



# **WORKSHOP MANUAL PATHFINDER**

## **NOTE**

Amendments to the instructions given in this manual are only made by the issue of revised sheets or additional sheets for insertion at the end of each section.

It is therefore of the utmost importance to refer to the end of each section for the latest instructions before carrying out any work on the vehicle.

The part number of this manual, which should be quoted when a copy is ordered, is AKD612.

*Issued by*

**RILEY MOTORS LIMITED**

*Proprietors: MORRIS MOTORS LIMITED*

**Abingdon-on-Thames - Berkshire**

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**NUFFIELD EXPORTS LIMITED**

*Proprietors: MORRIS MOTORS LIMITED*

**Cowley - Oxford - England**

**THE RILEY PATHFINDER**



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## GENERAL DATA

ENGINE TYPE	...	...	...	DP.25R.			
Number of cylinders	...	...	...	Four.			
Capacity	...	...	...	2442.5 c.c. (149 cu. in.).			
Bore	...	...	...	80.5 mm. (3.169 in.).			
Stroke	...	...	...	120 mm. (4.725 in.).			
Compression ratio	...	...	...	7.25 : 1.			
System of cooling	...	...	...	Thermo-siphon—Impeller assisted.			
Radiator hose—top	...	...	...	1½ in. × 5 in. (38.1 mm. × 127 mm.).			
Radiator hose, bottom	...	...	...	1½ in. × 3 in. (31.7 mm. × 76.2 mm.).			
First oversize bore	...	...	...	+0.10 in. (+2.5 mm.); 3.1793 in. (80.75 mm.).			
Maximum oversize bore	...	...	...	+0.40 in. (+50 mm.); 3.2093 in. (81.5 mm.).			
Firing order	...	...	...	1, 2, 4, 3.			
Piston type	...	...	...	LO-EX Aluminium alloy.			
Piston fit (bottom of skirt)	...	...	...	<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td rowspan="2" style="font-size: 2em; vertical-align: middle;">{</td> <td>0.0023 in. (min.) to 0.0031 in. (0.60 mm. to 0.78 mm.).</td> </tr> <tr> <td>0.0018 in. (min.) to 0.0026 in. (0.45 mm. to 0.66 mm.).</td> </tr> </table>	{	0.0023 in. (min.) to 0.0031 in. (0.60 mm. to 0.78 mm.).	0.0018 in. (min.) to 0.0026 in. (0.45 mm. to 0.66 mm.).
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	0.0018 in. (min.) to 0.0026 in. (0.45 mm. to 0.66 mm.).						
Ring gap	...	...	...	0.009 in. to 0.014 in. (0.229 mm. to 0.356 mm.).			
Number of compression rings	...	...	...	Two.			
Width of compression rings	...	...	...	0.927 in. to 0.937 in. (2.35 mm. to 2.38 mm.).			
Number of oil rings	...	...	...	Two.			
Width of oil rings	...	...	...	1.565 in. to 1.575 in. (3.975 mm. to 4.000 mm.).			
Ring side clearance	...	...	...	0.002 in. to 0.004 in. (0.05 mm. to 0.10 mm.).			
Oil pressure relief valve operates	...	...	...	50 lb./sq. in. (3.515 kg./cm. <sup>2</sup> ).			
Filter by-pass valve operates	...	...	...	35 lb./sq. in. (2.461 kg./cm. <sup>2</sup> ).			
Gudgeon pin type	...	...	...	Floating—located by circlips.			
Gudgeon pin diameter	...	...	...	0.866 in. (22 mm.).			
Fit in piston	...	...	...	Double-thumb push at room temperature.			
Fit in connecting rod	...	...	...	Push.			
Crankpin diameter	...	...	...	2.362 in. (60 mm.).			
Crankpin minimum regrind diameter	...	...	...	2.322 in. (58.98 mm.).			
Connecting rod—length between centres	...	...	...	8.625 in. (219.07 mm.).			
Connecting rod—type of bearing	...	...	...	Steel-backed <table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td rowspan="2" style="font-size: 2em; vertical-align: middle;">{</td> <td>lower half, white-metal-lined,</td> </tr> <tr> <td>upper half, copper-lead-lined.</td> </tr> </table>	{	lower half, white-metal-lined,	upper half, copper-lead-lined.
{	lower half, white-metal-lined,						
	upper half, copper-lead-lined.						
Connecting rod—side clearance	...	...	...	0.002 in. to 0.008 in. (0.05 mm. to 0.2 mm.).			
Connecting rod—diametrical clearance	...	...	...	0.0008 in. to 0.0023 in. (0.005 mm. to 0.057 mm.).			
Number of crankshaft bearings	...	...	...	Three.			
Type of main bearing	...	...	...	Steel-backed, white-metal-lined.			
Main journal diameter	...	...	...	2.625 in. (66.675 mm.).			
Main journal, first regrind	...	...	...	2.605 in. (65.167 mm.).			
Main journal, second regrind	...	...	...	2.585 in. (65.659 mm.).			
Main bearings—length :							
Front and intermediate	...	...	...	1.938 in. (49.25 mm.).			
Rear	...	...	...	2.760 in. (70.10 mm.).			
Main bearings—end clearance	...	...	...	0.0006 in. to 0.0078 in. (0.015 mm. to 0.195 mm.).			
Main bearings—diametrical clearance	...	...	...	0.0015 in. to 0.0035 in. (0.0381 mm. to 0.0889 mm.).			
Crankshaft—end thrust taken on	...	...	...	Rear main bearing.			
Flywheel—diameter	...	...	...	12½ in. (31.75 mm.).			
Flywheel—number of teeth	...	...	...	104.			
Number of camshaft bearings	...	...	...	Three per shaft. (Total 6).			
Type of camshaft bearings	...	...	...	Five bronze and one zinc base bushes.			
Camshaft bearing clearance	...	...	...	0.0015 in. to 0.004 in. (0.0375 mm. to 0.10 mm.).			
Camshaft journals—diameters :							
Inlet—front	...	...	...	1.805 in. (45.84 mm.).			
centre	...	...	...	1.094 in. (27.79 mm.).			
rear	...	...	...	1.5625 in. (39.68 mm.).			

