

# TERMS OF BUSINESS AND GUARANTEE

(TROYAN UTILITY CAR)

1.—GENERAL. The following are the conditions which apply to all orders given to and accepted by Leyland Motors Limited for Trojan Vehicles, spare parts, and/or other articles relative to such vehicles.

2.—PRICES. Quoted prices are based on the Company's current published lists, which are subject to alteration without notice. They are for delivery at Kingston Works, Surrey. The terms of payment are cash before delivery.

3.—ILLUSTRATIONS AND DESCRIPTIONS. Photographs, illustrations, descriptions, advertisements, lists and similar matter generally represent the articles referred to therein, but do not necessarily represent in detail goods which are the subject of a quotation or tender, and shall not form part of any contract entered into by the Company.

4.—IMPROVEMENTS AND ALTERATIONS. The Company reserves the right to carry out alterations and improvements in design or methods of manufacture from time to time without further notification. No such alterations shall affect any contract.

5.—TIME FOR DELIVERY. The Company makes every endeavour to execute each order within the time estimated for delivery, but it is a condition of the contract that no liability shall attach to the Company for delay in delivery, nor for any contingent or consequential loss or damage arising from such delay.

6.—LIABILITY. The Company accepts no responsibility for any damage or loss, either direct or indirect, that may arise after the customer has been notified that the vehicle or other articles are ready for delivery.

7.—VEHICLES DRIVEN BY COMPANY'S STAFF. Vehicles not the property of the Company are only driven by the Company's staff at the owner's risk and responsibility.

8.—GUARANTEE. All vehicles and chassis are subject only to the following express warranty, which is available to the original buyer, and if he is not the first registered user is also available to such first registered user. Such warranty shall exclude all conditions and warranties whatsoever, whether statutory or otherwise, which might exist but for this provision.

In the event of any defect being disclosed in any vehicle or part of a vehicle (except tyres, coachwork, electric fittings and accessories and proprietary and other articles not of the Company's manufacture, and except also defects caused directly or indirectly by racing, wear and tear, dirt, misuse or neglect) the Company undertakes on return of the defective part to its works within six months after the date mentioned below to repair the defective part or supply a new one in place thereof free of charge at works in those cases where on examination by the Company any fault be found due to defective material or workmanship.

This warranty runs from date of invoice, but in the event of any identification plates, numbers or marks being altered or removed the Company's liability thereunder ceases forthwith.

9.—CLAIMS. No claim regarding errors in despatch or invoicing will be recognised unless received by the Company within 14 days after receipt by the purchaser of the Company's advice note.

10.—OBSOLETE VEHICLES. In the event of the Company ceasing to manufacture vehicles of the type ordered by the buyer, the Company may, whether the time for delivery has arrived or not, terminate the contract without any liability to the buyer except the return of any deposit which may have been paid.

11.—EXHIBITIONS. Vehicles, chassis and other goods are sold by the Company only on the express condition that, without the prior consent of the Company in writing, they are not to be exhibited or allowed to be exhibited at any exhibition other than an exhibition held by the Society of Motor Manufacturers and Traders Limited or approved by that Society for exhibition of motor goods by its bondsmen. In any case of breach of this stipulation, the original buyer will forthwith pay to the Company as liquidated and ascertained damages the sum of £250 in respect of each breach. Any sum due in respect of any such damages may be assigned by the Company to anyone.

12.—EXPORT. Trojan vehicles or chassis are sold by the Company only on the express condition that they are not to be exported without the consent of the Company in writing. In any case of breach of this stipulation, the original buyer will forthwith pay to the Company as liquidated and ascertained damages the sum of £100.

13.—DEFAULT OF PURCHASER. If before a vehicle or goods have been paid for in full the buyer—

- (a) makes default in any payment due from him to the Company, whether in respect of such vehicle or goods or not;
  - (b) becomes subject to the bankruptcy laws;
  - (c) makes any composition or arrangement with or assignment for the benefit of creditors; or
  - (d) being a company, enters into liquidation or has a receiver appointed,
- the Company may cancel the contract for purchase and shall not be liable to refund or give credit for any deposit which may have been paid.

