

GENERAL DATA

ENGINE

Type	BC16GB.
Number of cylinders	4.
Bore	2.969 in. (75.41 mm.).
Stroke	3.5 in. (89 mm.).
Capacity	96.906 cu. in. (1588 c.c.).
Firing order	1, 3, 4, 2.
Compression ratio	9.9 : 1 with pistons AEH681. 8.3 : 1 with pistons AEH690.
Capacity of combustion chamber (valves fitted)	86.6 c.c. (5.28 cu. in.).
Valve operation	Twin overhead camshafts.
B.M.E.P.	163 lb./sq. in. (11.46 kg./cm. ²) at 4,500 r.p.m.
Torque	105 lb. ft. (14.5 kg. m.) at 4,500 r.p.m.
Cooling system	Thermo-siphon, pump- and fan-assisted.
Oversize bore:	
First .. .. .	.010 in. (.254 mm.).
Maximum .. .. .	.040 in. (1.016 mm.).

CRANKSHAFT

Main journal diameter	2 in. (50.8 mm.).
Crankpin journal diameter	1.8759 to 1.8764 in. (47.65 to 47.66 mm.).
Main bearings	
Number and type	3. Shell type.
Material (bottom half)	Steel-backed, lead-indium- or lead-tin-plated.
Material (top half)	Steel-backed, lead-indium- or lead-tin-plated.
Length	1.5 in. (38.1 mm.); (error) 1.25 in. (31.75 mm)
End-clearance .. .. .	.006 in. max. (.152 mm.).
End-thrust	Taken by thrust washers at centre main bearing.
Running clearance .. .. .	.002 to .0037 in. (.051 to .094 mm.).

CONNECTING RODS

Length between centres	6.5 in. (165.1 mm.).
Big-end bearings	
Material (bottom half)	Steel-backed, lead-indium- or lead-tin-plated.
Material (top half)	Steel-backed, lead-indium- or lead-tin-plated.
Bearing side-clearance .. .. .	.008 to .012 in. (.203 to .305 mm.).
Bearing diametrical clearance .. .. .	.002 to .0037 in. (.051 to .094 mm.).

PISTONS

Type	Flat top (9.9 : 1 compression ratio).
Material	Aluminium alloy.
Clearances:	
Bottom of skirt .. .. .	.0035 to .0066 in. (.090 to .168 mm.).
Top of skirt .. .. .	.0058 to .0083 in. (.147 to .211 mm.).
Type	Domed top (8.3 : 1 compression ratio).
Material	Aluminium alloy.
Clearances:	
Bottom of skirt .. .. .	.0035 to .0041 in. (.090 to .101 mm.).
Top of skirt .. .. .	.0070 to .0076 in. (.177 to .192 mm.).

PISTON RINGS

Compression:	
Top ring	Plain.
Second and third rings	Tapered.

GENERAL DATA—*continued*

Width .. .. .	.054 to .055 in. (1.37 to 1.39 mm.).
Thickness .. .. .	.124 to .131 in. (3.15 to 3.33 mm.).
Fitted gap .. .. .	.008 to .013 in. (.20 to .33 mm.).
Clearance in groove .. .. .	.0015 to .0035 in. (.038 to .089 mm.).
Oil control type	Microland scraper.
(From Engine No. 446)	Twin-segment scraper.
Width .. .. .	.1552 to .1562 in. (3.94 to 3.99 mm.).
Thickness .. .. .	.124 to .131 in. (3.15 to 3.33 mm.).
Fitted gap .. .. .	.008 to .013 in. (.20 to .33 mm.).
Clearance in groove .. .. .	.0015 to .0035 in. (.038 to .089 mm.).

GUDGEON PIN

Type	Fully floating.
Fit	Hand-push fit at room temperature.
Diameter .. .. .	.875 in. (22.22 mm.).

VALVES AND VALVE GEAR

Valves

Seat angle:

Inlet	45°.
Exhaust	45°.