## GENERAL DATA—continued

Exhaust—front and centre ... ..	1.805 in. (45.84 mm.).
rear ... ..	1.5625 in. (39.68 mm.).
Camshaft—end thrust taken on ... ..	Front face of front bearings.
Camshaft—end float ... ..	.006 in. to .008 in. (.015 mm. to .2 mm.).
Camshaft drive ... ..	Duplex roller chain ; $\frac{3}{8}$ in. pitch ; 104 pitches.
Valve timing markings ... ..	Crankshaft keyway vertical, and marks on chain wheels.
Valve timing in degrees ... ..	Inlet opens 12° B.T.D.C. Inlet closes 53° A.B.D.C. Exhaust opens 55° B.B.D.C. Exhaust closes 20° A.T.D.C.
Valve throat diameter—inlet ... ..	1.702 in. (43.23 mm.).
exhaust ... ..	1.476 in. (37.49 mm.).
Valve head diameter—inlet ... ..	1.830 in. (46.48 mm.).
exhaust ... ..	1.604 in. (40.7 mm.).
Valve stem diameter ... ..	.3125 in. (7.92 mm.).
Valve seat angle ... ..	45°.
Tappet type ... ..	Barrel.
Valve lift ... ..	.378 in. (9.602 mm.).
Valve—rocker clearance ... ..	.011 in. (.28 mm.).—hot engine.
Valve guides ... ..	Renewable.
Valve guide bore ... ..	.3125 in. (7.92 mm.).

### FUEL SYSTEM

Fuel tank level ... ..	Electric gauge on panel.
Fuel delivery ... ..	S.U. electric pump ; type H.P.
Fuel pump test—delivery ... ..	10 gallons (12 U.S. gallons ; 45.4 litres) per hour.
output lift ... ..	48 in. (121.9 cm.).
suction lift ... ..	33 in. (83.8 cm.).
Carburettors ... ..	Two $1\frac{1}{2}$ in. horizontal.
Carburettor needles—standard ... ..	EE.

### CLUTCH

Type ... ..	Borg and Beck, 10A.6-G.
Facing ... ..	MY3D.
Springs ... ..	{ Nine orange/red—95 lb. each (42.75 kg.). Three green—110 lb. each (49.5 kg.).

### GEARBOX

Synchromesh ... ..	Second, third and top.
Overdrive ... ..	0.7 to 1.
Ratios ... ..	Top 1 to 1. Third 1.435 to 1. Second 2.06 to 1. First 3.315 to 1. Reverse 4.493 to 1.

### FRONT SUSPENSION AND STEERING

Camber ... ..	1° positive $\pm \frac{1}{4}$ °.
Castor ... ..	3°.
Toe-in ... ..	Nil.
Swivel pin inclination ... ..	6°.
Steering ... ..	Cam gear.
Ratio ... ..	{ 16 : 1. 18 : 1 (from Car No. RMH.1170). 20 : 1 (from Car No. RMH.5554).
Steering wheel diameter ... ..	17½ in. (44.45 cm.).
Turning circle ... ..	35 ft. 6 in. (10.82 m.).

## GENERAL DATA—continued

### REAR AXLE

Type	...	...	...	...	...	Three-quarter floating.																	
Drive	...	...	...	...	...	Hypoid.																	
Adjustment	...	...	...	...	...	By distance pieces for pinion and crown wheel.																	
Ratio	...	...	...	...	...	4.1 to 1.																	
Overall ratios	...	...	...	...	...	<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td>Top:</td> <td>4.1 to 1.</td> <td>2.87 to 1</td> <td rowspan="5" style="font-size: 3em; vertical-align: middle; padding: 0 10px;">}</td> <td rowspan="5" style="vertical-align: middle;">With overdrive.</td> </tr> <tr> <td>Third:</td> <td>5.883 to 1.</td> <td>4.11 to 1</td> </tr> <tr> <td>Second:</td> <td>8.446 to 1.</td> <td>5.91 to 1</td> </tr> <tr> <td>First:</td> <td>13.591 to 1.</td> <td></td> </tr> <tr> <td>Reverse:</td> <td>18.421 to 1.</td> <td></td> </tr> </table>	Top:	4.1 to 1.	2.87 to 1	}	With overdrive.	Third:	5.883 to 1.	4.11 to 1	Second:	8.446 to 1.	5.91 to 1	First:	13.591 to 1.		Reverse:	18.421 to 1.	
Top:	4.1 to 1.	2.87 to 1	}	With overdrive.																			
Third:	5.883 to 1.	4.11 to 1																					
Second:	8.446 to 1.	5.91 to 1																					
First:	13.591 to 1.																						
Reverse:	18.421 to 1.																						

### SPRINGS

#### Front

Type	...	...	...	...	Independent—torsion bar.
Static deflection	...	...	...	...	6.66 in. (16.92 cm.).

