

SUSPENSION



Adjustable Damper Suspension Kit

The following damper and adjustable suspension kits all contain the famous original HILO RAC homologated kit but are available with the budget kit C-STR644 except for the lowered Damper types. The reason for this is that the C-STR644 kit does not lower as much as the HILOs making these particular kits impractical.

To order kits with the C-STR644 instead of the HILO, add the suffix A to the end of the part number.



- 1. Complete camber and tracking kit with AGX Evolution dampers. a. Kit with HILOs . . . MSSK3012 b. Kit with budget C-STR644 MSSK3012A
- 2. AGX Evolution dampers kits. a. Kit with HILOs MSSK3011 b. Kit with budget C-STR644.MSSK3011A
- 3. Gaz adjustable dampers kit. a. Standard height with HILOs kit MSSK3000 b. Standard height with budget C-STR644 kit

c. Lowered height with HILOs kit MSSK3001 d. Lowered height with budget C-STR644 kit.

..... MSSK3001A 4. 50th Anniversary Mini Spares Spax adjustable dampers. a. Standard height with HILOs kit MSSK3005 b. Standard height with budget C-STR644 kit MSSK3005A

c. Lowered height with HILOs

kit MSSK3006

Suspension Knuckles

Vehicles from 1990 on, have a knuckle joint GSV1264 fitted to the front only which raises the suspension for extra clearance. The knuckle joint (item 5) has a built in spacer as shown and should be replaced by item 6 the original when fitting HILOs.



Call to Order or Questions at 800-946-2642

- 5. Knuckle with built in spacer as fitted to front only from 1990 on GSV1188
- 6. a. Genuine original type knuckle for pre 1990 front & all rearGSV1118 b. Mini Spares original type knuckle for pre 1990

Rubber gaiter and plastic knuckle seat are available individually.

Non Adjustable Damper Type Kit

- 8. Kayaba Self adjusting Gas standard height dampers. a. Kit with HILOs MSSK3004
- b. Kit with budget C-STR644 MSSK3004A 9. Kayaba Gas upgrade standard height dampers.
- a. Kit with HILOs MSSK3003 b. Kit with budget C-STR644 MSSK3003A



Adjustable Suspension Cones

Known as a budget adjustable suspension cone these are a compromise for the real original Hilos.

Made by Mini Spares in the UK to their usual high standards these are superior to the copies found elsewhere that do not adjust as low and have poor threads.

In machined alloy to a basic shape with a flat base for the suspension cone spring rubber they will oxidise with time. Supplied as a full kit of 4 adjustable cones and 2 rear struts The original Hilo being cast has a specific shape where the suspension cone spring rubber sits to improve road holding .Mini Spares true Hilos are the only type ever homologated for motor sport use.

10. a. Pair HILO suspension cones HI-LO

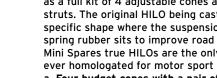
- 11. Pair rear alloy rods and 2 strut plugs HILO-01 12. Adjusting hexagonal rod (if required).
 - a. Front 40cm long HILO-02 b. Rear 50.5cm long HILO-03

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a. Four budget cones with a pair of rear



USPENSION



alloy rods..... C-STR644

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Suspension Dampers & Cones

Evo Performance Dampers

- 1. New Eight Point Twin Tube Adjustable Dampers. Redesigned AGX Evolution easy to set up eightpoint adjustable twin type gas-filled dampers. The eight-point dial feature makes for both easy and extremely accurate on-car adjustment. Suitable for standard height cars, the dampers can also be used on cars which have been lowered by up to 35mm from original suspension height. a. Front. Sold individually743039

Spax Performance Dampers

- 2. 50th Anniversary Mini Spares / Spax Performance Dual Adjustable Damper. Now Krypton gas filled for better low speed ride and improved high speed performance over traditional oil emulsion dampers. For standard height and lowered cars. Recommended to be fitted in pairs but sold individually. Adjustable while on the car. All sold individually.
 - a. Front standard height 158-MIGAS
 - b. Front lowered height158-M11GAS
 - c. Rear standard height 158-M2GAS
 - d. Rear Lowered height 158-M12GAS
- Motorsport Clubman range damper З.
- 4. Special Softer Fitting (standard height) Spax knob adjustable for softer setting on standard cars. The lowest setting is equivalent to standard dampers.

