LAND-ROVER

Technical Details

For Staff guidance only—not for general issue to the public

SEPTEMBER 1972

LAND-ROVER

TECHNICAL DETAILS

of the

88 in REGULAR, 109 in LONG

109 in 1-TON

and

STATION WAGON LAND ROVERS

CONTENTS

ENGINE

	2·25 Litre 4 Cylinder		
	Petrol		Diesel
Bore	90·47 mm (3·562 in)		90·47 mm (3·562 in)
Stroke	88·9 mm (3·5 in)		88·9 mm (3·5 in)
Capacity	2286 cc (139·5 in³)		2286 cc (139·5 in³)
Compression ratio ..	8 : 1	7 : 1	23 : 1
Max. B.H.P. (DIN) ..	70·5	65	62·0
at	4000 rev/min	4000 rev/min	4000 rev/min
Max. torque (DIN) ..	120 lb ft (16·5 Mkg)	116 lb ft (16 Mkg)	103 lb ft (14·2 Mkg)
at	1500 rev/min	1500 rev/min	1800 rev/min
Max. B.M.E.P. gross ..	130 lb/in² (9·15 kg/cm²)	125 lb/in² (8·79 kg/cm²)	110 lb/in² (7·74 kg/cm²)
at	1500 rev/min	1500 rev/min	1800 rev/min
Compression pressure ..		160–170 lb/in² (11·25–11·95 kg/cm²) at cranking speed (300 rev/min)	

	2·6 Litre 6 Cylinder Petrol	
Compression ratio ..	7·8 : 1	7 : 1
Bore	77·8 mm (3·063 in)	77·8 mm (3·063 in)
Stroke	92·075 mm (3·625 in)	92·075 mm (3·625 in)
Capacity	2625 cc (160·3 in³)	2625 cc (160·3 in³)

	2·6 Litre 6 Cylinder Petrol
Max. B.H.P. (DIN) ..	86·0
at	4500 rev/min
Max. torque (DIN) ..	132 lb ft (18·2 Mkg)
at	1500 rev/min
Max. B.M.E.P. gross ..	124 lb/in² (8·72 kg/cm²)
at	1500 rev/min
Compression pressure ..	170/175 lb/in² (11·95/12·3 kg/cm²) at cranking speed (300 rev/min)

	2·25 Litre Petrol	2·25 Litre Diesel	2·6 Litre Petrol (All)
Piston speed	2480 ft/min (756 m/min)	2330 ft/min (710 m/min)	2719 ft/min (826 m/min)
at	4250 rev/min	4000 rev/min	4500 rev/min
Cylinder head	Chrome cast iron	Chrome cast iron	Aluminium alloy inclined at 22°
Firing order	1, 3, 4, 2	1, 3, 4, 2	1, 5, 3, 6, 2, 4
Sparking plugs—type ..	Champion UN12Y	Heater Plugs: K.L.G. G.F. 210T	Champion N5
gap ..	·029–·032 in (·74–·81 mm)		·029–·032 in (·74–·81 mm)
Contact breaker gap ..	·014–·016 in (·35–·40 mm)		·014–·016 in (·35–·40 mm)

ENGINE—*continued*

	2·25 Litre Petrol	2·25 Litre Diesel	2·6 Litre Petrol (All)
Ignition timing	8 : 1 Comp. ratio T.D.C. (90 Octane Fuel) 3° A.T.D.C. (85 Octane Fuel) 7 : 1 Comp. ratio 6° B.T.D.C. (90 Octane Fuel) 3° B.T.D.C. (83 Octane Fuel) T.D.C. (75 Octane Fuel)	Start of Injection 15° B.T.D.C.	7·8 : 1 Comp. ratio 2° A.T.D.C. (90 Octane Fuel) 6° A.T.D.C. (85 Octane Fuel) 7 : 1 Comp. ratio 2° B.T.D.C. (83 Octane Fuel) T.D.C. (80 Octane Fuel) 2° A.T.D.C. (78 Octane Fuel)
Crankshaft bearings ..	3	3	7
material ..	Steel shell, tin-aluminium lined	Steel shell, copper lead-lead tin plated	Steel shell, copper lead-lead tin plated
Camshaft bearings ..	4	4	6
material ..	White-metal lined, steel shell		Split 'Mazak' castings
Valve position	Overhead	Overhead	Overhead inlet and inclined side exhaust
Valve operation	Roller type cam-followers operating valve rockers through push-rods and lead/tin plated bronze shoes, with adjusting screws on rockers		Inlet—Rocker type cam-followers, valve rockers, and push-rods with adjusting screws on rockers Exhaust — Rocker type roller cam-follower with adjusting screw and self-aligning pad bearing directly on valve stem