#### Torsion bar setting

No load on bar	...	...	...	...	6 $\frac{5}{16}$ in. (160.33 mm.)	}	Early type to Car No. RMH.1169; Bar dia. .925 in. (23.547 mm.).
Showroom trim	...	...	...	...	1 in. (25.4 mm.)		
No load on bar	...	...	...	...	R/H 7 $\frac{1}{8}$ in. (190.5 mm.)	}	Later type from Car No. RMH.1170; Bar dia. .880 in. (22.35 mm.).
Showroom trim	...	...	...	...	L/H 7 $\frac{1}{16}$ in. (179.4 mm.)		

#### Rear

Type	...	...	...	...	Coil springs.
Static deflection	...	...	...	...	5.45 in. (13.84 cm.).
Wire diameter	...	...	...	...	.5775 in. (1.46 cm.).
Mean coil diameter	...	...	...	...	4.375 in. (11.11 cm.).
Number of effective coils	...	...	...	...	Eight.
Free length	...	...	...	...	13.4 in. (34.03 cm.).
Solid height (not to exceed)	...	...	...	...	5.8 in. (14.73 cm.).
Length and load	...	...	...	...	919 lb. at 9.75 $\pm$ $\frac{1}{32}$ in. (41.631 kg. at 247.6 mm. $\pm$ .079 mm.).

#### Commencing Car No. 5554

Type	...	...	...	...	Semi-elliptic rubber-mounted leaf spring, hydraulic damper.
------	-----	-----	-----	-----	---

#### Spring data

Length	...	...	...	...	49 $\frac{1}{2}$ in. (1.257 m.).
Camber, free	...	...	...	...	2 $\frac{1}{16}$ in. (74.61 mm.). Auxiliary plate $\frac{1}{16}$ in. (14.29 mm.).
working	...	...	...	...	2.67 in. Neg. (67.82 mm.).
Maximum deflection	...	...	...	...	7 $\frac{1}{2}$ in. (190.5 mm.).
Number of leaves	...	...	...	...	8 (one auxiliary).
Width of leaves	...	...	...	...	1 $\frac{1}{4}$ in. (44.45 mm.).
Thickness of leaves	...	...	...	...	$\frac{1}{4}$ in. (6.35 mm.). Auxiliary plate $\frac{3}{16}$ in. (11.11 mm.).

### WHEELS AND TYRES

Wheels	...	...	...	...	Ventilated disc. Size 5K $\times$ 16.				
Tyre size	...	...	...	...	6.70—16 or 6.00—16.				
Tyre pressures—front and rear (6.70 $\times$ 16)	...	...	...	...	<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td>25 lb./sq. in. (1.76 kg./cm.<sup>2</sup>) normal.</td> <td rowspan="2" style="font-size: 3em; vertical-align: middle; padding: 0 10px;">}</td> <td rowspan="2" style="vertical-align: middle;">six passengers and luggage or high speeds.</td> </tr> <tr> <td>27 lb./sq. in. (1.90 kg./cm.<sup>2</sup>)</td> </tr> </table>	25 lb./sq. in. (1.76 kg./cm. <sup>2</sup> ) normal.	}	six passengers and luggage or high speeds.	27 lb./sq. in. (1.90 kg./cm. <sup>2</sup> )
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27 lb./sq. in. (1.90 kg./cm. <sup>2</sup> )									
Tyre pressures—front and rear (6.00 $\times$ 16)	...	...	...	...	<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td>27 lb./sq. in. (1.90 kg./cm.<sup>2</sup>) normal.</td> <td rowspan="2" style="font-size: 3em; vertical-align: middle; padding: 0 10px;">}</td> <td rowspan="2" style="vertical-align: middle;">six passengers and luggage or high speeds.</td> </tr> <tr> <td>30 lb./sq. in. (2.10 kg./cm.<sup>2</sup>)</td> </tr> </table>	27 lb./sq. in. (1.90 kg./cm. <sup>2</sup> ) normal.	}	six passengers and luggage or high speeds.	30 lb./sq. in. (2.10 kg./cm. <sup>2</sup> )
27 lb./sq. in. (1.90 kg./cm. <sup>2</sup> ) normal.	}	six passengers and luggage or high speeds.							
30 lb./sq. in. (2.10 kg./cm. <sup>2</sup> )									



## GENERAL DATA—continued

Commencing Chassis No. 5554,

Tyre size	6-50—16.
Tyre pressures	23 lb./sq. in. (1.62 kg./cm. <sup>2</sup> ) front normal, 25 lb./sq. in. (1.76 kg./cm. <sup>2</sup> ) front full load, 25 lb./sq. in. (1.76 kg./cm. <sup>2</sup> ) rear normal, 27 lb./sq. in. (1.9 kg./cm. <sup>2</sup> ) rear full load.

