



SPECIAL TUNING

FOR THE

1100 & 1300 SALOON

AUSTIN, MORRIS, MG, RILEY, VANDEN PLAS & WOLSELEY.



Issued by:

BRITISH LEYLAND SPECIAL TUNING DEPARTMENT
ABINGDON-ON-THAMES • BERKSHIRE • ENGLAND

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SPECIAL TUNING DATA

Issued by: BRITISH LEYLAND SPECIAL TUNING DEPARTMENT
ABINGDON-ON-THAMES · BERKSHIRE · ENGLAND

Model 1100 and 1300 RANGE

Sheet Fa - 1 Issue 1

DESCRIPTIVE INDEX

<u>Description</u>	<u>Part No.</u>	<u>Qty./Car</u>	<u>Sheet No.</u>
BODYWORK			
Bonnet Securing Strap Set	C-AJJ 3381	1	F-2
Petrol Tank Shield	C-AHT 176	1	F-2
Headlamp Cowl Kit	C-AJJ 3385	1	F-2
Seat, Lightweight Bucket Type	C-AHT 201	1/2	F-2
BRAKES			
Disc Pad Set DS11 (Mk.I Brakes only)	C-AHT 16	1	F-8
Disc Pad Set DS11 (Mk.II Brakes)	C-AHT 224	1	F-8
CAMSHAFTS			
Rally Camshaft 16 ^o ,56 ^o ,51 ^o ,21 ^o lift .250" (1100)	88G 229	1	Z-2
Road Camshaft 16 ^o ,56 ^o ,51 ^o ,21 ^o lift .250" (1300)	C-AEG 567	1	F6/F7/Z2
Rally Camshaft 10 ^o ,50 ^o ,51 ^o ,21 ^o lift .250" (1100)	AEG 510	1	F6/F7/Z2
Road Camshaft 10 ^o ,50 ^o ,51 ^o ,21 ^o lift .250" (1300)	C-AEG 542	1	F6/F7/Z2
Race Camshaft 50 ^o ,76 ^o ,75 ^o ,45 ^o lift .315" (1100)	C-AEA 648	1	F6/Z2
Race Camshaft 50 ^o ,70 ^o ,75 ^o ,45 ^o lift .315" (1300)	C-AEG 529	1	F6/Z2
Sprint Camshaft 60 ^o ,80 ^o ,75 ^o ,45 ^o lift .315" (1300)	C-AEG 597	1	Z-2
Valve Rocker Screw - lengthened	C-AEA 692	8	F6/Z2
CARBURETTORS			
1½" Twin SU H4 - RHD	C-AUD 178	1	F-1
Installation Kit Twin 1½" SU H4 RHD	C-AJJ 3301	1	F-1
1½" Twin SU H4 LHD	C-AUD 176	1	F-7
Installation Kit Twin 1½" SU H4 LHD	C-AJJ 3302	1	F-7
Flare Pipes for 1½" carburettors - alloy	C-AHT 247	2	F-7
Kit, Performance Twin 1½" SU HS4	C-AJJ 4004	1	F1/F7
1¾" Twin SU HS6	C-AUD 419	1	F-7
Kit, Installation for 1¾" SU H6 Carbs.	C-AJJ 4001	1	F-7
Flare Pipe for 1¾" carburettors	C-AHH 7209	1	F-7
Cable, Accelerator	C-AHT 85	1	F-7
EXHAUST			
Competition Manifold 1100	C-AHT 250	1	F-7
Stage I system 1100/1300	C-AHT 92	1	F1/F7
Competition Manifold 1300	C-AJJ 4003	1	F-1
FINAL DRIVE GEARS			
Final Drive Gear 3.938 : 1	C-22G 340	1	F-3
Pinion	C-22G 69	1	F-3
Final Drive Gear 4.267 : 1	C-22G 370	1	F-3
Final Drive Gear 4.35 : 1	C-22G 443	1	F-3
GEARBOX			
Kit, Limited Slip Differential	C-AJJ 3387	1	F-9
3.44:1 Gear Final Drive 62 teeth) Use	C-BTA 1250	1	F-9
3.65:1 Gear Final Drive 62 teeth)	C-BTA 1247	1	F-9
3.76:1 Gear Final Drive 64 teeth) with	C-BTA 1248	1	F-9
3.93:1 Gear Final Drive 63 teeth)	C-BTA 1252	1	F-9
4.13:1 Gear Final Drive 62 teeth) C-AJJ	C-BTA 1246	1	F-9
4.26:1 Gear Final Drive 64 teeth)	C-BTA 1251	1	F-9
4.35:1 Gear Final Drive 65 teeth) 3387	C-BTA 1249	1	F-9
Close Ratio Set Competition (Straight Cut)	C-AJJ 3371	1	F-3

