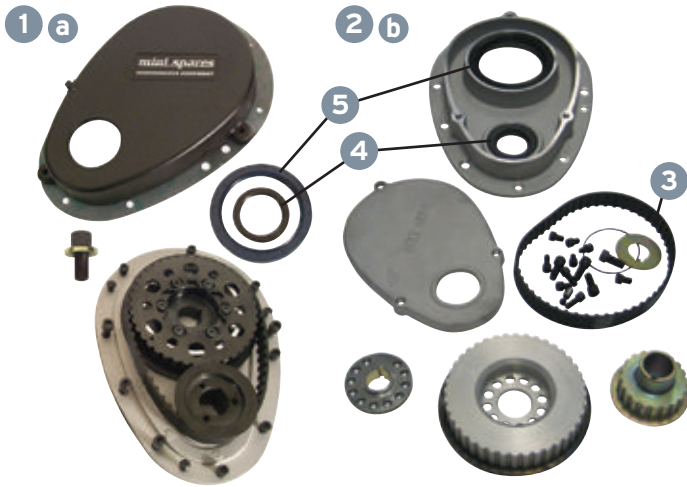




Belt Drive Kits



Belt drive kits help to restore power loss caused by original timing gear wear and stretching. Helps reduce noises associated with valve train and dampens out certain harmonic noises generated by the three main bearing 'A' series engine. Also preserves exact timing where anything over 2° out causes power loss. The kits available contains everything to replace timing gears and cover. Mini Spares latest belt drive kits which have a plastic dust cover will be phased out and replaced by the alloy version owing to costs. Two options for crank pulleys are used. Rotaslide screw adjustment or dowel adjustment.

- Rotaslide Belt drive kit with screw type adjustment.**
 - Plastic cover (38mm wide crank gear boss) C-AJJ3326RACE
 - Alloy cover (not shown) C-AJJ3326
- Dowel type belt drive kit, where interrelated holes between cam boss and cam gear are located by a dowel to give exact timing that will never move, is in fixed increments of 2°.**
 - Plastic cover (38mm wide crank gear boss) C-AJJ3328RACE
 - Alloy cover (32mm wide crank gear boss) C-AJJ3328
- Replacement belt for above BELTBELT**
- Replacement small oil seal.**
 - For 32mm wide gear BELTSEAL1
 - For plastic case type (as shown above) with upgraded 38mm wide gear BELTSEAL3
- Replacement large oil seal BELTSEAL2**

Timing Covers

- Timing cover with completely round breather for pre injection cars, A-plus cars without sensor or pickup. CAM4868**
- Timing cover less breather for A Plus engines with single chain and tensioner. CAM4904**
- Timing cover with breather for twin point injection cars. LJR103470**
- Timing cover with breather for single point injection cars 910n only with brackets for pick up points to provide timing /ignition sensors. LJR10168**



Note: All covers come complete with seals

Simplex Tensioner Repair Kit

- Simplex tensioner 6 piece kit to stop timing chain rattle on A plus engine with single row chain. Sold as kit MSSK051**
Kit Contains:
 - Timing chain 3H2127
 - Oil seal 88G561
 - Gasket 12G2625
 - Tensioner 12G2621
 - Plate to hold tensioner 12G2628
 - Pin to hold tensioner/plate . 12G2629
- Gears if required are:**
 - For crankshaft 8G725
 - For camshaft 12G4337



Upated Duplex Gear Kits



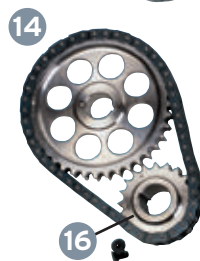
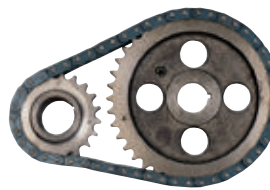
Fitment of an uprated cam drive system is essential when building a performance orientated engine. Timing scatter induced by the standard set up can reach up to 15° once the single row chain has stretched, which it does after only a few miles. This scatter not only affects the cam timing, but also the ignition and the distributor being driven by the camshaft. Power loss suffered by this phenomenon is substantial.

Replacing the standard single row (simplex) system with a dual row (duplex) system greatly reduces the problem, use of a tooth belt system all but eliminates it. The belt system vastly reduces valve train noise and also helps damp out some of the odd harmonics generated by the 3 main bearing 'A' series engine.

It is also extremely important to time any cam in to its required setting to obtain maximum performance, especially performance cams. The 'dot to dot' method can, because of manufacturing tolerances, be out by as much as 10° or more. Anything over 2° out and power suffers; more in small bore engines. In race engines you probably lose 1 hp for every degree the cam timing is out, more if over 6°. However, all manufacturer figures are really a close guide line. Dyno tuning the engine is the only way to optimise cam timing.

