TRN/LAN/2#12

C.S. PUBLIC WORKS (Miscellaneous.) **1928.**

No. 169/28.

Ag. Col. Engineer.

SUBJECT.

192 8.
19th April

PROPOSED PURCHASE OF MORRIS 6-WHEELED TRUCK.

Previous Paper.

MINUTES.

1-4. Minute from Ag. Col. Engineer, of 19.4.28.

[illegible] Purchase of a lorry [illegible] as [illegible] might be [illegible] for consideration in connection with the preparation of the Estimates for 1929.

[illegible]
26. 4. 28.

Hon C.S.

Please. [illegible]

23/4/28

Col. Eng. [illegible]

28. 4. 28. Hon: Col: Sec:
Noted
[illegible] 4/5/28.

Subsequent Paper.

[illegible]
[illegible]
[illegible] 20. 8. 28
[illegible]

(4)

No.

(It is requested that, in any reference to this minute, the above Number and the date may be quoted).

MINUTE.

19th April, 1928

From Actg. Colonial Engineer, *To*

Stanley.

THE COLONIAL SECRETARY,

Stanley, Falkland Islands.

I beg to report that the Morris lorry with roadless track is of no further use for transporting peat from the Common as the roadless creeper tracks have completely worn out and fallen to pieces. The work over the rough ground (mainly outcrops of rock) has proved too much for it. The chassis and engine is also badly strained. The lorry has therefore been taken off this service, has been overhauled and is now employed on general work in the town chiefly on new roads under the Improvement Scheme. The life of this lorry is only a year or two.

2. I submit for your consideration the desirability of purchasing a Morris-Commercial Six wheeled truck, 30 cwts, with accessories, as specified in attached booklet. The cost delivered Stanley with freight and all charges would be £675 to £700.

3. With this motor it should be possible to travel over rough virgin ground, peaty swamps or the steepest hills. It would be useful for either 'Camp' or town work, and would be as economical to run as the motors at present in use by the Government.

4. I do not claim that this vehicle will solve the problem of peat transport owing to the many outcrops of rock on the way to the bogs now existing which it is necessary to travel over, and I do not think that there is a motor which will stand up

to

(3)

to this work without first making a decent track to the Government peat banks, but I do think that money would be well spent on such a vehicle as the one suggested for getting materials to almost inaccessible spots and if necessary opening up parts distant from Stanley which cannot now be reached with an ordinary lorry or horse and cart.

G. Roberts,
Actg. Colonial Engineer.

Enclosures.
Booklet of 6 wheeled lorry.
Cutting from "Overseas Mail".

Agents Falkland Islands

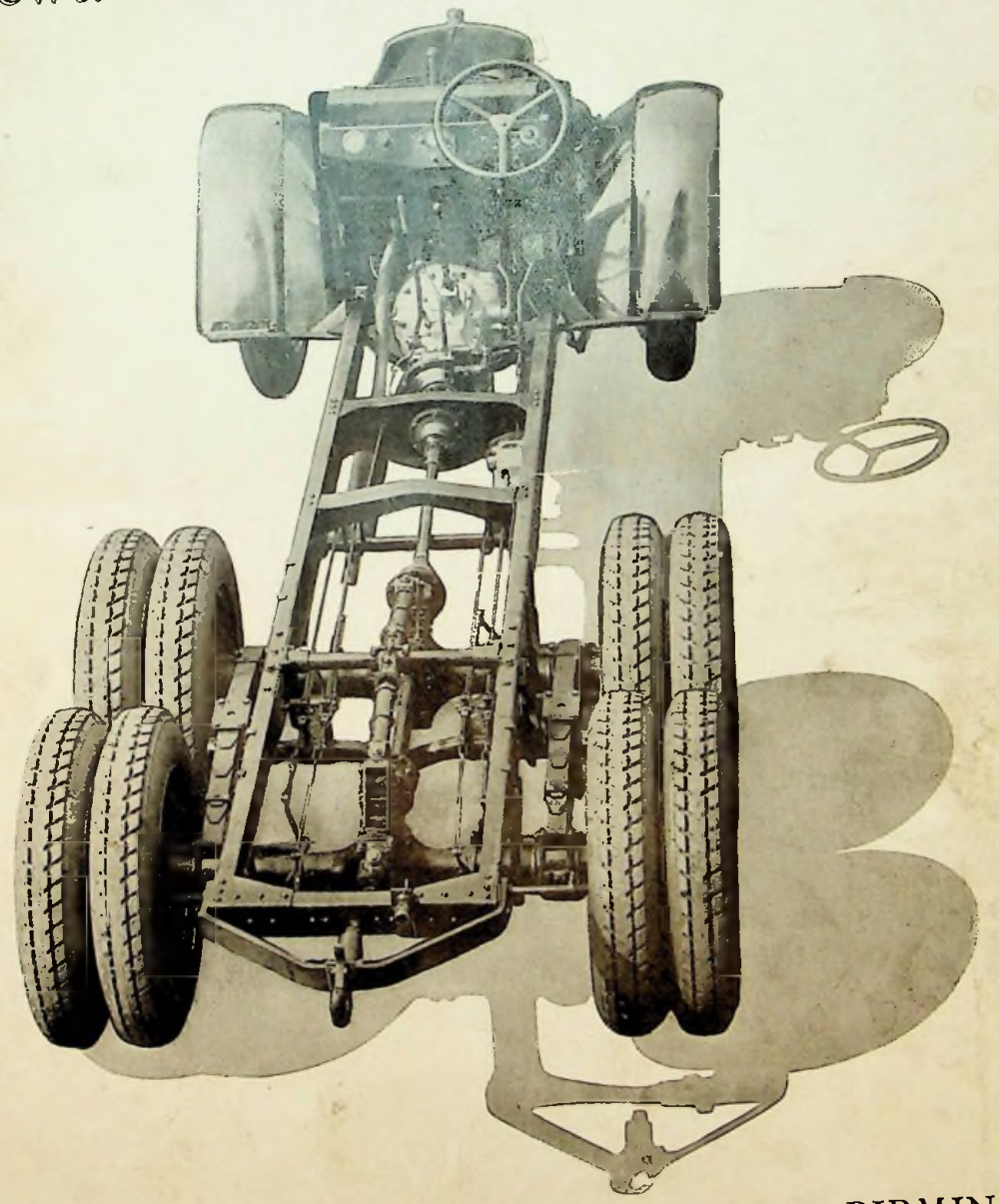
1st March, 1927

(2)

Go-Anywhere Transport

MORRIS-COMMERCIAL

30-cwt. and 2-ton Six-Wheeled Trucks



MORRIS-COMMERCIAL CARS LTD.———SOHO, BIRMINGHAM

The ability to traverse rough virgin ground, swamp and deep mud; to climb the steepest hill; to negotiate slippery surfaces; and also to travel fast and quietly on made roads. These are the attributes of the Morris-Commercial Six-Wheeler.

