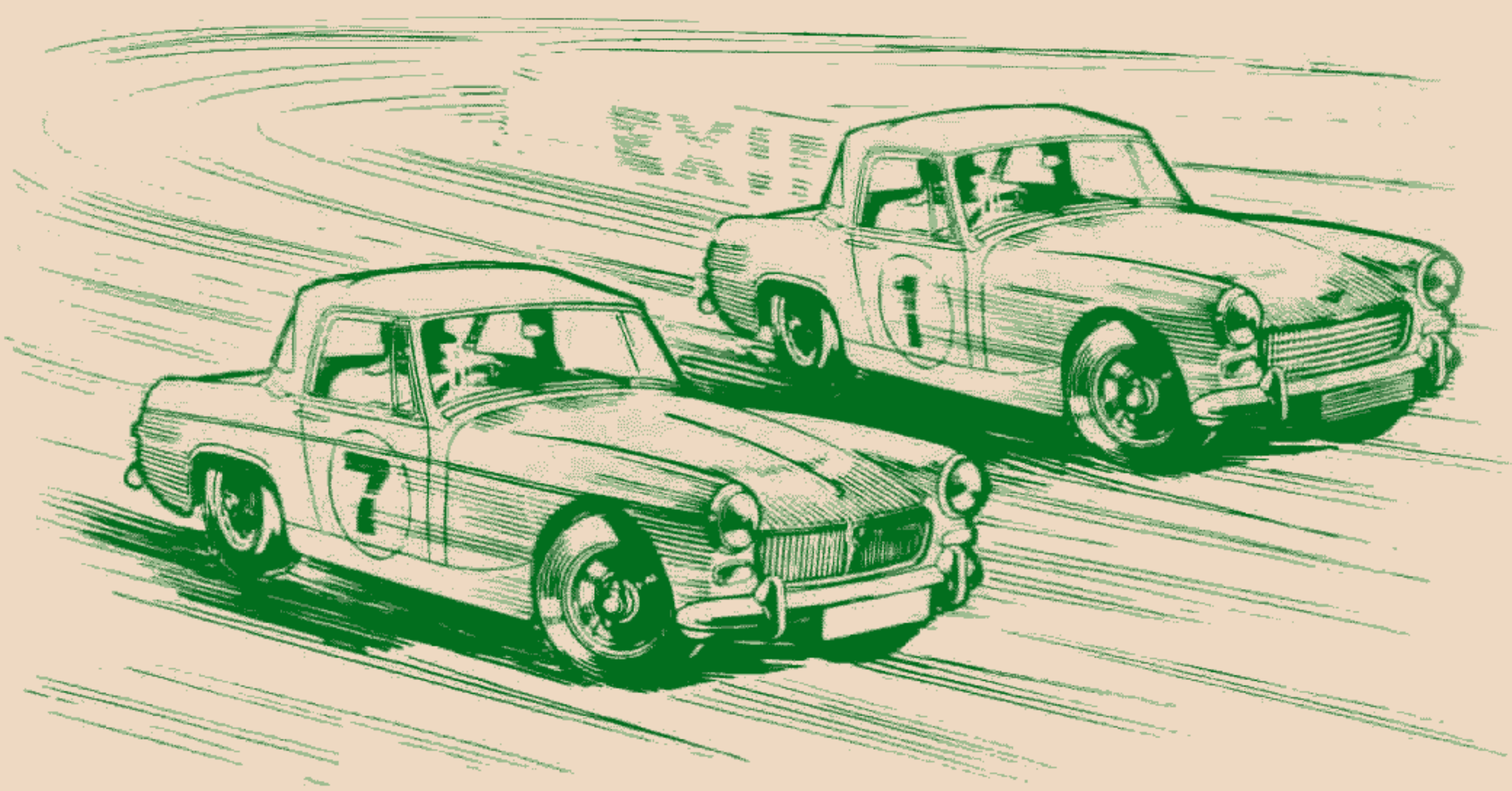
BMC

SPECIAL TUNING

FOR THE

MIDGET AND SPRITE

948c.c. & 1098c.c. ENGINES



Issued by:
THE BMC SPECIAL TUNING DEPARTMENT
ABINGDON-ON-THAMES, BERKSHIRE, ENGLAND

2/6 C-AKD 5097

SPECIAL TUNING DATA

Issued by: The BRITISH MOTOR CORPORATION LTD.