- Budget standard cast duplex gear and chain set, road use only. Genuine A.E. Hepolite parts C-AJJ3323**
- Budget lightened cast duplex gear and chain set. Not recommended for rally/ race application C-AJJ3324**
- Ultralight non-adjustable steel duplex gear and chain set C-AJJ3325**
- Vernier adjustable steel duplex gear and chain set. Uses the dowel adjustment system similar to the belt drive kit C-AJJ3327**
- a. Duplex chain 2H4905**
b. Performance duplex chain . . . 2H4905MS

NOTE: The engine front plate to main bearing cap screw holes need to be countersunk, and two AEA687 countersunk screws used to clear the chain. These are the original Allen key type of screw which are supplied in the steel kits and Phillips type head screw are supplied in budget kits.



Dyno tuning the engine is the only way to optimise cam timing to achieve maximum BHP possible.





Lightened Steel Flywheel

FLYWHEEL WEIGHT COMPARISONS

	KG	LB
Ultralight steel race flywheel	3.80	8.38
Steel Verto outer section only	4.01	8.84
Steel light weight fast road spec.	5.00	11.02
Verto standard iron outer section only	5.82	12.83
Safely lightened standard iron flywheel	6.06	13.36
Standard iron flywheel unmodified	7.58	16.71

NOTE: All above are with ring gears.

For improved performance you can replace the original cast iron with lightened steel. Lightened standard cast ones are dangerous (can explode at high revs). The steel flywheel also provides a much harder clutch surface.

It is highly recommended to use 3 clutch straps (2A3658 / No.9) per location to minimise stretch on high performance engines.

1. In 1996 we started producing our own ultralight steel flywheels as all available flywheels at the time had certain problems. Harmonic balancer testing showed frequency problems at high rpm - from the flywheel. Our flywheel is more symmetrical and evenly balanced to be near perfect. The flywheel comes with the required distance pieces for mounting the straps.

- a. Ultra light steel flywheel C-AEG619
- b. Ultra light flywheel with ring gear for pre-engaged starter. C-AEG620

2. For road use we developed a lightened steel flywheel ideal as a standard flywheel replacement. Gives smoother tick over than the ultra light version on fast road applications when high lift cams are used. Relevant distance pieces are provided.

- a. Light steel road spec flywheel. C-AEG421
- b. Light steel road spec flywheel, with ring gear for pre-engaged starter C-AEG420

3. For Verto type clutch assemblies we have developed a replacement outer flywheel section in steel that is nearly 4lb lighter than the standard item. Verto is identified by a short clutch arm. Manufactured to increase the pressure plate clamping rate, for improved clutch performance.

- a. Verto flywheel for pre injection type carburettor models. C-AEG422
- b. For single point injection. The ignition trigger points have been advanced by cnc milling the reluctor ring into the back of the flywheel to give an ignition timing of between 12-14° at 1000rpm, gives optimum power C-AEG425
- c. For twin point injection C-AEG424

4. Flywheel boss, verto only. Requires fixing bolts DAM5920. DAM5921

Clutch Backplate Pre Verto

5. This new EN8 upgraded lightweight backplate shows our commitment to improving products, this replaces our old original 22G270 iron type as used on Cooper 'S' models and weighs 1.450 kg (3.21LBS) C-AHT230
6. Mini Spares cast iron back plate 2.14kg (4.73LBS) original was 2.61kg (5.74LBS). Not for racing 22A598

AP Verto Pressure Plate

7. AP pressure plate, recognised as having the best clamping pressure, will not fit injection cars unless a modified Flywheel is used GCC679

Clutch Fittings

8. Bolt for clutch cover to pressure plate.
 - a. (torque to 19lbs). Sold individually 2A3657
 - b. Race version. Sold individually ... C-2A3657
9. Clutch Strap. Sold individually 2A3658
10. a. Bolt - strap to flywheel. Sold individually 2A3659
- b. Race version. Sold individually ... C-2A3659
11. Flywheel bolt lock tab. Pre verto 22A1155
12. Flywheel bolt. Pre verto. 22A747
13. Locking plate key.
 - a. Pre verto 88G508
 - b. Verto DAM5923
14. Flywheel locktab and bolt. Verto DAM5922
15. a. Clutch Oil Seal. Pre 1992. 13H2934
- b. Mini Spares version for performance engines. 13H2934MS
- c. Rovers last design (spring closer to back) black clutch oil seal. 1992 on LUF10005

