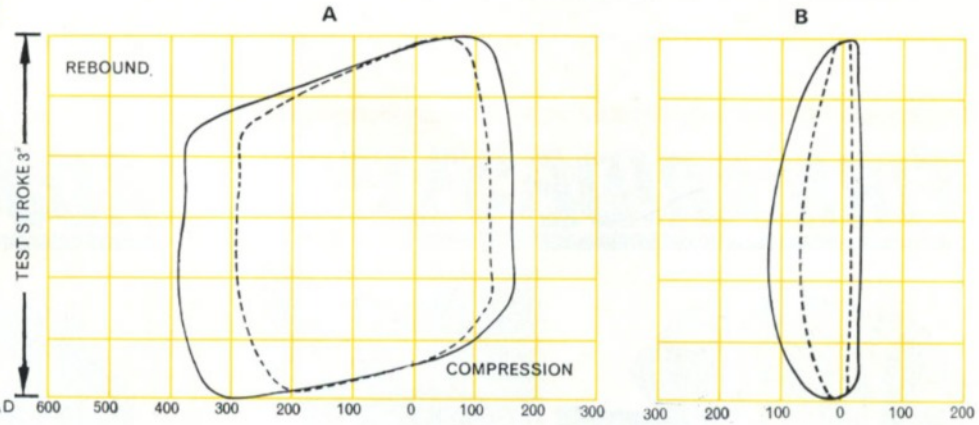
The settings in a particular shock absorber are read from work diagrams produced by graphing the unit on a Torque test machine. It will be noted that the Work Diagrams are taken at different speeds as indicated and correspond generally to functions one and two of the shock absorber as previously mentioned. It is obvious from these diagrams that the resistance of the damper is not a direct function of speed and it is the shape of the resistance/speed or "build-up" curve which has to be accurately determined to obtain the best results in any given application. In this respect, Armstrong Patents Company Limited have unrivalled experience, being the major suppliers of initial equipment in this country. It is interesting to note that a work diagram is taken on EVERY shock absorber in the Armstrong factories—not just a percentage, but every single unit.

FIRMARIDE

Model: AT 7 Telescopic.
These work diagrams show comparison between Standard (broken line) and Firmaride (solid line) shock absorbers at the speeds at which they are checked in the Armstrong factory. Note the overall setting increase of the Firmaride unit.

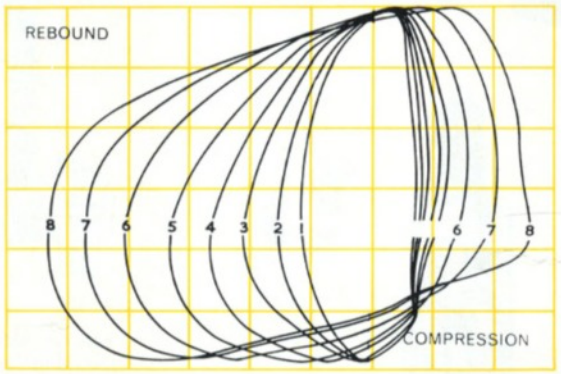
A. Valve Blow-off speed 104 r.p.m.
Mean Piston speed 52 ft. per minute

B. Valve Leak speed 9 r.p.m.
Mean Piston speed 4½ ft. per minute



ADJUSTARIDE 8

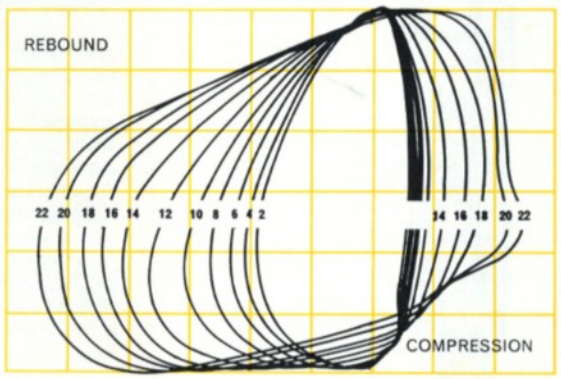
Model: AT 9 Telescopic.
Means of Adjustment:
Screwdriver or external adjustor knob.
Note:
Work diagram shows settings for all 8 positions. Note progressive alteration in both bump and rebound settings.



These work diagrams illustrate the Valve Blow Off settings. Similar variation of setting does, of course occur at all speeds.

ADJUSTARIDE 22

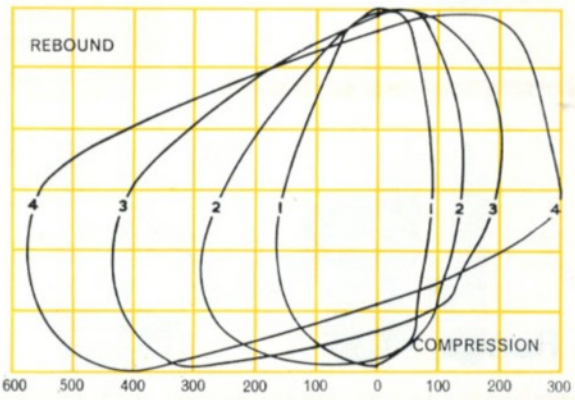
Model: AT 9 Telescopic.
Means of Adjustment:–
External adjustor knob.
Note:
Work diagram shows 11 out of the 22 adjustment positions. Both bump and rebound settings are altered.



Test Data
Valve Blow Off Speed—104 r.p.m
Mean Piston Speed 52 ft/min.
Temperature 61°—70°F.

SELECTARIDE

Model: AT 9 Telescopic.
Means of Adjustment:–
Electrically from 4 position switch convenient to driver.
Note:
Work diagram shows all 4 positions over full range Both bump and rebound settings are altered.



The Roadholder Range of

Developed out of world wide Armstrong successes in all fields of competition, this range of suspension tuning equipment has been specifically designed for the enthusiast, race and rally driver.

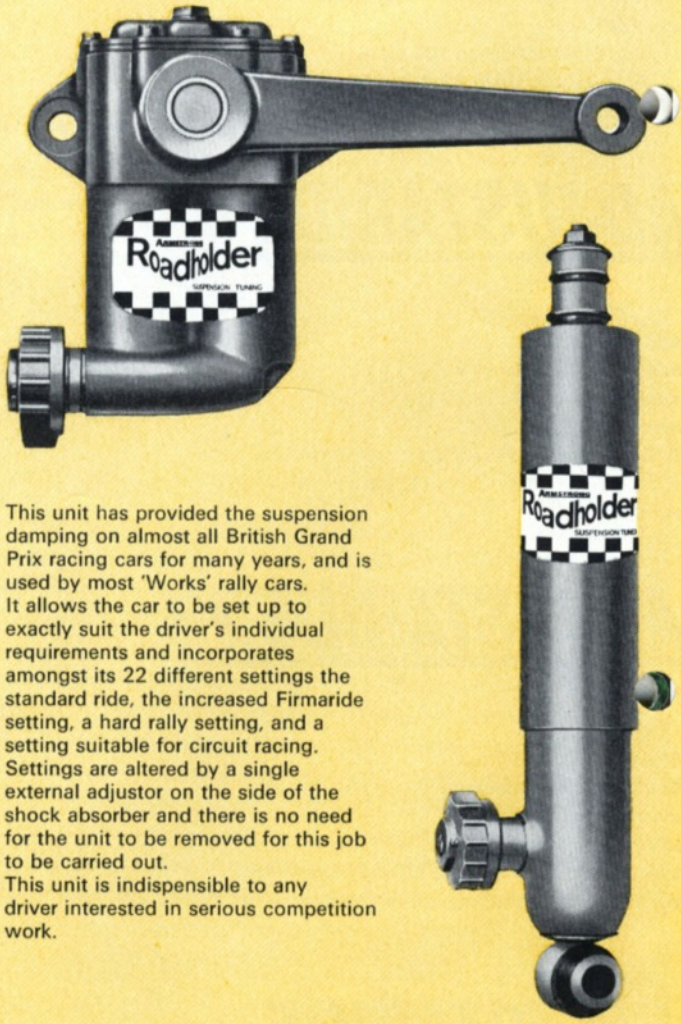
The range covers all types of shock absorber and every unit is of robust construction and manufactured from high quality material. Every piece of equipment is tested before it leaves the factory, and is guaranteed.

FIRMARIDE



These units are non-adjustable with increased settings and, in some cases, increased capacity over conventional shock absorbers. As well as for competition work these units are entirely suitable for normal road use where the emphasis is on road holding.
Firmaride shock absorbers are flexibly designed so that by combination with either electrically or manually adjustable shock absorbers, the car may be set up for the ultimate in road use or competition work.
Many cars used on the road today have varying degrees of engine tuning and modification. Firmaride shock absorbers are designed to provide the necessary degree of suspension tuning to complement these modifications.
Drivers who take a pride in their driving skills will drive better and more safely on Firmaride.

ADJUSTARIDE 22



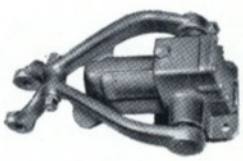
This unit has provided the suspension damping on almost all British Grand Prix racing cars for many years, and is used by most 'Works' rally cars.
It allows the car to be set up to exactly suit the driver's individual requirements and incorporates amongst its 22 different settings the standard ride, the increased Firmaride setting, a hard rally setting, and a setting suitable for circuit racing.
Settings are altered by a single external adjustor on the side of the shock absorber and there is no need for the unit to be removed for this job to be carried out.
This unit is indispensible to any driver interested in serious competition work.



The World's Widest Range







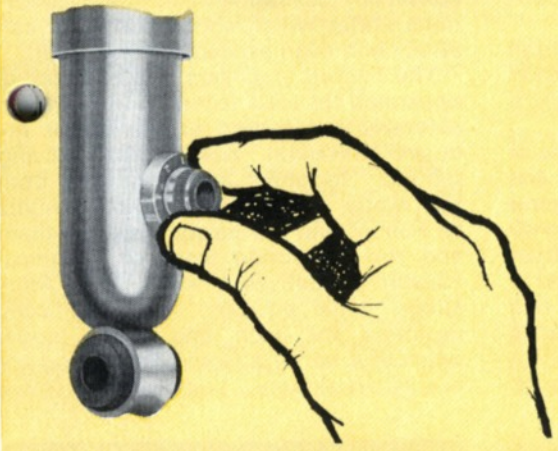


Suspension Tuning Equipment

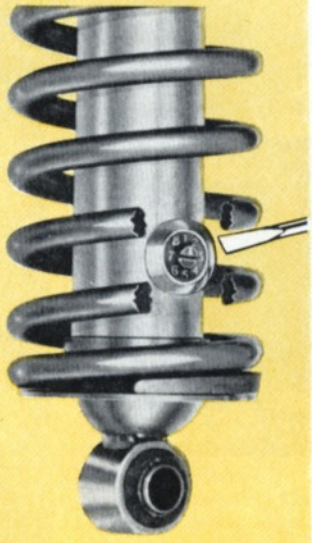
Incorporated in the basic design of the Armstrong range are such features as :—

- ✱ One-way oil circulation, eliminates foaming, fade and loss of efficiency.
- ✱ Simple, robust valve system gives precise settings.
- ✱ Large bearing surfaces reduce wear.
- ✱ Filter cleans oil on every stroke.
- ✱ Multi-lip seal prevents oil leakage and entry of air or dirt.
- ✱ Clean lines free from burrs and welding flashes.
- ✱ One piece end fittings.
- ✱ Mountings tailored to individual applications.

