



### Built-up Short Engine

1380cc Built-up Short (half) Engine for Road Use.

1. This engine is vacuum packed for storage and is built to the following specifications based on A-plus engines. Crankshaft reground and fitted with new bearings and thrusts. Set of remanufactured selected con rods with 73.5mm pistons fitted. Block is correctly offset bored to take the larger pistons, refaced, cleaned and then refitted with new core plugs and oil bungs. New camshaft bearings fitted and the crankshaft main bearing housings line bore honed. An Evolution fast road camshaft is dial gauge timed exactly and fitted with new cam followers. This camshaft was selected because during extensive testing and trials it gave the broadest range of power and torque to over 6000 rpm, although only 5500rpm was required for fast road use, still giving acceptable economy. Distributor spindles are fitted so ensure you have A-plus distributor. A front plate and timing cover are fitted to accept a set of new duplex gears and timing chain. The compression ratio is 9.75 to 10 to 1 when using a standard 21cc head. The engine is painted. The following are not supplied : Primary gear and all clutch ancillaries/ components, head studs and water pump, front pulley and bolt, oil pump and oil filter assembly.



All the parts not supplied are considered bolt on parts which should make the rest of assembly within the ability of any Mini owner who is armed with a technical manual for torque settings and fitting procedures.

- 1. a. Half engine - +40 for 1310cc ..... **ENG003**
- b. Half engine - 1380cc ..... **ENG001**

*Refundable surcharge may apply. Call for details.*

**WARNING:** Do not use synthetic based oil for the running-in period as it is detrimental to the ring bedding in process.

**NOTE:** The ring packs on these engines are coated in special heavy oil for storage and will smoke heavily on start up.

### Main Straps

On all performance 'A' series engines it is essential to ensure accurate and as near permanent location of the center main of the crank as possible. Movement allowed here, especially at sustained high rpm levels, can cause spun bearings, crank or main cap breakage with severe or mortal damage to the engine. We, therefore, offer a range of strengthening products, plus 'S' main bearing studs and nuts.

- 2. **4 bolt steel center main cap for large bore engines** (not 'S'). Ultimate center main location. Essential for all stroked engines. Needs line boring, and two extra holes drilling in the block and tapping 7/16UNF. The thrust faces are part machined for final finishing whilst the line boring is being done. Comes with correct length high tensile bolts. Bolts on one way only so take care to read instructions ..... **C-AGA619**

- 3. a. **Steel center main strap for 1275cc, non 'S' large bore engines.** Comes with longer high tensile bolts. Main cap top needs machining flat. No other modifications required. . . **CMS13**

- b. **Steel center main strap for small bore engines.** Comes with longer high tensile bolts. Main cap top needs machining flat. No other modifications required ..... **CMS10**

- 4. a. **'S' main stud set** (6 studs. 4 short & 2 long). Can be used on non 'S' blocks, but cap locating section on stud may need to be shortened by 2.5mm to avoid fouling bearing cap ..... **AEG323**

- b. **'S' center main strap studs** (6 studs. 4 short & 2 extra long) for center main and strap **AEG323L**

- 5. **Special 'S' mains nut**, sold as a set of 6. .... **C-AJJ4013**



### Connecting Rods and Bolts

As the Cooper 'S' con rod has not been produced by BL for many years, we have had them reproduced, faithful to the ORIGINAL specification - including material type, EN24V. These are the strongest production 'A' series con rods produced.

- 6. a. 1071cc and 1275 'S' rod 5.75" centers. Individually. . . . **AEG624**
- b. 970 'S' rod 5.875" center length. Order individually . . **AEG309**



Fitted with ARP nuts and bolts. These are made in a higher grade material and to specific tolerances, including the thread grade. Poor threads vastly reduce torque accuracy causing premature bolt failure.



- 7. **ARP Hi-grade 'S' big end bolt and nut set.** Torque up to 40-42lb ft. Order set. .... **C-STR288**



- 8. **ARP Hi-grade 1300cc type big end bolt set.** Torque up to 38-40lb ft. Order set ..... **C-STR289**



- 9. **The Cooper 'S' big end nut** is now in all metal self locking material. Order individually ..... **AEG147**



- 10. **Alternative multi-point nut for 'S' big end bolt** - ex Jaguar nut. Order individually. .... **EAC5541A**



- 11. **Shouldered big end nut** for 1300cc rod bolts. Give better clamp down than standard 1300cc type. Order individually .... **C-STR290**

### Dipsticks



- 12. **Stainless steel dipsticks with anodised knob** in red or blue.