Competition Clutch

17. Standard diaphragm
 18. AP Orange clutch diaphragm
 19. AP Rally/race clutch plate 180mm wide C-AHT596
 20. Road/Rally plate pre verto 180mm wide C-AHT595
 21. AP Standard turbo/fast road new style clutch plate, good up to 7000RPM .GCP204AF
 16. a. Standard diaphragm for all pre verto types GCC103
 - b. AP Orange clutch diaphragm C-AEG481
 - c. AP Grey clutch diaphragm. C-AEG482
 - d. AP Double grey clutch diaphragm for race use only with sintered clutch plate. C-AEG483
 17. a. AP Rally/race clutch plate 180mm wide C-AHT596
 - b. Road/Rally plate pre verto 180mm wide C-AHT595
 - c. AP Standard turbo/fast road new style clutch plate, good up to 7000RPM .GCP204AF
 18. Road rally performance plate 190mm wide 1990 on C-AHT594
 19. AP Heavy duty sintered paddle plate 180mm C-AHT598
- It is recommended that only the grey diaphragm is used with the sintered paddle plate.
20. Mini Spares latest design/ shape. 5 finger type with sintered pads is available 180mm wide C-AHT597
 21. Heavy duty race/rally 4 finger sintered plate 190mm. C-AHT600



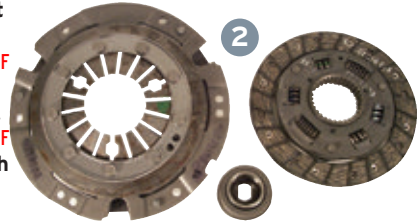
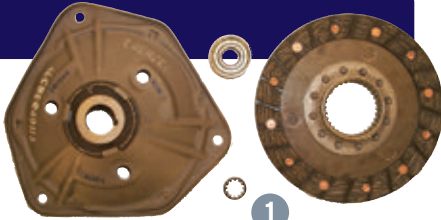


41 Clutch Parts, Slave Cylinders & Turbo Parts

POWERTRAIN

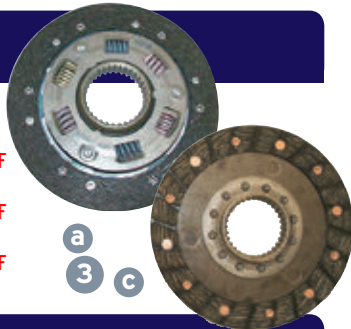
Clutch Kits

- 3 Piece Clutch Kits AP stands for Automotive Products the original manufacturer for all Mini clutches until Valeo were introduced to the 1275cc Verto range from 1990 on
 - 3 piece diaphragm type AP clutch kit. Pre Verto.GCK100AF
 - 3 piece diaphragm type clutch, but with Valeo plate, Pre Verto. GCK100MS
- 3 piece AP clutch kit with 180mm wide plate, Verto to 1990 ...GCK151AF
 - 3 piece AP clutch kit with 190mm wide plate. 1990-91. GCK150AF
 - 3 piece Valeo kit with 190mm plate, 190mm cover, Verto as standard from 1991 on but must be used on all injection models. . GCK152MS
 - Flywheel & clutch assembly with 190mm plate, for twin point 1996 onGCU90123AF
 - Flywheel & clutch assembly with 190mm plate, for single point 1992-96GCU90121AF



Clutch Plates

- Verto 190mm wide clutch plate, changed to Valeo type for 1275cc from 1990 on ..GCP90832AF
 - Verto 180mm wide clutch plate up to 1990 GCP271AF
 - Diaphragm type, pre verto clutch plateGCP204AF



Clutch Release Bearings & Arms

- Long pre verto clutch arm and plunger for heavy duty diaphragms, includes a steel plunger, hardened pin and R-clip.C-22A2204
- Long pre verto clutch arm.
 - Genuine for performance.22A2204
 - Standard use.22A2204MS
- Plunger22A180MS
- Short verto clutch arm. DAM5355
- Verto plunger DAM5353
- Release Bearing for use with long clutch arm. Pre verto.
 - Standard.GRB201
 - PerformanceGRB201EVO
- Release Bearing. For use with short Verto. GRB239
- Anchor for clutch return spring.2A3601
- Clutch arm return spring.1G5999
- Clutch arm lower large clevis pin CLZ628
- Clutch arm upper small clevis pin CLZ518



Slave Cylinders

- For Long arm pre verto genuine.GSY110
- For Long arm pre verto non-genuine.GSY110MS
- Seal repair kit for GSY110 ..GRK4008
- For Short arm verto.GSY118
 - As above non genuine.GSY118MS
 - Seal repair kit for GSY118. GRK4001
- Bracket for slave cylinder on verto enginesDAM5992
- Clutch arm push rod 13H396



Turbo Parts

- Bulkhead box, required when fitting a turbo.TURBO
- Reinforced manifold gasket for turbo. GUG704063MG
- Downpipe to fit turbo exhaust outlet. ET3
- Block to turbo oil feed pipeTURBO04
- Turbo fuel pump.TURBO05
- Fuel pressure regulator FPR012
- K&N filter clamps onto existing turbo air pipe for use in Mini body.RU-0840
- In car adjustable boost valveTURBO06
- Dump valve ... TURBO07
- Turbo boost gauge. SWG527
- Hose and fitting kit for SWG527LMA001
- Camshaft for turbo.TURBO03
- Oil pump for turbo engine GLP110MS



Mini Spares Bushes

The original Deva front bush often wears so Mini Spares came up with a proven alternative for their own use and as an inexpensive replacement. Remove your old bush and fit this replacement floating type, which just slides in without requiring the expense of having it machined concentrically with the top hat rear bush. The reliability of the rear floating bush has been tested in both full race and standard road cars since 1999.