ENGINE—*continued*

	2·25 Litre Petrol	2·25 Litre Diesel	2·6 Litre Petrol (All)
Valve springs	Duplex Interference coil (all models)		
Pistons	Aluminium alloy—compound ovality		Aluminium alloy with inverted 'V' crown
No. of rings	Compression 2 Scraper 1	Compression 3 Scraper 1	Compression 2 Scraper 1
Gudgeon pin	Floating	Floating	Fully floating
Tappet clearance:			
Inlet (Hot)	·010 in (·25 mm)	·010 in (·25 mm)	·006 in (·15 mm)
Exhaust (Hot or Cold) ..	·010 in (·25 mm)	·010 in (·25 mm)	·010 in (·25 mm)
Oil pressure	45–65 lb/in² (3·16–4·6 kg/cm²) at 2000 rev/min	35–65 lb/in² (2·5–4·5 kg/cm²) at 2000 rev/min	40–50 lb/in² (2·81–3·51 kg/cm²) at 2000 rev/min
Oil filters—Internal ..	Gauze pump-intake filter in sump (all models)		
External ..	A.C.-Delco, full flow filter (all models)		
Engine mounting ..	Four point rubber (all models)		
Vibration damper ..			Integral with fan pulley

ENGINE—*continued*

	2·25 Litre Petrol	2·25 Litre Diesel	2·6 Litre Petrol (All)
Fuel System			
Petrol pump	A.C.-Delco mechanical with sediment bowl and priming lever	A.C.-Delco mechanical with hand primer (high pressure type)	Bendix electric, dual inlet type, located on right-hand chassis side-member
Carburettor	Zenith downdraught type 36 IV		Zenith 175 CD2S horizontal
Injector pump		C.A.V, D.P.A. type self-governing	
Start of injection		15° B.T.D.C.	
Injector type		C.A.V. Pintaux	
Air cleaner	A.C.-Delco oil-bath type with built-in centrifugal pre-cleaner		
Fuel filters	Tank, sediment bowl	Sediment bowl on fuel pump. C.A.V. paper type filter	Pump, tank, paper type filter
Fuel level warning light ..		Blue on dash	

	2·25 Litre Petrol	2·25 Litre Diesel	2·6 Litre Petrol (All)
Electrical System			
Type	Negative earth (all models)		
Voltage	12 (all models)		
Battery capacity	58 A.H.	95 A.H.	58 A.H.
Ignition system	Coil	C.I.	Coil
Alternator	Lucas 16 A.C.R. (all models)		
Alternator output ..	34 amperes (all models)		
Starter type	Lucas 2M100	Lucas M45G S.I.D.	Lucas 2M100
operation ..	By key on steering column (all models)		
Heater plugs		K.L.G coil element, 1·7 volts, 36/42 amps	
operation		Combined with starter switch key	

TRANSMISSION

Clutch—type	.. ..	Single dry plate, 9½ in (241 mm) diameter. D.S. type, hydraulic operation (hydrostatic)
adjustment	.. ..	¾ in (20 mm) free movement at pedal pad
Main gearbox—type	..	Single helical constant mesh with synchro-mesh on all forward gears
Transfer box—type	..	Two speed reduction on main gearbox output
front wheel drive	..	Two/four wheel drive control on transfer box output
Propeller shafts—type	..	Open type, 2 in diameter. Gaiter fitted to sliding coupling of front shaft
Rear axle—type	.. ..	Spiral bevel (88 in), Hypoid bevel (109 in). Floating shafts
Differential ratio	..	4·7 : 1
Front axle—Differential	..	Spiral bevel
Front wheel drive	..	Enclosed universal joints
Angularity of universal joint on full lock	..	26°
Differential ratio	..	4·7 : 1

