01 - INTRODUCTION

CONTENTS

Page

INFORMATION

INTRODUCTION

This workshop manual covers the New Range Rover vehicle from introduction in 1995, and is designed to be used in conjunction with Electrical Troubleshooting Manual LRL0329 and Electrical Circuit Diagrams YVB101590 (2nd Edition). Amendments and additional pages will be issued to ensure that the manual covers latest models. Amendments and additions will be identified by the addition of a dated footer at the bottom of the page.

This Workshop Manual is designed to assist skilled technicians in the efficient repair and maintenance of Range Rover vehicles.

Individuals who undertake their own repairs should have some skill and training, and limit repairs to components which could not affect the safety of the vehicle or its passengers. Any repairs required to safety critical items such as steering, brakes, suspension or supplementary restraint system should be carried out by a Range Rover Dealer. Repairs to such items should NEVER be attempted by untrained individuals.

WARNINGS, CAUTIONS and **NOTES** are given throughout this Manual in the following form:

WARNING: Procedures which must be followed precisely to avoid the possibility of personal injury.

CAUTION: This calls attention to procedures which must be followed to avoid damage to components.

NOTE: This calls attention to methods which make a job easier or gives helpful information.

DIMENSIONS

The dimensions quoted are to design engineering specification. Alternative unit equivalents, shown in brackets following the dimensions, have been converted from the original specification.

REFERENCES

References to the left or right hand side in the manual are made when viewing the vehicle from the rear. With the engine and gearbox assembly removed, the water pump end of the engine is referred to as the front.

To reduce repetition, some operations covered in this Manual do not include reference to testing the vehicle after repair.

It is essential that work is inspected and tested after completion and if necessary a road test of the vehicle is carried out particularly where safety related items are concerned.

REPAIRS AND REPLACEMENTS

When replacement parts are required it is essential that Range Rover parts are used.
Attention is particularly drawn to the following points concerning repairs and the fitting of replacement parts and accessories: Safety features embodied in the vehicle may be impaired if other than Range Rover parts are fitted. In certain territories, legislation prohibits the fitting of parts not to the vehicle manufacturer's specification. Torque spanner values given in the Workshop Manual must be strictly adhered to. Locking devices, where specified, must be fitted. If the efficiency of a locking device is impaired during removal it must be replaced with a new one. Certain fasteners must not be re-used. These fasteners are specified in the Workshop Manual.

POISONOUS SUBSTANCES

Many liquids and other substances used are toxic and should not be consumed under any circumstances, and should be kept away from open wounds. These substances amongst others include anti-freeze, brake fluid, fuel, oil, windscreen washer additives, air conditioning refrigerant, lubricants and various adhesives.

FUEL HANDLING PRECAUTIONS

The following information provides basic precautions which must be observed if fuel is to be handled safely. It also outlines other potential risks which must not be ignored.

This information is issued for basic guidance only; in any case of doubt, seek advice from your local Fire Officer or Fire Department.

Fuel vapour is highly flammable and in confined spaces is also very explosive and toxic.

When fuel evaporates it produces 150 times its own volume in vapour, which when diluted with air becomes a readily ignitable mixture. The vapour is heavier than air and will always fall to the lowest level. It can readily be distributed throughout a workshop by air currents, consequently, even a small spillage of fuel is very dangerous.

Always have a fire extinguisher containing **FOAM CO_2 GAS,** or **POWDER** close at hand when handling fuel, or when dismantling fuel systems and in areas where fuel containers are stored.

WARNING: It is imperative that the battery is not disconnected during fuel system repairs as arcing at the battery terminal could ignite fuel vapour in the atmosphere. Always disconnect the vehicle battery BEFORE carrying out work on the fuel system.

Whenever fuel is being handled, transferred or stored, or when fuel systems are being dismantled, all forms of ignition must be extinguished or removed, any leadlamps used must be flame proof and kept clear of spillage.

No one should be permitted to repair components associated with fuel without first having had fuel system training.

Hot fuel handling precautions

WARNING: Before commencing any operation requiring fuel to be drained from the fuel tank, the following procedure must be adhered to:

1. Allow sufficient time for the fuel to cool, thus avoiding contact with hot fuels.
2. Vent the system by removing the fuel filler cap in a well ventilated area. Refit the filler cap until the commencement of fuel drainage.

Fuel transfer

WARNING: Fuel must not be extracted or drained from any vehicle while it is standing over a pit.

The transfer of fuel from the vehicle fuel tank must be carried out in a well ventilated area. An approved transfer tank must be used according to the transfer tank manufacturer's instructions and local regulations, including attention to grounding of tanks.

Fuel tank removal

A **FUEL VAPOUR** warning label must be attached to the fuel tank upon removal from the vehicle.

Fuel tank repair

Under no circumstances should a repair to any tank be attempted.

SYNTHETIC RUBBER

Many 'O' ring seals, flexible pipes and other similar items which appear to be natural rubber are made of synthetic materials called Fluoroelastomers. Under normal operating conditions this material is safe, and does not present a health hazard. However, if the material is damaged by fire or excessive heat, it can break down and produce highly corrosive Hydrofluoric acid which can cause serious burns on contact with skin. Should the material be in a burnt or overheated condition, handle only with seamless industrial gloves. Decontaminate and dispose of the gloves immediately after use.