ADJUSTARIDE 8

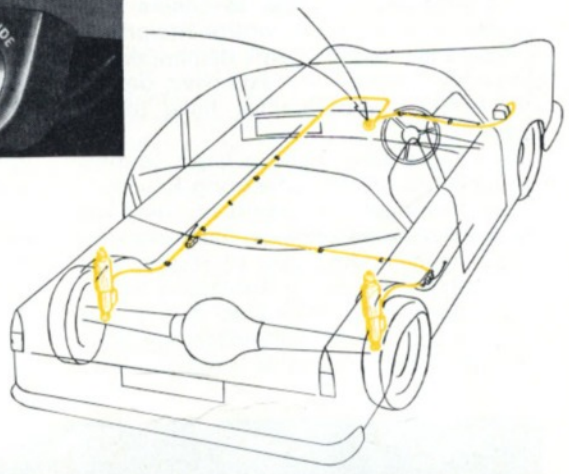


Where an adjustable telescopic unit is needed to fit inside a coil spring, or where there are clearance difficulties, then the latest Adjustaride '8' unit, with neat adjustor mechanism and screwdriver adjustment is ideal.
Here again, is a unit which has been race proved by 'Works' Teams during the last two seasons, and there is no need for the shock to be removed to change settings. The unit covers a similar range of settings to the Adjustaride '22', but in this case, the range is split into 8 positions.



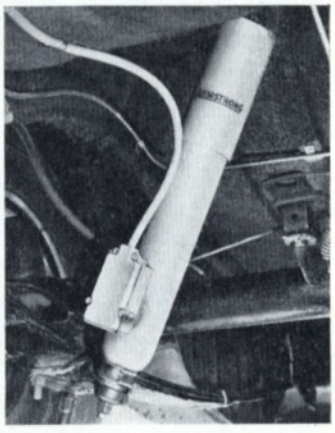
SELECTARIDE

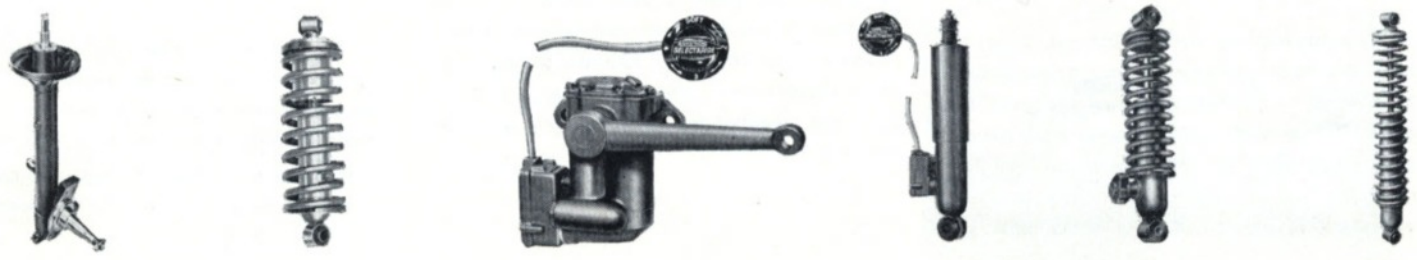




Selectaride is used for rear suspension only. It offers instant selection of 4 settings, by means of a switch convenient to the driver. The settings are : No. 1. softer than standard ; No. 2. standard ; No. 3 equivalent to Firmaride ; No. 4. competition—also suitable for carrying heavy loads, or caravan towing.
Selectaride gives sophistication in ride control as the driver can select at any given time, the most suitable settings for the prevailing conditions.
Selectaride is sold as a complete installation comprising :—

- Matched pair of Selectaride Shock Absorbers.
- Dashboard or bracket type switch.
- Full electrical harness.
- Connection Plugs.
- Fuse and Sealing Grommet.
- All necessary screws and clips.





FULFORD

RESEARCH AND DEVELOPMENT

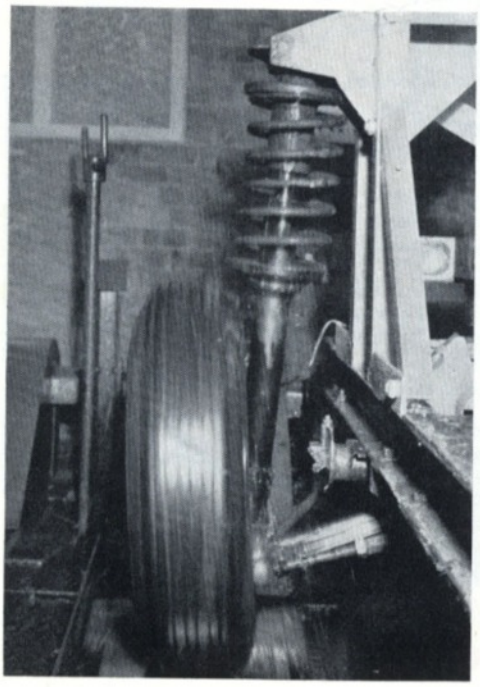
In race and rally, the suspension is tested to the limit in the most arduous and varying conditions. In order to ensure that Armstrong suspension control equipment meets all the requirements demanded by extremely severe use, extensive design and research programmes have to be carried out.

At Fulford near York, a large country mansion houses the Armstrong Research and Development Department. Here 40 specially selected engineers are engaged in the never ending task of testing and developing the existing Armstrong range, searching for improvements, and trying out new ideas. These engineers are divided into specialist teams, each working under a Development or Project Engineer whose job it is to see ideas and developments through all their stages to production release.

Drawing board theories are put through hard, practical endurance trials, and each team is responsible for designing its own apparatus to do this.

Fulford contains many unique pieces of test apparatus. Most dramatic are the bump rigs which hour after hour, day in and day out, simulate road conditions up to 40 miles per hour over surfaces far worse than the most spine jarring mountain track or Continental pavé. There are also rigs which simulate operating conditions liable to be met in literally every country in the world. For example, a regular shock absorber test consists of reproducing Arctic conditions of 50° below zero and conversely baking, African desert conditions under which shock absorbers can attain, and even exceed, boiling point.

The Fulford engineers also use special apparatus for road testing and carry out extensive car testing at the Motor Industry Research Association proving ground. Designers and Engineers from the Motor Industry are regular visitors to Fulford and the liaison between them and the Armstrong team of Technical Liaison Executives ensures that Armstrong initial equipment is specifically designed for each and every model whether it be for a Grand Prix racing car or a family saloon.



The Bump Rigs that simulate the conditions of a car travelling over an atrocious, rough road surface are used to complement other test apparatus. On these rigs, the road, in effect, moves while the car stands still. Thus it is possible to observe and record factually, hour after hour, day in and day out, what is happening to a shock absorber whilst the car is crashing 'over rough country.'



Actual road testing takes place under all conditions in cars in which the latest ideas in electronic equipment are used to supplement the wide experience of the engineers carrying out the test. In this manner, the shock absorber settings and characteristics are matched to the car so that the best ride, roadholding and handling are the outcome.



After testing, whether this be temperature, endurance, rig or road, the shock absorbers are dismantled and each component is examined. Thus the effects of any testing on individual components can be assessed and improvements made where necessary. This search for improvement is a continuous process.



Improving the breed

by Alan Platt

Competitions Manager

Ford of Great Britain

There are nearly three quarters of a million people like you who participate actively in some kind of motor sport. The majority of you belong to the seven hundred and fifty or so motor clubs which are registered with the R.A.C. At least two million people—very likely many more—spend much of their leisure time watching you.

This puts Britain far ahead of every country in the world—including the United States of America—as a nursery for motor sport enthusiasts and as a training ground for great drivers. It goes far to explain why this country produces more Champions than any other.

Variations of the sport, too, are more numerous here than anywhere else. Depending on your skill and dedication, you can participate in treasure hunts, restricted rallies, national and international rallies, autocross, hill climbs, club racing, veteran car rallies, international racing and, now, dragging. The differing conditions of terrain on which these events take place ensure that the cars which participate in them are subject to the most arduous shocks imaginable. Indeed, the treatment they receive is normally far more demanding and critical than anything they were built to endure.

The fact that they survive so magnificently under such conditions reflects credit on the manufacturers of the original equipment used in assembly. In extensive tests and in actual competitive conditions, the Roadholder shock absorbers developed and manufactured by Armstrong have proved as sturdy and successful as other similar products on the market, and they are now being made available to enthusiasts.

The demands of my own work as Competitions Manager of Ford of Britain are such that we are bound to subject every component we fit to the most rigorous test programme before passing it as acceptable for the arduous international events in which our teams participate—let alone introducing it into our production models. Armstrong shock absorbers like every other tried and tested component fitted by the Ford Motor Company, meet in full the exacting requirements which we ourselves, our drivers and the public expect of them.

In preparing our works team cars for the season, we subject them to runs on our research track, where we have artificially created every conceivable type of road condition. Following this, the cars are driven on 5,000-mile non-stop safaris at rally speeds as high as 60 m.p.h. over the worst tracks in East Africa. Before they ever reach this part of the world, they are intensively tested for reliability in Yugoslavia. Selected production cars undergo endurance testing on the worst possible Belgian pavé cobblestones, and they must survive hard test driving in widely different conditions all over the world.

SAFARI PROVED

In last year's East African Safari rally, Armstrong shock absorbers were fitted along with the best components on the market, to each of the Cortina GTs we entered—and we did not have a single failure either during testing or in the event itself. In terms of body and metal fatigue, cars undergo greater stress during this event than they would otherwise experience in the course of a normal life of many years.