SPECIAL TUNING DEPARTMENT, Abingdon, Berkshire, England

Model MIDGET/SPRITE 948 & 1098cc **Sheet** Ba - 1 **Issue** 2

DESCRIPTIVE INDEX

Description	Part No.	Qty./Car	Sheet No.
BODYWORK			
Bonnet securing straps - Buckle half	C-AHH 5518	1	B-6
- Tongue half	C-AHH 5519	1	B-6
- Retainer	C-AHH 5517	2	B-6
BRAKES			
DS 11 brake pad set (For disc brakes only	C-AHT 16	1	B-6
CAMSHAFT			
Competition 24°, 64°, 59°, 29°	C-AEA 731	1	B-4
Tuning 16°, 56°, 51°, 21°, (2A 948)	88G 229	1	B-2
CARBURETTER			
1½" Twin S.U. Assembly	C-AUD 194	1	B-4
Installation Kit for C-AUD 194 Carbs.	C-AJJ 3304	1	B-4
Flare pipe for 1½" S.U. Carb. (Steel)	C-AEA 485	2	B-4
" " " " " " (Glassfibre)	C-AHT 10	2	B-4
Weber 45 D.C.O.E. carburetter (M.G.B.)	C-AEH 785	1	B-5
Installation Kit & manifold for C-AHT 143	C-AJJ 3360	1	B-5
CRANKSHAFT			
Heavy duty, for all 948cc engines (under consideration)			
CLUTCH			
Heavy Duty clutch (Cover assy.	C-BHA 4448	1	B-3
From Engine No. Prefix 10CC (Driven plate	C-BHA 4449	1	B-3
DISTRIBUTOR			
For use with 2A 948 or C-AEA 731 camshaft	C-27H 7766	1	B-1,B-2
EXHAUST SYSTEM			
Competition large bore Manifold	C-AHT 11	1	B-3
3 Branch Manifold & clips AHA 5450	C-AHA 5448	1	B-1,B-3
Pipe	C-AHA 5449	1	B-1
Silencer	C-ARA 135	1	B-1
FINAL DRIVE			
4.55:1 ratio, matched crown wheel & pinion	C-BTA 816	1	B-7
Limited slip differential	C-BTA 881	1	B-7
or	C-BTA 696	1	B-7
GASKETS			
Cylinder head joint	C-AEA 647	1	B-1
Manifold joint	C-AEA 411	1	B-1
Rocker cover joint	C-AEA 511	1	B-1,B-3
GEARBOX			
Close ratio for AN5 only (2nd speed gear	C-22A 226	1	B-1
(use with 22A 426, 22A 204 (3rd speed gear	C-22A 227	1	B-1
and 22A 207) (1st motion shaft	C-22A 228	1	B-1
Straight cut close ratio gear set complete	C-AJJ 3319	1	B-8

continued on Sheet Ba - 2

SPECIAL TUNING DATA

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SPECIAL TUNING DEPARTMENT, Abingdon, Berkshire, England

Model MIDGET/SPRITE 948 & 1098cc **Sheet** Ba – 2 **Issue** 2

DESCRIPTIVE INDEX (Cont'd)

Description			Part No.	Qty./Car	Sheet No.
LITERATURE					
Special Tuning Booklet – Sprite Mk.I only			C-AKD 1021		B-1
Binder – for Tuning Sheets			C-AKD 5061		
Divider set for Binder			C-AKD 5093		
Tuning Booklet (948 & 1098cc Engines)			C-AKD 5097		
B.M.C. Special Tuning Rosettes (1 pair)			C-AKD 5100		B-1
PISTON					
High compression flat top Std. (also +.010", +.020", +.030" & +.040") (For 9C and 9CG engines only)			C- 2A 946	4	B-1
Piston ring – compression, all sizes			C- 2A 954	8	B-1
Piston ring – scraper, all sizes			C- 2A 955	4	B-1
SUMP					
Deep sump and oil pick-up kit			C-AJJ 3324	1	B-3
SUSPENSION					
Shock absorber, competition setting	Front	R.H.	C-AHA 6451	1	B-1,B-6
	Front	L.H.	C-AHA 6452	1	B-6
Shock absorber, adjustable	Rear	R.H.	C-AHA 6453	1	B-1
(For ¼ elliptic springs only after Car No. HAN5/4333)	Rear	L.H.	C-AHA 6454	1	B-1
Shock absorber, adjustable	Rear	R.H.	C-AHA 7906	1	B-6
(for ½ elliptic springs only)	Rear	L.H.	C-AHA 7907	1	B-6
Lowered Rear Road Springs (½ elliptic)			C-AHA 8272	2	B-6
Front suspension lowering kit			C-AJJ 3322	1	B-6
Anti-roll bar kit complete 9/16" dia.			C-AJJ 3314	1	B-6
Anti-roll bar ⅝" dia.			C-AHT 56	1	B-6
Anti-roll bar 11/16" dia.			C-AHT 57	1	B-6
Installation Kit for C-AHT 56 & 57			C-AJJ 3356	1	B-6
VALVE GEAR					
Valve spring – Outer (9C engines only)			C- 2A 950	8	B-1
Bottom collar, for spring AEA 401			C-AEA 432	8	B-1
Valve spring – Inner, for 9CG & 10CC engines			C-AEA 494	8	B-1,B-3
Bottom collar for C-AEA 494 springs			C-AEA 493	8	B-1
Valve spring – Outer, for 10CC engines			C-AEA 524	8	B-3
Strengthened rocker shaft			C-AEG 399	1	B-6
Distance tube			C-AEG 392	3	B-6
Duplex timing chain kit			C-AJJ 3325	1	B-3
WHEELS					
Wire, 60 spoke 13" x 5"			C-AHA 7573	5	

IMPORTANT: Tuning of the kind described on this sheet is expressly excluded by the terms of the Warranty of the vehicle manufacturer.

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SPECIAL TUNING DATA

Issued by: The BRITISH MOTOR CORPORATION LTD.

SPECIAL TUNING DEPARTMENT, Abingdon, Berkshire, England

Model SPRITE H/AN5, H/AN6 & MIDGET G/AN1 **Sheet** B – 1 **Issue** 5
Engine Type Prefixes 9C & 9CG

N.B. Most of the engine parts can be fitted to any B.M.C. 948cc engine if care is taken in the selection of parts in conjunction with the Mechanical Parts List.