If skin contact does occur, remove any contaminated clothing immediately and obtain medical assistance without delay. In the meantime, wash the affected area with copious amounts of cold water or limewater for fifteen to sixty minutes.

RECOMMENDED SEALANTS

A number of branded products are recommended in this manual for use during maintenance and repair work.
These items include:
HYLOMAR GASKET AND JOINTING COMPOUND and
HYLOSIL RTV SILICON COMPOUND.

They should be available locally from garage equipment suppliers. If there is any problem obtaining supplies, contact the following company for advice and the address of the nearest supplier.

MacDERMID LUBRICANTS LTD.
Hylo House,
Cale lane,
New Springs,
Wigan
WN2 1JR
United Kingdom

Tel: 01942 824242
Fax: 01942 501110

USED ENGINE OIL

WARNING: Prolonged and repeated contact with engine or motor oil will result in the removal of natural fats from the skin, leading to dryness, irritation and dermatitis.

Used engine oil contains potentially harmful contaminants which may cause skin cancer. Adequate means of skin protection and washing facilities should be provided.

Handling precautions

1. Avoid prolonged and repeated contact with oils, particularly used engine oils.
2. Wear protective clothing, including impervious gloves where applicable.
3. Do not put oily rags in pockets.
4. Avoid contaminating clothes, particularly underwear, with oil.
5. Overalls must be cleaned regularly. Discard unwashable clothing and oil impregnated footwear.
6. First aid treatment must be obtained immediately for open cuts and wounds.
7. Use barrier creams, before each work period, to help the removal of oil from the skin.
8. Wash with soap and water to ensure all oil is removed (skin cleansers and nail brushes will help). Preparations containing lanolin replace the natural skin oils which have been removed.
9. Do not use gasoline, kerosene, diesel fuel, petrol, thinners or solvents for washing the skin.
10. If skin disorders develop, obtain medical advice.
11. Where practicable, degrease components prior to handling.
12. Where there is a risk of eye contact, eye protection should be worn, for example, goggles or face shields; in addition an eye wash facility should be provided.

Disposing of used oils

Environmental protection precaution

It is illegal to pour used oil onto the ground, down sewers or drains, or into waterways.

Dispose of used oil through authorised waste disposal contractors. If in doubt, contact your Local Authority for advice on disposal facilities.

ACCESSORIES AND CONVERSIONS

DO NOT FIT unapproved accessories or conversions, as they could affect the safety of the vehicle.
Land Rover will not accept liability for death, personal injury, or damage to property which may occur as a direct result of the fitment of non-approved conversions to the Range Rover.

WHEELS AND TYRES

WARNING: DO NOT replace the road wheels with any type other than genuine Range Rover wheels which are designed for multi-purpose on and off road use and have very important relationships with the proper operation of the suspension system and vehicle handling. Replacement tyres must be of the make and sizes recommended for the vehicle, and all tyres must be the same make, ply rating and tread pattern.

CAUTION: When refitting a road wheel, apply a suitable anti-seize compound such as Raworth 33/04, to the spigot bore of the wheel. This will prevent possible seizure of the wheel to the hub spigot. Ensure that no compound comes into contact with the braking components.

STEAM CLEANING

To prevent consequential rusting, any steam cleaning within the engine bay **MUST** be followed by careful re-waxing of the metallic components affected. Particular attention must be given to the steering column, engine water pipes, hose clips and ignition coil clamp.

SPECIFICATION

The specification details and instructions set out in this Manual apply only to a range of vehicles and not to any particular one. For the specification of a particular vehicle, purchasers should consult their Dealer.
The Manufacturers reserve the right to vary their specifications with or without notice, and at such times and in such manner as they think fit. Major as well as minor changes may be involved in accordance with the Manufacturer's policy of constant product improvement.

While every effort is made to ensure the accuracy of the particulars contained in this Manual, neither the Manufacturer nor Dealer, by whom this Manual is supplied, shall in any circumstances be held liable for any inaccuracy or the consequences thereof.

SPECIAL SERVICE TOOLS

The use of approved special service tools is important. They are essential if service operations are to be carried out efficiently, and safely. Where special tools are specified, **only these tools should be used to avoid the possibility of personal injury or damage to the components.** Also the amount of time which they save can be considerable.

Every special tool is designed with the close co-operation of Land Rover, and no tool is put into production which has not been tested and approved by us. New tools are only introduced where an operation cannot be satisfactorily carried out using existing tools or standard equipment. The user is therefore assured that the tool is necessary and that it will perform accurately, efficiently and safely.

Special tools bulletins will be issued periodically giving details of new tools as they are introduced.

All orders and enquiries from the United Kingdom should be sent direct to V. L. Churchill. Overseas orders should be placed with the local V. L. Churchill distributor, where one exists. Countries where there is no distributor may order direct from:

V. L. Churchill Limited,
PO Box 3,
Daventry, Northants,
England, NN11 4NF.

The tools recommended in this Workshop Manual are listed in a multi-language illustrated catalogue, publication number **LPA ST ML 95**, which is obtainable from V. L. Churchill Limited at the above address.

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JACKING

The following instructions must be carried out before raising the vehicle off the ground.

1. Use a solid level ground surface.
2. Apply parking brake.
3. Select 'P' or 1st gear in main gearbox.
4. Select Low range in transfer gearbox.