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SPECIAL TUNING DATA

Issued by: BRITISH LEYLAND SPECIAL TUNING DEPARTMENT
ABINGDON-ON-THAMES • BERKSHIRE • ENGLAND

Model 1100 and 1300 RANGE

Sheet Fa - 2 Issue 1

DESCRIPTIVE INDEX (Continued)

<u>Description</u>	<u>Part No.</u>	<u>Qty./Car</u>	<u>Sheet No.</u>
<u>IGNITION/SPARKING PLUGS</u>			
Kit - high tension - plug - water proofing	C-AJJ 4010	1	F-6
Plug connector - rubber	C-AHT 265	4	
Champion N64Y	C-37H 4208	4	F-6
<u>LITERATURE</u>			
Tuning Booklet - 1100 & 1300 Saloons	C-AKD 5121		
Binder for Special Tuning Sheets	C-AKD 5061		
Divider Set for Binder	C-AKD 5093		
Tuning Data Sheet Set (All current models)	C-AJJ 3333		
British Leyland Tuning Emblems (1 pair)	C-AKD 5125		F-2
British Leyland Lapel Badge	C-AHT 200		
<u>OIL COOLER & PICK UP</u>			
Oil Cooler Kit	C-AJJ 3384	1	F-8
Oil Pump Pick up Pipe	C-AHT 54	1	F-8
Oil Cooler Cover	C-AHT 181	1	F-8
<u>PISTONS (1300 only)</u>			
Piston Assembly - 4 ring - flat top +.040"	C-AEG 043032	4	
Piston Assembly - 3 ring - dished +.020"/+.040"	C-AJJ 3377	1	F-5
<u>POLISHED CYLINDER HEADS/KITS</u>			
Stage I Kit 1100 Manual Gearbox	C-AJJ 3342	1	F-1
Stage I Kit 1100 Automatic Gearbox	C-AJJ 3348	1	F-1
Stage I Kit 1300 Manual & Automatic	C-AJJ 3344	1	F1/F7
Head Assy. (Full Race) 1300	C-AHT 221	1	F-5
Head Assy. 1300 (See	C-AHT 222	1	F5/F1
Head Assy. 1100/1300 Tuning Sheets	C-AHT 134	1	F1/F4/F5
Head Assy. 1100 for	C-AHT 90	1	F-4
Head Assy. 1100 details)	C-AHT 141	1	F-4
Gasket - cylinder head 1100	C-AEA 647	1	F-4
Gasket - cylinder head 1300	C-AHT 188	1	F1/F5
<u>SUNDRIES</u>			
Tachometer (Scuttle Mounting)	C-37H 2889	1	F-2
Alternator Bracket	C-AHT 32	1	F-8
<u>SUSPENSION</u>			
Rear Bump Stop Kit	C-AJJ 3386	1	
<u>VALVE GEAR</u>			
Valve Spring - Inner - 165 lb)	C-AEA 494	8	
Valve Spring - Outer)	C-AEA 524	8	
Valve Spring - inner - 180 lb)	C-AEA 652	8	
Locating Collar	C-AEA 654	8	
Inlet Valve (35.6% 1.401") 1300 only	C-AEG 544	4	
Inlet Valve (33.2% 1.307") 1300 only	C-AEG 569	4	
Kit - Duplex Timing Chain 1100 only	C-AJJ 3325	1	F-6
Lightened Camshaft Sprocket 1300 only	C-AEG 578	1	F-6
Lightened Tappet	C-AEG 579	8	
Valve Rocker Spacer	C-AEG 392	3	F-6

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SPECIAL TUNING DATA

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ABINGDON-ON-THAMES • BERKSHIRE • ENGLAND

Model 1100 and 1300 SALOON

Sheet F - 1

Issue 3

STAGE TUNING

Improved acceleration on the 1100 and 1300 range cars with single carburetters can be obtained by fitting British Leyland Stage I Tuning Kits to these cars. The kits are NOT suitable for the twin carburetter versions of either the 1100 or 1300 range. Various kits are available as follows :

C-AJJ 3342	1100, Manual gearbox only
C-AJJ 3348	1100, Automatic gearbox only
C-AJJ 3344	1300, Manual & Automatic

Kits suitable for the Traveller or Countryman versions can be ordered by adding suffix 'A' to the part number i.e. C-AJJ 3342A.