14.—ARBITRATION. If any dispute or difference shall arise as to the meaning or effect of these terms or the rights of the Company or a purchaser hereunder, it shall be referred to an arbitrator to be nominated by the Chairman of the Society of Motor Manufacturers and Traders Limited, and this shall be deemed to be a reference to arbitration under the Arbitration Act, 1889.

All purchasers of motor vehicles or goods from the Company shall be deemed to have so purchased with knowledge of the above conditions.

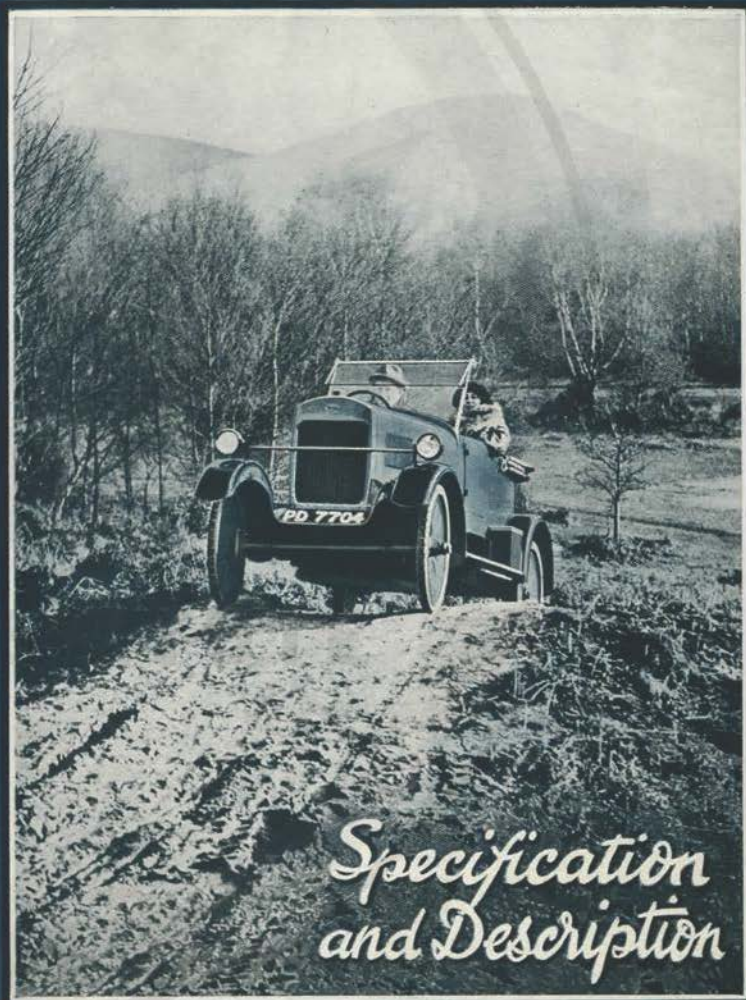
August, 1925

LEYLAND MOTORS, Ltd., Trojan Factory, Kingston-on-Thames

Telephone: Kingston 3994-5-6-7

# Trojan

UTILITY CAR



*Specification  
and Description*



# The Trojan Four-Seater Car



On solid  
tyres

**O**N Solid Tyres, with Lighting Set, Speedometer, two-piece glass Windscreen, Side-screens, Hood, Side-curtains, Horn, Mats, and Kit of Tools, Painted Trojan Blue with Black wings,

**£125 0 0**

(including Speedometer)