As motor sport enthusiasts, you lead the rest of the motoring public in demanding increased performance and improved suspension. Because you drive in exacting conditions, you know just how serious shock absorber failure could be. To be blunt, it could cause premature failure of both suspensions, the engine and gear box mounting, the radiator and the steering.

Happily none of these things are likely to occur, because components manufacturers have spent years in research and development to ensure that they won't. The new Roadholder shock absorbers, which our own exacting test programme has helped to develop, are even tougher, if that is possible, than others produced by Armstrong. They have been developed to answer the needs of the enthusiast, and, like all components fitted on Ford rally cars and subjected to the untold hazards of international motor rallying, they are designed to give heightened performance, a long life, and value for money.

'Reliability and Power'

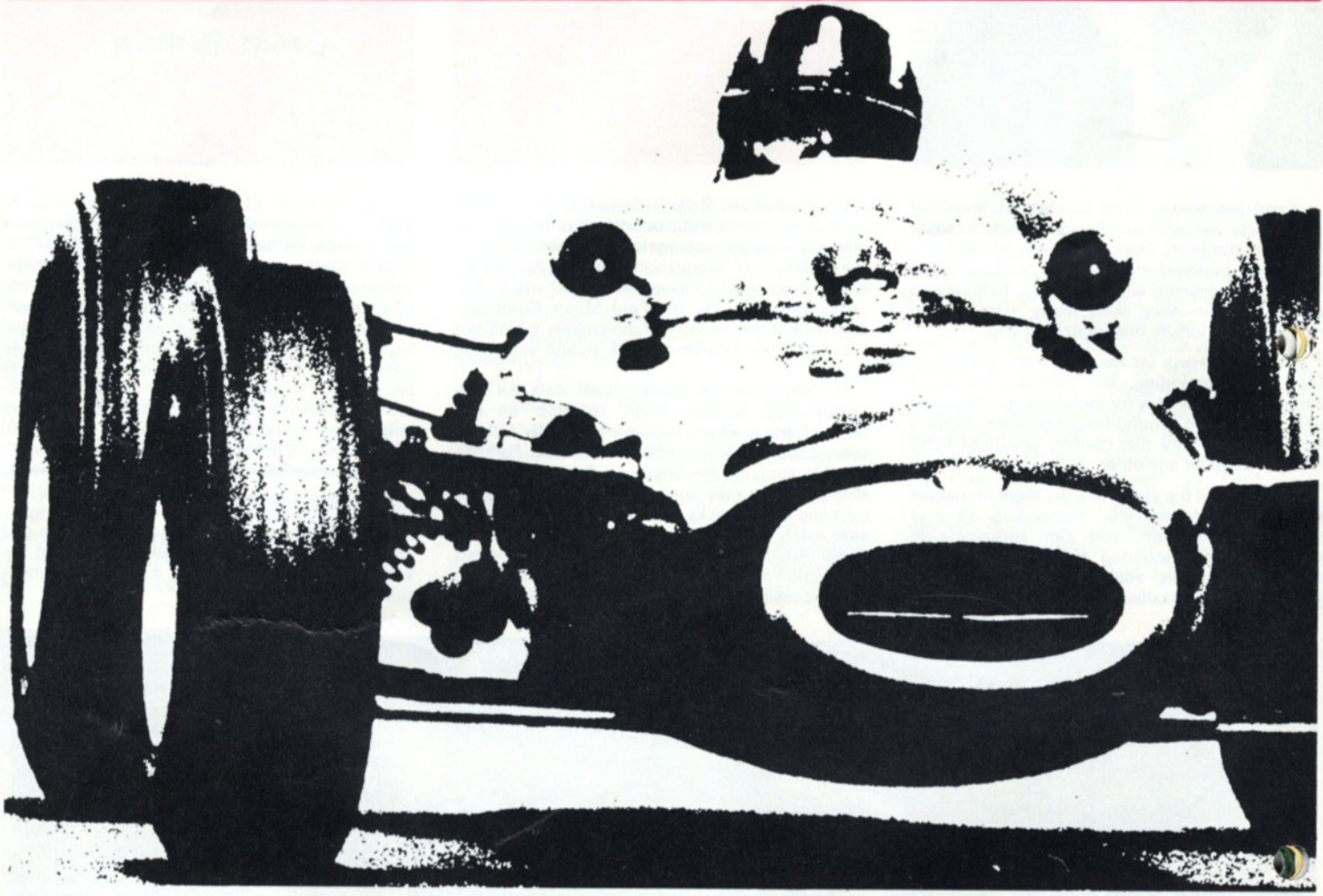
Lessons learnt in Yugoslavia, East Africa and Australia, and on racing circuits throughout the world make the Cortina the **complete** competition car.





ARMSTRONG

Supreme in the 1964 World Championship Series



Monaco 10th May

1	Graham Hill	B.R.M.
2	Richie Ginther	B.R.M.
3	Peter Arundell	Lotus-Climax
4	Jim Clark	Lotus-Climax

& 5th 6th 7th 8th 9th

French 28th June

1	Dan Gurney	Brabham-Climax
2	Graham Hill	B.R.M.
3	Jack Brabham	Brabham-Climax
4	Peter Arundell	Lotus-Climax

& 7th 8th 9th 10th 11th 12th

Austrian 23rd August

2	Richie Ginther	B.R.M.
3	Bob Anderson	Brabham-B.R.M.
4	Tony Maggs	B.R.M.
5	Innes Ireland	B.R.P./B.R.M.

& 6th 7th 8th 9th

United States 4th October

1	Graham Hill	B.R.M.
3	Jo Siffert	B.R.M.
4	Richie Ginther	B.R.M.
5	Walter Hansgen	Lotus-Climax

& 6th 7th 8th

Dutch 24th May

1	Jim Clark	Lotus-Climax
3	Peter Arundell	Lotus-Climax
4	Graham Hill	B.R.M.
5	Chris Amon	Lotus-B.R.M.

& 6th 7th 8th 9th 10th 11th 12th 13th

British European 11th July

1	Jim Clark	Lotus-Climax
2	Graham Hill	B.R.M.
4	Jack Brabham	Brabham-Climax
5	Phil Hill	Cooper-Climax

& 7th 8th 9th 10th 11th 12th 13th 14th

Italian 6th September

2	Bruce McLaren	Cooper-Climax
4	Richie Ginther	B.R.M.
5	Innes Ireland	B.R.P./B.R.M.
6	Mike Spence	Lotus-Climax

& 7th 8th 9th 10th 11th 12th 13th 14th

Mexican 25th October

1	Dan Gurney	Brabham-Climax
4	Mike Spence	Lotus-Climax
5	Jim Clark	Lotus-Climax
7	Bruce McLaren	Lotus-Climax

& 8th 9th 10th 11th 12th 13th 14th

Belgian 14th June

1	Jim Clark	Lotus-Climax
2	Bruce McLaren	Cooper-Climax
3	Jack Brabham	Brabham-Climax
4	Richie Ginther	B.R.M.

& 5th 6th 7th 8th 9th 10th 11th

German 2nd August

2	Graham Hill	B.R.M.
4	Jo Siffert	Brabham-B.R.M.
5	Maurice Trintignant	B.R.M.
6	Tony Maggs	B.R.M.

& 7th 8th 9th 10th 11th 12th 13th 14th

These results are typical of the success achieved on Armstrong Units in all forms of Motor Sport throughout the world.

RALLY SUCCESSES

RALLY SUCCESSES

Monte Carlo

1st Overall —Mini Cooper S
1st Grand Touring Class —M.G.B.
Manufacturers Team Prize —Mini Cooper S

East Africa Safari

1st Overall —Ford Cortina G.T.
Manufacturers Team Prize —Ford

Tulip

1st Overall —Mini Cooper S

Scottish

1st Overall —Ford Cortina G.T.

In top class Grand Prix racing to-day, the cars are so closely matched and competition is so fierce and close-fought that every tenth of a second assumes major importance. Every minor improvement, therefore, that can be gained by chassis and engine tuning gives the driver just that little extra with which to better his rivals' performances, and is well worth the hours of work put in by the whole team to achieve this. In some of the 1964 Grand Prix the organisers gave us four hours' practice a day for two days, and it is mostly in this time that the final adjustments and improvements are made which can in fact find those tenths of a second and result in the difference between winning, placing, or even finishing at all. Most people would imagine this to be ample to give the driver time to learn the circuit and get the car right. In fact, though, I have found on several occasions that we were running out of time towards the end of practice.



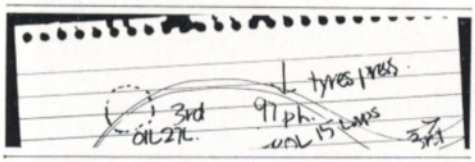
The key to this search for the ultimate can often be the very high degree of understanding which can be built up between the driver and his chief engineer and mechanics, so that the maximum benefit can be obtained from the practice period and the car does not spend too long in the pits being worked on, and not enough time on the track in the hands of the driver.



At most meetings these days you will see the drivers come in after a few fast laps, and go into an earnest huddle with the chief engineer. One of the most important partnerships in motor racing today is between these two men so that the drivers requirements may be understood and acted upon. It may take a long time for this sort of understanding to develop—but when it does it is priceless. If, as often happens, the driver comes in and says the handling is 'twitchy', then the engineer has to work on this gem of lucid information and other ill-explained mutterings and make or suggest alterations that will eradicate or reduce any fault that may have been disclosed.

If there is this understanding between driver and chief engineer, the driver's comments will be understood and the mechanics will cure the trouble and effect improvements and the practice period will be a fruitful and valuable time. If this understanding is not all it should be, the ensuing chase for this characteristic could occupy the entire practice period, the mechanics making one change after another and the driver never really improving on his lap times.

The driver is the only link between the mechanics and the high speed performance of the car out on the circuit and it is his criticisms and comments which have to give the lead to the improvements required. Though it is not absolutely essential for a driver to be an engineer, it is certainly of tremendous assistance to him and the team as a whole if he has a mechanical bent, and consequent sympathy with the car.



The driver, therefore, has become far more of a technician these days than he was in pre-war years and the business of tuning the chassis to suit the particular circuit has now become a refined art and an essential one; it is practised by all the top drivers today.

Some drivers are fortunate and can immediately detect what is wrong with the car's handling on any particular circuit, and suggest whatever alterations may be required in the suspension settings to bring about the improvements they need. It is very rarely indeed—if ever—that such alterations are not required, and I find that on every circuit I use, I need some sort of adjustments to the engine and chassis before the car is right.