Detailed tuning information for 9C engines is described in Tuning Booklet C-AKD 1021 most of which also applies to 9CG engines. The following parts are still available, but before carrying out any tuning of this nature, ensure that the engine is in good condition.

High compression piston (9.3:1) (Std., +.010", +.020", +.030" & +.040" sizes)		C- 2A	946
Oil pump, large capacity		12G	793
Camshaft tuning (2A 948)		88G	229
Distributor, for tuning camshaft		C-27H	7766
Rocker cover joint - F.J. type		C-AEA	511
Valve spring - inner	9C ONLY	AEA	401
Bottom collar for inner spring	9C ONLY	C-AEA	432
Valve spring - outer	9C ONLY	C- 2A	950
Top cup, for double springs	9C ONLY	AEA	402
Valve spring, inner	9CG ONLY	C-AEA	494
Bottom Collar for spring	9CG ONLY	C-AEA	493
Top cup for springs	9CG ONLY	AEA	653
Competition exhaust system, comprising:			
Manifold (includes clips AHA 5450)		C-AHA	5448
Pipe		C-AHA	5449
Silencer		C-ARA	135
Joint - manifold		C-AEA	411

Use the following parts to convert 9C gearbox to 9CG close ratios.

	Std.	C/R			
1st	3.63	3.20	1st speed wheel	22A	426
2nd	2.37	1.92	2nd speed gear (28 teeth)	C-22A	226
3rd	1.41	1.36	3rd speed gear (24 teeth)	C-22A	227
			Reverse gear	22A	204
			1st motion shaft (20 teeth)	C-22A	228
			Laygear (26,23,19 & 13 teeth)	22A	207

Competition shock absorber	R.H. Front	C-AHA	6451
	L.H. Front	C-AHA	6452
Adjustable shock absorber	R.H. Rear	C-AHA	6453
(After Car No. H/AN5/4333 only)	L.H. Rear	C-AHA	6454
Strengthened disc road wheel		AHA	6455
B.M.C. Special Tuning Rosettes (1 pair)		C-AKD	5100
Joint - cylinder head		C-AEA	647

N.B. No tuning was ever recommended for the 10CG Engine.

IMPORTANT: Tuning of the kind described on this sheet is expressly excluded by the terms of the Warranty of the vehicle manufacturer.

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SPECIAL TUNING DATA

Issued by: The BRITISH MOTOR CORPORATION LTD.

SPECIAL TUNING DEPARTMENT, Abingdon, Berkshire, England

Model SPRITE H/AN8 & MIDGET G/AN3 (Engine Prefix 10CC only) **Sheet** B – 2 **Issue** 4

Before carrying out any tuning on these cars, it is essential to ensure that both the engine and chassis components are in good mechanical condition. Workshop Manual AKD 4021 is available giving full details of the correct maintenance and repair of the car. Parts Lists may also be obtained quoting the following Part Number.

Austin Healey Sprite Mk.I & Mk.II & M.G. Midget Mk.I	Mechanical Parts List	AKD 3566
	Body Parts List	AKD 3567
Austin Healey Sprite Mk.III & Mk.Iv	Body Parts List	AKD 3514
M.G. Midget Mk.II & Mk.III	Mechanical Parts List	AKD 3513

Cylinder Head

A small increase in power can be obtained by lightly polishing the valve ports and combustion chambers. However, do not alter the shape of these as they are cast to optium shape. In addition, the compression ratio can be raised by machining the face of the cylinder head in accordance with the following table, which shows the power output figures assuming polished valve ports.

Comp. Ratio	Machine Head	Combustion Chamber cc	Ignition Setting B.T.D.C. & B.H.P. @ 6000 RPM	
			Std. Camshaft	Camshaft 2A 948
8.9:1	NIL	29 cc	5°, 60 BHP	2°, 63 BHP
9.5:1	.035"	26.5 cc	3°, 62 BHP	1°, 65 BHP
10:1	.060"	24.7 cc	3°, 62.5 BHP	0°, 67 BHP
10.5:1	.080"	23.2 cc	2°, 64.5 BHP	0°, 68.6 BHP

Camshaft

A camshaft with increased opening periods Part No. 88G 229 (2A 948) may also be fitted. This camshaft will give the power outputs shown in the chart and has the following specification.

Inlet opens 16° BTDC, closes 56° ABDC. Exhaust opens 51° BBDC, closes 21° ATDC.
Valve lift 0.312" Tappet clearance .015"

Distributor

Use a new Distributor Part No. C-27H 7766 with this camshaft, but the standard air cleaners and carburetter needles are retained. Alternatively pancake air cleaners 12A 222 may be fitted using screws ZCS 0513 (2 off) and ZCS 0512 (2 off). GZ needles (Part No. AUD 1473) should then be used (rich AH2, Part No. AUD 1059, weak EB, Part No. AUD 1149) with red piston springs Part No. AUC 4387.

Exhaust

An extractor exhaust manifold C-AHA 5448 is also available which will increase the power output by a further 2-3 B.H.P. when used with either the standard camshaft or 88G 229. The standard exhaust system will be quite satisfactory for use with this manifold and stage of tune.

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Model SPRITE H/AN8 & MIDGET G/AN3 (Engine Prefix 10CC only) **Sheet** B – 3 **Issue** 6

Valve Springs

Stronger valve springs are available, but do not use springs any stronger than necessary, as the load on the valve gear is increased.