### BRAKES

Type	Girling 12 in. (30.5 cm.) "Autostatic"; hydraulic Booster.
Type of lining	Mintex M.11. From Car No. 3966 DM.B.
Lining size	Front: 11½ in. × 2½ in. × ½ in. (29.2 cm. × 5.7 cm. × 6.35 mm.), From Car No. 1638, 9 in. × 2½ in. (22.86 cm. × 5.7 cm. × 6.35 mm.), From Car No. 3966, 7¾ in. × 2½ in. × ½ in. (19.94 cm. × 5.7 cm. × 6.35 mm.), From Car No. 5550, 9¾ in. × 2½ in. × ½ in. (23.81 cm. × 5.7 cm. × 6.35 mm.), Rear (Leading Shoe): 11½ in. × 2½ in. × ½ in. (29.2 cm. × 5.7 cm. × 6.35 mm.), From Car No. 3966, 9¾ in. × 2½ in. × ½ in. (23.93 cm. × 5.7 cm. × 6.35 mm.), Rear (Trailing Shoe): 10½ in. × 2½ in. × ½ in. (26.6 cm. × 5.7 cm. × 6.35 mm.), Rear (Leading and Trailing Shoes). From Car No. 5550, 9¾ in. × 2½ in. × ½ in. (23.81 cm. × 5.7 cm. × 6.35 mm.),
Lining area	Front: 103 sq. in. (667.75 cm. <sup>2</sup> ), From Car No. 1638, 81 sq. in. (522.6 cm. <sup>2</sup> ), From Car No. 3966, 70.6 sq. in. (455.6 cm. <sup>2</sup> ), From Car No. 5550, 84.5 sq. in. (545.2 cm. <sup>2</sup> ), Rear: 99 sq. in. (639.7 cm. <sup>2</sup> ), From Car No. 3966, 89.52 sq. in. (577.5 cm. <sup>2</sup> ), From Car No. 5550, 84.5 sq. in. (545.2 cm. <sup>2</sup> ).

### ELECTRICAL

System	12-volt; positive earth. C.V.C.
Distributor rotation	Anti-clockwise viewed from above.
Advance	Manual 12°. Automatic 36°-40°.
Firing point	Initial setting: 4°-8° B.T.D.C.
Contact breaker gap	.014 in. to .016 in. (.35 mm. to .40 mm.).
Sparking plugs	Champion NA.8, 14 mm. × ¾ in. Gap .025 in. (.64 mm.).
Battery	Lucas GTW.11.A, 63 amp./hrs. at 10 hours.
Starter drive ratio	10.4 : 1.

### CAPACITIES

Sump and filter	13 pints (15.6 U.S. pints; 7.4 litres).
Gearbox	2½ pints (2.7 U.S. pints; 1.3 litres).
Gearbox (Second type)	4½ pints (5½ U.S. pints; 2.56 litres).
Overdrive	1½ pints (1½ U.S. pints; .83 litres).
Rear axle	3 pints (3.6 U.S. pints; 1.7 litres).
	Second type 3¾ pints (4.5 U.S. pints; 2.13 litres).
Fuel tank	13 gallons (15.6 U.S. gallons; 59 litres).
Cooling system	17¾ pints (21.6 U.S. pints; 10.22 litres).
Luggage boot	11 cu. ft. (.31 m. <sup>3</sup> ).

## GENERAL DATA—continued

### GENERAL DIMENSIONS

Width	67 in. (170 cm.).
Overall length	183 in. (465 cm.).
Overall height	60 in. (152 cm.).
Wheelbase	113½ in. (288.22 cm.).
Track	Front : 54 in. (137.16 cm.). Rear : 54½ in. (138.43 cm.).
Ground clearance	7 in. (18 cm.).
Turning circle—RHD and LHD	35 ft. 6 in. (10.82 m.).
Frontal area	2,946 sq. in. (1.9 m. <sup>2</sup> ).
Weight (unladen)	3,412 lb. (1547 kg.).

### NUT TIGHTENING TORQUE

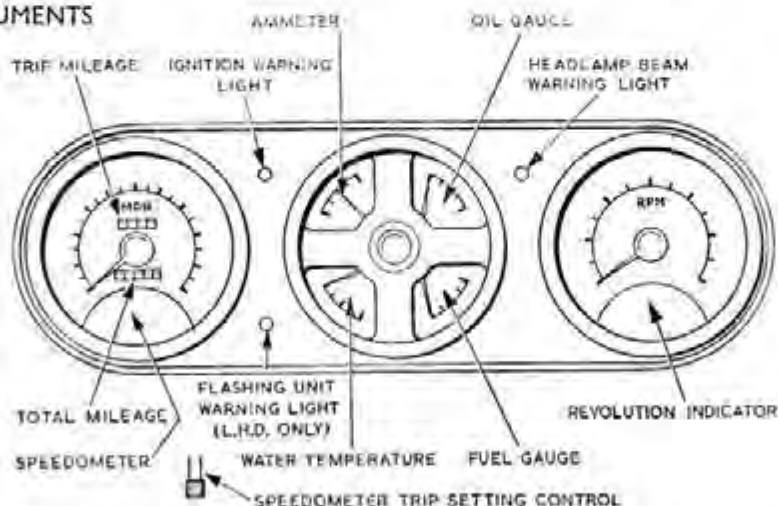
Cylinder head	1100 to 1200 lb. in. (12.7 to 13.8 kg. m.).	
Connecting rod	600 lb. in. (6.91 kg. m.).	
Main bearing	900 lb. in. (10.4 kg. m.).	
Flywheel	850 lb. in. (9.79 kg. m.).	
Rocker-shaft bracket nuts	300 to 324 lb. in. (3.45 to 3.72 kg. m.).	
Pinion bearing nut	1620 to 1680 lb. in. (18.63 to 19.32 kg. m.).	} applies to second type axle only.
Differential bearing cap nuts	720 to 780 lb. in. (8.3 to 8.99 kg. m.).	
Crown wheel bolts	660 to 720 lb. in. (7.6 to 8.3 kg. m.).	
Pinion bearing pre-load	16 to 18 lb. in. (1.84 to 2.07 kg. m.).	

## GENERAL INFORMATION

### TO OPEN THE BONNET

Release the bonnet lock by pulling on the control below the facia panel on the left-hand side, then turn the cap on the radiator casing anti-clockwise to release the safety catch.