Every change we make to the car in the way of spring frequencies; anti-roll bar stiffness; shock absorber settings; tyre pressures; wheel cambers; ride heights; and the degree of wheel toe-in, etc., is noted down in a book I carry about with me,



together with the effects they may have had and the improvement achieved—if any. Often, of course, a worsening of the situation is produced and then we have to go back to what we had before and start all over again. Such records are essential as otherwise the modifications are useless and you go on chasing perfection and never realise what it was that eventually produced it. Thus, the continuity of development is ensured and the same ground does not have to be covered again and again.



Generally speaking, however, the whole business of setting-up a car is a compromise. What you lose on the swings you gain on the roundabouts! Though you can resort to several dodges they are often accompanied by a snag or a worsening of the handling perhaps in another direction, so that this in turn has to be cancelled out or compromised before you can take advantage of the improvement you set out to find.

An example of this is the search for the maximum in road-holding. It is well-known that an increase of negative camber on the rear wheels, up to a maximum of 3 degrees, will increase road-holding. Beyond this limit there is nothing more to be gained in grip. The accompanying snag, however, is that the moment at which grip fails and the car starts to slide is more sharply defined and sudden—and consequently far more difficult for the driver to anticipate and deal with.

If a car is difficult to control the driver will quickly tire and he is not going to be able to drive so close to the car's limits—or if he does, his chances of losing control are far greater. With slightly less adhesion and more controllability, however, the driver will be able to drive much closer to the car's limits, and, in most cases, put up better lap times.

It is therefore essential to obtain the best balance or compromise between good road-holding and controllability if the driver is to drive at, or near to, the limit of adhesion in a 2½-hour Grand Prix—and this 'ten-tenths' performance is often required nowadays throughout a race since there is so very little difference between the performance of the leading cars.



There is after all, only one criterion by which it is possible to assess whether or not an adjustment has improved the car or not—and that is the stop-watch. It is essential to bear this in mind at all times.

Once the race has started there is nothing to be done to improve the car — you're with it for the duration—for better or for worse! The golden rule is never to alter the settings after the final practice session, however great the temptation. During all my races I have only broken this rule on one or two occasions and this has been when I have known both car and circuit extremely well.



What I have said above has been applicable to Grand Prix racing cars but much of this is of value to the ordinary enthusiast or rally man. He should be constantly striving to get the best out of his car but should do this with great care, and try always to understand what he is doing and why he is doing it, and not blindly follow the advice of others. He should keep records of modifications and improvements and consider tuning as applying to more than simply the power unit.

It is important to the enthusiast that his car should be tuned to suit his personal preference and driving style. I am quite sure that the modifications I have made to my car would not be fully acceptable to every one else. I have recently fitted my personal car with Firmaride front shock absorbers and Selectaride Electrically Adjustable rears. This has given me the ride and handling characteristics I require but other drivers may prefer a different degree of suspension tuning.



rally with care

by John Miles

John Miles is Course Manager and Senior Co-driver of the High Performance Course of the British School of Motoring. Previously, a driving instructor in the Metropolitan Police Force, he was for more than 14 years, one of their ace drivers.
He is well-known for his articles in Motoring Journals and as a Television personality. His considerable experience in rallying includes a private entry finish in the Monte Carlo Rally.

"I could a tale unfold, whose lightest word
would harrow up thy soul : freeze thy
young blood ;
Make thine two eyes, like stars, start
from their spheres ;
Thy knotted and combined locks to part,
And each particular hair to stand on end . . . "
Hamlet Act 1 Scene V.

Hamlet's words perfectly described rallying at its worst—or best, depending on whether you enjoy suffering or not.

Young and aspiring rally drivers often have a completely false conception of rallying. They think it's all excitement, dicing-with-death fast motoring, foot down hard, in the dark dead of night.

Certainly, "when you gotta go, you gotta go"—but you're more likely to finish the rally if you remember Eartha Kitt's maxim: "If I can't take it with me, I ain't gonna go." Because there's not much point in leading most of the way, then bending the car and being in the list of those "failed to finish."

Rallying does mean fast motoring, but within the limits imposed by where you are, what the car can do and, particularly, the ability of the driver. It means listening to your engine and using the gear box to the full ; sensing, through hands (and seat) the attitude of the car, and being well prepared for anything that may happen.

Navigators are always well prepared—they won't move a step without their load of paraphernalia. A driver's aids are less tangible—concentration, anticipation, determination, self-discipline, driving skill and know how and, if he's wise, willingness to recognize his navigator as an equal partner. From this evolves the other essential ingredients for a successful rally team—mutual trust.

A driver's concentration must be intense if he is to make his best time, keep the car on the road under any conditions and react quickly and accurately to directions. I say "accurately," because it's amazing how many people mix up their "lefts" and "rights" when under stress. My navigator repeating directions just before a turn has saved us going up many a wrong slot.

With all this, the driver should still find the time to feed details of salient features to the navigator to give him a check on the O.S. map. It's nice for him to know you are where you hoped to be.

LOST

It's when you're not where you hoped to be—and you're lost—that a driver's self-control (and the strength of your partnership) is put to the test. The temptation is to call the man every name in the book, but I've found it's better to stop, preferably just before the next cross-road, sit there and keep quiet until he's sorted it out. Call him what you like but do it later when you're back on course. This way, time as well as friendship is saved—and a driver in a temper can never be at his best.

When one side of a partnership fails, the other has to recoup the losses—and when navigation has gone to pot for a while, only skilled driving will put you back on schedule.

HAZARDS!

Late, and a tight section, the old principle of "slow in and fast out" is the best (remembering that slow and fast are relative to the individual). So—brake first on the way in, and then change gear.

This technique is used by most fast motorists who want to stay in one piece but not, as was stated, just to make sure the brakes are working. The reason is that, if you're travelling quickly, the car is at its most stable while it is straight. Braking before changing down prevents you entering hazards at an excessive speed and possibly running out of road. You also have both hands free to steer and can leave the hazard faster, since you are already in the right gear.

This means, of course, reading the road ahead so you see the hazards in good time. Brakes, tyres, gear-boxes and suspensions will only stand so much, and the more prepared you are for hazards, the less strain there is on the car and crew.

If in doubt about a bend or corner, watch the kerb line on the far side. It will tell you far quickly than the nearside kerb whether the road straightens or continues going round. Don't place too much trust on a line of telegraph poles. They, too often, go straight across a field.

Another aid to observation is staying with the other chap if you're overtaken on a winding road. With his unwitting help, you can see twice as far—round bends he is already taking. Allow yourself enough distance to stop in should he over do it, then brake **where** he brakes, not **when** he brakes—otherwise, you'll fall back through too-early braking.

Learn to "heel and toe" the gear-change. This reduces the distance needed for braking and gear-changing, and helps to keep a faster and more even pace.

To every driver comes the moment of making a mistake. Then, only well-learned lessons on braking, cornering and skidding will get you out of trouble.

The difference between the expert and the tyro is that the expert recognises his mistake much sooner and can minimise his error. The less knowledgeable are far too late in appreciating what is going to happen and when it does, it happens in the biggest possible way. Remember, there is a vast difference between "taking a chance" and "taking a calculated risk."

Everyone should uphold the good name of rallying by remembering the Black Spots. These were not so designated until rally drivers got to work on them. The reputation of all motor clubs is in each driver's hands, so if you are routed through villages, go quietly, in as high a gear as possible, with no tyre squeal—and let them sleep on.

RALLY CHECK POINTS



Check List 1.

Brakes—Check linings, especially disc pads. Always carry a spare set of pads with you.

Suspension—Check ball joints for play, anti-roll bar links for wear, and shock absorbers for leakage.

Steering—Check for free play.

ARMSTRONG Roadholder SUSPENSION TUNED

Look out for this car sticker, size 3½"×6" which is given with every pair of Roadholder Shock Absorbers

The following pages give details and part numbers of the Roadholder range of Firmaride, Adjustaride and Selectaride Suspension Tuning Equipment.

By using this section in accordance with information given on Pages 3 to 7 it is possible to decide on the degree of suspension tuning available for each car.

Particular attention should be paid to the notes on ordering and prices.

TYPE: The coding indicates the basic type of unit, i.e.:—

T = Telescopic.
L = Lever.
S = Suspension Unit, i.e. with integral coil spring.
St = Strut, e.g. Ford Cortina Front.

PRICES:

(a) Prices quoted are recommended maximum retail prices.

(b) Price and specification may be subject to change without notice.

(c) **Firmaride**—Price is for each unit and in the case of Lever type units includes link where fitted.

(d) **Adjustaride**—Price is for each unit and Lever type units do not include link.

(e) **Selectaride**—Price includes pair of units and complete installation for rear (See Page 7).

N.B.:—A £1 Surcharge is made on each Lever type and Selectaride Unit. This is returnable when the old unit is sent back. When a unit is fitted in a Garage or Service Station this charge does not apply.

ORDERING: When ordering it is important to **ALWAYS** quote:—

(a) Year and Model of car.

(b) **FULL** Part Number as listed in this catalogue section.

Example:

(A) For a pair of FIRMARIDE Units for front of 1961 Alfa Romeo Sprint quote:—

"Two R-2110 Firmaride for 1961 Alfa Romeo Sprint Front."

(B) For a pair of ADJUSTARIDE units for Front of 1963 AC Ace quote:—

"Two A-2231 Adjustaride for 1963 AC Ace Front."

(C) For a set of SELECTARIDE for 1960 Alvis TD21 Graber quote:—

"One set KB.557 Selectaride for 1960 Alvis TD21 Graber."

Year	Model	FRONT			REAR			
		Type	FIRMARIDE	ADJUSTARIDE	Type	FIRMARIDE	ADJUSTARIDE	SELECTARIDE (Full Kit)
A.C. CARS								
1955–63	Ace and Aceca	T	R-2038/1 *76/–*	A-2231 *99/–*	T	R-2158/1 *76/–*	A-2232/L* A-2232/R *99/–*	KA 556* *250/–*
1960–64	Greyhound	S	RS-4307 *130/–*		S	RS-4308 *130/–*		
1963–65	Cobra	T	R-2798/1 *76/–*		T	R-2158/1 *76/–*	A-2232/L* A-2232/R *99/–*	KA 556* 250/–
ALFA ROMEO								
1956–61	Guilietta and Sprint	T	R-2110 *66/–*		T	R-1345/1 *63/–*		
1963–65	2600 Berline	T	R-71097/1 *69/–*		T	R-101040 *85/–*		
1963–65	2600 Sprint and Spyder	T	R-71097/1 *69/–*		T	R-101038 *85/–*		
1963–65	Guilia and T.I. Super	T	R-2820 *66/–*	A-2842/L* A-2842/R *99/–*	T	R-71100/1 *69/–*	A-2843 *99/–*	
ALVIS								
1952–53 1953–56 1955–65	TA 21 TC 21 Grey Lady TD 21 Graber	T	R-2127/1 *76/–*		T	R-2128/1 *76/–*	A-2128 *99/–*	KB 557 275/–

*Units are Left Hand and Right Hand

RALLY CHECK POINTS



Check List 2.