Gearbox ratios

MAIN GEARBOX	88 in and 109 in		109 in 1-TON	
Top	Direct		Direct	
Third	1·50 : 1		1·50 : 1	
Second	2·22 : 1		2·22 : 1	
First	3·68 : 1		3·68 : 1	
Reverse	4·02 : 1		4·02 : 1	
TRANSFER BOX				
High transfer	1·15 : 1		1·53 : 1	
Low transfer	2·35 : 1		3·27 : 1	
OVERALL (Final drive)	**High transfer**	**Low transfer**	**High transfer**	**Low transfer**
Top	5·40 : 1	11·10 : 1	7·19 : 1	15·40 : 1
Third	8·05 : 1	16·50 : 1	10·80 : 1	23·10 : 1
Second	12·00 : 1	24·60 : 1	15·96 : 1	34·10 : 1
First	19·88 : 1	40·70 : 1	26·46 : 1	56·56 : 1
Reverse	21·66 : 1	44·30 : 1	28·91 : 1	61·78 : 1

Suspension

Road springs	Semi-elliptic, underslung
Hydraulic dampers	Woodromatic double-acting telescopic 88 in models—1 in bore 109 in models—1⅜ in bore

Brakes

Type	Girling
Footbrake	Hydraulic, servo assisted on Long Station Wagons and all other 6 cylinder models
Brake drum diameter	88 in models—10 in 109 in models—11 in
Brake shoe width	88 in models—1½ in 109 in 4 cylinder models—2¼ in 109 in 6 cylinder models—3 in front, 2¼ in rear
Friction lining area	88 in models—105 in² 109 in 4 cylinder models—172 in² 109 in 6 cylinder models—202 in²
Handbrake	Mechanical on transfer box output. Diameter 9 in. Shoe width 1¾ in. Lining area 30·2 in²

Steering	
Type	Burman recirculating ball, worm and nut
Ratio	15·6 : 1 straight ahead 23·8 : 1 full lock 109 in 1-Ton model—19·6 : 1 straight ahead 29·9 : 1 full lock
Steering wheel diameter ..	17 in
Number of turns lock to lock	3½ 109 in 1-Ton model—3¾
Wheel camber	1° 30′
Wheel castor	3°
Swivel pin inclination ..	7°
Front wheel toe-in ..	$\frac{3}{64}$ in to $\frac{3}{32}$ in
Steering damper ..	Fitted to drag link on 109 in 1-Ton model
Wheels and Tyres	
Type of wheel	Ventilated disc
Wheel size	88 in models—5·00 in F×16 in

	109 in models—5·50 in F×16 in 109 in 1-Ton model—6·50 in L×16 in
No. of fixing studs ..	5 per wheel—M16×1·5
Standard tyre and tube size	88 in models—6·00 in×16 in 109 in models—7·50 in×16 in 109 in 1-Ton—9·00 in×16 in
Standard tread	Dual purpose (road and cross-country)

CAPACITIES

	Imp. Unit	Litres
4 CYLINDER MODELS		
Engine oil (sump)	11 pints	6·25
Extra when new filter is fitted	1½ pints	0·85
Air cleaner oil	1½ pints	0·85
6 CYLINDER MODELS		
Engine oil (sump)	12 pints	6·8
Extra when new filter is fitted	1 pint	0·57
Air cleaner oil	1 pint	0·57
ALL MODELS		
Main gearbox oil	2½ pints	1·5
Transfer box oil	4½ pints	2·5
Rear differential (88 in)	3 pints	1·7
Rear differential (109 in)	4½ pints	2·56
Front differential	3 pints	1·7
Rear differential (109 in 1-Ton)	4½ pints	2·56
Front differential (109 in 1-Ton)	4½ pints	2·56

	Imp. Unit	Litres
Swivel pin housing, each	1 pint	0·5
Fuel tank—88 in and 109 in 2·25 litre models	10 gallons	45·0
Fuel tank—109 in 2·6 litre basic models	11 gallons	50·0
Fuel tank—109 in Station Wagon 2·25 and 2·6 litre models	16 gallons	73·0
COOLING SYSTEMS (Pressurised to 9 lb in²) (Including Heater)		
88 in and 109 in 2·25 litre petrol models	15¼ pints	8·7
88 in and 109 in 2·25 litre diesel models	14¾ pints	8·4
109 in 2·6 litre petrol models	21 pints	12·0