CAUTION: To avoid damage occurring to the under body components of the vehicle the following jacking procedures must be adhered to.

DO NOT POSITION JACKS OR AXLE STANDS UNDER THE FOLLOWING COMPONENTS.

Body structure	**Air suspension pipes**
Bumpers	**Fuel lines**
Brake lines	**Front radius arms**
Panhard rod	**Steering linkage**
Rear Trailing links	**Fuel tank**
Engine sump	**Gearbox bell housing**

CAUTION: If supporting vehicle by the front crossmember, the safety stands must be positioned carefully to avoid damage to air suspension pipes.

Vehicle jack

The jack provided with the vehicle is only intended to be used in an emergency, for changing a wheel. Do **NOT** use the jack for any other purpose. Refer to Owner's Manual for vehicle jack location points and procedure. Never work under a vehicle supported by the vehicle jack.

Hydraulic jack

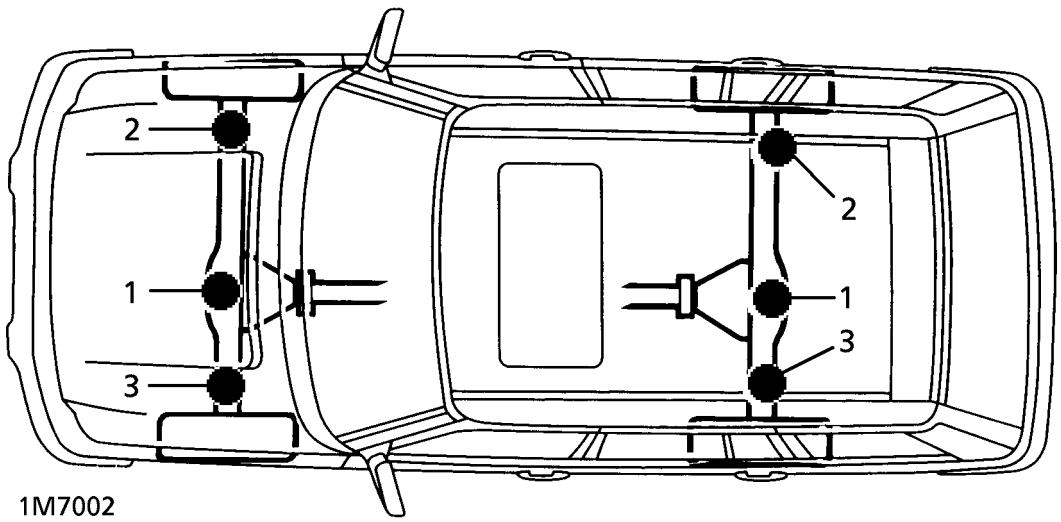
A hydraulic jack with a minimum 1500 kg, 3,300 lbs load capacity must be used.

CAUTION: Do not commence work on the underside of the vehicle until suitable axle stands have been positioned under the axle.

Raise the front of the vehicle

1. Position cup of hydraulic arm under differential casing.

NOTE: The differential casing is not central to the axle. Care should be taken when raising the front road wheels off the ground as the rear axle has less sway stiffness.



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2. Raise front road wheels to enable an axle stand to be installed under left hand axle tube.
3. Position an axle stand under right hand axle tube, carefully lower jack until axle sits securely on both axle stands, remove trolley jack.
4. Before commencing work on underside of vehicle re-check security of vehicle on stands.
5. Reverse procedure when removing vehicle from stands.

Raise rear of vehicle

1. Position cup of hydraulic arm under differential casing.
2. Raise vehicle to enable axle stands to be installed under left and right hand axle tubes.
3. Lower jack until axle sits securely on axle stands, remove trolley jack.
4. Before commencing work on underside of vehicle re-check security of vehicle on stands.
5. Reverse procedure when removing vehicle from stands.

HYDRAULIC VEHICLE RAMP (FOUR POST)

Use only a 'drive on' type ramp which supports vehicle by its own road wheels. If a 'wheel-free' condition is required, use a 'drive on' ramp incorporating a 'wheel-free' system that supports under axle casings. Alternatively, place vehicle on a firm, flat floor and support on axle stands.

TWO POST VEHICLE RAMPS

The manufacturer of RANGE ROVER VEHICLES DOES NOT recommend using 'Two Post' ramps that employ four adjustable support arms. These are NOT considered safe for Range Rover vehicles.
If a vehicle is installed on a Two Post ramp, responsibility for safety of the vehicle and personnel performing service operations is attributable to the Service Provider.

DYNAMOMETER TESTING - VEHICLES WITH ANTI-LOCK BRAKES (ABS)

WARNING: Do not attempt to test ABS function on a dynamometer

Four wheel dynamometers

NOTE: Before testing a vehicle on a four wheel dynamometer disconnect the valve relay. *See Electrical Trouble Shooting Manual.*
The ABS function will not work, the ABS warning light will illuminate. Normal braking will be available.

Provided that front and rear rollers are rotating at identical speeds and that normal workshop safety standards are applied, there is no speed restriction during testing except any that may apply to the tyres.

Two wheel dynamometers

IMPORTANT: Use a four wheel dynamometer for brake testing if possible.

NOTE: ABS will not function on a two wheel dynamometer. The ABS light will illuminate during testing. Normal braking will be available.