- a. **Red knob**. .... **MSA1125**
- b. **Blue knob**. .... **MSA1124**

- 13. **With chrome T-handle knob**. .... **MSA1134**

- 14. **Dipstick tube plastic**. .... **12G107**



### Sumpguards



- 15. **For serious off-road and rough stages**, the only type to fit is the rounded sledge front version, which helps ride the car over potentially damaging rough terrain. Extra strengthening bar fits on to front subframe cross member adding reinforcements. Similar design to the Scottish/ Scandinavian works design. Weight 8.335 kilos ..... **C-AJJ3320**



- 16. **Extension piece for either sumpguard 15 or 17** to give added protection. Weight 2.770 kilos ..... **C-AJJ3320EXT**



- 17. **The square front type** is adequate for competition road use and is cheaper and lighter than item 15. Weight 4.885 kilos ..... **C-AJJ3321**



- 18. **Mini Spares Mag/Alloy Sumpguard** for road use only. Adequate protection for everyday use. Especially on lowered cars to protect the gearbox cooling fins. 5mm clearance from gearbox case. CNC designed to fit front sub frames correctly. Weight 2.770 kilos ..... **SUMPGUARD**



- 19. **Innocenti - original type of Italian Mini Sumpguard** Very useful, inexpensive protection for the fins on the gearbox. Sturdy steel construction. Weight 4.23kilos. .... **MS96**





### Large Bore Mega Pistons

**NOTE:** We supply and sell each piston individually.  
Order 4 pistons for a complete engine set.  
Ringsets are for all four pistons.

Owing to poor supplies of performance pistons 10 years ago we recruited AE Hepolite to develop and design a range of Mini Spares pistons, using their technical and manufacturing expertise. Made in AE109TF lightweight alloy with special double heat treatment they have a full skirt for maximum piston and ring stability. One thick crown height to allow for machining when long stroke cranks, or longer con rods are used.

**WARNING** Do not use synthetic based oil for the running-in period as it is detrimental to the ring bedding in process



1. a. **6.5cc dished piston** available in +20, +40, +60. .... **C-AJJ3378**  
b. **Turbo 9.4CR with 11.3cc dish** available in +40 only uses Mega ringset, Will not take excessive extra boost. .... **P22357-40**
2. a. **Flat top piston** available in +20, +40, +60. .... **C-AJJ3382**  
b. **Ringsets** for C-AJJ3378, C-AJJ3382 and P22357S and Omega. Available in +20, +40, +60 ..... **C-AJJ3379**
3. **7cc dished, 73.5mm piston.** .... **C-STR310**
4. **11cc dished, 73.5mm piston.** .... **C-STR312**
5. **Ringsets** for C-STR310, C-STR312 and Omega 73.5mm. (4 pistons set). .... **C-STN96**

### Large Bore Pistons

Large Bore Pistons for all Cooper "S" and 1275cc Minis are manufactured by AE Hepolite pistons (Federal Mogul), the largest manufacturer of pistons in the world. These high quality pistons have been used in many successful competition applications.



6. **The different CR's are achieved by different pin to crown heights, with 21.4cc cylinder head camber size.** The P21253 pistons are the best suited to high performance use, with a much smaller oil drain slot behind the oil control ring, thereby reducing the possibility of breakage.
  - a. **8.8CR, 1275cc low drag slipper piston.** Available in Standard, +20, +40 and +60, 8.1cc dished ..... **P21251**
  - b. **Ringsets** for P21250 & P21251. Available in standard, +20, +30, +40, +60 ..... **R35960**
  - c. **9.75CR, 1275cc low drag slipper piston.** Available in Standard, +20, +40 and +60, 8.1cc dished.  
When fitted to Cooper "S" and early 1300 blocks can equal 10:1CR ..... **P21253**
  - d. **Ringsets** for P21253. Available in standard, +20, +40, +60 ..... **R41570**
7. a. **73.5mm "Powermax" big bore 9cc dished piston.** ..... **P20659-00**  
b. **Ringset** for P20659 ..... **R39390-00**



**WHEN ORDERING PISTONS OR RINGSETS PLEASE STATE SIZE REQUIRED.**  
**NOTE: ALL PISTONS SOLD INDIVIDUALLY.**

### Small Bore Pistons

8. **The low drag slipper piston** used by the Rover Group in the last 998cc Mini and Metros proved to be exceptionally reliable having been used in Mini race engines. They are available in flat top with press fit gudgeon pins but +40 only. Obviously the correct rod type should be used (can be modified by experts).
  - a. **10.3CR Flat top, press fit gudgeon pin 998cc.** (RoverNo.TAM2052) ..... **P22463-40**
  - b. **Ringset** for P22463. Available in +20, +40. .... **R43240**
9. a. **8.3CR Dished piston 998cc.** Inexpensive replacement piston with oil groove. Fully floating gudgeon pin with circlips Available in +20, +40 and +60 ..... **P20773**  
b. **Ringset** for P20773 ..... **R33636**



