

Safety Fast

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the magazine for those who practise driving as an art



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GETTING OVER THE SHOCK

Suspension tuning has recently become an important and complicated feature of improving a car's all-round performance. Armstrong Patents Co. Ltd. have introduced a wide range of shock absorbers to suit racing, rallying and fast road driving

UNTIL recently the term 'tuning' as applied to the motor-car invariably referred to the engine, but now enthusiasts talk of suspension tuning almost as much and from almost as many aspects. One of these aspects involves the use of shock absorbers, and Armstrong, who have been leaders in this field in many forms of racing, have now introduced their 'Roadholder' range of suspension tuning equipment.

As a background to the introduction of these shock absorbers Armstrong have a long and successful list of competition achievements and their equipment has been used on most of the Grand Prix cars, on all of the BMC competition cars, and all of the BMC sports cars in current production.

The question many enthusiasts may ask is: 'How important a part is played by the shock absorber in tuning a car's suspension?' Certainly for the ultimate performance in roadholding it may be necessary to change the method of

Armstrong 'Roadholder' shock absorbers would make this Sprite's landing a lot less painful! (left).

On the right is the lever type Armstrong shock absorber of the type fitted to the BMC sports car range. This model is adjustable to 22 settings by turning the knob on the left

suspension, for example, substituting independent suspension for a solid axle; but for setting a production car up for competition use the easiest and simplest method of obtaining better performance is to alter the shock absorber rates.

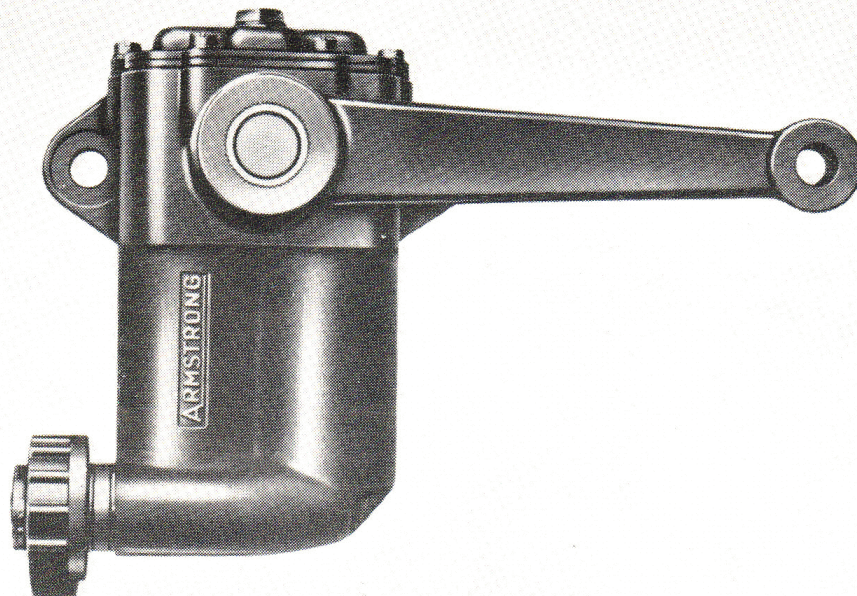
Standard shock absorbers as fitted to production cars are inevitably a compromise between the ultimate in road-holding and a comfortable ride over an assorted collection of road surfaces.

For increased suspension performance a harder setting is necessary, and also for carrying abnormally heavy loads that would normally upset a car's stability the same treatment would apply. For competition use a variable rate would be ideal, allowing different settings for various surfaces and types of competition.

For instance, one would require the stiffest setting for use on a smooth race track or road circuit but a slightly softer setting than this for use on rallies. It may even be necessary to adjust the shock absorbers during a rally for use on smooth hill climbs which might be included as special stages and then for use on rough unmade roads as often found on other sorts of special stage. On these two different surfaces it is easy to see that variable settings would be of great advantage.

The next question to come from the enthusiast is: 'If these shock absorbers are so important, then there must be something wrong with the basic suspension layout. As suspensions improve will shock absorbers be less important?' In fact the opposite applies, as if one looks at the early cars one notices that shock absorbers were relatively unimportant and non-existent on many cars.

The reason for this was that the suspensions were so hard that they provided their own damping effect. For a shock absorber is really better



described as a damper. The springs should absorb the initial shock from the bump, and the damper controls the bouncing effect. With leaf springs the friction between the leaves acts in a damping capacity and partially removes the need for a separate damper or shock absorber, as it is known more often in the United Kingdom.