Each kit contains a polished cylinder head, completely assembled with valves and springs, matching inlet/exhaust manifold, complete exhaust system, modified carburetter items, sparking plugs, studs, identifying label and all necessary joints and fitting instructions.

The existing new car Warranty will NOT be invalidated when this kit alone is fitted. Any queries concerning Warranty matters should be referred to B.M.C. Service Division, Cowley, Oxford.

Further power can be obtained at the expense of some flexibility. Although tuning can be varied to suit individual requirements, the following stage tuning is recommended, but is excluded under the terms of the new car Warranty.

1100 10AMW 10GR 10V 10AG (Single carburetter versions)

<u>Stage II</u>	Cylinder head (10:1) C.R.	C-AHT 134
	Carburetters Twin $1\frac{1}{2}$ S.U.	C-AJJ 4402
	Camshaft AEG 510 (C-AEG 542 on auto versions)	
	Exhaust manifold	C-AJJ 4003
	Exhaust system	C-AHT 92
	Gasket, head	C-AHT 188

1300 with Engine No. prefix 12G/12H

<u>Stage II</u>	Head (9.5:1) C.R.	C-AHT 134
	$1\frac{1}{2}$ " Carburetter Kit	C-AJJ 4004
	Gasket, head	C-AHT 188
<u>Stage III</u>	Head (10:1) C.R.	C-AHT 222
	$1\frac{1}{2}$ " Carburetter Kit	C-AJJ 4004
	Gasket, head	C-AHT 188

Late 1300 with Engine No. prefix 12H 199

Performance Kit (11.4:1) C.R.

Head	C-AHT 222
Carburetters	C-AUD 178
Installation Kit	C-AJJ 3301
Gasket, head	C-AHT 188

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SPECIAL TUNING DATA

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ABINGDON-ON-THAMES · BERKSHIRE · ENGLAND

Model 1100 and 1300 SALOON

Sheet F - 2 Issue 2

Information on carrying out normal repair work on these cars is contained in Workshop Manual Part No. AKD 3615G. Parts Lists are available to special order showing exploded views of all the parts, but it is advisable to check your Dealers up-to-date copy when ordering parts.

A number of specialised tools are required when working on the engine and Hydrolastic suspension and these are detailed in the manual.

Wheels and Spacers

Mk.II ventilated wheels 31G 693 may be fitted to earlier cars, but early wheels must NOT be fitted to Mk.II cars. On no account should wheel spacers be fitted, since hub bearings and wheel studs would be come grossly overloaded.

Bonnet Straps

Leather securing straps are available as a set C-AJJ 3381 to ensure the bonnet does not fly open during competition use. A Rubber Toggle set C-AJJ 4016 is also available which has a speedier action.

Lightweight Seat

Glassfibre bucket seats are available which weigh 17½ lb. (7.9 kg.) complete with mounting frame. These will fit the current Mk.II seat brackets CZA 2242 and CZA 2244 which must be ordered separately when fitting the seat to Mk.I cars. The seat rake and position can be adjusted to suit individual requirements.

Additional Petrol Tank & Shield

If the car is required for long distance event, an additional petrol tank C-AJJ 4033 may be fitted in the boot compartment. This holds a further 6 gallons and is available to special order only.

For rallying or rough autocross use, the existing petrol tank may be protected by Tank Shield C-AHT 176.

Headlamp Cowls

Perspex headlamp cowl set C-AJJ 3385 is now available to protect expensive light units from stone damage. Secured by two screws each can be removed with a minimum of delay to make adjustments to the focussing if necessary.

Special Tuning Emblems

Distinctive British Leyland Special Tuning Emblems C-AKD 5125 (1 pair) are available in very tough self-adhesive vinyl.