- Mini Spares front fully floating bush. 1275cc.C-AEA3240
- Front Deva bush - requires machining after fitment. 1275cc.DAM8889
- Rear top hat bush requires machining after fitment 22G109



POWERTRAIN





3 Synchro Straight Cut Gears

GEAR RATIO COMPARISON (3 SYNCHRO GEARS)

	850/997/998	'S' & 998 COOPER	STRAIGHT CUT
1st Gear	3.627	3.2	2.573
2nd Gear	2.172	1.916	1.722
3rd Gear	1.412	1.357	1.255
4th Gear	1.0	1.0	1.0



3 Synchro straight cut gear sets include 2nd, 3rd gear, 1st motion shaft and laygear only, but must be used with original B type 1st/2nd outer track 22A1021 and 22G202 standard reverse gear. Gears are also kept in stock for the Sprite/Midget box. First gear outer track 22G1118/9 is needed for this set up.

	Mini	Sprite
Kit part number	C-AJJ3371	C-AJJ3319
Laygear 12, 17, 20, 23 teeth	C-22G1047	C-22G1047
2nd Gear 28 teeth	C-22G1049	C-22G1049SPRITE
3rd Gear 24 teeth	C-22G1050	C-22G1050SPRITE
1st Motion 22 teeth	C-22G1048	C-AEG3138
1st Gear Outer Track (not supplied in kit)	22A1021	22G1119

NUMBER OF TEETH

Ratio	Primary Gear	Idler Gear	Input Gear
1-1	24	30	24
1-1	23	30	23
1.0416-1	24	30	25
1.0434-1	23	30	24
1.045-1	22	30	23
1.0869-1	23	30	25
1.09-1	22	30	24
0.958-1	24	30	23
1.136-1	22	30	25

22 tooth primary is for hill climbs, sprints only.
23 tooth primary originally turbo race (Metro)

Evolution Drop Gears

There are a unique eight ratios of straight cut drop gears to replace the standard helical set up, all based around a common idler gear. Produced to accurate specifications and a high quality finish, back lash is reduced to a minimum. This vastly reduces the 'clatter' experienced when using straight cut drop gears from other manufacturers, also making the gears inherently stronger and more tolerable when used in road cars. The

interchangeability greatly reduces the cost for racers of having alternative ratios for different circuits - allowing the optimum gear ratios to be used for each circuit without the need for crown wheel and pinion changes. NOTE: When fitting to 3 synchro boxes, spacer number C-STR239 is required for the input gear.

To alleviate undue pressure on standard idler gear bearings and thrust washers a twin taper roller or single roller bearing kit is available using a special converted idler gear. The taper type requires specialist installation.

- Primary Gears.**
 - 24 tooth 1300cc type C-STR124
 - 23 tooth 1300cc type C-STR123
 - 22 tooth 1300cc type C-STR122
- Idler Gears.**
 - 30 tooth - pre A-plus 1/2" shaft C-STR30
 - 30 tooth - A-plus 7/8" shaft C-STR30A
- 30 tooth idler gear & taper roller bearing conversion.**
 - Pre A-plus C-STR30T
 - A-plus C-STR30TA
- 30 tooth idler with one large central roller bearing conversion.**
 - Pre A-plus C-STR31
 - A-plus C-STR31A
- Input Gears.**
 - 23 tooth extra strong. C-STR230
 - 24 tooth input gear. C-STR240
 - 25 tooth input gear. C-STR250



4 Synchromesh Straight Cut Gears

Mini Spares are proud to boast that their unique gears are definitely the best on the market in terms of value, quality, design and appearance using original Rover tooling for the speed gears.

GEAR RATIO COMPARISON (4 SYNCHRO GEARS)

	HELICAL			STRAIGHT CUT	
	EARLY 850/998/1100	'S' & 1275GT	A-PLUS	CLUBMAN SET	'ST' SET
1st gear	3.52	3.32	3.64	2.583	2.544
2nd gear	2.21	2.09	2.18	1.711	1.731
3rd gear	1.43	1.35	1.42	1.250	1.258
4th gear	1.0	1.0	1.0	1.0	1.0

Evolution Gears

By using the very latest gear cutting techniques, equipment, Rover tooling and drawings it has enabled top line manufacture of all our gears, allowing Mini Spares to make alternative ratios, namely the 5 speed gearbox and the Evolution Clubman A-plus straight cut gear set.