 - a. Front SpaxNGM1A b. Rear SpaxNGM2A

Gaz Performance Dampers

Gaz performance dampers as used by the Mini Spares sponsored Mighty Mini Race Series. Adjustable on the car.

6

- 5. a. Front std height. Sold individuallyC-STN231
 - b. Rear std height. Sold individuallyC-STN233
 - c. Front lowered height. Sold individuallyC-STN236 d. Rear lowered height. Sold individually C-STN237
 - Standard Dampers

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R		6.	Standard replacement dampers, either Unipart or Kayaba premium upgrade. Kayaba are the		
			largest and probably best suppliers of original equipment to car manufacturers	l	
				ŀ	
			in the world. It is recommended to fit dampers		
			in pairs.	ĺ	
		a.	Kayaba front. Sold individually 442001	l	
		b.	Unipart front. Sold individually GSA388	1	
📄 📕 c. Kayaba front gas upgrade. Sold individual					
	0		342001		
		d.	Kayaba rear. Sold individually442002		
100 C				1	

- f. Kayaba rear gas upgrade. Sold individually 342002
- 7. Kayaba gas pressurised, self-adjusting dampers. Very effective and cost efficient slim body upgrade offering all weather, all temperature consistency for road cars. We
 - recommend fitting in pairs. a. Gas a-just front. Sold individually 552018
 - b. Gas a-just rear. Sold individually 552019
 - c. Gas a-just. Sold as car set MSSK3015

8						
8.	Damper eyelet bush for Spax / Gaz.					
•••	Sold individually					
9.	Rear damper upper bush kit. Sold individually					
10.	Rear damper top thread protection bush.					
	Sold individually					
11.	Standard replacement top damper bracket.					
	a. R/H top bracket 21A471					
	b. L/H top bracket					
12.	Top damper bracket for cars with lowered suspension. Maintains					
	near upright position required for retaining maximum efficiency,					
	available in pairs only C-AJJ3359					
13.	Upgraded EN8 lower damper pin. C-AJJ3361					
Rubber Suspension Cones						

Damper Fittings



🔽 In the past, there were two alternative rubber cones to the standard one - (which were red or blue spot). The first was produced at the request of BL's ST Department. These were considerably harder than standard and were developed to cope with the extra weight carried by the rally cars. The second was slightly uprated, but a more progressive cone, originally fitted to the Hatchback Innocenti 90/120. Proven to give a superior handling characteristic, Mini Spares have enhanced it further using a selective consistent balanced rubber mix and cooling procedure to get far more consistent spring rates. This provides better working rubber to help reduce body roll as the ultimate cone spring for road and race.

Used on Keith Dodd's twin point for the last 7 years. Improved manufacturing makes these more expensive than standard cones. 14. This shaped cone has a progressive balanced spring rate and

- when fitted initially sits higher than the standard original cones, HILO's will be required.
- a. Road and rally red spot C-STR687 🥨 b. Tarmac race only - yellow spot.....C-STR688
- 15. Standard cone spring FAM3968
- 16. Bump stop to fit nut on rear cone, only required on late subframe 1992 on when rear wheels foul or ERA cars.... ERA1190