Tachometer

In order to ensure that this important instrument is as near as possible to the line of vision, a tachometer (rev-counter) C-37H 2889 is now available for mounting on the scuttle above the dashboard. It is 3" (76%) diameter and is complete with its own cowl and mounting.

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SPECIAL TUNING DATA

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 ABINGDON-ON-THAMES · BERKSHIRE · ENGLAND

Model 1100 and 1300 SALOON

Sheet F - 3

Issue 3

ALTERNATIVE GEARBOX RATIOS

NOTE 3 speed synchromesh parts will NOT fit 4 speed synchro' gearboxes.

3 SPEED SYNCHROMESH

GEAR	MINI & 1100 STD.	COOPER 'S' STD.	EARLY 1275 (12G PREFIX)	WIDE RATIO SPUR CUT	CLOSE RATIO SPUR CUT
1st & Rev.	3.627	3.2	3.829	3.077	2.573
2nd	2.172	1.916	2.42	1.875	1.722
3rd	1.412	1.357	1.426	1.307	1.255
1st M. Shaft	22A 979	22G 322	22G 716	C-22G 427	C-AJJ
2nd Speed Gear	22A 980	22G 244	22A 980	C-22G 428	3371
3rd Speed Gear	22A 981	22A 983	22G 715	C-22G 429	complete
Laygear	2G 231	22G 232	22G 714	C-22G 335	Kit
1st M. Shaft	19 teeth	20 teeth	18 teeth	20 teeth	22 teeth
2nd Speed Gear	28 teeth	28 teeth	28 teeth	27 teeth	28 teeth
3rd Speed Gear	23 teeth	24 teeth	22 teeth	23 teeth	24 teeth
Laygear	28,24,19,13.	26,23,19,13.	28,24,18,13.	25,22,18,13.	23,20,17,13.

4 SPEED SYNCHROMESH

Kit C-AJJ 4032 will convert these gearboxes from standard ratio to close ratio (see chart) and kit C-AJJ 4014 will convert 4 speed synchromesh gearboxes to Straight-Cut close ratio for competition use.

RATIOS	Std. Helical	C.R. Helical	C.R. Spur
Reverse	3.54:1	3.35:1	2.69:1
1st	3.52:1	3.3 :1	2.543:1
2nd	2.22:1	2.07:1	1.73:1
3rd	1.43:1	1.35:1	1.257:1
1st Motion Shaft	17 teeth	18 teeth	19teeth

NOTE The gears shown in each vertical column must ONLY be used as sets. Although other gears have similar teeth, they will not necessarily mesh correctly. Ensure correct parts are ordered and that all remaining parts are in good condition.

When assembling Spur Cut gears, reverse the dismantling procedure but fit the 1st Motion Shaft from inside gearbox WITHOUT its ball race. Engage 2nd Gear before fitting assembled mainshaft from inside gearbox WITHOUT its ball race. Close the first motion shaft and mainshaft together, ensuring the spigot bearing is in position, and lower the assembly onto the selectors. Fit ball races to both shafts.

ALTERNATIVE FINAL DRIVE GEARS

Ratio (Teeth)	3.444 (18/62)	3.647 (17/62)	3.765 (17/64)	3.938 (16/63)	4.133 (15/62)	4.267 (15/64)	4.35 (15/65)
Wheel	22A 411	22G 940	22A 401	C-22G 340	22G 101	C-22G 370	C-22G 443
Pinion	22A 413	22A 399	22A 399	C-22G 69	22G 99	22G 99	22G 99

N.B. 4.133 ratio is standard for all 1100's.
 3.65 ratio is standard for all 1300's with 12H prefix
 3.44 ratio is standard for all early 1275 with 12G Prefix.



SPECIAL TUNING DATA

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ABINGDON-ON-THAMES • BERKSHIRE • ENGLAND

Model 1100 SALOON

Sheet F - 4 Issue 2

The transverse 1100 range have been offered with various combinations of piston and cylinder head volume (See chart), but there are no special competition pistons available.

Piston set 8G 2442 is fitted as standard to Low Compression AMW engine only. Piston set 8G 2443 is fitted to Low Compression MG/R engines and all High Compression AMW engines. Piston set 8G 2441 is fitted only to High Compression MG/R engines. AMW models should be fitted with one or other of the high compression pistons.