Because of its extreme versatility the Morris-Commercial Six-Wheeler is destined largely to widen the whole scope of motor transport, particularly in undeveloped countries or where roads are few.

Provisional price of Chassis - - - - - - **£450**

The Morris-Commercial Six-Wheeled Vehicle

MORRIS-COMMERCIAL CARS LTD., after a prolonged and careful study of the requirements of cross-country transport, introduce the Morris-Commercial Six-Wheeled Chassis as being representative of the most advanced design of this class of vehicle. It is a recognised fact that abroad, particularly in the colonies, there are large districts of great potential productivity, yet the land is only of nominal value because of the lack of suitable transport from that particular district to railhead.

Both railways and road have their limitations, whether imposed by economic or other conditions, and require the investment of a large amount of capital which demands a return within a reasonable period. The alternative is in the use of mechanical transport designed and built specially for primitive and unbeaten tracts, and the development of vast areas of country depends, to a very large extent, upon the available resources of motor transport.

This Morris-Commercial production is quite distinct and apart from the familiar type of six-wheeled vehicle and includes two differentially geared axles of the overhead worm type. The question naturally arises—why have six wheels in place of four? The advantages of this particular construction over and above the orthodox four-wheeled vehicle are numerous, and a résumé of these is incorporated in the data which appears in the following pages.

Evidence of the Morris-Commercial Six-Wheeled Chassis as an excellent solution of the problem of cross-country transport is to be found from every view-point. In the first place its initial cost is low, while the construction peculiar to this particular manufacture is such that the proper maintenance of the machine calls for but little more attention than the ordinary four-wheeled type of commercial vehicle. As to performance, the machine has been bought and thoroughly tested by the British War Office, with satisfactory results. The vehicle has, in fact, afforded a really practical solution to the difficult problem of transport across rough and undeveloped country.

SOME ADVANTAGES OF SIX-WHEELED CHASSIS

The rigid frame six-wheeler possesses many advantages over and above the orthodox four-wheeled vehicle to which passing reference has already been made. Probably the most important of these lies in the fact that all of the rear wheels take a share of the drive and load at all times—whether the vehicle is travelling over the ordinary made highway or negotiating soft and uneven ground.

The coefficient of road adhesion is greatly in excess of the ordinary four-wheeled truck, and consequently the load-supporting capacity on soft ground is increased, thus reducing the possibility of wheel sinkage under these conditions.

As already stated, the Morris-Commercial Six-Wheeled Chassis frame is rigid, but both of the rear axles fitted can move independently with each other and the frame; thus each wheel on one axle can be at least 6 in. higher than the corresponding wheel on the same axle. Again, either of the rear axles can be more than 8 in. above the other. The frame remains in its normal position relative to the ground during these movements, and it will be readily understood, therefore, that this unit as a whole is not so stressed, and is relieved of many shocks which are normally imposed upon the frame of the more familiar *rigid* six-wheeled type of vehicle.

The Morris-Commercial Six-Wheeled Chassis represents a very attractive means of cross-country transport. Its riding qualities are excellent—this will be appreciated when it is understood that none of the rear wheels normally leave the ground, and when travelling over this type of country they simply ride over obstacles without transmitting any undue shocks to the frame.

IMPORTANT NOTE. *The Morris-Commercial Six-Wheeled Chassis is manufactured in two lengths of wheelbase (see illustrations on page 5). The short wheelbase model has a useful load-carrying capacity of 30 cwt. over reasonably good ground surfaces, while the longer chassis is suitable for 2-ton loads under similar conditions. When the machines are traversing particularly adverse stretches of country it is, of course, advisable to load the vehicles according to those particular conditions.*

General Specification of 30-cwt. and 2-ton Models

POWER UNIT

With a bore and stroke of 80 mm. × 125 mm., the power unit has an R.A.C. rating of 15.9 h.p., which gives 18 b.h.p. at 1000 r.p.m. and a torque of 95 foot-pounds. Aluminium pistons are used, together with steel connecting rods of "H" section, which give maximum strength with minimum weight. Side-by-side valves are fitted, working in long guides. The cylinder block and upper half of crankcase with bearings are cast integral of the finest grade cast iron, this construction ensuring extreme rigidity and correct alignment. The large diameter camshaft operates against mushroom-head tappets which have fine screw adjustment and are lubricated from the crankcase. The cylinder head is easily detachable, giving ready access for decarbonising, valve grinding, etc. The bearings can be inspected or removed for adjustment by dropping the bottom half of the crankcase, an operation which can be carried out quite simply without removing any other part. The camshaft, dynamo and magneto are driven by spiral gears from the crankshaft. The 12-volt dynamo and H.T. magneto are placed in tandem and connected by a special coupling which gives an infinite range of variation. The self-starter, flange mounted, operates direct on to the flywheel pinion rim through a Bendix drive. Lubrication is effected by a plunger pump driven from the camshaft, giving a forced feed to the three main bearings and all connecting rod big-ends. A by-pass feeds all camshaft bearings and timing gears. The oil before entering the pump has to pass through a fine mesh filter which can easily be removed for inspection and cleaning. Adequate water circulation is effected by means of an impeller situated in the cylinder head and driven off the fan shaft, and cooling is further assisted by means of a large four-bl· ded fan driven by a rubber "V" belt from the cam-shaft. Perfect engine suspension is provided, the unit complete with gearbox being carried by a three-point suspension system, the forward end in a large bearing and the two rear feet by spherical blocks in brackets which are a part of the main frame.