### THE INSTRUMENTS



### THE CONTROLS

**Mixture Control.** When starting from cold, pull the knob right out to rich and lock it by turning to the left. Immediately the engine has started to run, allow the control to return to its original position as soon as possible. Never allow the engine to run for long periods with the control in the rich position.

**Ignition Switch.** Turn the key in a clockwise direction to switch on. Never leave the ignition switched on when the engine is not running as this will heat up the ignition coil and discharge the battery. The key will also fit the driver's door and the luggage boot.



## GENERAL INFORMATION—continued

**Starter Switch.** Press the starter switch, marked "S", smartly and release it as soon as the engine fires. Never operate the switch with the engine running.

**Hand Throttle.** This control, on the right-hand side of the panel and marked "T", is used to control the slow running while the engine is warming up. Turn clockwise to increase the engine speed.

**Ignition Control.** To retard the ignition, pull out the knob. It is marked "I" and located on the left of the panel. Pull the knob outwards to retard the ignition slightly when there are signs of the engine pinking.

**Fog Lamp Switch.** To switch on one lamp pull out the knob marked "F" to the first stop. To switch on the second lamp, turn to the right and pull out to the second stop.

**Panel Lamp Switch.** To illuminate the instruments pull the knob marked "P" to its first stop. To illuminate the speedometer and revolution indicator pull the knob to the second stop after turning to the right.

**Cigar Lighter.** Push in the knob and release. The lighter is partially ejected when the element has attained the necessary temperature.

**Windshield Wiper Switch.** Turn the control marked "W" to the right to start the motor. Turn to the right again to increase the speed of wiping. The wiper will only operate when the ignition is switched on. A thermostatic cut-out switch protects the motor against overheating. The blades are automatically parked when the motor is switched off.

**Windshield Washer.** Press the control button below the right-hand end of the facia panel for a second while the engine is running. The nozzles will discharge when the button is released.

**Heater.** A heater is fitted as standard equipment; see Section 5.

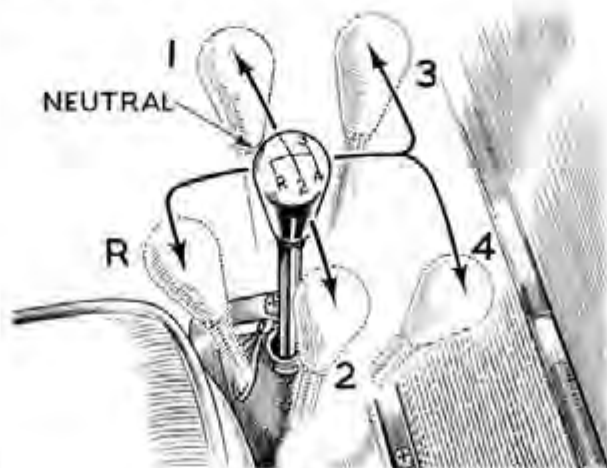
**Radio.** Provision has been made for the fitting of a radio.

### THE COOLING SYSTEM

**Filling.** Fill the radiator to within  $\frac{1}{2}$  in. of the bottom of the filler neck.

Unscrew the cap slowly if the engine is hot and protect the hand against escaping steam.

**Draining.** Release the radiator cap and open the taps on the left-hand side of the radiator bottom tank and on the rear left-hand side of the cylinder block. As anti-freeze will be used in frosty weather owing to the presence of a car heater, it is advisable to drain the water into a clean container for further use.



### THE TOOL KIT

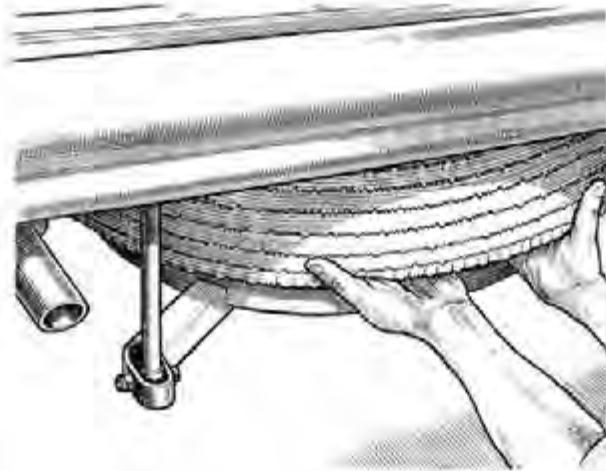
The tool kit is housed in boxes to the rear of each wheel arch in the luggage boot.

## GENERAL INFORMATION—*continued*

### JACKING THE CAR

A jacking bracket is attached to each bumper mounting in early models. To raise a wheel open the jack legs and position the jack arm within the jacking bracket with the tip of the arm behind the upper pin and the cross-pin in the jack arm engaging the cut-away portion of the bracket.

Later models have two-point jacking, one at each side of the car in an approximately central position.



### THE SPARE WHEEL

The spare wheel is secured on a tray below the luggage compartment by the bolt in the rear left-hand corner of the luggage compartment floor.



To release the wheel turn the bolt head anti-clockwise with the wheel nut spanner.

When replacing the wheel push it forwards on the tray until it is centralised and located by the two stops, and then retighten the securing bolt. (See Section R.13.)

## GENERAL INFORMATION—continued

### CAR AND ENGINE NUMBERS

When communicating with the company always quote the car and engine numbers which will be found on the identification plate above the battery.

### COMMUNICATING WITH THE COMPANY

#### Home Enquiries

*The Address :* RILEY MOTORS LIMITED  
Abingdon, Berkshire.  
*Telephone :* Abingdon 251-2-3-4.  
*Telegrams to :* Riley, Abingdon.