Head diameter:

Inlet	1.59 in. (40.38 mm.).
Exhaust	1.44 in. (36.58 mm.).

Stem diameter:

Inlet342 in. (8.68 mm.).
Exhaust342 in. (8.68 mm.).

Valve lift

..375 in. (9.52 mm.).
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Valve stem to guide clearance:

Inlet00155 to .00255 in. (.0394 to .0635 mm.).
Exhaust00155 to .00255 in. (.0394 to .0635 mm.).

Valve clearance

..014 to .015 in. (.356 to .381 mm.) (cold).
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Chain pitch and number of pitches

..375 in. (9.52 mm.), 132 pitches.
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Inlet valve:

Opens	20° B.T.D.C.
Closes	50° A.B.D.C.

Exhaust valve:

Opens	50° B.B.D.C.
Closes	20° A.T.D.C.

VALVE GUIDES

Length:

Inlet	2 $\frac{1}{8}$ in. (52.39 mm.).
Exhaust	2 $\frac{7}{8}$ in. (61.91 mm.).

Diameter:

Inlet: Outside .. .. .	.5645 to .5655 in. (14.33 to 14.36 mm.).
Inside .. .. .	.3438 to .3443 in. (8.73 to 8.74 mm.).
Exhaust: Outside .. .. .	.5645 to .5655 in. (14.33 to 14.36 mm.).
Inside .. .. .	.3438 to .3443 in. (8.73 to 8.74 mm.).

Fitted height above head:

Inlet .. .. .	.750 in. (19.05 mm.).
Exhaust .. .. .	.844 in. (21.43 mm.).

GENERAL DATA—continued

VALVE SPRINGS

Free length:

Inner	..	..	..	..	..	..	..	..	2.3 in. (58.42 mm.).
Outer	..	..	..	..	..	..	..	..	2.54 in. (64.51 mm.).

Fitted length:

Inner	..	..	..	..	..	..	..	..	1.62 in. (41.15 mm.).
Outer	..	..	..	..	..	..	..	..	1.78 in. (45.21 mm.).

Number of working coils:

Inner	..	..	..	..	..	..	..	..	7.8.
Outer	..	..	..	..	..	..	..	..	6.

Pressure:

Valve open	..	..	..	..	..	..	..	..	Inner 65 lb. (29.5 kg.). Outer 125 lb. (56.7 kg.).
Valve closed	Inner 42 lb. (19.1 kg.). Outer 84 lb. (38.1 kg.).

TAPPETS

Type	Inverted bucket.
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Diameter:

Body	1.5 in. (38.1 mm.).
Working face	1.5 in. (38.1 mm.).

Length	1.25 in. (31.75 mm.).
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(From Engine No. 1087)	1.5 in. (38.1 mm.).
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CAMSHAFTS

Journal diameters	1.250 to 1.2505 in. (31.75 to 31.76 mm.)
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End-float001 to .005 in. (.025 to .127 mm.).
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Bearings: number and type	3. D2 bi-metal bearings.
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Inside diameter	1.2515 to 1.2525 in. (31.788 to 31.813 mm.).
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Clearance001 to .0025 in. (.0254 to .0635 mm.).
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HALF-SPEED SHAFT

Journal diameters:

Front	1.78875 to 1.78925 in. (45.43 to 45.44 mm.).
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Centre	1.72875 to 1.72925 in. (43.91 to 43.92 mm.).
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Rear	1.62275 to 1.62325 in. (41.22 to 41.23 mm.).
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End-float003 to .006 in. (.076 to .152 mm.).
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Bearings: number and type	3. Thinwall steel-backed white metal
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Inside diameter (reamed in position):

Front	1.790 in. (45.47 mm.).
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Centre	1.730 in. (43.94 mm.).
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Rear	1.624 in. (41.25 mm.).
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Clearance001 to .002 in. (.025 to .051 mm.).
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ENGINE LUBRICATION SYSTEM