Piston set 8G 2441 is only fitted to the normal (high compression) MG/R models as standard. When fitted to the AMW range the compression ratio is increased to 9.5:1 due to the smaller combustion chamber volume. (See chart below).

Further increases in the compression can be gained by machining the existing cylinder head on purchasing one of the polished and modified heads available.

Polished Cylinder Heads

		Cubic Capacity	Inlet Valve Size	Exhaust Valve Size
C-AHT 90	90	23.24cc	1.151" 29.23 %	1.005" 25.5 %
C-AHT 141	141	25.26cc	1.219" 30.21 %	1.005" 25.5 %
C-AHT 134	134	18-19.5cc	1.307" 33.2 %	1.1515" 29.24 %

With cylinder head C-AHT 134 it may be necessary to undercut the cylinder block to allow the valve full travel. The machining should be done from the valve guide centre and the valve head should have a minimum lift and diametric clearance of 1/16" (1.59 %).

Use cylinder head gasket C-AEA 647 except with head C-AHT 134 when gasket C-AHT 188 should be used.

1100 Range Pistons

Piston Set No.	Part No.	Piston Dish	Standard Use	Compression Ratio				
				26.1cc Std AMW	28.3cc Std MG/R	23-24cc C-AHT 90	25-26cc C-AHT 141	18-19.5cc C-AHT 134
8G 2442	12G 305	12.3cc	AMW now Comp.	7.5:1	7.2:1	8.2:1	7.5:1	8.6:1
8G 2443	12G 303	6.9cc	AMW	8.5:1	8.0:1	9.0:1	8.6:1	10:1
8G 2441	12G 306	2.46cc	MG/R	9.5:1	8.9:1	10.2:1	9.6:1	11.4:1

Standard Bore 2.543"
Piston Height 2.288"

Compression Height 1.194"
Gudgeon Pin Dia. 0.625"

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ABINGDON-ON-THAMES • BERKSHIRE • ENGLAND

Model 1300 SALOON

Sheet F - 5 Issue 3

The 1300 Saloons have been fitted with power units with 12H prefix while 1100 models with the optional 1275 engine will have the 12G prefix.

These power units have a number of differences, but pistons shown on the chart are all interchangeable and head capacity also remains similar. Note that a special tool is required to remove and refit the gudgeon pins. On no account should heat be used on the little-end.

Reference to the chart shows the increased compression obtained from a particular piston with the standard cylinder head of 21.4cc combustion chamber volume and also the effect of reducing this volume.

Machining the face .012" (.3%) corresponds to a reduction of 1 cc in combustion chamber volume.

1300cc Pistons

Piston Set No.	Piston Dish	Standard Use	Compression Ratio		
			21.4cc	18.7cc	16.4cc
8G 2545	15.8cc	12G & 12H low comp.	8.0:1	8.5:1	9.1
8G 2546	11.1cc	12G & 12H high comp.	8.8:1	9.5:1	10.1
8G 2434	6.6cc	1275cc Mini MG/R 12H199	9.75:1	10.6:1	11.4:1
8G 2432	Nil	970cc	12.0:1	13.0:1	Not Suitable
* C-AJJ 3377	6.6cc		9.75:1	10.6:1	11.4:1

Standard bore 2.78" Compression height 1.495"
Piston height 2.745" Gudgeon pin dia. 0.813"

Standard pistons are available up to +.020", which will increase capacity to 1293cc.

*Forged competition piston sets C-AJJ 3377 are available +.020" or +.040".

Compression Ratios

The standard cylinder head has a combustion chamber capacity of 21.4cc with plugs and valves fitted, so the resultant compression ratio depends upon the pistons fitted, as shown above.

A polished head, fully assembled with new valves, guides and twin valve springs is available Part No. C-AHT 134. This has a combustion chamber volume of approximately 18.7cc and gives a slight increase in compression ratio as shown.

Competition heads C-AHT 222 or C-AHT 221 are available fully ported and polished, but with large inlet valves fitted, together with much stronger valve springs. The combustion chamber volume is 16.4cc giving compression ratios as shown in the above chart. Competition cylinder head gasket C-AHT 188 should be used in all cases.