The following spring should be used in sets:

140 lbs. Valve Springs –	Inner	AEA	768	8 off
	Outer	AEA	767	8 off
165 lbs. Valve Springs –	Inner	C-AEA	494	8 off
–	Outer	C-AEA	524	8 off
Use with –	Bottom cup	AEA	403	8 off

A heavy duty rocker cover joint C-AEA 511 is also available.

Valve Rocker

Forged valve rocker AEG 425 are available, which can be ground at the side to lighten them. Note that only screw AEG 167 or lengthened screw C-AEA 692 will fit these, together with locknut FNN 605 as the diameter and thread are different.

Timing Chain

When using competition camshaft and stronger valve springs, the standard chain will wear and stretch very quickly. A duplex chain can be fitted, using the correct camshaft and crankshaft sprockets. The front plate will need countersinking to take special bolts, but all the necessary parts and instructions are contained in Duplex Chain Kit C-AJJ 3325.

Deep Sump

In order to prevent surge away from the oil pick-up when cornering, or braking violently in driving tests, etc. a deeper sump is now available. This requires the oil pick-up to be lowered to the bottom of the sump, and all the necessary parts are contained in Deep Sump Kit C-AJJ 3324.

Clutch

A competition clutch cover assembly C-BHA 4448 is available with stronger springs to prevent slip. This should be used with a competition driven plate C-BHA 4449 designed to withstand a certain amount of slip. If a very high degree of tuning is being undertaken and the car used purely for racing, it may be necessary to obtain a special clutch assembly to suit these requirements.

Exhaust Manifold

A large bore competition exhaust manifold C-AHT 11 is available for absolute maximum power, when the cylinder head ports have been opened out fully and twin 1½" carburetters are fitted. An exhaust system can be specially made up to suit this manifold with a suitable size of silencer.

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Model SPRITE H/AN8 & MIDGET G/AN3 (Engine Prefix 10CC only) **Sheet** B - 4 **Issue** 4

Large S.U. Carburetters

1½" S.U. carburetters are available as a pair C-AUD 194 together with Installation Kit C-AJJ 3304. Remove the standard carburetters, but before removing the heat shield, use one of the insulators Part No. AHH 5713 provided in the Installation Kit C-AJJ 3304 to mark out the larger diameter induction holes in the heat shield and file out to suit. Holes should be drilled in the lower edge of the heat shield immediately under the throttle return spring levers to anchor the springs. Two insulators for each carburetter must be fitted over the heat shield to maintain induction pipe length. The bore of the manifold is already chamfered to accept larger carburetters but can, with advantage, be cleaned and polished.

The existing connections for the throttle and mixture cables are used, but the mixture cable is clamped to the abutment bracket which, in turn, is bolted to the inside of the carburetter air cleaner flanges. No air cleaners are called for but trumpets C-AEA 485 (steel) or C-AHT 10 (Glassfibre) are available to suit these carburetters.

The carburetters supplied C-AUD 194 are fitted with No. 6 needles, but some engines may be better suited by No. 5 needles which are slightly weaker throughout the range. Rich Needle No. 7.

Using these carburetters with polished valve ports, camshaft 2A 948, distributor C-27H 7766 and extractor exhaust system C-AHA 5448, the power output will be as shown in the following table according to the compression ratio.

Alternatively, camshaft Part No. C-AEA 731 may be fitted, which will give the power outputs shown in the table and has the following specification.

Inlet opens 24° BTDC, closes 64° ABDC. Exhaust opens 59° BBDC, closes 29° ATDC
Valve lift 0.320" Tappet clearance 0.015"

With this camshaft, the same needles and distributor will be required, but see the table for ignition timing.

Comp. Ratio	Machine Head	Combustion Chamber cc	Ignition Setting B.T.D.C. & B.H.P. @ 6000 RPM	
			Camshaft 2A 948 (88G 229)	Camshaft C-AEA 731
8.9:1	NIL	29 cc	5°, 68 BHP	4°, 69 BHP
9.5:1	.035"	26.5 cc	5°, 70 BHP	4°, 71 BHP
10.0:1	.060"	24.7 cc	4°, 72 BHP	3°, 73 BHP
10.5:1	.080"	23.2 cc	3°, 73.5 BHP	3°, 74 BHP