DIMENSIONS

OVERALL DIMENSIONS	REGULAR		LONG	
	Imperial	Metric	Imperial	Metric
Wheelbase	88 in	2,23 m	109 in	2,77 m
Track	51½ in	1,31 m	52½ in	1,33 m
Ground clearance	7 in	177 mm	8¼ in	209 mm
Ground clearance—1-Ton	—	—	8¾ in	222 mm
Turning circle	38 ft	11,58 m	47 ft	14,3 m
Overall length	142 9/16 in	3,62 m	175 in	4,44 m
Overall width (over hinges)	66 in	1,68 m	66 in	1,68 m
Overall height (max.)	77 in	1,97 m	79 in	2,01 m
INTERNAL DIMENSIONS				
Height of body sides	20 in	508 mm	19½ in	495 mm
Interior width between cappings	57 in	1,45 m	57 in	1,45 m
Floor width between wheel boxes	36¼ in	921 mm	36¼ in	921 mm
Width of wheel boxes	13¾ in	349 mm	13¾ in	349 mm
Interior length between cappings	47½ in	1,21 m	72¾ in	1,85 m
Height of wheel boxes	8½ in	216 mm	9 in	229 mm
Height, floor to roof (max.)	48 in	1,22 m	48 in	1,22 m

	REGULAR PETROL			REGULAR DIESEL		
	FRONT AXLE lb (kg)	REAR AXLE lb (kg)	TOTAL lb (kg)	FRONT AXLE lb (kg)	REAR AXLE lb (kg)	TOTAL lb (kg)
Unladen, plus 5 gall. fuel	1640 (744)	1313 (596)	2953 (1339)	1730 (785)	1367 (620)	3097 (1405)
Max. allowable gross weights						
Normal road work	1828 (830)	2625 (1190)	4453 (2020)	2140 (970)	2625 (1190)	4765 (2160)
Cross-country standard road springs	1828 (830)	2425 (1100)	4253 (1930)	2140 (970)	2425 (1100)	4565 (2070)

	LONG PETROL			LONG DIESEL		
	FRONT AXLE lb (kg)	REAR AXLE lb (kg)	TOTAL lb (kg)	FRONT AXLE lb (kg)	REAR AXLE lb (kg)	TOTAL lb (kg)
Unladen, plus 5 gall. fuel (2·25 L) ..	1839 (834)	1462 (663)	3301 (1497)	1946 (882)	1525 (692)	3471 (1574)
Unladen, plus 5 gall. fuel (2·6 L) ..	1879 (852)	1580 (717)	3459 (1569)	—	—	—
Unladen, plus 5 gall. fuel (1-Ton) ..	2088 (947)	1798 (816)	3886 (1763)	—	—	—
Max. allowable weights						
Normal road work	2140 (970)	3765 (1710)	5905 (2680)	2320 (1050)	3765 (1710)	6085 (2760)
Cross-country	2140 (970)	3565 (1620)	5705 (2590)	2320 (1050)	3565 (1620)	5885 (2670)
1-Ton (road and cross-country) ..	2550 (1157)	4200 (1905)	6750 (3062)	—	—	—

REGULAR PETROL—STATION WAGON

	FRONT		REAR		TOTAL	
	lb	kg	lb	kg	lb	kg
Running weight—Unladen+5 gall. fuel ..	1724	782	1557	706	3281	1488
Max. gross weight road work	1828	830	2625	1190	4453	2020
Max. gross weight cross country ..	1828	830	2425	1100	4253	1930

LONG PETROL—STATION WAGON

	FRONT		REAR		TOTAL	
	lb	kg	lb	kg	lb	kg
Running weight—Unladen+5 gall. fuel (2·25 L Engine)	1739	789	2013	913	3752	1702
Running weight—Unladen+5 gall. fuel (2·6 L Engine)	1699	771	2211	1003	3910	1774
Max. gross weight road work	2140	970	3765	1710	5905	2680
Max. gross weight cross country ..	2140	970	3565	1620	5705	2590

PAYLOADS

	'REGULAR'	'LONG'
Road work*	3 persons plus 1,000 lb (454 kg)	3 persons plus 2,000 lb (907 kg)
Cross country	3 persons plus 800 lb (363 kg)	3 persons plus 1,800 lb (817 kg)
	'REGULAR' STATION WAGON	**'LONG' STATION WAGON**
Road work*	7 persons plus 100 lb (45 kg)	10 persons plus 400 lb (181 kg)
Cross country	6 persons plus 50 lb (23 kg)	10 persons plus 200 lb (91 kg)

1-TON .. .. Road work—3 persons plus 2240 lb (1016 kg)

** Maximum load cross country when High Rate Springs are fitted*

	'REGULAR'	'LONG'	1-TON
Top gear (High transfer)			
m.p.h. per 1000 rev/min	15	16·5	13·3
k.p.h. per 1000 rev/min	24·1	26·6	21·4
Top gear (Low transfer)			
m.p.h. per 1000 rev/min	7·2	8·0	6·25
k.p.h. per 1000 rev/min	11·6	12·9	10·06
Crawling speed at 1000 rev/min			
In 1st gear (Low transfer) m.p.h. ..	2	2·2	1·7
k.p.h. ..	3·2	3·5	2·78

(m.p.h./1000 Engine rev/min. Based on rolling radius at 30 m.p.h.)