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ABINGDON-ON-THAMES · BERKSHIRE · ENGLAND

Model 1100 and 1300 SALOON

Sheet F - 6

Issue 2

Valve Rocker Gear

Complete rocker assembly AEG 1031 comprises a strengthened rocker shaft AEG 399, a drilled pedestal 12G 1807, a tapped pedestal 12G 1806 and two standard pedestals AEG 166. The latest rocker 12G 1221 fitted to this assembly can be lightened by grinding the valve pad so that each rocker fits its individual valve. Do not weaken the section of the arm at all. Lengthened tappet adjusting screw C-AEA 692 will fit this rocker.

To reduce friction the coil spring rocker spacers should be replaced by solid spacers C-AEG 392 (3 off) and spring washers AEG 168 (6 off). The spacing washers should be used either side of the rocker, but can be moved to ensure it is located directly above the valve stem.

Timing Chain and Sprockets

When using competition camshaft and stronger valve springs on 1100cc engines the standard single row 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.

On 1300cc engines, the lightened steel camshaft sprocket C-AEG 578 may be fitted as a direct replacement for the standard sprocket.

Camshafts

Many camshafts are available to fit these engines as shown on Data Sheet Z-2. 12G 165 is fitted to all 1100cc engines (12G 726 on Automatic versions) and a good replacement camshaft for road use would be AEG 510 (C-AEG 542 on Automatic versions). For maximum power in a lightened car, camshaft C-AEA 648 could be used, but at the expense of much tractability.

On all 1300cc cars, camshaft AEG 522 is fitted, which can be replaced by C-AEG 567. Full race camshaft C-AEG 529 can be used with the large valve head and twin $1\frac{1}{2}$ " carburettors.

N.B. Lengthened tappet adjusting screw C-AEA 692 must be used with camshaft C-AEA 648 or C-AEG 529. This screw will only fit the forged valve rocker 12G 1221, which is part of rocker assembly AEG 1031 mentioned above.

Waterproof H.T. Kit

Rubber waterproof plug covers C-AHT 265 (4 off) are available separately, or as part of a waterproof high tension kit C-AJJ 4010, which also contains 6 ft. of special H.T. cable, a coil cover, and a Lucas HA 12 coil with screw-in terminals. This is desirable to ensure that rough competition use does not vibrate out the current push-in connections. Most distributor caps still have screw connections, but if not, fit cap 57H 5477.



SPECIAL TUNING DATA

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ABINGDON-ON-THAMES · BERKSHIRE · ENGLAND

Model 1100 and 1300 SALOON

Sheet F - 7

Issue 3

For a further stage of tune on 1100 engines fitted with a Stage I Kit and camshaft AEG 510 (C-AEG 542 on automatic versions) fit twin $1\frac{1}{4}$ " SU Carburettors as supplied in kit C-AJJ 4002. The fitting of a single $1\frac{3}{4}$ " SU carburetter is being investigated.

Twin $1\frac{1}{2}$ " SU carburettors can be fitted to 1300 cars. On the versions fitted with twin $1\frac{1}{4}$ " carburettors the standard manifold can be polished and matched to carburettors supplied in pairs, C-AUD 178 using installation kit C-AJJ 3301 on right hand drive cars, for left hand drive cars use kit C-AUD 176 with installation kit C-AJJ 3302. To obtain best performance from conversion also fit camshaft C-AEG 567. Use flare pipes C-AHT 247 to reduce turbulence at intake.

For cars fitted with a single carburetter, use, in conjunction with camshaft C-AEG 567 and Stage I Kit C-AJJ 3344 (less inlet manifold) kit C-AJJ 4004 which includes twin $1\frac{1}{2}$ " SU carburettors, special inlet manifold and exhaust system complete.

For absolute maximum power on a race-tuned 1293cc engine twin $1\frac{3}{4}$ " SU carburettors C-AUD 229 could be used, flare pipes C-AHH 7209 are available to fit these carburettors. Alternatively a twin choke Weber carburetter can be fitted. Kit C-AJJ 3360 contains the special inlet manifold and all necessary pipes, brackets and controls to fit 45 DCOE Weber carburetter C-AHT 143.

Exhaust Manifold and System

The Stage I system complete C-AHT 92 can be fitted on single carburetter cars. For cars fitted with twin carburettors, use branch exhaust manifold assembly C-AHT 250.

Accelerator Cable

An improved accelerator cable C-AHT 85 has now been developed for smooth operation under arduous rally conditions. It will fit both 1100 and 1300 models with SU or Weber carburettors.