### Pistons Liners

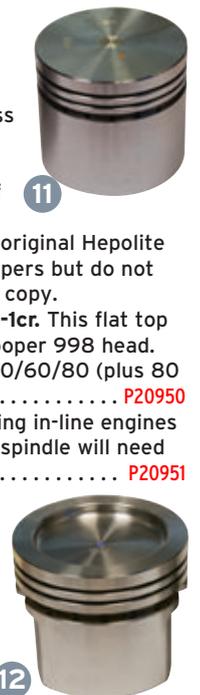
10. All piston liners are supplied individually.
  - a. **998 piston liner.** Customer order only. .... **12G164**
  - b. **1275 piston liner.** (HEPOLITE SU3598). .... **AEG428**



### Evolution Performance Pistons

The Evolution range was produced to fill the gap in the market for top quality, high strength pistons for performance and standard use. Manufactured in top grade cast aluminum with advanced heat treatment, plus a far higher silicon content than almost all other mass-manufactured pistons means it is lighter and more durable for use in any engine. All wrist pins are oil fed from the oil control ring land rather than rely on splash from whirling components. To extend the life of blocks 73mm and 74mm sizes for 1275cc and a plus 80 oversize for 998cc have been made.

11. **SMALL BORE, based on the original 998cc flat top piston** but with oil holes, rather than slots behind the rings to give crown strength, the only other change is the ring pack, to use a readily and sensibly priced set. Otherwise it retains the full skirt design with circlip retention of the wrist pin which means they can also be used for the later press fit pin rods from the A plus engines, by either leaving the circlips out and using the original interference fit, or honing out the small end of the con rod for a floating pin fit and using the circlips for retention. This piston replaces the original Hepolite 18516KR and P20950 as used on the 998 Coopers but do not mix with old Hepolite as they are not an exact copy.
  - a. **Suitable for all 998cc engine use, up to 12-1cr.** This flat top design will give a 9.5/6cr when used with a Cooper 998 head. Ring sets are C-STN99. Available in plus 20/40/60/80 (plus 80 giving 1061cc) ..... **P20950**
  - b. **The same type of piston for 1098CC** including in-line engines but owing to extra skirt length the distributor spindle will need modifying. Available in 40/60/80 ..... **P20951**
12. **Before taking blocks out to 73.5 we have introduced a new 73mm option to extend block life.** On a standard stroke 73mm gives 1362cc and shows no measurable loss of performance over the 73.5mm 1380cc size and also alleviates any cylinder head gasket problems that might be encountered. We have also had the 73.5 and 74mm size made identical with the same 10cc dish shape for improved swirl/burn. The pistons are lighter than cast pistons of its size and a lighter wrist pin is used to enhance this. Ring sets for 73mm are C-STN98 and for 73.5mm are C-STN97.
  - a. **For 73.00mm piston** ..... **C-STR313**
  - b. **For 73.5mm piston** ..... **C-STR311**
  - c. **For 74mm piston** ..... **C-STR314**



## 35 Oil Valves and Pumps



### Oil Pumps

The precision machined and built sureflow oil pump has not been available since late 2005. Mini Spares stock only standard type oil pumps, and have tested all the range to ensure good performance and reliability.

If fitting a 1300cc oil pump to 998cc blocks a spacer 12G1127 would still be required. When changing the camshaft we recommend you purchase an A-plus type, which has stronger 1/2" lobes and fit the corresponding oil pump to block type.

1. 998cc spade drive A-plus .....GLP139
2. 1300cc slot drive A-plus .....GLP138
3. Steel backed oil pump with increased pumping capacity as required, originally on Turbo engines ..... GLP110MS
4. Pin drive early small bore engines except 'S'.....GLP142
5. Star drive..... GLP141



Flow comparison - gallons per minute/litres per minute at 1000rpm.