#### Enquiries from Overseas

*The Address :* NUFFIELD EXPORTS LIMITED  
Cowley, Oxford, England.  
*Telephone :* Oxford, England 77733.  
*Telex :* Morex, Oxford, England.  
*Cables :* Morex, Oxford, England.

### IDENTIFICATION OF "UNIFIED" SCREW THREADS

The general standardisation of "Unified" screw threads makes it necessary to identify all nuts, bolts, and set screws with these threads in order to ensure their correct use with correspondingly threaded components and the fitting of correct replacements.

Identification has been standardised and is effected in the following manner:—

*Nuts.* By a circular groove turned on the end face of the nut or by connected circles stamped on one flat of the hexagon.

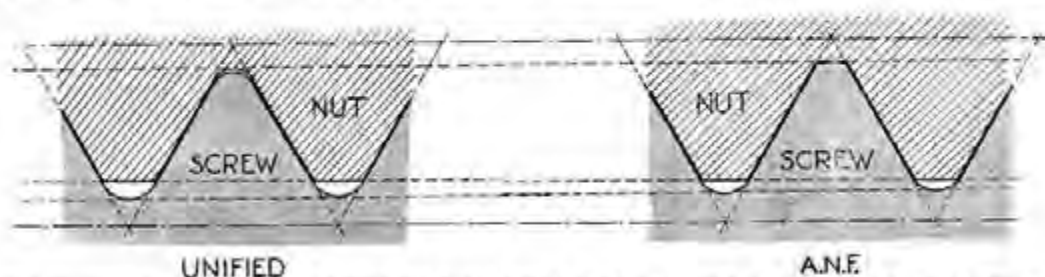
*Bolts and Set Screws.* By a circular depression turned on the head or by connected circles stamped on one flat of the hexagon.

*Wheel Stud Nuts.* By a notch cut in all the corners of the hexagon.



The identification marks for components with "Unified" threads.

The identification marks are clearly shown in the illustration above, and it is obviously of the utmost importance that any nuts, bolts, or set screws so marked are used only in conjunction with their associated components having "Unified" threads and that only replacement



This illustration of the "Unified" thread and A.N.F. thread to the same scale indicates their close relationship.

## GENERAL INFORMATION—continued

parts with "Unified" threads are used, as these are not interchangeable with Whitworth, B.S.F. or Metric threads.

The "Unified" thread is, however, interchangeable with the American National Fine (A.N.F.) thread for all practical purposes.

*Spanners.* Note that all A.N.F. and "Unified" threaded nuts and hexagon-headed bolts, with the exception of wheel stud nuts, are made to the standard American hexagon sizes and that spanners of the appropriate size must be used when tightening or loosening them.

KEY TO SPANNER SIZES (Nominal widths between jaws)

Diameter of Screw Thread (inches)	$\frac{1}{4}$ "	$\frac{5}{16}$ "	$\frac{3}{8}$ "	$\frac{7}{16}$ "	$\frac{1}{2}$ "	$\frac{9}{16}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	$\frac{7}{8}$ "	1"
For B.S.F. screws and nuts	.448	.529	.604	.705	.825	.925	1.016	1.207	1.309	1.489
For A.N.F. screws and nuts	.440	.504	.566	.629	.755	.880	.944	1.132	1.320	1.508
For "Unified" screws	.440	.504	.566	<b>.630</b>	.755	<b>.817</b>	.943	1.132	1.321	1.509
For "Unified" nuts (normal)	.440	.504	.566	<b>.692</b>	.755	<b>.880</b>	.943	1.132	1.321	1.509
For "Unified" nuts (heavy)	—	—	—	—	—	—	<b>1.069</b>	<b>1.258</b>	<b>1.446</b>	—

**NOTE.**—In the case of some "Unified" threaded components the size of the hexagon for the nut is different from that of the bolt. Where this occurs the spanner size is shown in heavy type in the above table.

In order to provide comprehensive information concerning the vehicle, the identification plate is stamped with symbols.

The symbols consist of three letters and two numbers followed by the usual serial numbers of the vehicle for cars of one colour, and four letters and two numbers followed by the vehicle serial number for vehicles with a Duotone finish.

The first letter when related to the code provides indication of the make and model of the vehicle—Morris Minor, Wolseley Four-Fifty, etc.

The second letter provides an indication of the type of vehicle—Saloon, Tourer, Van, etc.

The third letter indicates the colour in which the vehicle is finished or the top colour on Duotone vehicles.

The fourth letter indicates the bottom colour in which the Duotone vehicle is finished. (In Duotone vehicles, the third and fourth letters are read in the same (colour) column.)

The first figure indicates the class to which the vehicle belongs—RHD Home, LHD, etc.

The second figure indicates the type of paint used to finish the car—Cellulose, Synthetic, etc.

From this it will be clear that when an owner quotes the code number of his car it is a relatively simple matter to obtain a comprehensive picture of the vehicle concerned by reference to the tabulated code symbols on page 13.

As an example:

The symbols DAC 12/1001 when decoded give—Oxford, Saloon 4-door, Dark Red, RHD Home, Synobel, Car No. 1001.

The symbols KAKP 33/1002 when decoded give—M.G. Magnette, Saloon 4-door, Light Red (top), Ivory (bottom), LHD, Cellulose, Car No. 1002.

Owing to the fact that the technique required to effect repairs to the different paint finishes varies considerably and that the correct paint **must** be used for such purpose, it is to be noted that the last figure of the symbols is of particular importance as it defines the nature of the paint used by the factory to finish the car.