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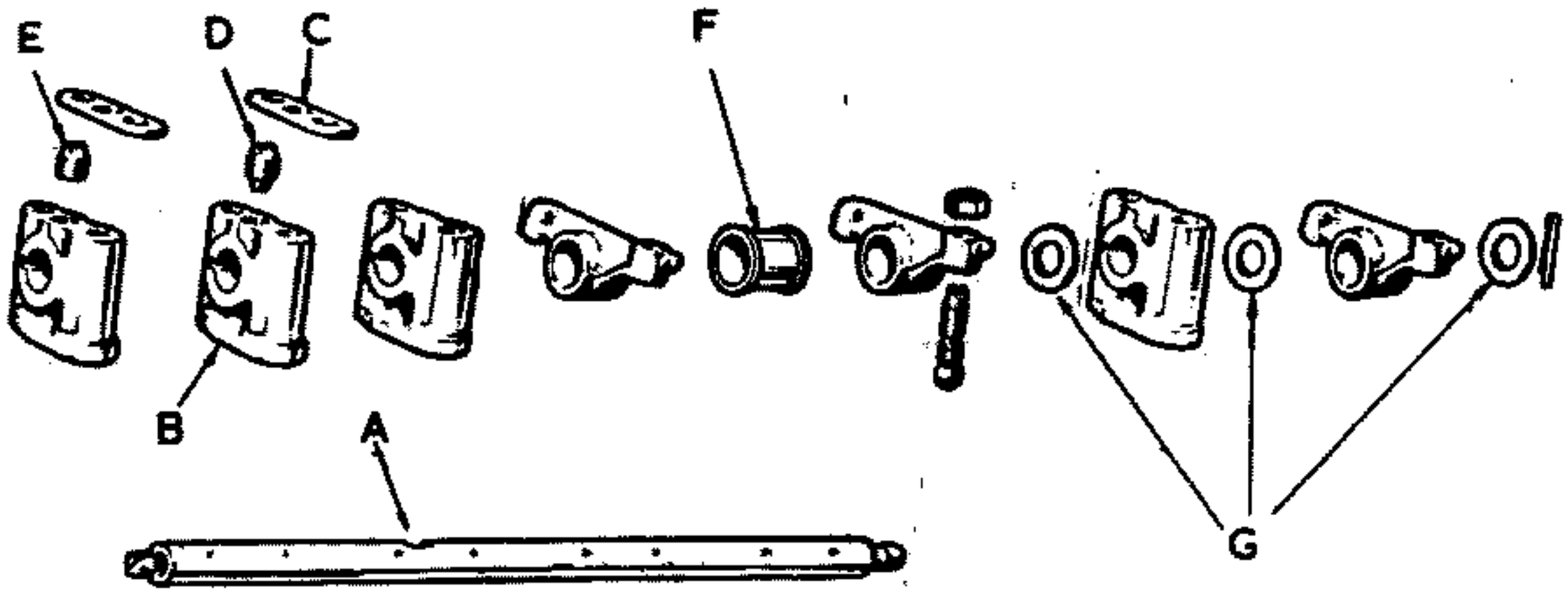
Rocker Shaft

A strengthened rocker shaft (A) Part No. C-AEG 399 is now available, which requires an additional tapped pedestal (B) 12A 210, locking plate (C) 2A 515 and locating screw (D) 2A 258. The locating screw (E) in the rear pedestal should be cut off flush with the end of the thread, so that the oil feed to this pedestal is still maintained. The location is now maintained by the adjacent pedestal (B) which should line up with the repositioned hole in the new rocker shaft.

Alternatively, one of the existing pedestals may be drilled to supply the oil feed from the head to the shaft, but ensure it is fitted in the correct position.



To reduce friction, the coil spring rocker spacers can be replaced by solid distance tubes (F) Part No. C-AEG 392 (3 off) and spacing washers (G) AEG 168 (6 off). These should normally be either side of the end pedestals, but may be moved to ensure each rocker is immediately above the valve stem.

Fan Belt

Where regulations permit running without a dynamo, use the standard water pump pulley 2A 601 and short fan belt Part No. C-AEA 539. A spare fan belt of the correct type can be clipped around the timing case and water pump for a quick changeover if one breaks during competition.

Weber Carburetter Manifold

For absolute maximum power, a special manifold is now available to take a 45 D.C.O.E. Weber carburetter. Kit C-AJJ 3360 includes this manifold and all the control rods, levers, springs, fuel pipes, etc. necessary for mounting the carburetter.

In view of the wide variations in tuning, it is not possible to advise on suitable jets, but Weber carburetter C-AEH 785 has 36 % chokes and will only need changes of jets.

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Competition Shockabsorbers

Front shockabsorbers with a harder setting are available Part No. C-AHA 6451 Right Hand, and C-AHA 6452 Left Hand. Before fitting these, they should be held in a vice and the lever operated for the full length of its stroke for a few minutes to expel all air from the valve.

Rear adjustable shockabsorbers are available Part No. C-AHA 7906 R.H. and C-AHA 7907 L.H. These can be adjusted in position to suit the ride conditions required.

Anti Roll Bars

A 9/16" (14.3 m/m) dia. anti roll bar is available as an optional extra on new cars, but this bar can also be fitted afterwards using kit C-AJJ 3314 which contains all necessary parts and fitting instructions.

For competition two larger diameter roll bars are available, $\frac{5}{8}$" (15.9 m/m) dia. C-AHT 56 or 11/16" (17.5 m/m) dia. C-AHT 57. These will fit straight onto cars already fitted with a works roll bar, but if no roll bar has previously been used, installation kit C-AJJ 3356 is required.

Suspension Lowering

The front suspension can be lowered about 1" (25 m/m) with lowering kit C-AJJ 3322. It is important to fit the rebound stop packing which is included in the kit.

Reference to the Mechanical Parts List AKD 3513 will show that two different front road springs have been fitted in production. Part No. 2A 4214 was fitted to earlier cars, but when AHA 8003 was fitted, this raised the car, which may be useful on earlier cars being used for rally work. Obviously it is essential to use two of the same springs.

Rear road springs, with a lowered setting for racing are available Part No. C-AHA 8272 (2 off) and should be used in conjunction with the front lowering kit C-AJJ 3322.