MSC Sureflow oil pumps	1.41/6.4
MSC Turbo oil pump	1.78/8.1
Holburn Eaton steel backed pump	1.32/6.0
Concentric 5 into 6 rotor/annulus.	1.27/5.8



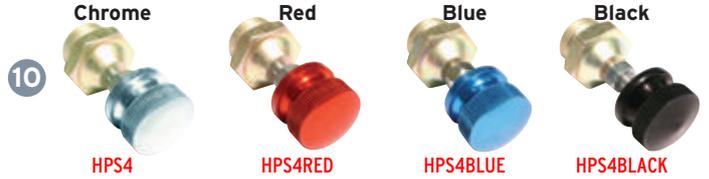
### Oil Switches and Transducers

6. A high pressure oil warning light switch is available to help protect the engine. The standard one comes on at 7lb much too late a warning to avoid any damage. The high pressure one HPS1 comes on at 22lb, and is a direct replacement for the standard one. But this is a 15-60lb high pressure adjustable oil warning light switch .....HPS3
7. Standard on all twin point cars from 1996 which have an electrical oil temperature gauge. This transducer switch replaces the oil pressure release valve cap on the engine block. ....YCB100320
8. a. Standard oil switch that activates at about 7-10LB .....GPS133  
b. High pressure oil switch that activates at about 22LB. .... HPS1
9. Oil pressure switch fitted from 1996 on. ....GPS135



### Oil Pressure Regulator Kit

10. Oil pressure regulator kit is a simple way of increasing or decreasing oil pressure by the turn of a knob. You do not need high oil pressure; just consistent. Available in four knob colors.



11. Original Cooper 'S' oil release valve spring, shorter and stronger than the standard mini spring ..... AEA536
12. Ball bearing to replace standard valve cap (cap shown as no. 15). Often used on performance engines where dirt or debris could get trapped around the standard valve (must use with AEA536). ..... BLS916
13. Ball / oil release valve kit. (Items 11 & 12 together)..... AEA536KIT



14. Standard oil pressure spring ..... 6K853
15. Original type oil release valve cap. Factory fitted ..... 12H865
16. Standard oil release valve kit. (No's 14 & 15 in kit) ..... 6K853KIT

### Drain Plugs & Magnetic Oil Traps

17. Magnetic sump plug with extended nose to collect metal debris in the bottom of the gear box. .... DP1
18. Sump plug repair plug with tapered cutting threads (must never be over-tightened!) ..... DP2
19. Sump plug standard as originally fitted ..... DAM7335
20. Magnetic oil trap. Fits in place of oil pick up plate on the rear of gearbox.  
a. With filter..... HPS5  
b. Without filter..... HPS6
21. Transmission drain plug with threaded hole when using Smiths small capillary type oil temperature gauge ..... HPS8



### Mini Mania Gift Certificates

Don't fret over gift giving!

Your favorite Mini Cooper enthusiast would love a Mini Mania Gift Certificate!

Details:

Item number: **GIFT**

Available in \$10 increments, from \$10 to \$10,000,000.

Redeemable for thousands of items - Free shipping

Great as gifts or as a thank you to valued customers, employees and suppliers.

The name on the Gift Certificate is left blank so you can fill in the recipient's name.

Please see more details and terms and conditions at:  
www.minimania.com/part/GIFT

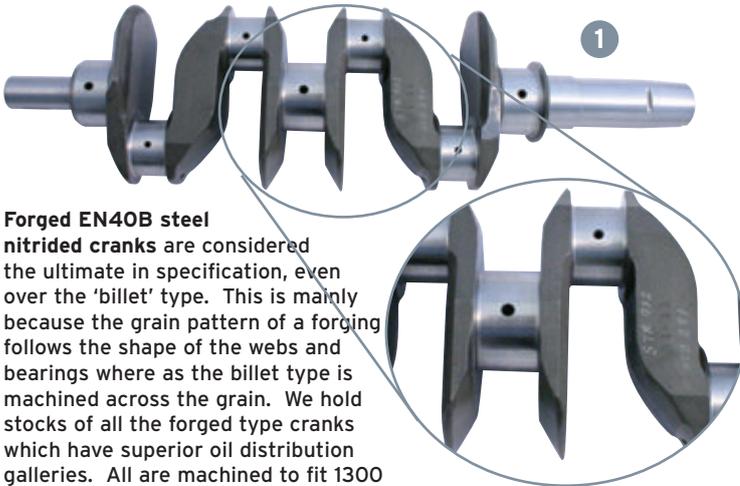


We mail the Gift Certificates to your specified delivery address.





## Forged EN40B Cranks



**Forged EN40B steel nitrided cranks** are considered the ultimate in specification, even over the 'billet' type. This is mainly because the grain pattern of a forging follows the shape of the webs and bearings where as the billet type is machined across the grain. We hold stocks of all the forged type cranks which have superior oil distribution galleries. All are machined to fit 1300 non 'S' center main except C-AEG479 which is 'S'.