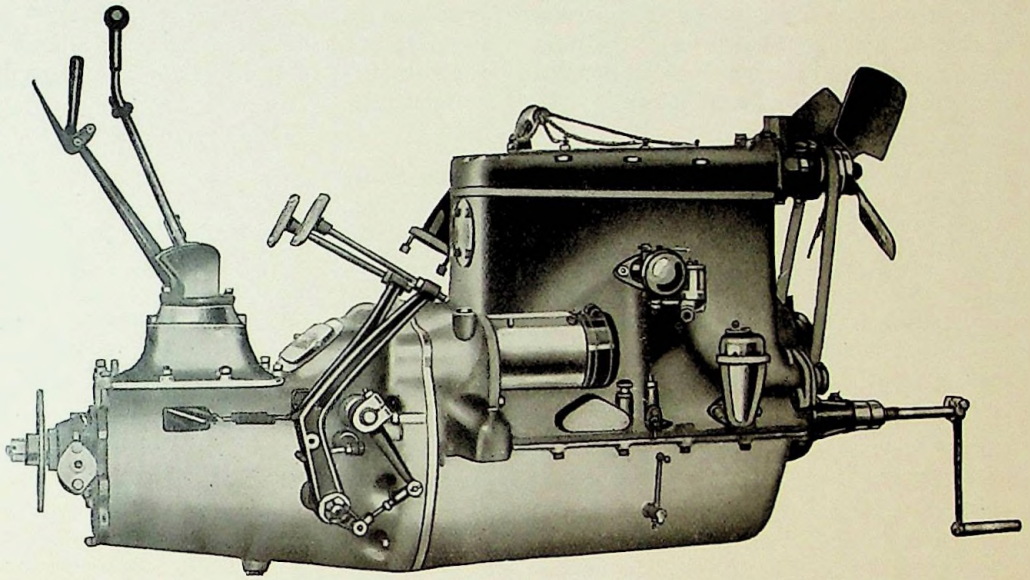
CLUTCH AND GEARBOX

The drive from the engine is taken through a single-plate dry clutch of ample size to transmit the full torque of the engine without slipping. Pressure on the friction faces is maintained by eight springs operating on the sliding member, the single plate which takes the drive to the gearbox being held between two bonded asbestos fabric discs, one of which is secured to the flywheel and the other to the sliding member. The lever system for releasing the clutch is so arranged that a comparatively light foot-pressure is required—special precautions are taken to prevent oil from either the crankcase or gearbox passing into the clutch pit, while the ball thrust race is lubricated through centre of shaft. The gearbox has four forward speeds and reverse. The gears are of wide face, mounted on large diameter splined shafts running in ball bearings. The gear changing is easy and is effected by swinging a lever in a gate operating three selector forks, the remaining two being definitely locked when any particular one is being used. The overall gear ratios obtainable are as follows: 1st, 25; 2nd, 17.4; 3rd, 12.3; 4th, 7.24; reverse 32.4.

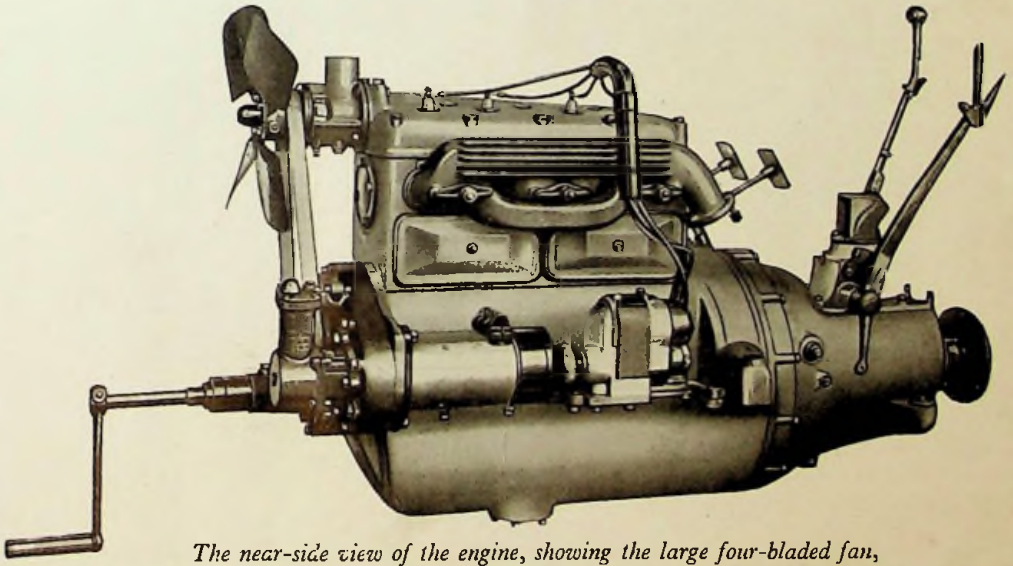
AUXILIARY EPICYCLIC REDUCTION GEARBOX

A very high degree of flexibility is obtained by reason of the auxiliary epicyclic reduction gearbox provided. With this unit the following *overall* reductions are obtainable: 1st, 81.5; 2nd, 57.0; 3rd, 40; 4th, 23.5; reverse 104.8. The drive is transmitted from the auxiliary

The Power Unit



From this off-side view of the engine it will be appreciated that the layout of all components is particularly neat, and extreme accessibility can be claimed for oil filling arrangements and also for carburetter.



The near-side view of the engine, showing the large four-bladed fan, water impeller in the cylinder head, engine-driven tyre pump and the tandem mounting of the dynamo and magneto. The manifolding, too, is particularly neat, affording ample flow for the ingoing gases and freedom for the exhaust.

SPECIFICATION (*continued*)

reduction gearbox through a metal universal joint and open propeller shaft to a sliding block joint at the front of the foremost rear axle. The drive is then taken between the axles through two other metal universal joints.

SUSPENSION

An ideal form of suspension is incorporated, which relieves the springs of any form of torque or twist. The mounting at the middle of the spring is free to rotate round the spring pivot shaft which extends the whole width of the frame, and is secured to the latter by a large "V" bracket. There are two sets of springs on each pair of rear wheels, while ordinary semi-elliptic springs are fitted to the front of the machine.

BRAKES

A highly efficient braking system is employed on the Morris-Commercial Six-Wheeled Chassis. Both hand and foot brakes operate internal expanding shoes inside 15 in. drums which are mounted on the hubs of both rear axles. Adjustment is by means of turnbuckles on the brake-operating rods, which are immediately accessible when the floorboards have been lifted. Individual adjustment is provided at each brake cam lever for equalising the brake pressures. The brakes are operated by the Dewandre Vacuum Servo system, the purpose of which is to assist the driver to apply the brakes and thereby relieve him of a greater part of the work. Besides reducing the necessary physical effort to a large extent, very powerful brakes are always available—an important feature in this type of vehicle.

STEERING

Steering is effected by means of the orthodox worm and worm wheel, the gears being housed in the steering box which is securely mounted on the frame side member. A complete worm wheel is used, and the steering is light in operation. For ease of manœuvring, ample steering lock is provided which gives a turning circle of 50 feet approximately. This will be found quite sufficient when the vehicle has to be used in confined spaces.

WHEELS AND TYRES

Both 30-cwt. and 2-ton chassis may be equipped with either 33″×5″ single tyres or 32″×4½″ twins on driving axles, with the option of 32″×6″ single all round at an extra cost of £50. Whenever twin tyres are supplied, metal tracks (as illustrated) are included in the equipment, while in the case of single-tyred models Parsons chains are supplied.