Lights—Clean and check setting with all equipment and crew aboard. Carry spare bulbs for all lights, two or three for flexilight and map magnifier (they always break). Make sure fuses are in place and there are no frayed wires around. Use covers for fog lights.

Sump Guard—Check fixings and tighten where necessary.

ROADHOLDER SUSPENSION TUNING EQUIPMENT

Year	Model	FRONT Type	FRONT FIRMARIDE	FRONT ADJUSTARIDE	REAR Type	REAR FIRMARIDE	REAR ADJUSTARIDE	REAR SELECTARIDE (Full Kit)
ASTON MARTIN								
1959–63	DB IV Sports	S	RS-4186† *130/–*		L	R-7470-DAS12 *130/–*		KF 540 *440/–*
1963–on	DB IV Sports	S	RS-4186/1† *130/–*		L	R-7470-DAS12 *130/–*		KF 540 *440/–*
1960–63	DB IV GT	S	RS-4186† *130/–*		L	R-7596-DAS12 *130/–*		KF 541 *440/–*
1963–on	DB IV GT	S	RS-4186/1† *130/–*		L	R-7596-DAS12 *130/–*		KF 541 *440/–*
1963–65	DB V	S	RS-4186/1† *130/–*		L			KF 633 *440/–*
AUSTIN								
1959–64	Mini Rally Settings	T	R-1799/1 *53/–*	A8-1799*	T	R-6330/1 *43/–*	A8-1798*	
	Mini Race Settings (Extra Heavy Duty)	T	R-1799 *53/–*		T	R-1798/1 *53/–*		
1959–64	Mini Cooper (Special Lowered Rear Suspension)				T	R-1894 *53/–*		
1959–61	A.40 Farina Saloon	L	R-5925/4-IS 9/3 *79/–*		L	R-7989/2-DAS 9 *87/6*	7989 ADJ *99/–*	KD 507 *250/–*
1962–65	A.40 Farina Saloon Mk. II	L	R-5925/4-IS 9/3 *79/–*		T	R-71025/2 *69/–*	A-2760 *99/–*	KA 545 *250/–*
AUSTIN HEALEY								
1954–59	Healey 100	L	R-7763-IS 9/10 *117/–*		L	R-6076/1-DAS 9 *87/6*	6076 ADJ *99/–*	
1955–57	Healey 100 S	L	R-7763-IS 9/10 *117/–*		L	R-7598-DAS 10 *95/6*	6189 ADJ *112/–*	
1958–59	Healey Sprite	L	R-5925/4-IS 9/3 *79/–*		L	R-7335/1-DAS 8 *79/6*		
1959–64	Healey Sprite	L	R-5925/4-IS 9/3 *79/–*		L	R-7537-DAS 9 *87/6*	7401 ADJ *99/–*	KD 505 *250/–*
1964–65	Healey Sprite from C/No. H.AN.8 38829	L	R-5925/4-IS 9/3 *79/–*		L	R-8681/1-DAS 9 *87/6*	8681 ADJ *99/–*	
1959–62	Healey 3000 Mk. I and II	L	R-7763-IS 9/10 *117/–*		L	R-6076/1-DAS 9 *87/6*	6076 ADJ§ *99/–*	KD 506§ *250/–*
1962–64	Healey 3000 Mk. II	L	R-8627-IS 9/10 *117/–*		L	R-6076/1-DAS 9 *87/6*	6076 ADJ§ *99/–*	KD 506§ *250/–*
1964–65	Healey 3000 Mk. III	L	R-8627-IS 9/10 *117/–*		L	R-8188/1-DAS 10 *98/6*	8188 ADJ *112/–*	
B.M.W.								
1963–65	1500-1800				T	R-8151 *53/–*		
BOND								
1963–65	Equipe GT 2 + 2	S	RS-1889/1†† *59/–*	SA-2697†† *120/–*	T	R-1514/3 *63/–*	A-2612 *99/–*	KA 552 *250/–*
1964–65	Equipe GT 4S							
BRABHAM RACING DEVELOPMENTS								
1962–63	Formula Jun. & Formula One	S	RS-71032/1†† *100/–*		S	RS-71032/1†† *100/–*		
1964	Formula One	SA		SA-2951 *200/–*	SA		SA-2952 *200/–*	
1964	Formula Two	S	RS-71032/1†† *100/–*		S	RS-71032/15†† *100/–*		
1964	Formula Three	S	RS-71032/15†† *100/–*		S	RS-71032/15†† *100/–*		
1964	Sports Car	SA		SA-2952 *200/–*	SA		SA-2952 *200/–*	

†Road Spring supplied by Aston Martin
§Adaptor Plates Required
*Available from July 1965
††Unit supplied less Road Spring

RALLY CHECK POINTS



Check List 3.

Tyres—Check pressures all round *including* spare wheels and carry two spares if possible.
Always pump spares up to the highest pressure you're running at—it's easier to let them down in a rally than blow them up. Don't forget valve caps.

Windscreen Wipers and Washers—Check blades are in good condition especially on Autumn and Winter rallies. Also see the washer bottle is full to the brim—if it's a wet night you'll need it. Meths in the bottle will help prevent icing up and an Aerosol de-icer is useful.

ROADHOLDER SUSPENSION TUNING EQUIPMENT

Year	Model	FRONT			REAR			
		Type	FIRMARIDE	ADJUSTARIDE	Type	FIRMARIDE	ADJUSTARIDE	SELECTARIDE (Full Kit)
BRISTOL CARS								
1961–63	407	T	R-2675/1 *76/–*		T	R-2676/2 *76/–*	A-2676 *99/–*	KA 559 *250/–*
1963–65	408	T	R-2675/1 *76/–*		T	R-2676/2 *76/–*	A-2676 *99/–*	KA 538 *250/–*
CHEQUERED FLAG								
1960–on	"Gemini" Formula Junior	S	RS-1485/3 *88/–*		St	RAS-1500†† *150/–*		
1961	"Gemini" Mk. 3A F. Junior	S	RS-1485/7 *88/–*	SA-2335 *200/–*	S	RS-1750 *88/–*	SA-2606 *200/–*	
1962–63	"Gemini" Formula Junior	SA		SA-2335 *200/–*	S	RS-71114†† *100/–*		
COLCHESTER RACING DEVELOPMENTS								
1962	Merlyn F. Junior Mk. III and Sports Car Mk. IV	S	RS-71086†† *100/–*		S	RS-71086†† *100/–*		
1963	Merlyn F. Junior Mk. V and Sports Car Mk. IVA	S	RS-71086†† *100/–*		S	RS-71112†† *100/–*	SA-2649/1 *200/–*	
1964	Merlyn Sports Car Mk. VI	S	RS-71086†† *100/–*		S	RS-71112†† *100/–*	SA-2649/1 *200/–*	
1964	Merlyn Formula III Mk. VII	S	RS-11012 *88/–*		S	RS-71112†† *100/–*	SA-2649/1 *200/–*	
1964	Merlyn Formula II Mk. VII	S	RS-11012 *88/–*		SA		SA-2916 *200/–*	
COOPER CARS								
1958–60	F.I, F.II Mk. 3 and Monaco	S	RS-2265 *100/–*	SA-2237 *200/–*	T	R-2266 *66/–*	A-2238 *99/–*	
1960	Formula Junior	S	RS-1742 *88/–*		T	R-1744 *53/–*		
1961	Formula Junior	SA		SA-2237 *200/–*	SA		SA-2624 *200/–*	
1962	Formula Junior	SA		SA-2713* *200/–*	S	RS-71064†† *100/–*		
1960–61	F.I. and Sports Car	SA		SA-2237 *200/–*	SA		SA-2624 *200/–*	
1962	F.I (Type 60)	SA		SA-2748* *200/–*	S	RS-71085†† *100/–*		
1963–64	Sports Car (Type 61)	SA		SA-2748/1* *200/–*	S	RS-71085/1†† *100/–*		
1963	Formula Junior (Type 67)	S	RS-71113/1†† *100/–*		S	RS-71113/2†† *100/–*		
1964	Formula II (Type 71) Formula III (Type 72)	SA		SA-2965 *200/–*	S	RS-71085/2†† *100/–*		
1964	Formula I (Type 73)	SA		SA-2869 *200/–*	SA		SA-2998 *200/–*	
DAIMLER								
1959–on	Dart 2/3 Seater Sports Car	T	R-1528 *63/–*		L	R-7586/1-DAS 10 *98/6*	7586 ADJ *112/–*	
D.K.W.								
1963–65	F.12	T	R-1968/1 *63/–*		T	R-1969/1 *63/–*		
1964–65	F.102	T	R-11055/1 *63/–*		T	R-11064/1 *63/–*		

††Unit Supplied less Road Spring
*Bare Unit

RALLY CHECK POINTS



Spares to Carry

Tools
Spare plugs
Tape
Short length of electric wire
Wheel nuts
First Aid Kit
Tow rope!!!!

If room available :-
Spare tin of petrol
Small tin of oil
Copper wire (handy for loose tail pipes, wings!!! etc.)