1. a. **81.33mm stroke EN40B**, nitrided, 1.625" 'S' big end journal. For 'S' block. .... **C-AEG479**
- b. **76mm stroke EN40B**, nitrided, 1.625" 'S' big end journal. For 1300cc block. .... **C-AEG476**
- c. **84mm stroke EN40B**, nitrided, 1.625" 'S' big end journal. For 1300cc block. .... **C-AEG497**
- d. **86mm stroke EN40B**, nitrided, 1.625" 'S' big end journal. For 1300cc block. .... **C-AEG478**
- e. **81.33mm stroke EN40B**, nitrided, for 1300cc block with 1300cc big end journal diameter, = 1.7497" standard. .... **C-STR931**
- f. **81.33mm stroke EN40B**, nitrided, for 1300cc block with 'S' big end journal diameter, = 1.625" standard. .... **C-STR932**
- g. Same as C-STR932 but without primary gear circlip groove for special applications. .... **C-STR933**

**Future forged EN40B crankshafts will be mass center balanced and benefit from latest technology in having leading edge chamfering on the crank webs, which helps reduce whip and resistance at high rpm giving smoother running and balancing properties.** (as shown above)

Cranks for the short stroke 'S' are available to order only, and are cut from a steel billet as the forgings are no longer available.

- 1071cc 'S' steel billet crank, stroke length 68.26mm. .... **C-AEG170**
- 970cc 'S' steel billet crank, stroke length 61.91mm. .... **C-AEG329**

BORE/STROKE CAPACITY COMBINATIONS IN CC					
	.020	.040	.060	73.5mm	74mm
76mm	1209	1226	1243	1290	1308
79mm	1256	1274	1297	1341	1359
81.33mm	1293	1312	1330	1379	1399
84mm	1336	1355	1374	1425	1445
86mm	1368	1387	1407	1459	1480

## Thrust Washers



When refitting crankshafts, thrust washers should always be checked and replaced. Available in standard and plus 3 thou only in an engine set of 4.

2. a for 1275 standard. .... **AEW2136**  
b for 1275 at 3 thou oversize. .... **AEW2136-003**
3. a for 998 standard size. .... **AEW2122**  
b for 998 at 3 thou oversize. .... **AEW2122-003**

As many as possible of our engine parts are supplied by Federal Mogul one of the worlds largest suppliers of automotive components, who purchased Vandervell, Glacier, Payen and AE Hepolite. All of these old names are synonymous with the BMC/Leyland A series engine and we have carried on the tradition.

## End & Main Bearings

4. Our main range of bearings was Vandervell but owing to poor supply, varying tolerances and imperfections all the leading engine builders and Mini Spares have reverted to the superior ACL bearings which are steel backed lead indium copper race quality. \* Please state oversizes when ordering bearings.



- a. Big ends 850/998/1100 and Cooper 'S', 1.625" diameter, available in std/10/20/30/40. .... **AEB572**
- b. Big ends 1275cc 1.749" diameter, available in std/10/20/30/40. .... **AEB91306**
- c. Mains 1300cc and all 'S', available in std/10/20/30/40. .... **AEM91120**
- d. Mains 1300cc A-plus, available in std/10/20 only, with center locating tab. .... **AEM91886**
- e. Mains 998/1100cc, available in std/10/20/30/40. .... **AEM3314**
- f. Mains 998 A-plus, available in std AE material only in std/10/20 only, with center locating tab. .... **AEM3427**

## Cam Keys Offset & Standard



To aid accurate timing when using non adjustable timing gear systems, there is a range of proper CNC machined offset cam keys available. These come in 1° increments up to 9°. One tooth round on the gear represents 13° of cam timing, so if you are more than 9° out move the cam gear one tooth in the required direction and use the keys the other way round as they are bi-directional. They are available individually.