RADIATOR

The radiator is a built-up unit of straightforward design, incorporating a detachable centre and aluminium head, sides and bottom tank, this construction facilitating repairs in the case of accident. Four and a half gallons of water are carried in circulation, and cooling is assisted by a large four-bladed fan, driven by a "V" belt from a pulley on the camshaft. It should be noted that an adequate head of water above the level of the water at the top of the cylinder block has been provided in the design; this greatly minimises the possibility of overheating under the most arduous conditions and prevents local distortion of the cylinder casting when the engine is driven at its maximum speed for long periods.

BONNET

The bonnet is of a special pattern, made in three sections, the top one of which is hinged. The side members are separately detachable, and this construction enables the engine to be reached with absolute ease for cleaning purposes, replenishments, etc.

DASH

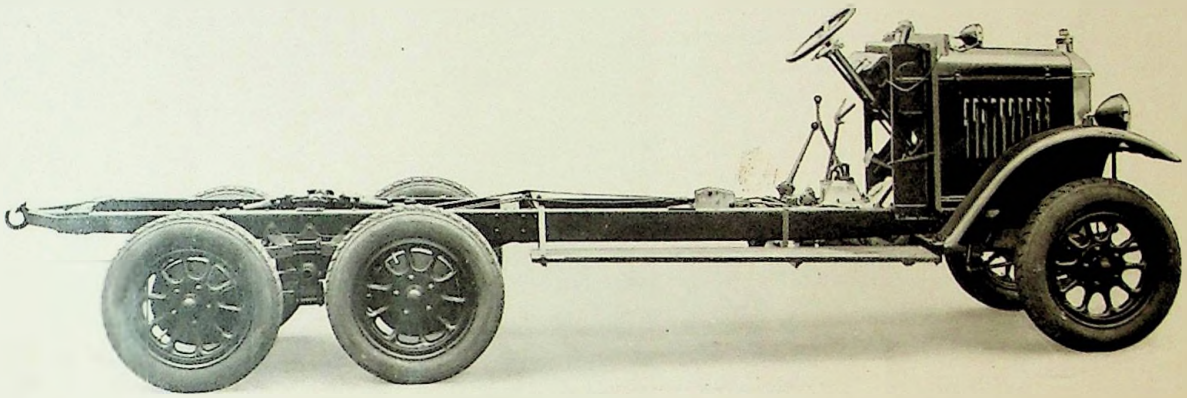
A substantial metal pressing, sturdily made so that it will stand for long use without giving rise to vibration, carries the eight-gallon petrol tank, facia boards, etc. It will be noted that the petrol filling orifice is outside the vehicle, thus greatly minimising the danger of petrol fumes igniting. On the dash are mounted the magneto switch, the lighting control switches, ammeter and oil gauge.

CONTROLS

The engine is controlled by the accelerator pedal, an additional hand control for slow running being mounted on the steering column. The clutch and brake pedals are situated in the normal position, the gear lever and hand brake being mounted at the centre of the chassis. The magneto control is on the steering column, while the air choke to assist easy starting in cold weather is situated on the dash.

2-ton Model (Maximum body length, 12 ft.)

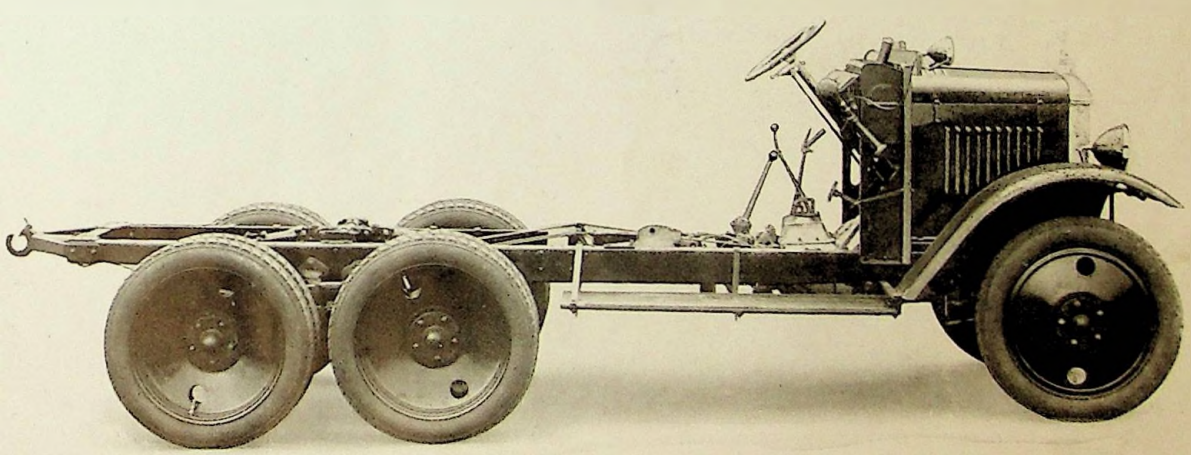
Chassis Price - - - **£450**



Both 30-cwt. and 2-ton models may be equipped with either 33″ × 5″ single tyres or 32″ × 4½″ twins on driving axles, with the option of 32″ × 6″ singles all round at an extra cost of £50.

30-cwt. Model (Maximum body length, 8 ft.)

Chassis Price - - - **£450**



The frame itself is of sturdy dimensions, capable of withstanding the hardest usage. Ample body space is allowed. The rearmost gear lever controls the two-speed epicyclic gear which augments the four ratios provided by the normal gearbox. The whole chassis is robust and thoroughly reliable, a remarkable example of an efficient vehicle sold at a reasonable price.

SPECIFICATION *(continued)*

MECHANICAL TYRE PUMP

To obtain maximum tyre mileage it is most important to keep them inflated at their correct pressure. In order to enable users of the Morris-Commercial Truck to do this with the least amount of trouble a mechanically-operated tyre pump is included in the standard equipment. This pump, known as the "Maxfield," is driven off the timing gears and can instantly be put into or out of engagement with the engine running.