## GENERAL INFORMATION—continued

Model	Code	Type	Code	Colour	Code	Class	Code	Paint	Code
Wolseley 6/80	A	Saloon 4-door	A	Black	A	RHD Home	1	Synthetic	1
Wolseley 4/50	B	Saloon 2-door	B	Light Grey	B	RHD Export	2	Synobel	2
Morris Six	C	Tourer	C	Dark Red	C	LHD	3	Cellulose	3
Morris Oxford	D	2-Seater	D	Dark Blue	D	North America	4	Metallic	4
Morris Cowley	E	Van	E	Mid Green	E	C.K.D.—RHD	5	Primed	5
Morris Minor	F	Truck	F	Beige	F	C.K.D.—LHD	6	Cellulosed Body and Synthetic Wings	6
Morris 5-wt.	G	Cab	G	Brown	G				
M.G. Midget	H	Mail	H	C.K.D. Finish	H				
M.G. 1½-litre	J	Engineers	J	Dark Grey	J				
M.G. Magnette	K	Chassis	K	Light Red	K				
Riley 1½-litre	L	Traveller	L	Light Blue	L				
Riley 2½-litre	M				M				
Wolseley 4/44	N				N				
Quarter-ton	O				O				
Half-Ton	P			Ivory	P				
Wolseley 6/90	R			White	R				
Isis	S			Mid Grey	S				
Wolseley 15/50	T			Light Green	T				
				Dark Green	U				

## MAINTENANCE ATTENTION

### FIRST 500 MILES (800 KM.) FREE SERVICE ATTENTION

1. Drain oil from engine, gearbox and rear axle, and refill.
2. Oil and grease all points of the car.
3. Tighten cylinder head and manifold nuts to recommended pressures.
4. Check tightness of valve rocker-shaft brackets to recommended pressures.
5. Check valve clearances and reset if necessary.
6. Tighten fan belt if necessary.
7. Check all water connections and tighten clips if necessary.
8. Examine and clean carburettors and reset slow-running adjustment if necessary.
9. Examine and adjust, if necessary, sparking plug and distributor points.
10. Check working of automatic ignition controls and, if necessary, reset ignition timing.
11. Check front wheel alignment and steering connections. Adjust if necessary.
12. Check tightness of universal joint nuts, wheel nuts, spring clips and wing (fender) bolts.
13. Check clutch pedal for free movement and adjust if necessary.
14. Check fluid level in master cylinder supply tank and top up if necessary.
15. Check braking system functionally and bleed lines if necessary.
16. Check electrical system functionally.
17. Examine battery and top up to proper level with distilled water or diluted acid as may be required. Clean and tighten terminals.
18. Inspect shock absorbers for leaks.
19. Test tyres for correct pressure.
20. Check doors for ease in opening and closing. If necessary lightly smear with a suitable lubricating agent all dovetails and striking plates.

ALL MATERIALS CHARGEABLE TO THE CUSTOMER.

### PERIODICAL ATTENTION

#### Every 1,000 miles (1600 km.):

1. Top up engine, gearbox and rear axle oil levels.
2. Lubricate carburettor piston dashpots.
3. Lubricate carburettor controls.
4. Lubricate water pump sparingly.
5. Top up radiator.
6. Check battery cell specific gravity readings and top up levels.
7. Lubricate all grease nipples.
8. Check brake pedal free travel and report if adjustment is required.
9. Check level of fluid in the clutch and brake master cylinder supply tank.
10. Make visual inspection of brake lines and pipes.
11. Examine all hydraulic dampers for leaks.
12. Check wheel nuts for tightness.
13. Check tyre pressures.



## MAINTENANCE ATTENTION—continued

### Every 3,000 miles (5000 km.):

1. Change engine oil.
2. Top up gearbox (and overdrive if fitted), steering gearbox and rear axle.
3. Lubricate carburettor piston dashpots.
4. Lubricate carburettor controls.
5. Clean and re-oil air cleaner.
6. Lubricate water pump sparingly.
7. Top up radiator.
8. Check battery cell specific gravity readings and top up levels.
9. Check and adjust if necessary, distributor contact points.
10. Check automatic ignition control, lubricating distributor drive-shaft and cam, and advance mechanism.
11. Check dynamo drive belt tension.
12. Lubricate dynamo bearing.
13. Clean and adjust sparking plugs.
14. Lubricate all grease nipples.
15. Lubricate gear-change control linkage.
16. Check level of fluid in clutch and brake master cylinder supply tank.
17. Make visual inspection of brake lines and pipes.
18. Examine all hydraulic dampers for leaks.
19. Lubricate door hinges, bonnet lock and operating mechanism.
20. Check brakes and adjust if necessary.
21. Change wheels round diagonally to regularise tyre wear.
22. Check tyre pressures.