The Evolution Clubman straight cut gear set has teeth counts that provide a ratio between the old special tuning 3 and 4 Synchro gearsets. This provides a better set for the road and is much favoured by certain participants of motorsports such as rallycross. This set utilises your standard 1st and reverse gear which are already straight cut as standard, which helps to reduce cost.

Laygear uses 2 bearings

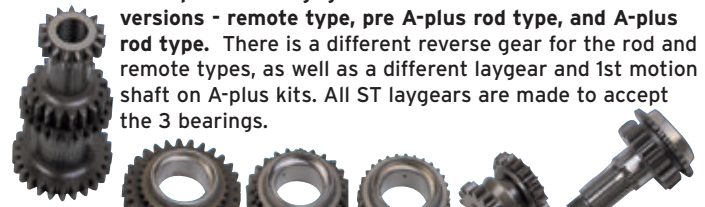


In A-plus type only C-STN39

C-STR291	Clubman 2nd Gear	26 Teeth
C-STR292	Clubman 3rd Gear	23 Teeth
C-STR293A	Clubman 1st motion Shaft	20 Teeth
C-STR294	Laygear	15,19,23,25 Teeth

Original Design Special Tuning Gears

The 'special tuning' gear ratio set is available in 3 versions - remote type, pre A-plus rod type, and A-plus rod type. There is a different reverse gear for the rod and remote types, as well as a different laygear and 1st motion shaft on A-plus kits. All ST laygears are made to accept the 3 bearings.



	Straight Cut Gears	Remote Type ST Ratio Gear Kit	Rod Change ST Ratio Gear Kit	Rod Change A-Plus Gear Kit
Part Number for Kits	C-AJJ4014	C-STN76	C-STN77	
1st motion pre A-plus, 19 teeth	C-22A1732	C-22A1732		
1st motion A-plus, 19 teeth				C-22A1732A
3rd Gear, 22 teeth	C-22A1733	C-22A1733	C-22A1733	
2nd Gear, 25 teeth	C-22A1734	C-22A1734	C-22A1734	
1st Gear, 29 teeth	C-22A1735	C-22A1735	C-22A1735	
Laygear, 15,19,23,25 teeth	C-22A1737	C-22A1737		
A-plus Laygear				C-22A1737A
Reverse Gear rod Gear	C-22A1736			
Rod Change Reverse Gear			C-STR303	C-STR303

Over 1,000 Straight Cut Gears Sold Annually

Synchromesh Hubs

- 1st/2nd synchronizing hub for 4 synchromesh gearboxes
 - Complete hub assembly DAM7455
 - Outer track only of DAM7455. DAM7300
- 3rd/4th synchronizing hub for 4 synchromesh gearboxes DAM7456



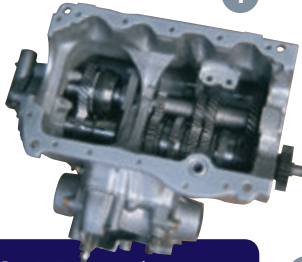
43 Gearbox, Levers, Gaiters & Mounts



5 Speed Rod Change Gearboxes

The gearcase undergoes extensive modifications plus 58 new linkage and gear modification parts. Modified to a closer ratio by virtue of new redesigned laygear and 1st motion shaft producing 3.282 1st gear, 1.966 2nd gear, 1.283 3rd gear, 1.1 4th gear and a 5th gear ratio of 0.882. Straight cut versions using Evolution Clubman gears produces a 5th gear ratio of 0.865. See gears page for Clubman ratios. Used since 1994 on all applications up to 1380cc (except extra boosted turbos), the strength of the helical cut gear box is dependant on the torque capability of the original 2nd/3rd gears plus the final drive pinion (i.e. 80-85 ft. lb. of torque). Keith Dodd & others used these gear boxes on 1380's & 8port road cars.

1. a. 5 Speed complete A-plus gearbox with 3.4 diff. **MSG04**
- b. 5 Speed complete A-plus gearbox with 3.4 crosspin diff. **MSG05**
- c. 5 Speed complete Evolution Clubman straight cut. 3.4 diff. ... **MSG06**
- d. 5 Speed complete Evolution Clubman straight cut with 3.4 crosspin diff. **MSG07**