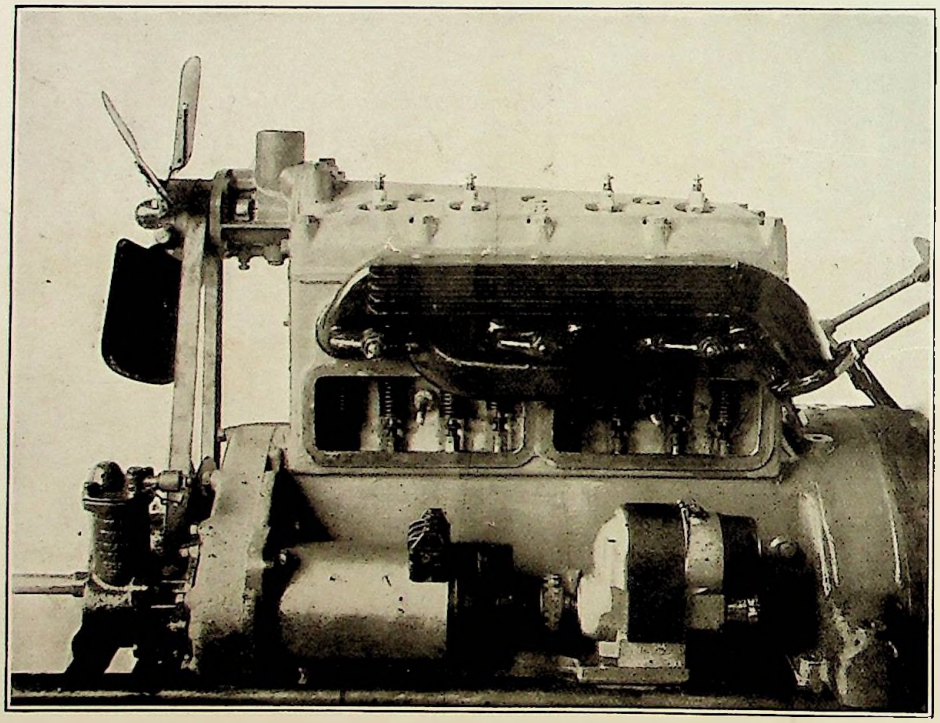
ELECTRICAL EQUIPMENT

The highest grade Lucas lighting and starting equipment is fitted as standard to the Morris-Commercial Six-Wheeled Chassis. The standard equipment includes Lucas 5-lamp lighting set working on a 12-volt circuit, and the battery box is fitted in a position where it is very easy of access.

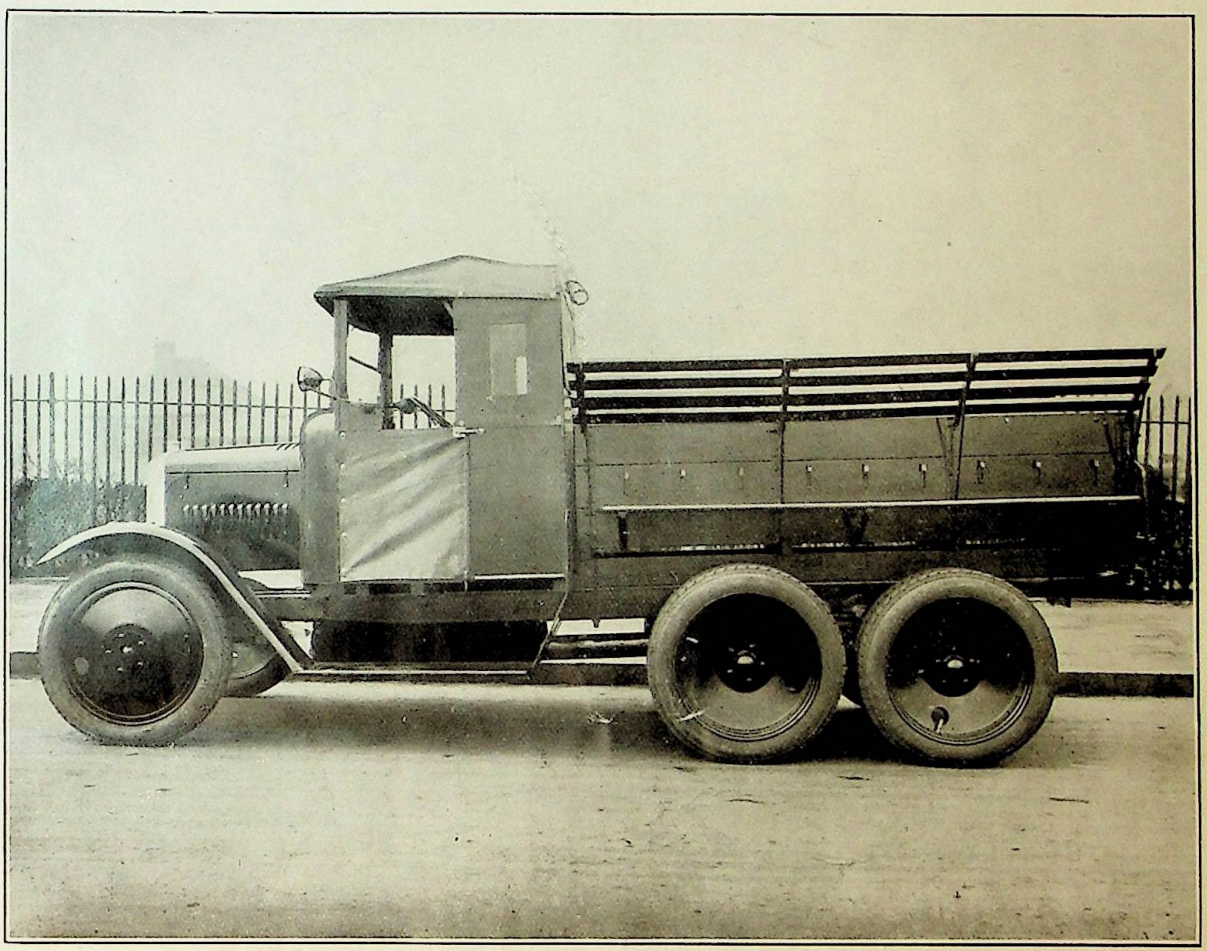
ACCESSORIES

The standard equipment includes Oil Pressure Gauge, Licence Holder, Driving Mirror, Bulb-Horn, Number-Plates, full Kit of Tools, Jack, Chassis Lubricating Gun, Speedometer with trip reading to 30 m.p.h.

Engine Accessibility



To ensure that upkeep costs shall be kept down to the workable minimum the engine has been designed so that maximum accessibility to all parts likely to require attention or adjustment has been obtained. Thus it will be appreciated from this view that the valve tappets can readily be adjusted when the near-side cover-plate has been removed. The contact breaker and distributor for the magneto are readily detachable, while the commutator of the dynamo can very easily be cleaned. It will be noted that the water circulation impeller is mounted in the highest point of the engine, so that it actually extracts the heated water away from the hot parts—a more efficient method than merely pumping cold water into the base of the cylinder block.