Brakes

The standard rear brake lining will be satisfactory for most competition use, but competition DS11 pad sets are available to eliminate fade under severe conditions Part No. C-AHT 16.

Bonnet Straps

Leather bonnet straps are available to provide additional safety with the forward opening bonnet on these cars. Use:-

Bonnet strap	- buckle half	C-AHH 5518	1 off
	- tongue half	C-AHH 5519	1 off
	- retainer	C-AHH 5517	2 off

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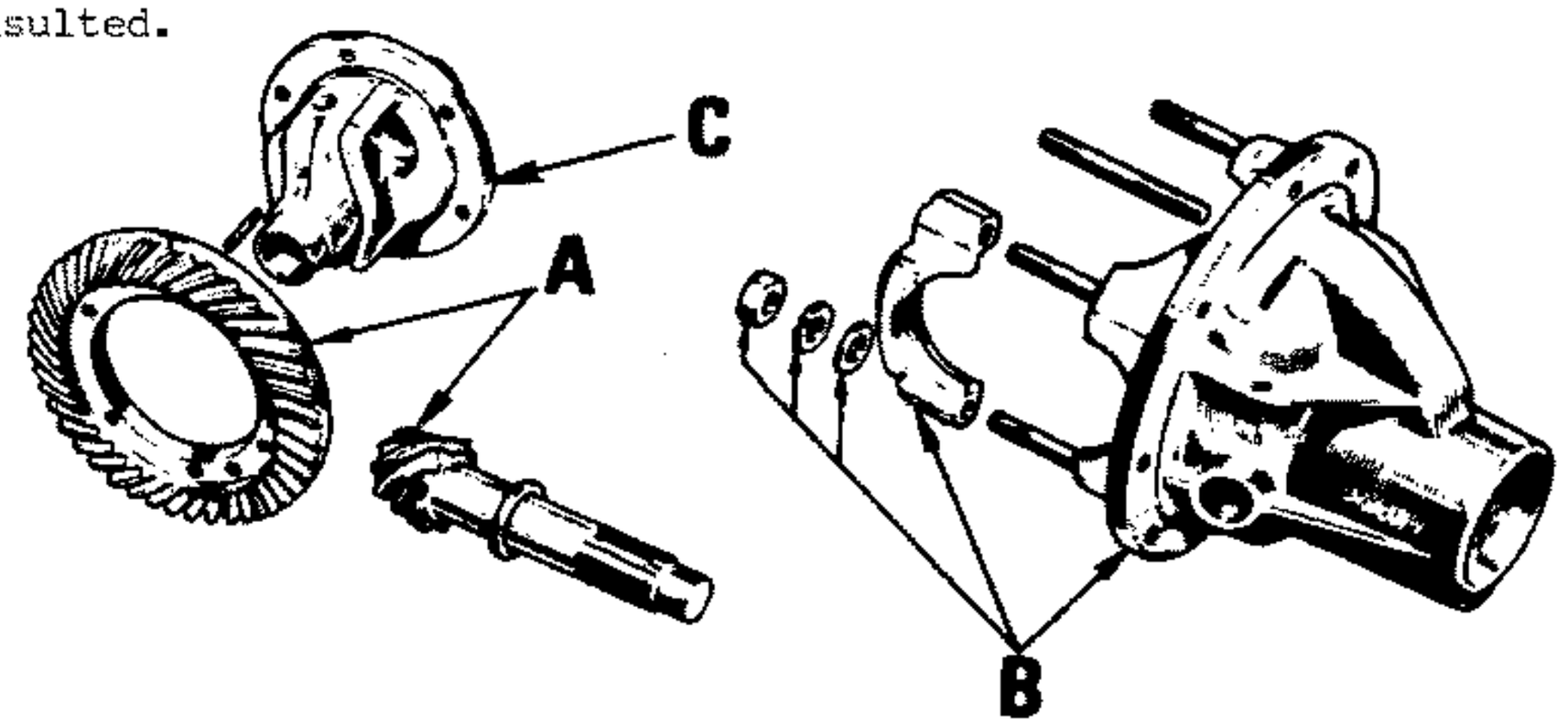
Model SPRITE AND MIDGET **Sheet** B - 7 **Issue** 2

Axle Ratios - Early Cars

Two types of rear axle have been fitted to these cars, and not all crown wheels and pinions are interchangeable on the earlier type. The following table shows the relative part numbers of the main components, for use on Mk.I and Mk.II Austin-Healey Sprite UP TO CAR NO. H-AN7-24731 and M.G. Midget UP TO CAR NO. G-AN2-16183 ONLY. These may be identified by the oil filler plug being in the carrier assembly 'B', and not in the axle case. For part numbers of spacers and bearings, the appropriate vehicle Mechanical Parts List should be consulted.



Ratio	No.of Teeth	C.W. & P. Part No. Illustration A	Carrier Assy. Part No. Illustration B	Differential Assy. Part No.	Standard Model
3.727	11/41	ATA 7240 *	ATA 7167	ATA 7239 *	Early Riley 1.5
3.900	10/39	C-ATA 7354 *	ATA 7167	ATA 7353 *	-
4.222	9/38	ATA 7266	ATA 7032	ATA 7326	Early Spridget
4.555	9/41	8G 7129	ATA 7032	ATA 7093	Morris ¼ Ton Van
4.875	8/39	C4 110	ATA 7032	2A 7230	A35 Van
5.375	8/43	ATA 7040	ATA 7032	ATA 7073	Morris GPO Van

Parts marked * are no longer available, but are included for reference.