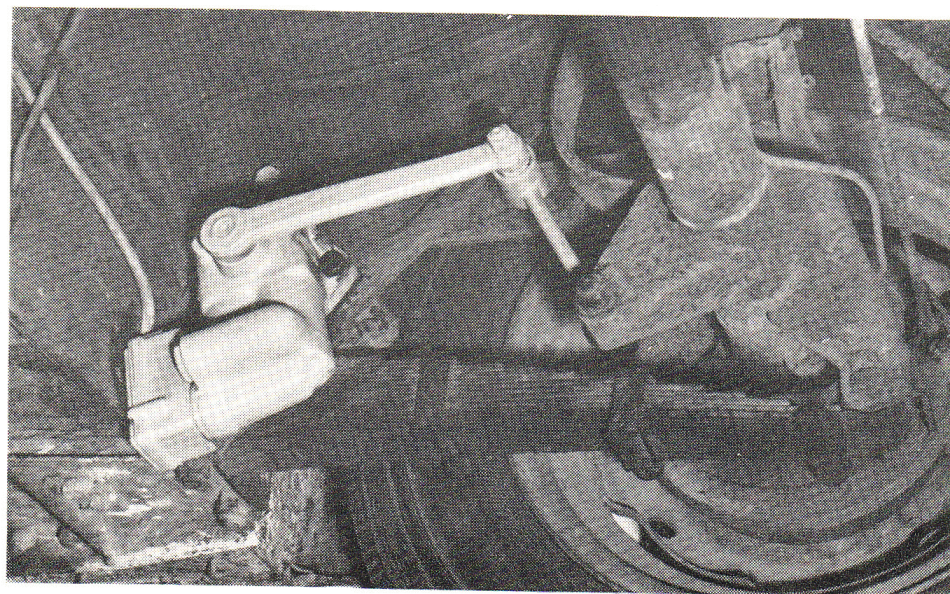
As suspension systems became softer to make ride in the car more comfortable on smooth modern roads, so the rate of bounce increased and so the need for a damper became more important on rougher surfaces to absorb this new tendency for the car to pitch.

Until the suspension incorporates its own damping system from the start, separate shock absorbers or dampers will be needed. Some modern suspension

systems already use a telescopic, piston-type shock absorber inside a coil spring unit, which saves space.

Armstrong Patents Co. Ltd. can supply four different types of shock absorber, three of them adjustable on both compression and rebound settings, to meet the demands of both racing driver and family motorist who may both need something different to meet the inadequate compromise of the standard unit. Racing demands a stiffer setting, and the fast driver on public roads and the Continental tourist often needs firmer suspension to cope with uneven road surfaces and their effect on the car's roadholding.

First in the 'Roadholder' range is the Firmaride unit. This is not adjustable but has an increased setting and/or



On the right is the Armstrong Selectaride unit fitted to the rear of a Mk. I Sprite and electrically controlled by a four-way switch on the dashboard so that the setting can be controlled while the car is on the move

capacity over the conventional shock absorber. (Modern suspension systems often overload the capacity of the shock absorber by their very low spring rates.) The Firmaride units are flexibly designed for use with adjustable units so that the car can be set up to the best advantage.

Below is a table of the Armstrong 'Roadholder' shock absorbers available for the BMC Mini and sports car range

The Adjustaride 22 offers 22 different settings, and adjustment is by means of a knob on the outside of the unit, which does not have to be removed for this job. The Adjustaride 8 has 8 settings and is adjustable by means of a knob or screwdriver slot; the latter, in the case of the unit being inside a coil spring. The Selectaride is an electrically controlled adjustable unit which has four settings manipulated from the dashboard of the car.

These shock absorbers are made in both lever- and telescopic-types and can be fitted to both front and rear in various combinations (except Selectaride which are used at the back only). It is not recommended that Adjustaride be used only on the front. Various units are available for 51 makes of car and full details are given in a comprehensive booklet available from Armstrong Patents Co. Ltd., Shipton Road, York.

R. K. S.

Year	Model	FRONT			REAR			
		Type	FIRMARIDE	ADJUSTARIDE	Type	FIRMARIDE	ADJUSTARIDE	SELECTARIDE (Full Kit)
AUSTIN and MORRIS MINIS								
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 Suspension) Lowered Rear	T			T	R-1894 53/-		
AUSTIN-HEALEY								
1954-59	100	L	R-7763-IS 9/10 117/-		L	R-6076/1-DAS 9 87/6	6076 ADJ 99/-	
1955-57	100 S	L	R-7763-IS 9/10 117/-		L	R-7598-DAS 10 95/6	6189 ADJ 112/-	
1958-59	Sprite	L	R-5925/4-IS 9/3 79/-		L	R-7335/1-DAS 8 79/6		
1959-64	Sprite	L	R-5925/4-IS 9/3 79/-		L	R-7537-DAS 9 87/6	7401 ADJ 99/-	KD 505 250/-
1964-65	Sprite from C/No. H-AN8-38829	L	R-5925/4-IS 9/3 79/-		L	R-8681/1-DAS 9 87/6	8681 ADJ 99/-	
1959-62	3000 Mk. I and 100-Six	L	R-7763-IS 9/10 117/-		L	R-6076/1-DAS 9 87/6	6076 ADJ† 99/-	KD 506† 250/-
1962-64	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	3000 Mk. III	L	R-8627-IS 9/10 117/-		L	R-8188/1-DAS 10 98/6	8188 ADJ 112/-	
M.G.								
1955-62	'MGA'	L	R-6172/1-IS 9/10 117/-		L	R-6066/1-DAS 10 98/6	6066 ADJ 112/-	KE 518 275/-
1962-65	'MGB'	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-AN3-25788	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/-	

† Adaptor plates required.