PETROL CONSUMPTION. 40 MILES PER GALLON

## BRIEF SPECIFICATION

- Engine.** Two-stroke four-cylinder engine ; water cooled ; bore  $2\frac{1}{2}$  ins., stroke  $4\frac{1}{4}$  ins. ; Treasury rating 10 h.p. (£10 tax).
- Proportionate lubrication** The engine is lubricated by putting a certain quantity of oil in with the petrol, the correct proportion being assured by a simple device. The oil is pumped continuously to all the bearings without the use of valves or a separate pump.
- Ignition.** Coil and accumulator.
- Lighting.** Dynamo.
- Gears.** The change-speed gear is epicyclic, two speeds forward, one reverse ; operated by gate-controlled lever and clutch-pedal. Ratios : top, 4—1 ; bottom, 12—1 ; reverse, 16.8—1. With engine revolutions at 1,000 per minute, the top gear gives 20 m.p.h.
- Brakes.** Two independent brakes are provided, one acting on the transmission and the other on the rear axle. In emergency, the epicyclic reverse gear is also available.

(Continued overleaf)

## THE TROJAN ON PNEUMATICS



On pneumatic  
tyres

The combination of solid tyres and wonder-springs makes the Trojan as comfortable to ride in as most cars with pneumatic tyres ; but, fitted with pneumatic tyres, the Trojan is SHEER LUXURY.

**Price £130 Complete**  
(including Speedometer)

LEYLAND MOTORS LTD., KINGSTON-ON-THAMES

## SPECIFICATION—Continued

**Suspension and Solid Tyres.** The ingenious combination of careful weight distribution with the use of long cantilever springs of special construction fitted both to front and rear axles, together with other novel features, makes the use of solid rubber tyres a practical and comfortable proposition.

**Front Axle and Steering.** The front axle is of tubular construction; the steering is on the Ackermann system, the steering column being at a comfortable angle. The reduction is of the spur and pinion pattern, enclosed and working in oil.

**Rear Axle and Final Drive.** A single duplex chain transmits the power to a differential-less axle shaft, which drives both wheels. This shaft runs on ball-bearings and is completely enclosed.

**Road Wheels and Tyres.** Single-disc wheels. Solid tyres.

**Bodywork.** The body seats four people. A two-piece glass wind-screen, side-screens, and a folding hood with side curtains are part of the standard equipment.

**Equipment.** A serviceable set of tools and tool-boxes is included, also a licence holder.

**Extras.** The following extras suitable for the car can be supplied:—clock, spot-light, driving-mirror, inspection lamp, screen-wiper and pedal covers.

**Principal Dimensions.** Wheel-base, 8 ft. 0 in.; track, 4 ft. 0 in.; overall length, 11 ft. 0 in.; overall width, 4 ft. 10 ins.; weight, 12½ cwt.; ground clearance, with normal load, 9 ins.

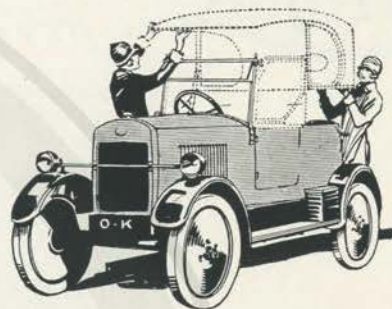
**Guarantee.** The complete car is guaranteed against faulty workmanship and material for a period of six months, in accordance with the Terms of Business printed on back page.

**NOTE.**—The engine, lubrication system, flexible-coupling, starter, gearbox, change-speed gear control, suspension system, disc wheels, part of the ignition system, priming device, and reserve petrol provision, etc., are all protected by patents.

## THE TROJAN COUPÉ

**T**HE Trojan Coupé consists of the touring model and a detachable coupé top which converts the open car into a luxurious four-seater town carriage.

The top can be removed in a few minutes.