5. Standard camshaft key. Always replace when fitting a new camshaft. .... **WKN505**
6. Offset camshaft key, represents 1° offset. Change the number to order the required key, (ie. for 3°, WKN3 OSET). Available from 1° to 9°. .... **WKN1 OSET**
7. Crankshaft timing gear key. .... **6K836**
8. 360° Protractor for timing camshaft. .... **C-AJP337**

## MPZ Engine Build Lubes

9. **MPZ Engine Assembly Lube.** Favoured by professionals for press fitting piston wrist pins, pre lubing bushes, plain bearings, roller bearings, journals and gears. Prevents scuff, seizure, wear, rust, waterproof and corrosion proof. (4 fl oz). .... **KCLUBE**
10. **MPZ Cam Lube.** As above but converted into a non-melting gel type grease. These features protect cam lobe, lifters and valvetrain components from scuffing and wear during initial start-up. Also useful for Mini oil pumps to stop drain back on start up. (1 fl oz). .... **KCLUBE1**





### Kent Cams

All 1/2" lobe Kent cams are now supplied on new A plus slot drive blanks as supplies of usable old units are scarce.

- Road Cam.** Excellent urban cam, pulls from very low down, increases low, mid and top end in nearly all engines. Smooth idle, and good economy. Rev band up to 6,000 rpm. . . . . **MDM256**
- Fast Road Cam.** Brilliant all round performance road cam. Smooth idle, pulls from around 1,200 rpm. Small gain in low end, big increase in mid and top end. Unbeatable for genuine fast road use. Rev band 1,200 rpm to 6,500/7,000 rpm . . . . . **MDM266**
- a. Mild Road Cam.** Single point injection only . . . . . **MDM274**  
**b. Performance Road Cam.** Twin point injection . . . . . **MDM274MPI**
- Road / Rally Cam.** Slightly lumpy at idle, especially in small bore units. Strong mid and top end power. Rev band 1,500/7,000 rpm. . . . . **MDM276**
- Rally Cam.** Hottest road useable cam. Not a good traffic cam. Lumpy idle. . . . . **MDM286**
- Race Cam.** Needs free flowing exhaust manifold and system, requires a high compression ratio, best with medium to long inlet manifolds. Mid and top end power only. Gives very good results when twin SU's are used. Rev range 3,250-8,000/8,500 dependant on build. . . . . **MDM296**
- Full Race Cam.** Needs fully prepared engine for best results. Rev range 4,000 to 8,500/9,000 dependant on build. High compression ratio also required, 12:1 plus . . . . . **MDM310**

### Mini Spares 'Evolution' Cams

Also available are Mini Spares own "Evolution" cams, designed for the broadest range of power on any 1275-1380cc whilst returning decent fuel economy and does not need hi lift rockers. Used on all our 1310-1380cc engines (see ENG001/2/3 on page 33). In A-plus only, on an exchange basis. . . . . **EVOLUTION001**

- 998cc Cooper cam is a classic and available.** We can do most 1/2" pin drive cams ground from new blanks if required . . . . . **AEA630**

### Piper Cams



- These 2 piper cams have been added to our range because they are very good for producing low emission readings.** Especially valuable for MOT tests. Available in A plus slot drive only.
  - Mild road** for all engines producing excellent torque and smooth idle between rev range 1000-6000 RPM . . . . . **BP255M**
  - Ultimate road** for 1275cc and larger engines, massive improvements in mid range torque and power. Powerband 2000-7000 RPM . . . . . **BP285M**

### Cam Bearings



It is also essential to fit cam bearings in any 850cc block being used in competition to prevent seizure of the cam. The block will need to be line-bored by a competent engineering company to enable fitment.

Housing diameters should be  
FRONT 1.7955" to 1.7965"  
Center 1.753" to 1.754"

REAR 1.503" to 1.504", FRONT is the water pump end.

- Large bore cam bearing set.** Has slightly wider bearing at oil pump end than the small bore block . . . . . **AEC3063**
- Small bore cam bearing set,** but could also be fitted to large bore block . . . . . **AEC3046**



This selection of cams are the very latest supercams available for the 'A' series engine. Their design gives more torque, more power and more usable rpm than their equivalent single pattern cams. Particularly when a single Weber on a short inlet manifold is used. Current state of the art technology.

- Street Cam.** Single point injection only . . . . . **MDM274SP**
- Ultimate Street Cam.** . . . . . **MDM286SP**
- Excellent Rally/Autocross/Rally Cross Cam.** Gives very strong mid range and top end power. Needs high compression ratio and non restrictive exhaust manifold and system. On new blank only. . . . . **MDM296SP**

### Kent Scatter Pattern Cams

- Race Cam.** Needs a high compression ratio. Not as fussy about exhaust system. Effectively a 90's engineered 649. Gives wide power band, very good results in standard stroke race 1275cc 'S'. . . . . **MD290SPM**
- Ultimate Race Cam.** Needs fully prepared engine for good results - high compression ratio, high flow head, exhaust manifold and system. Best for short stroke circuit/tarmac engines. . . . . **MD310SPM**

Early 850/998/1100cc used 3/8" wide lobe pin drive camshafts. We recommend you use A-plus camshaft with stronger 1/2" lobe widths and use corresponding oil pump. Always state type of oil pump drive that is required when ordering.  
Pin type now only available in 3/8" lobe.