Axle Ratios - Late Cars

AFTER Sprite Car No. H-AN7-24732 and Midget Car No. G-AN2-16184, a new axle assembly was fitted, which may be identified by the oil filler plug in the axle case. This was fitted with 9/38 Crown wheel and pinion BTA 539, Carrier Assembly BTA 549, and the Differential Assembly Part Number is BTA 550.

Only the following alternative ratios will fit this differential assembly:

3.727, 11/41 teeth Crown wheel and pinion BTA 535
4.555, 9/41 teeth Crown wheel and pinion C-BTA 816

N.B. ALL axles mentioned are fitted with Differential Cage ATA 7036 (Illus. C), and can ALL be fitted with Limited Slip Differentials C-BTA 696 and C-BTA 881 (alternatives).

Stronger Axle Shafts

For competition use, it is possible to fit the 1275 axle shafts BTA 806 (Disc Wheels) or BTA 807 (Wire Wheels).

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Close Ratio Gears (Helical Cut) NO LONGER AVAILABLE

Details are included for reference purposes, but replacements are no longer available from the Factory. The following parts could be fitted to gearboxes having 'A' series teeth (See Mechanical Parts List for details) to convert them to close ratio:-

C-22G 304 1st Motion Shaft (21 teeth)
C-22G 305 Laygear (25, 23, 19 & 13 teeth)

These parts gave the following ratios:

	C/R	(Std.)
1st	2·93	(3·20)
2nd	1·754	(1·92)
3rd	1·242	(1·36)
4th	1·0	1·0

N.B. It these gears require replacement, straight cut gear set may be used as detailed below.

Close Ratio Gears (Straight Cut)

For competition use where some gear noise is acceptable, close ratio straight cut gears are available giving the following ratios:-

	C/R	(Std.)
1st	2·573	(3·2)
2nd	1·722	(1·92)
3rd	1·255	(1·36)

After Engine No. 10CC/Da/H4642 and 10CC/Da/L2356 close ratio gear kit C-AJJ 3319 will be required. This contains the gears and all the necessary lockwashers and joints required. On all 9CG engines and 10CC engines BEFORE the above changepoint, use the following parts.

Close ratio gear kit	C-AJJ 3319
1st Speed Wheel	22G 326
Reverse Wheel	22G 240

N.B. An improved Layshaft 22G 673 is now fitted in production and should be used with these close ratio gears.

These gears will NOT fit gearboxes from engines with a prefix 9C/.

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Model GENERAL **Sheet** Z - 1 **Issue** 3

The following information is issued in order to facilitate the choice of a suitable final drive ratio for any particular application.

The table indicates the wheel revoluations per mile for the tyre size commonly used on B.M.C. vehicles. From this the vehicle speed per 1000 engine revolutions per minute can be calculated using the formula.

$$\text{M.P.H./1000 R.P.M.} = \frac{60000}{\text{axle ratio} \times \text{wheel revs per mile}}$$

or

$$\text{K.P.H./1000 R.P.M.} = \frac{96560}{\text{axle ratio} \times \text{wheel revs per mile}}$$

This formula gives the speed in direct top gear only but the equivalent road speed in any intermediate gear can be calculated by dividing this by the gearbox gear ratio.

Tyre Size & Type (Dunlop)	Wheel revs per mile @ 30 MPH	Tyre Size & Type (Dunlop)	Wheel revs per mile @ 30 MPH
520 x 10 C41	1058	145 x 13 SP	934
145 x 10 SP	1095	165 x 13 SP	892
520 x 10 CW44	1060	175 x 13 SP	874
500 x L10 R7	1053 *		
		520 x 14 C41	865
550 x 12 C41	960	550 x L14 R7	807 *
145 x 12 SP	980	560 x 14 C41	853
155 x 12 SP	960	590 x 14 RS5	842
550 x 12 CW44	955	590 x 14 C41	831
		145 x 14 SP	892
520 x 13 RS5	914	155 x 14 SP	873
520 x 13 C41	917	165 x 14 SP	854
560 x 13 C41	884		
550 x L13 R7	840 *	550 x L15 R7	775 *
590 x 13 RS5	871	560 x 15 C41	814
590 x 13 ~~867~~ C41	867	590 x 15 RS5	807
600 x L13 R7	807 *	590 x 15 C41	803
		600 x L15 R7	747 *
		165 x 15 SP	820

* Wheel revs @ 100 M.P.H.

For further information contact the tyre manufacturers direct.

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SPECIAL TUNING DATA

Issued by: The BRITISH MOTOR CORPORATION LTD.

SPECIAL TUNING DEPARTMENT, Abingdon, Berkshire, England

Model GENERAL **Sheet** Z – 2 **Issue** 6

The following chart snows details of the various B.M.C. camshafts produced for 'A' series in-line and transverse engines.