Gear Levers, Gaiters & Mounts

Quickshifts are not recommended for 5 speed gearboxes



2. Reverse gearlock for remote type gear levers to remove possibility of going into reverse in error **MS71**
3. a. Chrome quick shift gear change for rod change gearbox. Nearly halves lever travel between gear changes. **C-22A1751**
- b. New improved hi tech version Genuine K.A.D. supplied with an alloy gear knob **C-22A1752**
4. Chrome quick shift gear change for remote gearbox. Nearly halves lever travel for gear changes **C-22A1750**
5. Shift Bias Lever. (Rod change only). Makes second to third gear changes smoother and quicker, like most modern-day cars. Fitted to all 5 speeds. **MSG12**
6. Mounting for the remote control housing. **21A956**
7. Mounting for rod change gear lever housing. **22G2205**
8. Remote control housing large rubber plug. **22A271**
9. Remote housing to gearbox plug **22A285**
10. Gaiter 1959 upto introduction of remote control type fits on gear lever base. **22A1380**
11. Magic wand gear lever rubber gaiter. 1959 upto introduction of remote control type. Fits onto floor. **14A6860**
12. Remote type gear lever rubber gaiter. Upto 1973 when rod change type was introduced. **22A608**
13. Metal gaiter retainer for above. **14A9942**
14. Rod change type gear lever rubber gaiter. From 1973. **CZH4278**
15. Metal Gaiter retainer for above. **FJN10003**
16. a. Gear lever black vinyl gaiter. Rod change only. **BHH2002**
- b. black with red stitching. **BHH2002AM**

Gearbox Components

17. Over 12 years and 5000 sales have passed since an in-depth analysis was carried out to accumulate the contributing factors to the horrendous wear rates and failures, enabling Mini Spares to produce a new generation of pins that would almost eradicate the problem apart from those caused by poorly machined planet gears. Production tolerances were tied down to exacting specifications with a material and heat treatment upgrade. Planet gear contact area is increased as is the core strength of the pin combining with a finer ground surface to give a very tough and hard wearing component.
 - a. Performance strength diff pin **C-BTA166**
 - b. Genuine Rover tufridrid diff pin **22G2583**
 - c. Extra performance strength diff pin. For extra powerful road cars, autotesters and all types of racing where a standard diff has to be used we have developed the same exacting specification pin further by molybdenum coating the planet wheel contact areas. Must not be used with the bushed type planet gears as excessive wear will be created. **C-BTA164**
18. Bushed Planet Wheel+Diff Pin Kit for performance use. This is the ultimate way of stopping diff pin wear for any use and especially when competition regulations do not allow use of X pin or LSD differential units. The kit contains 2 specially bushed planet gears with thrusts, diff pin and a new securing roll pin. **C-BTA167**
19. Current standard baulk rings produced in sintered metal are not tough enough to deal with the demands of performance usage, in many instances only lasting one race before breakage and other failures. The main reason is the incompatibility of the material specification with the usage to which it is being put. Basically it is too brittle. Mini Spares competition baulk ring is a replication of the steel version similar to those originally fitted and used in the 1960 era. Manufactured in iron, induction hardened and then finished by hand to give an exact fit on the baulk ring cone.
 - a. Steel competition baulk ring for use on Mini Spares Moly coated gears. Order individually **C-22A1741**
 - b. Standard Rover sintered Order individually **22G2033**
 - c. Mini Spares sintered. Order individually **22G2033MS**
20. Center oil pick up pipe. To ensure an uninterrupted supply of oil to the engine during high rpm and hard cornering it is imperative to fit a center oil pick up pipe. This draws oil from a centralised position at the lowest point of the gearbox, therefore avoiding aeration caused by surge. The internal size of the pick up pipe bore has been optimised along with the filter gauze size and efficiency, so it is now (approximately) double the filter area without restricting pick up flow or compromising fitting. This greatly reduces oil pump and engine damage caused by foreign particles being sucked up the pipe. It is recommended to fit the extended drain plug DPI. **C-AHT54**
21. Rod Change Gear Box Leak Fix. Most engine / gearbox oil leaks originate from the gearchange rod seal. One remedy used to be fitting two seals, but this did not support the rod centrally. To overcome this problem an alloy spacer with an 'O' ring fitted centralises the gear change rod and helps restrict oil leaks. The original oil seal is then fitted to stop leaks and then a dust cover as final protection slides over the rod to stop road debris penetrating the seal.
 - a. Gearbox leak fix complete kit .. **MSSK050**
 - b. Alloy spacer **DAM8706**
 - c. Seal for above. **CDU1563**
 - d. Rod change linkage oil seal **AHU1672**
 - e. Rod change seal gaiter **DAM3022**
22. Gearbox case linkage bush **13H7286**
23. Roll pin punch tool **TOOL17**



Gearbox Bearings

All bearings are sold individually

<p>Bearing for 1st gear (4 synchro). AAU1815</p>		<p>Bearing for 2nd/3rd gear. (4 synchro). AAU1816</p>	
<p>65mm diameter main shaft double roller bearing. AAU1365</p>		<p>4 synchromesh 1st Motion shaft single roller bearing. ADU7619</p>	
<p>1st motion shaft needle roller bearing for 14mm mainshaft. CHM172</p>	<p>1st motion shaft needle roller & layshaft bearing for 18mm shaft. 13H9513</p>	<p>Layshaft large needle roller bearing for 20mm shaft. CHM141</p>	<p>Layshaft small needle roller bearing for 16mm shaft. 88G396</p>
<p>25.4mm diameter 3 synchromesh idler gear bearing. 88G302</p>		<p>27mm diameter 4 synchromesh idler gear bearing Pre A plus. 13H7848</p>	
<p>35mm diameter 4 synchromesh idler gear Torrington bearing A plus, 1996 factory upgrade. TUK100320</p>		<p>35mm diameter 4 synchromesh idler conversion bearing for A plus case to Pre A plus idler size. DAM3745</p>	
<p>1st motion shaft nose bearing and outer track for clutch case. AAU8424</p>	<p>Clip for holding outer track of nose bearing in clutch case. 2A3643</p>	<p>Circlip to hold bearing on 1st motion shaft. CCN110</p>	<p>Differential roller bearing except autos. AHU1856</p>