Bump Stops

- 18. Bump stop fits on subframe under upper arm 2A4267
- 19. Rear hydrolastic large dome bump stop
- 20. Rear hydrolastic flat dome rebound buffer 21A1517
- 21. Front hydrolastic bump stop 21A1598
- 22. Front dry bump stop pre 1976
- (twin bolt) 2A4332 23. Front bump stop 1976 on (single bolt)
- FAM2764 24. Front bump stop 1976 on (made in poly with lower flat top) FAM2764MS
- 25. The rearward pitch under hard acceleration can be minimised by fitting a progressive bump stop kit. Improves handling when fully laden. Developed for hydrolastic cars but often modified to fit dry suspension. Front bump stop kitC-AJJ4007
- 26. Rear progressive bump stop kit. Originally developed for hydrolastic cars but often modified by customers to fit dry suspension.
-C-AJJ3313 27. Rubbers to fit either kit are available separately. Same as the MGB AHH7074

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SPAX coil over kit parts are available separately, dampers, springs or front brackets. The cheapest way to purchase the SPAX complete car set is by ordering as RSX519 or RSX520 kits, for road/ competition.

Mini Spares Spax dampers/coil spring sets are for road use and limited tarmac competition events. If used for off road or rough terrain, strengthening modifications will need to be made. Fits most standard 10", 12" and 13" wheels but wide tires must be checked for clearance and spacers added when required. Full fitting instructions with complete kits.

- 1. a. Standard height kit. Full car set.
 - b. Rear damper/coil set standard. 2 x rear.....
- 2. When the Mini suspension was designed over 50 years ago with rubber cones it was innovative and successful but not very suitable for today's driving. Softer cones in different shapes have proven to give a more comfortable ride but at detriment to the handling. Within the confines of the Mini suspension the Mini Spares full coil over kit eliminates the rubber cones and provides a good alternative. Another alternative is the coil spring cone conversion, which is a direct replacement for the rubber cone. Made out of top quality spring wire to eliminate compressing after a few years usage they have been used on the road in Japan and



the USA for some time, however Mini Spares offer them only for Race use on tarmac where the suspension must be professionally set up. Not suitable for undulating tarmac (rough roads)

..... CK23

Coil spring cone conversion. Available in three spring rates.

- a. For softer rate (Blue).....C-SRP100
- b. For firm rate (Red).....C-SRP200
- c. For competition spec rate.
 - (orange or green) C-SRP250

Tie Rods & Joints

- - b. Standard right hand arm only.

 - c. Standard left hand arm only.
- New one piece forged lower arm makes nearly every other arm produced redundant. It is the correct H section shape as the originals for strength, and is fully adjustable to obtain the



- 6. Uprated adjustable tie rod, ⁵/₈" thick, is essential when setting up castor/camber angles correctly. Have been successfully used on road/ race cars since late 1970's. Sold as pair . 21A1091
- 7. Spherical jointed rod-end adjustable tie rods are for race use to allow fine castor adjustment and eradicate weaving effect when braking or accelerating hard. Sold with joints and in pairs.
- B. Tie rod supplied with all std nuts,bolts and
- part as per those fitted to tie rods. Sold individually.....VCW8 IO.Male spherical joints are available as a spare

part as per those fitted to bottom arms. Sold individuallyVCM8

11. Small dustcover that fits over all rod end joints. (2 required per joint). Sold as pair.....C-AJJ3368

12. Original large boot to protect rod ends from foreign bodies. Sold individually C-AJJ3367



Tie Bar & Arm Geometry Set

13. To get the best handling from your car it is imperative to equalise any setting side to side. Adjustable heavy duty tie rods are for getting castor angles correct and lower adjustable arms will correct or change camber angles. There is no point fitting rear alignment brackets unless the front geometry as stated is corrected.

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	Contents of Front Geometry Kits							
Order Front Geometry Kit as	Forged lower arms	Adjustable tie rods	Adjustable camber and tracking brackets See page 6 for more details	Bushes	Bushes	Extra fitting items		
21A1092	n/a	21A1091	n/a	n/a	C-STR627	All nuts & washer required 53K1031 PWZ207 2A4328 GFK3224 GFK3212 GFK1125		
MSSK3008	C-AJJ3360 📀 🔊	21A1091	n/a	C-STR632	C-STR627	n/a		
MSSK3013	C-AJJ3360	21A1091	MS73	C-STR632	C-STR627	n/a		
MSSK3007	C-AJJ3360	21A1091	MS73	n/a	n/a	n/a 👔		
MSSK3013A	C-AJJ3360	21A1091	MS73	n/a	C-STR627	Spherical joint MSRJM Dust cover C-AJJ3368 Rose joint spacer AN1372		
MSSK3014	C-AJJ3360	21A1091	MS70	C-STR632	C-STR627	Shims CK18		