The timing figures are quoted in degrees inlet period/exhaust period - inlet opens before top dead center/closes after bottom dead center, exhaust opens before bottom dead center and closes after top dead center.

MEGAYNE RANGE CAMS		POWER BAND	TIMING IN/EX IN °	DURATION IN/EX	LCA°	LIFT STD RATIO	CAM LIFT
	MDM256 Mild Road	1000-6000	21-53 / 53-21	254 / 254	106	.320 / .320	.263/.263
	MDM266 Fast Road	1000-6500	24-56 / 61-29	260 / 268	106	.320 / .330	.263/.270
	MDM274 Fast Road	1000-6000	12-56 / 69-25	248 / 274	112	.348 / .343	.258/.281
	MDM276 Road Rally	1500-7000	29-61 / 66-34	270 / 280	106	.360 / .380	.293/.315
	MDM286 Rally	2000-7500	34-66 / 71-39	280 / 290	106	.388 / .400	.315/.324
	MDM296 Race	3250-8000	39-71 / 76-44	290 / 300	106	.400 / .420	.324/.340
	MDM310 Full Race	4000-8500	49-81 / 81-49	310 / 310	106	.420 / .420	.340/.340
MEGAYNE SCATTER PATTERN CAMS		POWER BAND	TIMING No.1&4 IN/EX	TIMING No.2&3 IN/EX	LCA°	LIFT STD RATIO	CAM LIFT
	MD286SPM	2000-7500	34-66 / 71-39	37-63 / 71-39	106	.388 / .400	.315/.324
	MD296SPM	3250-8000	39-71 / 76-44	42-68 / 76-44	106	.400 / .420	.324/.340
	MD290SPM	3500-8250	41-69 / 73-37	47-63 / 67-43	103	.395 / .395	.383/.383
	MD310SPM	4000-8500	49-81 / 81-49	52-78 / 81-49	103	.420 / .420	.340/.340

All camshafts are A-plus slot drive, ensure you obtain the correct oil pump. Valve lifts are actual lifts achieved when fitted. All valve gap clearances are 0.16" (0.40mm)



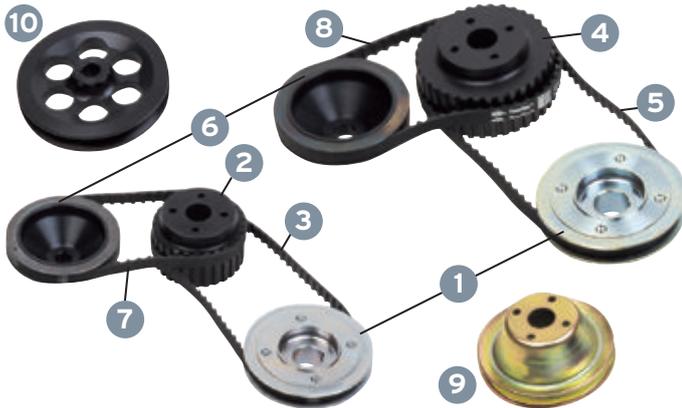


## Crank & Ancillary Pulleys

Alternative ancillary drive systems are available. For race use where the alternator is not used there is a toothed belt drive system with large diameter or standard diameter water pump pulley that eliminates problems caused by conventional belts being turned or thrown through misalignment.

The crank pulley is made to accept the 12A367 damper ring as shown on the crankshaft page, which is not included but advisable for most applications to reduce crankshaft failure.

A tooth belt drive kit for the alternator is also available with an oversized alternator pulley. Running a secondary belt from the water pump pulley to the alternator ensures that if the charging system belt goes, the car can still be driven.