Part Nos with pin type oil pump drive.	8G 712 2A 297 2A 571	12G 165 AEA 630	AEG 148	88G 229 2A 948 12A 122	AEG 510	C-AEA 731	C-AEA 648 AEA 649
Marking	–	2 rings	–	1 ring	1 ring	3 rings	
Cam lobe width	$\frac{3}{8}$"	$\frac{3}{8}$"	$\frac{1}{2}$"	$\frac{3}{8}$"	$\frac{1}{2}$"	$\frac{3}{8}$"	$\frac{1}{2}$"
Standard use	Mini	1100 & Midget	Cooper'S' Midget II	Cooper 997cc	Cooper'S' 1966 *		Racing
Inlet opens ETDC	✕ 5°	✕ 5°	@ 5°	✕ 16°	@ 10°	@ 24°	@ 50°
closes ABDC	45°	45°	45°	56°	50°	64°	70°
Exhaust opens BBDC	40°	51°	51°	51°	51°	59°	75°
closes ATDC	10°	21°	21°	21°	21°	29°	45°
Inlet period	230°	230°	230°	252°	240°	268°	300°
Exhaust period	230°	252°	252°	252°	252°	268°	300°
Cam lift	.221"	.250"	.250"	.250"	.250"	.252"	.315"
Valve lift	.285"	.318"	.318"	.318"	.318"	.320"	.394"
Running Clearance	.012" (.30 m/m)	.012" (.30 m/m)	.012" (.30 m/m)	.015" (.38 m/m)	.015" (.38 m/m)	.015" (.38 m/m)	.015" (.38 m/m)
Part Nos with I spider pump drive	12A1065 +	12G 726 +	AEG 522 Θ AEG 537	C-AEG567	C-AEG542	–	C-AEG 529
Cam lobe width	$\frac{3}{8}$"	$\frac{3}{8}$"	$\frac{1}{2}$"	$\frac{1}{2}$"	$\frac{1}{2}$"		$\frac{1}{2}$"
Markings	– –	– 2 rings	– –	AEG567 –	AEG543 1 ring		AEG 530 –

For identification see markings and cam lobe width ($\frac{3}{8}$" = 9.5m/m, $\frac{1}{2}$" = 12.7m/m)

✕ For checking, set rocker clearance to .019" (.48m/m)

@ For checking, set rocker clearance to .021" (.53m/m)

* Fitted from Engine No. 9F-SA-Y/40006

Θ Fitted to 1275cc Midget and Sprite with engine prefix 12CC-

\+ Fitted to automatic versions of Mini or 1100 range

I Part No. 12G 729

N.B. See Mechanical Parts List of appropriate vehicle for full details of changepoints, etc.

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Overheating

Assuming that the cylinder head gasket is not leaking due to distortion and that the correct sparking plugs, ignition timing and mixture are being used, check the running temperature with an accurately graduated gauge. Note the boiling points under pressure - 5 lb/sq.in. 226°F, 7 lb/sq.in. 232°F, 13 lb/sq.in. 246°F and refer to the pressure on the cap.

If excessive temperatures are confirmed, possible causes may be found amongst the following paragraphs.

Examine bottom hose 2A 245 on 'A' series engines in case heater outlet portion protrudes into the main bore. Cut off surplus with a sharp knife or replace if there is any sign of flaking. The water pump should be checked to ensure clearance between vane and body is no more than .020 to .030 in. (.508 to .762 m/m). The water pump intake bore should be as large as possible and the grinding of a slight taper into the bore will also assist flow. Ensure fan belt tension is adequate.

Assuming the thermostat is working correctly, overheating can result if it is removed without fitting blanking sleeve 11G 176 in its place. Alternatively, the by-pass connection between the cylinder head and water pump may be sealed on 'A' series engines.

If the car is fitted with a heater, overheating in traffic can often be prevented by opening the water valve and running the heater so that this acts as an extra radiator. For running under hot conditions, it may be desirable to fit a thermostat which opens at a lower temperature, such as 13H 3584 (74°C, 165°F).

After continual use in dusty conditions, the radiator core may become partially blocked, possibly with leaves and insects. This can be cleared by compressed air or a jet of water used in the opposite direction to normal air flow.

Obstructions to air flow, such as badges, extra lights and rally plates can all cause overheating, and should obviously be reduced as much as possible. If a sump guard is fitted, it is essential to use a large capacity oil cooler, and this is also desirable for competition or motorway use. On the Mini, Cooper and Cooper 'S', use a cooler such as that contained in kit C-AJJ 3309. On the M.G.B. Midget and Sprite full details of oil cooler installations are shown in the Mechanical Parts Lists, but a larger M.G.B. oil cooler is available to Part No. C-ARO 9875, and Part No. ARO 9809 can be fitted to the Midget and Sprite.

On the Mini Cooper 'S', the radiator efficiency has now been improved by changing from 13 gills per inch (25.4 m/m) to 16 gills per inch (25.4 m/m). This may be checked by counting vertically the number of horizontal fins in a given height of the radiator core. The latest Part No. ARA 2064 MUST be used with the correct cap ARA 1633 and improved top hose 12G 751 on the 'S' only. This same radiator ARA 2064 and cap ARA 1633 can also be used on the Mini Cooper, but top hose 12G 104 must be used on this model.

For the Mini range, 6 bladed Fan 2A 998 and Stiffener 2A 803 are the most efficient for cooling. The 16 bladed Fan 12A 404 is quietest, but for racing 1 or 2 off 2 bladed Fan C-2A 997 may be used with Stiffener 2A 803.

The latest thermostat Part Nos. are as follows:

13H 3584 (74°C, 165°F), 13H 3585 (82°C, 180°F), 13H 3586 (88°C, 192°F).

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