ROADHOLDER SUSPENSION TUNING EQUIPMENT

Year	Model	FRONT			REAR			
		Type	FIRMARIDE	ADJUSTARIDE	Type	FIRMARIDE	ADJUSTARIDE	SELECTARIDE (Full Kit)
DOVE CARS								
1963–65	GTR4 Model	T	R-1397/2 *63/–*		L	R-7999/1-DAS 9 *87/6*		
ELVA CARS								
1958–61	Courier	S	RS-1591 *88/–*		S	RS-1592 *88/–*		
1963	Courier	S	RS-2741 *100/–*		S	RS-2742 *100/–*		
1963	Courier Mk. III	S	RS-1907 *88/–*		S	RS-2742 *100/–*		
1964	Courier "T" Type	S	RS-1907 *88/–*		S	RS-2857 *100/–*		
1960–61	Formula Junior	S	RS-1485/3 *88/–*		S	RS-1512 *88/–*		
1963–64 1964	Sports Car Elva Porsche 2 litre	SA		SA-2783†† *200/–*	SA		SA-2782†† *200/–*	
FIAT								
1961–63	1300-1500 to Engine No. 29950	T	R-71057/1 *69/–*		T	R-71056/1 *69/–*		KA 573 *250/–*
1963–65	1300-1500 B	T	R-71057/1 *69/–*		T	R-71120/1 *69/–*		
1960–62	1500 Spyder	T	R-1461/1 *63/–*		T	R-2289 *76/–*		
1963	1600 Sports	T	R-2056/1 *76/–*		T	R-2289 *76/–*		
1961–65	1800B-2300	T	R-2383/1 *76/–*		T	R-2753/1 *76/–*		KA 1018 *250/–*
FORD								
Armstrong Shock Absorbers are used as initial equipment on all Ford cars built in this country and standard units should be obtained through Ford dealers. The Roadholder units listed here are not to Ford specification but have been specially designed with increased or variable settings for the rally and racing enthusiast.								
1953–59	Anglia 100E	St	RAS-2200/1 *140/–*		T	R-1458/1 *63/–*		KA 553 *250/–*
1959–on	Anglia 105E	St	RAS-2622/1 *129/6*		L	R-8953/1DAS 9 *87/6*	7398 ADJ *99/–*	KD 536 *250/–*
1956–62	Consul & Zephyr Mk. II Zodiac Mk. II	St	RAF-3400/1 *172/6*		L	R-8954/1DAS 10 *98/6*	6703 ADJ *112/–*	KE 533 *275/–*
1962–on	Zephyr 4 and 6 Zodiac Mk. III	St	RAF-3401/1 *172/6*		L	R-8955/1DAS 10 *98/6*	8016 ADJ *112/–*	KE 534 KE 535 *275/–*
1962 to 27/9/64	Cortina 113E	St	RAS-2608/1 *129/6*		T	R-22032/1 *76/–*	A 2758 *99/–*	KA 555 *250/–*
	Cortina 118E	St	RAS-2633/1 *129/6*		T	R-22032/1 *76/–*	A 2758 *99/–*	KA 555 *250/–*
27/9/64–on	Cortina 113E	St	RAS-2616/1 RAS-2617/1 *129/6*	Left hand Right hand	T	R-22032/1 *76/–*	A 2758 *99/–*	KA 555 *250/–*
	Cortina 118E	St	RAS-2618/1 RAS-2619/1 *145/–*	Left hand Right hand	T	R-22032/1 *76/–*	A 2758 *99/–*	KA 555 *250/–*
1963–on	Cortina 118E GT	St	RAS-2639/1 RAS-2640/1 *147/6*	Left hand Right hand	T	R-22032/1 *76/–*	A 2758 *99/–*	KA 555 *250/–*
1963–on	Corsair 102E	St	RAS-2618/1 RAS-2619/1 *145/–*	Left hand Right hand	T	R-22032/1 *76/–*	A 2942 *99/–*	KA 1016 *250/–*
1963–on	Corsair 120E GT	St	RAS-2641/1 RAS-2642/1 *147/6*	Left hand Right hand	T	R-22032/1 *76/–*	A 2942 *99/–*	KA 1016 *250/–*

††Unit supplied less Road Spring

RALLY CHECK POINTS



Wash the Car

It creates a good impression and makes the scrutineers job easier. After that keep your fingers crossed. P.S. Don't forget your competition licence.

ROADHOLDER SUSPENSION TUNING EQUIPMENT

Year	Model	FRONT Type	FRONT FIRMARIDE	FRONT ADJUSTARIDE	REAR Type	REAR FIRMARIDE	REAR ADJUSTARIDE	REAR SELECTARIDE (Full Kit)
FORD (GERMANY)								
1957–60	Taunus 17M				T	R-2065/3 *66/–*	A-2065/3 *99/–*	
1961–64	Taunus 17M Super				T	R-2706 *66/–*	A-2706 *99/–*	
1964–65	Taunus 17M and 20M				T	R-2706 *66/–*	A-2706 *99/–*	
GLASS								
1963–65	1004–1204–1300 G.T.	T	R-11032/1 *63/–*		T	R-11033/1 *63/–*		
GORDON KEEBLE								
1963–65	"GT" Model	T	R-3183 *78/–*		T	R-101044 *85/–*		KB 632 *275/–*
HILLMAN								
1961–65	Super Minx Mk. I and II	T	R-2399/3 *76/–*	A8-2399 *99/–*	T	R-71006/2 *69/–*	A-2756 *99/–*	KA 566 *250/–*
1963–65	Minx Mk. V	T	R-2399/3 *76/–*	A8-2399 *99/–*	T	R-2065/2 *66/–*	A-2065 *99/–*	KA 532 *250/–*
1963–65	Imp	S	RS-71122† *100/–*	SA8-22025† *200/–*	T	R-71123 *59/–*	A-2836/L†† A-2836/R *99/–*	KA 548†† *250/–*
HUMBER								
1964–65	Hawk Mk. IV	T	R-2385/1 *76/–*		T	R-2604 *66/–*	A-2640 *99/–*	KA 640 *250/–*
1963–65	Sceptre	T	R-2399/3 *76/–*	A8-2399 *99/–*	T	R-71006/2 *69/–*	A-2756 *99/–*	KA 550 *250/–*
JAGUAR								
1955–65	2.4, 3.4, 3.8 Litre Mk. II	T	R-3009/1 *88/–*	A8-3009 *111/–*	T	R-3010/1 *88/–*	A-3010 *99/–*	KB 560 *275/–*
1956–61	XK 140 and XK 150	T	R-3053/1 88/–	A-2614/L* A-2614/R 99/–	T	R-3054/1 88/–	A-2387 99/–	
1962–65	"E" Type 3.8 and 4.2	T		A-3231 99/–	S	RS-71067*§ 100/–	SA8-22018* 200/–	
1961–65	Mk. X and "S" Type	T	R-3009/1 *88/–*	A8-3009 *111/–*	S	RS-71138*§ *100/–*	SA8-22006*§ *200/–*	
JENSEN								
1957–60	541 "R" Series	L	R-7998/1-IS 9/10 *117/–*		T	R-2277/1 *76/–*	A-2277 *99/–*	KA 500 *250/–*
1960–63	541 "S" Series	L	R-7272/3-IS 9/10 *117/–*		T	R-2277/1 *76/–*	A-2277 *99/–*	KA 500 *250/–*
1962–65	CV 8	L	R-8532/1-IS 9/10 *117/–*		T	R-101034 *85/–*	A-2277 *99/–*	KA 500 *250/–*
LOLA								
1960–on	Formula Junior	S	RS-1485/3 *88/–*		S	RS-1417 *88/–*		
1960–on	Sports	S	RS-1485/3 *88/–*		S	RS-1417/1 *88/–*		

(continued over)

††Units are Left Hand and Right Hand
†Road Spring supplied by Rootes
§Supplied less Road Spring
*Two units per wheel

RALLY CHECK POINTS



Notes to Navigators. 1.

Use a 4B pencil for plotting, it rubs out easily after the rally—also it's much clearer under a magnifier.

When rallying on a separate control card-system clip an envelope to the dashboard in a vertical plane—it helps to avoid losing a valuable control card.

ROADHOLDER SUSPENSION TUNING EQUIPMENT

Year	Model	FRONT Type	FRONT FIRMARIDE	FRONT ADJUSTARIDE	REAR Type	REAR FIRMARIDE	REAR ADJUSTARIDE	SELECTARIDE (Full Kit)
LOLA—*continued*								
1962–63	Formula Junior Mk. V	S	RS-71117†† *100/–*		S	RS-71116†† 100/–		
1963	Formula Junior Mk. VA							
1962	Formula One Mk. IV	S	RS-71074†† *100/–*		S	RS-71074†† *100/–*	SA-2694†† *200/–*	
1962	Sports Mk. I	S	RS-1485/3 *88/–*		S	RS-1417 *88/–*		
1963	GT Mk. VI	SA		SA-2791 § *200/–*	SA		SA-2792 § *200/–*	
1964	Formula III (Type 53)	S	RS-71117†† *100/–*		S	RS-71116†† *100/–*		
1964	Formula II (Type 54)							
1964	Formula II (Type 55)	S	RS-71136†† *100/–*		S	RS-71116/5†† *100/–*		
1964	Ford GT 40	SA		SA-3207 *200/–*	SA		SA-3208 *200/–*	
LOTUS								
1959–60	Mk. 7 Series I	S	RS-1485/3 *88/–*		S	RS-1512 *88/–*		
1960–on	Mk. 7 Series II and Super 7	S	RS-1485/6 *88/–*		S	RS-1740 *88/–*		
1959–60	Elite Series I	S	RS-1485/5 *88/–*		St	RAS-1501†† *150/–*		
1960–63	Elite Series II	S	RS-1733 *88/–*		St	RAS-1506 *150/–*		
1963–65	Elan	S	RS-1784/1 *88/–*		St	RAS-1509 *150/–*		
1963–65	Elan Competition	S		SA-2870/LR* *200/–*	St	RAS-1512 *150/–*		
1963–65	Cortina	St	RAS-1631/LH* RAS-1632/RH *150/–*		S	RS-2765 *100/–*	SA-2765†† *200/–*	
1960	Eighteen Formula Junior	S	RS-1485/7 *88/–*		S	RS-1750 *88/–*		
1960–61	Eighteen Formula I and II	SA		SA-2335 *200/–*	SA		SA-2606	
1960–62	Nineteen Sports Car						SA-2692† *200/–*	
1961–62	Twenty Formula Junior	S	RS-1823 *88/–*	SA-2945 *200/–*	S	RS-1802 *88/–*	SA-2674†† *200/–*	
1961–62	Twenty-one F.I	SA		SA-2693 *200/–*	SA		SA-2694 *200/–*	
1962	Twenty-two F. Junior	S	RS-71059†† *100/–*	SA-2773 *200/–*	S	RS-71060†† *100/–*	SA-2774†† *200/–*	
1962	Twenty-three Sports Car							
	Twenty-three "B" Sports Car	S	RS-71059/1†† *100/–*	SA-2773 *200/–*	S	RS-71060/1†† *100/–*	SA-2774†† *200/–*	
1962	Twenty-four Formula One	SA		SA-2721 § *200/–*	SA		SA-2694 *200/–*	
1962	Twenty-five Formula One	SA		SA-2721 § *200/–*	SA		SA-2752 § *200/–*	
1963	Twenty-seven Formula Junior	S	RS-1932 *88/–*		S	RS-71060†† *100/–*		
1963	Twenty-nine "Indianapolis"	SA		SA-2721 *200/–*	SA		SA-2800 *200/–*	
MARCOS CARS								
1960–63	GT Model	S	RS-2651 *130/–*		S	RS-2650 *130/–*	SA-2650 *200/–*	
1963–64	Spyder							
1964–65	"1800"	S	RS-2972 *130/–*		S	RS-2971 *130/–*		

††Unit supplied less Road Spring §Bare Unit *Units are Left Hand and Right Hand
†This unit gives 13 cm. ground clearance as required by Appendix C. Sports Car Regulations

RALLY CHECK POINTS



Notes to Navigators. 2.