1. Crank pulley for all tooth belt drive kits. Use 12A367 damper ring (No.1).....C-AEG455
2. a. Standard diameter tooth belt drive alloy water pump pulley with 28 teeth giving 0.87 to 1 ratio.....C-AEA477  
b. Same as C-AEA477 above water pump pulley with 28 teeth, but in steel for use in dirty, dusty conditions where the alloy pulley can wear quickly.....C-AEA478
3. Tooth drive fan belt for No.9 and No.10.....C-BELT255
4. Large diameter tooth belt drive alloy water pump pulley with 36 teeth giving 1.13 to 1 ratio.....C-AEA476
5. Tooth belt fan belt for No.9 and No.12.....C-BELT270
6. a. Dynamo or alternator tooth belt pulley for 15mm fixing hole pre 1985.....C-AEA479  
b. Alternator tooth belt pulley for 17mm fixing hole 1985 on.....C-AEA480
7. Tooth belt for alternator to standard 28 teeth water pump pulley.....C-BELT210
8. Tooth belt for alternator to large 36 teeth water pump pulley.....C-BELT225
9. a. 3<sup>7</sup>/<sub>8</sub>" (3.875") pressed steel water pump pulley. Pre 1980.....CAM6239  
b. Large diameter 4<sup>3</sup>/<sub>4</sub>" water pump pulley as fitted from 1980 on.....CAM6408
10. Large 5" diameter alloy dynamo/alternator 'V' pulley is available for reducing the speed of the charging system to prevent overcharging, on high rpm engines.....C-AEA535

### TOOTH BELT DRIVE FOR CRANK TO WATER PUMP USE FOLLOWING PARTS

Crank Pulley	Water Pump Pulley	Fan Belt
C-AEG455	ALLOY 1.13 TO 1 RATIO	C-BELT270
C-AEG455	ALLOY 0.87 TO 1 RATIO	C-BELT255
C-AEG455	STEEL 0.87 TO 1 RATIO	C-BELT255

### TOOTH BELT DRIVE FROM WATERPUMP TO DYNAMO OR ALTERNATOR

15mm Hole Pulley Pre 85	17mm Hole	Fan Belt Pulley 85 on
C-AEA479	C-AEA480	C-BELT225
C-AEA479	C-AEA480	C-BELT210
C-AEA479	C-AEA480	C-BELT210

For complete kit follow the line across choosing pulley for electrics required and corresponding fan belt.

## Pulleys, Belts & Dampers



For high performance engines an efficient crank damper is a necessity to reduce failure. The standard damper commonly used is barely adequate for the standard engine, under certain conditions. Mini Spares have reproduced the original 'S' damper and pulley - far superior to the standard item. The damper ring can be bolted directly to the toothed belt crank pulley, or used with the original 'V' belt crank pulley.

11. Damper ring. For crank pulley.....12A367
12. Crank pulley.....C-AEG454
13. One piece damper pulley latest Poly 'V' belt pulley as per Twin points 1997 on... LHF100130
14. Original ST Works locktab for use with original hexagon bolt and split pulley. (No. 1 & 2 or 1 & 9).....C-AHT146
15. Consistent and effective crank damper retention has long been a problem on the 'A' series engine. This is mostly due to a short retaining bolt, which can become loose. The socket cap head bolt with extended threads and a large washer eradicate this problem and allow further spacing of the pulley.....C-AHT147

## Crank & Ancillary Pulleys

For improved drive for fast road applications where an alternator is used, a poly 'V' system is available. This is the latest design of ancillary drive fitted to most modern production cars, including the 1997 Mini with a front mounted radiator.



16. a. Poly 'V' drive system includes water pump pulley, 15mm hole alternator pulley, new crank damper pulley and drive belt. Pre 1985.....C-AEA538  
b. As above but with 17mm hole alternator pulley, 1985 on. for A127 type alternator.....C-AEA538A
17. Spare poly 'V' belt for C-AEA538.....C-AEA540

## Fan Belts

Nearly all cogged fan belts indicate their length by the last 3 digits of the part number in millimetres. The fan belts were changed so many times on pre 1990 cars the only sure way to find a correct replacement is to look at your old fan belt and if it appeared to be the correct size, see if there are any remnants of the part number and always carry a new spare so you have the part number on hand at all times. If not measure the old belt

18. a. Original small water pump pulley less charging system. This replaces C-AEA539.....GCB10685  
b. With CAM6408 large (4.75" wide) water pump pulley less charging system.....GCB10725  
c. With dynamo or 16/17ACR alternator.....GCB10813  
d. With CAM6408 large pulley 1980 -1996 plus some earlier cars.....GCB10825  
e. Longer alternative than No.4 with CAM6408 large pulley and alternator.....GCB10838  
f. With C-AEA535 large charging pulley and 3.875" pressed steel pulley.....GCB10863  
g. With C-AEA535 large charging pulley and CAM6408 large pulley.....GCB10900
19. Poly 'V' belts on Twin point injection cars from 1996.  
a. Without air con compressor.....GMB50920  
b. With air con compressor.....GMB51005

Standard Cogged Antislip Belts

18

Poly 'V' Grooved Belt

19