If brake testing on a single rig is necessary it must be carried out with propeller shaft to the rear axle removed, AND neutral selected in BOTH main and transfer boxes.

If checking engine performance, the transfer box must be in high range and drive shaft to stationary axle removed.

WARNING: Vehicles from 99 MY are fitted with 4 wheel traction control, which must be disabled prior to testing on a single axle dynamometer.

JUMP STARTING

WARNING: Hydrogen and oxygen gases are produced during normal battery operation. This gas mixture can explode if flames, sparks or lighted tobacco are brought near battery. When charging or using a battery in an enclosed space, always provide ventilation and shield your eyes.

Keep out of reach of children. Batteries contain sulphuric acid. Avoid contact with skin, eyes, or clothing. Also, shield eyes when working near battery to protect against possible splashing of acid solution. In case of acid contact with skin, eyes, or clothing, flush immediately with water for a minimum of fifteen minutes. If acid is swallowed, drink large quantities of milk or water, followed by milk of magnesia, a beaten egg, or vegetable oil. SEEK MEDICAL AID IMMEDIATELY.

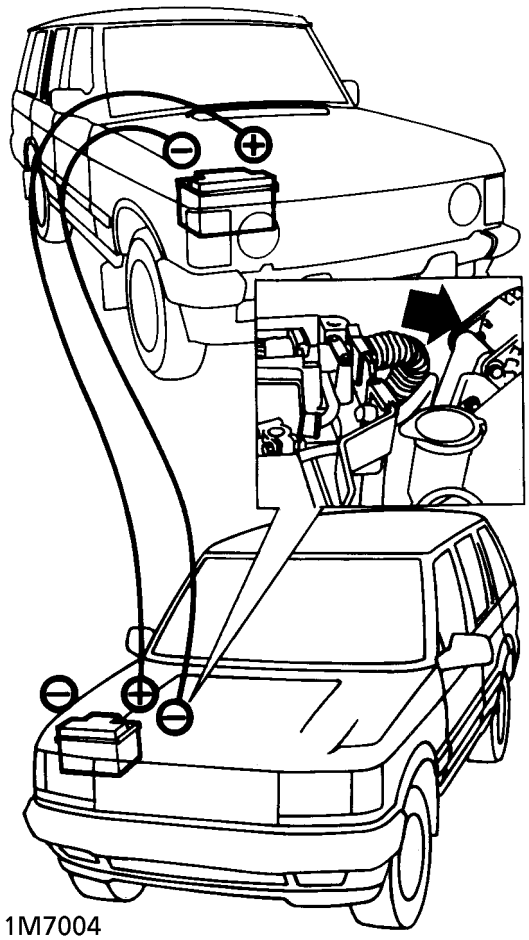
To Jump Start - Negative Ground Battery

WARNING: To avoid any possibility of injury use particular care when connecting a booster battery to a discharged battery.

1. Position vehicles so that jump leads will reach, ensuring that vehicles **DO NOT TOUCH,** alternatively a fully charged slave battery may be positioned on floor adjacent to vehicle.
2. Ensure that ignition and all electrical accessories are switched off; the parking brake must be applied and neutral selected on a manual gearbox; for an automatic gearbox select neutral (N) or park (P). Connect the jump leads as follows;

A. Connect one end of first jumper cable to positive (+) terminal of booster battery.
B. Connect other end of first jumper cable to positive (+) terminal of discharged battery.
C. Connect one end of second jumper cable to negative terminal of booster battery.
D. Connect other end of second jumper cable to a good earth point on the engine, **NOT TO NEGATIVE TERMINAL OF DISCHARGED BATTERY.** Keep jumper lead away from moving parts, pulleys, drive belts and fan blade assembly.

WARNING: Making final cable connection could cause an electrical arc which if made near battery could cause an explosion.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3. If booster battery is installed in another vehicle, start engine and allow to idle.
4. Start engine of vehicle with discharged battery, following starting procedure in Owners' Manual.

CAUTION: If vehicle fails to start within a maximum time of 12 seconds, switch ignition off and investigate cause. Failing to follow this instruction could result in irrepairable damage to catalysts.

5. Remove negative (-) jumper cable from the engine and then terminal of booster battery.
6. Remove positive (+) jumper cable from positive terminals of booster battery and discharged battery.

ABBREVIATIONS AND SYMBOLS USED IN THIS MANUAL

Across flats (bolt size) ..... AF
After bottom dead centre ..... ABDC
Air Conditioning ..... A/C
Air Fuel Ratio ..... AFR
After top dead centre ..... ATDC
Air Temperature Control ..... ATC
Alternating current ..... ac
Ambient Air Pressure ..... AAP
Ambient Air Temperature ..... AAT
Ambient Pressure ..... AP
Ampere ..... amp or A
Ampere hour ..... amp hr
Anti-lock Braking System ..... ABS
Anti-shunt Control ..... ASC
Automatic ..... Auto
Automatic Volume Control ..... AVC
Auxiliary ..... AUX

Battery Backed-Up Sounder ..... BBUS
Before bottom dead centre ..... BBDC
Before top dead centre ..... BTDC
Body Electrical Control Module ..... BeCM
Boost Pressure ..... BP
Bottom dead centre ..... BDC
Brake horse power ..... bhp
Brake Pedal Positions ..... BPP
British Standards ..... BS