Oil pump

Type	Eccentric rotor.
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Relief pressure valve operates	50 lb./sq. in. (3.52 kg./cm. ²).
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Relief valve spring:

Free length	3 in. (76.2 mm.).
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Fitted length	2 ⁵ / ₃₂ in. (54.77 mm.) at 16 lb. (7.26 kg.) load.
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Oil filter

Type	External renewable element, full-flow.
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Capacity	¹ / ₂ pint (.6 U.S. pint, .28 litre).
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GENERAL DATA—continued

Oil pressure									
Idling	10 to 15 lb./sq. in. (.7 to 1.05 kg./cm. ²).
Running	50 to 60 lb./sq. in. (3.52 to 4.22 kg./cm. ²).
TORQUE WRENCH SETTINGS									
Cylinder head nuts	..	..	..	..	..	..	..	..	70 lb. ft. (9.68 kg. m.).
Main bearing nuts	..	..	..	..	..	..	..	..	70 lb. ft. (9.68 kg. m.).
Big-end bearing nuts	..	..	..	..	..	..	..	..	50 lb. ft. (6.913 kg. m.).
Clutch assembly to flywheel	..	..	..	..	..	..	..	..	35 to 40 lb. ft. (4.84 to 5.53 kg. m.).
Camshaft bearing nut	..	..	..	..	..	..	..	..	33 lb. ft. (4.56 kg. m.).
Steering-wheel nut	..	..	..	..	..	..	..	..	42 lb. ft. (5.75 kg. m.).
FUEL SYSTEM									
Carburettor									
Make and type	..	..	..	..	..	..	..	..	S.U. twin H6 semi-downdraught.
Diameter	..	..	..	..	..	..	..	..	1½ in. (44.45 mm.).
Needle	..	..	..	..	..	..	..	..	OA6 (standard), RH (rich), OA7 (weak).
Jet	..	..	..	..	..	..	..	..	.10 in. (2.54 mm.).
Piston spring	..	..	..	..	..	..	..	..	Red, 4½ oz. (128 gm.).
AIR CLEANER									
Make and type	..	..	..	..	..	..	..	..	Vokes—oil-wetted.
FUEL PUMP									
Make and type	..	..	..	..	..	..	..	..	S.U. electric, large capacity.
Delivery test	..	..	..	..	..	..	..	..	12.5 gal./hr. (54.28 litres/hr.).
Suction lift	..	..	..	..	..	..	..	..	33 in. (83.8 cm.).
Output lift	..	..	..	..	..	..	..	..	48 in. (121.9 cm.).
COOLING SYSTEM									
Type	..	..	..	..	..	..	..	..	Pressurized radiator. Thermo-siphon, pump- and fan-assisted.
Thermostat setting	..	..	..	..	..	..	..	..	50 to 55° C. (122 to 131° F.).
Quantity of anti-freeze:									
15° frost	..	..	..	..	..	..	..	..	1½ pints (1.8 U.S. pints, .85 litre).
25° frost	..	..	..	..	..	..	..	..	2 pints (2.4 U.S. pints, 1.14 litres).
35° frost	..	..	..	..	..	..	..	..	3½ pints (4.2 U.S. pints, 2 litres).
IGNITION SYSTEM									
Sparking plugs	..	..	..	..	..	..	..	..	Champion N3. Champion N58R (for competition work and other arduous conditions).
Size	..	..	..	..	..	..	..	..	14 mm.
Plug gap	..	..	..	..	..	..	..	..	.025 in. (.64 mm.).
Coil	..	..	..	..	..	..	..	..	Lucas HA12.
Distributor	..	..	..	..	..	..	..	..	Lucas, type DM2.P4.
Distributor contact points gap	..	..	..	..	..	..	..	..	.014 to .016 in. (.35 to .40 mm.).
Suppressors	..	..	..	..	..	..	..	..	Lucas No. 78106A fitted on each H.T. cable.
Static timing:									
9.1:1 compression ratio - (error) 9.9:1	..	..	..	..	..	..	..	..	T.D.C.
8.3 : 1 compression ratio	..	..	..	..	..	..	..	..	8° B.T.D.C.
CLUTCH									
Make and type	..	..	..	..	..	..	..	..	Borg & Beck 8ARG. Single dry plate.
Diameter	..	..	..	..	..	..	..	..	8 in. (20.3 cm.).
Facing material	..	..	..	..	..	..	..	..	Wound yarn, reinforced.