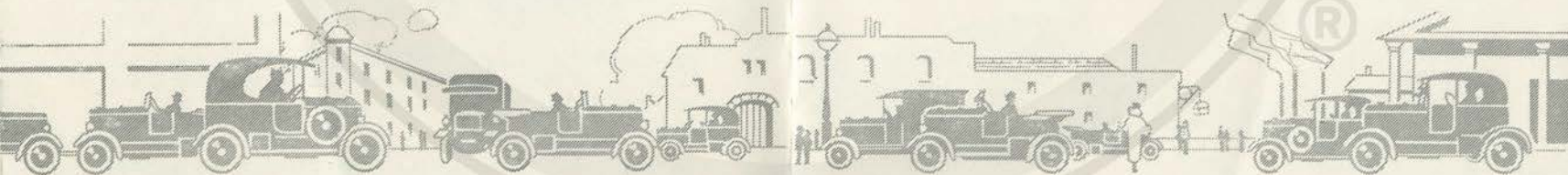


This illustration shows how, in a few minutes, by the simple manipulation of four bolts, the Coupé top can be removed.



The Trojan Coupé on pneumatic tyres

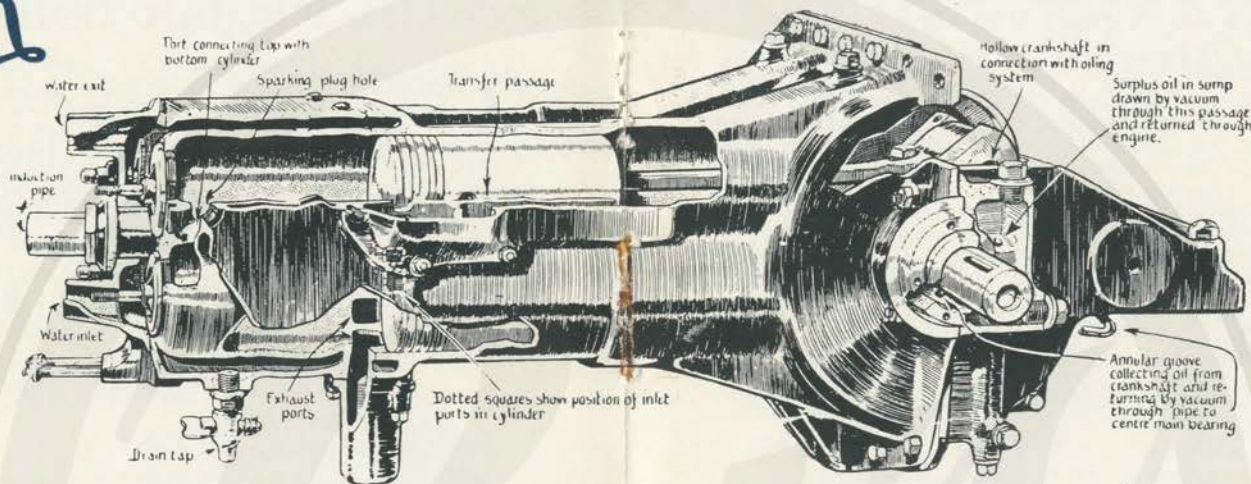
**Price £158** Complete, including hood and side-curtains, for converting from coupé to open car. A speedometer is also included.





# Trojan

Petrol consumption  
40 miles  
per gallon



THE TWO-STROKE FOUR-CYLINDER ENGINE OF THE TROJAN UTILITY CAR, PARTLY CUT AWAY TO SHOW THE INTERNAL DETAILS.

## Description of the Trojan

THE Trojan is a small utility car of substantial construction; its outstanding features are its simplicity, its reliability and the exceptionally low cost of running—the cost of tyres and petrol in particular. It has been designed, on entirely novel lines with the particular object in view of eliminating, wherever possible, those components which in current and conventional practice have proved to give occasional trouble or to be expensive in maintenance. The Trojan requires the minimum of attention either on the road or in the garage; it is very easy to wash, and there are no polished parts. A great convenience, especially to doctors, is that the engine can be primed and started, the lamps lighted, and, if necessary, the reserve of petrol brought into use—all from the driver's seat.