Camshaft Position ..... CMP
Calculated Load Value CLV
Canister Vent Solenoid ..... CVS
Carbon Dioxide ..... CO_2
Carbon monoxide ..... CO
Celsius C
Centimetre ..... cm
Central Door Locking ..... CDL
Centre Differential Control ..... CDC
Centre High Mounted Stop Lamp ..... CHMSL
Chlorofluorocarbon ..... CFC
Clutch Pedal Position ..... CPP
Compact Disc ..... CD
Compact Disc - Read Only Memory ..... CD-ROM
Controller Area Network ..... CAN
Crankshaft Position ..... CKP
Cubic centimetre ..... cm^3
Cubic feet per minute ..... ft^3/min
Cubic inch ..... in^3

dB ..... Decibels
Degree (angle) ..... deg or °
Degree (temperature) ..... deg or °
Diagnostic Control Unit ..... DCU
Dial Test Indicator ..... DTI
Diameter ..... dia.

Digital Diesel Electronics ..... DDE
Digital Signal Processing ..... DSP
Digital Versatile Disc ..... DVD
Direct current ..... dc
Direct Ignition System ..... DIS
Direct Injection ..... DI
Directional Control Valve ..... DCV
Double Overhead Camshaft ..... DOHC
Dual Mass Flywheel ..... DMF

Electronic Air Control Valve ..... EACV
Electronic Air Suspension ..... EAS
Electronic Automatic Transmission ..... EAT
Electronic Brake pressure Distribution ..... EBD
Electronic Control Unit ..... ECU
Electronic Diesel Control ..... EDC
Electronic Erasable Programmable Read Only Memory ..... EEPROM
Electronic Fuel Injection ..... EFI
Electronic Traction Control ..... ETC
Electronic Unit Injector ..... EUI
Electronic Vacuum Regulator ..... EVR
Electrical Reference Library ..... ERL
Emergency Key Access ..... EKA
Emergency Locking Retractor ..... ELR
Engine Control Module ..... ECM
Engine Coolant Temperature ..... ECT
Engine Fuel Temperature ..... EFT
Engine Management System ..... EMS
Enhanced Other Network ..... EON
European Community Directive ..... ECD
European Norm ..... EN
European Economic Community ..... EEC
European On Board Diagnostics ..... EOBD
Evaporative Emission ..... EVAP
Exhaust Gas Recirculation ..... EGR

Fahrenheit ..... F
Fast Throttle Control ..... FTC
Feet ..... ft
Feet per minute ..... ft/min
Field Effect Transistor ..... FET
Fifth 5th
First 1st
Fluid ounce ..... fl oz
Foot pounds (torque) ..... lbf.ft
Fourth 4th
Fuel Burning Heater ..... FBH
Fuel Injection Pump ..... FIP

Gallons ..... gal
Gallons (US) ..... US gal
Gramme (force) ..... gf
Gramme (mass) ..... g
Greenwich Mean Time ..... GMT
Global Positioning System ..... GPS
Gravity ..... g

Heated Front Screen ..... HFS
Heated oxygen sensor ..... HO_2S
Heated Rear Window ..... HRW
Height Dilation Of Precision ..... HDOP
High ..... HI
High compression ..... hc
High Density Polyethylene ..... HDPE
High Molecular Weight ..... HMW
High Strength Low Alloy ..... HSLA
High tension (electrical) ..... HT or ht
Hill Descent Control ..... HDC
Hour ..... h
Hydrocarbons ..... HC
Hydrofluorocarbon ..... HFC

Idle Air Control Valve ..... IACV
In Car Entertainment ..... ICE
Inches of mercury ..... in. Hg
Inches ..... in
Inertia-fuel Shut Off ..... IFS
Injector Pulse Width ..... IPW
Inlet Throttle ..... ILT
Intake Air Temperature ..... IAT
Intermediate Frequency ..... IF
Internal diameter ..... I.D. or i.dia.
International Organisation for Standardisation ..... ISO

Kilogramme (force) ..... kgf
Kilogramme (mass.) ..... kg
Kilogramme centimetre (torque) ..... kgf.cm
Kilogrammes per hour ..... kg/h
Kilogramme per square millimetre ..... kgf/mm^2
Kilogramme per square centimetre ..... kgf/cm^2
Kilogramme metres (torque) ..... kgf.m
Kilometres ..... km
Kilometres per hour ..... km/h
KiloPascal ..... kPa
Kilowatts ..... kW
Kilovolts ..... kV
Knock Sensor ..... KS

Left-hand ..... LH
Left-hand Drive ..... LHD
Left-hand thread ..... LHThd
Light Emitting Diode ..... LED
Litres l
Liquid Crystal Display ..... LCD
Liquid Vapour Separator ..... LVS
Low ..... LO
Low compression lc
Low Emission Vehicle ..... LEV
Low tension ..... l.t.