Layshafts

1. a. 4 synchro layshaft single step pre A-plus.....**22G931**
b. Competition version of above.....**C-22A1738**
2. a. 4 synchro layshaft dual step. A-plus.....**DAM3187**
b. Competition version of above.....**C-22A1739**
3. 3 synchro hi-grade layshaft.....**C-22A1731**



Gearbox Rebuild Kits

Pre A-plus gearboxes have a 14mm wide end on the mainshaft to fit the 1st motion shaft where as A-plus have a 18mm wide end to fit the 1st motion shaft. Some early A-plus and all ST original ratio straight cut laygears were made to take 3 bearings, hence kit.....**MSG24**
Complete gearbox rebuild kit less differential for a pre A-plus series.
MSG20

Complete gearbox rebuild kit with differential for a pre A-plus series.
MSG21

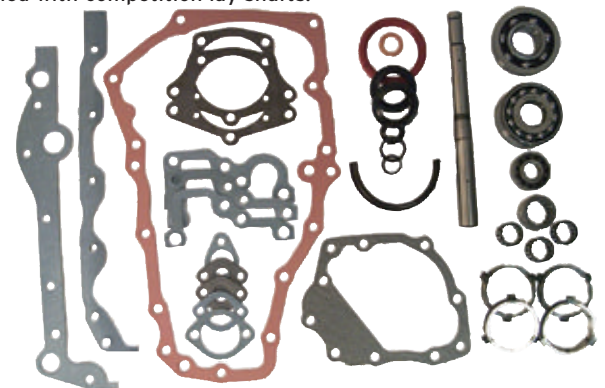
For 4 synchromesh gearboxes with 18mm wide mainshaft A-plus type

Complete gearbox rebuild kit less differential A-plus with 2 bearings on laygear.....**MSG22**

Complete gearbox rebuild kit with differential parts for A-plus as above.....**MSG23**

Complete gearbox rebuild kit less differential A-plus with 3 bearings on laygear.....**MSG24**

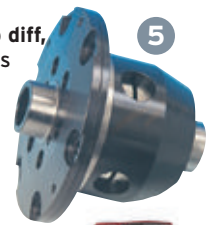
The small roller bearings under 1st gear is available as **AAU1815** and for 2nd or 3rd gear, available as **AAU1816**. These are not included because they do not often get checked or changed and are expensive. All supplied with competition lay shafts.



- Kits breakdown as follows:**
Above only = **MSG20/22/24** (no diff parts)
Above + Left + a = **MSG21** (with diff parts)
Above + Left + b = **MSG23** (with diff parts)

Evolution Diffs

4. **Evolution cross pin differential**, Mini Spares have produced the same original and unique X-Pin diff since 1994. It was designed for powerful engines or events where the LSD type was not allowed, or the original differential could not cope and would prove inadequate. Tried and tested on RAC Rally and various hill climbing events
C-AJJ3385
5. **Our own world famous Evolution limited slip diff**, designed in 1993 with the latest technology is available as road, rally or race for the Mini and in race form for the Sprite and Midget.
 - a. Mini Race.....**C-AJJ3387**
 - b. Mini Rally.....**C-AJJ3387A**
 - c. Mini Road.....**C-AJJ3387B**
 - d. Sprite Race.....**C-BTA1226**
 - e. Sprite Rally.....**C-BTA1226A**





Diffs & Drive Couplings

Reproduction parts include the 'S' diff side plate, which are essential when using the Hardy Spicer type coupling or LSD output shaft. Mini Spares only produce the 'S' side plate with the extra 'ear' 22G420, so it can be used with No. 5/9 on rod and remote type gear boxes.

The studs that fit the output shaft flange are also remade.