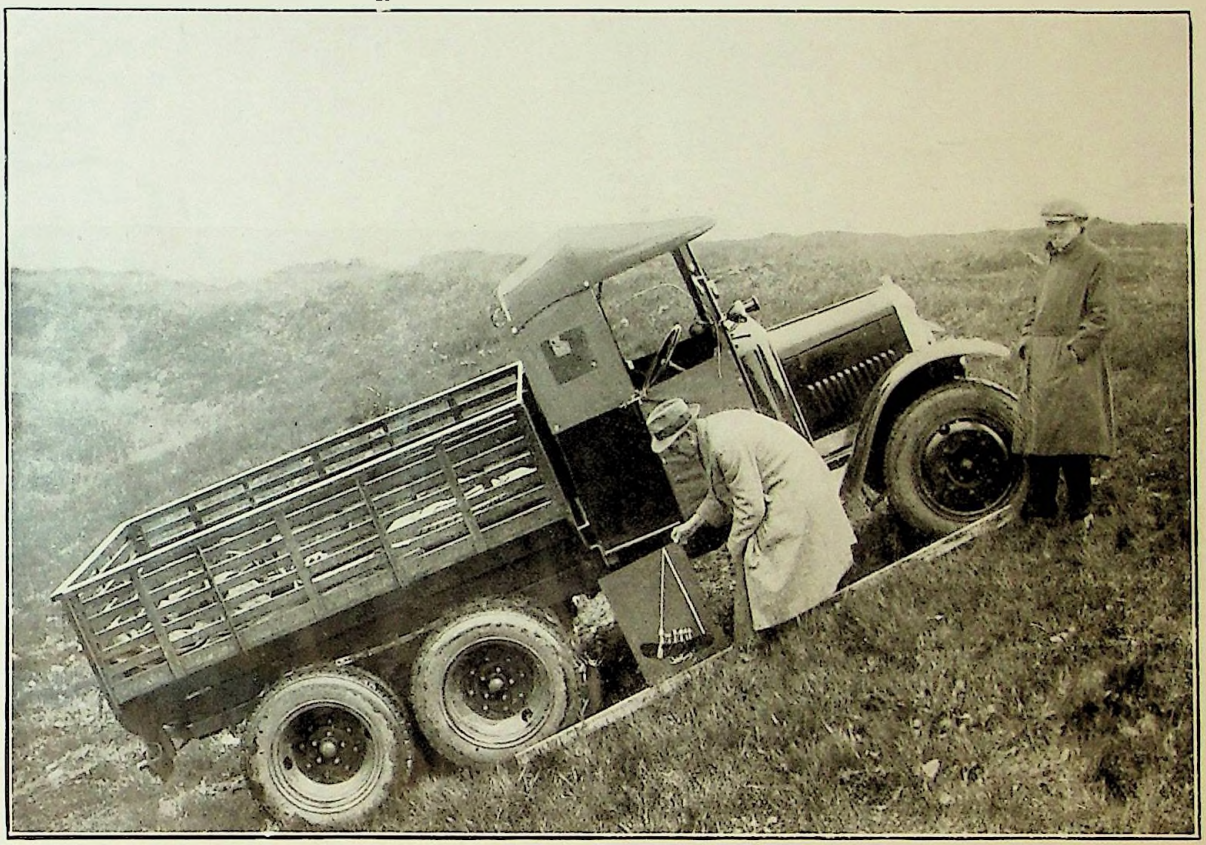
The 30-cwt. Model with War Office Type Body Mounting

Although its performance is very much out of the ordinary there is nothing grotesque or particularly unusual in the appearance of the complete Morris-Commercial Six-Wheeled Vehicle. The rear wheels are mounted as close together as can conveniently be arranged, so that mudguarding is an easy matter, while the driver's cab does not depart from the usual practice.

It will be quickly appreciated from this photograph how the actual load carried by the vehicle is mounted directly over the four rear wheels, and this has the effect of equalising the load carried per wheel of the vehicle, so that there is no danger of either the steering being inoperative through the front axle being too lightly loaded or of any of the wheels churning themselves into soft ground as the result of being too heavily laden.

The above illustration shows the 2-ton model with a 12 ft. lorry body mounted. This body has a width of 5 ft. 6 in. and the sides are 18 in. high. As shown below, the sides and tailboard are hinged, and if desired can be removed, thus enabling the machine to be used as a flat platform carrier. The price of this vehicle complete (without side-curtains) is **£505.**