Call to Order or Questions at 800-946-2642



Steering

Upper Arm Rebuild Kit





Track Rod Ends



- Longer track rod ends are for use on lowered cars or cars with negative camber where the original has insufficient thread for the standard rod end to screw safely onto steering rack. Also fits Midget and Sprite.
- Sold individually.....GSJ158 4. a. Track rod end for steering rack.



 a. NEW Quick rack 2.2 turns lock to lock as (opposed to 2.7) for competition, MK2 on.

R/H/D	C-GSR626
L/H/D	C-FAM7307
b. New standard steering rack, MK2 on.	
R/H/D	FAM7306
L/H/D	FAM7307MS

Steering Rack Gaiter Kits

Over the last 50 years there has been significant changes in manufacturers of steering racks, which have used these three common types of gaiter kits.

- 9. Lower steering felt bush. 1959 -1985 21A998
- 10. Lower steering column plastic bush. 1985 - 1996 NAM8563

Lower Arm Pin and Bushes

 11. a. Lower arm pin genuine
 HMP441037

 b. Lower arm pin non genuine
 21A1889

Bottom Arm Bushes - Pretty Poly vs Rubber Whilst it is true that polyurethane is harder wearing, brighter colored and longer lasting than rubber, in many applications it is not necessarily the best material. Polyurethane has greater abrasion resistance and is stiffer for a similar hardness, is much cheaper to produce - and therefore sells at a lower cost - and can be produced in a wide variety of colors. However it does not possess the elasticity, vibration absorbency or deflection tolerance of rubber, pretty much why manufacturers use rubber on production cars instead of the cheaper polyurethane.

A case in point is the lower arm bush used in competition where spherical rod end joints are not allowed. Increasing the castor angle to improve handling distorts the inner lower arm bush dramatically. The more castor angle used, the more dramatic the distortion. Whilst a rubber bush will tolerate this, a polyurethane bush will deform and stay deformed, gradually disintegrating affecting the bushes performance. Ideally a rubber bush with a metal sleeve in it to reduce the quantity of rubber in the installation to improve stability and control is the way to go. Mini Spares - after protracted investigation into materials, suitability and performance - have produced a rubber bush with consistent performance manufactured with a special angled bush to compensate for the increased leverage applied when adjusting (increasing) castor angle. The new offset performance bushes are available in 80 or 90 IRHD rubber for fast road/



competition and race use respectively. Although being a little more costly than the plastic alternatives they do a far superior job. **12. a. Where the geometry has been changed**

the new road/competition bush with a moulded metal sleeve, with an angle to compensate for increased castor angles to prevent bush distortion, for all uses. Yellow dot. Set of four.....CSTR632

 b. As above but in harder material 90IRHD. Race only. White dot. Set of four.... C-STR631
 13. Standard production sleeved rubber bush.

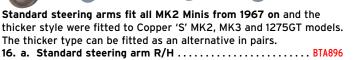
Sold individually......21A1882 14. A collared rubber bush in upgraded rubber is for cars where no geometry change has been made. Sold individually.....21A1882MS

Tie Bar Bushes



The same research program has encompassed the tie bar bushes. A well known fact amongst competition car drivers is that the outer bush needs to be hard to stop weaving when braking, increasing car stability.

Steering Arms



- b. Standard steering arm L/H BTA897 17. a. Upgraded steering arm R/H BTA894
 - b. Upgraded steering arm L/HBTA895

Easy on-line ordering at www.minimania.com

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Radius Arms



Radius arm for vehicles with dampers (known as dry suspension shock absorbers). Complete with pins and necessary parts ready to fit.