1. Diff side plate for standard rod or remote gear box except automatics and Cooper 'S' where Hardy Spicer joints are fitted, fits item number 8 **CHM85**
2. 'S' diff side plate - for original 'S' remote type and rod change gearbox when Hardy Spicer or limited slip differential are fitted, when using No. 5 or 9.... **22G420**
3. Diff side cover flange gasket.... **22A1611**
4. Diff side cover oil seal.
 - a. All Minis except S and automatic. **ADU5738**
 - b. Cooper 'S' only **AHU1082**
 - c. Automatic only, pre pot joint. **22A1616**
5. Hardy Spicer shaft coupling assembly. When using no. 9 or 'S' output shafts..... **27H7880**
 - b. universal joint As supplied in no. 5. **GUJ101**
6. Output flange stud. Order individually **22A1139**
7. Special philidas nut for 22A1139. Order individually **GFK3431**
8. Inboard CV joint (pot joint) type output shaft for LSD..... **C-BTA1263**
9. a. Hardy Spicer coupling type output shaft for LSD (uses 22G420 side plates)..... **C-BTA1262**
 - b. Spacer washer for C-BTA1262. (2 required, not shown) **C-BTA1243**
 - c. Retaining clip for C-BTA1262. (2 required) **CCN122**
10. Original rubber coupling including 'U' bolts & nuts. Order individually .. **GCD101**
11. Uprated needle roller type coupling. Plastic ends are resistant to oil which causes wear on the GCD101. Including 'U' bolts & nuts. Order as pair **QL5000**
12. Pot joint (inboard CV) **GCV1102**
13. a. Genuine gaiter kit for pot joint..... **GDG234**
 - b. Non genuine gaiter kit for pot joint **BHM7012**
14. Driveshaft small yoke end gaiter pre pot joint... **21A963**



Crown Wheels



18. Standard helical cut crown wheels and pinions.
 - a. 2.76 crown wheel and pinion **CWP2-76**
 - b. 2.95 crown wheel and pinion **CWP2-9**
 - c. 3.1 crown wheel and pinion **CWP3-1**
 - d. 3.2 crown wheel and pinion **CWP3-2**
 - e. 3.44 crown wheel and pinion **CWP3-4**
 - f. 3.6 crown wheel and pinion **CWP3-6**
19. Semi helical strong competition crown wheel and pinion set (not for LSD)
 - a. 3.46 crown wheel and pinion with 52x15 teeth..... **C-BTA1001**
 - b. 3.76 crown wheel and pinion with 64x17 teeth **C-BTA1002**
 - c. 3.93 crown wheel and pinion with 55x14 teeth **C-BTA1003**
 - d. 4.07 crown wheel and pinion with 53x13 teeth **C-BTA1004**
 - e. 4.31 crown wheel and pinion with 56x13 teeth **C-BTA1005**
 - f. 4.57 crown wheel and pinion with 63x14 teeth..... **C-BTA1006**
 - g. 4.67 crown wheel and pinion with 56x12 teeth..... **C-BTA1007**
20. Semi helical strong competition crown wheel and pinion set (LSD only)
 - a. 3.46 crown wheel and pinion with 52x15 teeth..... **C-BTA1250**
 - b. 3.76 crown wheel and pinion with 64x17 teeth. This is the only true straight cut **C-BTA1248**
 - c. 3.93 crown wheel and pinion with 55x14 teeth **C-BTA1252**
 - d. 4.07 crown wheel and pinion with 53x13 teeth **C-BTA1246**
 - e. 4.23 crown wheel and pinion with 55x13 teeth **C-BTA1251**
 - f. 4.31 crown wheel and pinion with 56x13 teeth **C-BTA1249**
 - g. 4.67 crown wheel and pinion with 56x12 teeth..... **C-BTA1253**

Dynamos, Starters & Alternators

New units are without exchange unless stated.

21. 16/17ACR type new alternator with pulleys upgraded to 45amps to cover all those extra lamps and sound systems you may have fitted. Fitted up to 1980. **GXE2211**
22. A127 type new alternator with pulleys upgraded to 70 amps to cover all the electrics already on your car plus any others you have fitted. Fits cars from 1980 to 1996..... **GXE2297**
23. Original alloy heavy duty alternator bracket. Only fits Pre A-plus engines **C-AHT32**
24. Dynamo for those early cars.
 - a. Exchange rebuilt unit..... **GXE3101**
 - b. New unit **GXE3101N**
25. a. Starter, Inertia type, new. **GXE4404**
 - b. Exchange rebuilt unit **GXE4404F**
26. Pre Engaged starter 1985 on, new. **GXE4527**
27. If you are looking for a lightweight starter with extra and more consistent cranking power, taking up to less than 50% of the running current by the original this is what most motorsport participants use.
 - a. For inertia type starter **GXE1000**
 - b. For pre engaged type..... **GXE1001**
28. Lightweight alternator for motorsport with fitting brackets and tensioner for cars up to 1996..... **GXE1003**



Starter Solenoids / Switches



15. Starter solenoid.
 - a. 3 terminal fits most Minis..... **13H5952**
 - b. 4 terminal fits 1983-85..... **ADU5728**
 - c. 3 terminal with integral starter push button..... **BMK1727**
16. Integral solenoid for pre engaged starter **NAF10004**
17. Floor start switch..... **17H5260**