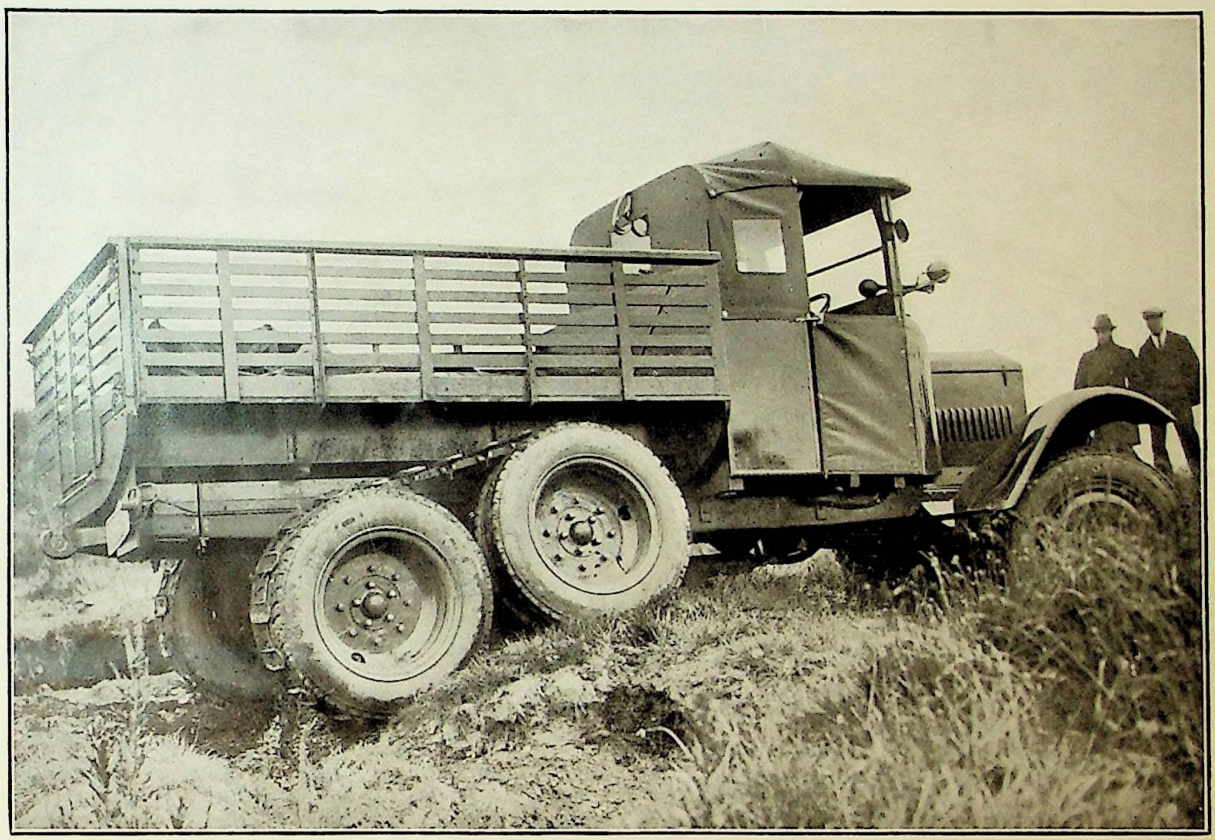
Will Cope with Extreme Conditions



In its normal form, and without any additions, the Morris-Commercial Six-Wheeled Vehicle will negotiate almost any conditions that are likely to be encountered. For use in cases where deep-sided and slippery ditches or hillocks have to be overcome, however, chain tracks are provided which fit round the four rear driving wheels. The task of applying these chains is extremely simple—quite as simple as fitting of non-skid chains on to an ordinary vehicle.

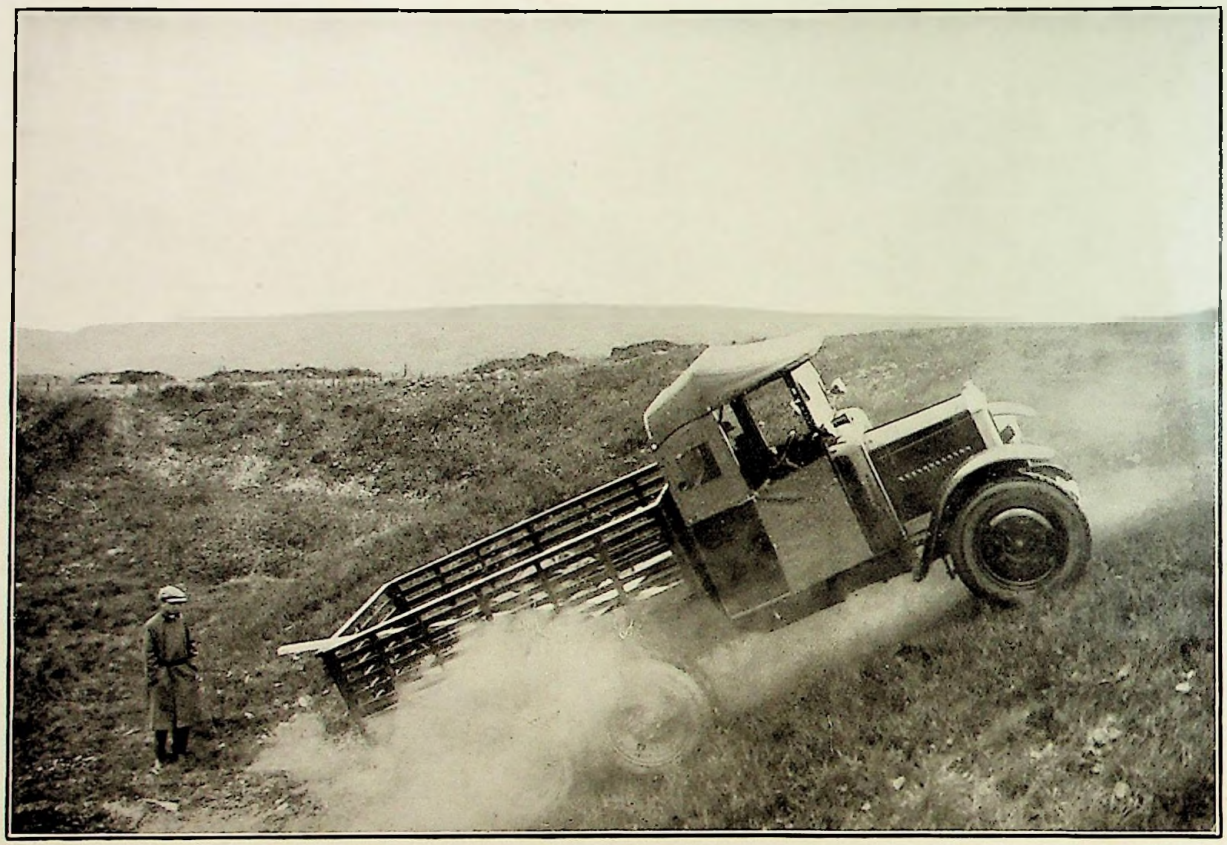
As can be judged from the photograph, the chains are laid out on the ground and the vehicle is backed over them. Each chain is then joined as in the left-hand photograph.

With these chains it has been proved that the vehicle, with full ton load, can negotiate gradients of 1 in 2 with a surface consisting of wet grass and clay. This feat is not merely a demonstration. It can be repeated by any of the standard vehicles.