**Chassis.** Strictly speaking, the Trojan chassis does not incorporate a frame, its place being taken by a light steel pressing (known as the "punt") which provides enormous strength, in addition to constituting an effective undershield.

**Engine.** The Trojan engine, working on the two-stroke principle, is valveless; it is placed horizontally with the cylinder heads pointing forward. The four water-cooled cylinders, which are cast monobloc, are internally connected in pairs, there being only two combustion chambers. The two crank-throws are set at 180°, and a central bearing is provided, housed in a web which divides the crank-case into distinct halves, in each of which identical operations take place.

An exceptionally high torque is obtained at low speeds, greatly facilitating driving in traffic and hill climbing. There are only

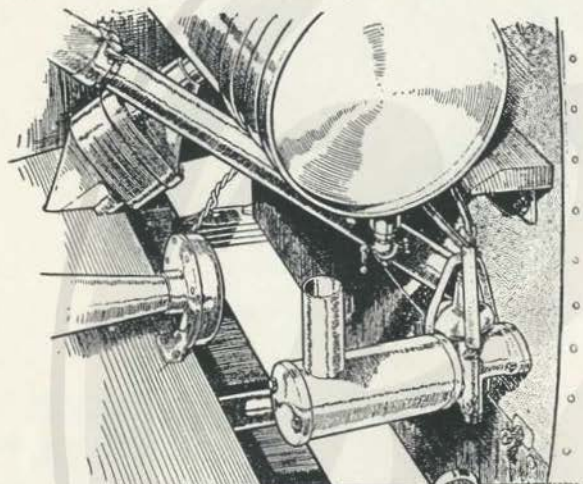




seven separately moving parts, all of which can be removed as a complete unit after detaching the crank-case foot.

### **Sequence of Operations.**

In order to understand fully the working of the engine, it is better to consider only one side (i.e. one pair of cylinders and the corresponding half of the crank-case) at a time. At the moment of maximum compression, with the pair of pistons at the inner limit of their stroke (i.e. close to the cylinder head), the gas is fired



UNDER THE BONNET, THE PETROL TANK, HORN, STEERING BOX, AND CARBURETTER WHICH IS FITTED WITH AN AIR MUFFLER TO SILENCE THE AIR-INTAKE

in the common combustion chamber and the pistons are forced towards the crank-case, the lower one leading slightly, owing to the angularity of the connecting rods. Before reaching the limit of its travel, the head of the lower piston uncovers the exhaust port (which communicates with the lower cylinder only) and the gas flows out. The head of the upper piston then uncovers a port

(the "Transfer Port") which opens a passage between the upper cylinder and the crank-case, in which a fresh charge has been compressed by the descending pistons. This gas is thus pumped into the upper cylinder and thence through the combustion chamber, driving the exhaust gases from both cylinders. As the pistons recede, three operations take place. (1) The lower piston closes the exhaust port. (2) The upper piston closes the transfer port. (3) The skirt of the upper piston uncovers the inlet port, leading from the induction pipe to the crank-case, where the receding pistons have created a partial vacuum which induces a fresh charge of explosive mixture from the carburetter.

Owing to the lead which the lower piston possesses over the upper, and owing to the small communicating passage between the two cylinders, a state of turbulence is maintained in the combustion chamber, so that when the firing point is reached, flame propagation is extremely rapid.