Malfunction Indicator Light ..... MIL
Manifold Absolute Pressure ..... MAP
Mass Air Flow ..... MAF
Maximum ..... max.
MegaPascal ..... MPa
Metal Oxide Semiconductor Field Effect Transistor ..... MOSFET
Metre ..... m
Millilitre ..... ml
Millimetre ..... mm
Miles per gallon ..... mpg
Miles per hour ..... mph
Minus (of tolerance) ..... -
Minimum ..... min.
Minute (angle) ..... ’
Model Year ..... MY
Modular Engine Management System ..... MEMS
Motorised Valve ..... MV
Multi-Function Logic ..... MFL
Multi-Function Unit ..... MFU
Multi-Point injection ..... MPi
Multiport Fuel Injection ..... MFI

Negative (electrical) ..... -ve
Negative Temperature Coefficient ..... NTC
Newton metres (torque) ..... Nm
Nitrogen Dioxide ..... NO_2
Non-Return Valve ..... NRV
North American Specification ..... NAS
Number ..... No.

Off-road Mode ..... ORM
Ohms ..... ohm
On Board Diagnostics ..... OBD
On Board Monitoring ..... OBM
Organic Acid Technology ..... OAT
Ounces (force) ..... ozf
Ounces (mass) ..... oz
Ounce inch (torque) ..... ozf.in.
Outside diameter ..... O.D. or o.dia.
Overhead Cam ..... OHC
Oxides of Nitrogen ..... NOx

Part number ..... Part No.
Percentage ..... %
Pints ..... pt
Pints (US) ..... US pt
Plus or Minus ..... ±
Plus (tolerance) ..... +
Polytetrafluorethylene ..... PTFE
Position Dilation Of Position ..... PDOP
Positive (electrical) ..... +ve
Positive Crankcase Ventilation ..... PCV
Positive Temperature Coefficient ..... PTC
Pound (force) ..... lbf
Pounds force feet ..... lbf.ft
Pounds inch (torque) ..... lbf.in
Pound (mass) ..... lb(s)
Pounds per square inch ..... psi
Pounds per square inch ..... lbf/in^2
Power Assisted Steering ..... PAS
Pressure Conscious Reducing Valve ..... PCRV
Printed Circuit Board ..... PCB
Programme Information ..... PI
Pulses Per Second ..... PPS
Pulse Width Modulation ..... PWM

Radio Data Service ..... RDS
Radio Frequency ..... RF
Radius ..... r
Ratio ..... :
Read Only Memory ..... ROM
Red/Green/Blue ..... RGB
Reference ..... ref.
Regionalisation ..... REG
Research Octane Number ..... RON
Rest Of World ..... ROW
Revolution per minute ..... rev/min
Right-hand ..... RH
Right-hand Drive ..... RHD
Roll Over Valve ..... ROV
Rover Engineering Standards ..... RES

Second (angle) ..... "
Second (numerical order) 2nd
Secondary Air Injection ..... SAI
Self Levelling and Anti-Lock Brake System .... SLABS
Self Levelling Suspension ..... SLS
Single Overhead Camshaft ..... SOHC
Single Point Entry ..... SPE
Society of Automotive Engineers ..... SAE
Specific gravity ..... sp.gr.
Square centimetres ..... cm^2
Square inches ..... in^2
Standard ..... std.
Standard wire gauge ..... s.w.g.
Supplementary Restraint System ..... SRS
Synchroniser/Synchromesh ..... synchro.

Temperature, Manifold Absolute Pressure ..... TMAP
Third 3rd
Thermostsatic Expansion Valve ..... TXV
Three Way Catalyst ..... TWC
Throttle Position ..... TP
Top Dead Centre ..... TDC
Torsional Vibration ..... TV
Traffic Announcement ..... TA
Traffic Management Control ..... TMC

United Kingdom ..... UK
United States ..... US
US gallons per hour ..... US galls/h

Variable ..... Var.
Variable Intake System ..... VIS
Variable Reluctance Sensor ..... VRS
Vehicle Identification Number ..... VIN
Vehicle Information Communications System .... VICS
Vehicle Speed Sensor ..... VSS
Velocity Dilation Of Precision ..... VDOP
Volts V

Watts ..... W
Wide Open Throttle ..... WOT

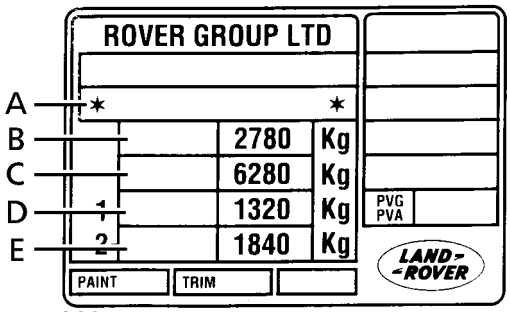
SCREW THREADS

American Standard Taper Pipe ..... NPTF
British Standard Pipe ..... BSP
Unified Coarse ..... UNC
Unified Fine ..... UNF

VEHICLE IDENTIFICATION NUMBER (VIN)

An adhesive label containing the Vehicle Identification Number and the recommended maximum vehicle weights is located on the left hand side of the bonnet locking platform.
The number is also stamped on the outside of the chassis in the front RH wheel arch to the rear of the anti-roll bar link.

NOTE: It may be necessary to remove underseal in order to locate the number; ensure underseal is restored on completion.