GENERAL DATA—continued

Pressure springs	6.
Colour	Light grey.
Damper springs	6.
Colour	Maroon and light green.
Release lever ratios	11.7 : 1.

GEARBOX

Number of forward speeds	4.	
Synchromesh	Second, third, and fourth gears.	
Ratios:	Standard gearbox	Close ratio gearbox
Top	1.0 : 1.	1.0 : 1.
Third	1.374 : 1.	1.267 : 1.
Second	2.214 : 1.	1.62 : 1.
First	3.64 : 1.	2.445 : 1.
Reverse	4.67 : 1.	3.199 : 1.
Overall ratios:		
Top	4.3 : 1.	4.3 : 1.
Third	5.908 : 1.	5.449 : 1.
Second	9.520 : 1.	6.966 : 1.
First	15.652 : 1.	10.52 : 1.
Reverse	20.468 : 1.	13.75 : 1.
Speedometer gears ratio	5/12.	

STEERING

Type	Rack and pinion.
Steering wheel turns—lock to lock	2 $\frac{3}{8}$.
Steering wheel diameter	16 $\frac{1}{2}$ in. (419.10 mm.).
Camber angle	1° positive to $\frac{1}{2}$ ° negative on full bump.
Castor angle	4°.
King pin inclination	9° to 10 $\frac{1}{2}$ ° on full bump.
Toe-in	Wheels parallel.
Track:	
Front	47 $\frac{3}{8}$ in. (1.217 m.).
Rear	48 $\frac{7}{8}$ in. (1.242 m.).

FRONT SUSPENSION

Type	Independent coil.
Spring detail:	
Coil diameter (mean)	3.28 in. (82.25 mm.).
Diameter of wire .. .. .	.54 in. (13.72 mm.).
Free height	9.09 in. \pm $\frac{1}{8}$ in. (23.09 cm. \pm 1.6 mm.).
Number of free coils	7.2.
Static laden length	6.6 in. (16.76 cm.).
Static laden length at load of	1,193 lb. (541 kg.).
Dampers	Piston type.
Damper settings:	
Rebound: Blow-off	1,150 lb. in. (13.3 kg. m.) at 180°/sec. at 18° C.
Time setting	725 lb. in. (8.3 kg. m.) at 20°/sec. at 18° C.
Compression: Blow-off	550 lb. in. (6.3 kg. m.) at 180°/sec. at 18° C.
Time setting	350 lb. in. (4.0 kg. m.) at 20°/sec. at 18° C.

GENERAL DATA—continued

REAR SUSPENSION

Type	Semi-elliptic.
Spring detail:	
Number of leaves	6.
Width of leaves	1½ in. (44.45 mm.).
Gauge	$\frac{7}{32}$ in. (5.56 mm.).
Working load	450 lb. (203.7 kg.).
Free camber	3.60 in. (91.44 mm.).
Dampers	Piston type.
Damper settings:	
Rebound: Blow-off	1,300 lb. in. (15 kg. m.) at 180°/sec. at 18° C.
Time setting	175 lb. in. (2.01 kg. m.) at 20°/sec. at 18° C.
Compression: Blow-off	400 lb. in. (4.6 kg. m.) at 180°/sec. at 18° C.
Time setting	175 lb. in. (2.01 kg. m.) at 20°/sec. at 18° C.