Always wear safety belts as tight as possible—it helps t cut down 'whiplash' effects—also a very good ant sickness device when tight.

Adjust the seat so that your feet can be braced against th floor without having to move them when navigating. Th will assist you in maintaining some form of balance ar help the anti-sickness war.

ROADHOLDER SUSPENSION TUNING EQUIPMENT

Year	Model	FRONT Type	FRONT FIRMARIDE	FRONT ADJUSTARIDE	REAR Type	REAR FIRMARIDE	REAR ADJUSTARIDE	REAR SELECTARIDE (Full Kit)
MERCEDES								
1960–63	190 DC	T	R-1795/2 *63/–*		T	R-3188 *78/–*	A-2644 *99/–*	KA-582 *250/–*
1960–65	220 SB, 220 B, 220 SEB	T	R-1795/2 *63/–*		T	R-3188 *78/–*	A-2644 *99/–*	KA 582 *250/–*
1964–65	230 SL	T	R-1795/2 *63/–*		T	R-3188 *78/–*	A-2644 *99/–*	KA 582 *250/–*
M. G. CARS								
1955–62	M.G.A.	L	R-6172/1-IS 9/10 *117/–*		L	R-6066/1-DAS 10 *98/6*	6066 ADJ *112/–*	KE 518 *275/–*
1962–65	M.G.B.	L	R-8177/2-IS 9/10 *117/–*		L	R-8178/1-DAS 10 *98/6*	8178 ADJ *112/–*	KE 520 *275/–*
1961–64	Midget	L	R-5925/4-IS 9/3 *79/–*		L	R-7537-DAS 9 *87/6*	7401 ADJ *99/–*	KD 505 *250/–*
1964–65	Midget from C/No. G AN 3 25788	L	R-5925/4-IS 9/3 *79/–*		L	R-8681/1-DAS 9 *87/6*	8681 ADJ *99/–*	
1959–61	Magnette Mk. III	L	R-7396/3-IS 9/10 *106/–*		L	R-7584/2-DAS 9 *87/6*	7584 ADJ *99/–*	
1962–65	Magnette Mk. IV	L	R-8181/2-IS 9/10 *117/–*		L	R-8182/1-DAS 9 *92/6*	8182 ADJ *99/–*	
MORGAN								
1950–65 1963–65	Plus Four Plus Four Plus	T	R-1341/1 *63/–*		L	R-6103/1-DAS 9 *87/6*	6103 ADJ *99/–*	KD 641 *250/–*
1956–65	Four x Four	T	R-1401/1 *63/–*		L	R-6103/1-DAS 9 *87/6*	6103 ADJ *99/–*	KD 641 *250/–*
MORRIS								
1959–64	Mini Rally Settings	T	R-1799/1 *53/–*	A8-1799*	T	R-6330/1 *43/–*	A8-1798*	
	Mini Race Settings (Extra Heavy Duty)	T	R-1799 *53/–*		T	R-1798/1 *53/–*		
1959–64	Mini Cooper (Special Lowered Rear Suspension)				T	R-1894 *53/–*		
N.S.U.								
1958–61	Prinz and Sports	T	R-6279 *43/–*		T	R-6280 *43/–*		
1961–65	Prinz III, IV and Sports	T	R-6340 *43/–*		T	R-6280/1 *43/–*		
OPEL								
1963–65	Kadette	T	R-2823/1 *76/–*		T	R-2824/1 *76/–*		
1963–65	Rekord–4 Cyl.	T	R-1990/1 *63/–*		T	R-1558/1 *53/–*	A-2224 *99/–*	
1963–65	Rekord–6 Cyl.	T	R-1990/1 *63/–*		T	R-1558/15 *53/–*	A-2224 *99/–*	
1958–64	Kapitan	T	R-1613/2 *53/–*		T	R-1614/1 *63/–*	A-2015 *99/–*	
1964	Kapitan	T	R-1613/2 *53/–*		T	R-11045/1 *63/–*		
1964–65	Kapitan (from C/No. 1582888)	T	R-1613/2 *53/*		T	R-1558/15 *53/–*	A-2224 *99/–*	

*Available from July 1965

RALLY CHECK POINTS



Notes to Navigators. 3.

Devise a set of markings for your maps to indicate "gates" fords, bumps, rough roads, dangerous corners etc., and USE THEM ON ALL YOUR MAPS.

Fill in white road 'goers' in some distinctive colour such as green, orange, or purple—colours not often found on one inch O.S. maps. It greatly assists navigation through a magnifier when being thrown from the drivers lap to the door and back again.

ROADHOLDER SUSPENSION TUNING EQUIPMENT

Year	Model	FRONT Type	FRONT FIRMARIDE	FRONT ADJUSTARIDE	REAR Type	REAR FIRMARIDE	REAR ADJUSTARIDE	REAR SELECTARIDE (Full Kit)
PANHARD								
1956–65	Tiger	T	R-1467/1 *63/–*		T	R-1468/1 *63/–*		
PORSCHE								
1956–62	1600-356A B-C	T	R-2355/1 *76/–*	A-2355 *99/–*	T	R-2354/1 *76/–*	A-2354 *99/–*	
1964–65	911				T	R-22071/1 *63/–*	A-22071 *99/–*	KA-1028 *250/–*
RENAULT								
1959–62	Dauphine Gordini with Aerostable	T	R-1731/1 *63/–*		T	R-1432/4 *53/–*		
1960–62	Floride (Caravelle with Aerostable)	T	R-1731/1 63/–		T	R-1432/4 53/–		
1960–62	Ondine R 1090A	T	R-1731/1 *63/–*		T	R-1432/4 *53/–*		
1960–62	Ondine Gordini R 1091A							
1963–65	R8	T	R-1971/1 *63/–*		T	R-1970/1 *63/–*		
RILEY								
1957–65	1.5 Litre Competition	L	R-7324-IWS 8 *86/–*		L	R-7325-DAS 9 *77/6*	7325 ADJ† *99/–*	KD 522 *250/–*
1962–64	Elf Competition (Rally Settings)	T	R-1799/1 *53/–*	A8-1799**	T	R-6330/1 *43/–*	A8-1798**	
	(Race Settings)	T	R-1799 *53/–*		T	R-1798/1 *53/–*		
ROVER								
1963–65	"2000" Model	T	R-2290/1 *76/–*		T	R-2169/2 *76/–*		
SAAB								
1961–65	"96"	T	R-71003/1 *69/–*	A-2743 *99/–*	T	R-71004/1 *69/–*	A-2744 *99/–*	KA 577 *250/–*
SIMCA								
1963	1000 S	T	R-1863/1 *63/–*		T	R-1954/2 *63/–*		
1963–65	1000 S (from C/No. S160690)	T	R-1992/2 *63/–*		T	R-1954/2 *63/–*		
1963–64	1300-1500	T	R-2939/35 *76/–*		T	R2835/25 *76/–*		
1964–65	1300-1500 (from C/No. L. 08588)	T	R-2939/35 *76/–*		T	R-2940/35 *76/–*		
SINGER								
1956–63	Gazelle	T	R-2161/4 *66/–*		T	R-2065/2 *66/–*	A-2065 *99/–*	KA 565 *250/–*
Oct.1963-65	Gazelle	T	R-2399/3 *76/–*	A8-2399 *99/–*	T	R-2065/2 *66/–*	A-2065 *99/–*	KA 565 *250/–*
1961–65	Vogue	T	R-2399/3 *76/–*	A8-2399 *99/–*	T	R-71006/2 *69/–*	A-2756 *99/–*	KA 566 *250/–*
1964–65	Chamois Competition	S	RS-71122* *100/–*	SA8-22025* *200/–*	T	R-71123 *59/–*	A-2836/L§ A-2836/R *99/–*	KA 548§ *250/–*

**Available from July 1965
*Road Spring supplied by Rootes
†Adaptor Plates required
§Units are Left Hand and Right Hand

RALLY CHECK POINTS



Notes to Drivers

When you've got time in hand at a time control, clean the lamps and screen—odds on you'll be going flat out at the next section.

Warn the navigator of hump back bridges as soon as *you* see them.

Always check the car over first at a halfway halt before you go and have a 'cuppa'.