(Kit No. 3 GSV1125)

a. New R/H arm only......21A392 b. New L/H arm only......21A393



- 4. Rubber grommet for grease hole, on item no. 5.....1447081
- - b. Right hand.....14A6615

Anti Roll Bars

Anti-roll (sway) bars are effectively a length of either solid steel rod or tube mounted across the car in mountings generally fixed to the chassis at either front or rear, and sometimes both. An arm at each end links the bar to each wheel, so when the car rolls in a corner, the bar has to be twisted before one wheel can rise and the other fall. The resistance offered by the bar controls weight transfer and reduces body roll, thus improving cornering speed by altering under or

over-steer. A very powerful instrument, it can have more beneficial effects than simply fitting stronger cone springs, because the Mini has very limited options.

A few years back Mini Spares undertook a re-development programme to improve the bars performance as well as improve fitability irrespective of handbrake actuating lever length, damper size or exhaust type used. By replacing the simple bent bar with a more compact bar and blade design, it provided a lighter unit with reduced lever arm deflection. Further enhanced by shorter drop links.

The fixed rear bar uses a 0.50"(12.7mm) diameter steel rod with 3mm plate blades. To maximise efficiency, the only rubber bushes used are metalastic bushes in the drop links - unlike other kits that rubber mount the bar also. The adjustable rear bar uses a 0.75" (19mm) diameter steel rod with 4mm plate blades with spherical rod end drop links to give ultimate efficiency. Adjustment is via a series of holes along the blades. Both kits come complete with all necessary components for easy fitment.

12

- Alloy Rear Subframe Section
- 5. This rear subframe

replacement box section is manufactured from an extruded aluminum alloy for inherent strength and consistency of dimensions,



9

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Hydrolastic Pipes

- 8. Nylon flexible hydrolastic pipe tested to 1200 PSI replacement for genuine steel type which can be run inboard. Approximate length 10'9"......FSP3
- - Not sided......FSP4



- 11. Adjustable front anti roll bar, ³/4" race only specialist suspension setting up required.C-AJJ4006



Call to Order or Questions at 800-946-2642



Subframes and Fixings

Front Subframes

All the genuine subframes are assembled on the original jigs to ensure correct fit and alignment of parts to the car body to provide correct castor and camber angle. It has the correct amount and

positioning of welds. They are finished 0 0 0 0 in black electrocoat paint which is the only method of ensuring every

- internal and external part gets protection to provide longevity.
- 1. a. Front subframe dry suspension cars 1959-76 21A2570
 - **b. Front subframe** for 1275cc cars 1990 on 21A2774

3. Towing eye hooks latest type.....

Subframe Mountings

4. Rear of front subframe mounting. a. Genuine. Sold individually......21A2599

All Front

Subframes are

only available as

aenuine

2

 5. Front tear drop mounting on front subframe.
 a. Genuine. Sold individually21A2624

b. Non genuine. Sold individually 21A2624MS

- Lower front subframe tower mount rubber center bolt seal......

Front Subframe Solid Mountings

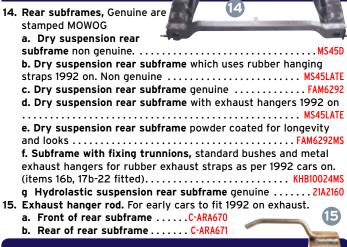
- 8. Budget poly kit for tower and front of front subframe only C-STR643

10. Front alloy cast mountings which will



not break and also enhance road holding. These replace those troublesome front rubber mountings and compliment the

Rear Subframe



Rear Subframe Fixings



26. Pair of adjustable rear camber and tracking brackets. The ultimate for correcting suspension geometry giving infinite camber adjustment.......MS73

27. Rear tracking shims. An alternative to MS73 is to use MS70

Easy on-line ordering at www.minimania.com

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. These replace esome front rubber nd compliment the untings. These are also for vehicles nd sold in pairs. When fitted with the