PROPELLER SHAFT

Type	Tubular, flanged.
Make and type of joints	Hardy Spicer. Needle roller.
Length between centres of joints (fully extended)	30 $\frac{1}{8}$ in. (76.99 cm.).
Overall length (fully extended)	32 $\frac{11}{16}$ in. (83.0 cm.).
Overall length (fully compressed)	31 $\frac{1}{2}$ in. (80.65 cm.).
Length between centres of joints (fully compressed)	29 $\frac{3}{8}$ in. (74.65 cm.).
Diameter	2 in. (50.8 mm.).

REAR AXLE

Make and type	B.M.C. 'B' type, three-quarter-floating.
Ratio	10/43.
Adjustment	Shims.

ELECTRICAL EQUIPMENT

System	12-volt. Positive earth.
Charging system	Compensated voltage control.
Battery:	
Type	Lucas SG9E.
Type (Export only)	Lucas STGZ9E (dry-charged).
Voltage	6-volt (2 off).
Capacity (20-hour rate)	58 amp. hr.
Starter motor	Lucas 4-brush M35G1.
Dynamo	Lucas C39PV2.
Control box	Lucas RB106/2.
Cut-out:	
Cut-in voltage	12.7 to 13.3.
Drop-off voltage	8.5 to 11.
Reverse current	5 amps. (max.).
Regulator:	
At 1,500 r.p.m. dynamo speed:	
Open circuit setting at 20° C. (68° F.)	15.4 to 16.4 volts.
For ambient temperatures other than 20° C. the following allowances should be made to the above setting:	
For every 10° C. (18° F.) above 20° C. subtract .1 volt.	
For every 10° C. (18° F.) below 20° C. add .1 volt.	

GENERAL DATA—continued

BRAKES

Type	Dunlop disc (front and rear).
Disc diameter	11 in. (27.9 cm.).
Fluid	Wakefield Crimson (S.A.E. 70.R1).

WHEELS

Type	Ventilated disc, 4J x 15.
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TYRES

Size	5.90—15.
Tyre pressures:	
Normal:	
Front	18 lb./sq. in. (1.27 kg./cm. ²).
Rear	20 lb./sq. in. (1.4 kg./cm. ²).
Fast motoring:	
Front	22 lb./sq. in. (1.55 kg./cm. ²).
Rear	24 lb./sq. in. (1.69 kg./cm. ²).
Competition work and sustained high-speed motoring:	
Front	24 lb./sq. in. (1.69 kg./cm. ²).
Rear	26 lb./sq. in. (1.83 kg./cm. ²).

CAPACITIES

	<i>Imp.</i>	<i>U.S.</i>	<i>Litres</i>
Engine sump (including filter)	13 pt.	15.6 pt.	7.38
Gearbox	4 $\frac{1}{2}$ pt.	5.7 pt.	2.69
Rear axle	2 $\frac{1}{4}$ pt.	3.25 pt.	1.56
Cooling system	13 $\frac{1}{2}$ pt.	16.2 pt.	7.7
Steering rack	$\frac{1}{2}$ pt.	.6 pt.	.28
Fuel tank	10 gal.	12 gal.	45.4

GENERAL DIMENSIONS

Wheelbase	94 in. (2.388 m.).
Overall length	156 in. (3.962 m.).
Overall width	58 in. (1.473 m.).
Overall height	50 in. (1.27 m.).
Ground clearance	6 in. (15.24 cm.).
Turning circles:	
Right hand	32 ft. 1 in. (9.78 m.).
Left hand	32 ft. 6 in. (9.91 m.).

WEIGHTS

Fully equipped with tools, spare wheel, oil, water, and 2 gallons (2.5 U.S. gal., 9.1 litres) of fuel	2,185 lb. (991 kg.).
Engine (dry)	414 lb. (188 kg.) approx.
Gearbox (dry)	69 lb. (31 kg.) approx.
Rear axle (dry)	137 lb. (62 kg.) approx.