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Model 1100 and 1300 SALOON

Sheet F - 8 Issue 2

Oil Cooler and Cover

An oil cooler is recommended for fast roadwork, particularly in warm weather and when towing a caravan or trailer. A complete kit of parts is now available Part No. C-AJJ 3384 which will fit all versions of the range. Cars with automatic gearboxes will also require connecting Pipe C-AHT 220.

For winter motoring, when a quicker warm-up of the oil is required, Oil Cooler Cover C-AHT 181 should be fitted, but remember to remove it for competition use, or when the warmer weather returns.

Brakes

A special puller as detailed in the Workshop Manual will be necessary when examining the rear brakes, but pad wear on the front can easily be checked. Brake Servo unit may be fitted to these cars using Kits 18G 8171 and 18G 8172.

On all cars with Mk.I brakes (fixed caliper type) harder pads with DS11 material are available Part No. C-AHT 16. If these are fitted, there may be a tendency for the rear wheels to lock when lightly loaded. The existing brake pressure limiting valve should be changed to Part No. 31G 911 (375 lbs/sq.in.) or if this reduction is not sufficient, Part No. 21A 1774 (315 lbs/sq.in) should be tried.

Harder Pads are now available for Mk.II brakes (Swinging caliper type) in DS11 material, Part No. C-AHT 224.

For serious track racing, a Dual Master Cylinder Kit C-AJJ 3388 is available with the necessary parts and instructions for fitment.

Use only Lockheed Series II Disc brake fluid when topping-up.

Alternator Fitting

A complete alternator kit is not available, but a list of all necessary parts is supplied with special cast alternator mounting bracket C-AHT 32. This is designed to take Lucas 11AC Alternator 13H 2131 in place of the existing dynamo pulley C-AEA 535. This will then cope with extra lights, heated screens etc. for rallying, or can be used for continual stop-start motoring where the dynamo may not be adequate.

Oil Pick-up Pipe

In order to reduce the possibility of loss of oil pressure due to surge when cornering fast and continuously, a modified Oil Pick-up Pipe C-AHT 54 is available. This will fit all transverse manual 'A' series gearboxes and is ideal for use in competition driving tests, rallies, autocrosses, etc.

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



SPECIAL TUNING DATA

Issued by: BRITISH LEYLAND SPECIAL TUNING DEPARTMENT
ABINGDON-ON-THAMES · BERKSHIRE · ENGLAND

Model 1100 and 1300

Sheet F - 9

Issue 1

Powr-Lok Differential

A Powr-Lok Differential Kit is available to Part No. C-AJJ 3387 which will only fit cars with needle roller drive shafts, and flange couplings. Earlier cars with rubber drive shaft couplings can be replaced by needle roller drive shafts using the following standard parts :

End Cover	22G 419	2
Seal - for end cover	22G 423	2
Collet - for driving flange	22G 424	4
Seal - rubber, for flange	22A 1202	2
Washer - plain	22A 1201	2
Washer - spring	LWZ 510	2
Setscrew - for driving flange	22A 1104	2
Nut - for bolt	LNZ 205	8
Driveshaft Assembly R.H. *	BTA 790	1
Driveshaft Assembly L.H. *	BTA 791	1

* See Mechanical Parts Lists for Breakdown of these Driveshaft Assemblies if required.

If a conventional differential is required after converting to needle-roller couplings, differential gears 22A 1151 (2 off) and driving flange 22A 1152 (2 off) will be required.

ALTERNATIVE FINAL DRIVE GEARS

Ratio	3.444	3.647	3.765	3.938	4.133	4.267	4.35
(Teeth)	(18/62)	(17/62)	(17/64)	(16/63)	(15/62)	(15/64)	(15/65)
Wheel	22A 411	22G 940	22A 401	C-22G 340	22G 101	C-22G 370	C-22G 443
Pinion	22A 413	22A 399	22A 399	C-22G 69	22G 99	22G 99	22G 99
Mod'ed	C-BTA	C-BTA	C-BTA	C-BTA	C-BTA	C-BTA	C-BTA
Wheel	1250	1247	1248	1252	1246	1251	1249

N.B. Cars fitted with Powr-Lok Differential C-AJJ 3387 require the modified final drive wheel, but use the same pinion as before.

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