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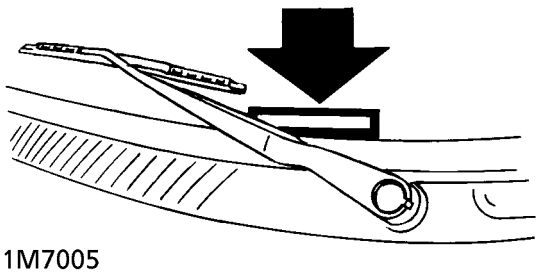
Key to Vehicle Identification Number Plate

A. VIN (17 digits)
B. Maximum permitted laden weight for vehicle
C. Maximum vehicle and trailer weight
D. Maximum road weight-front axle
E. Maximum road weight-rear axle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In addition, the VIN is stamped on a plate which is visible through the left side of the windscreen.

Federal (USA) vehicle identification number

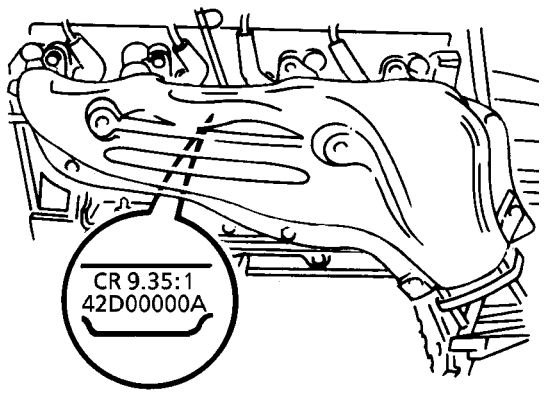
An adhesive label containing the Vehicle Identification Number, date of manufacture and gross axle weight ratings is fixed to the lock face of the front left hand door. The information includes wheel and tyre sizes and tyre pressures at gross axle weight ratings.

LOCATION OF IDENTIFICATION NUMBERS

Engine serial number - V8 engine

Stamped on a cast pad on the cylinder block, between numbers 3 and 5 cylinders.

NOTE: The engine compression ratio is stamped above the serial number.



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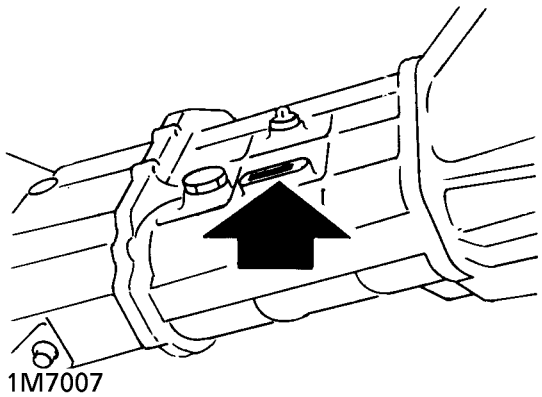
Engine serial number - BMW Diesel engine

Stamped on the LH side of the cylinder block above the sump.

Main gearbox R380 - 5 speed

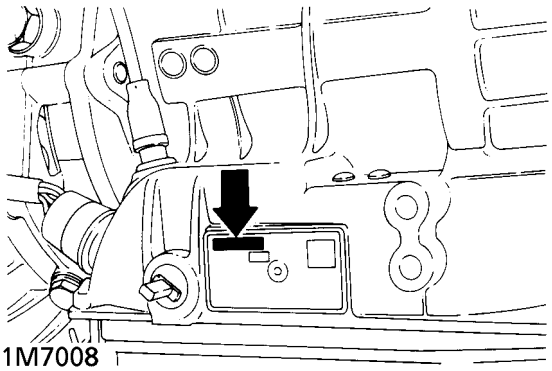
Stamped on a cast pad on the bottom right hand side of the gearbox.



1M7007

Automatic gearbox ZF4HP22/ZF4HP24

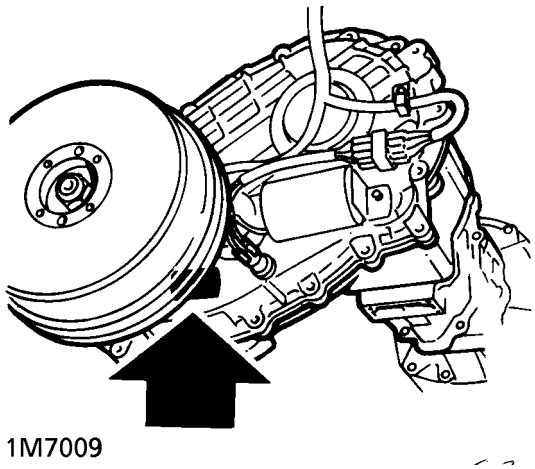
Stamped on a plate riveted to the bottom left hand side of the gearbox casing.



1M7008

Transfer gearbox-Borg Warner

Stamped on a plate attached to the gearbox casing, between filler/level and drain plug.



1M7009

Front and rear axle

Stamped on the left hand axle tubes.

Vehicle identification number (VIN)

Made up of 17 digits, these numbers are used to identify manufacturer, model range, specification, body type, engine, transmission/steering, model year, plant and build sequence number and serve to identify the vehicle.