AVERAGE FUEL CONSUMPTION	PETROL 'Reg.' and 'Long' 2·25	PETROL 'Reg.' and 'Long' 2·6	DIESEL 'Reg.' and 'Long'	PETROL 1-TON 2·6
M.P.G.	18—20	14·6	24—27	14—16
LITRES/100 Km	14—16	19·35	10·46—11·76	17·6—20·2

GROSS TRACTIVE EFFORT (1st Gear Low Transfer)	'REGULAR' Petrol	'REGULAR' Diesel	'LONG' Petrol 2·25	'LONG' Petrol 2·6	'LONG' Diesel	'1-TON' 2·6
lb	4000	3600	3600	4100	3200	4700
kg	1814	1633	1633	1860	1452	2132

DRAW BAR PULL	'REGULAR' Petrol	'REGULAR' Diesel	'LONG' Petrol 2·25	'LONG' Petrol 2·6	'LONG' Diesel	'1-TON' 2·6
lb	3360	2980	2960	3380	2600	4300
kg	1524	1352	1343	1533	1179	1950

ACCELERATION (Seconds)	REGULAR Petrol		REGULAR Diesel		LONG 2·25 Petrol		LONG 2·6 Petrol		LONG 2·25 Diesel	
Top gear—High transfer	*Unladen*	*Laden*	*Unladen*	*Laden*	*Unladen*	*Laden*	*Unladen*	*Laden*	*Unladen*	*Laden*
10–30 m.p.h. (16–48 k.p.h.)	10·7	13·0	12·1	15·1	15·3	18·6	10·1	15·8	14·9	22·6
20–40 m.p.h. (32–64 k.p.h.)	10·5	12·3	12·1	15·1	16·6	17·7	10·5	16·3	14·8	23·5
30–50 m.p.h. (48–80 k.p.h.)	12·1	14·7	15·6	20·3	19·5	19·9	12·2	19·3	19·0	32·8

ACCELERATION (Seconds)	REGULAR				LONG					
	Petrol		Diesel		2·25 Petrol		2·6 Petrol		2·25 Diesel	
Through gears	*Unladen*	*Laden*	*Unladen*	*Laden*	*Unladen*	*Laden*	*Unladen*	*Laden*	*Unladen*	*Laden*
0–30 m.p.h. (0–48 k.p.h.)	5·8	7·5	7·0	8·6	8·4	7·6	6·4	7·5	7·8	11·5
0–40 m.p.h. (0–64 k.p.h.)	9·7	11·8	12·0	14·4	14·5	13·3	10·7	13·0	13·6	20·1
0–50 m.p.h. (0–80 k.p.h.)	16·3	20·1	20·5	25·3	23·1	22·0	15·9	20·6	23·4	37·1
MAXIMUM SPEED										
m.p.h. ..	65–70		60–65		65–70		70–75		60–65	
k.p.h. ..	105–113		97–105		105–113		113–121		97–105	
MAXIMUM GRADIENT	*Unladen*— Over 45°		*Unladen*— Over 45°		*Unladen*— Over 45°		*Unladen*— Over 45°		*Unladen*— Over 45°	
	Laden 37°		*Laden* 30°		*Laden* 39°		*Laden* 41°		*Laden* 29°	

ACCELERATION	1-TON (Laden)
	(Seconds)
Top gear—High transfer	
10–30 m.p.h. (16–48 k.p.h.)	13·5
20–40 m.p.h. (32–64 k.p.h.)	14·6
30–50 m.p.h. (48–80 k.p.h.)	18·0
Through gears	
0–30 m.p.h. (0–48 k.p.h.)	9·9
0–40 m.p.h. (0–64 k.p.h.)	16·2
0–50 m.p.h. (0–80 k.p.h.)	26·3
MAXIMUM SPEED	
m.p.h. ..	67
k.p.h. ..	108

1970

THE QUEEN'S AWARD
TO INDUSTRY 1970

ROVER — BRITISH LEYLAND UK LIMITED

SOLIHULL · WARWICKSHIRE · ENGLAND

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Land Rover

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