### Every 6,000 miles (10000 km.):

1. Change oil in engine, gearbox (and overdrive if fitted) and rear axle.
2. Top up oil in steering gearbox.
3. Lubricate carburettor piston dashpots.
4. Lubricate carburettor controls.
5. Clean carburettors and fuel pump filters.
6. Check valve rocker clearances and adjust if necessary.
7. Fit new oil filter element.
8. Clean and re-oil air cleaner.
9. Lubricate water pump sparingly.
10. Top up radiator.
11. Check battery cell specific gravity readings and top up levels.
12. Check and adjust if necessary, distributor contact points.
13. Check automatic ignition control, lubricating distributor drive shaft and cam, and advance mechanism.
14. Check dynamo drive belt tension.
15. Lubricate dynamo bearing.
16. Clean and adjust sparking plugs.
17. Lubricate all grease nipples.
18. Lubricate gear-change control linkage.
19. Re-pack front hub caps with grease.
20. Check clutch pedal free movement and adjust if necessary (mechanical linkage only).
21. Check level of fluid in the clutch and brake master cylinder supply tank.
22. Make visual inspection of brake lines and pipes.
23. Examine all hydraulic dampers for leaks.
24. Check tightness of radius arm fixing bolts and anti-sway bar anchorage.
25. Check body bolts and tighten if necessary.
26. Check and tighten if necessary, door and striker plate securing screws.
27. Lubricate door hinges, bonnet lock and operating mechanism.
28. Lubricate trafficators.
29. Check brakes and adjust if necessary.
30. Change wheels round diagonally to regularise tyre wear.
31. Check tyre pressures.
32. Check front suspension height.
33. Check wheel alignment.
34. Road-test car and report.

### Every 12,000 miles (20000 km.):

1. Remove engine sump and "pick-up" strainer, clean and reassemble, filling with fresh oil.
2. Change oil in gearbox (and overdrive if fitted) and rear axle.
3. Top up oil in steering gearbox.
4. Remove carburettor suction chamber and piston, clean, reassemble and top-up.
5. Remove carburettor float-chamber, empty sediment and refit.
6. Lubricate carburettor controls.
7. Clean carburettor and fuel pump filters.
8. Check valve rocker clearances and adjust if necessary.
9. Fit new oil filter element.
10. Clean and re-oil air cleaner.
11. Lubricate water pump sparingly.
12. Drain, flush out and refill radiator.
13. Check battery cell specific gravity readings and top up levels.
14. Check and adjust if necessary, distributor contact points.
15. Check automatic ignition control, lubricating distributor drive shaft and cam, and advance mechanism.
16. Check dynamo drive belt tension.
17. Lubricate dynamo bearing.
18. Fit new sparking plugs.
19. Lubricate all grease nipples.
20. Lubricate gear-change control linkage.
21. Re-pack front hub caps with grease.
22. Check clutch pedal free movement and adjust if necessary (mechanical linkage only).
23. Check level of fluid in clutch and brake master cylinder supply tank.
24. Make visual inspection of brake lines and pipes.
25. Examine all hydraulic dampers for leaks.
26. Check tightness of radius arm fixing bolts and anti-sway bar anchorage.
27. Check body bolts and tighten if necessary.
28. Check, and tighten if necessary, door hinges and striker plate securing screws.
29. Lubricate door hinges, bonnet lock and operating mechanism.
30. Lubricate trafficators.
31. Check brakes and adjust if necessary.
32. Change wheels round diagonally to regularise tyre wear.
33. Check tyre pressures.
34. Check front suspension heights.
35. Check wheel alignment.
36. Check steering and front suspension moving parts for wear.
37. Road-test car and report.



## FROST PRECAUTIONS

If the car is not stored in a warmed building, steps must be taken to prevent the cooling water from freezing during frosty weather. Water, upon freezing, expands, with the result that there is a very considerable risk of bursting either the radiator or the cylinder block by the pressure generated. As a precautionary measure when frost is anticipated, the water should be drawn from the radiator and engine before the car is stored for the night, or, better still, an anti-freeze solution may be used in the radiator.

We recommend owners to use Smiths "Bluecol," Shell "Snowflake" or Filtrate "Nevafreze" non-erosive anti-freeze in order to protect the cooling system during frosty weather and reduce corrosion to a minimum.

The windshield washing equipment reservoir should have some "Trico" solvent added to the water to prevent it freezing in cold weather and to improve the cleaning properties, but on no account must radiator anti-freeze be introduced in the windshield washing equipment.

### WARNING

As the cooling system of the Riley Pathfinder is of the sealed type, relatively high temperatures are developed in the radiator upper tank. For this reason anti-freeze solutions having an alcohol base are unsuitable owing to their high evaporation rate producing rapid loss of coolant and a consequent interruption of the circulation of coolant.

Only anti-freeze of the ethylene-glycol or glycerine type is suitable for use in the Riley Pathfinder cooling system. Never use radiator anti-freeze in the windshield washing equipment.

The correct quantities of anti-freeze for different degrees of frost resistance in the Riley Pathfinder are :—

Down to 7° F. (—14° C.)	Down to 0° F. (—18° C.)
15 per cent. solution	20 per cent. solution
Quantity 2½ pints (1.6 litres)	Quantity 3½ pints (2 litres)

First decide what degree of frost protection is required before adding the anti-freeze to the radiator. If temperatures below 0° F. (—18° C.) are likely, solutions of 25 per cent. or more must be employed. Consult your local Dealer for the correct proportions.

Before introducing anti-freeze mixture to the radiator it is advisable to clean out the cooling system thoroughly by swilling out the passages with a hose inserted in the filler cap, keeping the drain taps open. Only top up when the cooling system is at its normal running temperature, in order to avoid losing anti-freeze due to expansion.

Make sure that the cooling system is watertight and examine all joints, replacing any defective rubber hose with new.

The capacity of the cooling system is 21 pints (25.4 U.S. pints ; 12 litres).

Note: Workshop Manuals From October 1955 show  
Cooling System Capacity as 17¾ Pints. Previous Manuals  
show Cooling System Capacity as 21 Pints

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The capacity of the cooling system is 17¾ pints (21.6 U.S. pints ; 10.22 litres).