ROADHOLDER SUSPENSION TUNING EQUIPMENT

Year	Model	FRONT Type	FRONT FIRMARIDE	FRONT ADJUSTARIDE	REAR Type	REAR FIRMARIDE	REAR ADJUSTARIDE	REAR SELECTARIDE (Full Kit)
SUNBEAM								
1955–63	Rapier All Competition	T	R-2161/4 *66/–*		T	R-2065/2 *66/–*	A-2065 *99/–*	KA 565 *250/–*
1963–65	Rapier IV	T	R-2399/3 *76/–*	A8-2399 *99/–*	T	R-2065/2 *66/–*	A-2065 *99/–*	KA 565 *250/–*
1961–63	Alpine Mk. II Competition	T	R-2161/4 *66/–*		L	R-7855/1-DAS 9 *77/6*		KD 529 *250/–*
1963	Alpine Mk. III	T	R-71013/1 *69/–*		T	R-71012/1 *69/–*		KA 592 *250/–*
1964–65	Alpine Mk. IV	T	R-71109/1 *69/–*	A8 2399 @ 99/- each.	T	R-71012/1 *69/–*		KA 592 *250/–*
1964–65	Tiger (Export)	T	R-71109/1 *69/–*		T	R-71121/1 *69/–*		
TORNADO CARS								
1961–62	Tempest 2 Seater	S	RS-1582/5 *88/–*		S	RS-1582/3 *88/–*		
1961–62	Tempest 4 Seater	S	RS-1582/5 *88/–*		S	RS-1582/6 *88/–*		
1962–65	Talisman	S	RS-2737 *100/–*		S	RS-1886 *88/–*		
TRIUMPH								
1952–61	TRII, TRIII and TRIIIA	T	R-2079 *66/–*		L	R-6054-DAS 9 *77/6*	6054 ADJ-8 *99/–*	
1961–65	TR IV	T	R-2079 *66/–*		L	R-7999/1-DAS 9 *87/6*		
1959–65	Herald	S	RS-71081†† *100/–*	SA-2697†† *120/–*	T	R-71008 *59/–*	A-2612 *99/–*	KA 552 *250/–*
1962–65	Vitesse	S	RS-71081†† *100/–*	SA-2697†† *120/–*	T	R-71008 *59/–*	A-2612 *99/–*	KA 552 *250/–*
1963–65	Spitfire Mk. I and II	S	RS-71081†† *100/–*	SA-2697†† *120/–*	T	R-71008 *59/–*	A-2612 *99/–*	KA 552 *250/–*
1963–65	2000	St	RAS-1511/5 *120/–*		T	R-101048/2 *85/–*		KA 1010 *250/–*
1965	TR IV A	T	R-71143 *69/–*	A8-22014 *99/–*	L	R-8686/1-DAS 10* *98/6*		
TURNER								
1961–62	Sports 2 Seater	L	R-5925/4-IS 9/3 *79/–*		T	R-1746 *53/–*		
1961–62	Coventry Climax Sports							
1963	Mk. III 2 Seater.	S	RS-1889/1 *59/–*		T	R-1746 *53/–*		
1963	GT 1500	S	RS-1889/1 *59/–*		S	RS-1874 *88/–*		
T.V.R. CARS								
1962	Mk. III	S	RS-1919†† *59/–*		S	RS-1919†† *59/–*		
1963	Mk. III "1800"							
19[illegible]	Griffiths "200" Series							
VAUXHALL								
1961–63	Victor FB / Victor VX4/90 up to C/No. 3151343	T	R-2715/1 *76/–*		T	R-2716/1 *76/–*	A-2716 *99/–*	KA 569 *250/–*
1963–64	Victor FB Victor VX 4/90	T	R-2720/1 *76/–*	A8-2720 *99/–*	T	R-2716/1 *76/–*	A-2716 99/–	KA 569 *250/–*

(continued over)

††Unit supplied less Road Spring
*Live Axle Model (for U.S.A. only) fits a different Link to standard

RALLY CHECK POINTS



Notes to Drivers.

Don't tap dance between the 'stop' and 'go' pedals, it's the quickest way of turning a navigator green around the gills.

O.S. maps are not always up to date so don't rely on the navigator calling up bends 100% accurately.

ROADHOLDER SUSPENSION TUNING EQUIPMENT

Year	Model	FRONT			REAR			
		Type	FIRMARIDE	ADJUSTARIDE	Type	FIRMARIDE	ADJUSTARIDE	SELECTARIDE (Full Kit)
VAUXHALL—*continued*								
1965	Victor 101 Victor VX 4/90	T	R-2720/1 *76/–*	A8-2720 *99/–*	T	R-2392/1 *76/–*	A-2392 *99/–*	KA1027 *250/–*
1958–65	Velox and Cresta	T	R-2663/1 *76/–*		T	R-2664/1 *76/–*	A-2664 *99/–*	KB 570 *275/–*
1963–65	Viva	T	R-1993/1 *63/–*	A-2817 *99/–*	T	R-1994/1 *63/–*	A-2818 *99/–*	KA 1011 *250/–*
VOLKSWAGEN								
1962–65	1500	T	R-1893 *53/–*	A-22072 *99/–*	T	R-1898 *53/–*	A-2973/L A-2973/R *99/–*	KA 1013 *250/–*
1952–65	1200	T	R-2139 *66/–*	A-2269/L§ A-2269/R *99/–*	T	R-2140 *66/–*	A-2631 *99/–*	
VOLVO								
1958–65	P1200 Amazon 122S	T	R-2636/1 *76/–*	A8-2636 *99/–*	T	R-2852/1 *76/–*	A8-2852 *99/–*	KB 594 *275/–*
1961–63	P1800	T	R-2853/1 *76/–*		T	R-1257/2 *63/–*	A-2028 *99/–*	KB 586 *275/–*
WOLSELEY								
1957–65	1500 Competition	L	R-7324-IWS 8 *86/–*		L	R-7325-DAS 9 *77/6*	7129 ADJ† *99/–*	KD 522† *250/–*
1962–64	Hornet (Rally Settings)	T	R-1799/1 *53/–*	A8-1799*	T	R-6330/1 *43/–*	A8-1798*	
	Hornet (Race Settings)	T	R-1799 *53/–*		T	R-1798/1 *53/–*		

†Adaptor Plates Required §Units are Left Hand and Right Hand
*Available from July 1965

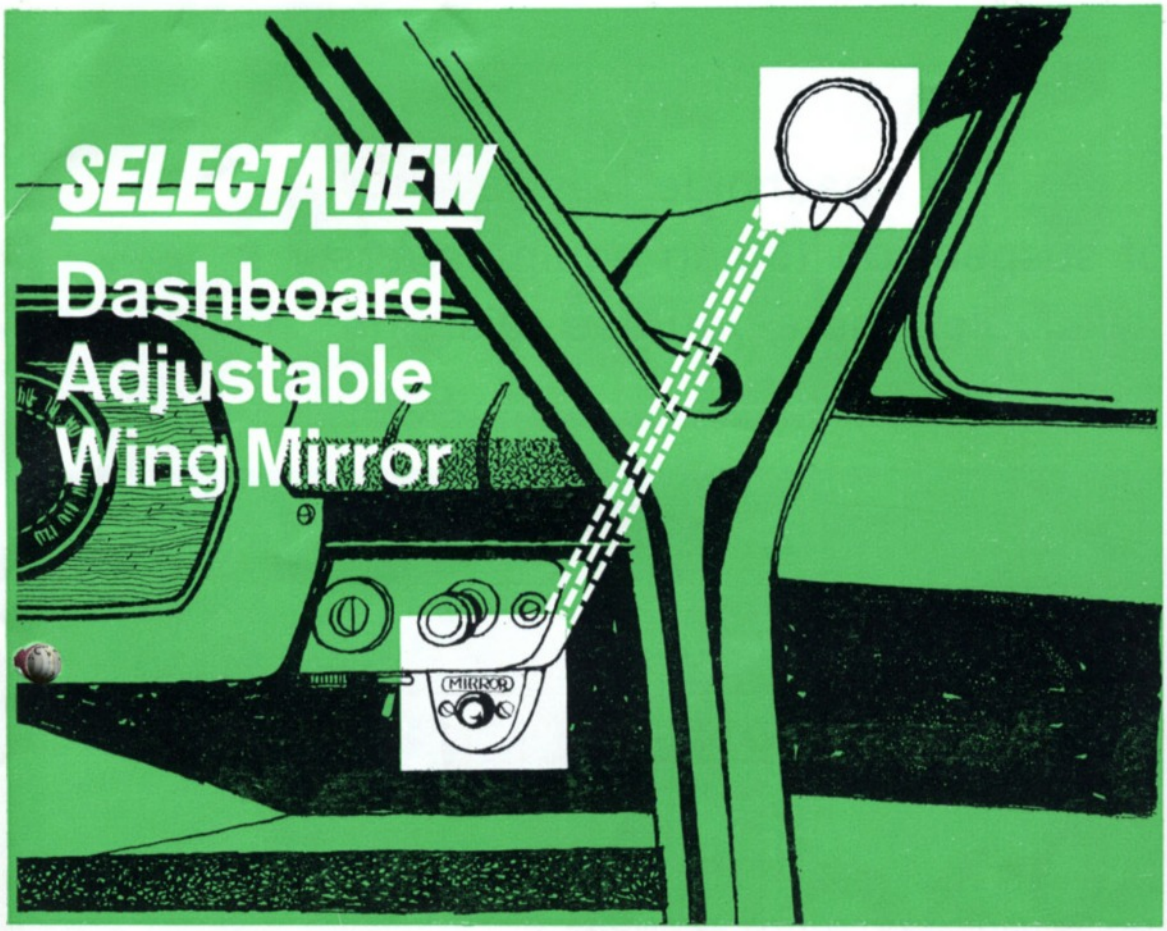
NOTES

REMEMBER—TO WIN YOU'VE GOT TO FINISH



"HE ONLY FITTED THE STICKER"







AM 35 SPORT



AM 40 TOURING



AM 25/2 MINI TOURING
AM 25/4 SMALL CAR TOURING

Selectaview wing mirrors are adjusted from a switch situated on the dashboard which is connected to the mirror by neatly concealed cables. The mirror face is adjustable 28° laterally and 10° vertically and is protected from damage by an extended cowl. The cables are connected in such a way that movement of the switch is matched by a similar movement of the mirror face. Thus, if the switch is moved to the right the mirror face moves to the right also.

The mirrors are precision engineered and robust in construction with a heavy quality chromium plated finish. The mirror face is flat and free from distortion and so reflects a true image.

Three types of mirror are available—
Type AM. 35 Sport,
Type AM. 40 Touring and
Type AM. 25 Mini and Small Car Touring.

All of these types are available as single mirrors with a single control switch or as pairs with double switch. Matching non-dashboard adjustable mirrors are available for all types.

Selectaview wing mirrors are easy to fit and each box contains complete fitting instructions and drilling templates as well as all the necessary grommets and screws.

1. Mirror adjusting is no longer a two man job.
2. Where more than one driver uses the car he can instantly re-set the mirror from the driving position.
3. Similarly, it is just as easy to readjust to suit a changing driving position they are ideal when used with reclining seats.
4. At night a touch of the dashboard control eliminates dazzle from behind. Its just as easy to re-align.
5. Ideal for changing to continental "right hand side" driving.



PRICES	SINGLE	PAIR	MATCHING UNIT
AM 25/2 (Mini Touring)	57/6	117/-	27/6
AM 25/4 (Small Car Touring)	59/6	119/-	27/6
AM 40 (Touring)	65/6	131/-	35/-
AM 35 (Sport)	65/6	131/-	35/-

Selectaview Dashboard Adjustable Wing Mirrors can be obtained from your nearest Armstrong stockist. If motorists experience difficulty in obtaining them they should write to Armstrong Patents Co. Ltd., Beverley, Yorkshire, England.

The Roadholder range
of suspension tuning equipment is
available where you see this sign



If you have difficulty obtaining supplies
or require any further information
contact:

ARMSTRONG PATENTS CO. LTD.,
EASTGATE, BEVERLEY, YORKSHIRE, ENGLAND
TEL 882212 (TEN LINES) TELEX 52164

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