This example shows the sequence:

European code

S AL LP A M J 7 M A

S	Europe
AL	UK
LP	Range Rover
A	European Spec.
M	4 Door Station Wagon
J	4.6 Litre Fuel Injection
7	Manual right steering
M	1995 Model Year
A	Solihull

Federal (USA) code

S AL P V 1 2 4 2 S A

S	Europe
AL	UK
P	Range Rover
V	North America Spec.
1	4 Door Station Wagon
2	4.0 Litre fuel injection
4	Automatic, Left Hand Steering
2	Check Digit
S	1995 Model Year
A	Solihull

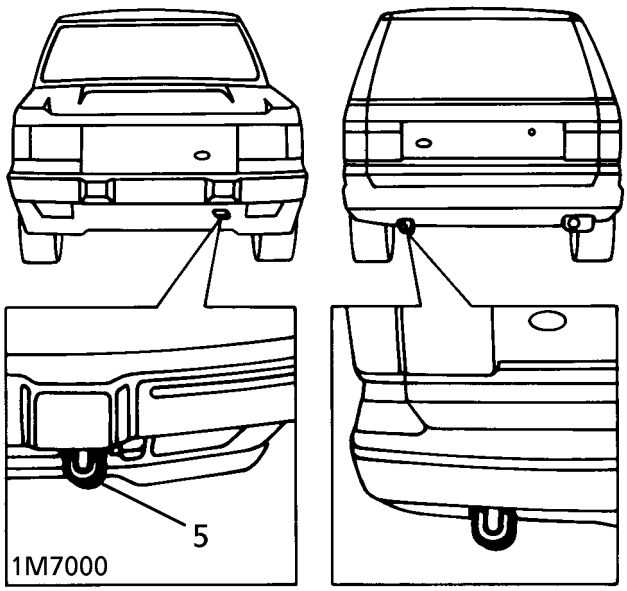
EMERGENCY TOWING

CAUTION: The New Range Rover has permanent four-wheel drive. The following instructions must be adhered to when towing:-

Towing the vehicle on four wheels

If it is necessary to recover the vehicle by towing on all four wheels, 'Transfer neutral' **MUST** be selected.

1. With the starter key removed, insert a fuse of 5 amps or more in fuse position '11' in the RH seat fuse box.
2. Turn the starter switch to position '2'; the transfer box will now automatically select neutral.
3. Wait until the message centre displays 'TRANSFER NEUTRAL' and then turn the starter switch off, position '0'.
4. Turn the starter switch to position '1' to unlock the steering and leave in this position while the vehicle is being towed.



5. Secure tow rope to the front towing eye.
6. Release the parking brake.

CAUTION: Power assistance for braking and steering systems will not be provided without the engine running. Greater pedal pressure will be required to apply the brakes, the steering wheel will require greater effort to turn the front wheels.
The vehicle tow connection should be used only in normal road conditions.

CAUTION: DO NOT remove the starter key or turn the switch to position '0' when the vehicle is in motion.

7. To reactivate the transfer box after towing, turn the starter switch off to position '0' and remove the fuse from position '11'. On automatic vehicles the transfer box will automatically engage the Low or High gear range.
8. On manual vehicles, first press the range change switch. The transfer box will then engage the Low or High gear range.

Suspended tow by breakdown vehicle

CAUTION: To prevent vehicle damage, front or rear propeller shaft MUST be removed, dependant upon which axle is being trailed.

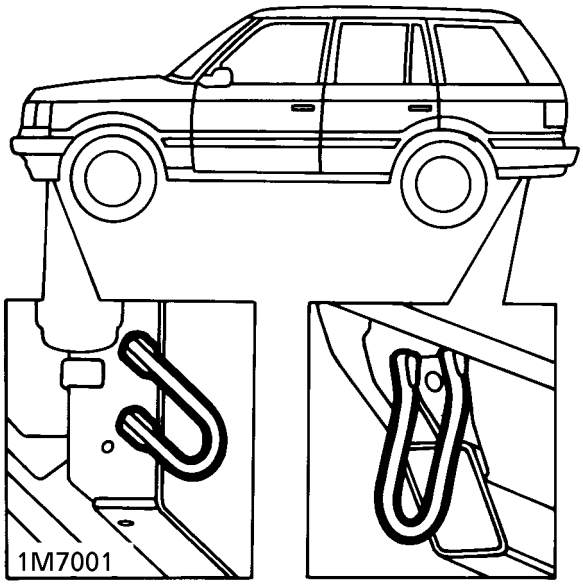
9. To facilitate reassembly, first mark the propeller shaft drive flanges at transfer box and axle.
10. Remove propeller shaft fixings and lift shaft from vehicle.
11. If the front axle is to be trailed, turn ignition key to position '1' to release the steering lock.

CAUTION: If the rear axle is to be raised, the steering wheel and/or linkage MUST be secured in a straight ahead position. DO NOT use the steering lock for this purpose.

TRANSPORTING THE VEHICLE BY TRAILER

If the vehicle should require transporting on a trailer or the back of a lorry, the air suspension must be set to 'ACCESS' before being lashed. ***See FRONT SUSPENSION, Description and operation.***

Lashing eyes are provided on the front and rear chassis cross members to facilitate the securing of the vehicle, as shown.



CAUTION: DO NOT secure lashing hooks or trailer fixings to any other part of the vehicle.

CAUTION: If the air suspension cannot be set to the 'ACCESS' position, then the vehicle must be lashed by its wheels and not the lashing eyes.

Install vehicle on the trailer and apply park brake. Select neutral in main gearbox; this will prevent damage to the parking pawl of the automatic gearbox.