**Ignition.** See brief specification.

**Lighting.** See brief specification.

**Lubrication.** Lubrication is based on the petroil system, but in a new form which effectually removes the old-standing objection, namely, that of imperfect oil circulation. The oil is contained in the same tank as the petrol, the correct proportion—3 per cent.—being ensured by a special measuring device. After passing through the carburetter, whence it issues in the form of fine spray, the oil is carried along the induction pipe, and is admitted, with the explosive mixture, into each side of the crank-case alternately, as the respective inlet ports are opened. Being heavier than the petrol mixture, the oil falls to the bottom of the crank-case. The internal circulation of the oil is effected by the states of partial vacuum and pressure alternately existent in the two halves of the crank-case. The forward travel of one pair of pistons forces the oil through a strainer and sump to the main bearing of the opposite half of the crank-case, where a partial vacuum simultaneously assists its progress into the hollow crank-shaft. Centrifugal force throws the oil along the hollow webs, whence it lubricates the big-end bearings, splashes the cylinder walls, drains to the sump, and is thence fed back, in a similar manner, to the other main bearing. The principal advantage of this lubrication system over that employed in other modern automobile engines is that an ideal proportion of oil to petrol is maintained, depending, not on the speed of the engine, but on the load.





### Petrol System and Carburetter.

and shielded from the engine by a steel partition, is the petrol tank with a capacity of seven and a half gallons. A patented device retains one gallon of this as a reserve, instantly available from the driver's seat, and prevents chance water or dirt or undissolved oil from reaching the carburetter. The latter, which is also shielded from the engine, has been specially designed for the Trojan, and gives a practically constant air-petrol mixture under all conditions, without employing moving parts subject to engine suction and consequent wear. Even after dismantling, there are no parts requiring accurate adjustment. A variable jet, operated from the dash, permits the correct setting for any climatic conditions, and, with the exception of the pedal accelerator, is the only engine control. A muffle, fitted to the air-intake, reduces the noise, acts as an air filter and prevents loss of petrol due to blow-back. The mixture passes down the induction pipe, through a passage surrounded by the hot water-jackets, and impinges on a hot plate which deflects it, through the inlet port, into the crank-case. Due to this arrangement, the separation of the petrol from the oil is completed.

### Gears and Transmission.

The power is transmitted from the engine to the gearbox through spiral springs, set radially. This provides a smooth and flexible, though positive, drive. An exceptionally easy gear-change is obtained by the use of epicyclic gear. A gate-change lever at the driver's right contracts the top, low speed, or reverse bands on to their respective drums. A clutch-pedal is, therefore, not essential, though one is fitted for convenience. The engine gives such a high torque at low speeds that hills with a gradient of 1 in 8 can be climbed, with full load, in top gear which has a ratio of 4 to 1, while the emergency low gear (12 to 1) enables practically any hill to be negotiated without the slightest difficulty. The reverse gear has a ratio of 16.8 to 1. (A road speed of 20 m.p.h. represents an engine speed of 1,000 r.p.m. in top gear.) The drive is taken through a spur reduction gear, and thence by duplex chain to the solid back axle, where the absence of a differential not only helps the car to hold the road, but renders it less liable to skid and makes passage through deep snow and over soft ground possible. The enclosed axle shaft runs on ball-bearings.

Placed under the bonnet,

### Suspension and Tyres.

Solid tyres, costing £9 a set, are fitted. No sacrifice of comfort is entailed, owing to the exceptional design of the long cantilever springs fitted at both front and rear, in conjunction with a careful disposition of weight. Being widely spaced, and rigidly attached to the axles, they give great stability.

**Brakes.** See brief specification.

**Front Axle and Steering.** See brief specification.

**Bodywork** The body seats four people. A two-piece glass screen with side-screens, and a folding hood with side-curtains, are standard equipment. The back of the car affords ample capacity for luggage, and a capacious cupboard under the dash, illuminated at will, is an additional convenience. The tail-lamp is completely enclosed behind a translucent number-plate, and is visible to the driver through a tell-tale.

**Controls.** The hand brake and change-speed levers are placed at the driver's right hand, in proximity to the starting-lever, which also retards the spark for starting. All three levers are so arranged that they do not interfere with the off-side doorway. A detachable key, which fits a socket in the dash, acts as a master switch for the ignition and electric horn, and also forms the "main" and "reserve" petrol tap. To the right of the steering wheel is the mixture regulator. There are three pedals, actuating accelerator, foot-brake and clutch. A foot-operated pump primes the engine.

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