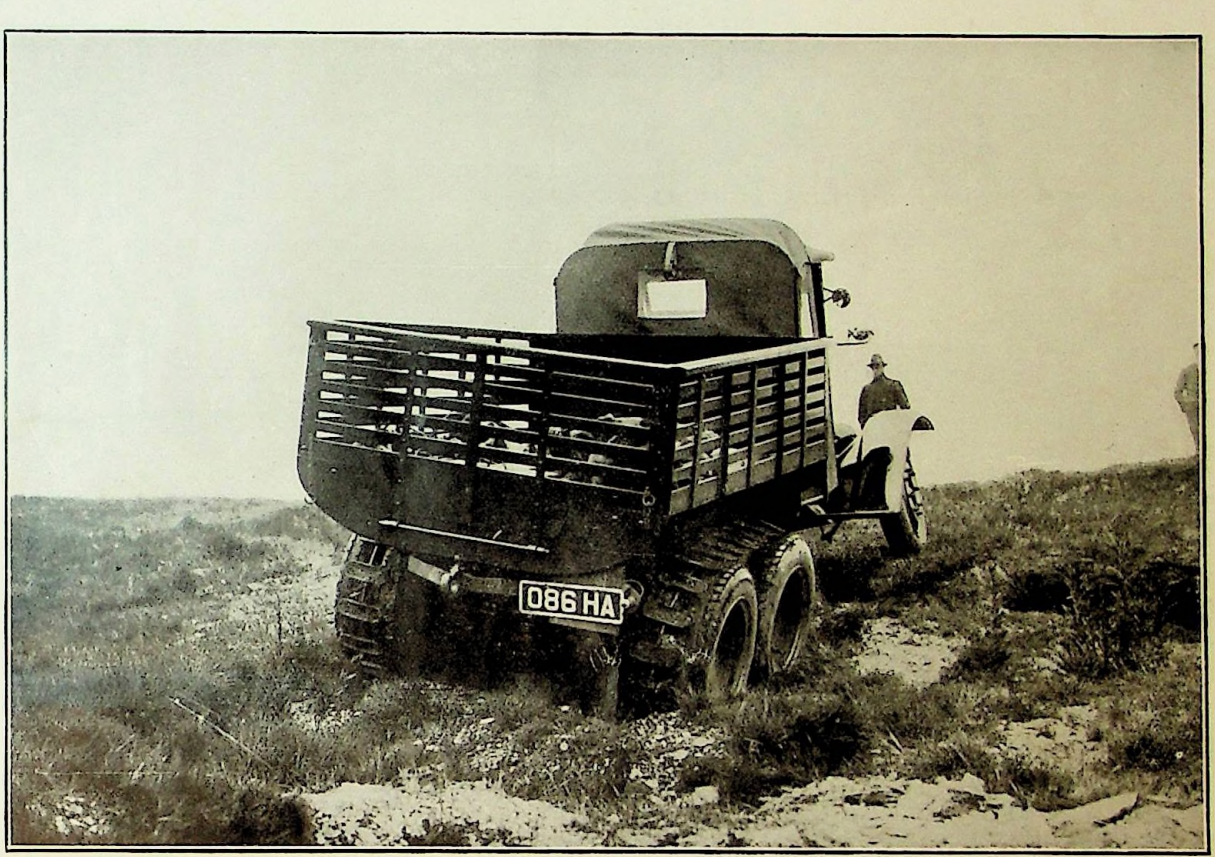
By reason of the unique and patented system of mounting the two rear axles, the four driving wheels of the Morris-Commercial Six-Wheeler can conform to almost any conditions, and thus, by securing the maximum road adhesion, propel the vehicle over types of ground as shown in the above photographs. At all times, moreover, the load is equally distributed between the two rear axles, so that there is no danger of one wheel spinning idly in the air while the other does more than a fair share of its work.

No Road Too Rough



No Ditch Too Steep

Here is a picture of a fully laden truck starting away from a standstill on a 1 in 2 gradient depicted earlier on in this catalogue. It is because of its remarkable road grip that the Morris-Commercial Six-Wheeler can easily perform feats of this kind which would be absolutely impossible to a normal type of truck. It must, moreover, not be forgotten that on a made road the Six-Wheeler is in fact as economical as is an ordinary truck, which latter would be completely baulked off the road.



Immense Power of Traction

No other truck is made that could haul itself out of a situation such as that depicted above. But the Morris-Commercial Six-Wheeler not only does it easily, but gladly and willingly. The ample power delivered by the sturdy 15.9 h.p. engine, passing through the perfectly designed transmission system, is properly applied at the road wheels, and working in conjunction with the correctly designed suspension makes light of such tasks as that shown above. Remember that it is an actual untouched photograph of a vehicle that was carrying its full ton load.

Guarantee (Home Sales)

Morris-Commercial Cars Ltd. (hereinafter called " the Company ") hereby guarantee that all precautions which are usual and reasonable have been taken by them to secure excellent materials and workmanship in their trucks. This guarantee is applicable only to new trucks or chassis or parts thereof, and is to be in force for a period of Twelve Months only from the date when the truck or chassis is delivered new from the Company's Works.

The Company only holds itself liable under this guarantee for the replacement or repair of any part or parts which may have proved to be defective. The Company will not be responsible for any expense which the purchaser may incur in removing or having removed or in replacing or having replaced any part or parts to be sent for inspection or in fitting or having fitted any new parts supplied in lieu thereof.

In the case of the sale of second-hand trucks or trucks which have been used for " hiring out " purposes no guarantee of any kind is given or is to be implied.

The liability of the Company is limited to the replacement (free at the Company's Works) of any part or parts found to be defective. No guarantee is given in respect of alleged defects caused by wear and tear, accident, misuse or neglect.

The Company guarantee only those trucks or chassis which are bought either direct from them or from one of their duly authorised Main Dealers or Sub-Dealers or through a bona fide motor dealer who has been supplied by the Company's authorised Main Dealer in his territory.

Chassis supplied by the Company are intended to be fitted with bodies similar in weight and character to those shown in the Company's catalogue. Should a purchaser fix a body materially differing therefrom he does so at his own risk.

The Company hereby give notice that this guarantee becomes null and void if the pneumatic tyre equipment, fitted as standard to their trucks, be replaced by solid or semi-solid tyres, either on all wheels or on the rear wheels alone.

CONDITIONS OF GUARANTEE

If an alleged defective part should be found in a Morris-Commercial truck it must be sent to the Company, carriage paid, with an Advice Note under separate cover stating the numbers of the engine and chassis of the truck from which the part was taken as shown by the Company's number-plate, the name of the dealer from whom the truck was purchased, the date of purchase and an intimation from the sender that he desires to have the alleged defective part replaced or made good free of charge under this guarantee. Parts returned to the Works without such advice will be at the risk of the sender, and this guarantee and any implied guarantee shall not be enforceable in respect thereof.

The equipment of the Morris-Commercial truck is of the highest grade obtainable, but the Company does not guarantee any proprietary fittings whatsoever (whether tyres, lamps, magnetos, electrical equipment, or any other proprietary fitting of any type) supplied with its trucks or otherwise. Such proprietary fittings are covered by a guarantee issued by their separate manufacturers and will be serviced direct by them. Neither does the Company guarantee any component part supplied by the Company to the order of the purchaser which differs from the usual specification of the part supplied with the Company's truck or by the Company in connection therewith. This guarantee shall not apply to any vehicle repaired or altered in any way which in the judgment of the Company shall affect its stability or reliability.

This guarantee is given in lieu and in exclusion of all other warranties, conditions and obligations imposed or implied by Statute or otherwise in respect of the Company's trucks or chassis, and no modification of the terms hereof is authorised whether the purchaser at the time of purchase shall receive a copy of the Company's guarantee or not. The Company does not give any guarantee in respect of second-hand goods sold by them.

MORRIS-COMMERCIAL CARS LTD.
(W. R. MORRIS, Governing Director)

Printed by The Morris-Oxford Press Ltd., Oxford.

2343—7/27/5m/4